

SAN BERNARDINO COUNTY REGIONAL GREENHOUSE GAS REDUCTION PLAN

FINAL



Adelanto	Colton	Montclair	San Bernardino
Apple Valley	Fontana	Needles	Twentynine Palms
Barstow	Grand Terrace	Ontario	Upland
Big Bear Lake	Hesperia	Rancho Cucamonga	Victorville
Chino	Highland	Redlands	Yucaipa
Chino Hills	Loma Linda	Rialto	Yucca Valley

Unincorporated San Bernardino County



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Acronyms and Abbreviations

AB	Assembly Bill
ATVs	all-terrain vehicles
AVL	automatic vehicle location
BAPIS	Bus Arrival Prediction Information System
BAU	Business-as-Usual
BBARWA	Big Bear Area Regional Wastewater Agency
BRT	Bus Rapid Transit
BVES	Bear Valley Electric Service
CAA	Clean Air Act
CAFE	Corporate Average Fuel-Economy
Cal-EPA	California Environmental Protection Agency
CAP	climate action plan
CARB	California Air Resources Board
CCAs	Community Choice Aggregations
CCR	California Code of Regulations
CEC	California Energy Commission
CEEP	Community Energy Efficiency Program
CEQA	California Environmental Quality Act
CFL	compact fluorescent
CH ₄	methane
CIC	CAP Implementation Coordinator
CIT	CAP Implementation Team
CIM	California Institution for Men
CLEO	Custom Language Efficiency Outreach
CO ₂	carbon dioxide
CPUC	California Public Utilities Commission
EIR	environmental impact report
EPA	U.S. Environmental Protection Agency
ESPs	energy service providers
°F	degrees Fahrenheit
FED	Functional Equivalent Document
FY	fiscal year
GHG	greenhouse gas

GPS	global positioning system
GTFS	General Transit Feed Specification
GWh	gigawatt-hours
GWP	global warming potential
HERS	Home Energy Rating System
HFCs	hydrofleurocarbons
HQTA	High Quality Transit Areas
HVAC	heating/venting and air conditioning
IEUA	Inland Empire Utilities Agency
IOU	investor-owned utilities
IPCC	Intergovernmental Panel on Climate Change
ITS	Intelligent Transportation Systems
IVR	Interactive Voice Response
kW	kilowatts
LCFS	Low Carbon Fuel Standard
LED	light emitting diode
LFGTE	landfill-gas-to-energy
L RTP	Long Range Transit Plan
MCAP	municipal inventory and reduction plan
MEU	Mobile Energy Unit
M MTCO ₂ e	million MTCO ₂ e
MPOs	metropolitan planning organizations
MTCO ₂ e	metric tons of carbon dioxide equivalent
MW	megawatt
N ₂ O	nitrous oxide
NPV	Net Present Values
ODS	ozone-depleting substances
PACE	Property Assessed Clean Energy
Partnership	San Bernardino Council of Governments and Participating San Bernardino County Cities Partnership
PFCs	perfluorinated carbons
PPAs	Power Purchase Agreements
ppb	parts per billion
ppm	parts per million

ppt	parts per trillion
PS	GHG Performance Standard for New Development
QR	Quick Response
Reduction Plan	San Bernardino County Regional Greenhouse Gas Reduction Plan
Reporting Rule	Greenhouse Gas Reporting Rule
RHNA	Regional Housing Needs Allocation
RPS	Renewable Portfolio Standard
RTPs	Regional Transportation Plans
SB	Senate Bill
SBCOG	San Bernardino Council of Governments
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCGC	Southern California Gas Corporation
SCS	sustainable communities strategy
SF ₆	sulfur hexafluoride
SMP	Sustainable Master Plan
TDM	Transportation Demand Management
TRP	trip reduction plan
TSM	Transportation Systems Management Plan
UC	University of California
UPRR	Union Pacific Railroad
VERA	Voluntary Emission Reduction Agreement
VMT	vehicle miles traveled
VVWA	Victor Valley Wastewater Agency
WWTPs	wastewater treatment plants

Executive Summary

San Bernardino Council of Governments and San Bernardino County Jurisdictions Partnership

In 2006, the California legislature passed Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006. The law establishes a limit on greenhouse gas (GHG) emissions for the state of California to reduce state-wide emissions to 1990 levels by 2020. In 2016, the California Assembly and Senate expanded upon AB 32 with Senate Bill (SB) 32, which mandates a 40% reduction in GHG emissions from 1990 levels by 2030 (California Legislative Information, 2016). In January 2017, the California Air Resources Board (CARB) developed a plan (SB 32 Scoping Plan¹) that charted a path towards the GHG reduction goal using all technologically feasible and cost-effective means (CARB, 2017).

In response to these initiatives, an informal project partnership, led by the San Bernardino Council of Governments (SBCOG), compiled a GHG emissions inventory and an evaluation of reduction measures that could be adopted by the 25 Partnership Cities of San Bernardino County. For the purposes of this report, this group is referred to as the San Bernardino Council of Governments and Participating San Bernardino County Jurisdictions Partnership (Partnership).

The Partnership has committed to undertake the following actions that will reduce GHG emissions associated with its regional (or countywide) activities.

1. Prepare a baseline (2016) GHG emissions inventory for each of the 25 Partnership jurisdictions in the county.
2. Prepare future year (2020, 2030, and 2045²) GHG emissions forecasts for each of the jurisdictions.
3. Develop general GHG reduction measures and jurisdiction-specific measures appropriate for each jurisdiction.
4. Develop consistent baseline information for jurisdictions to use for their development of community climate action plans (CAPs) meeting jurisdiction-identified reduction goals.

By working in a collaborative manner on these goals, the jurisdictions aim to develop consistent information in an efficient manner that can subsequently be used by individual jurisdictions that choose to develop and adopt CAPs for their jurisdictions and/or implement specific GHG reduction measures. GHG reduction measures selected by jurisdictions for this report are non-binding unless the decision-making body of a jurisdiction decides to formally adopt them.

The 25 Partnership jurisdictions participating in this study are Adelanto, Apple Valley, Barstow, Big Bear Lake, Chino, Chino Hills, Colton, Fontana, Grand Terrace, Hesperia, Highland, Loma Linda,

¹ For the Scoping Plan, see: https://ww3.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf.

² The primary focus of this regional plan is to achieve GHG reductions for 2030 in light of statewide legislative policy to reduce emissions through 2030. The 2045 forecast is provided as context for the post-2030 period because there will need to be additional reduction efforts to ultimately achieve post-2030 reduction targets that are likely to be adopted by the California legislature in the future.

Montclair, Needles, Ontario, Rancho Cucamonga, Redlands, Rialto, San Bernardino, Twentynine Palms, Upland, Victorville, Yucaipa, Yucca Valley, and the County of San Bernardino.

Reduction Plan Purpose and Description

This *San Bernardino County Regional Greenhouse Gas Reduction Plan* (Reduction Plan) satisfies Partnership goals 1, 2, 3, and 4 listed above. In 2019, a jurisdictional GHG emissions inventory was developed to help plan for GHG reduction strategies. This report includes the resulting inventory, *San Bernardino County Regional 2016 Community Greenhouse Gas Inventories*, in Appendix A.

This Reduction Plan summarizes the actions that 23 jurisdictions selected to reduce jurisdictional GHG emissions, as well as state-mandated actions. Additionally, for two cities, SBCOG's consultants (ICF and LSA) developed the reduction scenarios; for all other cities, the jurisdictions developed their reduction scenarios. This report describes the GHG emissions avoided in 2030 associated with each local and state action, and each jurisdiction's predicted progress towards their selected GHG reduction goal. The report consists of six chapters and two appendices, as follows.

Chapter 1: Introduction—presents basic information about the document itself and how to read it, the benefits of a regional GHG reduction plan, SBCOG's role, and the next steps jurisdictions may take.

Chapter 2: Background Information—describes GHG reduction and climate action planning at the federal, state, and local levels defines basic terms and concepts used in the report, and details the relationship of climate action plans to CEQA and local plans.

Chapter 3: Reduction Profiles—presents the profile for each participating jurisdiction, including a summary of the jurisdiction, its emissions reductions profile, specific emissions reduction measures and estimated reductions, and any relevant general plan policies.

Chapter 4: GHG Emissions Reduction Measures—includes a detailed description of each GHG reduction measure (or action). Each reduction measure description includes:

- General description of GHG reduction measure
- Entity responsible for implementing the measure
- Implementation details
- Level of commitment
- Range of GHG reductions
- Other co-benefits

Chapter 5: Implementation of Local Climate Action Plans and Regional Coordination—outlines key steps jurisdictions could follow to implement the selected reduction measures effectively and efficiently.

Chapter 6: References—lists all sources referenced in the report.

Appendix A: GHG Inventory and Forecast Introduction—summarizes the GHG emissions inventory and forecasted GHG emissions for each jurisdiction.

Appendix B: GHG Reduction Measure Methods—provides a detailed overview of the methodology used to calculate the GHG emissions reductions in the report.

This Reduction Plan is intended to be used as a reference document; it is not intended to be read continuously from beginning to end. Each jurisdiction has its own section that details the jurisdiction's 2016 GHG emissions inventory, 2030 GHG emissions forecast, reduction goal, jurisdiction-selected (or consultant-identified) GHG reduction measures, and related General Plan policies or other ongoing programs in the jurisdiction. The jurisdiction sections are largely graphical, so the authors encourage readers to read the reduction measure descriptions in Chapter 4, the implementation guidelines in Chapter 5, and the Appendices together with each jurisdiction section. The jurisdiction reduction plans developed as part of this document are intended to serve as a foundation upon which each individual jurisdiction may develop its own customized and comprehensive CAP. This plan leveraged efforts that would be common to all jurisdictions and allowed the selection of a unique set of individual programs and policies. SBCOG anticipates that individual jurisdictions may choose to utilize the information in this document to complete and adopt their own CAPs.

Why Prepare a Greenhouse Gas Reduction Plan?

Preparing a regional GHG reduction plan to inform a local CAP offers the following benefits:

- **Consistency:** Using consistent methodologies to prepare GHG inventories and to calculate GHG reductions avoids inconsistencies in how neighboring jurisdictions account for emissions and reductions, and promotes fair comparisons across jurisdictions in the region.
- **Economies of Scale for Plan Preparation:** The cost of preparing inventories, developing reduction measures, calculation reductions, evaluating costs and benefits and supporting technical detail can be substantially reduced by doing them together instead of on a one-by-one basis.
- **Opportunities for Collaboration in Implementation:** By working together on the regional reduction plan, jurisdictions can identify areas of common action where working together can result in cost savings in implementation. In the future, the Partnership jurisdictions can also seek external grant funding and other opportunities together, which can reduce implementing cost by leveraging economies of scale.

How Does this Plan Account for the COVID-19 Pandemic?

The COVID-19 pandemic erupted throughout the United States near the beginning of 2020, and most of the country went into lockdown in mid-March and into April, causing massive disruption to the society and economy of San Bernardino, but also across the United States and the world. Since the original outbreak, disruptions and lockdowns have ebbed and flowed. San Bernardino and the world have not returned to normal even at the end of 2020, and energy use and GHG emissions during the year have been atypical as travel and commuting have dropped significantly and as businesses reduced or ceased operations. In fact, GHG emissions decreased by 8.8% globally and by 13.3% in the U.S. during the first half of 2020, compared to the same period in 2019. However, emissions have since risen from that diminished level as restrictions were relaxed and economic activities resumed.³

³ *Nature Communications*. 2020. Near-Real-Time Monitoring of Global CO₂ Emissions Reveals the Effects of the COVID-19 Pandemic. Liu, Z., Ciais, P., Deng, Z. et al. Available at: <https://www.nature.com/articles/s41467-020-18922-7>.

Please note that the GHG inventory data in this document does not account for the impacts of COVID-19 in any way. The historical data is only as recent as 2016, i.e., pre-pandemic. However, this document does include emissions forecasts for future years, including 2020, based on historical data and predictive modeling methods. Because the emissions models and forecasts did not anticipate a global pandemic and the resulting impacts on energy use and emissions, it is unlikely that the pre-COVID business as usual (BAU) estimations will closely align with the actual results for 2020. It may also be the case that activities and priorities in the 25 Partnership jurisdictions may change post-pandemic, and individual jurisdictions may alter their GHG emission reduction measures accordingly. However, regardless of the current effect of the changes in economic activity and mobility during the COVID health emergency, it is expected that economic growth and mobility will increase as recovery from the emergency occurs, and along with it will come increases in GHG emissions unless local and state activity is taken to reduce those emissions in line with current policies to reduce GHG emissions substantially in the long run.

Regional Summary—Growth, Emissions, and Reductions

Challenges—How the Region Will Grow

Current and projected GHG emissions are directly correlated with activity within the jurisdictional boundary. As such, emissions reflect the unique geography, climate, demographics, economy, and character of a community. Further, future projections of GHG emissions reflect how a community plans to grow with respect to housing, jobs, and infrastructure. In 2016 (the baseline year for the inventories), the county's total population was 2,134,967 and 750,000 jobs (SCAG, 2019).⁴

Figure ES-1A shows a map of the county and areas of highest projected increase in population; Figure ES-1B shows a map of the county and areas of highest projected increase in employment. Table ES-1 shows current and projected population, households, and jobs for each of the jurisdictions in the Partnership. Partnership jurisdictions expected to experience the largest increase in population from 2016 to 2030 are Needles (52%), Adelanto (48%), Hesperia (38%), Ontario (29%), and Victorville (29%). Partnership jurisdictions expected to experience the largest growth in jobs from 2016 to 2030 are Hesperia (51%), Twentynine Palms (45%) and Grand Terrace (36%). Overall, the region will add approximately 329,000 residents and 135,000 jobs before 2030.

Partnership jurisdictions face a difficult challenge to reduce GHG emissions while population and economic activity continue to grow in the region at a rate higher than many other areas of California. Projections generated by the California Department of Finance show that San Bernardino County ranked 12th out of 58 California counties for expected growth between 2020 and 2030 (California Department of Finance, 2019); the neighboring counties of Kern and Riverside ranked first and fourth, respectively. Partnership jurisdictions and the state will need to pursue comprehensive approaches to improve the efficiency of and reduce the energy associated with the daily activities of workers and residents in the region.⁵

⁴ The baseline inventory for 2016 was derived in part from socioeconomic data in the SCAG 2016 RTP/SCS.

⁵ As explained in Appendix A, the forecasts for 2030 used forecasted changes in population, employment, and households between the baseline year of 2016 and 2030.

Figure ES-1A. Map of Percent Growth in Population for Partnership Jurisdictions from 2016 to 2030

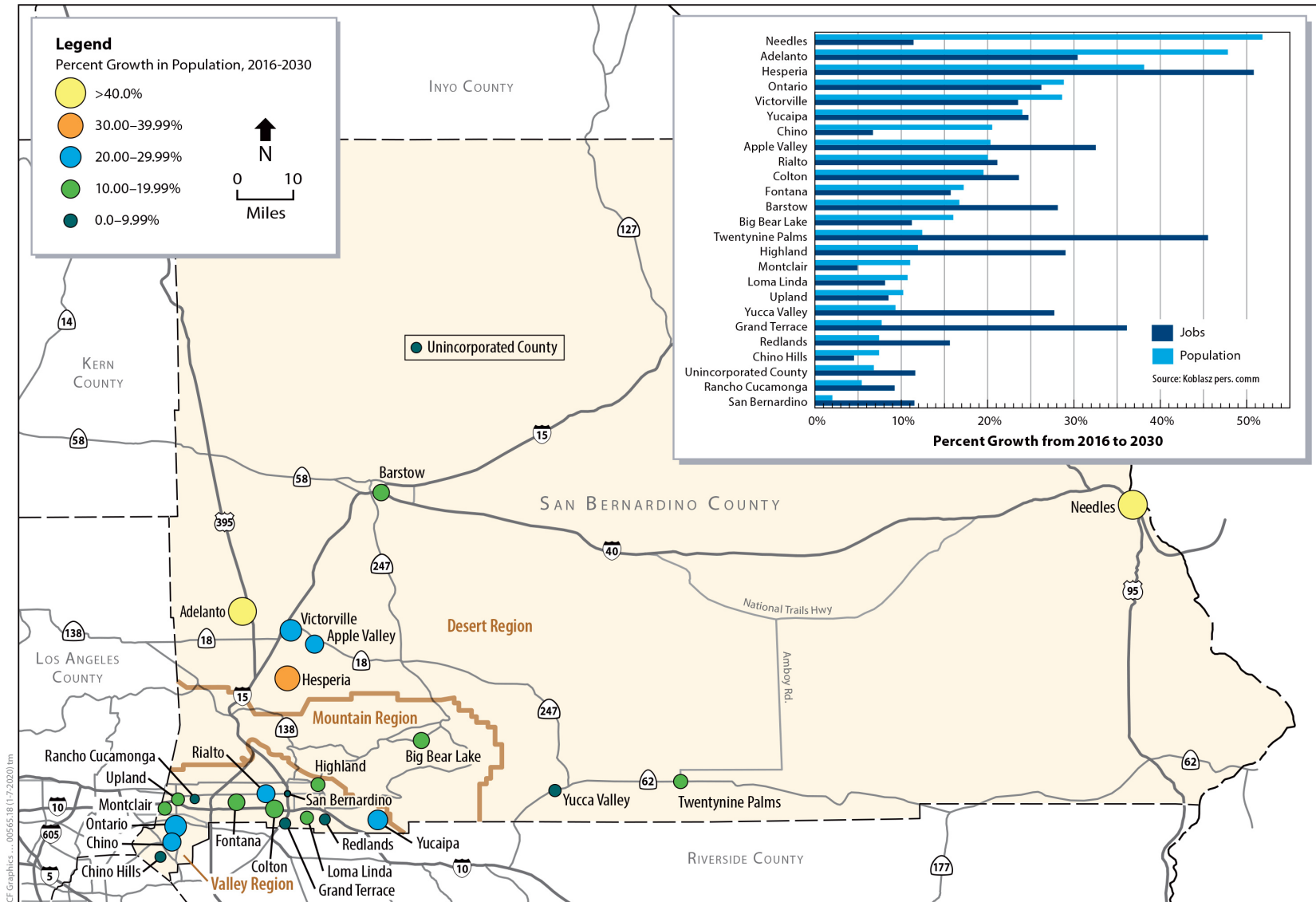


Figure ES-1B. Map of Percent Growth in Jobs for Partnership Jurisdictions from 2016 to 2030

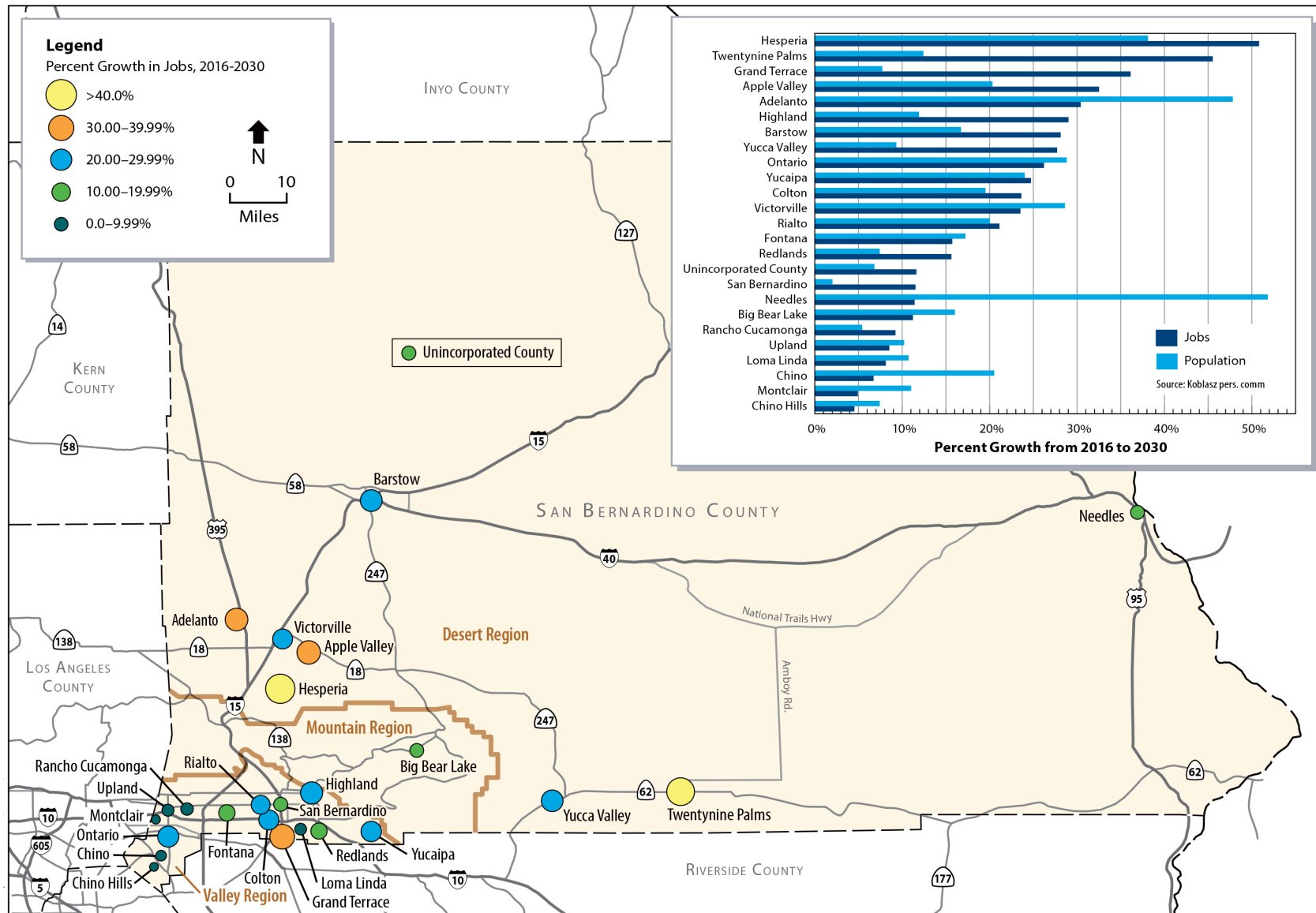


Table ES-1. Socioeconomic Data for Partnership Jurisdictions 2016, 2030, and 2045

Jurisdiction	2016			2030			2045		
	Population	Households	Employment	Population	Households	Employment	Population	Households	Employment
Adelanto	33,893	8,159	6,141	50,081	13,686	8,005	66,637	19,802	10,007
Apple Valley	74,313	24,734	18,012	89,425	31,547	23,871	101,405	37,386	30,160
Barstow	24,187	8,417	11,704	28,228	10,556	14,993	32,695	12,849	18,516
Big Bear Lake	4,932	2,095	4,683	5,722	2,442	5,207	6,569	2,813	5,768
Chino	81,294	23,227	50,408	97,940	27,983	53,796	115,773	33,078	57,425
Chino Hills	79,737	23,838	16,424	85,623	25,868	17,156	92,822	28,043	17,940
Colton	53,705	15,026	19,453	64,184	19,002	24,042	70,710	21,668	28,958
Fontana	210,983	51,518	56,724	247,196	64,192	65,619	286,666	77,772	75,149
Grand Terrace	12,400	4,421	3,481	13,359	4,975	4,738	14,501	5,569	6,085
Hesperia	93,687	26,764	22,460	129,410	39,503	33,861	168,067	53,153	46,077
Highland	54,201	15,391	6,938	60,631	17,956	8,952	68,942	21,410	11,116
Loma Linda	24,474	9,033	24,184	27,093	10,458	26,152	30,112	11,985	28,260
Montclair	38,701	9,866	19,309	42,971	10,492	20,259	49,150	11,162	20,892
Needles	5,031	1,941	1,731	7,636	3,070	1,928	10,281	4,280	2,140
Ontario	172,249	46,001	113,859	221,806	60,602	143,699	269,050	74,521	169,331
Rancho Cucamonga	176,503	56,764	88,314	186,120	61,426	96,434	201,255	66,421	105,135
Redlands	69,531	24,421	42,569	74,690	27,516	49,220	80,832	30,832	56,347
Rialto	99,318	26,485	25,472	119,193	31,785	30,837	139,068	37,085	35,524
San Bernardino	216,326	59,709	101,330	220,565	64,084	113,030	230,532	68,771	125,566
Twentynine Palms	26,487	8,367	4,427	29,768	10,031	6,440	33,266	11,814	8,596
Upland	76,403	26,088	35,893	84,208	29,336	38,960	92,963	32,817	42,247
Victorville	123,309	33,932	41,180	158,601	47,392	50,848	194,522	61,813	61,207
Yucaipa	53,779	19,987	10,824	66,706	23,716	13,500	75,209	27,349	17,624
Yucca Valley	21,445	8,358	6,937	23,447	9,566	8,857	25,810	10,861	10,914
Unincorporated w/ SOI	308,079	97,066	58,795	328,897	105,700	65,587	353,053	114,950	72,864
San Bernardino County Total	2,134,967	631,608	791,252	2,463,500	752,884	925,991	2,809,889	878,202	1,063,848

GHG Emissions for the Partnership Jurisdictions

Total GHG emissions,⁶ excluding stationary sources,⁷ for all Partnership jurisdictions in 2016 amounted to 15,972,244 metric tons of carbon dioxide equivalent (MTCO₂e).⁸ The Business as Usual (BAU)⁹ of GHG emissions for all Partnership jurisdictions in 2030 projects total emissions will be 17,674,452 MTCO₂e. Figure ES-2 shows the contribution of various activities to total regional GHG emissions, excluding stationary sources.

Total GHG emissions in 2016 and projected GHG emissions in 2030 are shown for each of the Partnership jurisdictions in Figure ES-3, excluding stationary sources. With a few exceptions, in 2016 and in 2030, the largest sources of regional GHG emissions are combustion of transportation fuels and electricity and natural gas used by residential and commercial buildings. Consequently, the on-road transportation and building energy sectors will figure prominently in jurisdiction GHG reduction plans.

Including stationary sources, the emissions in 2016 were 21,567,392 MTCO₂e and 2030 BAU emissions are estimated as 24,736,167 MTCO₂e. Stationary sources is the third largest source of emissions after transportation and building energy. As discussed in Appendix A, when including stationary sources, several of the jurisdictions, including Apple Valley and San Bernardino County, have notably higher overall GHG emissions due to the inclusion of very large stationary sources in these two jurisdictions, such as the CEMEX cement plant in Apple Valley and other large stationary sources in the unincorporated County.

A detailed description of each jurisdiction's GHG inventory is provided in Appendix A, *San Bernardino County Regional 2016 Community Greenhouse Gas Inventories*.

⁶ Total GHG emissions as reported above for the region, and unless otherwise stated in this document are the sum of Direct and Indirect emissions. Excluded emissions sources are not included in the regional or jurisdiction totals but have been calculated and reported for the region and for each jurisdiction. Please see the complete GHG Inventory Report for details (Appendix A).

⁷ Stationary sources are disclosed in the inventories, but are not included in the totals for local reduction planning as local municipalities have limited authority over large stationary sources, which are being regulated for GHG emissions by both the state (CARB) and by the federal government (U.S. Environmental Protection Agency).

⁸ Carbon dioxide equivalent" or "CO₂e" is a term that describes different greenhouse gases using a common unit. For any quantity and type of greenhouse gas, CO₂e signifies the amount of CO₂ which would have the equivalent global warming impact.

⁹ Business as Usual (BAU) reflects conditions that would exist in the future without any local or state action to reduce GHG actions. The 2030 BAU conditions are a raw projection of emissions using the 2016 emissions as a base and then inflating the emissions for 2030 based on the increases in population, housing, and employment. Methods used to develop the 2030 BAU forecast are described in Appendix A.

Figure ES-2. 2016 Baseline GHG Emissions and 2030 BAU GHG Emissions Forecast for the 25 Partnership Jurisdictions by Activity (MTCO₂e)

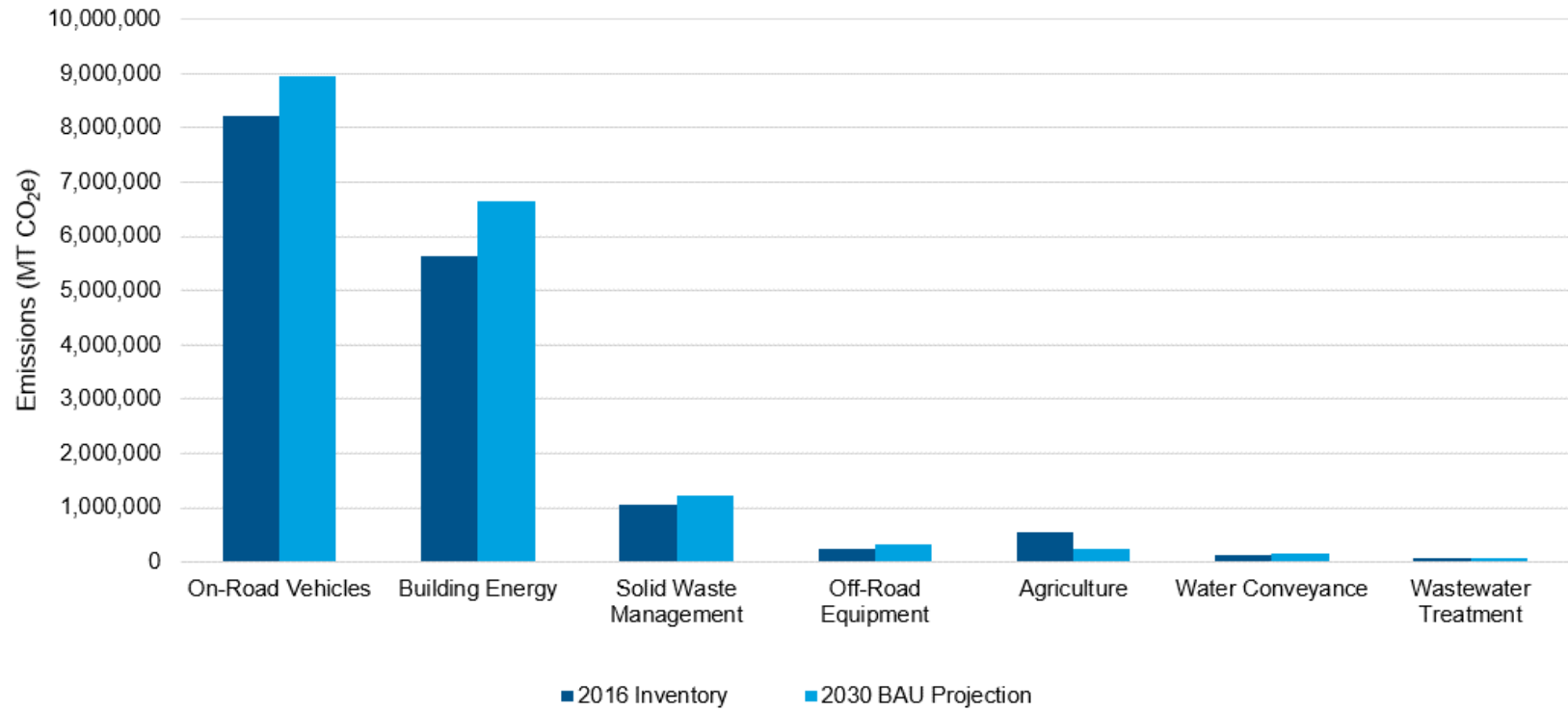
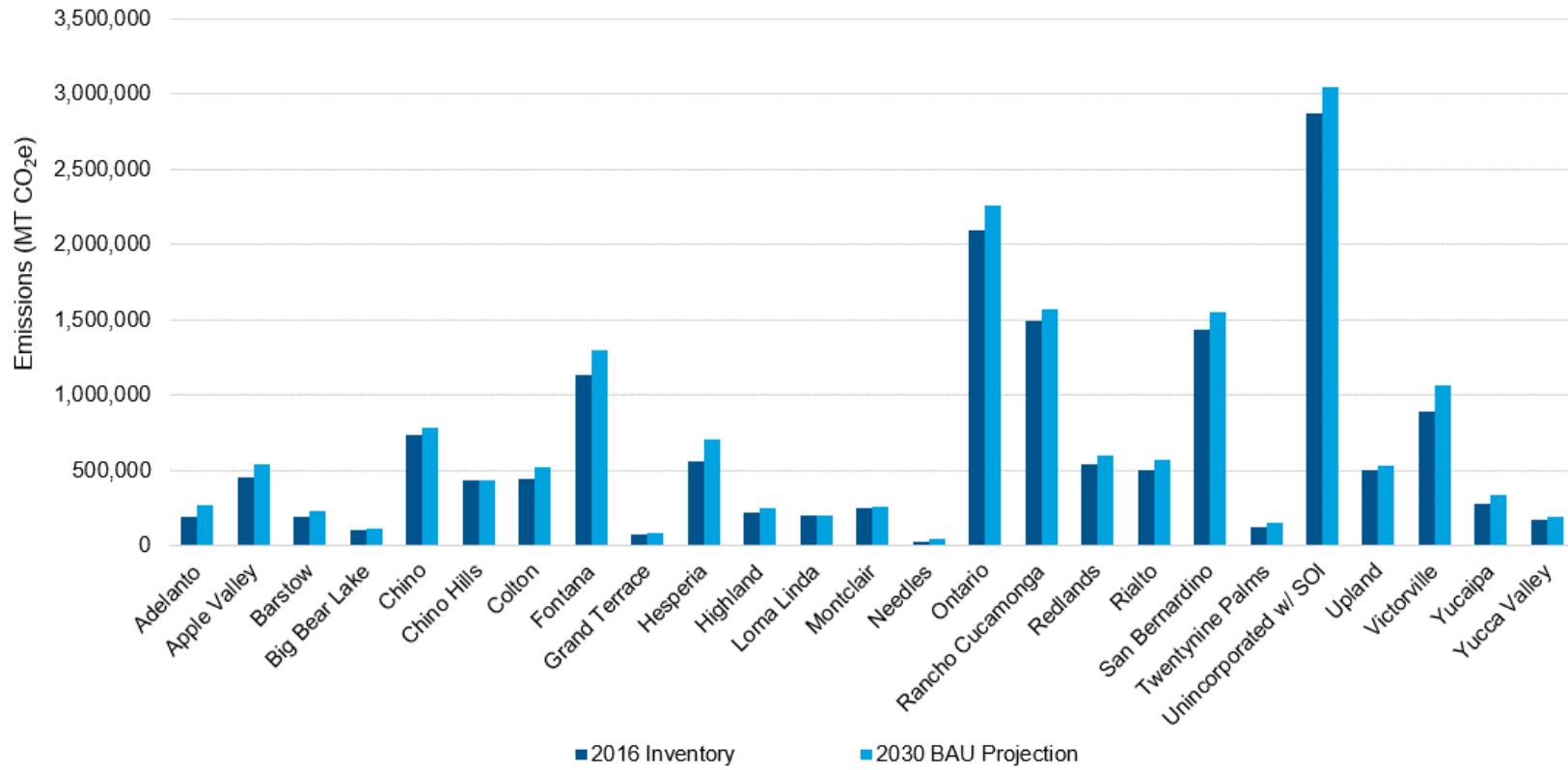


Figure ES-3. 2016 Baseline GHG Emissions and 2030 BAU GHG Emissions Forecast for the Partnership Jurisdictions (MTCO₂e)



Regional GHG Reductions—Sector View

Through this project, Partnership jurisdictions identified actions that could become the basis of each jurisdiction's individual CAP, if it chooses to move forward with development and adoption of a local CAP. These actions include those mandated by the state, such as the Pavley fuel economy standards (AB 1493), and those implemented individually by each Partnership jurisdiction, such as local energy efficiency retrofits, urban tree planting, or waste diversion requirements. Through the combination of these actions, each Partnership jurisdiction and the region as a whole will be able to reduce GHG emissions. Reduction targets are only identified on a per jurisdiction basis.¹⁰

According to CARB's 2016 inventory data for GHG emissions, California is on track to exceed its 2020 target of reaching 1990 emission levels as required by AB 32.

Additionally, some GHG reduction actions are best suited to regional planning and cooperation and the benefits are best monitored at the regional level, as opposed to the jurisdiction level. The results presented in this document can be used to support both jurisdiction-level and regional-level planning.

Figure ES-4 shows the amount of GHG reductions achieved in the region within each GHG emission sector (i.e., the sum of all actions taken by all jurisdictions within that sector, including state level programs). Additionally, Figure ES-4 conveys that there is a potential for approximately nearly 8 million MTCO_{2e} in GHG reductions due to the combined effect of state, regional, and local actions detailed in this report.

Figure ES-4 shows that 75% of the region's reductions will come from state level programs, and 25% from local measures—12% from measures implemented in the building energy sector, and 13% from other local programs.

Regional GHG Reductions—Jurisdiction View

Figure ES-5 shows the amount of GHG reductions that have been identified by each of the Partnership jurisdictions relative to their 2030 BAU projection and their identified target. Figure ES-5 shows that all jurisdictions will meet their specified reduction target with the actions identified in this report, including state mandates, regional measures, and local actions. Selected reduction targets for Partnership jurisdictions are diverse. Selected targets include a range of custom levels between 25% and 46% below 2008, 40% below 2016 GHG emissions levels, 36% to 42% below 2020 BAU, or several per capita emissions levels. Figure ES-6 shows a comparison of emissions by sector in 2030 and reductions by sector in 2030. The pie charts show a similar distribution across sectors, indicating that emissions are projected to be reduced proportionally in the sectors where projected 2030 emissions are the highest, such as building energy and on-road transportation.

¹⁰ Using CARB's inventory data for GHG emissions for 2016, the state is on track to exceed its 2020 target of reaching 1990 emission levels (as required by AB 32). The 2008 AB 32 Scoping Plan recommended local jurisdictions reduce their emissions by 15% relative to "current" emissions, which at the time of the Scoping Plan was understood to be roughly 2005 – 2008 emission levels. The 2017 SB 32 Scoping Plan expands upon the 15% goal, recommending that local jurisdictions should derive evidence-based local per capita, mass emissions, or service population goals to reach state-wide 2030 and 2050 climate goals. In this plan, jurisdictions have identified individual targets for 2030.

Figure ES-7a shows projected 2030 emissions for each jurisdiction, excluding stationary source emissions, and figure ES-7b shows the contribution of each jurisdiction to the overall GHG reductions in the region. These contributions generally parallel the distribution of population and employment in the region.

Figure ES-4. Total Identified GHG Reductions in 2030 for the 25 Partnership Jurisdictions (MTCO₂e)

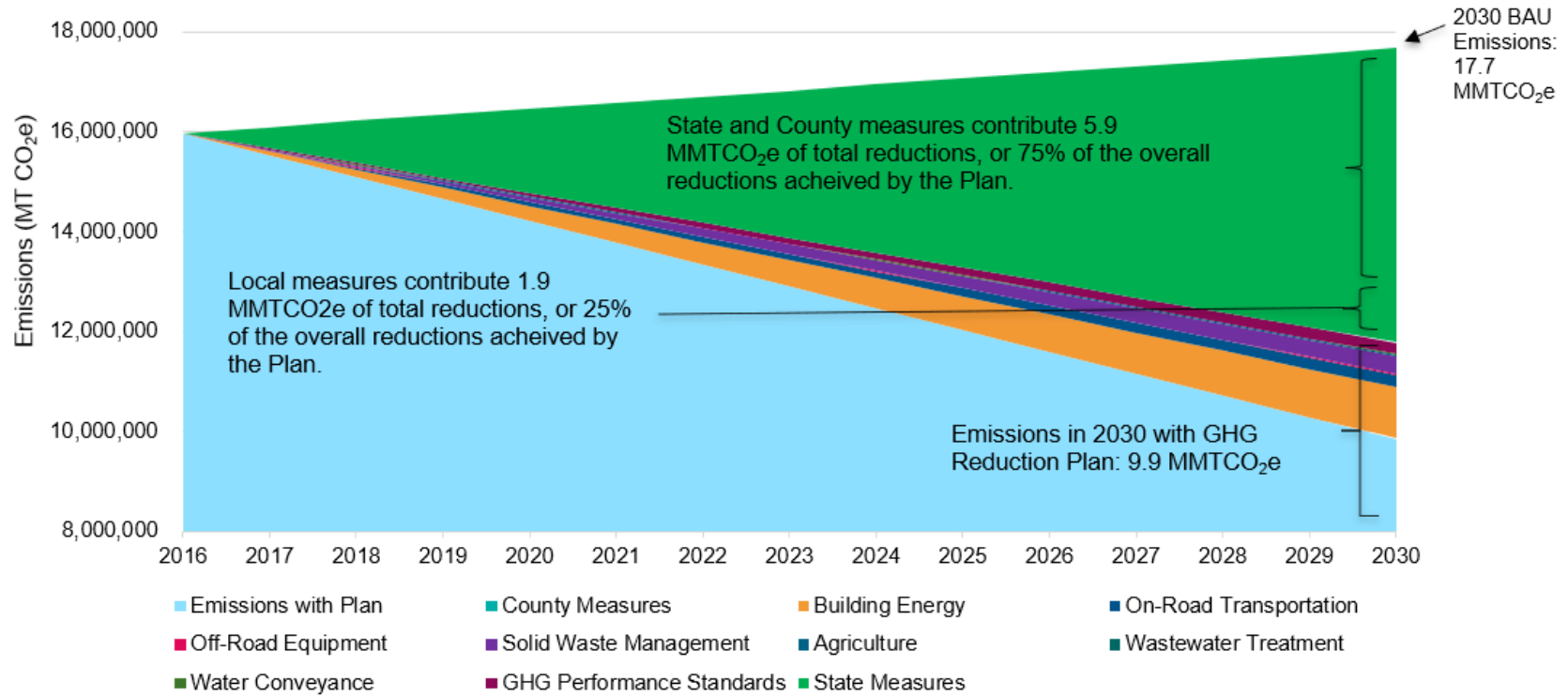


Figure ES-5. 2030 BAU GHG Emissions Forecast and Identified GHG Reductions in 2030 for All Partnership Jurisdictions (MTCO₂e)

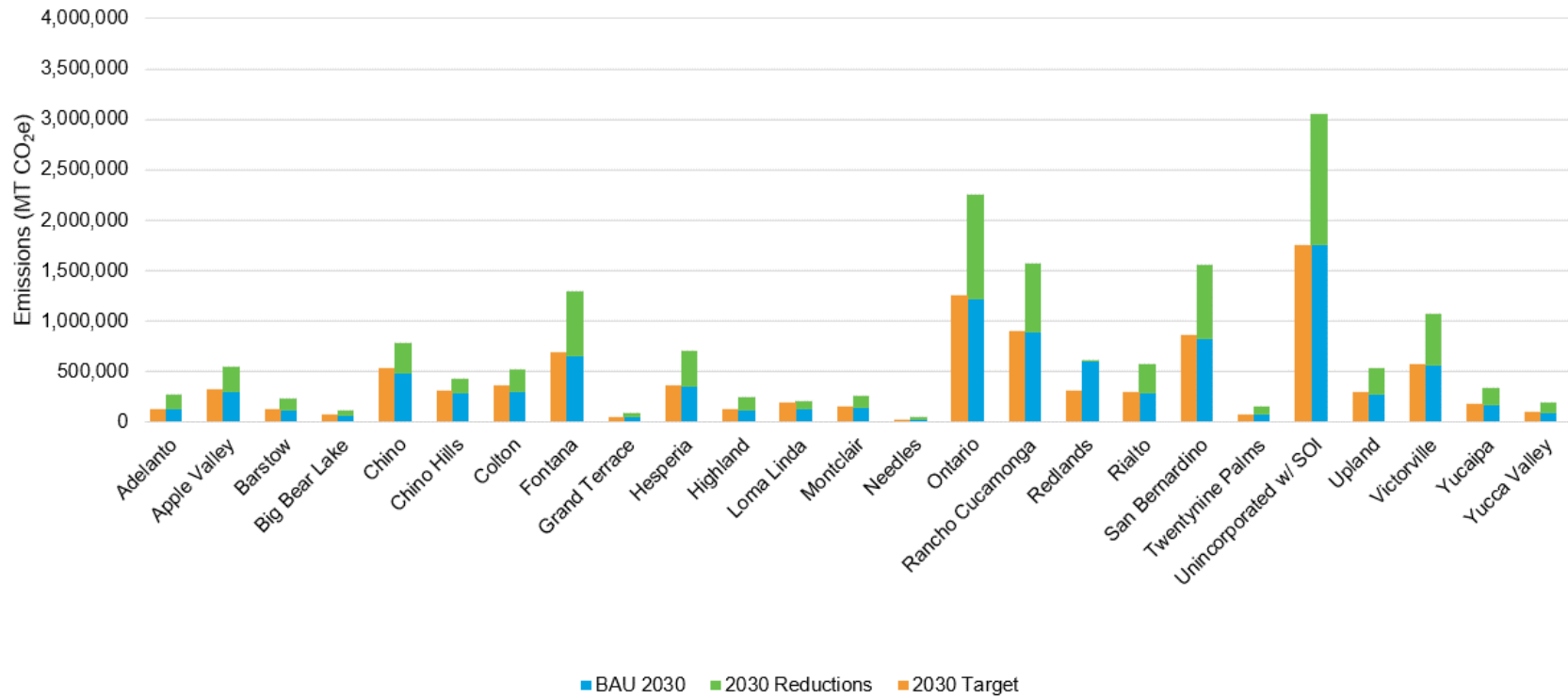


Figure ES-6. Distribution of Regional BAU Emissions and Reductions in 2030 by Sector (MTCO_{2e})

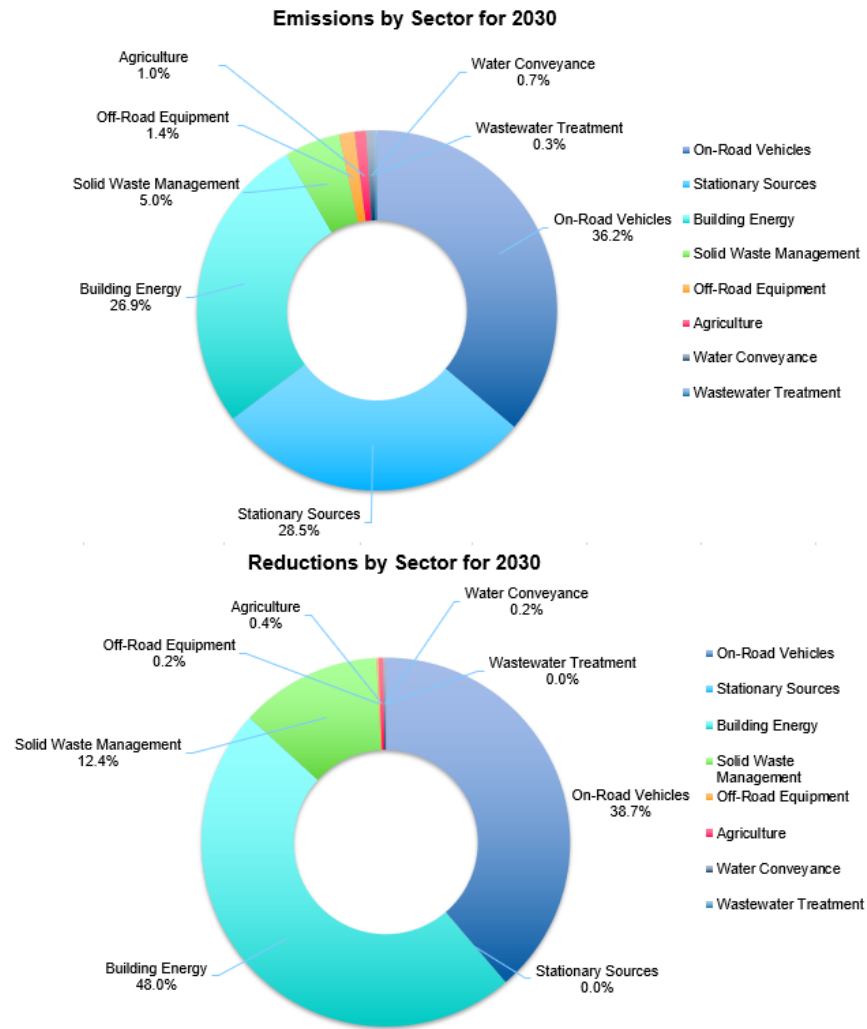


Figure ES-7a. Distribution of Projected GHG Emissions in 2030 for all Partnership Jurisdictions (MTCO₂e)

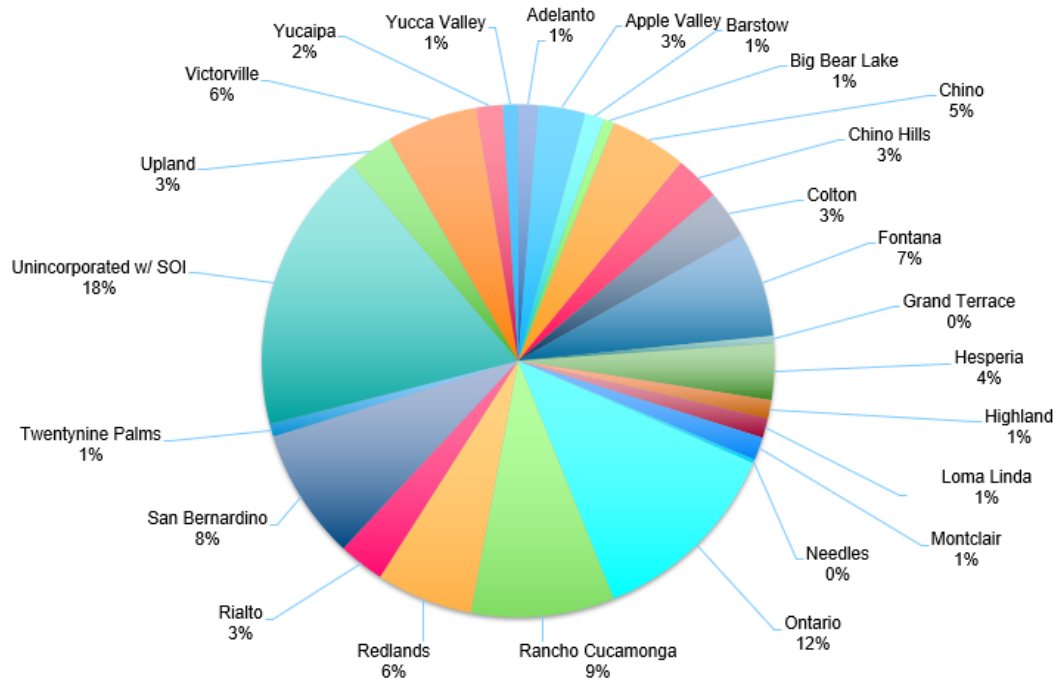
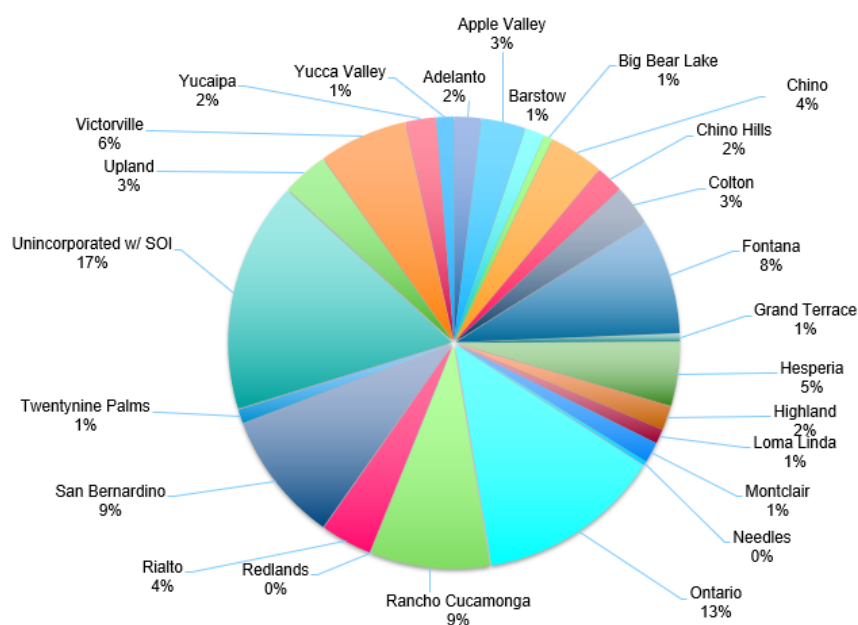


Figure ES-7b. Distribution of Identified GHG Emissions Reductions in 2030 for all Partnership Jurisdictions (MTCO_{2e})



Next Steps

This Reduction Plan identifies state measures applicable to every Partnership jurisdiction, as well as local measures selected by each jurisdiction that could reduce future GHG emissions within jurisdictional boundaries. Through the development of this Reduction Plan, each Partnership jurisdiction individually selected GHG reduction measures, tailored the level of commitment for reduction measures, and set unique GHG reduction goals for the year 2030. Neither SBCOG nor the region has set a regional GHG reduction goal and this Reduction Plan is not a mandate from SBCOG. Instead, it represents the collective effect of the individual jurisdictions' actions. This document describes the projected GHG reductions that can be achieved for the region through the combined efforts of all Partnership jurisdictions if they were to fully implement the reduction measures identified in this Reduction Plan.

This Reduction Plan is intended to serve as a foundation upon which the Partnership jurisdictions can develop individual jurisdiction-specific CAPs to be adopted and enacted according to their own internal procedures. The next steps for Partnership jurisdictions that choose to move forward with this process and ultimately develop their own local climate action planning are listed below.

1. **Plan Adoption:** Partnership jurisdictions may adopt (but are not required to do so) CAPs based upon this Reduction Plan or their respective portions of the regional reduction plan presented herein. This would occur after SBCOG approves this Reduction Plan. Development of a CAP may require the development of a jurisdiction-specific implementation plan that will identify responsible parties, funding and tracking protocols, and schedule actions. Each Partnership jurisdiction would undertake steps needed to formally adopt the CAP in their jurisdiction, such as gathering input from stakeholders; conducting public meetings; review by jurisdiction

council, planning commission, or board of supervisors; California Environmental Quality Act (CEQA) analysis as needed; and/or vote by a governing body.

2. **CEQA Compliance on the Regional Reduction Plan:** SBCOG will be completing CEQA compliance to assess the potential environmental impacts associated with implementation of this Reduction Plan as an update to the prior Regional Reduction Plan from 2015. A comprehensive Environmental Impact Report was certified by SANBAG in 2015. It is expected that CEQA compliance for the updated regional plan will likely be an addendum or supplement to the prior EIR. The CEQA document will rely on the assumption that all jurisdictions will implement the measures selected in this Reduction Plan prior to 2030, but does not require that all Partnership jurisdictions formally adopt this Reduction Plan. After adoption of the CEQA document for the Regional Reduction Plan by SBCOG, additional CEQA analyses will only be required at the jurisdiction level if Partnership jurisdictions choose to change their GHG reduction measures from those identified in this Reduction Plan, and if those measures have potentially significant secondary impacts on the environment.
3. **Implementation and Tracking of the Reduction Plan(s):** Properly tracking the progress of the Reduction Plan, monitoring the real benefits, and reporting these results are crucial to the success of implementing the Reduction Plan and to adaptive management of GHG reductions measures going forward. Each Partnership jurisdiction is expected to monitor the progress of actions identified, and to monitor metrics of the program such as energy consumption, water consumption, or waste diversion. SBCOG can take a lead role in communicating with each Partnership jurisdiction, tracking regional progress, and regularly updating and communicating relevant issues to the whole Partnership, including future updates to the Reduction Plan, if desired by the Partnership jurisdictions (discussed further in Chapter 5).
4. **Tiering of CEQA Analysis of Greenhouse Gas Emissions:** Those Partnership jurisdictions choosing to complete and adopt local CAPs that are consistent with this GHG Reduction Plan and with the prior Regional Plan Program EIR and the addendum or supplemental CEQA document prepared by SBCOG will be able to tier their future project-level CEQA analyses of GHG emissions from their CAP. This can help to streamline project-level CEQA review.

1.1 What Is This Document?

This document presents greenhouse gas (GHG) inventories, assesses the effectiveness of California initiatives to reduce GHG emissions, and identifies local GHG reduction strategies that were selected for 25 Partnership jurisdictions to reduce local GHG emissions. This *San Bernardino County Regional Greenhouse Gas Reduction Plan* (Reduction Plan) presents the collective results of all local efforts to reduce GHG emissions consistent with statewide GHG targets expressed in Senate Bill (SB) 32, the “Global Warming Solutions Act of 2006,” and SB 375. Partnership jurisdictions will use this document in a variety of ways, depending on their needs.

This Reduction Plan is not mandatory for the Partnership jurisdictions. Instead, it provides information that can be used by Partnership jurisdictions, if they choose so, to develop individual climate action plans (CAPs). Each jurisdiction will need to decide whether or not to finalize and adopt a local CAP, including strategies described in this Reduction Plan, as part of a separate process. This Reduction Plan describes the reductions that are possible if San Bernardino Council of Governments (SBCOG) and every Partnership jurisdiction were to adopt the reduction strategies as described in this document.

1.2 What Are the Benefits of a Regional GHG Reduction Plan?

Partnership jurisdictions have chosen to prepare GHG inventories and evaluate local GHG reduction measures jointly. SBCOG and the Partnership jurisdictions see several advantages to this approach.

Economies of Scale: Although many aspects of GHG planning and policy making are unique to each jurisdiction, certain steps are standard and would be conducted in exactly the same way by all jurisdictions. These steps include:

1. Collecting GHG inventory data;
2. Calculating GHG inventory results;
3. Forecasting 2030 and 2045 GHG estimates;
4. Reviewing standard GHG reduction measures to support 2030 reduction targets;
5. Quantifying the benefits of state level GHG reduction measures; and
6. Preparing basic regulatory language and text common to GHG reduction plan documents.

Completing these standard steps together saves both money and time for all Partnership jurisdictions.

Assurance of Standard Methods, Data, and Baseline Year: Even though GHG inventory protocols are standard and communities generally follow the recommended protocols, some subtle differences exist that can limit comparability between jurisdictions. Ensuring consistency of the

selection of the baseline year, the type of data collected, and the methodology and boundaries used greatly improves the comparability of plans. With a regional inventory and reduction plan, Partnership jurisdictions can be assured of an “apples to apples” comparison across all sectors for jurisdiction-to-jurisdiction comparisons as well as jurisdiction-to-region comparisons.

Regional Communication and Education: Similar to most communities in California and across the U.S., San Bernardino jurisdictions are undertaking a GHG inventory and reduction plan for the first time. As jurisdiction staff, stakeholders, and residents go through this process, each learns lessons that can be shared with other communities in the region. Sharing information and lessons learned benefits all Partnership jurisdictions.

Holistic Regional View: Certain sectors of GHG emissions are the result of activity that occurs only within the boundary of a jurisdiction, for example, residential natural gas use. Other emissions, such as on-road transportation, are the result of activity that occurs across jurisdictional boundaries and for which both jurisdictions are responsible for the emissions. For certain sectors, looking only at the GHG emissions of a single jurisdiction is of limited utility and GHG reduction planning cannot be undertaken alone. This Reduction Plan supports both jurisdiction-specific and regional planning.

Streamlining CEQA Compliance: The California Environmental Quality Act (CEQA) Guidelines require lead agencies to describe, calculate, or estimate the amount of GHG emissions that would result from a project. CEQA Guidelines (Section 15183.5) also allow individual projects to tier off of a qualified GHG reduction plan.¹ Thus, individual projects do not need to each conduct a GHG analysis to comply with CEQA if they can demonstrate consistency with a qualified plan. By completing CEQA compliance for a qualified GHG reduction plan, projects in jurisdictions with an qualified plan can tier project analysis from the plan and be considered less than significant under CEQA if they show consistency with their qualified plan

1.3 What Is SBCOG’s Role?

The *San Bernardino County Regional Greenhouse Gas Reduction Plan* has been sponsored and facilitated by SBCOG. The purpose of SBCOG is to speak with a collective voice on important issues that affect its member agencies. SBCOG is leveraging its role as a planning agency and its regional scope of authority to reduce GHG emissions in several emissions sectors in the region. As a regional agency, SBCOG is in a unique position to support coordinated jurisdiction efforts and facilitate regional dialogue and cooperation on GHG issues.

SBCOG worked closely with Southern California Association of Governments (SCAG) and San Bernardino County Transportation Authority (SBCTA) in the development and adoption of SCAG’s *2016-2040 Regional Transportation Plan/Sustainable Communities Strategy*, the benefits of which are captured for the region in this analysis. SBCTA is also spearheading efforts to transition to zero-emission vehicles and is leading other regional efforts related to energy efficiency, multimodal transportation infrastructure, and renewable energy. To learn more about SBCOG and SBCTA, visit <https://www.gosbcta.com/cog/about-cog/>.

¹ “Tiering off” refers to an instance in which if there is an earlier, broader environmental document that covers the general impacts of a program or project, then subsequent environmental documents for a related individual project can focus on unique or unanalyzed issues.

1.4 How Do I Use This Document?

This Reduction Plan is intended to serve three purposes for the Partnership jurisdictions.

- 1. Reference Document:** This Reduction Plan establishes a baseline GHG inventory and an emissions forecast for all jurisdictions and the region as a whole. This baseline can be referenced for all future GHG analyses and planning. This document contains basic terms and concepts and regulatory information that may be useful for future planning (jurisdiction-specific or regional).
- 2. Climate Action Plan Template:** This Reduction Plan provides the technical information to support a jurisdiction's selection of appropriate targets and GHG emissions reduction measures that could be included in a local CAP. The information in this document will help jurisdictions understand their GHG emissions and their options for local reductions. This Reduction Plan is provided in an electronic format that allows jurisdictions to utilize relevant portions in developing their own local CAPs. At a minimum, it is expected that jurisdictions will develop their own schedule, funding, and implementation plans in harmony with their existing infrastructure and procedures and in tune with each jurisdiction's unique priorities and needs. Beyond that, it is expected that many jurisdictions will use the Reduction Plan to develop a local CAP.
- 3. Outline for a Local Climate Action Plan:** The CEQA guidelines adopted pursuant to SB 97 specify that a GHG reduction plan must include the following elements in order to allow for tiering under CEQA—each element has already been developed and included in this Reduction Plan, areas where local refinement is needed are noted.
 - An inventory of GHG emissions.
 - A forecast of future GHG emissions.
 - An identified GHG reduction goal.
 - Measures to reduce GHG emissions under the control of the jurisdiction.
 - Implementation actions to ensure that the measures result in actual reductions (requires local refinement).
 - Monitoring of the Reduction Plan's success over time (requires local refinement).
 - Adaptation and revision of the Reduction Plan over time as needed to meet the adopted goal (requires local refinement).

Because this document provides the required components of a GHG reduction plan listed above, a jurisdiction could adopt the Reduction Plan as its local CAP with limited refinement. However, as the Reduction Plan contains only basic implementation steps that would apply to all jurisdictions, jurisdictions will need to identify a specific schedule, funding, and implementation actions. Similar refinement would be needed for the monitoring and adaptation components of the Reduction Plan.

Please note that this document is not intended to be read through sequentially; rather, it should be used as a reference document and readers should skip to sections of interest. The document map below (Table 1-1) will help you find specific types of information.

Table 1-1. Document Map

For a complete list and description of GHG policy and legislation (both federal and state)	→	Go to Chapter 2.1
For a description of the underlying chemistry and physics of global warming	→	Go to Chapter 2.3.3
For a list of on-going efforts related to GHG emissions reductions in the region (“What are we doing already?”)	→	Go to Chapter 2.2
For the definitions of basic terms and concepts related to GHG inventories and reduction planning	→	Go to Chapter 2.3
For a look at GHG emissions for the region as a whole and how the combined efforts of the state, SBCOG, other regional agencies and individual jurisdictions can result in reduced GHG emissions for the region	→	Go to the Executive Summary
For descriptions of all the GHG measures considered by the jurisdictions	→	Go to Chapter 4
For a glossary of individual GHG reduction measures, their full descriptions, their methods of calculation, including key assumptions and likely means of implementation	→	Go to Appendix B
For each jurisdiction’s individual GHG inventory and reduction plan, including charts, tables, and related general plan policies	→	Go to Chapter 3
For an overview of how the Reduction Plan and each individual plan can be implemented, including suggestions for scheduling, funding mechanisms, outreach, a timeframe for future plan updates, recommendations for data collection and record keeping, and recommendations for long-term management	→	Go to Chapter 5
For a discussion of the relationship of this Reduction Plan to CEQA	→	Go to Chapter 5
For references cited in this document	→	Go to Chapter 6
For detailed descriptions of each jurisdiction’s GHG inventory	→	Go to Appendix A
For a detailed description of the methods used to calculate GHG emissions and GHG reductions	→	Go to Appendix B

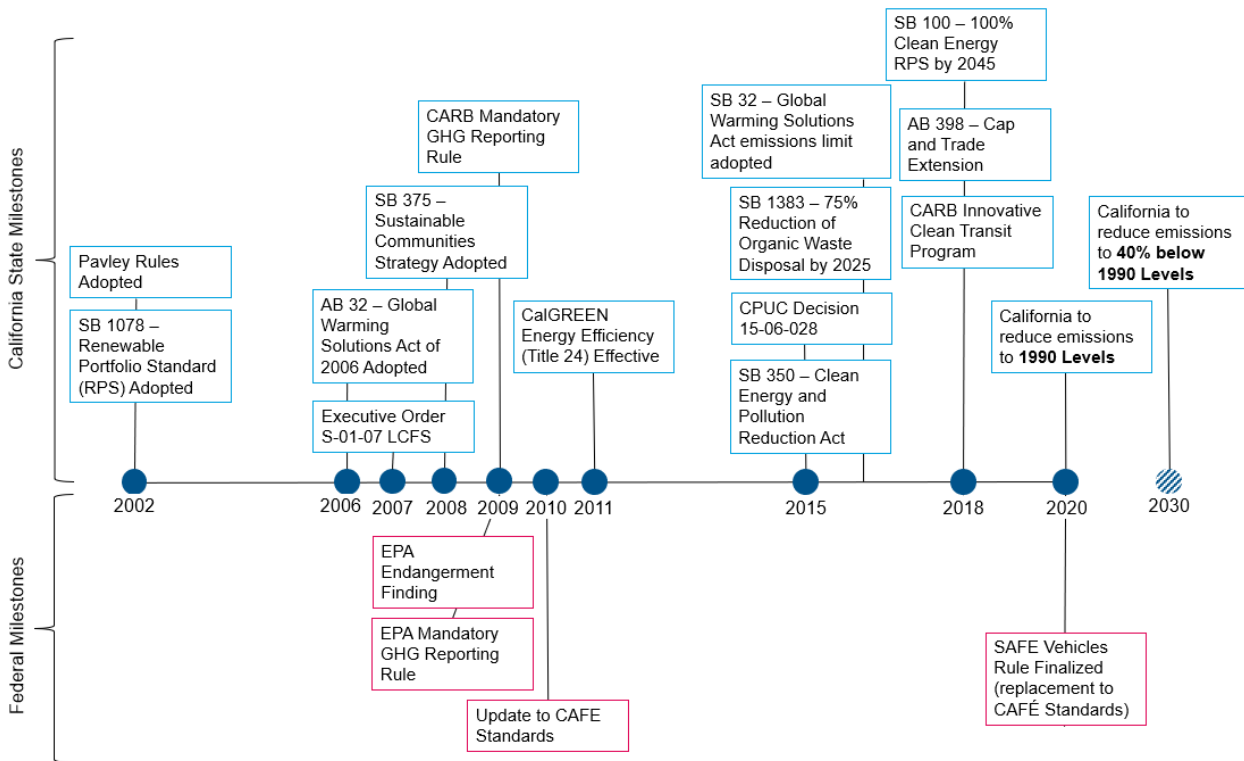
1.5 What Are the Next Steps?

Following SBCOG’s approval of this Reduction Plan, Partnership jurisdictions anticipate developing their own CAPs or adopting the regional CAP as their local CAP. Next, Partnership jurisdictions may begin working together with stakeholders, residents, and businesses within their respective communities to implement GHG reduction measures and systems to track their success. Partnership jurisdictions will continue to communicate with each other on progress through the auspices of SBCOG.

Greenhouse Gas Reduction and Climate Action Planning in California

This section describes important laws, policies and documents related to GHG emissions, including AB 32, SB 32, SB 375, the Renewable Portfolio Standard, Pavley fuel economy standards (AB 1493), and the Low Carbon Fuel Standard (LCFS). This section also briefly discusses pending national legislation and the challenges associated with GHG reduction and climate action planning at the state level. Figure 2-1 displays a timeline of key state and federal regulatory activities.

Figure 2-1. Milestones in Federal and State Legislation and Regulation



Federal Regulations

Although there is currently no comprehensive federal law specifically related to climate change or the reduction of GHGs, the U.S. Environmental Protection Agency (EPA) leads the implementation of the federal Clean Air Act (CAA) and related regulations. The following federal regulations are related to climate change and GHG emissions.

Mandatory Greenhouse Gas Reporting Rule: EPA (2009)

On September 22, 2009, EPA released its final Greenhouse Gas Reporting Rule (Reporting Rule). The Reporting Rule is a response to the fiscal year (FY) 2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110-161), which required EPA to develop “mandatory reporting of greenhouse gasses above appropriate thresholds in all sectors of the economy...” The Reporting Rule applies to most entities that emit 25,000 metric tons of carbon dioxide equivalent (MTCO_{2e}) or more per year. Starting in 2010, facility owners were required to submit an annual GHG emissions report with detailed calculations of facility GHG emissions. The Reporting Rule also mandates recordkeeping and administrative requirements to help EPA to verify annual GHG emissions reports.

Endangerment and Cause and Contribute Findings: EPA (2009)

On December 7, 2009, EPA signed the Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the CAA. Under the Endangerment Finding, EPA found that the current and projected concentrations of the six key well-mixed GHGs—carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), perfluorinated carbons (PFCs), sulfur hexafluoride (SF₆), and hydrofluorocarbons (HFCs)—in the atmosphere threaten the public health and welfare of current and future generations. Under the Cause or Contribute Findings, EPA found that the combined emissions of these well-mixed GHGs from new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

These findings did not by themselves impose any requirements on specific industries or other entities. However, this action was a prerequisite to finalizing EPA’s corporate average fuel economy (CAFE) standards for light-duty vehicles for future years.

Updates to CAFE Standards and SAFE Rules: EPA and NHTSA

The 2012 CAFE standards (for model years 2017-2025) incorporated stricter fuel economy requirements promulgated by EPA and the National Highway Traffic and Safety Administration (NHTSA). The 2012 standards established GHG emissions regulations and would have required new passenger cars and light trucks to reach 54.5 miles per gallon in 2025. Additionally, the program included incentives to encourage adoption of new technologies to improve vehicle performance, including incentives for electric vehicles (U.S. Department of Transportation, 2014). In 2018, the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule was proposed, which would amend prior CAFE and GHG emissions standards and create new standards for 2021-2026, reducing fuel economy requirements. In September 2019, NHTSA and EPA established “The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program,” which withdrew California’s ability to create their own fuel economy standards under the Clean Air Act. In 2020, the SAFE rule, Parts one and two were finalized. The SAFE rule has been legally challenged by a number of states, led by California. In January 2021, the Biden Administration has indicated that it intends to pursue new rulemaking to make vehicle efficiency requirements that are more stringent than the SAFE rule.

Because California is party to the litigation on the SAFE Rule and California vehicle standards have not been changed, this study presumes that the California vehicle standards (i.e., the 2012 CAFE standards) will be in effect (e.g., this study presumes California will be successful in its legal appeal and/or that the Biden Administration will put in place new standards equivalent or better than the 2012 standards).

State Regulations

California has adopted statewide legislation addressing various aspects of climate change and GHG emissions mitigation. This legislation establishes a broad framework for the state's long-term GHG reduction and the California Air Resources Board and other agencies have adopted associated regulations and prepared detailed implementation plans. Several executive orders related to the state's evolving climate change policy have also been adopted. The following state regulations are related to climate change and GHG emissions.

Executive Order S-03-05 (2005)

Signed by Governor Schwarzenegger on June 1, 2005, Executive Order S-3-05 asserts that California is vulnerable to the effects of climate change (CA Office of the Governor, 2005). To combat this concern, Executive Order S-3-05 established the following GHG emissions reduction targets for state agencies:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80% below 1990 levels.

Executive orders are binding only on state agencies. Accordingly, EO S-03-05 will guide state agencies' efforts to control and regulate GHG emissions but will have no direct binding effect on local government or private actions. The secretary of the California Environmental Protection Agency (Cal-EPA) is required to report to the governor and state legislature biannually the impacts of global warming on California, mitigation and adaptation plans, and progress made toward reducing GHG emissions and meeting the targets established in this executive order.

Assembly Bill 1493—Pavley Rules (2002, Amendments 2009)

Known as "Pavley I," AB 1493 standards were the nation's first GHG standards for automobiles. AB 1493 requires the California Air Resources Board (CARB) to adopt vehicle standards that will lower GHG emissions from new light-duty autos to the maximum extent feasible beginning in 2009. In 2012, CARB strengthened the Pavley standards with Advanced Clean Cars, a set of regulations that limit GHG emissions from model-year 2017–2025 passenger vehicles (California Air Resources Board, 2020).

EPA and CARB worked together on a joint rulemaking to establish GHG emissions standards for model-year 2017–2025 passenger vehicles. Under the Obama administration, the federal government completed rulemaking in summer 2012, resulting in the adoption of new standards that would lead to a fleet average of 54.5 mpg in 2025 (New York Times, 2012). In 2017, President Trump ordered a rollback of Obama-era fuel efficiency standards, and in 2018 announced a plan to eliminate California's waiver, which, since 1963, has allowed the state to set tighter fuel economy standards than the rest of the United States. President Trump's new plan orders annual increases in fuel efficiency of 1.5%, significantly less than the 5% increases ordered under the Obama administration (New York Times, 2020).

Senate Bills 1078 (2002), Senate Bill 107 (2006), Senate Bill 2 (2011), Senate Bill 350 (2015), Senate Bill 100 (2018)—Renewable Portfolio Standard

SB 1078 and SB 107, California's Renewable Portfolio Standard (RPS), obligates investor-owned utilities (IOUs), energy service providers (ESPs), and Community Choice Aggregations (CCAs) to procure an additional 1% of retail sales per year from eligible renewable sources until 20% is reached, by no later than 2010. The California Public Utilities Commission (CPUC) and California Energy Commission (CEC) are jointly responsible for implementing the program. Senate Bill 2 (2011) set forth a longer-range target of procuring 33% of retail sales by 2020. Following Senate Bill 2, Senate Bill 350 established a long-range, more ambitious target of sourcing 50% of electricity retail sales from renewable resources by 2030. This was further accelerated by SB 100 (2018), which escalates the RPS to 60% by 2030, and mandates that California source 100% of its electricity from carbon-free resources by 2045 (California Public Utilities Commission, 2020).

Assembly Bill 32—California Global Warming Solutions Act (2006)

In September 2006, the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 establishes a cap on statewide GHG emissions and sets forth the regulatory framework to achieve the corresponding reduction in statewide emission levels. Under AB 32, CARB is required to take the following actions (California Legislative Information, 2006):

- Adopt early action measures to reduce GHGs,
- Establish a statewide GHG emissions cap for 2020 based on 1990 emissions,
- Adopt mandatory reporting rules for significant GHG sources,
- Adopt a scoping plan indicating how emission reductions would be achieved through regulations, market mechanisms, and other actions, and
- Adopt regulations needed to achieve the maximum technologically feasible and cost-effective reductions in GHGs.

Executive Order S-01-07—Low Carbon Fuel Standard (2007)

Executive Order S-01-07 mandates: (1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020, and (2) that an LCFS for transportation fuels be established in California. The executive order initiated a research and regulatory process at CARB. CARB approved the LCFS on April 23, 2009 and the regulation became effective on January 12, 2010 (California Air Resources Board 2011). The U.S. District Court for the Eastern District of California ruled in December 2011 that the LCFS violates the Commerce Clause of the U.S. Constitution. CARB appealed this ruling in 2012 and on September 18, 2013, a 9th U.S. Circuit Court of Appeals panel upheld the LCFS, ruling that the program does not violate the Commerce Clause and remanded the case to the Eastern District. In 2015, CARB re-adopted the regulation, and in 2018 CARB passed amendments to the LCFS. These amendments, in alignment with the GHG reduction targets outlined in SB 32, strengthened California's carbon intensity standards through 2030 (California Air Resources Board, 2019).

Senate Bill 375—Sustainable Communities Strategy (2008)

SB 375 provides for a new planning process that coordinates land use planning, regional transportation plans, and funding priorities in order to help California meet the GHG reduction goals established in AB 32. SB 375 requires regional transportation plans, developed by metropolitan planning organizations (MPOs) to incorporate a sustainable communities strategy (SCS) in their regional transportation plans (RTPs). The goal of the SCS is to reduce regional vehicle miles traveled (VMT) through land use planning and consequent transportation patterns. SB 375 also includes provisions for streamlined CEQA review for some infill projects such as transit-oriented development (San Diego Council of Governments, 2008).

The Southern California Association of Governments (SCAG) is the MPO responsible for the southern California region that includes San Bernardino County. SCAG updated their RTP/SCS in April 2016, outlining strategies to meet or exceed the reduction targets set by CARB to reduce passenger and light-duty vehicle per capita GHG emissions by 8% by 2020 and by 13% by 2035 compared to 2005 per capita GHG emissions levels. The RTP/SCS anticipates that strategies employed will result in an eight percent reduction in greenhouse gas emissions per capita by 2020, an 18% reduction by 2035 and a 21% reduction by 2040 compared with 2005 levels (Southern California Association of Governments, 2016). The RTP/SCS includes a combination of land use and transportation strategies to reduce VMT and associated GHG emissions. However, it should be noted the land use pattern in the SCS is not mandatory as local land use agencies retain their jurisdiction and authority over land use planning. The Regional Housing Needs Allocation (RHNA) must be consistent with the SCS and local cities must meet the RHNA for their city in their housing elements, but the RHNA does not specify the location or design of new housing, which is a prerogative of local planning.

California Energy Efficiency Standards for Residential and Nonresidential Buildings—Title 24 (2008), Green Building Code (2011), Title 24 Update (2014), Title 24 Update (2019)

California has adopted aggressive energy efficiency standards for new buildings and has been continually updating them for many years. The latest update to the standards occurred in 2019 and improved upon previous standards for the construction of new buildings and the addition to and alteration of existing buildings (California Energy Commission, 2019).

In 2008, the California Building Standards Commission adopted the nation's first green building standards, which include standards for many other built environment aspects apart from energy efficiency. The California Green Building Standards Code (proposed Part 11, Title 24) was adopted as part of the California Building Standards Code (24 California Code of Regulations [CCR]). Part 11 establishes voluntary standards that became mandatory in the 2010 edition of the code, including planning and design for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. The latest update to the California Green Building Standards Code was in 2019 (California Department of General Services, 2019).

California Air Resources Board Greenhouse Gas Mandatory Reporting Rule Title 17 (2009)

In December of 2007, CARB approved a rule requiring mandatory reporting of GHG emissions from certain sources, pursuant to AB 32. Facilities subject to the mandatory reporting rule started to

report their emissions from the calendar year 2009 and were required to have those emissions verified by a third party in 2010. In general, the rule applies to facilities emitting more than 25,000 MTCO_{2e} in any given calendar year or electricity generating facilities with a nameplate generating capacity greater than 1 megawatt (MW) and/or emitting more than 25,000 MTCO_{2e} per year. Additional requirements also apply to cement plants and entities that buy and sell electricity in the state. The most recent amendments to the CARB Mandatory Reporting Regulation were made in 2018, and became effective in April of 2019, for 2019 data (California Air Resources Board, 2018a). These amendments a) more clearly define current requirements for calculation and reporting, b) make certain that electricity import emissions are fully accounted for, and c) support the GHG Cap-and-Trade Program that was adopted in 2011 (California Air Resources Board, 2018b).

California Environmental Quality Act (CEQA) – 2010, CEQA Update (2018)

The State CEQA Guidelines require lead agencies to describe, calculate, or estimate the amount of GHG emissions that would result from a project. Moreover, the State CEQA Guidelines emphasize the necessity to determine potential climate change effects of the project and propose mitigation as necessary (California Natural Resources Agency, 2019). The State CEQA Guidelines confirm the discretion of lead agencies to determine appropriate significance thresholds, but require the preparation of an environmental impact report (EIR) if “there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with adopted regulations or requirements” (Section 15064.4).

The guidelines were updated in 2010 to address GHG emissions. State CEQA Guidelines section 15126.4 includes considerations for lead agencies related to feasible mitigation measures to reduce GHG emissions, which may include, among others:

- Measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency’s decision;
- Implementation of project features, project design, or other measures which are incorporated into the project to substantially reduce energy consumption or GHG emissions;
- Offsite measures, including offsets that are not otherwise required, to mitigate a project’s emissions; and
- Measures that sequester carbon or carbon-equivalent emissions.

The guidelines were updated again in 2018; changes included revisions to transportation impact analysis following Senate Bill 743, revisions to greenhouse gas emissions analysis, and updates to Section 15126.2(a) pursuant the California Supreme Court’s decision in California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal 4th 369 (California Governor’s Office of Planning and Research, 2018).

Greenhouse Gas Cap-and-Trade Program (2011)

On October 20, 2011, CARB adopted the final cap-and-trade program for California. The California cap-and-trade program creates a market-based system with an overall emissions limit for effected sectors. The program currently regulates more than 85% of California’s emissions and has staggered compliance requirements in the following order: (1) electricity generation and large industrial sources (2012), and (2) fuel combustion and transportation (2015) (California Air Resources Board,

2015). The first auction was in late 2012 with the first compliance year in 2013. Since its adoption, the GHG Cap-and Trade Program has undergone several amendments. The most recent amendments, passed in 2018, address (1) the proceedings for an entity covered by the program that filed for bankruptcy and sold its power plant to its creditor-purchaser, and (2) the procedure set in place to address disparities in jurisdiction-specific Auction Reserve Price values (California Air Resources Board, 2018c).

Senate Bill 743 (2013)

In accordance with Senate Bill 743, the California Natural Resources Agency has adopted changes to the California Environmental Quality Act (CEQA) Guidelines that “promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses,” as described under Section 21099(b)(1) of the California Public Resources Code. With these changes, vehicle miles traveled (VMT) has been identified as the most appropriate metric for evaluating a project’s transportation impact, and automobile delay—as measured by “level of service” or similar measures of vehicular capacity of traffic congestion—generally no longer constitutes a significant environmental effect under CEQA. The requirement to analyze VMT under CEQA became mandatory as of July 1, 2020. With analysis of VMT under CEQA, it can be expected there will be project-level reductions in VMT for new development, but predicting exactly how many reductions will actually occur is difficult to forecast at this initial time of application.

Senate Bill 32—California Global Warming Solutions Act (2016)

In September of 2016, the California Assembly and Senate expanded on AB 32 with Senate Bill (SB) 32, which mandates a 40% reduction in GHG emissions from 1990 levels by 2030. SB 32 directs CARB to utilize the most advanced technology feasible to achieve the most cost-efficient reductions in GHG emissions. SB 32 also has an important environmental justice component: GHG reduction targets must be met in a way that benefits the state’s “most disadvantaged communities,” who are often impacted first and more profoundly by the effects of climate change (California Legislative Information, 2016a).

Assembly Bill 197—State Air Resources Board: Greenhouse Gases – Regulations

In September of 2016, the California Assembly passed the companion bill to SB 32, AB 197, which provides guidance to CARB on enacting GHG emission reduction measures and making air emissions data more accessible to the public. Specifically, AB 197 outlines the following requirements (California Legislative Information, 2016b):

- Public, statewide posting of GHG benchmarks and toxic air contaminant data.
- Consideration of social costs of GHG emissions and prioritization of the following when passing emission reduction rules and regulations that protect disadvantaged communities.
 - Rules/regulations that facilitate direct reductions in emissions from large stationary sources and mobile sources.
 - Rules/regulations that facilitate direct emissions reductions from other sources.
- Identification of the following for each GHG emissions reduction measure:

- Potential range of GHG emissions reductions brought about by the measure.
- Potential range of air pollution reductions brought about by the measure.
- Effectiveness of the measure in terms of costs (including social costs).

Executive Order B-55-18 (2018)

- Signed by Governor Brown in 2018, Executive Order B-55-18 established a goal to achieve carbon neutrality by 2045.

The Role of Local Governments

The 2017 SB 32 Scoping Plan builds on the 2008 AB 32 Scoping Plan, which laid out California’s plan for achieving the GHG reductions required by AB 32 (California Air Resources Board, 2017). The SB 32 Scoping Plan proposes a continuation of successful aspects of the AB scoping plan, including Cap-and-Trade Regulation, LCFS, the movement towards cleaner vehicles, the transition to cleaner renewable energy, and the effort to reduce methane emissions from agricultural and other waste.

Because the state does not have jurisdictional control over many of the activities that produce GHG emissions in California, the AB 32 Scoping Plan articulated a unique role for local governments in achieving the state’s GHG reduction goals. The AB 32 scoping plan recommended that local governments reduce GHG emissions from both their municipal operations and the community at large to a level that is 15% below 2017 levels. The SB 32 Scoping Plan expands upon this goal, directing local governments to strive for per capita emissions of no more than 6 MTCO_{2e} by 2030 and 2 MTCO_{2e} by 2050 (California Air Resources Board, 2017). These per capita reduction targets align with statewide emissions limits outlined in AB 32, SB 32, and Executive Orders S-3-05. They are also consistent with the Under 2 MOU that began in California and has been adopted or supported by jurisdictions in 33 countries across six continents.

In response to AB 32, SB 32 and the SB 32 Scoping Plan, many jurisdictions across California have completed a GHG inventory and reduction plan, commonly called a climate action plan or CAP. These plans generally address two types of emissions:

- The “community inventory”—emissions that arise from the community at large (residents, businesses, and their associated activities within the jurisdictional boundary).
- The “municipal inventory”—emissions that arise from the county/city’s operations only (county/city buildings, vehicle fleet, activities required to provide services to the jurisdiction).

Many jurisdictions in southern California have completed a community or municipal CAP, or both, including San Bernardino County, Ontario, Redlands, Chino, Colton, Yucaipa, Hesperia, Upland, Apple Valley, as well as Los Angeles, San Diego, and many others.

Current Local Efforts

This section describes large-scale GHG planning efforts in southern California, including regional transportation planning, utility programs, SBCOG efforts, and efforts in unincorporated San Bernardino County and several jurisdictions in San Bernardino County.

Regional Transportation Planning

On April 7, 2016, the Regional Council of SCAG adopted the *2016–2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS): Towards a Sustainable Future* (Southern California Association of Governments, 2016). The RTP/SCS is the culmination of a multi-year effort involving stakeholders from across the SCAG Region. SCAG has prepared RTPs for the southern California region for over 30 years, with the primary goal of increasing mobility for the region's residents and visitors.

The 2016–2040 RTP/SCS includes the following key initiatives (Southern California Association of Governments, 2016):

- **Investment of \$275.5 billion in the existing transportation system**, with the goal of preserving or improving state highways, transit and passenger rail systems, and regionally significant roads and streets.
- **Creation of alternatives to driving alone** through the expansion of the regional transit system. Key entities in this initiative include the Metro subway, Light Rail Transit system, new Bus Rapid Transit system, local and rapid bus systems, streetcar systems, and Metrolink systems.
- **Expansion of the passenger rail system** to escalate pieces of the regional rail network to the federally defined speed of 110 mph or higher, and to help spearhead an integrated system of rail services.
- **Improvement of highway and arterial capacity** to achieve maximum productivity of and expanding access to the highway system. This initiative supports the distribution and employment of new technology, as well as preservation of and addition to the regional network of Express lanes.
- **Management of transportation system demands**, with a focus on reducing overall vehicle miles traveled through encouragement of ridesharing, telecommuting, and alternative modes of travel.
- **Optimization of transportation system capacity and performance** through advanced ramp metering, improved managements of incidents, removal of bottlenecks, traffic signal integration, extensive data collection, intentional congestion management, and other Intelligent Transportation System enhancements.
- **Promotion of active transportation**, such as walking and biking, through the improvement of the quality of sidewalks and bicycle lanes.
- **Improving goods movement throughout the Regional Transportation Network**, through the instatement of truck-only lanes, addition of mainline trucks to the system, building highway-rail grade separations, modernization of intermodal infrastructure, and encouragement of the use of low-emission trucks and trains.
- **Leveraging advanced technologies**, especially those that enhance communication, reduce environmental impacts of existing transportation, and improve transportation system efficiency.

- **Bettering access to airports** to improve efficiency and reduce on-the-ground congestion that results from frequent air-travel trips.
- **Stimulating growth around transit**, by supporting policies that expand the development of a) High Quality Transit Areas, b) livable corridors, and c) Neighborhood Mobility Areas.
- **Reduction of GHG emissions and enhancement of air quality** through integrated land-use planning and sustainable transportation initiatives.
- **Natural land preservation**, especially for areas that do not have associated conservation plans and may be susceptible to development.

Utility Incentive Programs

Local and regional utility providers, including Southern California Edison (SCE), Southern California Gas Company (SCGC), Southwest Gas Corporation, Bear Valley Electric Service (BVES), and the Inland Empire Utilities Agency (IEUA) have a wide range of incentive programs aimed at promoting energy efficiency and renewable energy use; these are summarized below.

Southern California Edison Programs

Income Qualified Programs—Energy Savings Assistance Program: This program helps income-qualified households conserve energy and reduce their electricity costs. SCE pays all the costs of purchasing and installing energy-efficient appliances and equipment, which are free to eligible customers.

Mobile Energy Unit (MEU): The MEU promotes energy-efficiency solutions and energy management for both residential and business customers.

Energy Solutions: SCE provides their customers with a home energy survey, residential energy guides, and energy saving tips.

Energy Management Solutions: SCE provides its commercial customers with energy management solutions by industry sector in order to cut costs and greenhouse gas emissions.

Refrigerator & Freezer Recycling Program: SCE hauls away old refrigerators and freezers for free and provides a \$50 incentive to customers.

Home Energy Efficiency Survey: SCE provides its residential customers a 15-minute survey and helps them find tips to maximize savings, and useful information about rebates that they can qualify for. The results are customized for each household.

Incentives For Home Energy Upgrades: SCE provides home energy-efficiency product rebates on products such as compact fluorescent (CFL) and energy efficiency lighting, Energy Star® refrigerators, energy efficiency water heaters, Energy Star air conditioners, whole-house fans, and energy-efficient evaporative cooling systems.

Plug-In Electric Vehicle Survey & Checklist: SCE provides a survey and checklist to help customers with electric vehicles set up their homes.

Renewables Standard Contract Program: SCE provides a standardized procurement process (for renewable power generation projects not to exceed 20 MW) that leads to quicker execution of the project, relative to other procurement processes.

California Solar Initiative: CE provides financial incentives for installing eligible solar photovoltaic (PV) systems.

New Solar Homes Partnership: The New Solar Homes Partnership program, part of the California Solar Initiative, provides financial incentives and other support for installing eligible solar generating systems on new residential buildings—single family, income-eligible, and multifamily housing.

California Solar Initiative Thermal Program: SCE offers incentive rebates for electric-displacing solar water heating systems in its service territory.

Multifamily Affordable Solar Housing: This program is part of the California Solar Initiative. It offers incentives for installing eligible photovoltaic systems for qualifying multifamily affordable housing. It is designed to subsidize photovoltaic systems in multifamily housing, which will offset electricity loads and provide economic benefits for housing property owners and managers as well as building tenants.

Multifamily Property Rebates: includes T8 replacement lamps (\$6.50 per lamp), Energy Star certified smart thermostats (\$50 per thermostat).

Savings by Design: Encourages high-performance, non-residential building design and construction to help maximize energy performance in new and upgraded building projects.

Solar Programs: includes the Single Family Affordable Solar Homes (SASH) program, the Disadvantaged Communities Single Family Affordable Solar Homes (DAC-SASH) program, and the Solar on Multifamily Affordable Housing (SOMAH) program.

Self-Generation Incentive Program: SCE customers with a demand of 30 kilowatts (kW) or more can receive a cash incentive from \$0.60 to \$4.50 per watt for installing qualifying electricity generating equipment.

Southern California Gas Company (SCGC) Programs

Direct Assistance Program: SCGC offers no-cost energy-saving home improvements and furnace repair or replacement services for qualified limited-income renters and homeowners.

Conservation Tips: SCGC provides useful tips for residential customers to conservation energy.

Instant Rebate Program: Customers may receive instant rebates for energy efficient products.

Residential Rebates: SCGC offers money-saving rebates on qualifying energy-efficient appliances or upgrades for residential customers. Qualified appliances include clothes washers, dishwashers, low-flow showerheads, furnaces, insulation, natural gas storage water heaters, and natural gas tankless water heaters.

Rebates for Property Managers: The Multifamily Rebate Program offers rebates for the installation of qualified energy-efficient products in apartment units and common areas of apartments, condominium complexes, and mobile home parks.

Energy Efficiency Starter Kit: The kit includes three faucet aerators and a low-flow showerhead to help save energy and water.

Home Energy Efficiency Survey: Customers may save money and resources by taking a free Home Energy Efficiency Survey. When customers take the survey, they get customized gas, electricity, and water saving tips on the best ways to use appliances in their homes.

Financing for Energy Efficiency Upgrades: Customers can qualify for \$2,500 to \$20,000 to purchase and install energy-efficient upgrades with the Home Energy Upgrade Financing program.

Comprehensive Mobile Home Program: Qualifying mobile home customers are provided with no-cost energy conservation evaluations, installations of low-flow showerheads and faucet aerators, and gas energy-efficiency improvements, such as duct test and seal of heating/venting and air conditioning (HVAC) systems.

LivingWise® School Program: This program combines classroom learning and home retrofit/audit projects completed by sixth grade students and their parents. It provides a LivingWise® Activity Kit for each customer.

Upstream High Efficiency Gas Water Heater Rebate Program: This program offers rebates to distributors and wholesalers for high-efficiency gas water heaters to reduce or remove the price differential between these appliances and standard gas water heaters.

On-Demand Efficiency (Recirculation Loops for Central Domestic Hot Water Heaters): This program installs on-demand intelligent pumps in central domestic hot water systems with recirculation loops in multifamily buildings to help reduce unnecessary natural gas consumption.

High Efficiency Hot Water Distribution Program (Solar): This program helps customers install new solar pool heating systems to augment an existing gas pool heater. This program is for qualified apartment complexes that heat swimming pools throughout the year.

Multifamily Direct Installation Programs: Qualifying owners and managers of multifamily buildings are provided with no-cost energy audits, products, and their installation. No-cost products include super low-flow energy-efficient showerheads, kitchen aerators, bathroom aerators, and pipe wrap for hot water distribution systems.

CoolGas Replacement Program: This program provides incentives, based on calculated energy savings, for the replacement of smaller (50 tons or less), older, inefficient natural gas air conditioning systems with new energy-efficient units and quality installation procedures.

Domestic Hot Water Controls Project: This program installs domestic hot water controller technology on the hot water systems in hotels and motels to reduce natural gas consumption by a minimum of 25 therms per hotel room, per year.

Energy Challenger: This program offers business customers an interactive online assessment to develop practical energy-efficiency recommendations.

Home Energy Rating System (HERS) Rater Advanced Training Program: This program will provide advanced training and education delivered both in the classroom and online. Training is for currently certified HERS raters and energy analysts involved in new construction.

Program for Resources Efficiency in Private Schools: This program is to help private grade schools, colleges and universities, preschools, and trade and technical schools reduce energy use and energy costs. Program activities and services will include customer screening, comprehensive energy audit reports, rebates, bonuses, and installation support services.

Small Industrial Facility Upgrades: The program is targeted at small industrial customers to deliver natural gas savings. Program offerings include, but are not limited to, improvements for heat recovery; process equipment replacement and equipment modernization; furnace and oven

improvements and excess air reduction; onsite audits to identify energy savings opportunities; and design assistance to help customers understand the best ways to achieve energy savings.

Steam Trap and Compressed Air Survey: This program will provide comprehensive compressed air and steam surveys and evaluations to small through large industrial customers. Survey activities carried out onsite will include a baseline of the customer's current energy consumption; field analysis of energy-consuming equipment; application of best practices; use of standard engineering protocols for design; identification of alternate methods of accomplishing the same task with less energy input; and methods to maintain quality, reliability, and safety of plant operations while achieving the energy-savings objectives.

Custom Language Efficiency Outreach (CLEO) Program: This program promotes SCGC energy-efficiency programs and education/training to customers in SCGC's service territory who speak Chinese, Korean, Vietnamese, and Indian languages. The program will also address the needs of the African American community. Offerings include interactive workshops, community booths and energy surveys, and low-cost and no-cost recommendations.

Property Assessed Clean Energy (PACE) Energy Savings Project: This program promotes energy-efficiency programs in the SCGC service area. The primary focus is ethnic minority communities (Vietnamese, Indian, Chinese, Korean, and Hispanic) for customers with historically low participation in SCGC energy-efficiency programs.

California Sustainability Alliance Program: This program includes public and private organizations dedicated to increasing and accelerating adoption of sustainability best practices in the planning, design, construction, and operations of new and existing facilities and communities to increase efficient utilization of resources and develop self-sustaining community initiatives and capabilities.

Portfolio of the Future Program: This program is designed to identify the market commercialization of emerging technologies that can improve energy efficiency and reduce reliance on natural gas supplies in the southern California market at a quick pace.

Vendor Participation Program: Suppliers and installers of insulation, steam traps, boilers, and other qualifying products can apply for rebates on behalf of their customers.

Seminars & Training at the Energy Resource Center: SCGC offer training on the latest in energy-efficient equipment and technologies. SCGC also sponsors seminars about energy-efficient equipment, kitchen ventilation, food safety, equipment maintenance, industry trends, and more.

Zero Percent On-Bill Financing: Working in conjunction with rebate and incentive programs, SCGC offers qualified customers purchasing qualified natural gas equipment 0%, unsecured financing.

Energy Efficiency Benchmarking: SCGC benchmarking allows building owners and managers to track and assess the energy performance of their buildings at no charge.

Southwest Gas Corporation Programs

Commercial Service Planning Representatives: Southwest Gas Corporation's commercial service planning representatives are trained in energy-related aspects of business, and can perform a variety of equipment specific evaluations to optimize a company's energy decisions, including providing energy savings option information.

California Low-Income Energy Efficiency Weatherization Program: In order to participate in this program, a customer must meet the income qualifications set forth by CPUC.

Winter Energy and Money Saving Ideas: Southwest Gas Corporation provides ideas for customers to save energy and money.

Bear Valley Electric Service (BVES) Programs

Program for Income Qualified customers: BVES offers a program that provides free energy-saving home improvements and education to qualified customers.

Energy Star Rebate Program: BVES offers rebates for Energy Star qualified refrigerators and room air conditioners. For customers that need to replace their electric water heater, BVES offers rebates for high-efficiency replacements.

Lighting Exchange Events: Throughout the year, BVES holds a series of free Lighting Exchange Events where customers can exchange up to four incandescent bulbs for up to four CFLs.

Energy Conservation Booklet: BVES makes saving energy easy for customers with the Energy Conservation Booklet. This booklet includes helpful tips and information about ways to reduce their electric bills.

Energy Saving Tips: BVES provides seasonal and year-round tips for how customers can save energy.

Small/Medium Business Lighting Cash Rebates: BVES offers rebates for customers that make lighting improvements. Eligible measures include T12 to T8 retrofits, light emitting diode (LED) exit signs, occupancy sensors, and time clocks.

Inland Empire Utilities Agency (IEUA) Programs

Residential Conservation Rebates: IEUA offers rebates for the purchase of residential water conservation appliances and equipment including high efficiency clothes washers, SmartTimer controllers for lawns, and high efficiency sprinkler nozzles. IEUA also offers free landscape evaluations and a high efficiency toilet installation co-pay program.

Commercial Conservation Rebates: IEUA offers rebates for the purchase of commercial water conservation appliances and equipment including toilets and urinals, laminar flow restrictors, connectionless food steamers, cooling towers, dry vacuum pumps, air cooled ice machines, smart controllers for irrigation, high efficiency sprinkler nozzles, large rotary nozzles for irrigation, and in-stem flow regulators. IEUA also offers free landscape evaluations and a high efficiency toilet installation co-pay program.

Water Calculator: Through IEUA's website, residents and businesses can calculate their annual water usage using the H₂O Conserve Water Calculator.

Landscaping: IEUA provides the following water conservation resource materials related to landscaping: how to use irrigation controllers and leading manufacturers of controllers; a guide to edible landscaping; a database of California friendly plants; cost comparison tools for sustainable landscapes and traditional landscapes and advice from garden experts.

SBCTA Transportation Plans

Long Range Transit Plan

San Bernardino County's Transportation Authority's (SBCTA)'s *Long Range Transit Plan* (LRTP) (San Bernardino Council of Governments 2010¹) addresses San Bernardino County's current and future travel challenges, including addressing growing travel demand. The goal of the LRTP is to provide transit facilities and services to support this demand. The LRTP prioritizes goals and projects for transit growth and connects land use and transportation strategies. The LRTP identifies premium transit routes and station locations that helped to develop the SCS for areas in the county.

Non-Motorized Transportation Plan

SBCTA's *Non-Motorized Transportation Plan* (NMTP) (SBCTA 2018²) has a goal of developing a cohesive, integrated plan to deliver a safe-interconnected cycling and walking system for San Bernardino County and identifying sources of funds to implement that plan. The NMTP identifies a comprehensive network, with a focus on the bicycle system. It is also a response, in part, to the initiatives to reduce vehicle travel and greenhouse gas emissions embedded in California Senate Bill 375 (SB 375). The Plan satisfies the State of California requirements of a Bicycle Transportation Plan (BTP) for purposes of Caltrans Bicycle Transportation Account (BTA) funding. Implementation of the Plan requires a strong partnership among local governments, transportation agencies, and the citizens of San Bernardino County can make it happen. The NMTP serves as a vehicle for communicating the non-motorized vision for the County, which is represented by the collective visions of each jurisdiction. Although the jurisdictions are responsible for implementation of the Plan, the Plan cuts across subareas and jurisdictions so that coordination can occur on a physical facility level as well as in scheduling and funding.

Inland Empire Comprehensive Multimodal Corridor Plan

The *Inland Empire Comprehensive Multimodal Corridor Plan* (IECMCP) (SCAG et al 2020³) studies multiple north-south and east-west sub-corridors in the urbanized portion of San Bernardino and Riverside counties, excluding the Coachella Valley. North-south sub-corridors analyzed in San Bernardino County include Victorville to San Bernardino, San Bernardino To Riverside. East-west corridors in San Bernardino County include Apple Valley to the Los Angeles County Line, Banning to Rialto, and Riverside/Rialto to the Los Angeles County Line. The results of the IE CMCP include a detailed assessment of the corridor conditions, a list of recommended projects and programs to improve corridor conditions in each of the sub-corridors, and a framework for evaluating the potential improvements. To understand the transportation issues facing the corridors and to inform the recommendations of the study, the IE CMCP includes detailed assessments of both current and projected transportation future conditions. This included an analysis of all modes (roadway, transit, active transportation, and freight) as well as cross-cutting themes such as safety. .

¹ Available at: <https://www.gosbcta.com/wp-content/uploads/2019/10/San-Bernardino-County-Long-Range-Transit-Plan.pdf>.

² Available at: <https://www.gosbcta.com/plan/non-motorized-transportation-plan-2018/>.

³ Available at: <https://www.gosbcta.com/plan/inland-empire-comprehensive-multimodal-corridor-plan/>.

Zero Emission Vehicle Readiness and Implementation Plan

SBCTA's *Zero Emission Vehicle Readiness and Implementation Plan* (ZEV RIP)(SBCOG 2019⁴). The Plan accomplished the following goals: 1) Assessed the current ZEV charging infrastructure within San Bernardino County; 2) Provided quantitative analysis and recommendations for additional ZEV infrastructure at public agencies, workplace, destinations, transit stations, and multi-unit dwellings (MUDs) with focus on disadvantaged communities (DACs); 3) Identified implementation actions to promote ZEV and ZEV infrastructure adoption over the next 10 years; and 4) Provided local governments and stakeholders with tools to effectively procure, site, and install ZEV infrastructure; develop a list of potential "shovel-ready" projects in the County.

Unincorporated San Bernardino County

In September 2011, San Bernardino County adopted the *County of San Bernardino Greenhouse Gas Emissions Reduction Plan* (Emissions Reduction Plan), which outlines a strategy to use energy more efficiently, harness renewable energy to power buildings, enhance access to sustainable transportation modes, and recycle waste. It has the following specific goals.

- Reduce emissions from activities over which the County has jurisdictional and operational control to 15% below 2007 levels by 2020, consistent with the target reductions of the AB 32 Scoping Plan.
- Provide estimated GHG reductions associated with the County's existing sustainability efforts and integrate the County's sustainability efforts into the discrete actions of the Emissions Reduction Plan.
- Provide a list of discrete actions that would reduce GHG emissions.
- Approve a GHG reduction plan that satisfies the requirements of Section 15183.5 of the CEQA Guidelines, so that compliance with the GHG reduction plan can be used in appropriate situations to determine the significance of a project's effects related to GHG emissions, thus providing streamlined CEQA analysis of future projects that are consistent with the approved GHG reduction plan.

⁴ Available at: <https://www.gosbcta.com/plan/zero-emission-vehicle-readiness-and-implementation-plan/>

Other Climate Action Planning Efforts in San Bernardino County

There are a number of community CAPs that have been completed in San Bernardino County. These are introduced and briefly described below.

Town of Apple Valley

The Town of Apple Valley adopted a Climate Action Plan in 2016, which includes a 2005 inventory and baseline and proposed reduction measures that will enable the City to achieve the target of 15% below 2005 levels by 2020. The Climate Plan also introduces the statewide reduction target of 40% below 2005 levels by 2030. The Apple Valley Climate Plan includes actions such as VMT reduction measures, fuel efficiency measures, mass transit incentives, waste reduction measures, increased solar adoption, and energy efficiency measures (Town of Apple Valley 2016).

City of Chino

The City of Chino adopted a Citywide Climate Action Plan in November 2013 (City of Chino 2013). The CAP identifies strategies to reduce the City's GHG emissions and enhance sustainability. The CAP includes an GHG emissions inventory for the year 2008 and set a target of reducing GHG emissions 15 percent below 2008 levels by 2020. Some primary benefits from the CAP include improving community health and wellness, reducing carbon emissions, protecting the natural environment, and increasing sustainability of city operations. An updated Climate Action Plan is underway (City of Chino 2013).

City of Colton

The City of Colton adopted a Climate Action Plan in 2015, outlining actions to reduce greenhouse gas emissions. The City's GHG emissions reduction target was 15% below the 2008 emissions level, which aligns with California's statewide reduction target. The City of Colton's CAP includes mitigation measures such as increasing solar installation, tree planting programs, sustainable transportation efforts, and waste and wastewater emission reduction measures (City of Colton 2015).

City of Hesperia

The City of Hesperia adopted the *City of Hesperia Climate Action Plan* in June of 2010. The Hesperia CAP outlines a course of action for the City government and the community of Hesperia to reduce per capita GHG emissions 29% below 2010 levels by 2020 and to adapt to the effects of climate change. The Hesperia CAP includes actions such as reducing emissions from new development through CEQA, increasing bicycle use through a safe and well-connected system of bicycle paths and end of trip facilities, reducing energy use from the transport and treatment of water, and improving the City's recycling and source reduction programs to make continued progress in minimizing waste (City of Hesperia 2010).

City of Ontario

The City of Ontario adopted a Climate Action Plan in 2014, with an GHG emissions reduction goal of 30% below business as usual (City of Ontario 2014). This goal roughly aligns with the Scoping Plan adopted by the State of California in 2008, recommending a target of 15% below current emissions

levels. The Climate Action Plan identified feasible actions to reduce GHG emissions generated from community actions. The largest reductions from the City's CAP came from the building and renewable energy sector, on-road transportation, and off-road equipment (City of Ontario 2014).

City of Redlands

The City of Redlands adopted a Climate Action Plan in 2017, demonstrating how the city will comply with the State of California's GHG emission reduction standards (City of Redlands 2017). The Climate Action Plan includes a GHG inventory, GHG emissions projections through 2035, monitoring and reporting process to track progress, and options to reduce GHG emissions beyond what is required by the State of California. The plan covers emissions from ten sectors: residential, commercial, industrial, transportation, solid waste, water, wastewater, off-road equipment, public lighting, and agriculture. Based on the Plan's inventory, the sector with the most emissions was transportation, followed by residential and commercial (City of Redlands 2017).

City of Yucaipa

The City of Yucaipa adopted a Climate Action Plan in 2014, with the goal of reducing its community GHG emissions to 15% below its 2008 GHG emissions level by 2020 (City of Yucaipa 2014). The City planned to meet this goal through a combination of state (~81%) and local (~19%) efforts. The selected measures in Yucaipa's Climate Action Plan had the greatest impacts on GHG emissions in the on-road transportation, building energy, and water conveyance sectors (City of Yucaipa 2014).

Basic Terms and Concepts

This section defines terms and explains basic concepts inherent to understanding GHG inventories and reductions, as well as the basics of climate change science. Important terms like *community inventory* and *business as usual* are defined below, along with a description of global warming and major greenhouse gases.

Basic Terms

Business as Usual (BAU): BAU represents a future scenario that does not consider the possible reduction of GHG emissions that may result from any legislation or regulation that would go into effect after the baseline year. The BAU projections are estimates of future emissions based on energy and carbon intensity in the existing economy with the expected increases in population and economic growth in the future.

Community Inventory: The community inventory includes GHG emissions occurring in association with the land uses within the jurisdictional boundaries of the planning areas, and generally consists of emissions sources that the community can influence or control. The inventory includes emissions that occur both inside and outside the jurisdictional boundaries, but only to the extent that such emissions are due to land uses and activities within the planning areas.

Emissions Type: GHG emissions can be defined as either direct (emissions that occur at the end use location, such as natural gas combustion for building heating) or indirect (emissions that result from consumption at the end use location but occur at another location, such as emissions that occur at the power plant itself but result from residential electricity use of in-home appliances or other uses).

This report addresses both types of emissions. In this report, the term emission refers to GHG emissions and not to emissions of air quality pollutants.

Unit of Measure: The unit of measure used throughout this GHG inventory is MTCO₂e. Presenting inventories in CO₂e (carbon dioxide equivalence) allows the characterization of the complex mixture of GHGs as a single unit taking into account that each gas has a different global warming potential (GWP). A million MTCO₂e is abbreviated as MMTCO₂e.

Emissions Sectors Explained

GHG emissions and reductions presented in this document are done so in terms of “sectors.” The term sector refers to the type of emissions or the type of activity that produces the emission. For example, the on-road transportation sector includes emissions from the cars and trucks driven on the region’s roads and freeways. Table 2-1 offers a brief description of each sector considered in this document, as well as a list of the GHG reduction measures applicable to that sector. Chapter 4 contains a glossary of all GHG reduction measures and Appendix B contains a detailed description of the methods used to calculate the associated GHG reductions.

Table 2-1. Emissions Sectors and Reduction

Sector	How GHG emissions are avoided	Associated Reduction Measures
Building Energy Emissions result from the use of electricity and natural gas by residential and commercial buildings.	New construction built to a high energy-efficiency standard; retrofits to existing buildings to make them more energy efficient; and the increased use of renewable energy to power buildings.	State-1, State-2, State-3, State-4, State-5; Energy-1, Energy-2, Energy-3, Energy-4, Energy-5, Energy-6, Energy-7; Land-Use-1, Land-Use-2; PS-1.
On-Road Transportation Emissions result from the burning of gasoline and diesel fuel by light-, medium-, and heavy-duty vehicles that travel on the region’s roads and freeways.	Increased fuel economy of all vehicles; reduced carbon content of the fuel; reduced vehicle miles traveled (increased use of alternative modes of transportation, carpooling, alternative work schedules and smart growth).	State-6; On-Road-1, On-Road-2, On-Road-3, On-Road-4, On-Road-5; PS-1.
Off-Road Transportation Emissions result from the burning of gasoline and diesel fuel by off-road equipment and vehicles.	Increased fuel economy of all vehicles and equipment; reduced carbon content of the fuel; idling limitations, and increased use of electric or alternatively fueled vehicles and equipment.	Off-Road Equipment-1, Off-Road Equipment-2, Off-Road Equipment-3.
Agriculture Emissions result from the application of fertilizer and the management of manure. Emissions also result from the burning of gasoline and diesel fuel by agricultural equipment, but these emissions are captured in the Off-Road equipment sector.	Installation of methane-capture technologies on manure ponds and systems.	Agriculture-1.

Sector	How GHG emissions are avoided	Associated Reduction Measures
<p>Solid Waste Management Emissions result from the decay of garbage under the anaerobic conditions present in landfills. This sector captures both the waste that is generated by San Bernardino County residents in the inventory year and the waste that was historically generated by any person or business that has sent waste to a landfill located within San Bernardino County.</p>	Waste reduction and increased methane capture at relevant landfills.	State-8; Waste-1, Waste-2; PS-1.
<p>Wastewater Treatment Emissions result from the chemical and biological breakdown of the waste. Emissions also result from the energy used to power plants and pump water, but these emissions are captured in the Building Energy sector.</p>	Increased energy efficiency at wastewater treatment plants and installation of biogas capture and gas to energy technologies.	Wastewater-1, Wastewater-2.
<p>Water Conveyance Emissions result from the energy used to bring water from outside the jurisdiction to the border of a jurisdiction, including deliveries from the state water project or Colorado River.</p>	More efficient water pumping equipment and both indoor and outdoor water conservation.	Water-1, Water-2, Water-3; PS-1.

Climate Change and Global Warming

Climate change describes a change in the state of the Earth's climate that can be scientifically identified by changes in the mean and/or variability of its properties, and which persists for an extended period of time—typically decades or longer (Intergovernmental Panel on Climate Change 2018). Recent climate change has been unequivocally linked to rapid increasing concentrations of GHGs in Earth's lower atmosphere (Intergovernmental Panel on Climate Change 2007a). Although the climate has historically responded to natural drivers, the recent and rapid increase of GHGs in the atmosphere is primarily due to anthropogenic (i.e., human caused) emissions of GHGs, particularly from burning fossil fuels.

Increases in fossil fuel combustion and deforestation have exponentially increased concentrations of GHGs in the atmosphere since the industrial revolution. The higher concentration of heat trapping GHGs in the atmosphere intensifies the greenhouse effect, which results in increasing global surface temperatures; this phenomenon is commonly known as *global warming*.

Rising atmospheric concentrations of GHGs in excess of natural levels have increased global surface temperatures, which in turn result in changes to the Earth's climate system, including ocean circulation patterns, precipitation patterns, global ice cover, and biological distributions (Intergovernmental Panel on Climate Change 2007a, 2007b, 2014b). Put another way, global

warming is only one piece of climate change, and it causes a cascade of other effects that further affect the climate system. Some of these large-scale climate changes will result in specific impacts at the state and local level.

The Intergovernmental Panel on Climate Change (IPCC) was established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC identifies the following compounds as key anthropogenic GHGs: CO₂, CH₄, N₂O, PFCs, SF₆, and HFCs (Intergovernmental Panel on Climate Change 2007a, 2014a). Each is discussed in detail below.

To improve comparability and to simplify reporting and analysis, methods have been established to describe emissions of GHGs using a common unit. The most commonly accepted method to compare GHG emissions is the Global Warming Potential (GWP) methodology defined in IPCC reference documents (Intergovernmental Panel on Climate Change 1996, 2001:241–280). IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of CO₂e, which compares the gas in question to that of the same mass of CO₂ (CO₂ has a GWP of 1 by definition).

Table 2-2 lists the global warming potential, lifetime, and atmospheric abundance of CO₂, CH₄, N₂O, PFCs, SF₆, and HFCs.

Table 2-2. Lifetimes and Global Warming Potentials of Several Greenhouse Gases

Greenhouse Gases	Global Warming Potential (100 years)	Lifetime (years)	2011 Atmospheric Abundance
CO ₂ (ppm) ^a	1	*	390
CH ₄ (ppb)	28	12.4	1,803
N ₂ O (ppb)	265	121	324
CF ₄ (ppt) ^a	6,630	50,000	79
C ₂ F ₆ (ppt) ^a	11,100	10,000	2.9
SF ₆ (ppt)	23,500	3,200	7.3
HFC-23 (ppt)	12,400	222	24
HFC-134a (ppt)	1,300	13.4	62
HFC-152a (ppt)	138	1.5	6.4

Sources: Intergovernmental Panel on Climate Change 2013.

Notes: ppm = parts per million

ppb = parts per billion

ppt = parts per trillion

^a CF₄ and C₂F₆ are PFCs

* No single lifetime can be given for CO₂

Principal Greenhouse Gases

Carbon Dioxide

Carbon dioxide (CO₂) is the most abundant anthropogenic GHG, accounting for more than 75% of all GHG emissions caused by humans. The primary sources of anthropogenic CO₂ in the atmosphere

include the burning of fossil fuels, gas flaring, cement production, and land use changes (e.g., deforestation, oxidation of elemental carbon). CO₂ can be removed from the atmosphere by photosynthetic organisms (e.g., plants and certain bacteria). Atmospheric CO₂ has increased from a pre-industrial concentration of 280 parts per million (ppm) to 405 ppm in 2017 (National Oceanic and Atmospheric Administration, 2020a).

Methane

Methane (CH₄), the main component of natural gas, is the second most abundant GHG and has a GWP of 28—that is to say that one kilogram of CH₄ has the same warming effect as 28 kilograms of CO₂ (Intergovernmental Panel on Climate Change 2013). Sources of anthropogenic emissions of CH₄ include growing rice, raising cattle, using natural gas, landfill outgassing, and mining coal (National Oceanic and Atmospheric Administration 2005). Certain land uses also function as both a source and sink for CH₄. For example, the primary terrestrial source of CH₄ is wetland areas, whereas undisturbed, aerobic soils act as a CH₄ sink (i.e., they remove CH₄ from the atmosphere). Atmospheric CH₄ has increased from a preindustrial concentration of 715 parts per billion (ppb) to 1,850 ppb in 2017 (National Oceanic and Atmospheric Administration, 2020b).

Nitrous Oxide

Nitrous oxide (N₂O) is a powerful GHG, with a GWP of 265 (Intergovernmental Panel on Climate Change 2013). Anthropogenic sources of N₂O include agricultural processes (e.g., fertilizer application), nylon production, combustion of fossil fuel by power plants, nitric acid production, and vehicle emissions. N₂O also is used in rocket engines, racecars, and as an aerosol spray propellant. Natural processes, such as nitrification and denitrification, can also produce N₂O, which can be released to the atmosphere by diffusion. In the United States, more than 70% of N₂O emissions are related to agricultural soil management practices, particularly fertilizer application. Atmospheric N₂O concentrations have increased from a preindustrial concentration of 270 ppb to 330 ppb in 2017 (National Oceanic and Atmospheric Administration, 2020c).

Perfluorocarbons

The most abundant perfluorocarbons (PFCs) are CF₄ (PFC-14) and C₂F₆ (PFC-116). These human-made chemicals are emitted largely from aluminum production and semiconductor manufacturing processes. PFCs are extremely stable compounds that are destroyed only by very high-energy ultraviolet rays; hence, PFCs have very long lifetimes. They also have high GWPs, ranging from 6,630 for CF₄ to 11,100 for C₂F₆ (Intergovernmental Panel on Climate Change 2013). PFCs are incredibly powerful GHGs due to the combination of very high GWPs and very long lifetimes.

Sulfur Hexafluoride

Sulfur hexafluoride (SF₆) is a human-made chemical used in the magnesium industry, semiconductor manufacturing, as an electrical insulating fluid for power distribution equipment, and as a tracer chemical for the study of oceanic and atmospheric processes (U.S. Environmental Protection Agency 2006). In 2017, atmospheric concentrations of SF₆ were 9.3 parts per trillion (ppt) and steadily increasing (National Oceanic and Atmospheric Administration, 2020d). SF₆ is the most powerful of all GHGs listed in IPCC studies, with a GWP of 23,500 (Intergovernmental Panel on Climate Change 2013).

Hydrofluorocarbons

Hydrofluorocarbons (HFCs) are human-made chemicals used in commercial, industrial, and consumer products and have high GWPs ranging from 140 to 11,700 (U.S. Environmental Protection Agency, 2006). HFCs are generally used as substitutes for ozone-depleting substances (ODS) in automobile air conditioners and refrigerants. The most abundant HFCs, in descending order, are HFC-134a, HFC-23, and HFC-152a.

Greenhouse Gas Inventories and Emissions Sources

A GHG inventory identifies and measures the sources of all GHG emissions and sinks within a selected physical and/or economic boundary. GHG inventories can be performed on a large scale (e.g., for a country) or on a small scale (e.g., for a building or person). A GHG inventory is a valuable tool for policymakers who can use it to develop strategies and policies to reduce emissions, and track progress over time.

The majority (75%) of GHG emissions in the United States result from burning fossil fuels (U.S. Environmental Protection Agency, 2020). Fossil fuels are burned to create electricity, which powers homes, commercial buildings, and vehicles. Energy used to power buildings is the primary source of GHGs in California and the nation. Vehicle emissions are a close second, comprising approximately 30% of total national emissions and 37% of total statewide emissions (U.S. Environmental Protection Agency 2010; California Air Resources Board 2010). Other sources of GHG emissions include agriculture, land clearing, landfills, refrigerants, and certain industrial processes.

Table 2-3 outlines the most recent global, national, and statewide GHG inventories to help contextualize the magnitude of San Bernardino County's GHG emissions.

Table 2-3. Global, National, State, and Local GHG Emissions Inventories

Emissions Inventory	CO₂e (metric tons)
2010 IPCC Global GHG Emissions Inventory	49,000,000,000
2018 EPA National GHG Emissions Inventory	6,677,000,000
2018 CARB State GHG Emissions Inventory	425,300,000

Sources: Intergovernmental Panel on Climate Change 2014c; U.S. Environmental Protection Agency 2020; California Air Resources Board 2013.

Impacts of Climate Change on Southern California

Increases in the atmospheric concentration of GHGs will cause the lower atmosphere to warm, in turn inducing myriad changes to the global climate system. These large-scale changes will cause potentially severe impacts in the western United States, California, and the region surrounding San Bernardino county. Current research efforts coordinated through CARB, CEC, Cal-EPA, University of California (UC) system, and others are examining the specific changes to California's climate that would occur as the earth's surface warms.

Existing evidence indicates that climate change is expected to affect California's natural environment in the following ways:

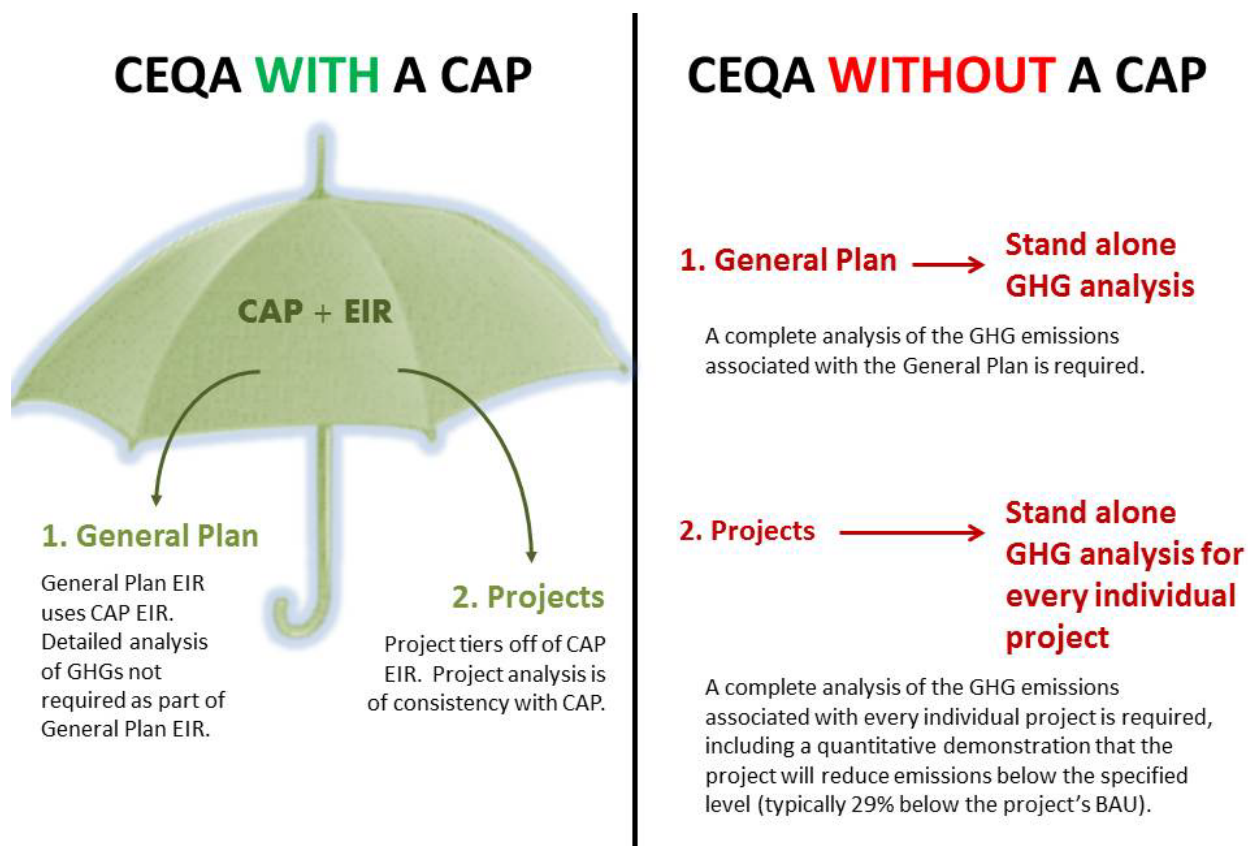
- Increased **sea level rise** along the coastline.

- Increased frequency and intensity of **extreme heat conditions**, such as heat waves and very high temperatures.
- Increased frequency, intensity, and duration of conditions that are conducive to forming air pollution, causing **reduced air quality**.
- Increased heat-related **human deaths** and **infectious diseases**.
- **Higher risk of respiratory problems** caused by deteriorating air quality.
- **Reduced water supplies** (all end uses).
- Potential increased severity of **winter storms**, affecting peak stream flows and flooding.
- Changes in growing season conditions that could affect agricultural production, such as **variations in crop quality and yield**.
- Changes in **distribution of plant and wildlife species**.
- Decreased Sierra snowpack and altered timing and amount of snowmelt, causing **reduced water supply** and affecting water management.
- **Increased frequency and intensity of wildfires**.

Relationship of Climate Action Plans to CEQA and Local General Plans

This section describes the general relationship of CAPs to CEQA and to local general plans, including legal requirements and evolving practices throughout California. Figure 2-2 illustrates these relationships.

Figure 2-2. CAPs, General Plans, and CEQA



As a discretionary action, prior to adoption of the GHG reduction plan by local cities, CEQA review is required. SBCOG has prepared an EIR that analyzes the physical impacts of the measures selected by the Partnership jurisdictions on the environment. This analysis will be used to complete CEQA compliance prior to consideration of adopting of the portions of the reduction plan applicable to SBCOG and to each individual jurisdiction.

Amendments to the CEQA guidelines in 2018 state that CEQA project evaluations of GHG emissions can tier off a programmatic analysis of GHG emissions provided that the GHG analysis (or CAP) includes the following (CEQA Guidelines Section 15183.5).

- *Quantify GHG emissions*, both existing and projected over a specified time period, resulting from activities within a defined geographic area. This Reduction Plan has quantified all primary sectors of GHG emissions within each jurisdiction for 2016 and 2030. Partnership jurisdictions may choose to adopt portions of this document as their individual CAP or build upon the information here to develop a more comprehensive CAP document.
- *Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by a CAP would not be cumulatively considerable.* This Reduction Plan includes the different proposed reduction targets of each of the Partnership jurisdictions. Some, but not all, of the participating jurisdictions have identified reduction targets, like 40% or more below 2016 levels, which are roughly consistent with the recommendations in the SB 32 Scoping Plan for municipalities to support the overall SB 32 reduction targets.

The 2016 state GHG inventory is roughly equivalent to 1990 levels. The SB 32 reduction target is 40% below 1990 levels. As such, 40% below 2016 levels is roughly equivalent to the SB 32 reduction target. For jurisdictions with GHG reduction targets that are not equivalent to (or better than) the SB 32 reduction target and that used such targets for their Climate Action Plan, they would not be able to tier their individual project compliance from their CAP as they would not meet the requirement in CEQA guidelines 150183.5

- *Identify and analyze the GHG emissions* resulting from specific actions or categories of actions anticipated within the geographic area. This Reduction Plan analyzes community emissions for each Partnership jurisdiction as a whole and includes predicted growth expected by 2030.
- *Specify measures or a group of measures, including performance standards* that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level. This Reduction Plan identifies both specific measures and project-level reduction standards (where selected by individual jurisdictions) to achieve the overall reduction target.
- *Monitor the plan's progress.* This Reduction Plan outlines general monitoring steps. Individual CAPs that utilize this Reduction Plan as a base would include locally specific identification of monitoring actions.
- *Adopt the GHG Reduction Strategy in a public process following environmental review.* For each jurisdiction that chooses to do so, a CAP would be adopted in a public process. The CEQA documentation for this Reduction Plan can be used to support local jurisdiction compliance with CEQA.

Once adopted, subsequent project-level CEQA evaluations of GHG emissions can tier off from the adopted jurisdiction CAP, provided that the local jurisdiction has adopted a qualified CAP and the specific project is consistent with all applicable requirements from the relevant adopted city CAP.

The South Coast Air Quality Management District (SCAQMD) adopted an interim GHG significance threshold for stationary source projects where the SCAQMD is the lead agency. SCAQMD does not currently have GHG significance thresholds for development projects. SCAQMD encourages local governments to adopt a qualified GHG reduction strategy consistent with state goals and the new statewide CEQA guidelines described above. SCAQMD recommends that stationary source projects, consistent with an adopted qualified GHG reduction plan that meets the standards described in the CEQA guidelines, can be presumed to have no significant GHG emissions and do not need to be evaluated against SCAQMD's recommended mass emissions thresholds. For stationary source projects not consistent with an adopted qualified GHG reduction plan, if they exceed a screening significance threshold level of 10,000 MTCO_{2e} of emissions per year, then the project must demonstrate design features and/or other measures to mitigate GHG emissions to the maximum extent feasible, or implement offsite mitigation (GHG reduction projects) to reduce GHG emission impacts to less than the proposed screening level. SCAQMD has draft thresholds for land use projects (residential and commercial development) that similarly allow for tiering off a qualified GHG reduction plan and use of numeric thresholds where a qualified reduction plan has not been adopted.

As noted above, CEQA Guidelines Section 15183.5 establishes opportunities for tiering for qualified GHG reduction plans. Accordingly, emissions associated with projects that are consistent with the GHG reduction plans adopted by jurisdictions can be considered less than significant and their

contributions to cumulative emissions are not cumulatively considerable. Clearly, projects that are consistent with the plans adopted by jurisdictions would still create emissions; however, they can be approved knowing that overall emissions projected to occur in 2030 would be less than the emissions that would occur in 2030 under BAU. This determination only relies on an individual jurisdiction's actions relative to its GHG emissions. Provided that a project is within a jurisdiction with a qualified GHG reduction plan that is being implemented in full, tiering can be used. If some of the Partnership jurisdictions choose not to adopt CAPs or choose to adopt different targets or measures than described in this Reduction Plan, this would not affect the ability of other cities to tier their project analysis from their adopted plans, provided the plans are being implemented.

3.1 Introduction

This chapter presents the GHG inventory, 2030 BAU forecast, and GHG emission reductions for each Partnership jurisdiction in the Reduction Plan. For each Partnership jurisdiction, the following items are presented.

1. **Jurisdiction Summary**—Presents background information for each jurisdiction, such as its location, socioeconomic data, and key points of interest; demographic information consistent with the Southern California Association of Governments (SCAG) Local Profiles¹ is also summarized. An overview of the jurisdiction’s emissions and selected reduction measures is also provided.
2. **Emission Reductions Graphics**—Three graphics are presented in this section:
 - i. A bar chart showing the jurisdiction’s 2016 GHG emissions inventory, state emission reductions, local emission reductions, and unmitigated emissions in 2030, along with the jurisdiction’s 2030 emissions goal;
 - ii. A bar chart showing the 2030 BAU GHG emissions by sector and the projected 2030 GHG emissions under full implementation of the Reduction Plan; and
 - iii. Pie charts showing GHG emission reductions by controlling entity and by sector.
3. **Emissions and Reductions Table**—This table presents the same information as shown in the graphics, including the jurisdiction’s 2016 GHG emissions inventory, 2030 BAU GHG forecast, and GHG emission reductions by sector.
4. **Reduction Measures Table**—This table presents all GHG emission reduction measures considered by the jurisdiction for this Reduction Plan, along with simple descriptions of each measure.
5. **Relevant General Plan Policies**—For each jurisdiction, a summary of general plan policies that are relevant to avoiding or reducing GHG emissions in general, or that support specific reduction measures in the Reduction Plan. General Plan policies are listed in reference to the specific GHG reduction measures they support. Refer to Chapter 1 for an explanation of the main goal of each reduction category and to Chapter 4 for a definition of each individual reduction measure listed.

Each jurisdiction has selected a goal to reduce their community’s GHG emissions from BAU levels by the year 2030. Each jurisdiction has selected their goal based on what each jurisdiction considers feasible given the local conditions within that jurisdiction. City selections are non-binding and will only become binding if the decision-making body of the jurisdiction decides to formally adopt them.

¹ Koblasz, Ginger. 2019. Personal communication via email with Cory Matsui of ICF to transmit regional socioeconomic data.

Each jurisdiction has selected their own set of measures independently of other jurisdictions' selections, with the exception of Apple Valley, Montclair, and Rialto, for which the consultants created reduction scenarios based on prior selections in the prior regional plan and a general assessment of suitable reduction plans. Some jurisdictions have chosen wide-ranging measures that apply to all economic sectors of their inventory, others have chosen a more limited set of measures. Selections include both the measure itself and the participation rate associated with each measure. For example, jurisdictions that chose to include Energy Efficiency for Existing Buildings (Energy-1) also chose the specific percentage of homes and businesses that will be retrofitted by the year 2030; this can vary greatly among jurisdictions. The measure selections were based on each jurisdiction's best judgment about what is feasible for their jurisdiction, and depend on the specific emissions source profile (i.e., GHG inventory) and the anticipated growth within each jurisdiction. For example, jurisdictions that are expected to construct many new homes to support a rising population may select a measure for new homes, while jurisdictions that are fully built-out would have limited use for a measure aimed at new homes. Not all jurisdictions selected the same measures and there is reasonable variation between the measures selected for each jurisdiction.

3.2 City of Adelanto



3.2.1 City Summary

The City of Adelanto is located in the western portion of the Mojave Desert, also known as the Victor Valley. It is approximately 40 miles north of the city of San Bernardino on Highway 395, within 20 miles of Victorville, Hesperia, and Apple Valley. Adelanto is located near the Southern California Logistics Airport, formerly known as the George Air Force Base.

Attractions near Adelanto include the Mirage Off-Road Vehicle Park and the High Desert Mavericks minor league baseball team, part of the Seattle Mariners franchise. Adelanto has a typical high desert climate with summertime high temperatures above 90 degrees Fahrenheit (°F) and winter time lows near 30°F.

Adelanto spans 56 square miles and a significant portion of the area in the southern section of the City is designated for industrial, manufacturing, and commercial uses. These land uses are reflected in the City’s GHG profile, with primary emissions sources being the on-road transportation, commercial energy uses, and stationary sources sectors. Other land uses in the City include low density residential and desert living areas. The City had a population of 33,893 as of 2016. The manufacturing sector was the largest job sector in 2017, accounting for 19.7% of the City’s total jobs. The average annual salary for jobs located in the City was \$52,076 in 2017. Adelanto’s demographic composition in 2018 was 20.4% Non-Hispanic Black, 13.7% Non-Hispanic White, 1.4% Non-Hispanic Asian, and 2.2% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 62.3%, which represents a 45.8% increase since 2000. Adelanto has a very young population, with a median age of 27.5, compared to 35.8 for the SGAC region (SCAG, 2019). Table 3-1 presents socioeconomic data for Adelanto, including population, housing, and employment (SBCOG, 2019).

Table 3-1. Socioeconomic Data for Adelanto

Category	2016	2030	2045
Population	33,893	50,081	66,637
Households	8,159	13,686	19,802
Jobs	6,141	8,005	10,007



3.2.2 Emission Reductions

The City of Adelanto selected a goal to reduce its community GHG emissions to a level that is 40% below its 2020 GHG emissions level by 2030. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost effective through a combination of state (~60%) and local (~40%) efforts. The Pavley vehicle standards, the state’s LCFS, the RPS, and other state measures will reduce GHG emissions in Adelanto’s on-road, off-road, and building energy

sectors in 2030. An additional reduction of 59,812 MTCO₂e will be achieved primarily through the following local measures, in order of reductions achieved: GHG Performance Standard for New Development (PS-1); solar installation for existing commercial/industrial facilities (Energy-8); and waste diversion and reduction (Waste-2). Adelanto's reduction plan has the greatest effect on GHG emissions in the building energy, waste, and on-road transportation.

The City of Adelanto adopted the North Adelanto Sustainable Community Plan which is a City planning framework that contains many transportation and land use-related actions to reduce vehicle-related GHG emissions throughout the region. This community plan supports the goals of SB 375 and the Sustainable Communities Strategy (OnRoad-STATE-SCS) through a wide range of actions which include the following.

- Integrate state, regional, and local sustainable community/smart growth principles into the development and entitlement process.
- Develop a system of trails and corridors that facilitates and encourages bicycling and walking.
- Require new development to provide transit facilities, such as bus shelters, transit bays, and turnouts, as necessary.
- Require the future development of community-wide servicing facilities to be sites in transit-ready areas that can be served and made accessible by public transit.
- Provide development-related incentives for projects that promote transit use.
- Designate and maintain a network of City truck routes that provide for the effective transport of goods while minimizing negative impacts on local circulation and noise sensitive land uses.
- Transition the City fleet to low emission/fuel-efficient vehicles as they are retired from service.
- Encourage carpooling.
- Work with the regional transit provider to provide shade, weather protection, seating, and lighting at all stops.

The bars in Figure 3-1 show Adelanto's 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City's emissions reduction target (40% below the 2020 GHG emissions level). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total ("2030 Plan"), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~60%) of the total reductions needed to achieve the 2030 target.

Figure 3-2 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and off-road equipment sectors.

Table 3-2 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2030 and demonstrates that Adelanto exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the on-road transportation, waste, and building energy sectors.

Figure 3-3 presents emission reductions by sector and by control (i.e., state control versus local or city control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road

transportation sectors. Of the local measures, the majority of reductions are in the building energy sector.

Figure 3-1. Emissions Reduction Profile for Adelanto

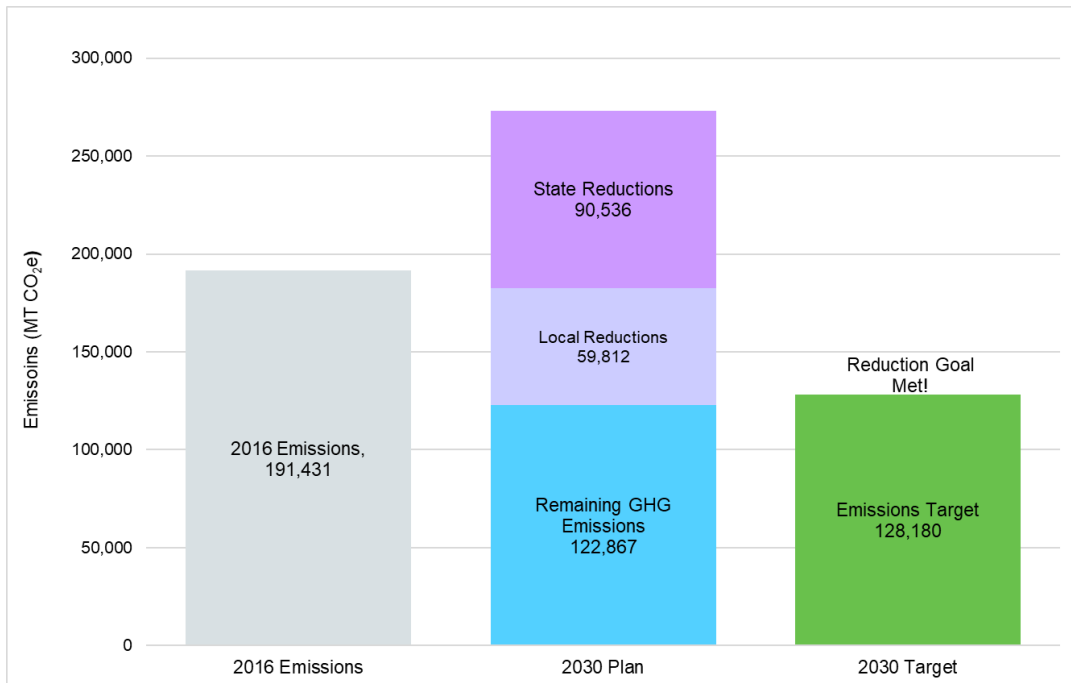


Figure 3-2. Emissions by Sector for Adelanto

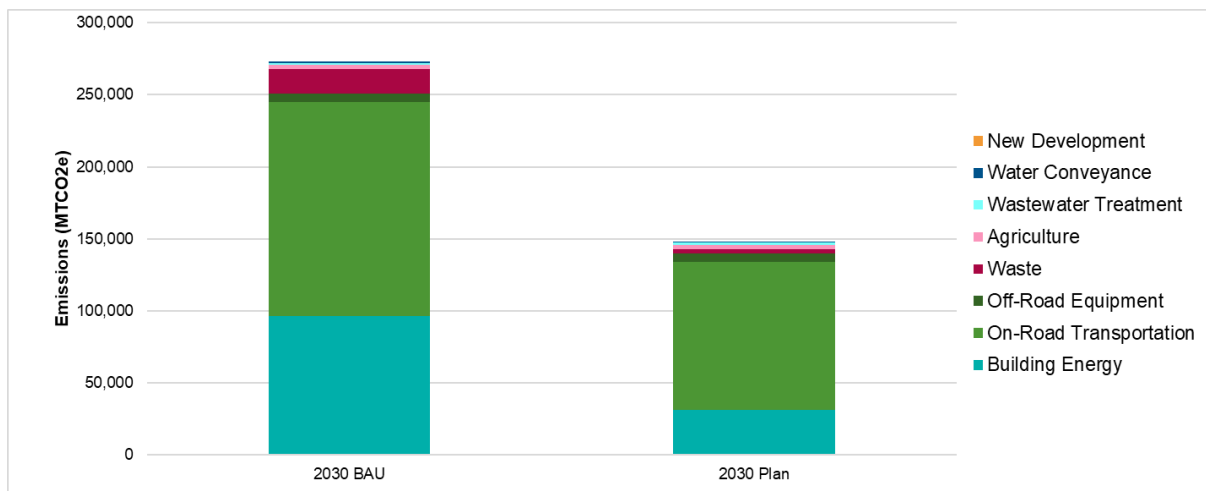


Table 3-2. Emission Reductions by Sector for Adelanto

Sector	2016 Emissions (MTCO₂e)	2030 BAU (MTCO₂e)	2030 Reductions (MTCO₂e)	2030 Emissions with Reduction Plan (MTCO₂e)	Reduction (percent)
Building Energy	64,833	96,194	65,123	31,070	67.7%
On-Road Transportation	104,575	148,547	45,401	103,146	30.6%
Off-Road Equipment	3,622	6,356	381	5,975	6.0%
Waste	11,187	16,531	14,018	2,513	84.8%
Agriculture	5,501	3,097	0	3,097	0.0%
Wastewater Treatment	1,062	1,569	74	1,495	4.7%
Water Conveyance	650	921	165	756	17.9%
GHG Performance Standard*	-	-	25,185	-	-
Total	191,431	273,216	150,349	122,867	55.0%
Goal	-	-	-	128,180	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	5,313	-

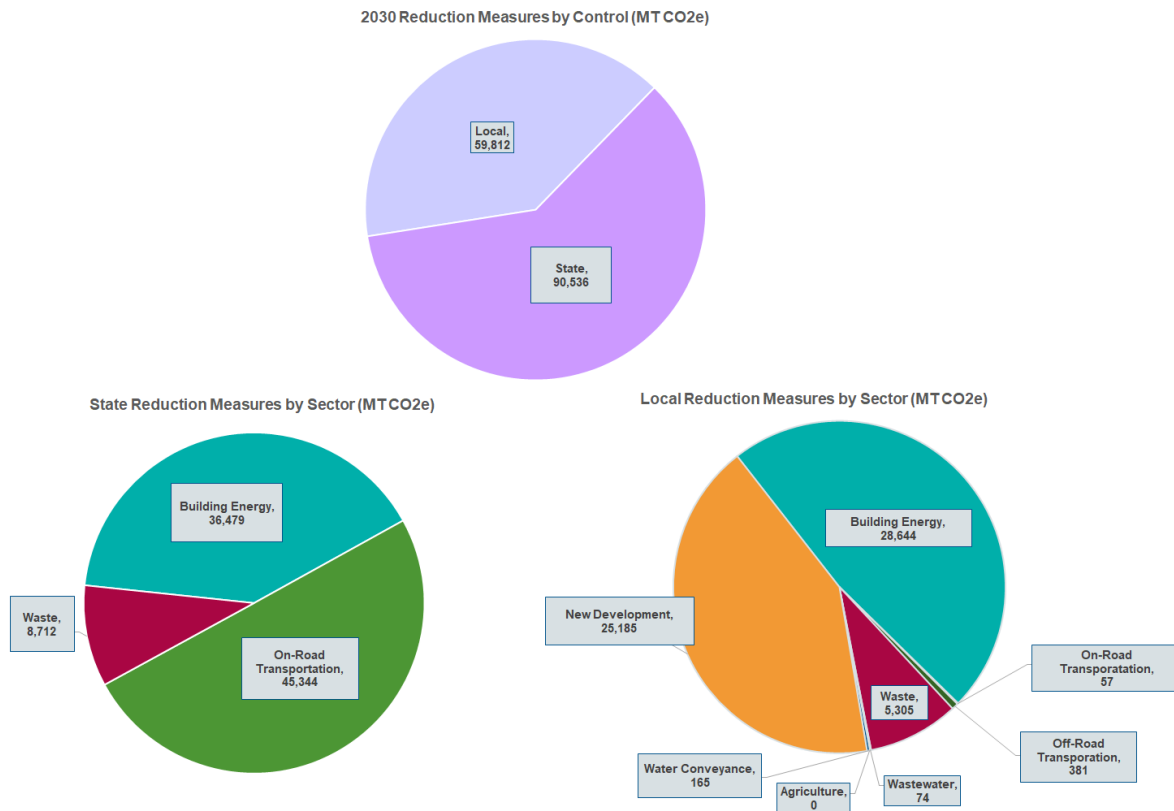
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City's reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-3. Emission Reductions by Control and by Sector for Adelanto



3.2.3 Reduction Measures

Table 3-3 presents each reduction measure evaluated for Adelanto. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-3. GHG Reduction Measures and Estimated 2030 reductions for Adelanto

Measure Number	Measure Description	Reductions (MTCO _{2e})
State Measures		
State-SB 100	SB 100	19,001
State-SB 350	SB 350	11,469
State-T24	Title 24 (Energy Efficiency Standards)	5,881
State-Solar Water Heater	Solar Water Heaters (Residential)	20
State-Increased CHP	Increased Combined Heat and Power (Commercial)	109
State-OnRoad	State Fuel Efficiency Measures	45,344
State-SB 1383	Methane Capture	8,712
Total State Reductions		90,536
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	2,982
Energy-2	Lighting Efficiency	0
Energy-3	All Electric Buildings	0
Energy-5	Renewable Energy – New Commercial/Industrial	0
Energy-6	Solar Energy for Warehouse Space	0
Energy-7	Solar Installation for Existing Housing	4,323
Energy-8	Solar Installation for Existing Commercial/Industrial	16,651
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	27
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	57
OnRoad-2	Encourage Use of Mass Transit	0
OnRoad-3	Transportation Demand Management and Synchronization	0
OnRoad-4	Expand Bike Routes	0
OnRoad-5	Community Fleet Electrification	0
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	166
OffRoad-2	Idling Ordinance	70
OffRoad-3	Electric Landscaping Equipment	146
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	5,305
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	0
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	74
<i>Water Conveyance</i>		

Water-1	Require Tier 1 Voluntary CALGreen Standards for New Construction	0
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	4,661
Water-3	Water-Efficient Landscaping Practices	165
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	25,185
Total Local Reductions		59,812
Total Reductions		150,349

Notes:

Values may not sum due to rounding.

3.2.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Adelanto's GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Adelanto 1994 General Plan unless otherwise noted (City of Adelanto, 1994). In addition to state level measures, the City of Adelanto selected GHG reduction measures across most sectors (Table 3-3). However, the City's General Plan includes policies and programs that broadly support energy efficiency and sustainability across all sectors, even if the City did not select a specific GHG reduction measure within the sector as part of this Reduction Plan. Relevant General Plan policies for the specific reduction measures the City selected are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.2.4.1 Building Energy

Energy-1. Building Energy Efficiency

- **Goal NR 1:** To preserve and protect the area's renewable and nonrenewable resources to the maximum extent possible.
- **Goal NR 2:** To reduce the rate of consumption per capita of renewable and non-renewable natural resources which are located within and outside the Planning Area.
- **Policy NR 1.4:** All new developments will be required to implement energy conservation techniques into the development design.
- **Policy NR 1.6:** Conservation techniques shall be required for proposed development (both domestic and industrial) to minimize consumption levels of renewable and non-renewable natural resources including water resources.
- **Long Term Implementation Strategy AQ 1.2.9:** The City has the opportunity to provide leadership in reducing employee-related air pollutant emissions. Progressive City programs to reduce vehicle-mile-traveled, vehicle trips, solid waste, and energy consumption would improve air quality.

Energy-5. Renewable Energy - New Commercial/Industrial

- **Policy NR 1.1:** The City shall promote the development and use of alternative energy sources, such as passive solar in industrial, commercial and, residential developments.

Energy-7. Solar Installation for Existing Housing

- **Policy NR 1.1:** The City shall promote the development and use of alternative energy sources, such as passive solar in industrial, commercial, and residential developments.

Energy-8. Solar Installation for Existing Commercial/Industrial

- **Policy NR 1.1:** The City shall promote the development and use of alternative energy sources, such as passive solar in industrial, commercial, and residential developments.

Energy-10. Urban Tree Planting for Shading and Energy Savings

- **Policy NR 1.6:** Conservation techniques shall be required for proposed development (both domestic and industrial) to minimize consumption levels of renewable and non-renewable natural resources including water resources.
- **Other Community Design Considerations—Landscaping:** The present tree planting program should be expanded to all parts of the City. This includes not only tree planting in public streets and parks, in the Edison Company easement, and in the Flood Control District easements, but also in commercial, industrial, and residential areas.

3.2.4.2 On-Road

OnRoad-3. Alternative Fueled Transit Fleets

- **Goal AQ 1 (and all policies under AQ 1):** Support local and regional efforts to improve air quality throughout the region.
- **Policy AQ 1.2:** The City will require all new developments, as defined by State requirements and implementing ordinances to institute any required Transportation Systems Management Plan (TSM).

3.2.4.3 Off-Road

Off-Road-1. Electric-Powered Construction Equipment

- **Goal AQ 1:** Support local and regional efforts to improve air quality throughout the region.
- **Goal AQ 2:** To assist in improving air quality in accord with the San Bernardino Air Quality Attainment Plan.
- **Goal AQ 3:** Implementation of control measures which apply to Adelanto as an employer and contractor.
- **Goal AQ 4:** To reduce air pollutant emissions to the greatest extent feasible by monitoring air quality mitigation measures developed for new development projects.

Off-Road-2. Idling Ordinance

- **Policy AQ 1.1:** The City shall continue to work with the Mojave Desert Air Quality Management District and any other agencies in order to enforce and implement regional air quality plans.
- **Long Term Implementation Strategy AQ 1.2.8:** With increasing regional arid national environmental concerns, Adelanto is required by law to implement measures that will further regional air quality objectives. The law provides some latitude for the City to determine which measures would produce the greatest reduction in air-pollutant emissions.

Off-Road-3. Electric Landscaping Equipment

- **Policy AQ 1.1:** The City shall continue to work with the Mojave Desert Air Quality Management District and any other agencies in order to enforce and implement regional air quality plans.
- **Long Term Implementation Strategy AQ 1.2.8:** With increasing regional arid national environmental concerns, Adelanto is required by law to implement measures that will further regional air quality objectives. The law provides some latitude for the City to determine which measures would produce the greatest reduction in air-pollutant emissions.

3.2.4.4 Solid Waste Management

Waste-2. Waste Diversion and Reduction

- **Long Term Implementation Strategy AQ 1.2.9:** The City has the opportunity to provide leadership in reducing employee-related air pollutant emissions. Progressive City programs to reduce vehicle-mile-traveled, vehicle trips, solid waste, and energy consumption would improve air quality.

3.2.4.5 Water Conveyance

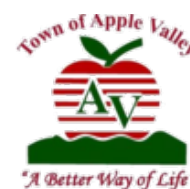
Water-2. Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency

- **Policy LU 1.1:** Promote low per capita water use through the use of low water consumptive plant materials/desert plants (xeriscape). California species.
- **Policy WQ 1.1:** The City will require that development be designed and constructed to conserve water utilizing low flow irrigation and plumbing fixtures and facilities.
- **Policy WQ 1.5:** The City will require that all new development utilize water conservation techniques to conserve water resources, such as the use of low-flow irrigation and plumbing systems in new and existing development.

Water-3. Water-Efficient Landscaping Practices

- **Policy LU 1.1:** Promote low per capita water use through the use of low water consumptive plant materials/desert plants (xeriscape).
- **Policy NR 1.3:** The City will encourage residential, commercial, industrial users to conserve the use of water and other renewable and non-renewable natural resources by incorporating conservation measures.
- **Policy WQ 1.1:** The City will require that development be designed and constructed to conserve water utilizing low flow irrigation and plumbing fixtures and facilities.
- **Policy WQ 1.5:** The City will require that all new development utilize water conservation techniques to conserve water resources, such as the use of low-flow irrigation and plumbing systems in new and existing development.

3.3 Town of Apple Valley



3.3.1 City Summary

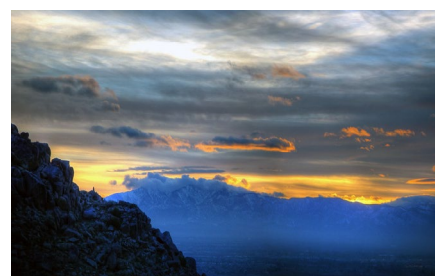
The Town of Apple Valley is located in the Mojave Desert, also known as the Victor Valley. The town is just east of Victorville and Hesperia, 35 miles south of Barstow, and 49 miles north of San Bernardino through the Cajon Pass. The south edge of the town is bordered by the foothills of the San Bernardino Mountains. Apple Valley has a semi-arid climate with summertime high temperatures above 90°F and winter time lows near 30°F.

Apple Valley spans 73.5 square miles and has a population of 74,313 as of 2016. The education sector was the largest job sector in 2017, accounting for 45.9% of the City’s total jobs (SCAG, 2019). The median household income was \$50,907 in 2018. Apple Valley’s demographic composition in 2018 was, 51.4% Non-Hispanic White, 7.7% Non-Hispanic Black, 3.0% Non-Hispanic Asian, 0.2% Non-Hispanic American Indian or Alaska Native, and 2.6% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 35.1% (SCAG, 2019).

Table 3-4 presents socioeconomic data for Apple Valley, including population, housing, and employment (SBCOG, 2019).

Table 3-4. Socioeconomic Data for Apple Valley

Category	2016	2030	2045
Population	74,313	89,425	101,405
Households	24,734	31,547	37,386
Jobs	18,012	23,871	30,160



The Town of Apple Valley adopted a Climate Action Plan in 2016, which includes a 2005 inventory and baseline and proposed reduction measures that will enable the City to achieve the target of 15% below 2005 levels by 2020. The Climate Plan also introduces the statewide reduction target of 40% below 2005 levels by 2030. The Apple Valley Climate Plan includes actions such as VMT reduction measures, fuel efficiency measures, mass transit incentives, waste reduction measures, increased solar adoption, and energy efficiency measures (Town of Apple Valley, 2016).

3.3.2 Emission Reductions

LSA consultants prepared a reduction scenario for the Town of Apple Valley as city staff were unable to assist due to other City priorities (including responding to the COVID health emergency, among other pressing matters). ICF identified a reduction goal to reduce its community GHG emissions to a

level that is 3.60 MTCO₂e per capita for 2030.² LSA consultants identified reduction measures based on selections in the prior regional plan and identification of other local reduction measures suitable for the City. The reduction scenario identified by LSA show that Apple Valley can meet and exceed the goal subject to reduction measures that are technologically feasible and cost-effective through a combination of state (~75%) and local (~25%) efforts. The Pavley vehicle standards, the state's low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in Apple Valley's on-road, off-road, and building energy sectors in 2030. An additional reduction of 62,949 MTCO₂e will be achieved primarily through the following local measures, in order of reductions achieved: Solar Installation for Existing Housing (Energy-7); Renovations for Existing Buildings to Achieve Higher Level of Water Efficiency (Water-2); and Waste Diversion and Reduction (Waste-2). Apple Valley's reduction plan has the greatest effect on GHG emissions in the building energy, on-road transportation, and waste sectors.

The bars in Figure 3-4 show Apple Valley's 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City's emissions reduction target (i.e., 40% below the 2020 GHG emissions level). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total ("2030 Plan"), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~75%) of the total reductions needed to achieve the 2030 target.

Figure 3-5 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation and building energy emissions sectors.

Table 3-5 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2030 and demonstrates that Apple Valley exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the waste, on-road transportation, and water conveyance sectors.

Figure 3-6 presents emission reductions by sector and by control (i.e., state control versus local or City control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are in the building energy sector.

² The California Air Resources Board, in the 2017 Scoping Plan, recommended that local jurisdictions reduce GHG emissions to support the state's overall reduction target under SB 32. CARB suggested that local jurisdictions should strive to reduce emissions to a level of 6.0 MTCO₂e per capita by 2030. That goal included all emission sectors, including agriculture, industrial, and other sectors that are not always found in local communities. When removing the sectors not included in the inventories in this study (agriculture, industrial, high GWP gases, marine, aviation, and rail), the revised target for 2030 would be 3.60 MTCO₂e per capita.

Figure 3-4. Emissions Reduction Profile for Apple Valley

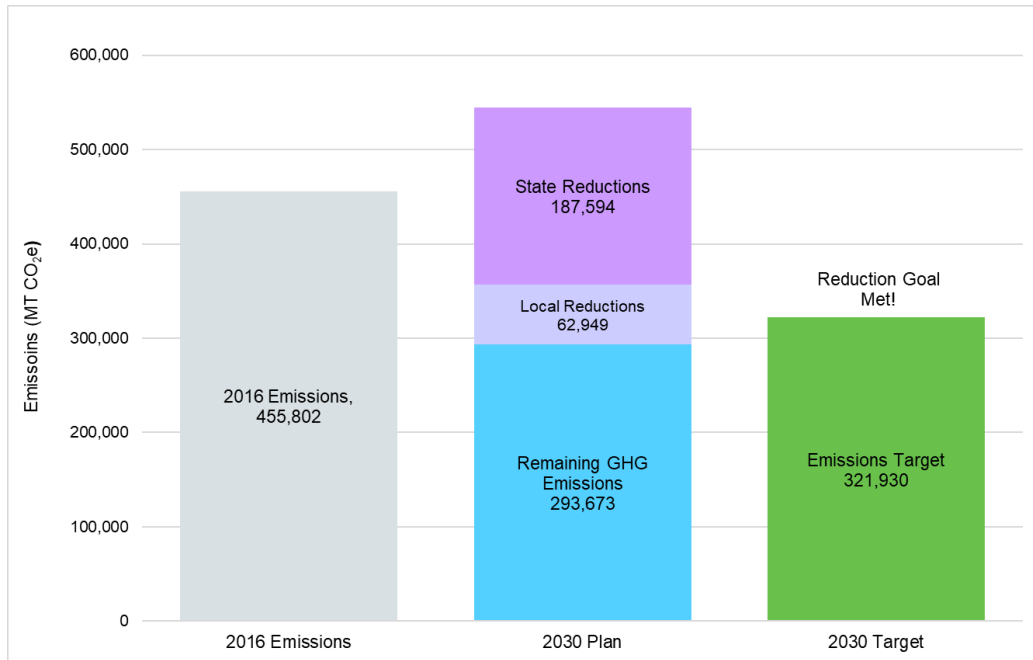


Figure 3-5. Emissions by Sector for Apple Valley

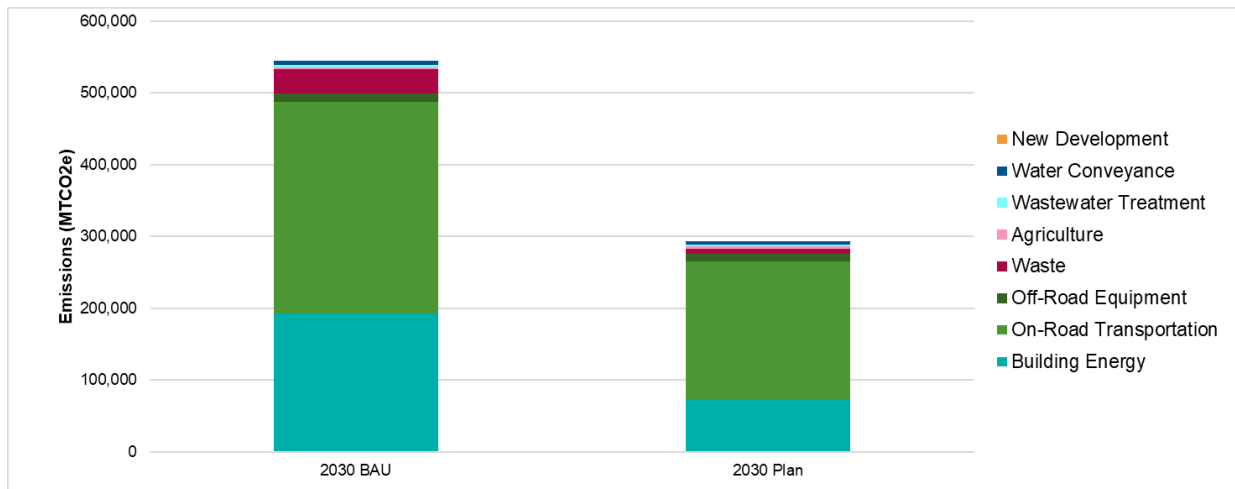


Table 3-5. Emission Reductions by Sector for Apple Valley

Sector	2016 Emissions (MTCO₂e)	2030 BAU (MTCO₂e)	2030 Reductions (MTCO₂e)	2030 Emissions with Reduction Plan (MTCO₂e)	Reduction (percent)
Building Energy	152,295	192,574	118,820	73,754	61.7
On-Road Transportation	255,281	294,867	103,782	191,085	35.2%
Off-Road Equipment	8,092	11,792	622	11,170	5.3%
Waste	28,032	33,732	26,461	7,272	78.4%
Agriculture	4,793	2,698	0	2,698	0.0%
Wastewater Treatment	2,328	2,801	133	2,669	4.7%
Water Conveyance	4,981	5,751	726	5,025	12.6%
GHG Performance Standard*	-	-	-	-	-
Total	455,802	544,216	250,543	293,673	46.0%
Goal	-	-	-	321,930	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	28,257	-

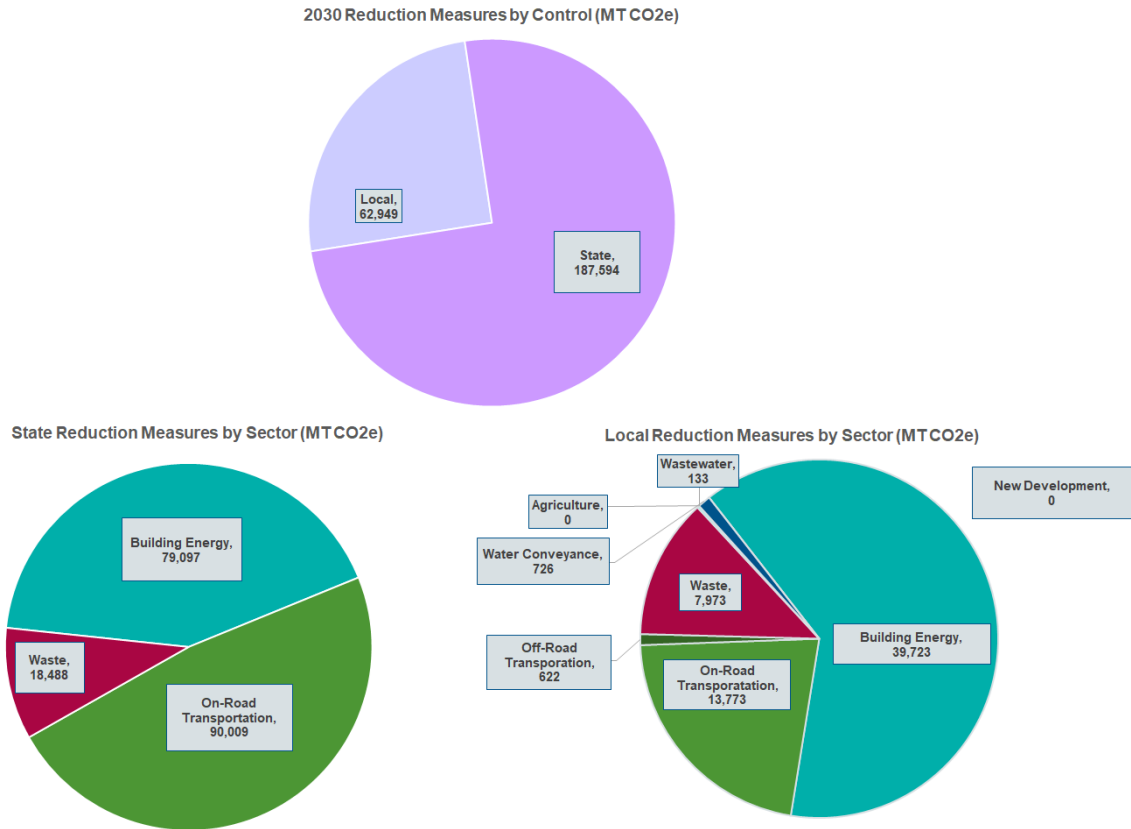
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City's reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-6. Emission Reductions by Control and by Sector for Apple Valley



3.3.3 Reduction Measures

Table 3-6 presents each reduction measure evaluated for Apple Valley. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-6. GHG Reduction Measures and Estimated 2030 reductions for Apple Valley

Measure Number	Measure Description	Reductions (MTCO _{2e})
State Measures		
State-SB 100	SB 100	44,398
State-SB 350	SB 350	27,963
State-T24	Title 24 (Energy Efficiency Standards)	6,451
State-Solar Water Heater	Solar Water Heaters (Residential)	57
State-Increased CHP	Increased Combined Heat and Power (Commercial)	228
State-OnRoad	State Fuel Efficiency Measures	90,009
State-SB 1383	Methane Capture	18,488
Total State Reductions		187,594
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	3,743
Energy-2	Lighting Efficiency	1,426
Energy-3	All Electric Buildings	0
Energy-5	Renewable Energy – New Commercial/Industrial	1,474
Energy-6	Solar Energy for Warehouse Space	6,973
Energy-7	Solar Installation for Existing Housing	9,251
Energy-8	Solar Installation for Existing Commercial/Industrial	6,175
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	27
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	119
OnRoad-2	Encourage Use of Mass Transit	6,120
OnRoad-3	Transportation Demand Management and Synchronization	2,049
OnRoad-4	Expand Bike Routes	1,851
OnRoad-5	Community Fleet Electrification	3,634
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	238
OffRoad-2	Idling Ordinance	124
OffRoad-3	Electric Landscaping Equipment	260
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	7,973
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	0
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	133
<i>Water Conveyance</i>		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New	1,919

	Construction	
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	8,735
Water-3	Water-Efficient Landscaping Practices	726
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	0
Total Local Reductions		62,949
Total Reductions		250,543

Notes:

Values may not sum due to rounding.

3.3.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the Town of Apple Valley’s GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Apple Valley 2009 General Plan unless otherwise noted (City of Apple Valley, 2009). In addition to state level measures, GHG reduction measures were selected across most sectors (Table 3-6). The Town’s General Plan includes policies and programs that broadly support energy efficiency and sustainability across all sectors, even if a specific GHG reduction measure within the sector was not selected as part of this Reduction Plan. Relevant General Plan policies are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.3.4.1 Building Energy

Energy-1. Building Energy Efficiency

- **Policy 1.A:** The community and all economic sectors shall be urged to conserve energy, with particular focus on the inclusion of energy saving measures in transport systems, and in the planning and construction of urban uses.
- **Policy 1.H:** Encourage energy-conservation and passive design concepts that make use of the natural climate to increase energy efficiency and reduce housing costs.
- **Policy 1.A:** The community and all economic sectors shall be urged to conserve energy, with particular focus on the inclusion of energy saving measures in transport systems, and in the planning and construction of urban uses.
- **Long Term Implementation Strategy AQ 1.2.9:** The City has the opportunity to provide leadership in reducing employee-related air pollutant emissions. Progressive City programs to reduce vehicle-mile-traveled, vehicle trips, solid waste, and energy consumption would improve air quality.

Energy-2. Lighting Efficiency

- **Policy 1.A:** The community and all economic sectors shall be urged to conserve energy, with particular focus on the inclusion of energy saving measures in transport systems, and in the planning and construction of urban uses.
- **Policy 1.B.3:** The Town shall encourage building design that takes advantage of shade, prevailing winds and sun screens. Energy efficient lighting and installation of colored “cool

roofs”, cool pavement and strategically planted shade trees should also be encouraged. The Town shall support the installation of solar panels on carports and over parking areas where appropriate.

- **Policy NR 1.1:** The City shall promote the development and use of alternative energy sources, such as passive solar in industrial, commercial, and residential developments.

Energy-5. Renewable Energy – New Commercial/Industrial

- **Policy NR 1.1:** The City shall promote the development and use of alternative energy sources, such as passive solar in industrial, commercial, and residential developments.

Energy-6. Solar Installation for Warehouse Space

- **Policy NR 1.1:** The City shall promote the development and use of alternative energy sources, such as passive solar in industrial, commercial, and residential developments.

Energy-7. Solar Installation for Existing Housing

- **Policy 1.A:** The community and all economic sectors shall be urged to conserve energy, with particular focus on the inclusion of energy saving measures in transport systems, and in the planning and construction of urban uses.
- **Policy 1.D:** The Town will encourage and facilitate the exploitation of local renewable resources by supporting public and private initiatives to develop and operate alternative systems of electricity generation, using wind, solar and other renewable energies.

Energy-8. Solar Installation for Existing Commercial/Industrial

- **Policy 1.A:** The community and all economic sectors shall be urged to conserve energy, with particular focus on the inclusion of energy saving measures in transport systems, and in the planning and construction of urban uses.
- **Policy 1.D:** The City will encourage and facilitate the exploitation of local renewable resources by supporting public and private initiatives to develop and operate alternative systems of electricity generation, using wind, solar and other renewable energies.
- **Policy NR 1.1:** The City shall promote the development and use of alternative energy sources, such as passive solar in industrial, commercial, and residential developments.

Energy-10. Urban Tree Planting for Shading and Energy Savings

- **Policy 1.B.3:** The City shall encourage building design that takes advantage of shade, prevailing winds and sun screens. Energy efficient lighting and installation of colored “cool roofs,” cool pavement, and strategically planted shade trees should also be encouraged. The City shall support the installation of solar panels on carports and over parking areas where appropriate.
- **City Objective 3:** Use of xeriphytic (drought tolerant) landscape materials are to be emphasized. School children, public officials, and community organizations should be involved in the planting and care of trees at schools and playgrounds and families should be involved in neighborhood and park development programs.

- **Other Community Design Considerations—Landscaping:** The present tree planting program should be expanded to all parts of the City. This includes not only tree planting in public streets and parks, in the Edison Company easement, and in the Flood Control District easements, but also in commercial, industrial, and residential areas.

3.3.4.2 On-Road

On-Road-1. Alternative Fueled Transit Fleets

- **Policy 1.A:** The community and all economic sectors shall be urged to conserve energy, with particular focus on the inclusion of energy saving measures in transport systems, and in the planning and construction of urban uses.

On-Road-2. Encourage Use of Mass Transit

- **Policy 1.M:** Encourage the expansion of an integrated public transit system.
- **Policy 1.O:** Proactively participate in regional transportation planning.

On-Road-3. Transportation Demand Management and Signal Synchronization

- **Policy 1.D:** Traffic calming devices shall be integrated into all City streets to the greatest extent possible.
- **Policy 1.E:** Bus pullouts shall be designed into all new projects on arterial roadways, to allow buses to leave the flow of traffic and reduce congestion.
- **Policy 1.A:** The community and all economic sectors shall be urged to conserve energy, with particular focus on the inclusion of energy saving measures in transport systems, and in the planning and construction of urban uses.

On-Road-4. Expand Bike Routes

- **Policy 1.J:** The City shall implement a coordinated and connected bicycle lane network consistent with the Bicycle Lane Map in this Element.
- **Policy 1.K:** The City shall provide for a comprehensive, interconnected recreational trails system suitable for bicycles, equestrians and/or pedestrians.

On-Road-5. Community Fleet Electrification

- **Policy 1.N:** The City shall purchase and/or replace vehicles with alternate fuel vehicles to the greatest extent possible, and shall encourage other agencies to do the same.

3.3.4.3 Off-Road

Off-Road-1. Electric-Powered Construction Equipment

- **Policy 1.A:** The community and all economic sectors shall be urged to conserve energy, with particular focus on the inclusion of energy saving measures in transport systems, and in the planning and construction of urban uses.

Off-Road-2. Idling Ordinance

- **Policy 1.A:** The community and all economic sectors shall be urged to conserve energy, with particular focus on the inclusion of energy saving measures in transport systems, and in the planning and construction of urban uses.

Off-Road-3. Electric Landscaping Equipment

- **Policy 1.A:** The community and all economic sectors shall be urged to conserve energy, with particular focus on the inclusion of energy saving measures in transport systems, and in the planning and construction of urban uses.

3.3.4.4 Solid Waste Management

Waste-2. Waste Diversion and Reduction

- **Program 1.E.3:** The Town shall require the recycling of mineral-based construction materials, including asphalt, concrete, gypsum and similar materials, and the use of recycled materials in new construction.

3.3.4.5 Water Conveyance

Water-1. Require Tier 1 Voluntary CALGreen Standards for New Construction

- **Policy 1.A:** The City will cooperate with Federal, State and County governments and local agencies concerning the maintenance and improvement of the quality and quantity of local and regional groundwater resources.
- **Water Resources Policy 1.A:** The Town shall coordinate land development and assure a balance of development and water supply that ensures the long-term maintenance of an adequate supply of water, and its continued high quality.
- **Policy 1.F:** Consistent with community design standards and local and regional drainage plans, the Town shall provide development standards and guidelines for the construction of on-site storm water retention facilities.

Water-2. Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency

- **Policy 1.A.** The City will cooperate with Federal, State and County governments and local agencies concerning the maintenance and improvement of the quality and quantity of local and regional groundwater resources.

Water-3. Water-Efficient Landscaping Practices

- **Policy 1.A.** The City will require low water use through drought tolerant and native desert plants for landscaping.



3.4 City of Barstow

3.4.1 City Summary

The City of Barstow is centrally located in the western portion of the Mojave Desert, at the entrance the Mojave National Preserve. It is midway between Los Angeles and Las Vegas. Interstates 15 and 40, and highways 58 and 247 all converge in Barstow, making it a major transportation corridor.³

Natural Attractions near Barstow include the Rainbow Basin and Mojave National Preserve. Barstow has a typical desert climate with summertime high temperatures above 105°F and wintertime lows near 45°F.

Barstow spans 41 square miles and a significant portion of the area in the southwestern section of the City is designated for general commercial uses.⁴ These land uses are reflected in the City’s GHG profile, with primary emissions sources in the on-road transportation, commercial energy uses, and stationary sources sectors. Other land uses in the City include low density residential and desert living areas. The City had a population of 24,187 as of 2016. Barstow’s demographic composition in 2018 was, 28.5% Non-Hispanic White, 15.7% Non-Hispanic Black, 3.2% Non-Hispanic Asian, 1.5% Non-Hispanic American Indian or Alaska Native, and 5.8% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 45.3% (SCAG, 2019).

Table 3-7 presents socioeconomic data for Barstow, including population, housing, and employment (SBCOG, 2019).

Table 3-7. Socioeconomic Data for Barstow

Category	2016	2030	2045
Population	24,187	28,228	32,695
Households	8,417	10,556	12,849
Jobs	11,704	14,993	18,516



3.4.2 Emission Reductions

LSA consultants selected a goal to reduce its community GHG emissions to a level that is 40% below its 2020 BAU GHG emissions level by 2030. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective through a combination of state (~70%) and local (~30%) efforts. The Pavley vehicle standards, the state’s low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in Barstow’s on-road, off-

³ <https://www.barstowca.org/visitors/about-barstow>.

⁴ <https://www.barstowca.org/home/showdocument?id=5361>.

road, and building energy sectors in 2030. An additional reduction of 32,104 MTCO₂e will be achieved primarily through the following local measures, in order of reductions achieved: Solar Installation for Existing Commercial/Industrial Facilities (Energy-8); GHG Performance Standard for New Development (PS-1); and Waste Diversion and Reduction (Waste-2). Barstow’s reduction plan has the greatest effect on GHG emissions in the building energy, on-road transportation, and waste sectors.

The bars in Figure 3-7 show Barstow’s 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City’s emissions reduction target (i.e., 40% below the 2020 GHG emissions level). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total (“2030 Plan”), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~70%) of the total reductions needed to achieve the 2030 target.

Figure 3-8 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or “Reduction Plan” scenarios. The largest emissions contributions are in the on-road transportation, building energy, and waste emissions sectors.

Table 3-8 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction (“Reduction Plan”) results by sector. It shows the percent reduction in each sector’s emissions in 2030 and demonstrates that Barstow exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the building energy, on-road transportation, and waste sectors.

Figure 3-9 presents emission reductions by sector and by control (i.e., state control versus local or City control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are in the building energy sector.

Figure 3-7. Emissions Reduction Profile for Barstow

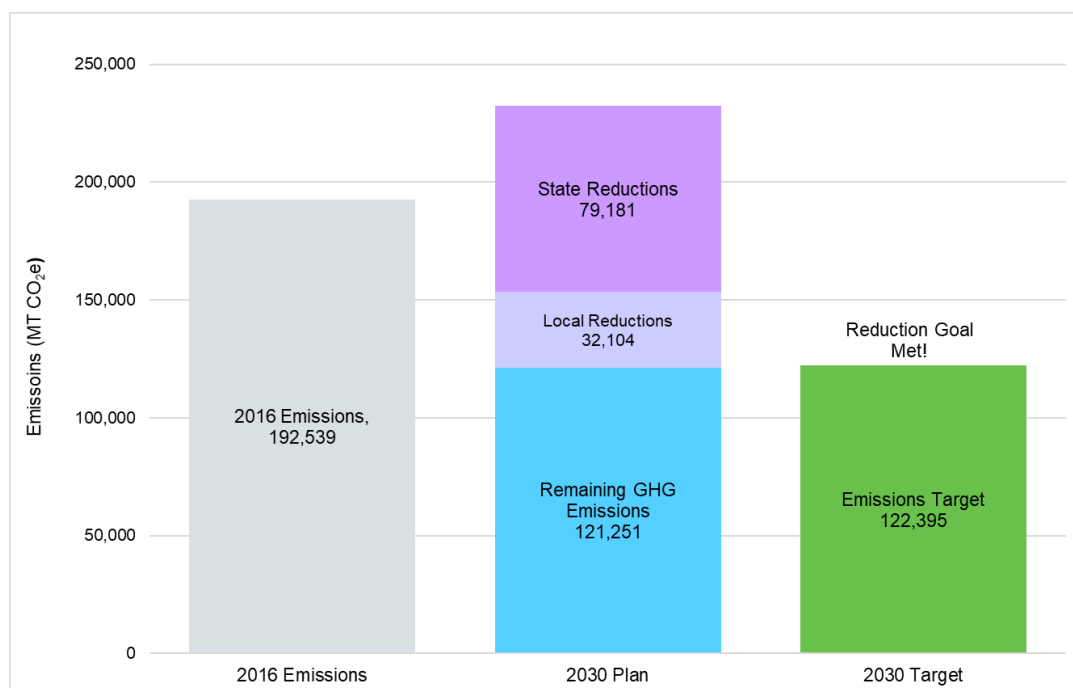


Figure 3-8. Emissions by Sector for Barstow

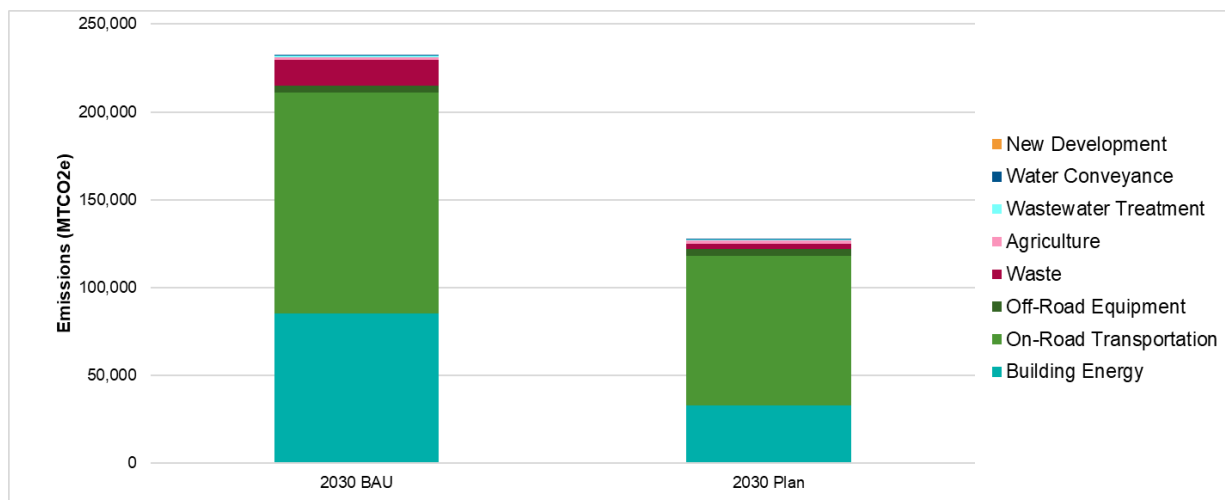


Table 3-8. Emission Reductions by Sector for Barstow

Sector	2016 Emissions (MTCO _{2e})	2030 BAU (MTCO _{2e})	2030 Reductions (MTCO _{2e})	2030 Emissions with Reduction Plan (MTCO _{2e})	Reduction (percent)
Building Energy	68,309	85,296	52,375	32,922	61.4%
On-Road Transportation	104,919	125,689	40,743	84,946	32.4%
Off-Road Equipment	2,814	4,034	159	3,875	3.9%
Waste	12,567	14,667	11,342	3,325	77.3%
Agriculture	2,826	1,591	0	1,591	0.0%
Wastewater Treatment	465	543	6	537	1.0%
Water Conveyance	638	715	149	566	20.8%
GHG Performance Standard*	-	-	6,512	-	-
Total	192,539	232,535	111,285	121,251	47.9%
Goal	-	-	-	122,395	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	1,145	-

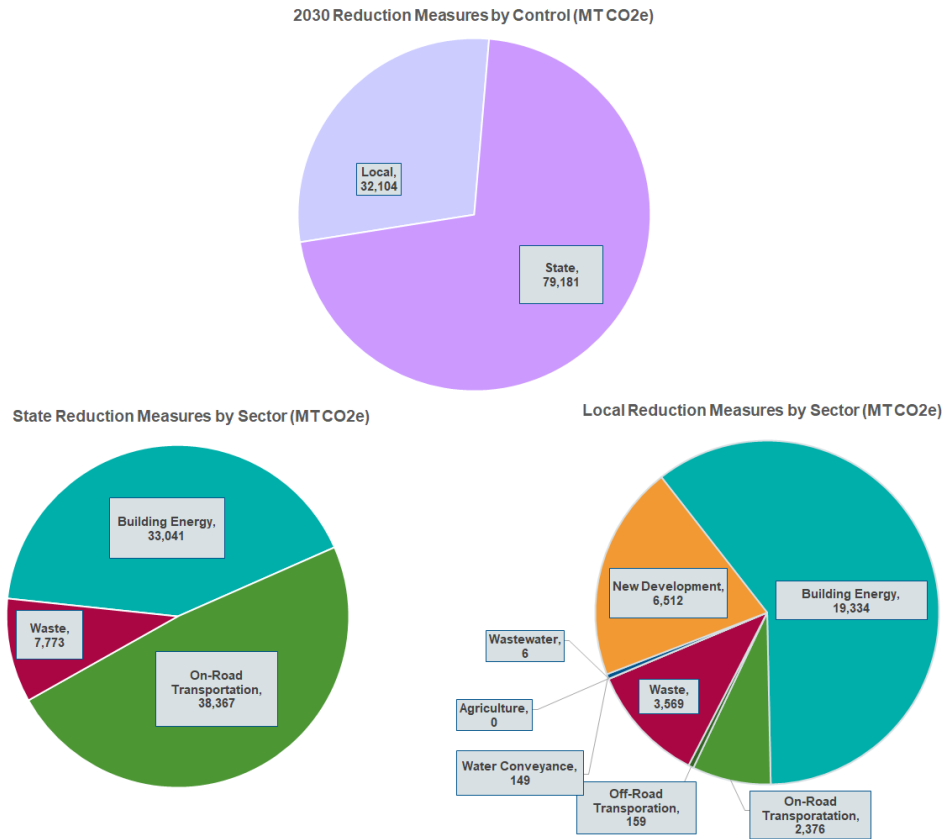
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City’s reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-9. Emission Reductions by Control and by Sector for Barstow



3.4.3 Reduction Measures

Table 3-9 presents each reduction measure evaluated for Barstow. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-9. GHG Reduction Measures and Estimated 2030 reductions for Barstow

Measure Number	Measure Description	Reductions (MTCO _{2e})
State Measures		
State-SB 100	SB 100	21,943
State-SB 350	SB 350	7,986
State-T24	Title 24 (Energy Efficiency Standards)	2,904
State-Solar Water Heater	Solar Water Heaters (Residential)	19
State-Increased CHP	Increased Combined Heat and Power (Commercial)	189
State-OnRoad	State Fuel Efficiency Measures	38,367
State-SB 1383	Methane Capture	7,773
Total State Reductions		79,181
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	2,467
Energy-2	Lighting Efficiency	0
Energy-3	All Electric Buildings	0
Energy-5	Renewable Energy – New Commercial/Industrial	0
Energy-6	Solar Energy for Warehouse Space	0
Energy-7	Solar Installation for Existing Housing	3,148
Energy-8	Solar Installation for Existing Commercial/Industrial	10,936
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	27
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	38
OnRoad-2	Encourage Use of Mass Transit	0
OnRoad-3	Transportation Demand Management and Synchronization	0
OnRoad-4	Expand Bike Routes	789
OnRoad-5	Community Fleet Electrification	1,549
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	37
OffRoad-2	Idling Ordinance	39
OffRoad-3	Electric Landscaping Equipment	82
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	3,569
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	0
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	6
<i>Water Conveyance</i>		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New	0

Water-2	Construction Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	2,755
Water-3	Water-Efficient Landscaping Practices	149
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (58% below projected BAU emissions for the project)	6,512
Total Local Reductions		32,104
Total Reductions		111,285

Notes:

Values may not sum due to rounding.

3.4.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Barstow’s GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Barstow 2015 General Plan unless otherwise noted (City of Barstow, 2015). In addition to state level measures, the City of Barstow selected GHG reduction measures across most sectors (Table 3-9). However, the City’s General Plan includes policies and programs that broadly support energy efficiency and sustainability across all sectors, even if the City did not select a specific GHG reduction measure within the sector as part of this Reduction Plan. Relevant General Plan policies for the specific reduction measures the City selected are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.4.4.1 Building Energy

Energy-1. Building Energy Efficiency

- **Policy 6.A.** Educate the development community with regard to green building principles and other strategies for conserving natural resources.
- **Strategy 2.B.2.** Enact local ordinances to promote clean technologies.
- **Strategy 6.A.1.** Informally encourage the use of green building standards and Leadership in Energy and Environmental Design (LEED) or similar programs in both private and public projects.
- **Strategy 6.A.2.** Educate the public about energy conservation techniques.
- **Strategy 6.A.3.** Reduce energy consumption in both existing and future developments by coordinating with the local energy provider to develop policies and procedures for energy conservation.
- **Strategy 6.A.4.** Encourage residents and businesses to utilize the incentives provided by local energy providers to retrofit their buildings and businesses for energy efficiency and conservation.

Energy-6. Solar Installation for Warehouses

- **Strategy 2.B.2.** Enact local ordinances to promote clean technologies.

Energy-7. Solar Installation for Existing Housing

- **Strategy 2.B.2.** Enact local ordinances to promote clean technologies.

Energy-8. Solar Installation for Existing Commercial/Industrial

- **Strategy 2.B.2.** Enact local ordinances to promote clean technologies.

Energy-10. Urban Tree Planting for Shading and Energy Savings

- **Policy 6.A.** Educate the development community with regard to green building principles and other strategies for conserving natural resources.

3.4.4.2 On-Road

On-Road-1. Alternative Fueled Transit Fleets

- **Policy 3.C.** Encourage carpooling and the use of alternative fuel vehicles by City residents and employees.
- **Strategy 3.C.2.** Secure the installation of electric vehicle charging stations at City Hall and in conjunction with the development of major commercial and industrial land uses.
- **Policy 2 B.** Public Facilities and Operations - Local government should take a leadership role in reducing the emissions from its own vehicle fleet as a model for the private sector.
- **Strategy 2.B.1.** Replace or convert City conventional fuel vehicles with clean fuel vehicles as feasible.

On-Road-4. Expand Bike Routes

- **Strategy 1.B.2.** Seek to acquire right-of-way from developers proposing residential uses along arterial roadways for pedestrian pathways and/or bicycle routes.
- **Policy 3.B.** Establish a network of bicycle routes as illustrated on Exhibit C-2.
- **Policy 3.D.** Implement incentives outlined in Municipal Code Chapter 19.49 – Design Guidelines such as relaxation of parking requirements, density bonuses and exceptions to building height and lot coverage requirements in exchange for on- or off-site provision of bicycle racks and/or storage facilities, bikeways, electric vehicle charging facilities, designated pedestrian pathways or other design features designed to foster alternatives to single- occupancy, internal combustion engine driven vehicle use.
- **Strategy 2.A.6.** Encourage developers to propose innovative measures to reduce air quality impacts, such as bike path and trail systems to facilitate non- vehicular transportation.
- **Strategy 7.A.5.** Interconnecting areas for pedestrian, bicycle and alternative transportation trails shall be provided throughout the City.

3.4.4.3 Off-Road

Off-Road-1. Electric-Powered Construction Equipment

- **Strategy 2.B.2.** Enact local ordinances to promote clean technologies.
- **Policy 2 A.** Work with the Mojave Desert Air Quality Management District, San Bernardino Association of Governments, San Bernardino County and neighboring jurisdictions to implement the federal ozone and PM10 & PM 2.5 non- attainment plans and meet federal state air quality standards and reduce overall emissions from mobile and stationary sources.

Off-Road-2. Idling Ordinance

- **Goal 6.** Provide programs and incentives to encourage residents, businesses, and developers to reduce consumption and efficiently use energy resources. City
- **Policy 2 A.** Work with the Mojave Desert Air Quality Management District, San Bernardino Association of Governments, San Bernardino County, and neighboring jurisdictions to implement the federal ozone and PM10 & PM 2.5 non- attainment plans and meet federal state air quality standards and reduce overall emissions from mobile and stationary sources.

Off-Road-3. Electric Landscaping Equipment

- **Strategy 2.B.2.** Enact local ordinances to promote clean technologies.
- **Policy 2 A.** Work with the Mojave Desert Air Quality Management District, San Bernardino Association of Governments, San Bernardino County, and neighboring jurisdictions to implement the federal ozone and PM10 & PM 2.5 non- attainment plans and meet federal state air quality standards and reduce overall emissions from mobile and stationary sources.

3.4.4.4 Solid Waste Management

Waste-2. Waste Diversion and Reduction

- **Strategy 6.A.5.** Continue the existing recycling program and utilization of the material recovery facility program while exploring additional methods of reducing waste.
- **Strategy 6.A.6.** Incentivize businesses that provide solutions for recycling and re-use of specific waste streams such as food waste and cooking oils.
- **Strategy 6.A.7.** Work with all interested parties, as appropriate, to implement a community-wide food scrap collection and composting program.

3.4.4.5 Wastewater Management

Wastewater-2. Equipment Upgrades at Wastewater Treatment Plants

- **Strategy 1.B.2.** Encourage upgrading of all sewer treatment plants (municipal or otherwise) located along the Mojave River drainage system to provide tertiary treatment to all waters entering the system.

3.4.4.6 Water Conveyance

Water-2. Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency

- **Policy 1 B.** Ensure protection of water quality and quantity for the community by working in cooperation with all water purveyors in the area to preserve, augment, capture and purify all waters in the Mojave River system.
- **Policy 1 D.** Coordinate efforts with other agencies to ensure that all property owners within Barstow's Sphere of Influence have adequate sewer and water facilities.
- **Policy 1 E.** Maintain a storm drainage system adequate to protect the lives and property of Barstow residents.

Water-3. Water-Efficient Landscaping Practices

- **Strategy 1.C.3.** Encourage the use of xeriscape landscaping and plantings throughout the City and as an integral part of all landscape related guidelines, policies, RC-26 procedures, plans and programs within the City's control. This shall include development reviews and encouragement to local businesses, especially nurseries.



3.5 City of Big Bear Lake

3.5.1 City Summary

The City of Big Bear Lake is one of Southern California’s premier resort destinations. Located 100 miles east of Los Angeles and 25 miles northeast of the City of San Bernardino and surrounded by the San Bernardino National Forest, Big Bear Lake offers both summer and winter resort activities. The primary industry in Big Bear Lake is tourism and the City’s regular population of 5,512 (SCAG, 2019) can swell by a factor of 10 or 20 on weekends. Big Bear’s demographic composition in 2018 was 67.0% Non-Hispanic White, 1.2% Non-Hispanic Black, 1.1% Non-Hispanic American Indian or Alaska Native, 1.1 % Non-Hispanic Asian, and 2.6% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 67.0% of the population. Big Bear Lake also has with generally older residents, with 22.1% of persons over age 65 (SCAG, 2018).

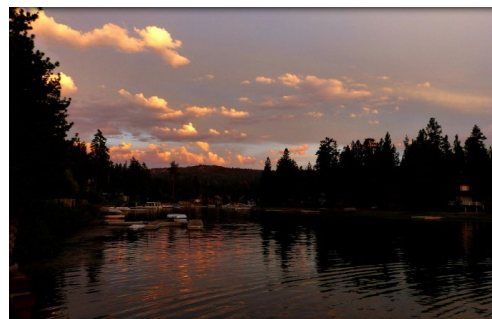
Big Bear Lake has higher per-capita emissions compared to other cities within the County. This can be attributed to the fact that Big Bear Lake is a year-round tourist destination for hiking, mountain biking, skiing, and other outdoor activities. An estimated 6,000,000 visitors travel to the City of Big Bear Lake annually, and the City’s population regularly surges to over 100,000 during many weekends. As such, accommodation facilities (e.g., hotels, resorts, and rented rooms and houses) and associated facilities (e.g., restaurants, services) are required, and lengthy travel to and from Big Bear Lake occurs which increase the overall energy consumption on a per-capita basis of the City’s actual residents.

Big Bear Lake covers approximately 6.5 square miles at an altitude of 6,700 feet. In addition to winter sports, fishing, boating, camping, and hiking, visitors come to the area for regularly scheduled annual events such as the Independence Day Fireworks, Antique Car Show and Oktoberfest. Because many of the residents in Big Bear Lake are temporary and because incoming vehicle trips originate far away, the pattern of Big Bear Lake’s GHG emissions is unique. Based on data collected by the City of Big Bear, approximately 18% of the residential population and 58% of the daily population are non-permanent residents. The City’s opportunities to reduce GHG emissions and the ability of state measures to reduce GHG emissions in the region are somewhat different than other Partnership jurisdictions as described below in the Emissions Reductions section.

Table 3-10 presents socioeconomic data for Big Bear Lake, including population, housing, and employment (SBCOG, 2019). Please note, Table 3-10 reflects socioeconomic data for permanent residents only.

Table 3-10. Socioeconomic Data for Big Bear Lake

Category	2016	2030	2045
Population	4,932	5,722	6,569
Households	2,095	2,442	2,813
Jobs	4,683	5,207	5,768



3.5.2 Emission Reductions

The City of Big Bear Lake selected a goal to reduce its community GHG emissions to a level that is 32% below its 2008 emissions level by 2030. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective per BB 32 through combination of state (~55%) and local (~45%) efforts. The Pavley vehicle standards, the state's low carbon fuel standard, the RPS, and other state measures will significantly reduce GHG emissions in Big Bear Lake's on-road and solid waste sectors in 2030. An additional reduction of 22,143 MTCO₂e will be achieved primarily through the following local measures, in order of reductions achieved: Solar Installation for Existing Commercial/Industrial Facilities (Energy-8); GHG Performance Standard for New Development (PS-1) and Waste Diversion and Reduction (Waste -2). Big Bear Lake's reduction plan has the greatest impacts on GHG emissions in the building energy, waste, and on-road transportation sectors.

As described above, approximately 50% of the City's emissions can be attributed to tourist activity, with almost 70% of the on-road sector emissions due to non-permanent residents. This City is still able to meet its GHG reduction target, primarily because the state's efforts to reduce GHG emissions in the on-road sector will have a large impact on Big Bear's on-road emissions, including the trips of visitors to the area. The City's local measures impact residents and tourists alike, allowing the Big Bear Lake to surpass its reduction target.

The bars in Figure 3-10 show Big Bear Lake's 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City's emissions reduction target (i.e., 32% below the 2008 emissions level). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total ("2030 Plan"), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~55%) of the total reductions needed to achieve the 2030 target.

Figure 3-11 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation and building energy emissions sectors.

Table 3-11 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2030 and demonstrates that Big Bear Lake exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the water conveyance, waste, and on-road transportation sectors.

Figure 3-12 presents emission reductions by sector and by control (i.e., state control versus local or City control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the solid waste management and on-road transportation sectors. Of the local measures, the majority of reductions are in the building energy sector.

Figure 3-10. Emissions Reduction Profile for Big Bear Lake

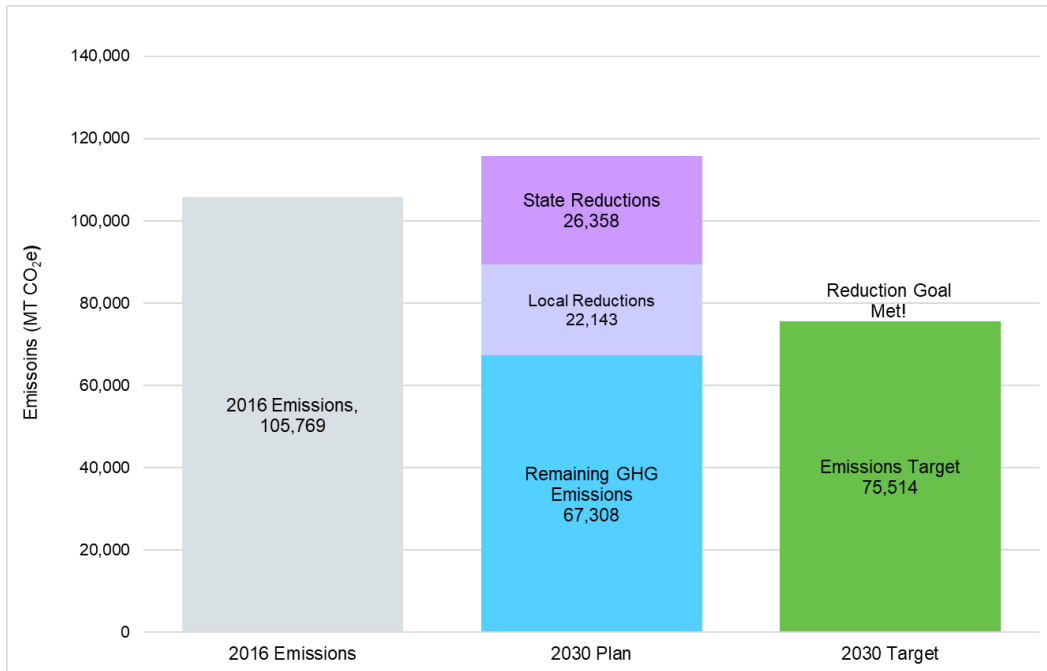


Figure 3-11. Emissions by Sector Big Bear Lake

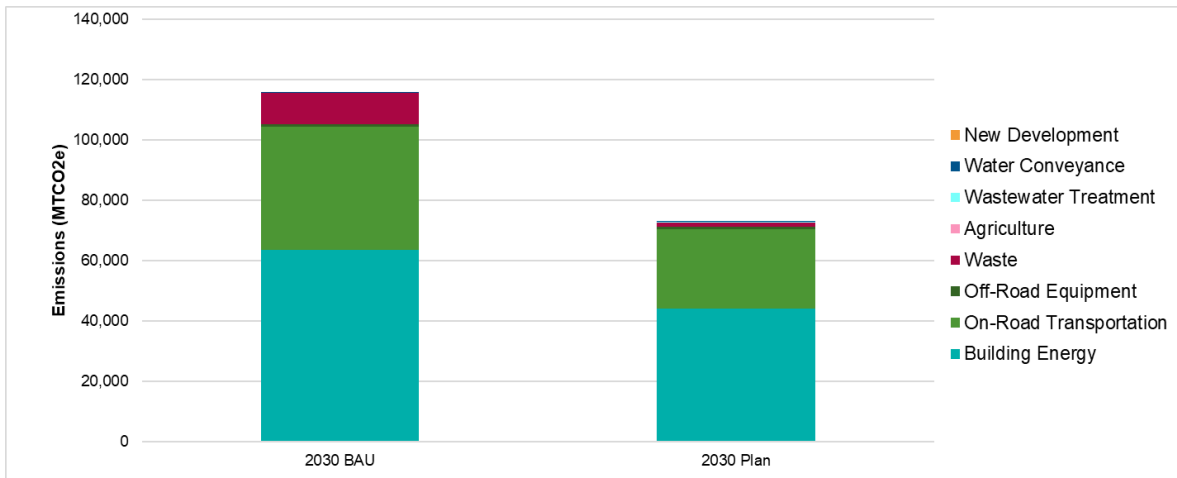


Table 3-11. Emission Reductions by Sector for Big Bear Lake

Sector	2016 Emissions (MTCO_{2e})	2030 BAU (MTCO_{2e})	2030 Reductions (MTCO_{2e})	2030 Emissions with Reduction Plan (MTCO_{2e})	Reduction (percent)
Building Energy	55,063	63,650	19,450	44,200	30.6%
On-Road Transportation	41,041	40,786	14,526	26,260	35.6%
Off-Road Equipment	631	897	0	897	0.0%
Waste	8,889	10,313	8,906	1,407	86.4%
Agriculture	0	0	0	0	NA
Wastewater Treatment	79	92	0	92	0.0%
Water Conveyance	64	71	35	37	48.4%
GHG Performance Standard*	-	-	5,584	-	-
Total	105,769	115,809	48,501	67,308	41.9%
Goal	-	-	-	75,514	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	8,205	-

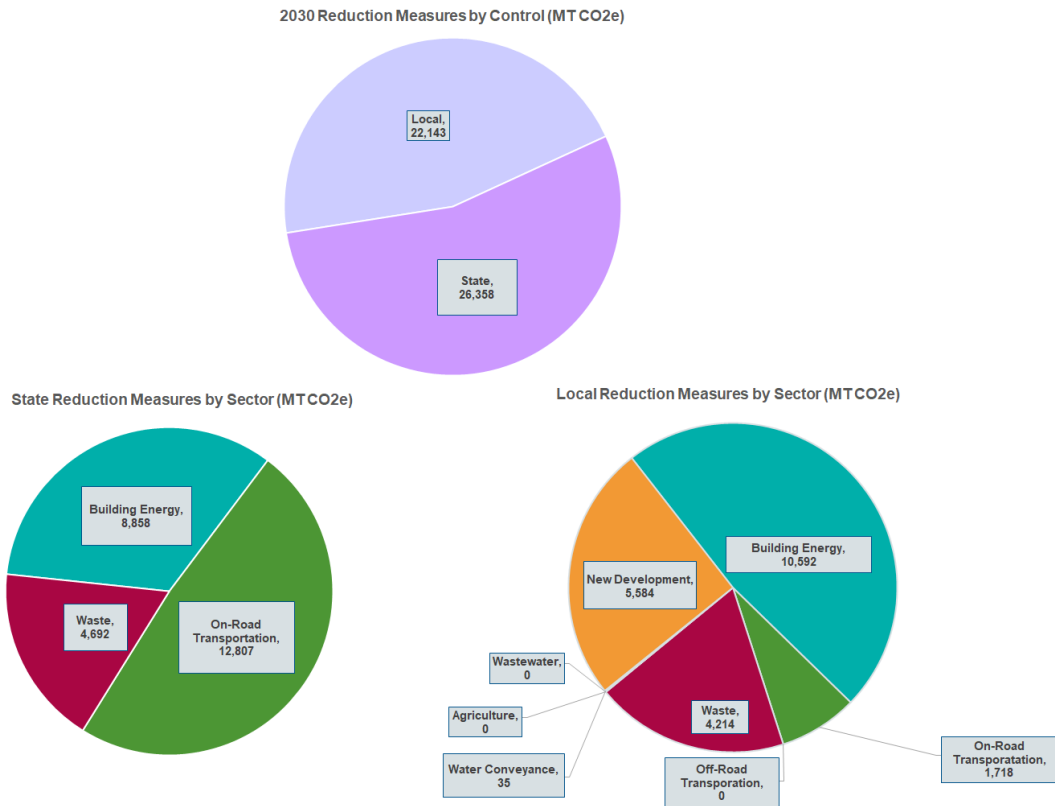
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City's reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-12. Emission Reductions by Control and by Sector for Big Bear Lake



3.5.3 Reduction Measures

Table 3-12 presents each reduction measure evaluated for Big Bear Lake. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-12. GHG Reduction Measures and Estimated 2030 reductions for Big Bear Lake

Measure Number	Measure Description	Reductions (MTCO _{2e})
State Measures		
State-SB 100	SB 100	6,899
State-SB 350	SB 350	1,278
State-T24	Title 24 (Energy Efficiency Standards)	676
State-Solar Water Heater	Solar Water Heaters (Residential)	4
State-Increased CHP	Increased Combined Heat and Power (Commercial)	0
State-OnRoad	State Fuel Efficiency Measures	12,807
State-SB 1383	Methane Capture	4,692
Total State Reductions		26,358
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	1,870
Energy-2	Lighting Efficiency	192
Energy-3	All Electric Buildings	0
Energy-5	Renewable Energy – New Commercial/Industrial	83
Energy-6	Solar Energy for Warehouse Space	0
Energy-7	Solar Installation for Existing Housing	740
Energy-8	Solar Installation for Existing Commercial/Industrial	7,213
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	0
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	0
OnRoad-2	Encourage Use of Mass Transit	1,134
OnRoad-3	Transportation Demand Management and Synchronization	280
OnRoad-4	Expand Bike Routes	305
OnRoad-5	Community Fleet Electrification	0
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	0
OffRoad-2	Idling Ordinance	0
OffRoad-3	Electric Landscaping Equipment	0
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	4,214
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	0
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	0
<i>Water Conveyance</i>		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New	98

	Construction	
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	395
Water-3	Water-Efficient Landscaping Practices	35
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	5,584
Total Local Reductions		22,143
Total Reductions		48,501

Notes:

Values may not sum due to rounding.

3.5.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Big Bear Lake's GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Big Bear Lake 1999 General Plan unless otherwise noted (City of Big Bear Lake, 1999). In addition to state level measures, the City of Big Bear Lake selected GHG reduction measures in the wastewater sector and a performance standard (Table 3-12). However, the City's General Plan includes policies and programs that broadly support energy efficiency and sustainability across all sectors, even if the City did not select a specific GHG reduction measure within the sector as part of this Reduction Plan. Relevant General Plan policies for the specific reduction measures the City selected are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.5.4.1 Building Energy

Energy-1. Building Energy Efficiency

- **Policy ER 7.1:** Promote energy conservation in all areas of community development, including transportation, development planning, public and private sector office construction, and operation, as well as in the full range of residential, commercial, and industrial projects.
- **Program H4.2.2:** As funds permit, provide a grant to a nonprofit community organization to assist in funding an outreach worker to inform residents of Big Bear Lake about available housing programs, such as the first-time homebuyer programs, rehabilitation loan programs, weatherization program, senior loan program and the Section 8 tenant assistance program.
- **Program PS 4.2.3:** Support local, State and Federal programs and economic incentives for conservation and alternative energy programs, and consider establishing City incentives.

Energy-2. Lighting Efficiency

- **Policy ER 7.1:** Promote energy conservation in all areas of community development, including transportation, development planning, public and private sector office construction and operation, as well as in the full range of residential, commercial and industrial projects.
- **Program PS 4.2.3:** Support local, State and Federal programs and economic incentives for conservation and alternative energy programs, and consider establishing City incentives.

Energy-5. Renewable Energy – New Commercial/Industrial

- **Policy ER 6.4:** The City shall encourage the use of clean alternative energy sources for transportation, heating and cooling whenever practical.
- **Program ER 7.1.1:** Encourage the use of passive solar energy for natural heating through design, construction, and landscaping techniques.

Energy-7. Solar Installation – Existing Housing

- **Policy ER 6.4:** The City shall encourage the use of clean alternative energy sources for transportation, heating and cooling whenever practical.
- **Program ER 7.1.1:** Encourage the use of passive solar energy for natural heating through design, construction, and landscaping techniques.

Energy-8. Renewable Energy – Existing Commercial/Industrial

- **Policy ER 6.4:** The City shall encourage the use of clean alternative energy sources for transportation, heating and cooling whenever practical.
- **Program ER 7.1.1:** Encourage the use of passive solar energy for natural heating through design, construction, and landscaping techniques.

3.5.4.2 On-Road

On-Road-2. Encourage Use of Mass Transit

- **Policy C1.9:** Participate in multi-jurisdictional efforts to upgrade and expand the regional street and highway network, and to plan for feasible alternate modes of transportation connecting the Big Bear Valley with other areas.
- **Policy C2.1:** Continue to participate in provision of public transit services for City and valley residents, and expansion of transit service to meet growth when warranted and feasible.

OnRoad-3. Transportation Demand Management and Signal Synchronization

- **Policy ER 7.1:** Promote energy conservation in all areas of community development, including transportation, development planning, public and private sector office construction and operation, as well as in the full range of residential, commercial and industrial projects.

OnRoad-4. Expand Bike Routes

- **Policy C3.1:** Enhance accessibility and convenience for bicyclists and pedestrians, and plan for provision of scenic recreational trails in the City where practical.
- **Program C3.1.2:** Require bicycle parking in commercial developments where appropriate, located in a convenient area of the site which is visible from adjacent storefronts for security purposes.
- **Program C3.1.4:** In review of new development proposals, evaluate the accessibility of proposed facilities for pedestrians and bicyclists, and ensure that safe convenient access links are provided on site as well as connections from the site to public sidewalks and adjacent developments, where appropriate.

3.5.4.3 Off-Road

OffRoad-2. Idling Ordinance

- **Policy ER 7.1:** Promote energy conservation in all areas of community development, including transportation, development planning, public and private sector office construction and operation, as well as in the full range of residential, commercial and industrial projects.

3.5.4.4 Solid Waste Management

Waste-2. Waste Diversion and Reduction

- **Program PS 6.1.2:** In cooperation with San Bernardino County and other affected agencies, assist in planning for a suitable site within the Valley for legal disposal, stockpiling and/ or recycling of paving materials and construction debris.

3.5.4.5 Wastewater Treatment

Wastewater-1. Equipment Upgrades and Wastewater Treatment Plants

- **Policy ER 7.1:** Promote energy conservation in all areas of community development, including transportation, development planning, public and private sector office construction and operation, as well as in the full range of residential, commercial and industrial projects.
- **Program PS 3.1.2:** Cooperate with Big Bear Area Regional Wastewater Agency in assuring that new development pays its fair share of future development, expansion, and operating costs for wastewater treatment.
- **Program P4.1:** Provide adequate water supply and storage. Promote such efforts as wastewater re-use, water conservation measures, and acquisition of new water sources.

3.5.4.6 Water Conveyance

Water-1. Require Tier 1 Voluntary CALGreen Standards for New Construction

- **Program ER 4.2.1:** The City shall provide information on the use of low-flush toilets, water conserving appliances and low-flow showerheads and faucets for existing development, and shall require the application of water conserving technologies in conformance with applicable state laws, for new development.
- **Program PS 2.1.3:** Encourage conservation of ground water resources.

Water-2. Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency

- **Program ER 4.2.1:** The City shall provide information on the use of low-flush toilets, water conserving appliances and low-flow showerheads and faucets for existing development, and shall require the application of water conserving technologies in conformance with applicable state laws, for new development.
- **Program PS 2.1.3:** Encourage conservation of ground water resources.

Water-3. Water-Efficient Landscaping Practices

- **Policy ER 4.1:** Encourage the use of low water-consuming, drought-tolerant landscape plantings as a means of reducing water demand, and strengthen education/public relations programs to inform residents of the full range of water-saving techniques available.

- **Program PS 2.1.3:** Encourage conservation of ground water resources.

3.6 City of Chino



3.6.1 City Summary

The City of Chino is one of the westernmost jurisdictions in the San Bernardino Valley and occupies a strategic location at the intersection of Riverside, San Bernardino, Orange, and Los Angeles Counties. While the City’s history is rooted in the agricultural and dairy industries, the development of the Chino Valley Freeway and Pomona Freeway helped shift the focus to new land uses such as residential housing, commercial centers, and parks. Also, Chino’s proximity to the Ontario International Airport, and easy access to major transit corridors used for the transportation of goods make it a favorable location for warehouse and distribution centers. Chino’s GHG Inventory reflects these land uses. Other large regional uses such as the Chino Airport, Ayala Regional Park, and the California Institution for Men (CIM) are also located in the City.

Chino spans roughly 30 square miles and the population in 2016 was 81,294. Chino’s demographic composition in 2018 was 24.8 % Non-Hispanic White, 5.7% Non-Hispanic Black, 0.2 % Non-Hispanic American Indian or Alaska Native, 12.2 % Non-Hispanic Asian, 0.2% and 4.7 % from other all other non-Hispanic races. Persons of Hispanic or Latino origin were 52.4%. Chino has a high home ownership rate (63.3% compared to 52.4% average for the SCAG region) and also has a higher-than-average median household income (\$75,530 versus \$64,989 for the SCAG region) (SCAG, 2018). Chino’s population is expected to grow to 97,940 by 2030 (a 20% increase over 2016) and GHG emissions are expected to grow to 785,555 MTCO_{2e} (excluding stationary sources), an increase of 7%. The climate in Chino is typically sunny and warm, with more than 280 days of sun and only 17 inches of rain per year on average.

Table 3-13 presents socioeconomic data for Chino, including population, housing, and employment (SBCOG, 2019).

Table 3-13. Socioeconomic Data for Chino

Category	2016	2030	2045
Population	81,294	97,940	115,773
Households	23,227	27,983	33,078
Jobs	50,408	53,796	57,425



The City of Chino adopted a first Citywide Climate Action Plan in November 2013 (City of Chino, 2013). The 2013 CAP identified strategies to reduce the City’s GHG and enhance sustainability. The Climate Action Plan included an GHG emissions inventory for the year 2008, and target for reducing GHG emissions 15% below 2008 levels by 2020. The City of Chino adopted a Climate Action Plan Update 2020 – 2030 in November 2020 which includes a 2016 inventory, forecasts for 2020 and 2030, a target of reducing its emissions to a level 46% below 2008 levels by 2030, and identified reduction measures to achieve the goal. Some primary benefits identified for implementation of the

City's CAP include improving community health and wellness, reducing carbon emissions, protecting the natural environment, and increasing sustainability of city operations.

3.6.2 Emission Reductions

The City of Chino selected a goal to reduce its community GHG emissions to a level that is 46% below its 2008 emissions level by 2030. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective through a combination of state (~90%) and local (~10%) efforts. The Pavley vehicle standards, the state's low carbon fuel standard, the RPS, and other state measures will significantly reduce GHG emissions in Chino's on-road and building energy sectors in 2030. An additional reduction of 34,157 MTCO₂e will be achieved primarily through the following local measures, in order of reductions achieved: Waste Diversion and Reduction (Waste-2); Solar Installation for Existing Housing (Energy-7); Building Energy Efficiency (Energy-1). Chino's reduction plan has the greatest impacts on GHG emissions in the waste, building energy, and on-road transportation emissions sectors.

The bars in Figure 3-13 show Chino's 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City's emissions reduction target (i.e., 55% below the 2008 emissions level). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total ("2030 Plan"), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~90%) of the total reductions needed to achieve the 2030 target.

Figure 3-14 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation and building energy emissions sectors.

Table 3-14 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2030 and demonstrates that Chino exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the waste, building energy, and on-road transportation emissions sectors.

Figure 3-15 presents emission reductions by sector and by control (i.e., state control versus local or City control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors.

Figure 3-13. Emissions Reduction Profile for Chino

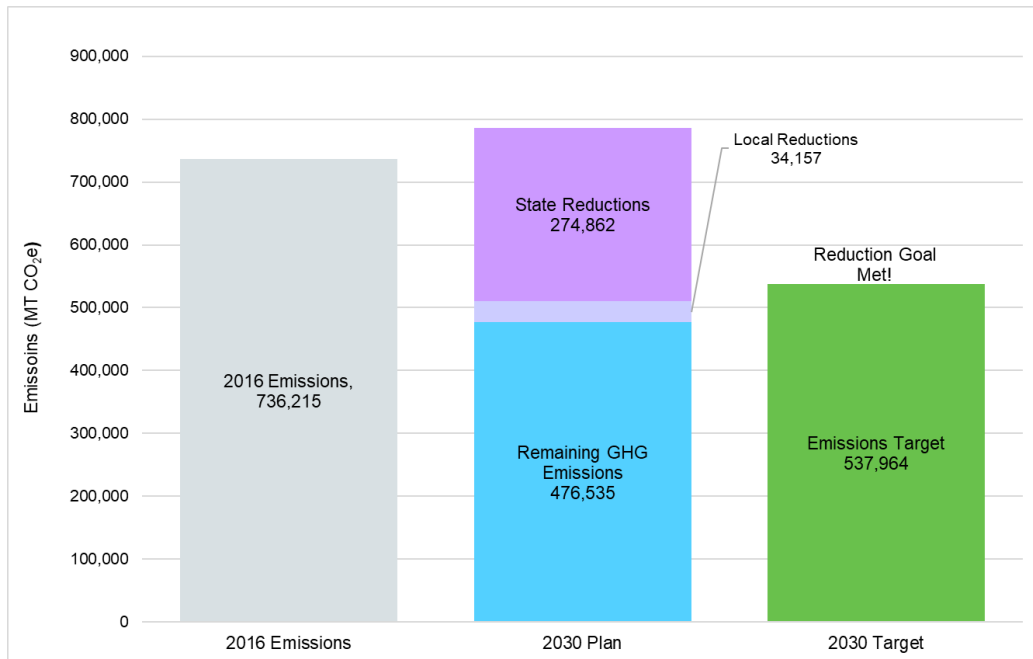


Figure 3-14. Emissions by Sector for Chino

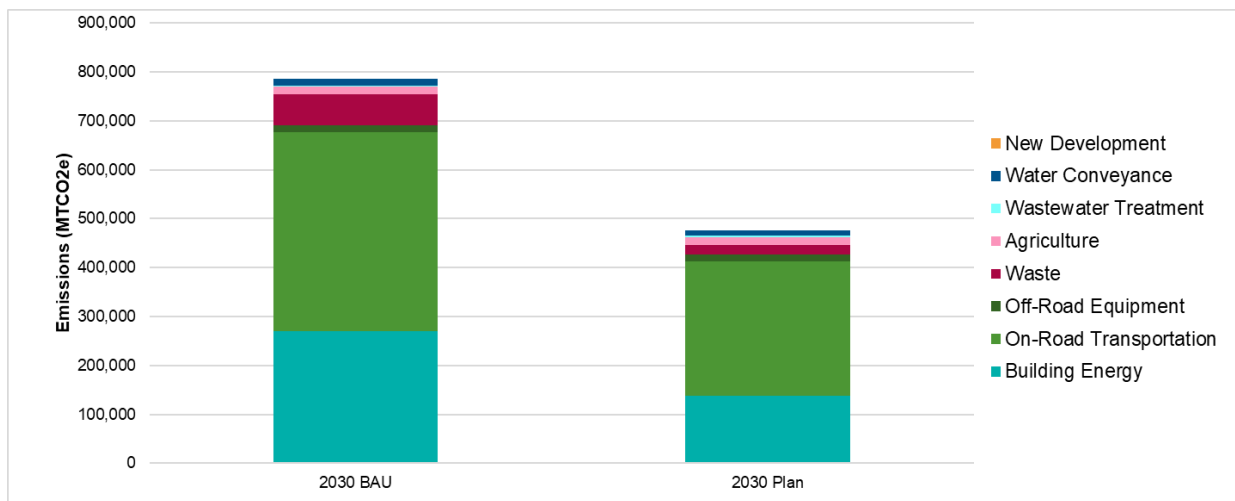


Table 3-14. Emission Reductions by Sector for Chino

Sector	2016 Emissions (MTCO₂e)	2030 BAU (MTCO₂e)	2030 Reductions (MTCO₂e)	2030 Emissions with Reduction Plan (MTCO₂e)	Reduction (percent)
Building Energy	243,394	269,596	131,587	138,009	48.8%
On-Road Transportation	390,212	407,742	133,881	273,861	32.8%
Off-Road Equipment	10,210	14,314	0	14,314	0.0%
Waste	52,509	63,261	42,558	20,703	67.3%
Agriculture	26,295	14,804	0	14,804	0.0%
Wastewater Treatment	2,547	3,068	0	3,068	0.0%
Water Conveyance	11,049	12,770	994	11,776	7.8%
GHG Performance Standard*	-	-	-	-	-
Total	736,215	785,555	309,020	476,535	39.3%
Goal	-	-	-	537,964	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	61,429	-

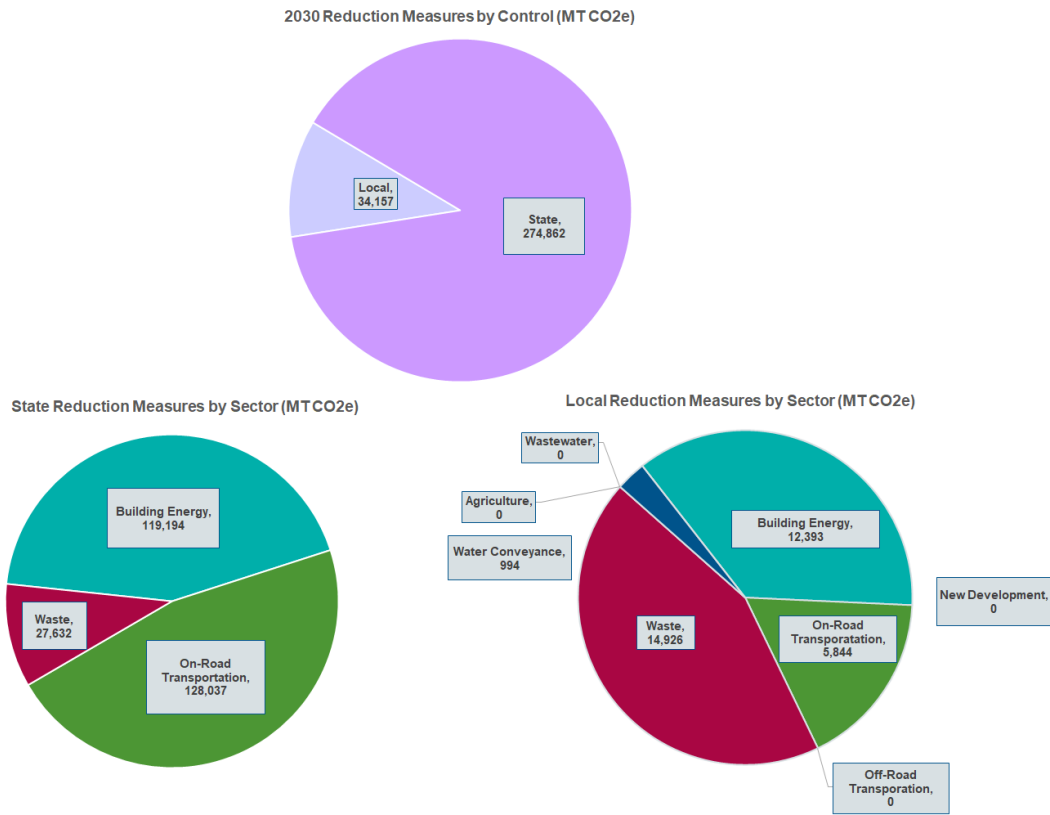
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City's reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-15. Emission Reductions by Control and by Sector for Chino



3.6.3 Reduction Measures

Table 3-15 presents each reduction measure evaluated for Chino. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-15. GHG Reduction Measures and Estimated 2030 Reductions for Chino

Measure Number	Measure Description	Reductions (MTCO_{2e})
State Measures		
State-SB 100	SB 100	81,333
State-SB 350	SB 350	33,018
State-T24	Title 24 (Energy Efficiency Standards)	4,629
State-Solar Water Heater	Solar Water Heaters (Residential)	52
State-Increased CHP	Increased Combined Heat and Power (Commercial)	161
State-OnRoad	State Fuel Efficiency Measures	128,037
State-SB 1383	Methane Capture	27,632
Total State Reductions		274,862
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	5,154
Energy-2	Lighting Efficiency	0
Energy-3	All Electric Buildings	0
Energy-5	Renewable Energy – New Commercial/Industrial	0
Energy-6	Solar Energy for Warehouse Space	0
Energy-7	Solar Installation for Existing Housing	7,239
Energy-8	Solar Installation for Existing Commercial/Industrial	0
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	0
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	0
OnRoad-2	Encourage Use of Mass Transit	0
OnRoad-3	Transportation Demand Management and Synchronization	2,797
OnRoad-4	Expand Bike Routes	3,047
OnRoad-5	Community Fleet Electrification	0
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	0
OffRoad-2	Idling Ordinance	0
OffRoad-3	Electric Landscaping Equipment	0
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	14,926
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	0
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	0
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	0
<i>Water Conveyance</i>		

Water-1	Require Tier 1 Voluntary CALGreen Standards for New Construction	0
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	0
Water-3	Water-Efficient Landscaping Practices	994
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	0
Total Local Reductions		34,157
Total Reductions		309,020

Notes:

Values may not sum due to rounding.

3.6.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Chino's GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Chino 2010 General Plan unless otherwise noted (City of Chino, 2010). In addition to state level measures, the City of Chino selected GHG reduction measures in the building energy, transportation, and waste sectors (Table 3-15). The City's General Plan includes policies and programs that broadly support energy efficiency and sustainability across all sectors, even if the City did not select a specific GHG reduction measure within the sector as part of this Reduction Plan. Relevant General Plan policies for the specific reduction measures the City selected are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.6.4.1 Building Energy

- **OSC-4.1—P4:** The City shall require that deciduous trees be planted on the south- and west-facing sides of new buildings to reduce energy usage.
- **OSC-4.3—P8:** Parking lots shall be landscaped, including shade trees, to create an attractive pedestrian environment and reduce the impact of heat islands.
- **OSC-6.1—P2:** The City shall actively inspect non-residential buildings and enforce State requirements for cool roofs on non-residential re-roofing projects.
- **OSC-4.1—P2:** The City shall encourage developers to offer buyers of new homes the option of having solar panels incorporated.
- **OSC-4.1—P3:** The City shall encourage solar-oriented design, green roofs, and passive solar heating and cooling in all new residential, commercial, and civic development.

Energy-1. Building Energy Efficiency

- **OSC-4.2—P2:** The City shall collaborate with local energy suppliers and distributors to establish energy conservation programs, Energy Star® appliance change-out programs, rebates, vouchers, and other incentives to install energy-efficient technology and products.

Energy-7. Solar Installation for Existing Housing

- **OSC-4.1—P11:** The City shall protect solar access by limiting the blockage of buildings from sunlight by other buildings and structures.

Energy-8. Solar Installation for Existing Commercial/Industrial

- **OSC-4.1—P11:** The City shall protect solar access by limiting the blockage of buildings from sunlight by other buildings and structures.

3.6.4.2 On-Road

- **TRA-11.1:** Increase the pedestrian share of travel within Chino.
- **AQ-1.1-P1:** The City shall promote land use patterns that reduce the number and length of motor vehicle trips.
- **LU-5.2:** Review fee structures to provide financial and administrative incentives to support desired land uses and development patterns, and alternative modes of transportation.

On-Road-3. Transportation Demand Management and Signal Synchronization

- **Goal TRA-4:** Maximize the efficiency of the existing transportation network throughout Chino with the use of Intelligent Transportation Systems (ITS) strategies.
- **LU-5.2:** Review fee structures to provide financial and administrative incentives to support desired land uses and development patterns, and alternative modes of transportation.
- **TRA-14.1 P1:** The City shall work with transit agencies to prioritize funding for expanded transit service and transit service with lower emissions.
- **TRA-14.2:** Promote the use of low- and zero-emission vehicles, and alternative fuels, and other measures that directly reduce emissions from motor vehicles.

On-Road-4. Expand Bike Routes

- **LU-1.2:** Create and maintain neighborhoods that facilitate walking and bicycling in lieu of car travel.
- **CC-4.2:** Connect established and new areas of the City with one another.
- **TRA-10.2:** Increase the connectivity, safety, and convenience of the bicycle network.

3.6.4.3 Solid Waste Management

Waste-2. Waste Diversion and Reduction

- **PFS-12.1 P1:** The City shall require mandatory trash, recycling, and green waste pick-up as a means to ensure a safe, sanitary environment.
- **PFS-12.1 P3:** The City shall strive to meet or exceed the State's goal of diverting 50% of all solid waste from landfills.
- **PFS-12.1 P4:** The City shall promote the redesign, reuse, composting, and shared producer responsibility of discarded material.
- **PFS-12.1 P5:** The City shall encourage local businesses to expand their recycling and composting efforts and to reduce packaging of products manufactured in the City.

3.6.4.4 Wastewater Treatment

- **OSC-4.2 P2:** The City shall collaborate with local energy suppliers and distributors to establish energy conservation programs, Energy Star® appliance change-out programs, rebates, vouchers, and other incentives to install energy-efficient technology and products.

3.6.4.5 Water Conveyance

- **PFS-7.1 P2:** The City shall establish water demand reduction standards for new development and redevelopment to reduce per capita and total demand for water.
- **PFS-7.1 P4:** The City shall review proposed new development and significant redevelopment to determine whether all feasible water conservation measures are being implemented.
- **PFS-7.1 P5:** The City shall implement cost-effective water conservation programs that improve water-use efficiency, reduce water demand, and preserve the City's supplies.

Water-3. Water-Efficient Landscaping Practices

- **PFS-7.1 P3:** The City shall review proposed irrigation systems to ensure they provide required water efficiency.

3.7 City of Chino Hills



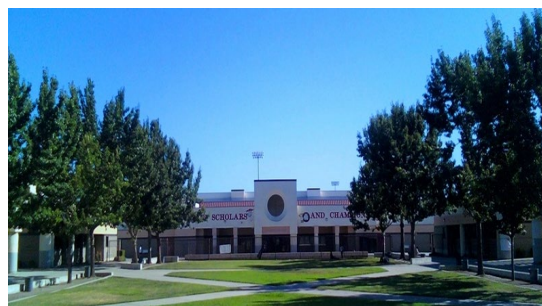
3.7.1 City Summary

The City of Chino Hills is located in an area of rolling hills just southeast of the City of Chino. Chino Hills is located in the far southwest corner of San Bernardino County, in proximity to major freeways connecting the region. However, unlike nearby Chino or Ontario, Chino Hills is predominantly a hillside community with a strong residential character. Commercial development is located along the SR-71 corridor and major arterials. There is no heavy industry in the City. Chino Hills covers an area of approximately 45 square miles, much of which is devoted to open space, low density residential land uses, and the Chino Hills State Park. Outdoor activities, including horseback riding, are popular due to the community’s equestrian heritage and numerous parks and open space areas. The City’s GHG inventory reflects these largely residential uses and open spaces.

As of the 2016 the population of Chino Hills was 79,737 (SCAG, 2019). Population is expected to grow around 7% by 2030 from 2016 in Chino Hills. Chino Hills’ demographic composition in 2018 was 30.2% Non-Hispanic White, 4.6% Non-Hispanic Black, 0.2% Non-Hispanic American Indian or Alaska Native, 33.3% Non-Hispanic Asian, and 2.9% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 28.8%. Chino Hills has a higher Asian population (33%) than the regional average (13%) and also has a high home ownership rate (76.9% versus 52.4% for the SCAG region) (SCAG, 2018). Table 3-16 presents socioeconomic data for Chino Hills, including population, housing, and employment (SBCOG, 2019).

Table 3-16. Socioeconomic Data for Chino Hills

Category	2016	2030	2045
Population	79,737	85,623	92,822
Households	23,838	25,868	28,043
Jobs	16,424	17,156	17,940



3.7.2 Emission Reductions

The City of Chino Hills selected a goal to reduce its community GHG emissions to a level that is 35.1% below its 2008 emissions level by 2030, which corresponds to the attainment of the California Air Resource Board’s per capita GHG reduction target for 2030.⁵ The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective

⁵ The California Air Resources Board, in the 2017 Scoping Plan, recommended that local jurisdictions reduce GHG emissions to support the state’s overall reduction target under SB 32. CARB suggested that local jurisdictions should strive to reduce emissions to a level of 6.0 MTCO_{2e} per capita by 2030. For Chino Hills, a target of 6.0 MTCO_{2e} per capita for 2030 corresponds to a mass emissions level of approximately 308,290 MTCO_{2e}, which is 35.1% below 2008 emission levels of 475,023 MT CO_{2e}.

through state (100%) efforts. The Pavley vehicle standards, the state’s low carbon fuel standard, the RPS, and other state measures will significantly reduce GHG emissions in Chino Hills’ on-road and building energy sectors in 2030. Chino Hills’ reduction plan has the greatest impacts on GHG emissions in the building energy, on-road transportation, and waste sectors.

The bars in Figure 3-16 show Chino Hills’ 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City’s emissions reduction target (i.e., 35.1% below its 2008 emissions level). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total (“2030 Plan”), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for all of the total reductions needed to achieve the 2030 target.

Figure 3-17 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or “Reduction Plan” scenarios. The largest emissions contributions are in the on-road transportation and building energy emissions sectors.

Table 3-17 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction (“Reduction Plan”) results by sector. It shows the percent reduction in each sector’s emissions in 2030 and demonstrates that Chino Hills exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include building energy, on-road transportation, and waste sectors.

Figure 3-18 presents emission reductions by sector and by control (i.e., state control versus local or City control). Of the measures, the majority of reductions are in the building energy and on-road transportation sectors.

Figure 3-16. Emissions Reduction Profile for Chino Hills

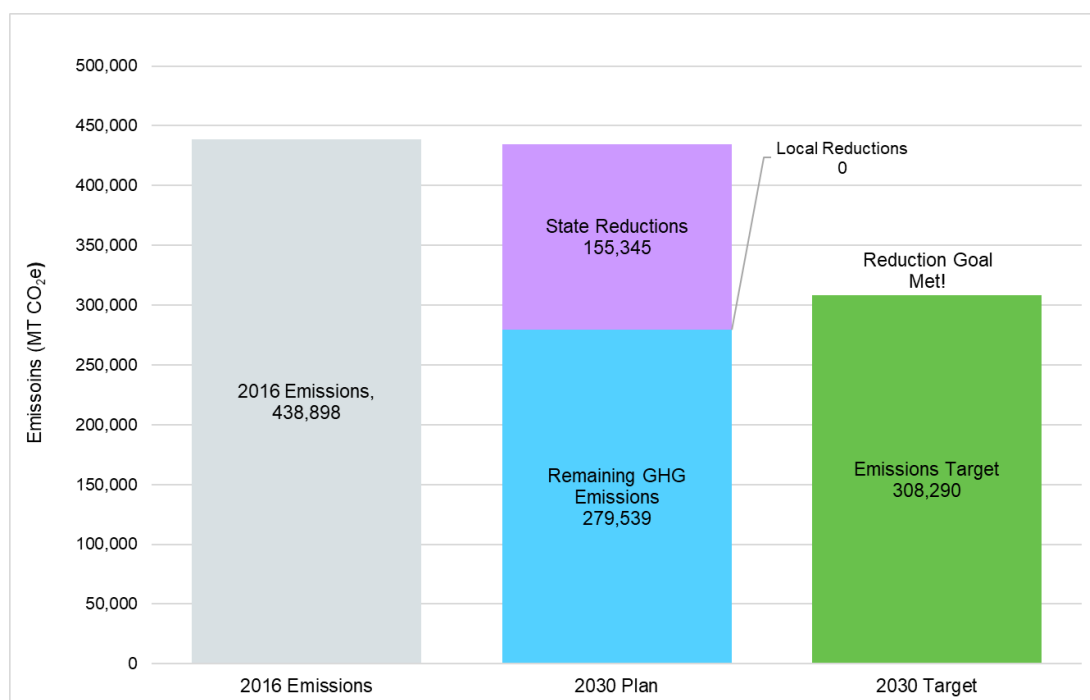


Figure 3-17. Emissions by Sector for Chino Hills

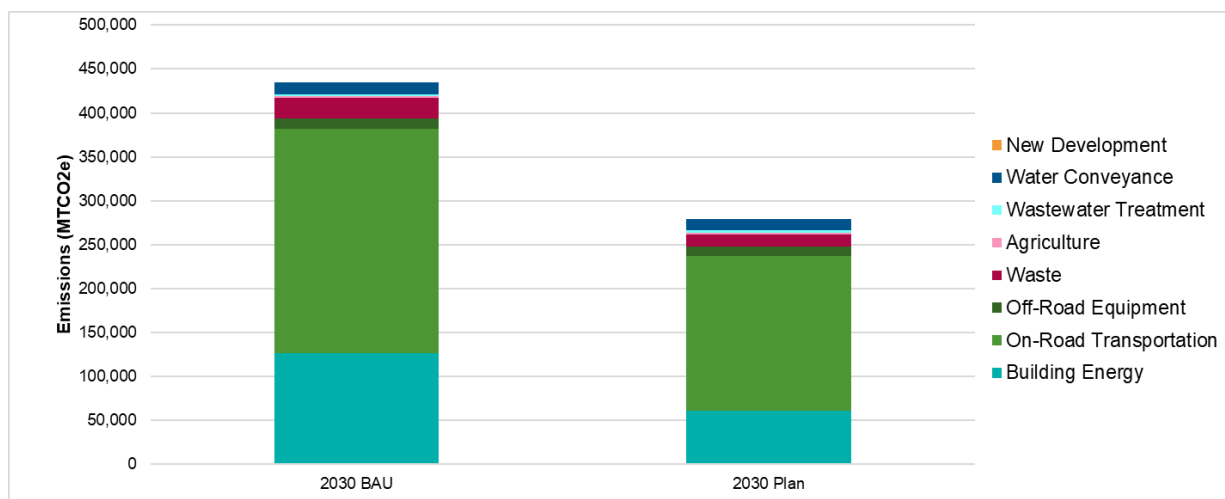


Table 3-17. Emission Reductions by Sector for Chino Hills

Sector	2016 Emissions (MTCO _{2e})	2030 BAU (MTCO _{2e})	2030 Reductions (MTCO _{2e})	2030 Emissions with Reduction Plan (MTCO _{2e})	Reduction (percent)
Building Energy	118,310	126,448	65,059	61,388	51.5%
On-Road Transportation	271,116	255,720	80,300	175,420	31.4%
Off-Road Equipment	8,651	11,098	0	11,098	0.0%
Waste	22,057	23,686	9,986	13,700	42.2%
Agriculture	3,222	1,814	0	1,814	0.0%
Wastewater Treatment	2,498	2,682	0	2,682	0.0%
Water Conveyance	13,043	13,437	0	13,437	0.0%
GHG Performance Standard*	-	-	-	-	-
Total	438,898	434,884	155,345	279,539	35.7%
Goal	-	-	-	308,290	-
Goal Met?	-	-	-	Yes	-
Reductions Beyond Goal	-	-	-	28,751	-

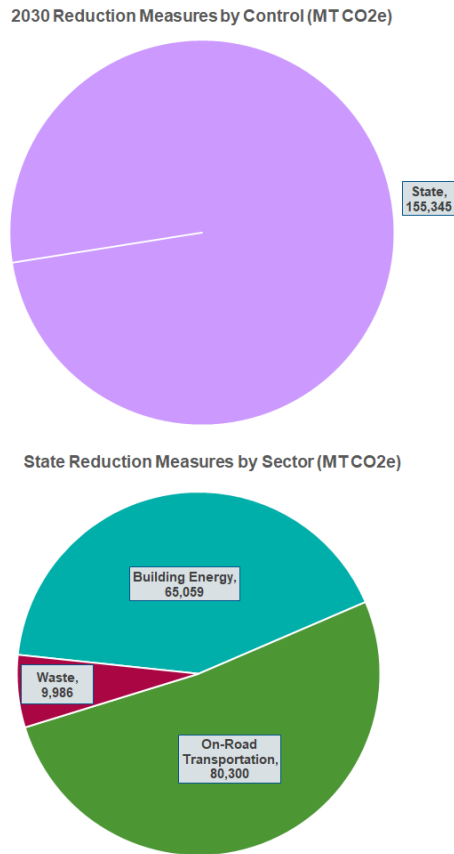
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City’s reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-18. Emission Reductions by Control and by Sector for Chino Hills



3.7.3 Reduction Measures

Table 3-18 presents each reduction measure evaluated for Chino Hills. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-18. GHG Reduction Measures and Estimated 2030 Reductions for Chino Hills

Measure Number	Measure Description	Reductions (MTCO_{2e})
State Measures		
State-SB 100	SB 100	29,834
State-SB 350	SB 350	33,640
State-T24	Title 24 (Energy Efficiency Standards)	1,516
State-Solar Water Heater	Solar Water Heaters (Residential)	52
State-Increased CHP	Increased Combined Heat and Power (Commercial)	17
State-OnRoad	State Fuel Efficiency Measures	80,300
State-SB 1383	Methane Capture	9,986
Total State Reductions		155,345
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	0
Energy-2	Lighting Efficiency	0
Energy-3	All Electric Buildings	0
Energy-5	Renewable Energy – New Commercial/Industrial	0
Energy-6	Solar Energy for Warehouse Space	0
Energy-7	Solar Installation for Existing Housing	0
Energy-8	Solar Installation for Existing Commercial/Industrial	0
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	0
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	0
OnRoad-2	Encourage Use of Mass Transit	0
OnRoad-3	Transportation Demand Management and Synchronization	0
OnRoad-4	Expand Bike Routes	0
OnRoad-5	Community Fleet Electrification	0
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	0
OffRoad-2	Idling Ordinance	0
OffRoad-3	Electric Landscaping Equipment	0
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	0
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	0
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	0
<i>Water Conveyance</i>		

Water-1	Require Tier 1 Voluntary CALGreen Standards for New Construction	0
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	0
Water-3	Water-Efficient Landscaping Practices	0
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	0
Total Local Reductions		0
Total Reductions		155,345

Notes:

Values may not sum due to rounding.

3.7.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Chino Hills' GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Chino Hills 2015 General Plan unless otherwise noted (City of Chino Hills 2015). The City of Chino Hills did not select local GHG reduction measures beyond state and county level measures (Table 3-18). Additionally, the City's General Plan includes policies and programs that broadly support energy efficiency and sustainability across all sectors. Relevant General Plan policies for the specific reduction measures the City selected are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.7.4.1 Building Energy

- **Goal CN-3:** Promote Sustainable Practices that Conserve Natural Resources and Reduce Greenhouse Gas Emissions
- **Policy CN-3.1:** Endorse green building design in new and existing construction.
- **Policy CN-3.2:** Develop and implement a Climate Action Plan.
- **Policy H-3.3:** Encourage the use of energy conservation devices and passive design concepts which make use of the natural climate to increase energy efficiency and reduce housing costs.

3.7.4.2 On-Road

- **Policy CN-6.1:** Reduce air pollution through coordinated land use, transportation, and energy use planning.
- **Policy C-1.2:** Create a safe, efficient, and neighborhood-friendly street system.
- **Policy C-2.1:** Support and participate in regional efforts to improve vehicular and non-vehicular transportation systems.
- **Policy C-3.1:** Encourage the use of public transportation for commute and local, and increase City-wide transit ridership.
- **Policy C-3.2:** Support other alternatives to single occupant vehicular travel.
- **Policy C-4.1:** Plan for high-density mixed-use development close to regional transit and nonvehicular transportation corridors.

- **Policy C-5.1:** Provide adequate infrastructure improvements in conjunction with development.

3.7.4.3 Off-Road

- **Policy CN-6.3:** Reduce air pollution emissions from construction activities.
- **Policy CN-6.4:** Reduce air pollution emissions from new development.

3.7.4.4 Solid Waste Management

- **Policy CN-5.1:** Meet the City's solid waste disposal needs, while maximizing opportunities for waste reduction and recycling.

3.7.4.5 Wastewater Treatment

- **Action CN-4.1.4:** Continue to use reclaimed water for non-potable water supplies wherever not precluded by public health considerations.

3.7.4.6 Water Conveyance

- **Policy CN-4.1:** Promote water conservation.
- **Policy CN-4.2:** Plan for water resources and distribution.

3.8 City of Colton



3.8.1 City Summary

The City of Colton is located in the valley region of San Bernardino County, east of the City of Fontana and between San Bernardino and Riverside. Colton was incorporated in July of 1887, making it one of the oldest jurisdictions in the county. The City owes much of its historical growth to its location along a main artery of the Union Pacific Railroad transcontinental rail line, constructed in 1875. When the Burlington Northern Santa Fe Rail line was later constructed, Colton was placed at the center of what is today one of the busiest at-grade rail crossings in the United States.

Colton covers approximately 16 square miles. The population in Colton as of 2016 was 53,705 and is expected to grow to 64,184 by 2030 (20% increase over 2016). Colton’s demographic composition in 2018 was 17.2% Non-Hispanic White, 7.5 % Non-Hispanic Black, 0.4% Non-Hispanic American Indian or Alaska Native, 4.5% Non-Hispanic Asian, and 1.5 from all other non-Hispanic races. Persons of Hispanic or Latino origin were 68.9%, which is notably larger than the SCAG region’s average of 46.5%. Major regional employers in Colton include Arrowhead Regional Medical Center, the Colton school district and the Ashley Furniture joint factory and retail outlet. Employment is expected to grow by 24% by 2030. Colton’s location in the southern area of the county and its proximity to freeways have made it, like other valley jurisdictions, a desirable and fast-growing community in recent decades.

Table 3-19 presents socioeconomic data for Colton, including population, housing, and employment (SBCOG, 2019).

Table 3-19. Socioeconomic Data for Colton

Category	2016	2030	2045
Population	53,705	64,184	70,710
Households	15,026	19,002	21,668
Jobs	19,453	24,042	28,958



The City of Colton adopted a Climate Action Plan in 2015, outlining actions to reduce greenhouse gas emissions. The City’s GHG emissions reduction target was 15% below the 2008 emissions level, which aligns with California’s statewide reduction target. The City of Colton’s CAP includes mitigation measures such as increasing solar installation, tree planting programs, sustainable transportation efforts, and waste and wastewater emission reduction measures (City of Colton, 2015).

3.8.2 Emission Reductions

The City of Colton selected a goal to reduce its community GHG emissions to a level that is 46% below its 2008 GHG emissions level by 2030. The City will exceed this goal through a combination of

state (~65%) and local (~35%) efforts. The Pavley vehicle standards, the state's low carbon fuel standard, the RPS, and other state measures will significantly reduce GHG emissions in Colton's on-road and building energy sectors in 2030. An additional reduction of 80,526 MTCO₂e will be achieved primarily through the following local measures, in order of reductions achieved: All Electric Buildings (Energy-3); Solar Installation for Existing Commercial/Industrial Facilities (Energy-8); and Waste Diversion and Reduction (Waste-2). Colton's reduction plan has the greatest impacts on GHG emissions in the waste, on-road transportation, and building energy sectors.

The City of Colton has been able to successfully leverage state resources to enhance its emissions reductions plan. Properties in the City of Colton receive electric services from the Colton Electric Department (CED). CED met the state's renewable portfolio standard of 25% by 2016 and expects to exceed the goal of 33% by 2020. The Colton Electric Utility offers incentives and programs to increase the community's energy efficiency, including the Residential Energy Efficiency Rebate Program, residential energy audits, commercial energy audits, and more.

The bars in Figure 3-19 show Colton's 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City's emissions reduction target (i.e., 15% below its 2008 GHG emissions level). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total ("2030 Plan"), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~65%) of the total reductions needed to achieve the 2030 target.

Figure 3-20 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation and building energy emissions sectors.

Table 3-20 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2030 and demonstrates that Colton exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the waste, on-road transportation, and building energy emissions sectors.

Figure 3-21 presents emission reductions by sector and by control (i.e., state control versus local or city control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are in the building energy sector.

Figure 3-19. Emissions Reduction Profile for Colton

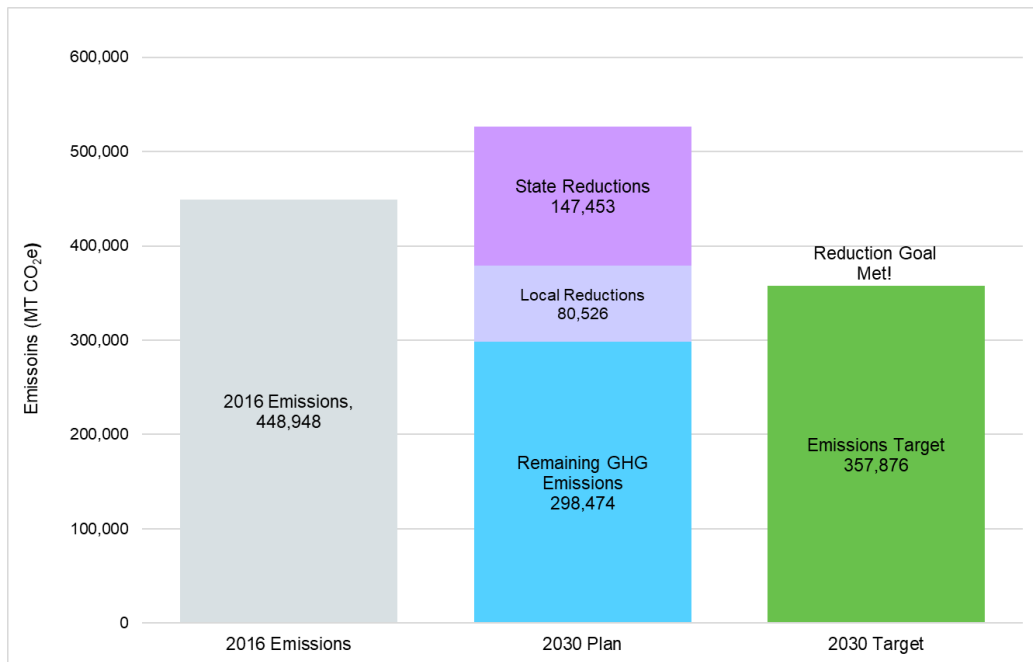


Figure 3-20. Emissions by Sector for Colton

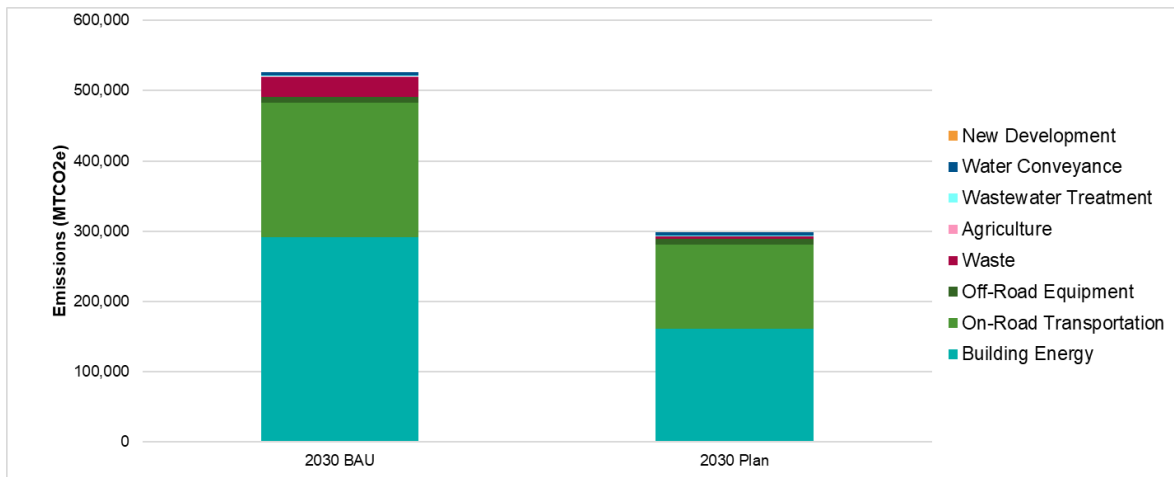


Table 3-20. Emission Reductions by Sector for Colton

Sector	2016 Emissions (MTCO₂e)	2030 BAU (MTCO₂e)	2030 Reductions (MTCO₂e)	2030 Emissions with Reduction Plan (MTCO₂e)	Reduction (percent)
Building Energy	236,568	291,094	130,186	160,908	44.7%
On-Road Transportation	176,831	191,706	71,648	120,058	37.4%
Off-Road Equipment	5,997	8,687	655	8,032	7.5%
Waste	23,755	28,390	25,017	3,374	88.1%
Agriculture	426	240	0	240	0.0%
Wastewater Treatment	1,682	2,011	194	1,817	9.6%
Water Conveyance	3,689	4,324	278	4,046	6.4%
GHG Performance Standard*	-	-	-	-	-
Total	448,948	526,453	227,979	298,474	43.3%
Goal	-	-	-	357,876	-
Goal Met?	-	-	-	Yes	-
Reductions Beyond Goal	-	-	-	59,402	-

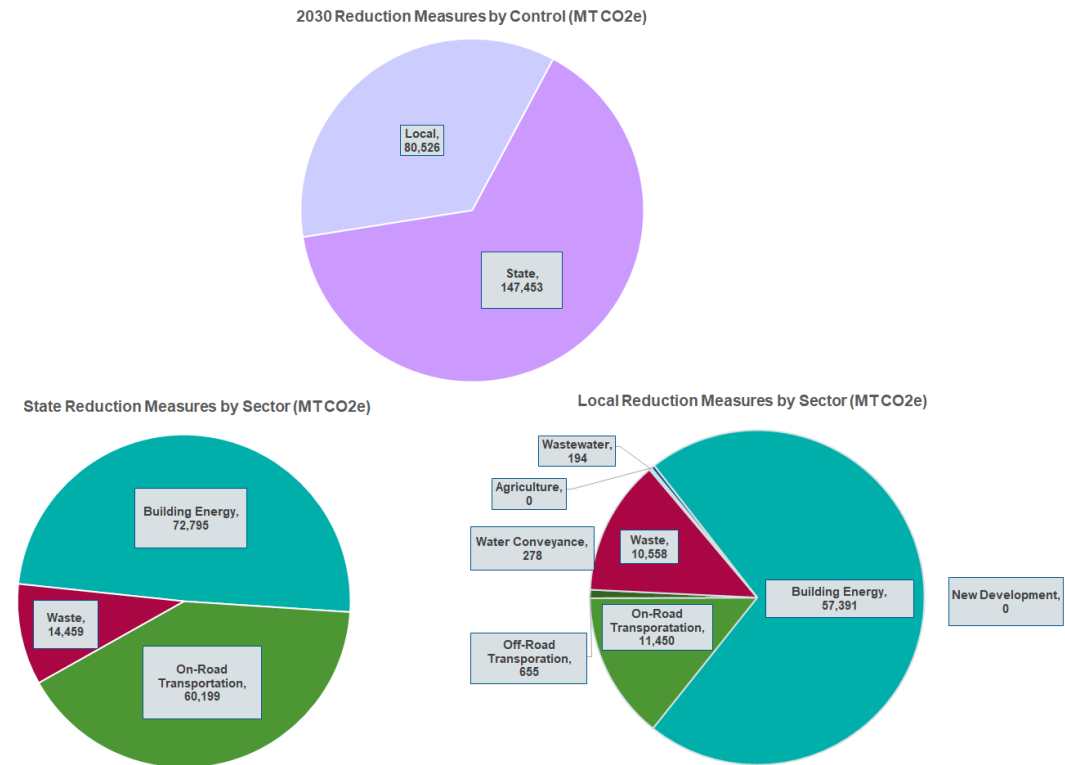
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City's reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-21. Emission Reductions by Control and by Sector for Colton



3.8.3 Reduction Measures

Table 3-21 presents each reduction measure evaluated for Colton. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-21. GHG Reduction Measures and Estimated 2030 reductions for Colton

Measure Number	Measure Description	Reductions (MTCO_{2e})
State Measures		
State-SB 100	SB 100	47,669
State-SB 350	SB 350	19,159
State-T24	Title 24 (Energy Efficiency Standards)	5,554
State-Solar Water Heater	Solar Water Heaters (Residential)	34
State-Increased CHP	Increased Combined Heat and Power (Commercial)	379
State-OnRoad	State Fuel Efficiency Measures	60,199
State-SB 1383	Methane Capture	14,459
Total State Reductions		147,453
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	2,897
Energy-2	Lighting Efficiency	1,854
Energy-3	All Electric Buildings	22,313
Energy-5	Renewable Energy – New Commercial/Industrial	2,367
Energy-6	Solar Energy for Warehouse Space	3,478
Energy-7	Solar Installation for Existing Housing	4,765
Energy-8	Solar Installation for Existing Commercial/Industrial	16,650
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	7
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	127
OnRoad-2	Encourage Use of Mass Transit	4,737
OnRoad-3	Transportation Demand Management and Synchronization	1,315
OnRoad-4	Expand Bike Routes	2,006
OnRoad-5	Community Fleet Electrification	3,264
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	426
OffRoad-2	Idling Ordinance	89
OffRoad-3	Electric Landscaping Equipment	140
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	10,558
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	0
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	194
<i>Water Conveyance</i>		

Water-1	Require Tier 1 Voluntary CALGreen Standards for New Construction	951
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	2,109
Water-3	Water-Efficient Landscaping Practices	278
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	0
Total Local Reductions		80,526
Total Reductions		227,979

Notes:

Values may not sum due to rounding.

3.8.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Colton's GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Colton 2013 General Plan unless otherwise noted (City of Colton, 2013).

3.8.4.1 Building Energy

Energy-1. Building Energy Efficiency

- **Policy LU-5.1:** Require the incorporation of energy conservation features into the design of all new construction and site development, as required by State law and local regulations.
- **Policy LU-5.2:** Provide incentives, as funding opportunities become available, for the installation of energy conservation features in existing multi-family residential and commercial developments, including technical assistance and possible low interest loans.
- **Policy LU-5.3:** Educate the public using a variety of outreach channels regarding the need for energy conservation, techniques which can be employed, and systems which are available.
- **Policy LU-5.4:** Support the ongoing efforts of the California Air Resources Board to implement AB32 and SB375, and fully follow any new AB32 and SB375-related regulations.

Energy-2. Lighting Efficiency

- **Policy LU-5.2:** Provide incentives, as funding opportunities become available, for the installation of energy conservation features in existing multi-family residential and commercial developments, including technical assistance and possible low interest loans.
- **Policy LU-5.3:** Educate the public using a variety of outreach channels regarding the need for energy conservation, techniques which can be employed, and systems which are available.

Energy-3. All Electric Buildings

- **Policy LU-5.5:** Develop and implement greenhouse gas emissions reduction measures, including discrete, early-action greenhouse gas reducing measures that are technologically feasible and cost effective.

Energy-5. Renewable Energy - New Commercial/Industrial

- **Policy LU-5.5:** Develop and implement greenhouse gas emissions reduction measures, including discrete, early-action greenhouse gas reducing measures that are technologically feasible and cost effective.
- **Policy LU-5.6:** Require detailed air quality and climate change analyses for all applications that have the potential to adversely affect air quality, and incorporate the analyses into applicable CEQA documents. Projects with the potential to generate significant levels of air pollutants and greenhouse gases, such as manufacturing facilities and site development operations, shall be required to incorporate mitigation into their design and operation, and to utilize the most advanced technological methods feasible.

Energy-6. Solar Energy for Warehouse Space

- **Policy LU-5.5:** Develop and implement greenhouse gas emissions reduction measures, including discrete, early-action greenhouse gas reducing measures that are technologically feasible and cost effective.

Energy-7. Solar Installation - Existing Housing

- **Policy LU-5.5:** Develop and implement greenhouse gas emissions reduction measures, including discrete, early-action greenhouse gas reducing measures that are technologically feasible and cost effective.

Energy-8. Renewable Energy - Existing Commercial/Industrial

- **Policy LU-5.5:** Develop and implement greenhouse gas emissions reduction measures, including discrete, early-action greenhouse gas reducing measures that are technologically feasible and cost effective.

Energy-10. Urban Tree Planting for Shading and Energy Savings

- **Policy LU-12.4:** Provide five acres of park space for every 1,000 residents.
- **Policy LU-12.1:** Preserve and protect the City's established recreational and open space uses.
- **Policy LU-12.2:** Pursue opportunities for providing additional open space and recreation areas for residents, working toward the goal of having a City park within one-half mile of every residential neighborhood in Colton.

3.8.4.2 On-Road

OnRoad-2. Encourage Use of Mass Transit

- **Policy LU-16.8:** Link projects and downtown with public transit and/or trails (bus rapid transit, bike lanes, etc.).
- **Goal M-7:** Coordinate with other jurisdictions and agencies on regional transportation projects.
- **Policy M-3.13:** Maintain the Long-range Developer Impact Fee program to help fund the cost of transportation system improvements.
- **Policy M-3.8:** Require new developments of more than 100 employees (per building or per tenant/company) to develop Transportation Demand Management programs to minimize automobile trips and to encourage use of transit, ridesharing, bicycling, and walking.
- **Goal M-2:** Provide a transportation system that includes connected transit, bicycle, and pedestrian networks.

- **Policy M-2.1:** Work with Omnitrans to increase the use of public transit, establish or modify routes, and improve connectivity to regional services that respond to the needs of the Colton community.
- **Policy M-2.3:** Require that private development projects provide transit amenities, including bus stops that meet Omnitrans' bus stop design guidelines.
- **Policy M-2.5:** Work with Metrolink and the Southern California Regional Rail Authority to establish a Metrolink station in Colton along existing Metrolink rail lines.

OnRoad-3. Transportation Demand Management and Signal Synchronization

- **Policy LU-10.4:** Establish land use patterns and provide pedestrian amenities within the mixed-use districts that minimize the need for vehicle travel among the uses within a district.
- **Policy LU-17.6:** Reduce the visual and environmental impacts of expansive parking lots along major corridors by encouraging a street-oriented development pattern that encourages pedestrian activity, with buildings sited at or near the sidewalk edge.
- **Policy LU-20.11:** Require that roadway systems are adequate to accommodate new volumes, existing demands, and emergency response needs.
- **Policy M-2.9:** Condition discretionary projects to require bicycle amenities such as bike racks and secure storage areas.
- **Policy M-1.5:** Minimize vehicle emissions by encouraging land use patterns and multi-modal transportation improvements that reduce the need for automobile trips by making biking, walking, and use of public transit more convenient and available.
- **Policy M-1.1:** Provide for the needs of drivers, public transportation vehicles and patrons, bicyclists, and pedestrians of all ages and abilities in planning, programming, design, construction, reconstruction, retrofit, operations, and maintenance activities of all streets.

OnRoad-4. Expand Bike Routes

- **Policy LU-20.9:** Create connections between neighboring land uses that make alternatives to the automobile safe and attractive. Provide pedestrian linkage to surrounding neighborhoods, and require that development plans and designs facilitate both pedestrian and bicycle use.
- **Policy LU-21.5:** Establish community recreation and park facilities, including open space areas with hiking and bicycle trails.
- **Policy M-1.2:** View all transportation improvements as opportunities to improve safety, access, and mobility for all travelers in Colton. Recognize bicycle, pedestrian, and transit modes as integral elements of the transportation system.
- **Policy M-1.3:** Require all new nonresidential, mixed-use, and large-scale residential development projects, through the development review process, to include public transit, bicycle, and pedestrian facilities.
- **Policy M-1.4:** Plan for multi-use recreation trails and paths that allow for physical activities, including running, walking, and bicycling.
- **Policy M-1.5:** Minimize vehicle emissions by encouraging land use patterns and multi-modal transportation improvements that reduce the need for automobile trips by making biking, walking, and use of public transit more convenient and available.
- **Goal M-2:** Provide a transportation system that includes connected transit, bicycle, and pedestrian networks.

3.8.4.3 Off-Road

Off-Road-1. Electric-Powered Construction Equipment

- **Policy LU-5.5:** Develop and implement greenhouse gas emissions reduction measures, including discrete, early-action greenhouse gas reducing measures that are technologically feasible and cost effective.

Off-Road-2. Idling Ordinance

- **Policy LU-5.5:** Develop and implement greenhouse gas emissions reduction measures, including discrete, early-action greenhouse gas reducing measures that are technologically feasible and cost effective.

Off-Road-3. Electric Landscaping Equipment

- **Policy LU-5.5:** Develop and implement greenhouse gas emissions reduction measures, including discrete, early-action greenhouse gas reducing measures that are technologically feasible and cost effective.

3.8.4.4 Wastewater Treatment

Wastewater-2. Equipment Upgrades at Wastewater Treatment Plants

- **Policy LU-21.8:** Ensure that safety services and sewer, water, and utility infrastructure are adequate to accommodate new development.

3.9 City of Fontana



3.9.1 City Summary

The City of Fontana is located in the valley, in southern San Bernardino County. Like other valley jurisdictions, Fontana is close to major roadway arteries of southern California. The City’s general plan indicates over 6,000 acres (11,000 in the sphere of influence) denoted for commercial and industrial uses, supporting trucking-based industries and warehouse distribution centers for many large companies such as Mercedes Benz and Target. Fontana is also home to a major regional medical center that brings both employees and patients to the City. Other regional attractions include the Center Stage Theater and the Lewis Library and Technology Center. These uses are reflected in the City’s GHG emissions profile.

Primary sources of GHG emissions in Fontana are light/medium-duty vehicles, commercial/industrial electricity, and stationary sources (however, stationary sources are not included when setting the City’s reduction target). The City of Fontana covers approximately 42 square miles and had a population of 210,983 as of 2016 making Fontana the second largest City in San Bernardino County. Fontana has grown at a rate of approximately 50% every 10 years, and is projected to reach a population of 247,196 by 2030 (an approximately 17% increase over 2016). Fontana’s demographic composition in 2018 was 14.2% Non-Hispanic White, 8.3% Non-Hispanic Black, 0.1% Non-Hispanic American Indian or Alaska Native, 6.2% Non-Hispanic Asian, and 2.9% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 68.3%, which is larger than the SCAG regional average of 46.5%.

Table 3-22 presents socioeconomic data for Fontana, including population, housing, and employment (SBCOG, 2019).

Table 3-22. Socioeconomic Data for Fontana

Category	2016	2030	2045
Population	210,983	247,196	286,666
Households	51,518	64,192	77,772
Jobs	56,724	65,619	75,149



3.9.2 Emission Reductions

The City of Fontana selected a goal to reduce its community GHG emissions to a level that is 46% below its 2008 GHG emissions level by 2030. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective through a combination of state (~75%) and local (~25%) efforts. The Pavley vehicle standards, the state’s low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in Fontana’s on-road, solid

waste, and building energy sectors in 2030. An additional reduction of 167,255 MTCO₂e will be achieved primarily through the following local measures, in order of reductions achieved: Waste Diversion and Reduction (Waste-2); GHG Performance Standard for Existing Development (PS-1); and Solar Energy for Warehouse Space (Energy-6). Fontana’s reduction plan has the greatest impacts on GHG emissions in the waste, on-road transportation, and building energy sectors.

The City of Fontana has adopted policy statements that contain transportation and land use related actions to reduce vehicle greenhouse gas emissions throughout the SBCOG region. These policy statements support the goals of SB 375 and the Sustainable Community Strategy (Transportation 1) and include the following.

- Continue to support the regional bus system to provide intra-City service, inter-City service to major employment centers, and connection to other regional transportation transfer points.
- Where needed and appropriate, require new development to provide transit facilities and accommodations, such as bus shelters and turnouts, consistent with regional agency plans and existing and anticipated demands.
- Continue to implement traffic signal systems and intelligent transportation systems (ITS) components (not limited to signal coordination, highway advisory radio, closed circuit television, emergency vehicle signal preemption, etc.) along arterial roadways and sub-areas, in accordance to the City’s traffic Signal System Conceptual Buildout Plan and in compliance with regional and appropriate ITS Architecture Master Plans
- Continue to develop non-motorized trails and bicycle routes as identified in the City’s adopted General Plan; Parks, Recreation and Trails Element and the a adopted Regional Non-Motorized Transportation Plan.
- Require that all new development adjacent to non-motorized trails provide bicycle and pedestrian routes linked to those facilities.
- Increase densities via transit-oriented development in the core of the City adjacent to the Metro-link and Omni-trans hub.
- Activity Centers should be linked with residential neighborhoods and be accessible by multiple modes of transportation.

The bars in Figure 3-22 show Fontana’s 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City’s emissions reduction target (i.e., 46% below the 2008 emissions level). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total (“2030 plan”), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~75%) of the total reductions needed to achieve the 2030 target.

Figure 3-22. Emissions Reduction Profile for Fontana

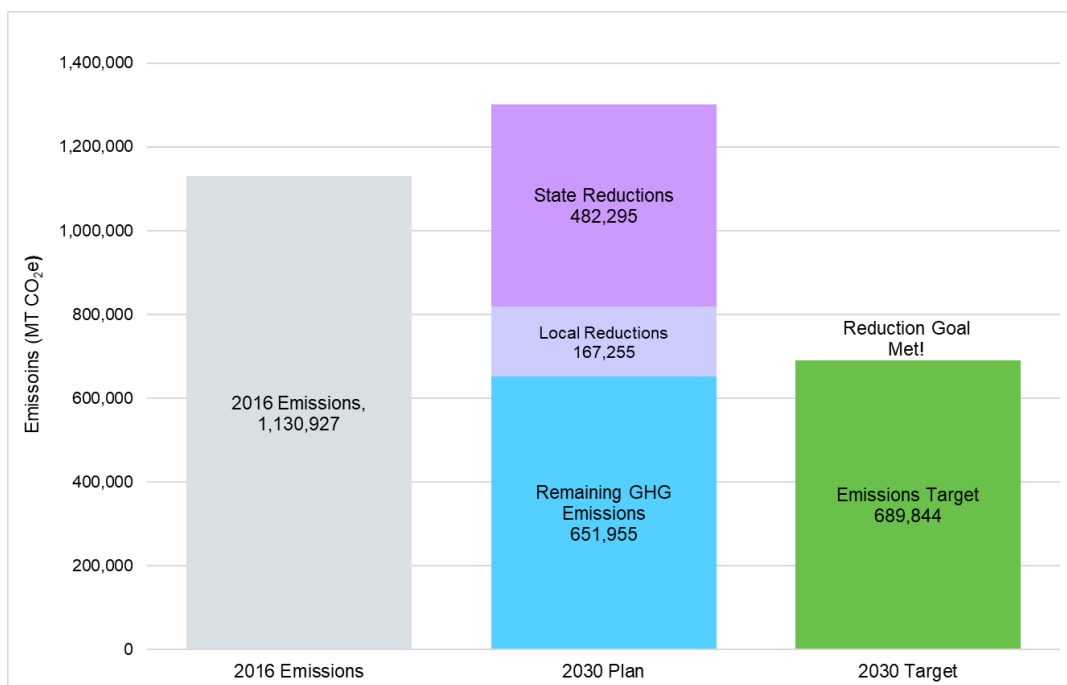


Figure 3-23 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or “Reduction Plan” scenarios. The largest emissions contributions are in the on-road transportation and building energy emissions sectors.

Table 3-23 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction (“Reduction Plan”) results by sector. It shows the percent reduction in each sector’s emissions in 2030 and demonstrates that Fontana exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the waste, on-road transportation, and building energy sectors.

Figure 3-24 presents emission reductions by sector and by control (i.e., state control versus local or City control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are in the waste sector.

Figure 3-23. Emissions by Sector for Fontana

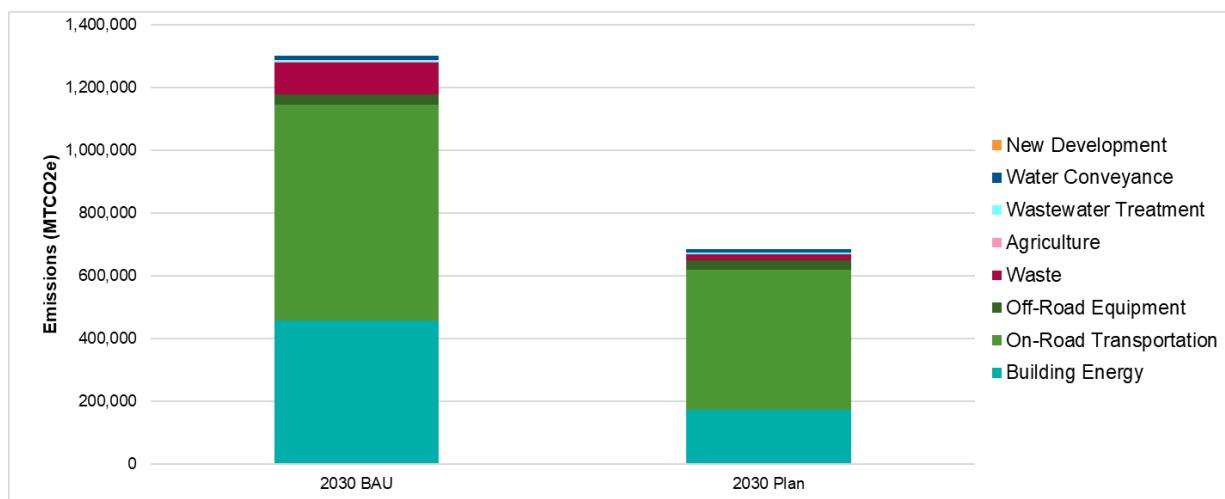


Table 3-23. Emission Reductions by Sector for Fontana

Sector	2016 Emissions (MTCO _{2e})	2030 BAU (MTCO _{2e})	2030 Reductions (MTCO _{2e})	2030 Emissions with Reduction Plan (MTCO _{2e})	Reduction (percent)
Building Energy	385,933	458,378	285,552	172,826	62.3%
On-Road Transportation	616,723	688,573	241,702	446,871	35.1%
Off-Road Equipment	23,220	32,595	1,344	31,251	4.1%
Waste	86,844	101,750	84,374	17,376	82.9%
Agriculture	1,016	572	0	572	0.0%
Wastewater Treatment	6,610	7,744	734	7,010	9.5%
Water Conveyance	10,581	11,893	1,433	10,461	12.0%
GHG Performance Standard*	-	-	34,412	-	-
Total	1,130,927	1,301,505	649,550	651,955	49.9%
Goal	-	-	-	698,844	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	37,889	-

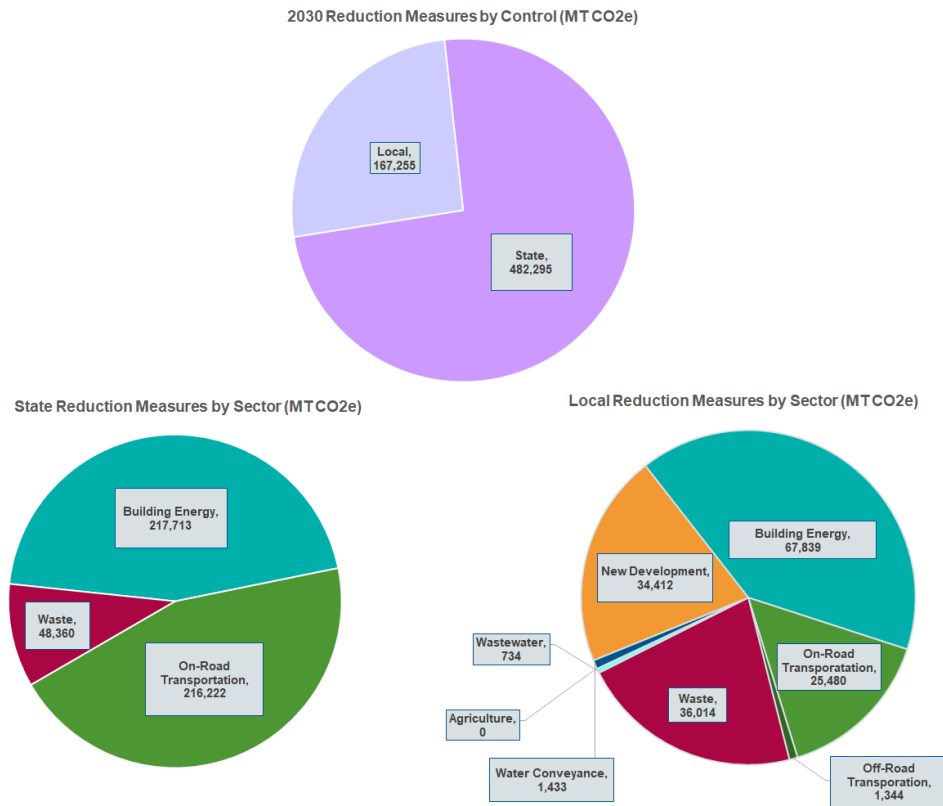
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City’s reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-24. Emission Reductions by Control and by Sector for Fontana



3.9.3 Reduction Measures

Table 3-24 presents each reduction measure evaluated for Fontana. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-24. GHG Reduction Measures and Estimated 2030 reductions for Fontana

Measure Number	Measure Description	Reductions (MTCO_{2e})
State Measures		
State-SB 100	SB 100	120,967
State-SB 350	SB 350	83,368
State-T24	Title 24 (Energy Efficiency Standards)	12,747
State-Solar Water Heater	Solar Water Heaters (Residential)	118
State-Increased CHP	Increased Combined Heat and Power (Commercial)	513
State-OnRoad	State Fuel Efficiency Measures	216,222
State-SB 1383	Methane Capture	48,360
Total State Reductions		482,295
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	10,517
Energy-2	Lighting Efficiency	2,943
Energy-3	All Electric Buildings	0
Energy-5	Renewable Energy – New Commercial/Industrial	2,027
Energy-6	Solar Energy for Warehouse Space	21,274
Energy-7	Solar Installation for Existing Housing	12,846
Energy-8	Solar Installation for Existing Commercial/Industrial	6,338
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	0
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	0
OnRoad-2	Encourage Use of Mass Transit	5,317
OnRoad-3	Transportation Demand Management and Synchronization	4,724
OnRoad-4	Expand Bike Routes	7,204
OnRoad-5	Community Fleet Electrification	8,235
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	821
OffRoad-2	Idling Ordinance	344
OffRoad-3	Electric Landscaping Equipment	180
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	36,014
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	0
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	734
<i>Water Conveyance</i>		

Water-1	Require Tier 1 Voluntary CALGreen Standards for New Construction	4,501
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	7,393
Water-3	Water-Efficient Landscaping Practices	1,433
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	34,412
Total Local Reductions		167,255
Total Reductions		649,550

Notes:

Values may not sum due to rounding.

3.9.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Fontana’s GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Fontana 2018 General Plan unless otherwise noted (City of Fontana 2018). In addition to state level measures, the City of Fontana selected numerous GHG reduction measures across all sectors (Table 3-24). Relevant General Plan policies for the specific reduction measures the City selected are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.9.4.1 Building Energy

Energy-1. Building Energy Efficiency

- **SR Policy 1:** Create a Sustainable Fontana program that promotes green practices in government and in the community.
- **SR Policy 2.1:** Incorporate goals into the City Code for resource efficiency in municipal facilities and operations.
- **SR Policy 5:** Promote green building through guidelines, awards, and nonfinancial incentives.
- **SR Policy 6.1:** Promote energy-efficient development in Fontana.
- **SR Policy 6.2:** Meet or exceed state goals for energy-efficient new construction.
- **Chapter 10 Policy 7.** Promote renewable energy and distributed energy systems in new development and retrofits of existing development to work towards the highest levels of low-carbon energy-efficiency.

Energy-2. Lighting Efficiency

- **SR Policy 1:** Create a Sustainable Fontana program that promotes green practices in government and in the community.
- **SR Policy 2.1:** Incorporate goals into the City Code for resource efficiency in municipal facilities and operations.
- **SR Policy 2.2:** Continue organizational and operational improvements to maximize energy and resource efficiency and reduce waste.

Energy-5. Renewable Energy - New Commercial/Industrial

- **SR Policy 3:** Promote renewable energy programs for government, Fontana businesses, and Fontana residences.
- **Chapter 10 Policy 7.** Promote renewable energy and distributed energy systems in new development and retrofits of existing development to work towards the highest levels of low-carbon energy-efficiency.

Energy-6. Solar Energy for Warehouse Space

- **SR Policy 3:** Promote renewable energy programs for government, Fontana businesses, and Fontana residences.

Energy-7. Solar Installation for Existing Housing

- **SR Policy 3:** Promote renewable energy programs for government, Fontana businesses, and Fontana residences.
- **SR Policy 3.1:** Evaluate a Community Choice Aggregation (CCA) Program for Fontana.
- **SR Policy 3.2:** Ensure that appropriate zoning and design standard regulations are in place as needed to provide for domestic solar and wind installations.
- **Chapter 10 Policy 7:** Promote renewable energy and distributed energy systems in new development and retrofits of existing development to work towards the highest levels of low-carbon energy-efficiency.

Energy-8. Renewable Energy - Existing Commercial/Industrial

- **SR Policy 3:** Promote renewable energy programs for government, Fontana businesses, and Fontana residences.
- **SR Policy 4:** Continue to collaborate with SBCTA, infrastructure agencies, and utilities on greenhouse gas reduction studies and goals.
- **Chapter 10 Policy 7:** Promote renewable energy and distributed energy systems in new development and retrofits of existing development to work towards the highest levels of low-carbon energy-efficiency.

3.9.4.2 On-Road

OnRoad-2. Encourage Use of Mass Transit

- **CM Policy 1.4:** Make land use decisions that support walking, bicycling, and public transit use, in alignment with the 2014-2040 Regional Transportation Plan and Sustainable Communities Strategy.
- **CM 7.2:** Coordinate with regional agencies and Caltrans to participate in regional efforts to maintain transportation infrastructure in Fontana.
- **CM 7.3:** Participate in the efforts of the Southern California Association of Governments (SCAG) to coordinate transportation planning and services that support greenhouse gas reductions.

OnRoad-3. Transportation Demand Management and Signal Synchronization

- **CM Policy 1.1:** Provide roadways that serve the needs of Fontana residents and commerce, and that facilitate safe and convenient access to transit, bicycle facilities, and walkways.
- **CM Policy 1.2:** Make safety and multimodal accessibility the top priority of Citywide transportation planning.

- **CM 3.2:** Promote concentrated development patterns in coordination with transit planning to maximize service efficiency and ridership.
- **CM 7.1:** Lead and participate in initiatives to manage regional traffic.
- **CM 7.4:** Participate in the efforts by Caltrans to reduce congestion and improve traffic flow on area freeways.

OnRoad-4. Expand Bike Routes

- **CM 2.1:** When constructing or modifying roadways, design the roadway space for use by all users when feasible, including motor vehicles, buses, bicyclists, mobility devices, and pedestrians, as appropriate for the context of the area.

OnRoad-5. Community Fleet Electrification

- **CM Action 7.D:** Support the adoption and use of technologies that reduce emissions from passenger and transit vehicles.

3.9.4.3 Solid Waste Management

Waste-2. Waste Diversion and Reduction

- **SR Policy 2.2:** Continue organizational and operational improvements to maximize energy and resource efficiency and reduce waste.
- **Chapter 10 Policy 8.2:** Continue to maximize landfill capacity by supporting recycling innovations, such as organic waste recycling for compost.

3.9.4.4 Water Conveyance

- **Chapter 10 Policy 1:** Support initiatives to provide a long-term supply of the right water for the right use through working with regional providers and the One Water One Watershed Plan.
- **Chapter 10 Policy 2.1:** Encourage use of processed water from the IEUA systems using recycled water for all non-drinking water purposes.
- **Chapter 10 Policy 2.2:** Promote laundry-to-landscape greywater systems for single-family housing units.

Water-1. Voluntary CALGREEN: New Construction

- **SR Policy 7:** Continue to promote and implement best practices to conserve water.

Water-2. Renovate Existing Buildings

- **SR Policy 7:** Continue to promote and implement best practices to conserve water.

Water-3. Water-Efficient Landscaping Practices

- **SR Policy 7:** Continue to promote and implement best practices to conserve water.
- **Chapter 10 Policy 3.1:** Support landscaping in public and private spaces with drought resistant plants.
- **Chapter 10 Policy 3.2:** Continue successful City water conservation programs and partnerships.

3.10 City of Grand Terrace



3.10.1 City Summary

The City of Grand Terrace is located in the valley of southern San Bernardino County between San Bernardino and Riverside. Grand Terrace is predominantly a residential community situated on the I-215 freeway on a natural terrace between two mountain ranges. Only 18% of the City is allocated to commercial and industrial uses (City of Grand Terrace General Plan, 2010). The City is known for quiet and safe streets, good schools, and access to natural areas. These predominantly residential uses are reflected in the City’s GHG profile.

The population of Grand Terrace in 2016 was 12,400, up from 11,768 in 2008. Population in Grand Terrace has grown at a slower pace relative to other jurisdictions in San Bernardino County, approximately 6% per decade as opposed to 20% on average for the county. Grand Terrace encompasses an area of 3.6 square miles with no external sphere of influence. Grand Terrace’s demographic composition in 2018 was 37.6% Non-Hispanic White, 4.2% Non-Hispanic Black, Non-Hispanic American Indian or Alaska Native 6.7% Non-Hispanic Asian, and 2.5% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 49.0%. Grand Terrace is a mostly Hispanic/Latino and White community with a slightly higher-than-average median household income (\$65,422 versus \$64,989 for the SCAG region) (SCAG, 2018). Population in 2030 is expected to be 13,359, a slight increase from 2016, and GHG emissions are expected to increase from 77,968 MTCO_{2e} in 2016 to 90,477 MTCO_{2e} by 2030 (excluding stationary sources).

Table 3-25 presents socioeconomic data for Grand Terrace, including population, housing, and employment (SBCOG, 2019).

Table 3-25. Socioeconomic Data for Grand Terrace

Category	2016	2030	2045
Population	12,400	13,359	14,501
Households	4,421	4,975	5,569
Jobs	3,481	4,738	6,085



3.10.2 Emission Reductions

The City of Grand Terrace selected a goal to reduce its community GHG emissions to a level that is 42% below its 2020 GHG emissions level by 2030. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective through a combination of state (~80%) and local (~20%) efforts. The Pavley vehicle standards, the state’s low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in Grand Terrace’s on-road, solid waste, and building energy sectors in 2030. An additional reduction of 9,676 MTCO_{2e} will be achieved primarily through the following local measures, in order of reductions achieved: waste diversion and reduction (Waste-2); GHG Performance Standard for existing development (PS-1);

solar installation for existing commercial and industrial (Energy-8). Grand Terrace’s reduction plan has the greatest impacts on GHG emissions in the on-road transportation, building energy and waste sectors.

The bars in Figure 3-25 show Grand Terrace’s 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City’s emissions reduction target (i.e., 42% below the 2020 emissions level). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total (“2030 plan”), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~80%) of the total reductions needed to achieve the 2030 target.

Figure 3-26 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or “Reduction Plan” scenarios. The largest emissions contributions are in the on-road transportation and building energy emissions sectors.

Table 3-26 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction (“Reduction Plan”) results by sector. It shows the percent reduction in each sector’s emissions in 2030 and demonstrates that Grand Terrace exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the waste, building energy, and on-road transportation sectors.

Figure 3-27 presents emission reductions by sector and by control (i.e., state control versus local or City control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are in the building energy sector.

Figure 3-25. Emissions Reduction Profile for Grand Terrace

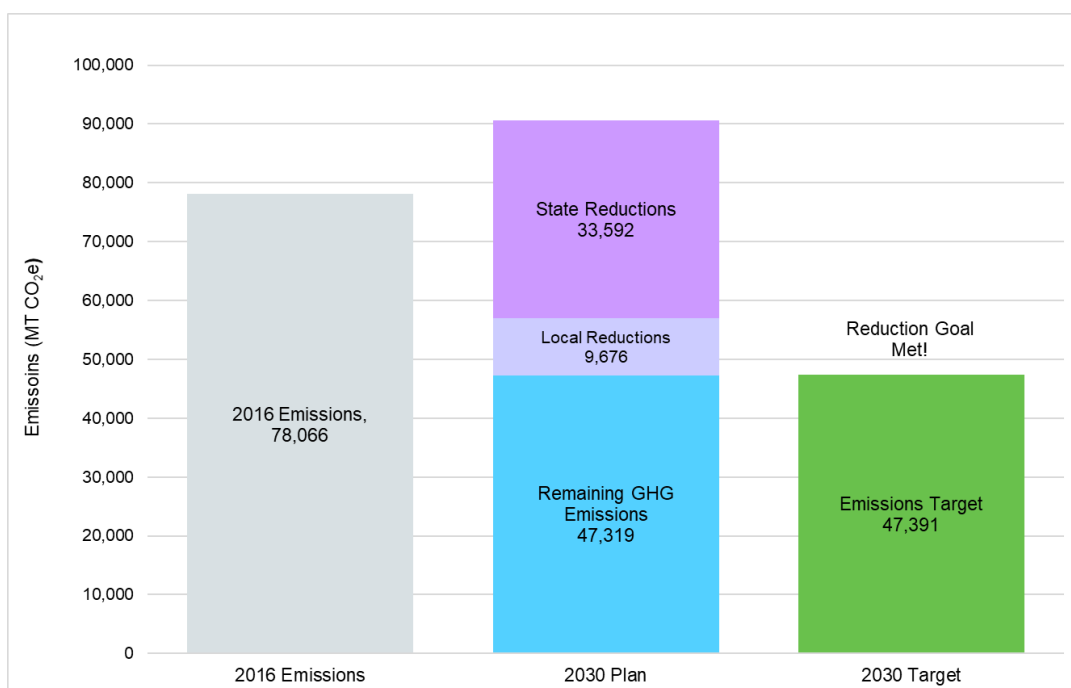


Figure 3-26. Emissions by Sector for Grand Terrace

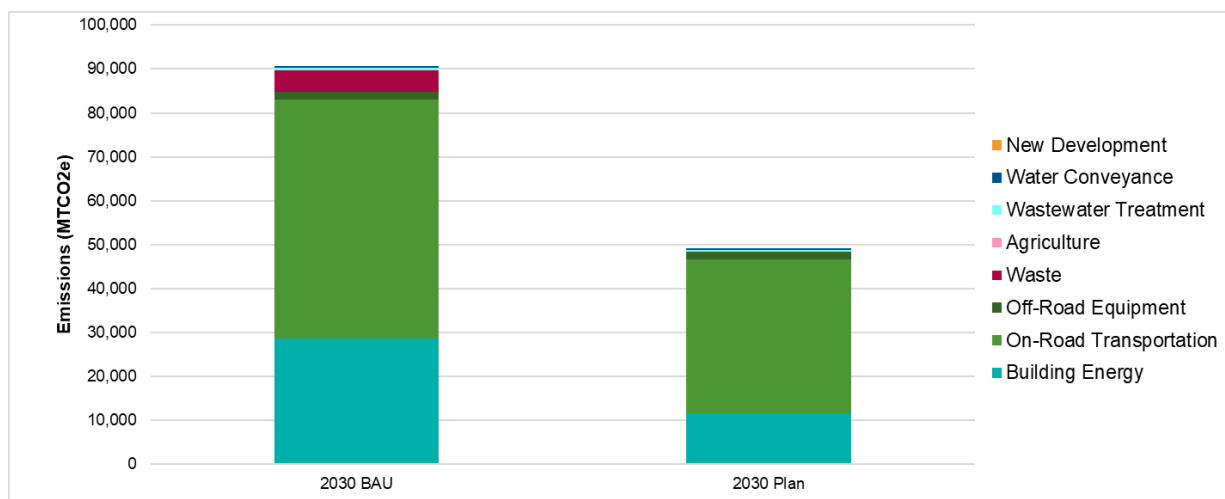


Table 3-26. Emission Reductions by Sector for Grand Terrace

Sector	2016 Emissions (MTCO _{2e})	2030 BAU (MTCO _{2e})	2030 Reductions (MTCO _{2e})	2030 Emissions with Reduction Plan (MTCO _{2e})	Reduction (percent)
Building Energy	24,187	28,716	17,020	11,696	59.3%
On-Road Transportation	47,107	54,292	19,408	34,884	35.7%
Off-Road Equipment	1,362	1,803	64	1,739	3.5%
Waste	4,581	4,935	4,858	77	98.4%
Agriculture	73	41	0	41	0.0%
Wastewater Treatment	388	418	20	399	4.7%
Water Conveyance	369	381	0	381	0.0%
GHG Performance Standard*	-	-	1,899	-	-
Total	78,066	90,587	43,268	47,319	47.8%
Goal	-	-	-	47,391	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	72	-

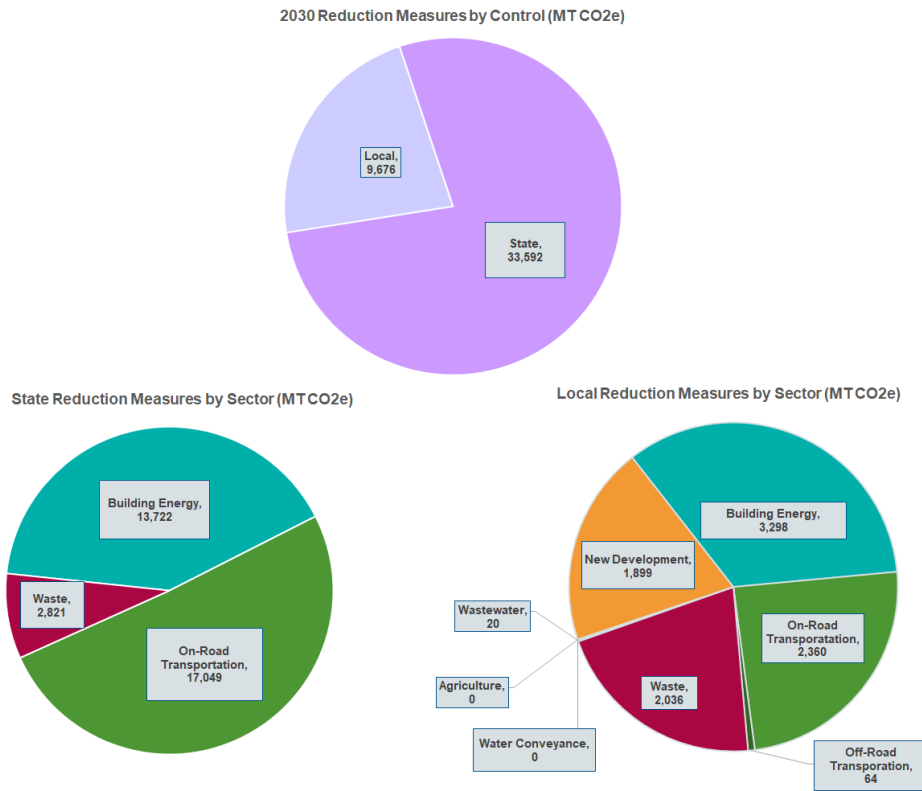
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City’s reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-27. Emission Reductions by Control and by Sector for Grand Terrace



3.10.3 Reduction Measures

Table 3-27 presents each reduction measure evaluated for Grand Terrace. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-27. GHG Reduction Measures and Estimated 2030 reductions for Grand Terrace

Measure Number	Measure Description	Reductions (MTCO _{2e})
State Measures		
State-SB 100	SB 100	8,234
State-SB 350	SB 350	4,696
State-T24	Title 24 (Energy Efficiency Standards)	719
State-Solar Water Heater	Solar Water Heaters (Residential)	10
State-Increased CHP	Increased Combined Heat and Power (Commercial)	63
State-OnRoad	State Fuel Efficiency Measures	17,049
State-SB 1383	Methane Capture	2,821
Total State Reductions		33,592
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	581
Energy-2	Lighting Efficiency	112
Energy-3	All Electric Buildings	0
Energy-5	Renewable Energy – New Commercial/Industrial	466
Energy-6	Solar Energy for Warehouse Space	0
Energy-7	Solar Installation for Existing Housing	827
Energy-8	Solar Installation for Existing Commercial/Industrial	910
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	0
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	47
OnRoad-2	Encourage Use of Mass Transit	839
OnRoad-3	Transportation Demand Management and Synchronization	372
OnRoad-4	Expand Bike Routes	406
OnRoad-5	Community Fleet Electrification	696
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	35
OffRoad-2	Idling Ordinance	19
OffRoad-3	Electric Landscaping Equipment	10
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	2,036
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	0
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	20
<i>Water Conveyance</i>		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New	0

	Construction	
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	402
Water-3	Water-Efficient Landscaping Practices	0
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	1,899
Total Local Reductions		9,676
Total Reductions		43,268

Notes:

Values may not sum due to rounding.

3.10.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Grand Terrace’s GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Grand Terrace 2010 General Plan unless otherwise noted City of (Grand Terrace 2010). In addition to state level measures, the City of Grand Terrace selected local measures such as an anti-idling ordinance and energy efficiency measures (Table 3-27). The City’s General Plan includes policies and programs that broadly support energy efficiency and sustainability even if it is not closely tied to a specific measure as part of this plan. Relevant General Plan policies for the specific reduction measures the City selected are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.10.4.1 Building Energy

- **Policy 4.6.3:** The City shall encourage energy and environmentally sustainable design in new land development projects using the standards of LEED.
- **Policy 9.4.2:** The City shall provide trees and other landscaping along all arterial highways.
- **Policy 4.7.7:** The City shall promote energy conservation efforts in new and existing residences and businesses.
- **Policy 8.2.4:** Support the development of cost saving and energy conserving construction techniques.
- **Policy 9.1.2:** The City shall incorporate energy conservation measures into conditions of approval for new development projects.
- **Policy 9.3.2:** Site and building design in new developments should maximize opportunities for efficient energy performance.
- **Policy 2.5.3** Energy efficiency shall be encouraged in all future development.

Energy-1. Energy Efficiency for Existing Buildings

- **Policy 4.6.1:** The City shall establish an energy conservation policy and implementation program for all City facilities.
- **Policy 4.6.2:** The City shall implement a public outreach program to provide the public with information regarding energy conservation practices and programs.
- **Policy 4.7.7:** The City shall promote energy conservation efforts in new and existing residences and businesses.

- **Policy 9.1.1:** The City shall work with Southern California Edison to promote energy conservation at residences and businesses.
- **Policy 9.8.2:** The City shall actively reduce greenhouse gas emissions from public facilities throughout the community.
- **Policy 8.3.5:** Encourage the use of rehabilitation assistance programs to make residences more energy efficient.

Energy-2. Lighting Efficiency

- **Policy 4.6.1:** The City shall establish an energy conservation policy and implementation program for all City facilities.
- **Policy 4.6.2:** The City shall implement a public outreach program to provide the public with information regarding energy conservation practices and programs.
- **Policy 4.7.7:** The City shall promote energy conservation efforts in new and existing residences and businesses.
- **Policy 9.8.2:** The City shall actively reduce greenhouse gas emissions from public facilities throughout the community.

3.10.4.2 On-Road

- **Policy 3.1.4:** Coordinate with transportation planning, programming, and implementation agencies.
- **Policy 3.4.1:** Develop a system of continuous and convenient bicycle routes designed to connect schools, residential areas, shopping centers, parks, and employment areas.
- **Policy 3.4.2:** The City shall promote and facilitate the use of bicycles as an alternative mode of transportation through the development of a City-wide network of bikeways.
- **Policy 3.5.3:** The City shall encourage and facilitate pedestrian movement by creating environments that are conducive to walking and maintaining a "human scale" of development.
- **Policy 4.7.3:** The City shall encourage land use planning and urban design that reduces vehicle trips through mixed use development, consolidation of commercial uses along arterial highways, and pedestrian connection between residential and commercial uses.
- **Policy 3.5.2:** The City shall participate in local and regional public transit programs.
- **Policy 3.5.4:** The City shall work closely with the regional transit agencies to ensure convenient and the affordable bus service continues to be available to local residents.

3.10.4.3 Off-Road

- **Policy 9.3.1:** Incorporate "green" building practices into the review of all new or renovated development projects.
- **Policy 4.7.6:** The City shall implement policies and procedures designed to reduce emissions generated by construction activities including enforcement of SCAQMD Rule 403.

3.10.4.4 Solid Waste Management

- **Policy 4.6.4:** The City shall work with its franchised solid waste collection company to implement recycling programs designed to reduce the per capita waste generation within the City while responding to the requirements of the California Integrated Waste Management Act of 1989.

- **Policy 7.4.1:** Work with the City’s franchise waste collection company to ensure an effective and efficient waste collection program for all City residents and businesses.
- **Policy 7.4.3:** Work with the County and the City’s waste hauler to implement effective recycling programs to reduce the total amount of waste requiring disposal.
- **Policy 9.2.1:** The City shall reduce the use of disposable products at all City facilities.
- **Policy 9.2.2:** Require all new development projects to recycle construction and demolition wastes.
- **Policy 9.2.3:** The City shall work with its franchise waste collection company to expand current recycling programs.

3.10.4.5 Wastewater Treatment

- **Policy 7.2.3:** Work with Riverside Highland Water Company to promote water conservation and education programs.
- **Policy 4.6.1:** The City shall establish an energy conservation policy and implementation program for all City facilities.
- **Policy 4.7.7:** The City shall promote energy conservation efforts in new and existing residences and businesses.

3.10.4.6 Water Conveyance

- **Policy 7.2.3:** Work with Riverside Highland Water Company to promote water conservation and education programs.
- **Policy 9.3.1:** Incorporate “green” building practices into the review of all new or renovated development projects.

3.11 City of Hesperia



3.11.1 City Summary

The City of Hesperia is located in the far southwestern corner of the Mojave Desert, also known as the Victor Valley. Both the Mojave River and the California Aqueduct flow through Hesperia. Founded in 1891, Hesperia has a rural and agricultural history and portions of the City contain rural residential and agricultural uses today. Many residents keep livestock and horses within the City limits. Hesperia has modest commercial and industrial activity relative to other jurisdictions in the region, with the exception of some cement manufacturing. The GHG inventory below reflects these uses.

Hesperia has a high-desert climate with daytime temperatures in summer often exceeding 100°F but with a large range between daytime and nighttime temperatures. Winter temperatures can be below freezing. For these reasons, homes and businesses in the high desert typically use more energy per capita to warm and cool buildings relative to more moderate climate zones in California.

The population of Hesperia in 2016 was 93,687, up from 93,687 in 2016. Hesperia’s demographic composition in 2018 was 34.8% Non-Hispanic White, 4.6% Non-Hispanic Black, 0.8% Non-Hispanic American Indian or Alaska Native, 1.6% Non-Hispanic Asian, and 1.6% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 56.6%. The City also has a high homeownership rate of 63% (SCAG, 2018). The population is expected to increase by 38% by 2030 compared to 2016. GHG emissions are projected to increase by approximately 26%, due to expected growth in both commercial and residential activity. A striking 51% growth in employment is expected in Hesperia between 2016 and 2030.

Table 3-28 presents socioeconomic data for Hesperia, including population, housing, and employment (SBCOG, 2019).

Table 3-28. Socioeconomic Data for Hesperia

Category	2016	2030	2045
Population	93,687	129,410	168,067
Households	26,764	39,503	53,153
Jobs	22,460	33,861	46,077



The City of Hesperia adopted the City of Hesperia Climate Action Plan in June of 2010. The Hesperia CAP outlines a course of action for the City government and the community of Hesperia to reduce per capita GHG emissions 29% below 2010 levels by 2020 and to adapt to the effects of climate change. The Hesperia CAP includes actions such as reducing emissions from new development through CEQA, increasing bicycle use through a safe and well-connected system of bicycle paths and end of trip facilities, reducing energy use from the transport and treatment of water, and improving

the City’s recycling and source reduction programs to make continued progress in minimizing waste (City of Hesperia, 2010).

3.11.2 Emission Reductions

In 2010, the City of Hesperia completed a CAP. The City participated in this regional effort as a study to inform their decision to update or revise their existing CAP. As part of this effort, the City of Hesperia has selected a goal to reduce its community GHG emissions to a level that is 40% below its 2020 level of GHG emissions by 2030. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective through a combination of state (~70%) and local (~30%) efforts. The Pavley vehicle standards, the state’s low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in Hesperia’s on-road, off-road, and building energy sectors in 2030. An additional reduction of 110,304 MTCO_{2e} will be achieved primarily through the following local measures, in order of reductions achieved: GHG Performance Standard for Existing Development (PS-1); Water Efficiency Renovations for Existing Buildings (Water-2); and Waste Diversion and Reduction (Waste-2). Hesperia’s Plan has the greatest impacts on GHG emissions in the building energy, on-road transportation, and waste sectors.

The bars in Figure 3-28 show Hesperia’s 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City’s emissions reduction target (i.e., 40% below its 2020 level of GHG emissions). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total (“2030 plan”), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~70%) of the total reductions needed to achieve the 2030 target.

Figure 3-29 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or “Reduction Plan” scenarios. The largest emissions contributions are in the on-road transportation and building energy emissions sectors.

Table 3-29 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction (“Reduction Plan”) results by sector. It shows the percent reduction in each sector’s emissions in 2030 and demonstrates that Hesperia exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the on-road transportation, waste, and building energy sectors.

Figure 3-30 presents emission reductions by sector and by control (i.e., state control versus local or City control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are due to the GHG Performance Standard for New Development (PS-1).

Figure 3-28. Emissions Reduction Profile for Hesperia

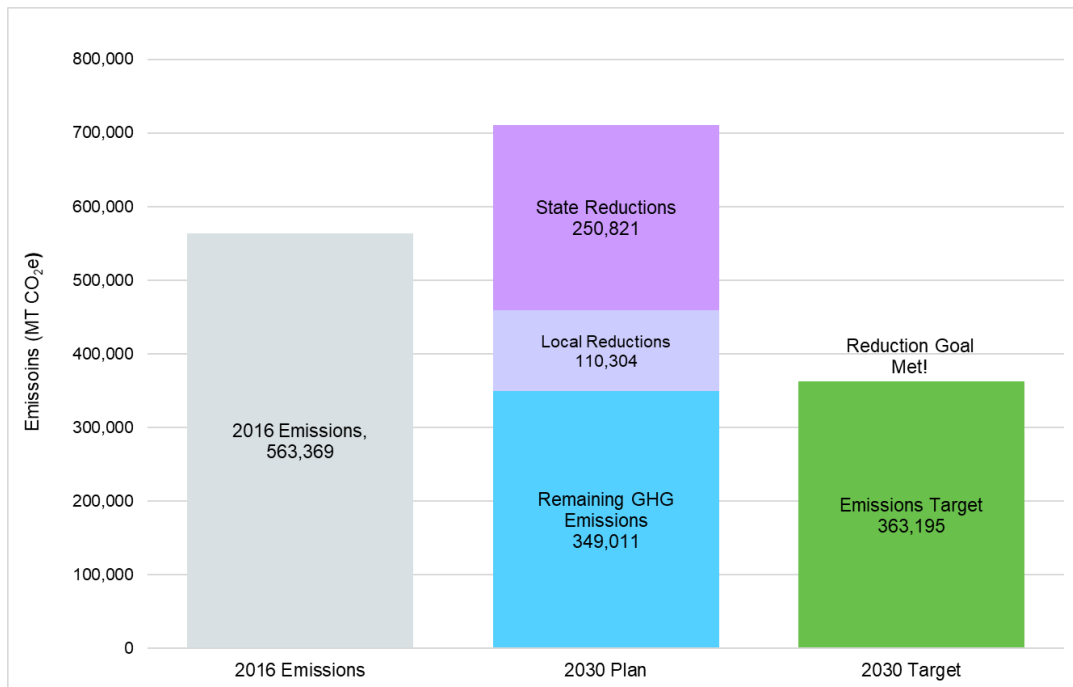


Figure 3-29. Emissions by Sector for Hesperia

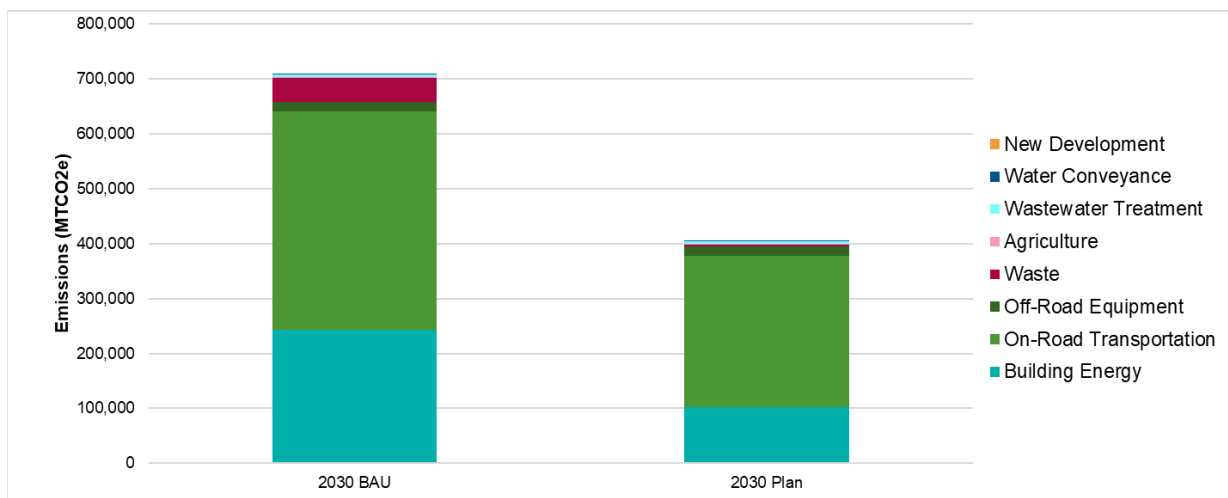


Table 3-29. Emission Reductions by Sector for Hesperia

Sector	2016 Emissions (MTCO₂e)	2030 BAU (MTCO₂e)	2030 Reductions (MTCO₂e)	2030 Emissions with Reduction Plan (MTCO₂e)	Reduction (percent)
Building Energy	167,316	243,320	141,764	101,557	58.3%
On-Road Transportation	346,306	398,267	121,727	276,540	30.6%
Off-Road Equipment	10,296	17,152	556	16,596	3.2%
Waste	30,825	42,579	39,507	3,072	92.8%
Agriculture	3,642	2,051	0	2,051	0.0%
Wastewater Treatment	2,935	4,054	0	4,054	0.0%
Water Conveyance	2,048	2,714	492	2,222	18.1%
GHG Performance Standard*	-	-	57,079	-	-
Total	563,369	710,136	361,125	349,011	50.9%
Goal	-	-	-	363,195	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	14,184	-

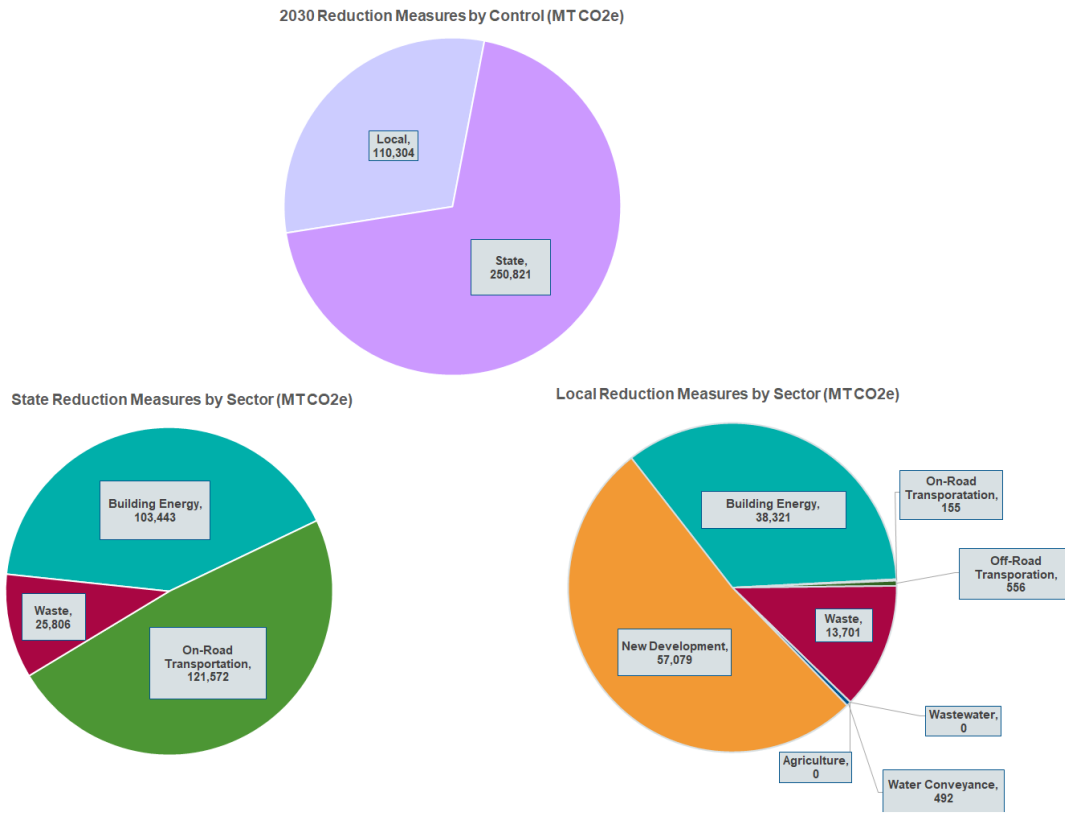
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City's reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-30. Emission Reductions by Control and by Sector for Hesperia



3.11.3 Reduction Measures

Table 3-30 presents each reduction measure evaluated for Hesperia. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-30. GHG Reduction Measures and Estimated 2030 reductions for Hesperia

Measure Number	Measure Description	Reductions (MTCO_{2e})
State Measures		
State-SB 100	SB 100	56,553
State-SB 350	SB 350	33,571
State-T24	Title 24 (Energy Efficiency Standards)	12,808
State-Solar Water Heater	Solar Water Heaters (Residential)	65
State-Increased CHP	Increased Combined Heat and Power (Commercial)	445
State-OnRoad	State Fuel Efficiency Measures	121,572
State-SB 1383	Methane Capture	25,806
Total State Reductions		250,821
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	2,596
Energy-2	Lighting Efficiency	0
Energy-3	All Electric Buildings	0
Energy-5	Renewable Energy – New Commercial/Industrial	0
Energy-6	Solar Energy for Warehouse Space	0
Energy-7	Solar Installation for Existing Housing	10,010
Energy-8	Solar Installation for Existing Commercial/Industrial	11,193
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	27
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	155
OnRoad-2	Encourage Use of Mass Transit	0
OnRoad-3	Transportation Demand Management and Synchronization	0
OnRoad-4	Expand Bike Routes	0
OnRoad-5	Community Fleet Electrification	0
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	0
OffRoad-2	Idling Ordinance	180
OffRoad-3	Electric Landscaping Equipment	376
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	13,701
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	0
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	0
<i>Water Conveyance</i>		

Water-1	Require Tier 1 Voluntary CALGreen Standards for New Construction	0
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	14,495
Water-3	Water-Efficient Landscaping Practices	492
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	57,079
Total Local Reductions		110,304
Total Reductions		361,125

Notes:

Values may not sum due to rounding.

3.11.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Hesperia's GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Hesperia 2010 General Plan unless otherwise noted (City of Hesperia 2010). In addition to state level measures, the City of Hesperia selected a variety of measures across nearly all sectors (Table 3-30). However, the City's General Plan includes policies and programs that broadly support energy efficiency and sustainability even if it is not closely tied to a specific measure as part of this Reduction Plan. Relevant General Plan policies for the specific reduction measures the City selected are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.11.4.1 Building Energy

- **Implementation Policy: CN-8.4:** Promote the utilization of alternative energy resources such as wind and solar in new development.

Energy-1. Building Energy Efficiency

- **Implementation Policy: CN-7.4:** Educate the public about energy conservation techniques.
- **Implementation Policy: CN-7.5:** Coordinate with the local energy provider in developing policies and procedures to reduce energy consumption in existing and future developments.
- **Implementation Policy: CN-7.3:** Provide incentives like technical assistance and low interest loans for projects that are energy efficient and contain energy conservation measures.
- **Implementation Policy: CN-7.6:** Encourage residents and businesses to utilize the incentives provided by the local energy providers to retrofit their buildings and businesses for energy efficiency and conservation.
- **Implementation Policy LU-6.2:** Promote sustainable building practices that go beyond the requirements of Title 24 of the California Administrative Code, and encourage energy-efficient design elements, consistent with Policy LU-6.1.
- **Implementation Policy: CN-7.2:** Encourage the use of green building standards and LEED or similar programs in both private and public projects.
- **Implementation Policy: CN 8.7:** Promote energy conservation through site layout, building design, natural light, and efficient mechanical and electrical products in development.

Energy-2. Lighting Efficiency

- **Implementation Policy LU-6.1:** Promote the use of green building standards and LEED, or other equivalent programs, in both private and public projects.
- **Implementation Policy: CN-7.4:** Educate the public about energy conservation techniques.
- **Implementation Policy: CN 8.9:** Promote sustainable principles in development that conserves such natural resources as air quality and energy resources.

Energy-10. Urban Tree Planting for Shading and Energy Savings

- **Implementation Policy: CN-7.5:** Coordinate with the local energy provider in developing policies and procedures to reduce energy consumption in existing and future developments.
- **Implementation Policy LU-3.4:** Encourage the beautification of pedestrian areas, particularly through the use of landscaping.
- **Implementation Policy LU-3.8:** Incorporate landscape plantings into commercial developments to define and emphasize entrances, inclusive of those areas along the front of a building facing a parking lot.
- **Implementation Policy LU-4.7:** Incorporate landscape plantings into industrial projects to define and emphasize entrances, inclusive of those areas along the front of a building facing a parking lot.
- **Implementation Policy LU-6.5:** Encourage development that incorporates green building practices to conserve natural resources as part of sustainable development practices.

3.11.4.2 On-Road

- **Implementation Policy CI-5.3:** Continue to participate with the Victor Valley Transit Authority to ensure there are adequate routes to provide efficient, adequate, safe service for the community.
- **Implementation Policy CI-5.4:** Continue to work with and support the Victor Valley Transit Authority in providing transit facilities for elderly and handicapped residents.
- **Implementation Policy LU-6.7:** Encourage the development of public facilities in a manner which assures adequate levels of service, while remaining compatible with existing and future land uses.
- **Implementation Policy CI-1.11:** Encourage alternative modes of transportation including bus, bicycle, pedestrian, and equestrian through street design.
- **Implementation Policy CI-1.13:** Where feasible, create opportunities for recreation through the establishment of interconnected trail systems throughout the community.
- **Implementation Policy CI-1.12:** Provide for a safe and efficient pedestrian network.
- **Implementation Policy CI-1.14:** Coordinate with San Bernardino County Flood Control District and Southern California Edison Company to promote utilization of easements for the trail system.
- **Implementation Policy CI-2.8:** Reduce trip generation through development and implementation of Transportation Demand Management Programs.
- **Implementation Policy CI-5.1:** Provide a wide range of travel alternatives to the use of single occupancy vehicles.
- **Implementation Policy CI-5.2:** Work with Caltrans and SBCOG to provide additional park-and-ride lots at key locations.

- **Implementation Policy: OS-6.1:** Provide an interconnecting plan in conjunction with surrounding agencies to provide regional trails.
- **Implementation Policy LU-2.4:** Utilize mixed-use development to create unique and varied housing.
- **Implementation Policy LU-6.4:** Encourage sustainable development that incorporates green building best practices and involves the reuse of previously developed property and/or vacant sites within a built-up area.

3.11.4.3 Off-Road

- **Implementation Policy: CN- 9.2:** Implement measures to reduce exhaust emissions from construction equipment.

Off-Road-2. Idling Ordinance

- **Implementation Policy: CN-7.4:** Educate the public about energy conservation techniques.

Off-Road-3. Electric Landscaping Equipment

- **Implementation Policy: CN-7.4:** Educate the public about energy conservation techniques.

3.11.4.4 Solid Waste Management

Waste-2. Waste Diversion and Reduction

- **Implementation Policy: CN 8.8:** Continue the existing recycling program and utilization of the material recovery facility program while exploring additional methods of reducing waste.
- **Implementation Policy LU-6.3:** Support sustainable building practices that encourage the use of recycled or other building materials that promote environmental quality, economic vitality, and social benefits. Support construction, and operational practices that limit impacts to the environment.

3.11.4.5 Wastewater Treatment

- **Implementation Policy: CN-8.4:** Promote the utilization of alternative energy resources such as wind and solar in new development.
- **Implementation Policy: CN 8.9:** Promote sustainable principles in development that conserves such natural resources as air quality and energy resources.

3.11.4.6 Water Conveyance

Water-1. Require Tier 1 Voluntary CALGreen Standards for New Construction

- **Implementation Policy: CN-1.6:** Encourage the use of low-water consumption fixtures in homes and businesses.
- **Implementation Policy: CN-1.7:** Require new development to use new technology, features, equipment, and other methods to reduce water consumption.

Water-2. Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency

- **Implementation Policy: CN-1.2:** Educate residents on water conservation methods with best practices and tips.

- **Implementation Policy: CN-1.6:** Encourage the use of low-water consumption fixtures in homes and businesses.

Water-3. Water-Efficient Landscaping Practices

- **Implementation Policy: CN-1.1:** Promote the use of desert vegetation with low water usage and drought tolerant materials in landscaped areas.
- **Implementation Policy: CN-1.2:** Educate residents on water conservation methods with best practices and tips.
- **Implementation Policy: CN-1.6:** Encourage the use of low-water consumption fixtures in homes and businesses.
- **Implementation Policy: CN-1.7:** Require new development to use new technology, features, equipment, and other methods to reduce water consumption.

3.12 City of Highland



3.12.1 City Summary

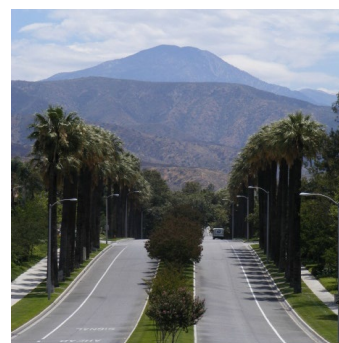
The City of Highland is located on the far eastern side of the San Bernardino Valley, east of the City of San Bernardino and north of the City of Redlands. The City is bordered on the north by the San Bernardino Mountains. Highland is primarily a residential community, with over 60% of the City’s 19 square miles planned for residential uses and another 20% for open spaces. The GHG inventory below reflects these largely residential uses, with primary sources of GHG emissions in Highland of light/medium-duty vehicles (43%), residential electricity (13%), and residential natural gas (13%).

Like other valley jurisdictions, Highland was founded in the late 1800s with ties to agriculture and the railways. Highland’s population 54,201 in 2016, up from 53,014 in 2010. Highland’s demographic composition in 2018 was 27.6% Non-Hispanic White, 8.1% Non-Hispanic Black, 0.4% Non-Hispanic American Indian or Alaska Native, 9.0% Non-Hispanic Asian, 3.4% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 51.5%. Highland anticipates a 29% increase in employment between 2016 and 2030.

Table 3-31 presents socioeconomic data for Highland, including population, housing, and employment (SBCOG, 2019).

Table 3-31. Socioeconomic Data for Highland

Category	2016	2030	2045
Population	54,201	60,631	68,942
Households	15,391	17,956	21,410
Jobs	6,938	8,952	11,116



3.12.2 Emission Reductions

The City of Highland selected a goal to reduce its community GHG emissions to a level that is 40% below its 2016 emissions by 2030. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective through a combination of state (~70%) and local (~30%) efforts. The Pavley vehicle standards, the state’s low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in Highland’s on-road, solid waste, and building energy sectors in 2030. An additional reduction of 40,163 MTCO₂e will be achieved primarily through the following local measures, in order of reductions achieved: GHG Performance Standard (PS-1); Waste Diversion and Reduction (Waste-2); and Solar Installation for Existing Housing (Energy-7). Highland’s reduction plan has the greatest impacts on GHG emissions in the building energy, waste, and on-road transportation sectors.

The bars in Figure 3-31 show Highland’s 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City’s emissions reduction target (i.e., 42% below its 2016 emissions). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total (“2030 plan”), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~70%) of the total reductions needed to achieve the 2030 target.

Figure 3-32 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or “Reduction Plan” scenarios. The largest emissions contributions are in the on-road transportation and building energy emissions sectors.

Table 3-32 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction (“Reduction Plan”) results by sector. It shows the percent reduction in each sector’s emissions in 2030 and demonstrates that Highland exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the building energy, waste, and on-road transportation sectors.

Figure 3-33 presents emission reductions by sector and by control (i.e., state control versus local or City control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are in the building energy sector.

Figure 3-31. Emissions Reduction Profile for Highland

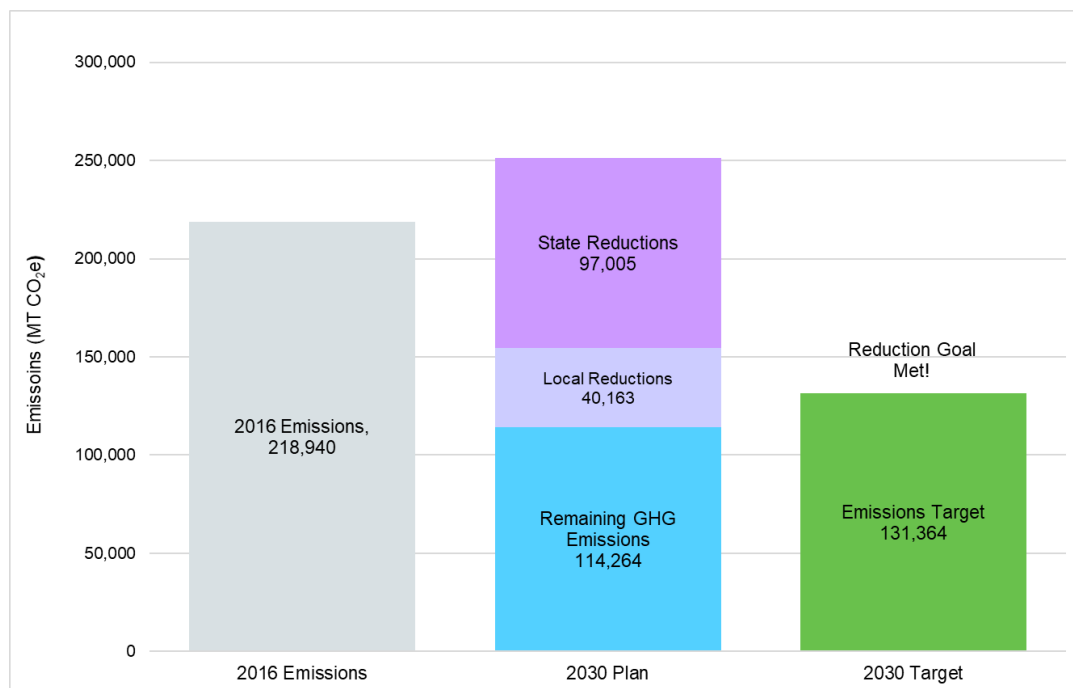


Figure 3-32. Emissions by Sector for Highland

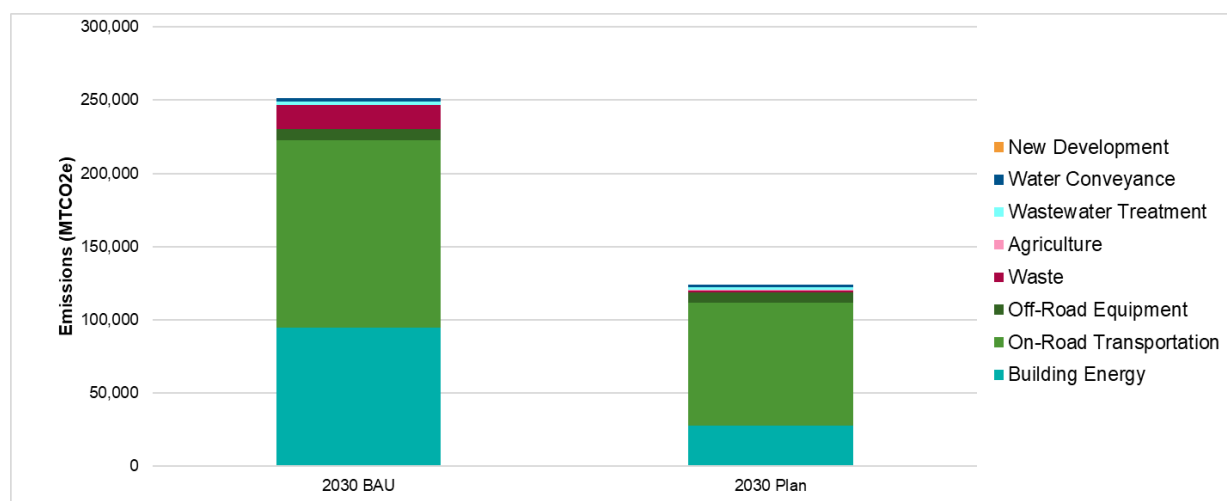


Table 3-32. Emission Reductions by Sector for Highland

Sector	2016 Emissions (MTCO ₂ e)	2030 BAU (MTCO ₂ e)	2030 Reductions (MTCO ₂ e)	2030 Emissions with Reduction Plan (MTCO ₂ e)	Reduction (percent)
Building Energy	79,872	94,464	66,557	27,907	70.5%
On-Road Transportation	113,978	128,139	44,366	83,772	34.6%
Off-Road Equipment	5,671	7,654	315	7,339	4.1%
Waste	14,511	16,232	15,165	1,067	93.4%
Agriculture	788	444	0	444	0.0%
Wastewater Treatment	1,698	1,899	408	1,492	21.5%
Water Conveyance	2,423	2,600	338	2,262	13.0%
GHG Performance Standard*	-	-	10,019	-	-
Total	218,940	251,432	137,168	114,264	54.6%
Goal	-	-	-	131,364	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	17,100	-

Notes:

Values may not sum due to rounding.

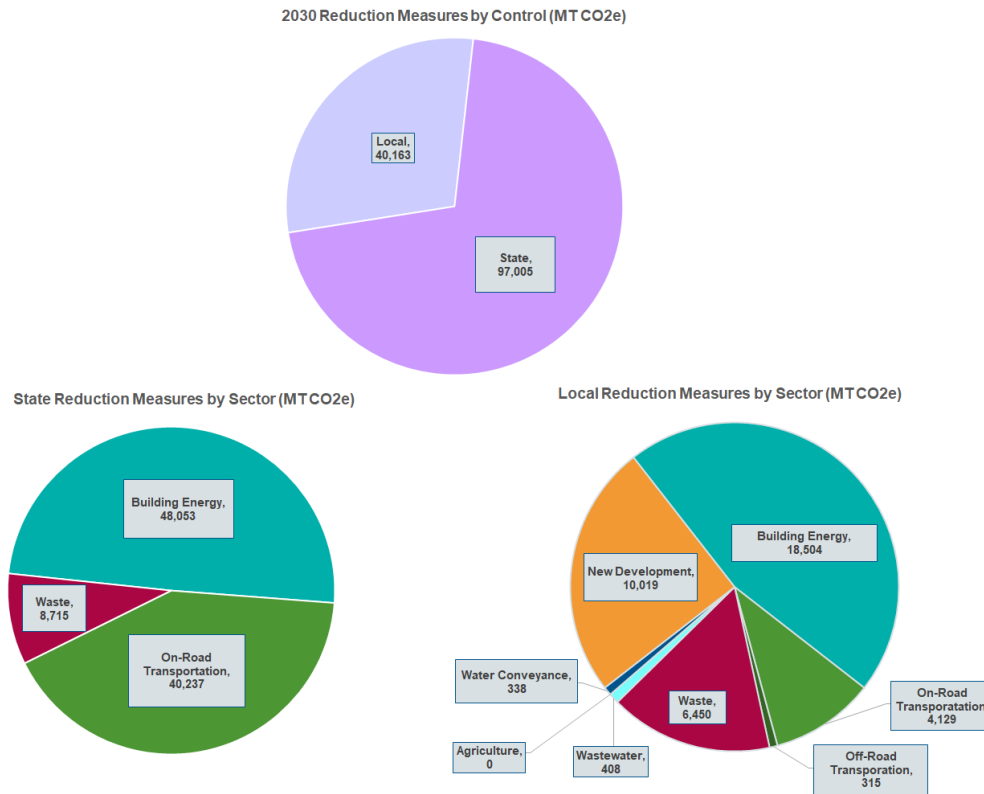
Dashes indicate no value or not applicable.

Negative 2030 reduction emissions indicate that emissions will be higher than 2016 emissions.

Negative 2030 emissions with reduction plan values indicate that emissions reductions are larger than the projected 2030 BAU emissions.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City’s reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-33. Emission Reductions by Control and by Sector for Highland



3.12.3 Reduction Measures

Table 3-33 presents each reduction measure evaluated for Highland. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-33. GHG Reduction Measures and Estimated 2030 Reductions for Highland

Measure Number	Measure Description	Reductions (MTCO _{2e})
State Measures		
State-SB 100	SB 100	23,645
State-SB 350	SB 350	21,664
State-T24	Title 24 (Energy Efficiency Standards)	2,594
State-Solar Water Heater	Solar Water Heaters (Residential)	34
State-Increased CHP	Increased Combined Heat and Power (Commercial)	115
State-OnRoad	State Fuel Efficiency Measures	40,237
State-SB 1383	Methane Capture	8,715
Total State Reductions		97,005
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	1,309
Energy-2	Lighting Efficiency	284
Energy-3	All Electric Buildings	3,191
Energy-5	Renewable Energy – New Commercial/Industrial	814
Energy-6	Solar Energy for Warehouse Space	0
Energy-7	Solar Installation for Existing Housing	4,797
Energy-8	Solar Installation for Existing Commercial/Industrial	3,996
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	11
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	208
OnRoad-2	Encourage Use of Mass Transit	990
OnRoad-3	Transportation Demand Management and Synchronization	879
OnRoad-4	Expand Bike Routes	958
OnRoad-5	Community Fleet Electrification	1,095
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	121
OffRoad-2	Idling Ordinance	84
OffRoad-3	Electric Landscaping Equipment	110
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	6,450
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	120
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	288
<i>Water Conveyance</i>		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New	586

Water-2	Construction Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	3,517
Water-3	Water-Efficient Landscaping Practices	338
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	10,019
Total Local Reductions		40,163
Total Reductions		137,168

Notes:

Values may not sum due to rounding.

3.12.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Highland’s GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Highland 2006 General Plan unless otherwise noted (City of Highland 2006). In addition to state level measures, the City of Highland selected GHG reduction measures across nearly all sectors (Table 3-33). Relevant General Plan policies for the specific reduction measures the City selected are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.12.4.1 Building Energy

Energy-1. Building Energy Efficiency

- **Goal 5.19 Policy 13:** Continue comprehensive efforts to reduce energy consumption.
- **Goal 5.16 Policy 1:** Consolidate and adopt energy-saving practices for all City departments.
- **Goal 6.8 Policy 7:** Support current incentive programs that recognize and reward developments using new and innovative emission reduction techniques such as innovative efficient window glazing, wall insulation, and ventilation systems; efficient air conditioning, heating, and appliances; use of passive solar design, and solar heating systems; use of energy cogeneration and/or use of waste energy; and landscape techniques that reduce water consumption and provide passive solar benefits.
- **Goal 5.16 Policy 2:** Monitor energy usage for all City facilities.
- **Goal 5.16 Policy 4:** Distribute energy-conservation information, in both English and Spanish, to residents and businesses.
- **Goal 5.17 Policy 11:** Participate in the CEEP (Community Energy Efficiency Program) Certificate and Recognition Program.
- **Goal 10.12 Policy 1:** Encourage landscaping practices that increase energy efficiency and conserve natural resources.
- **Goal 5.17 Policy 1:** Encourage energy and environmentally sustainable designs—such as “Green Development Standards”—in the design and approval of new projects.
- **Goal 5.17 Policy 7:** Encourage energy-efficient retrofitting of existing buildings, where practical, throughout the City including assisting applicants in the installation of more efficient HVAC (heating, ventilation, air conditioning) systems.
- **Goal 5.17 Policy 10:** Adopt LEED design standards for public buildings.

Energy-2. Lighting Efficiency

- **Goal 5.17 Policy 10:** Adopt LEED design standards for public buildings.
- **Goal 5.19 Policy 13:** Continue comprehensive efforts to reduce energy consumption.
- **Goal 5.16 Policy 1:** Consolidate and adopt energy-saving practices for all City departments.

Energy-3. All Electric Buildings

- **Goal 10.12 Policy 6:** Encourage site planning and building orientation that maximizes solar and wind resources for cooling and heating.

Energy-5. Renewable Energy - New Commercial/Industrial

- **Goal 5.17 Policy 8:** Distribute and participate in incentive programs for incorporation of solar and photovoltaic panels (active solar) into existing or new buildings.
- **Goal 10.12 Policy 6:** Encourage site planning and building orientation that maximizes solar and wind resources for cooling and heating.

Energy-6. Solar Energy for Warehouse Space

- **Goal 5.17 Policy 8:** Distribute and participate in incentive programs for incorporation of solar and photovoltaic panels (active solar) into existing or new buildings.
- **Goal 10.12 Policy 6:** Encourage site planning and building orientation that maximizes solar and wind resources for cooling and heating.
- **Goal 6.8 Policy 7:** Support current incentive programs that recognize and reward developments using new and innovative emission reduction techniques such as use of passive solar design, and solar heating systems; and landscape techniques that reduce water consumption and provide passive solar benefits.

Energy-7. Solar Installation for Existing Housing

- **Goal 5.17 Policy 8:** Distribute and participate in incentive programs for incorporation of solar and photovoltaic panels (active solar) into existing or new buildings.
- **Goal 10.12 Policy 6:** Encourage site planning and building orientation that maximizes solar and wind resources for cooling and heating.
- **Goal 6.8 Policy 7:** Support current incentive programs that recognize and reward developments using new and innovative emission reduction techniques such as use of passive solar design, and solar heating systems; and landscape techniques that reduce water consumption and provide passive solar benefits.

Energy-8. Renewable Energy - Existing Commercial/Industrial

- **Goal 5.17 Policy 8:** Distribute and participate in incentive programs for incorporation of solar and photovoltaic panels (active solar) into existing or new buildings.
- **Goal 10.12 Policy 6:** Encourage site planning and building orientation that maximizes solar and wind resources for cooling and heating.
- **Goal 6.8 Policy 7:** Support current incentive programs that recognize and reward developments using new and innovative emission reduction techniques such as innovative efficient window glazing, wall insulation, and ventilation systems; efficient air conditioning, heating, and appliances; use of passive solar design, and solar heating systems; use of energy cogeneration and/or use of waste energy; and landscape techniques that reduce water consumption and provide passive solar benefits.

Energy-10. Urban Tree Planting for Shading and Energy Savings

- **Goal 10.5 Policy 4:** Provide ample landscaping for internal parking areas using landscaped bays and overstory shade trees.
- **Goal 10.12 Policy 1:** Encourage landscaping practices that increase energy efficiency and conserve natural resources.
- **Goal 10.12 Policy 2:** Planting trees and incorporating landscaped berms to provide shade and wind buffering.
- **Goal 5.1 Policy 9:** Preserve mature trees, natural hydrology, native plant materials and areas of visual interest.
- **Goal 5.6 Policy 10:** To the extent possible, require the preservation of existing native trees and shrubs.
- **Goal 6.8 Policy 15:** Enforce compliance of new development with the Tree Preservation Ordinance.
- **Goal 5.16 Policy 4:** Provide ample landscaping for internal parking areas using landscaped bays and overstory shade trees.

3.12.4.2 On-Road

OnRoad-1. Alternative Fueled Transit Fleets

- **Goal 6.8 Policy 4:** Support the development and use of alternative fuel sources for transportation-related activities to reduce local government energy demand.

OnRoad-2. Encourage Use of Mass Transit

- **Goal 3.1 Policy 10:** Encourage major employers to reduce vehicular trips by offering incentive concepts discussed in the General Plan Circulation Element, including but not limited to reduced transit passes and preferential parking for ridesharing.

OnRoad-3. Transportation Demand Management and Signal Synchronization

- **Goal 2.10 Policy 3:** Provide access to multiple modes of travel, including pedestrian, bicycle, transit, and automobile.
- **Goal 3.4 Policy 11:** Encourage and improve pedestrian connections from residential neighborhoods to retail activity centers, employment centers, schools, parks, open space areas and community centers.
- **Goal 3.4 Policy 13:** Support the planning of sidewalks of appropriate width to allow the provision of buffers to shield nonmotorized traffic from vehicles.
- **Goal 5.19 Policy 14:** Offer incentives to home-based businesses, carpool networks and park-and-ride facilities.
- **Goal 6.8 Policy 9:** Reduce work trips in the City and peak period auto travel by enforcing the City's Transportation Demand Ordinance; supporting current staggered, flexible, and compressed work schedules in public agencies; working with private agencies to encourage work schedule flexibility programs for employers with more than 25 employees in a single location; educating City residents on the advantages of ride sharing and public transit; and encouraging the development of job-intensive uses within designated employment centers for local residents.
- **Goal 6.8 Policy 11:** Reduce the number of vehicles driven to work by requiring as part of the development review process that preferential parking be included in parking lot designs to high occupancy vehicles, vanpools, and shuttle services, if applicable.

- **Goal 10.12 Policy 5:** Encourage transit-oriented, infill development to make efficient use of existing land.
- **Goal 3.5:** Promote bus service and paratransit improvements. (All Policies).

OnRoad-4. Expand Bike Routes

- **Goal 3.7:** Protect and encourage bicycle travel. (All Policies).
- **Goal 5.12 Policy 5:** Where possible, designate and design new trail development near transit routes or heavily traveled areas.

OnRoad-5. Community Fleet Electrification

- **Goal 6.8 Policy 4:** Support the development and use of alternative fuel sources for transportation-related activities to reduce local government energy demand.

3.12.4.3 Off-Road

Off-Road-2. Idling Ordinance

- **Goal 6.8 Policy 3:** Create and integrate innovative local emissions reducing pilot programs into City plans for future government facilities and equipment.

3.12.4.4 Solid Waste Management

Waste-2. Waste Diversion and Reduction

- **Goal 4.5 Policy 3:** Reduce the volume of solid waste material sent to landfills by continuing source reduction, recycling, and composting programs in compliance with State law and encouraging the participation of all residents and businesses in these programs.
- **Goal 4.5 Policy 4:** Increase the price paid for recycling glass and plastic from private vendors.
- **Goal 5.18 Policy 2:** Where joint programs offer improved efficiency or reduced cost, collaborate with other entities in waste recycling efforts.
- **Goal 5.18 Policy 3:** Maintain a comprehensive public education program, coordinated, in part, through the Environmental Learning Center, to stimulate recycling, reuse and waste reduction by its resident and businesses.
- **Goal 10.12 Policy 9:** Encourage local recycling and composting initiatives at the neighborhood level.

3.12.4.5 Wastewater Treatment

Wastewater-1. Methane Recovery at Wastewater Treatment Plants

- **Goal 6.8 Policy 7:** Support current incentive programs that recognize and reward developments using new and innovative emission reduction techniques such as the use of waste energy.

Wastewater-2. Equipment Upgrades and Wastewater Treatment Plants

- **Goal 4.3 Policy 3:** Encourage Grey Water Recycling, especially for residential use irrigation.
- **Goal 5.16 Policy 5:** Coordinate energy-related policies and actions with local utilities and energy agencies.

3.12.4.6 Water Conveyance

- **Goal 5.6 Policy 9:** Consider underground irrigation techniques to conserve water.
- **Goal 5.16 Policy 5:** Coordinate energy-related policies and actions with local utilities and energy agencies.

Water-1. Require Tier 1 Voluntary CALGreen Standards for New Construction

- **Goal 5.6 Policy 5:** Ensure that the latest water-saving technologies for domestic and landscaping uses are incorporated into new developments or retrofitted into existing developments where intensification is proposed.

Water-2. Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency

- **Goal 5.6 Policy 3:** Continue to specify and install water-conserving plumbing fixtures and fittings in public facilities such as parks, community centers and government buildings in accordance with Title 24 of the California Code of Regulations.

Water-3. Water-Efficient Landscaping Practices

- **Goal 10.12 Policy 1:** Encourage landscaping practices that increase energy efficiency and conserve natural resources.
- **Goal 10.12 Policy 2:** Planting trees and incorporating landscaped berms to provide shade and wind buffering.
- **Goal 5.1 Policy 9:** Preserve mature trees, natural hydrology, native plant materials and areas of visual interest.
- **Goal 5.6 Policy 10:** To the extent possible, require the preservation of existing native trees and shrubs.
- **Goal 5.6 Policy 13:** Where possible, require the extensive use of mulch in landscape areas to improve the water-holding capacity of the soil by reducing evaporation and soil compaction.
- **Goal 10.12 Policy 3:** Using native and drought-tolerant landscaping (“xeriscaping”) and drip irrigation to conserve water resources.
- **Goal 5.6 Policy 6:** Encourage the use of drought-tolerant plants and water-efficient landscape design.
- **Goal 5.6 Policy 15:** Establish landscape maintenance districts along streets for water conservation purposes.
- **Goal 5.6 Policy 11:** Within each model home complex, require that homes incorporate a specified amount of drought-tolerant landscaping.
- **Goal 5.6 Policy 5:** Ensure that the latest water-saving technologies for domestic and landscaping uses are incorporated into new developments or retrofitted into existing developments where intensification is proposed.
- **Goal 5.6 Policy 12:** Require residential builders to provide information, including a plant palette of xeriscape species, to prospective buyers of new homes within the City of Highland regarding drought-tolerant planting concepts.

3.13 City of Loma Linda



3.13.1 City Summary

The City of Loma Linda is located in the San Bernardino Valley, east of Colton, south of San Bernardino, and west of Redlands. Loma Linda is home to the Loma Linda University Medical Center, drawing employees from all over the region and patients and students from all over the world. Loma Linda is primarily a residential community that has grown up around the medical center and university. The GHG emissions below reflect these land uses. The climate in Loma Linda is similar to other valley jurisdictions with warm summers, mild winters, and less than 15 inches of rain per year.

Loma Linda encompasses approximately 7.5 miles (10.5 miles in the planning area). The population in Loma Linda in 2016 was 24,474 and is expected to grow to 27,093 by 2030, an increase of 11% over the 2016 population. Loma Linda’s demographic composition in 2018 was 34.0% Non-Hispanic White, 11.9% Non-Hispanic Black, 0.2% Non-Hispanic American Indian or Alaska Native, 25.4% Non-Hispanic Asian, 3.1% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 25.4 %. Loma Linda has a larger Asian population than average compared to the SCAG region (25% compared to 13%) and 33% of the population is foreign-born (SCAG, 2018; U.S. Census Bureau, 2012).

Table 3-34 presents socioeconomic data for Loma Linda, including population, housing, and employment (SBCOG, 2019).

Table 3-34. Socioeconomic Data for Loma Linda

Category	2016	2030	2045
Population	24,474	27,093	30,112
Households	9,033	10,458	11,985
Jobs	24,184	26,152	28,260



3.13.2 Emission Reductions

The City of Loma Linda selected a goal to reduce its community GHG emissions to a level that is 25% below its 2008 emissions by 2030. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective through a combination of state (~90%) and local (~10%) efforts. The Pavley vehicle standards, the state’s low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in Loma Linda’s On-Road, and Building Energy sectors in 2030. An additional reduction of 8,199MTCO₂e will be achieved primarily through the following local measures, in order of reductions achieved: Solar Installation

for Existing Commercial/Industrial Facilities (Energy-8); Expand Bike Routes (OnRoad-4); and Transportation Demand Management and Synchronization (OnRoad-3). Loma Linda's reduction plan has the greatest impacts on GHG emissions in the on-road transportation, waste and building energy sectors.

The City of Loma Linda's adopted 2009 General Plan addresses GHG emissions and supports the goals of SB 375 and Sustainable Communities Strategies (Transportation-1) on a local and regional level (SBCOG Region) through the following actions.

Regional actions:

- Maintain or enhance the performance of the multi-modal transportation system, and minimize traffic delays.
- Assist in focusing available transportation funding on cost-effective responses to subregional and regional transportation needs.
- Help to coordinate development and implementation of subregional transportation strategies across jurisdictional boundaries.
- Promote air quality and improve mobility through implementation of land use and transportation alternatives or incentives that reduce both vehicle trips and miles traveled, and vehicle emissions.
- Participate in Tier 1 and II traffic signal coordination with SBCOG.

Local actions:

- Design new residential neighborhoods to provide safe pedestrian and bicycle access to schools, parks, and neighborhood commercial facilities through explicit development requirements for such amenities.
- Coordinate with Omnitrans to review new developments and encourage transit improvements, which may include transit stops, bus turnouts and bus shelters to encourage public transit ridership and address air quality and traffic congestion concerns.
- Incorporate transit stops, bus turnouts, and bus shelters into new developments.
- Integrate Locally Preferred Alternative transit stations into nearby planned development.
- Encourage extension of Metrolink service to the Loma Linda area, including assistance in locating and developing a Metrolink station within Loma Linda should service be extended to the area.
- Preserve options for future transit use when designing roadway and highway improvements.

The bars in Figure 3-34 show Loma Linda's 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City's emissions reduction target (i.e., 25% below its 2008 emissions). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total ("2030 plan"), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~90%) of the total reductions needed to achieve the 2030 target.

Figure 3-35 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or “Reduction Plan” scenarios. The largest emissions contributions are in the on-road transportation and building energy emissions sectors.

Table 3-35 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction (“Reduction Plan”) results by sector. It shows the percent reduction in each sector’s emissions in 2030 and demonstrates that Loma Linda exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the on-road transportation, waste and building energy sectors.

Figure 3-36 presents emission reductions by sector and by control (i.e., state control versus local or City control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are in the building energy sector.

Figure 3-34. Emissions Reduction Profile for Loma Linda

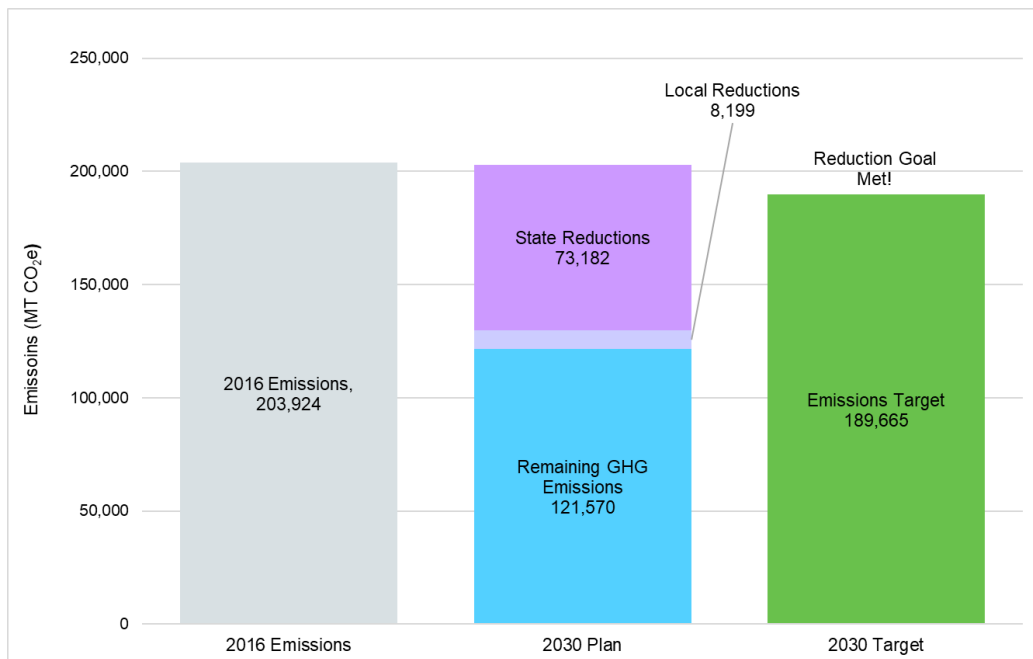


Figure 3-35. Emissions by Sector for Loma Linda

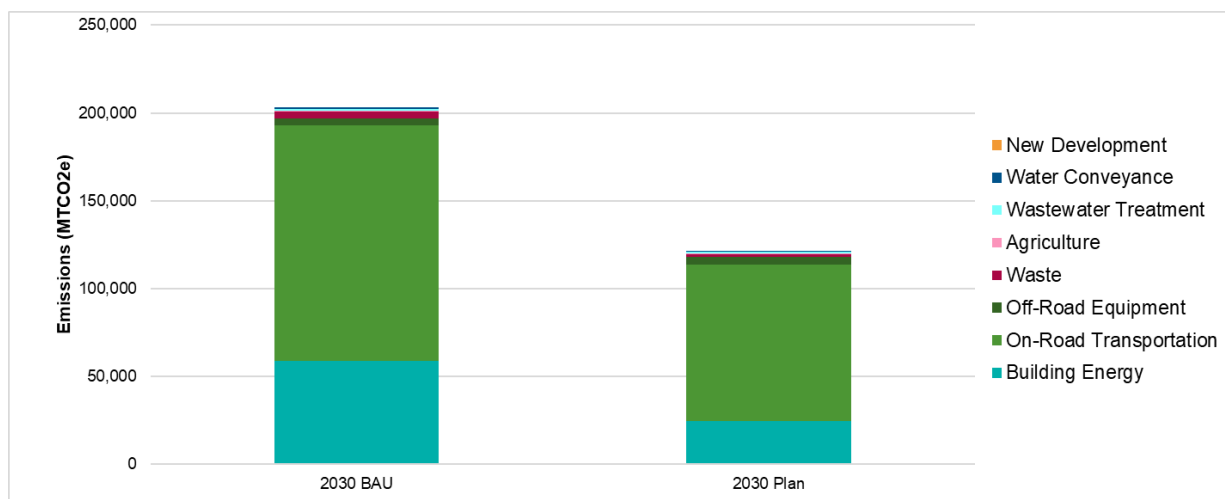


Table 3-35. Emission Reductions by Sector Loma Linda

Sector	2016 Emissions (MTCO _{2e})	2030 BAU (MTCO _{2e})	2030 Reductions (MTCO _{2e})	2030 Emissions with Reduction Plan (MTCO _{2e})	Reduction (percent)
Building Energy	52,959	58,736	33,885	24,851	57.7%
On-Road Transportation	142,180	133,947	45,138	88,809	33.7%
Off-Road Equipment	3,180	4,320	56	4,265	1.3%
Waste	3,574	3,957	2,138	1,819	54.0%
Agriculture	400	225	0	225	0.0%
Wastewater Treatment	767	849	0	849	0.0%
Water Conveyance	863	917	165	753	17.9%
GHG Performance Standard*	-	-	-	-	-
Total	203,924	202,951	81,381	121,570	40.1%
Goal	-	-	-	189,665	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	68,095	-

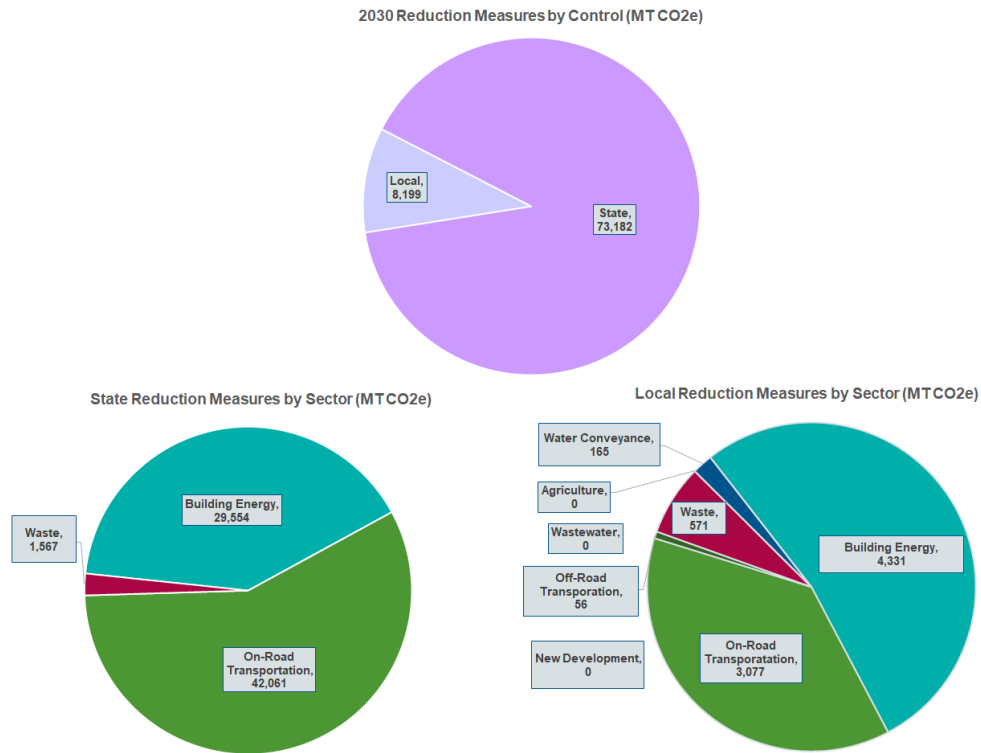
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City’s reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-36. Emission Reductions by Control and by Sector for Loma Linda



3.13.3 Reduction Measures

Table 3-36 presents each reduction measure evaluated for Loma Linda. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-36. GHG Reduction Measures for Loma Linda

Measure Number	Measure Description	Reductions (MTCO_{2e})
State Measures		
State-SB 100	SB 100	18,606
State-SB 350	SB 350	10,018
State-T24	Title 24 (Energy Efficiency Standards)	864
State-Solar Water Heater	Solar Water Heaters (Residential)	20
State-Increased CHP	Increased Combined Heat and Power (Commercial)	47
State-OnRoad	State Fuel Efficiency Measures	42,061
State-SB 1383	Methane Capture	1,567
Total State Reductions		73,182
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	585
Energy-2	Lighting Efficiency	150
Energy-3	All Electric Buildings	0
Energy-5	Renewable Energy – New Commercial/Industrial	140
Energy-6	Solar Energy for Warehouse Space	0
Energy-7	Solar Installation for Existing Housing	845
Energy-8	Solar Installation for Existing Commercial/Industrial	1,738
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	1
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	57
OnRoad-2	Encourage Use of Mass Transit	414
OnRoad-3	Transportation Demand Management and Synchronization	919
OnRoad-4	Expand Bike Routes	1,001
OnRoad-5	Community Fleet Electrification	687
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	36
OffRoad-2	Idling Ordinance	0
OffRoad-3	Electric Landscaping Equipment	20
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	571
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	0
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	0
<i>Water Conveyance</i>		

Water-1	Require Tier 1 Voluntary CALGreen Standards for New Construction	0
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	871
Water-3	Water-Efficient Landscaping Practices	165
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	0
Total Local Reductions		8,199
Total Reductions		81,381

Notes:

Values may not sum due to rounding.

3.13.4 Relevant General Plan Policies

This section summarizes key general plan policies that support Loma Linda’s GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Loma Linda 2009 General Plan unless otherwise noted (City of Loma Linda 2009). In addition to state level measures, the City of Loma Linda selected a variety of measures across nearly all sectors (Table 3-36). Relevant General Plan policies for the specific reduction measures the City selected are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.13.4.1 Building Energy

Energy-1. Building Energy Efficiency

- **4.6.4.2. Policy e:** Consider light-colored surfacing on pavements and rooftops where feasible to reduce heat absorption
- **4.6.4.2. Policy f:** As part of the development review process, work with builders to maximize energy conservation benefits in the placement of buildings on a site with regard to sun and natural breezes.
- **4.6.4.2. Policy z:** Incorporate energy efficiency as a key criterion in the City’s procurement process.
- **Policy 1.3:** Establish incentives and provide in-house resources for energy conservation measures in new and existing housing to implement an energy conservation program.

Energy-2. Lighting Efficiency

- **4.6.4.2. Policy z:** Incorporate energy efficiency as a key criterion in the City’s procurement process.

Energy-5. Renewable Energy - New Commercial/Industrial

- **Guiding Policy 9.8.1 Policy i:** Facilitate implementation of renewable technologies through streamlined planning and development rules, codes, processing, and other incentives.
- **Guiding Policy 9.8.1 Policy k:** Provide incentives such as expedited processing for facilities that use renewable energy sources.

Energy-6. Solar Energy for Warehouse Space

- **Guiding Policy 9.8.1 Policy i:** Facilitate implementation of renewable technologies through streamlined planning and development rules, codes, processing, and other incentives.
- **Guiding Policy 9.8.1 Policy k:** Provide incentives such as expedited processing for facilities that use renewable energy sources.

Energy-7. Solar Installation for Existing Housing

- **Guiding Policy 9.8.1 Policy i:** Facilitate implementation of renewable technologies through streamlined planning and development rules, codes, processing, and other incentives.
- **Guiding Policy 9.8.1 Policy k:** Provide incentives such as expedited processing for facilities that use renewable energy sources.

Energy-8. Renewable Energy - Existing Commercial/Industrial

- **Guiding Policy 9.8.1 Policy i:** Facilitate implementation of renewable technologies through streamlined planning and development rules, codes, processing, and other incentives.
- **Guiding Policy 9.8.1 Policy k:** Provide incentives such as expedited processing for facilities that use renewable energy sources.

Energy-10. Urban Tree Planting for Shading and Energy Savings

- **4.6.4.2. Policy l:** Preserve and encourage planting trees in neighborhoods to provide shade in summer and reduce heat loss in winter.

3.13.4.2 On-Road

OnRoad-1. Alternative Fueled Transit Fleets

- **Implementing Policy 4.6.4.2 Policy t and Guiding Policy 9.8.1 Policy t:** Support and participate in the development of intermodal transit hubs that expand alternative transportation use.
- **Guiding Policy 4.6.4.1:** Minimize greenhouse gas emissions that are reasonably attributable to the City's discretionary land use decisions and internal government operations, with the goal of reducing Loma Linda's greenhouse gas emissions to 1990 levels by 2020.
- **Guiding Policy 9.3.6 Policy b:** Budget for purchase of clean fuel vehicles, including electrical and hybrid vehicles where appropriate, and, if feasible, purchasing natural gas vehicles as diesel-powered vehicles are replaced.

OnRoad-2. Encourage Use of Mass Transit

- **Implementing Policy 4.6.4.2 Policy c and Guiding Policy 9.8.1 Policy c:** Encourage patterns of commercial development that support use of public transit, including modifying development regulations to facilitate commercial and/or mixed-use projects at sites near transit stops.
- **Implementing Policy 4.6.4.2 Policy m and Guiding Policy 9.8.1 Policy m:** Promote transit routes and link neighborhoods with transit.
- **Implementing Policy 4.6.4.2 Policy o and Guiding Policy 9.8.1 Policy o:** Require new development to incorporate features that reduce energy used for transportation, including pedestrian and bicycle pathways, and access to transit (where available).
- **Implementing Policy 4.6.4.2 Policy q and Guiding Policy 9.8.1 Policy q:** Work with Omnitrans to provide turnouts for transit stops.

- **Implementing Policy 4.6.4.2 Policy t and Guiding Policy 9.8.1 Policy t:** Support and participate in the development of intermodal transit hubs that expand alternative transportation use.
- **Implementing Policy 4.6.4.2 Policy u and Guiding Policy 9.8.1 Policy u:** Encourage the use of public transit and alternative modes of transportation through land use designations and zoning which cluster employment centers with a mix of other uses, and project design that incorporates carpool areas, “park and ride” facilities and similar incentives.
- **Implementing Policy 4.6.4.2 Policy w and Guiding Policy 9.8.1 Policy w:** Work with Omnitrans to post current schedules and maps at all transit stops and other key locations, to make real-time arrival information available to riders, and to provide shelters that adequately protect riders from inclement weather.
- **Guiding Policy 6.10.3 Policy e:** Encourage ridership on public transit through use of City information sources.
- **Guiding Policy 6.10.3 Policy f:** Encourage extension of Metrolink service to the Loma Linda area, including assistance in locating and developing a Metrolink station within Loma Linda should service be extended to the area.

OnRoad-3. Transportation Demand Management and Signal Synchronization

- **Guiding Policy 6.10.2 Policy a:** Design new residential neighborhoods to provide safe pedestrian and bicycle access to schools, parks and neighborhood commercial facilities through explicit development requirements for such amenities.
- **Guiding Policy 6.10.2 Policy d:** Integrate multi-use paths into creek corridors, railroad rights-of-way, utility corridors, and park facilities through proactive coordination with property owners and developers.
- **Guiding Policy 6.10.2 Policy g:** Orient site design in non-residential areas to allow for safe and convenient pedestrian access from sidewalks, transit and bus stops, and other pedestrian facilities, in addition to access through required parking facilities.
- **Guiding Policy 6.10.3 Policy b:** Preserve options for future transit use when designing roadway and highway improvements.
- **Guiding Policy 9.8.1 Policy g:** Actively support provision of infrastructure needed for alternative fuel vehicles, including fueling and charging stations. Review and consider revising applicable codes applying to refueling and recharging infrastructure to facilitate their inclusion in new development where appropriate.
- **Guiding Policy 2.2.4.1 Policy b:** Encourage pedestrian-oriented development and small-scale development.
- **Guiding Policy 4.6.4.1:** Minimize greenhouse gas emissions that are reasonably attributable to the City’s discretionary land use decisions and internal government operations, with the goal of reducing Loma Linda’s greenhouse gas emissions to 1990 levels by 2020.

OnRoad-4. Expand Bike Routes

- **Implementing Policy 4.6.4.2 Policy o and Guiding Policy 9.8.1 Policy o:** Require new development to incorporate features that reduce energy used for transportation, including pedestrian and bicycle pathways, and access to transit (where available).

OnRoad-5. Community Fleet Electrification

- **Implementing Policy 4.6.4.2 Policy t and Guiding Policy 9.8.1 Policy t:** Support and participate in the development of intermodal transit hubs that expand alternative transportation use.
- **Guiding Policy 4.6.4.1:** Minimize greenhouse gas emissions that are reasonably attributable to the City's discretionary land use decisions and internal government operations, with the goal of reducing Loma Linda's greenhouse gas emissions to 1990 levels by 2020.

3.13.4.3 Off-Road

Off-Road-1. Electric-Powered Construction Equipment

- **Guiding Policy 9.8.1 Policy x:** Minimize Loma Linda's contributions to greenhouse gas emissions by shifting to low-carbon and renewable fuels, and employing zero-emission technologies, where feasible in City purchasing and ongoing operations and maintenance activities.
- **Guiding Policy 9.3.6 Policy b:** Budget for purchase of clean fuel vehicles, including electrical and hybrid vehicles where appropriate, and, if feasible, purchasing natural gas vehicles as diesel-powered vehicles are replaced.

3.13.4.4 Solid Waste Management

- **Implementing Policy 8.9.2.1 Policy h:** Continue to participate in the waste-to-energy program.
- **Implementing Policy 8.9.2.1 Policy i:** Plan for the transformation or elimination of waste materials that cannot be reduced, recycled, or composted in order to eliminate the need for additional landfill space, save energy, reduce greenhouse gas emissions, reduce air and water pollution, and conserve forests.

Waste-2. Waste Diversion and Reduction

- **Implementing Policy 8.9.2.1 Policy d:** Require provision of attractive, convenient recycling bins and trash enclosures in new multifamily residential and non-residential development.
- **Implementing Policy 8.9.2.1 Policy e:** Continue and expand public education programs involving waste reduction, recycling, composting, waste to energy, zero-waste programs, and household hazardous waste.
- **Implementing Policy 8.9.2.1 Policy f:** Require builders to incorporate interior and exterior storage areas for recyclables into new commercial, industrial, and public buildings.
- **Implementing Policy 8.9.2.1 Policy g:** Continue to follow State regulations by implementing City goals, policies and programs which include source reduction, reuse, recycling, and composting in order to achieve and maintain a 50% reduction in solid waste disposal.

3.13.4.5 Wastewater Treatment

- **Implementing Policy 8.8.2.1 Policy d:** Investigate the use of reclaimed wastewater.
- **Guiding Policy 9.6.2 Policy f:** Pursue the use of reclaimed water for the irrigation of all appropriate open space facilities and City projects, and encourage existing and new developments to tie to the reclaim water system when available and recommended by the San Bernardino Municipal Water Department (wastewater provider) to reduce demand on municipal water supplies.

3.13.4.6 Water Conveyance

Water-2. Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency

- **Implementing Policy 8.7.2.1 Policy f:** Encourage water conservation as a means of preserving water resources. Require new development to be equipped with water conservation devices.
- **Implementing Policy 9.6.1.2 Policy a:** Reduce the waste of potable water through efficient technologies, conservation efforts, and design and management practices, and by better matching the source and quality of water to the user's needs.

Water-3. Water-Efficient Landscaping Practices

- **Guiding Policy 9.8.1 Policy d:** Encourage energy efficient landscaping for resource conservation by developing guidelines that emphasize proper irrigation techniques and sustainable landscaping (organic fertilizers and pesticides).
- **Implementing Policy 9.6.1.2 Policy a:** Reduce the waste of potable water through efficient technologies, conservation efforts, and design and management practices, and by better matching the source and quality of water to the user's needs.
- **Guiding Policy 9.6.2 Policy d:** Encourage sustainable landscapes or landscapes that require little irrigation through the use of drought-tolerant and native vegetation in new development.
- **Implementing Policy 9.6.1.2 Policy d:** Require site-appropriate, drought-tolerant low water use landscaping.
- **Implementing Policy 9.6.1.2 Policy e:** Encourage use of irrigation technologies such as evapotranspiration systems.
- **Implementing Policy 9.6.1.2 Policy f:** Encourage use of on-site rainwater capture, storage, and infiltration for irrigation.
- **Guiding Policy 9.6.2 Policy b:** Develop and encourage the implementation of water conservation programs by residents, employers, students, and service providers.

3.14 City of Montclair



3.14.1 City Summary

The City of Montclair is located on the western side of the San Bernardino Valley, along the I-10 corridor and between the cities of Pomona and Ontario, close to the boundaries of Orange, Riverside, and Los Angeles Counties. Montclair was incorporated in 1956 and has easy access to numerous major Southern California arteries. Montclair Plaza, one of the first major shopping centers in the region, opened in 1968. The Montclair Transcenter, a multi-modal transportation hub along Metrolink’s San Bernardino Line, has parking accommodations for 1,600 vehicles. The Transcenter will also serve as a future stop on the Metro Gold Line light rail extension. Montclair has a combination of land uses, with much of the city designated for low density residential but with commercial and industrial areas concentrated in the areas north of I-10 and along the UPRR corridor. These uses are reflected in Montclair’s GHG inventory, with emissions resulting primarily from the on-road transportation and residential and commercial building energy sectors.

The population of Montclair was 38,701 in 2016 (36,664 in 2010) and the city encompasses 5.5 square miles. Montclair’s demographic composition in 2018 was 12.2 % Non-Hispanic White, 2.8 % Non-Hispanic Black, 0.2 % Non-Hispanic American Indian or Alaska Native, 8.6 % Non-Hispanic Asian, 2.0 % from all other non-Hispanic races. Persons of Hispanic or Latino origin were 74.2 %, which is notably larger than the regional average of 46.5% (SCAG, 2019). Sixty-six percent of the population in Montclair speaks a language other than English at home (27% for California) (U.S. Census Bureau, 2012). Population is expected to grow to 42,971 by 2030, an increase of 11% beyond the 2016 population, and employment is expected to grow 5%, one of the lower job growth rates in the region.

Table 3-37 presents socioeconomic data for Montclair, including population, housing, and employment (SBCOG, 2019).

Table 3-37. Socioeconomic Data for Montclair

Category	2016	2030	2045
Population	38,701	42,971	49,150
Households	9,866	10,492	11,162
Jobs	19,309	20,259	20,892



3.14.2 Emission Reductions

ICF consultants prepared a reduction scenario for the City of Montclair as city staff were unable to assist due to other City priorities (including responding to the COVID health emergency, among other pressing matters). ICF identified a reduction goal to reduce its community GHG emissions to a level that is 40% below its 2016 GHG emissions level by 2030 to match the AB 32 targets. ICF

consultants identified reduction measures based on selections in the prior regional plan and identification of other local reduction measures suitable for the City. The reduction scenario identified by ICF show that Montclair can meet and exceed the goal subject to reduction measures that are technologically feasible and cost-effective through a combination of state (~80%) and local (~20%) efforts. The Pavley vehicle standards, the state's low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in Montclair's On-Road, Solid Waste, and Building Energy sectors in 2030. An additional reduction of 20,861 MTCO₂e will be achieved primarily through the following local measures, in order of reductions achieved: Solar Installation for Existing Commercial/Industrial Facilities (Energy-8); Solar Installation for Existing Housing (Energy-7); and Waste Diversion and Reduction (Waste-2). Montclair's reduction plan has the greatest impacts on GHG emissions in the building energy, waste, and on-road transportation sectors.

The bars in Figure 3-37 show Montclair's 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City's emissions reduction target (i.e., 42% below its 2016 GHG emissions level by 2030). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total ("2030 plan"), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~80%) of the total reductions needed to achieve the 2030 target.

Figure 3-38 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation and building energy emissions sectors.

Table 3-38 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2030 and demonstrates that Montclair exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the waste, building energy, and on-road transportation sectors.

Figure 3-39 presents emission reductions by sector and by control (i.e., state control versus local or City control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are in the building energy sector.

Figure 3-37. Emissions Reduction Profile for Montclair

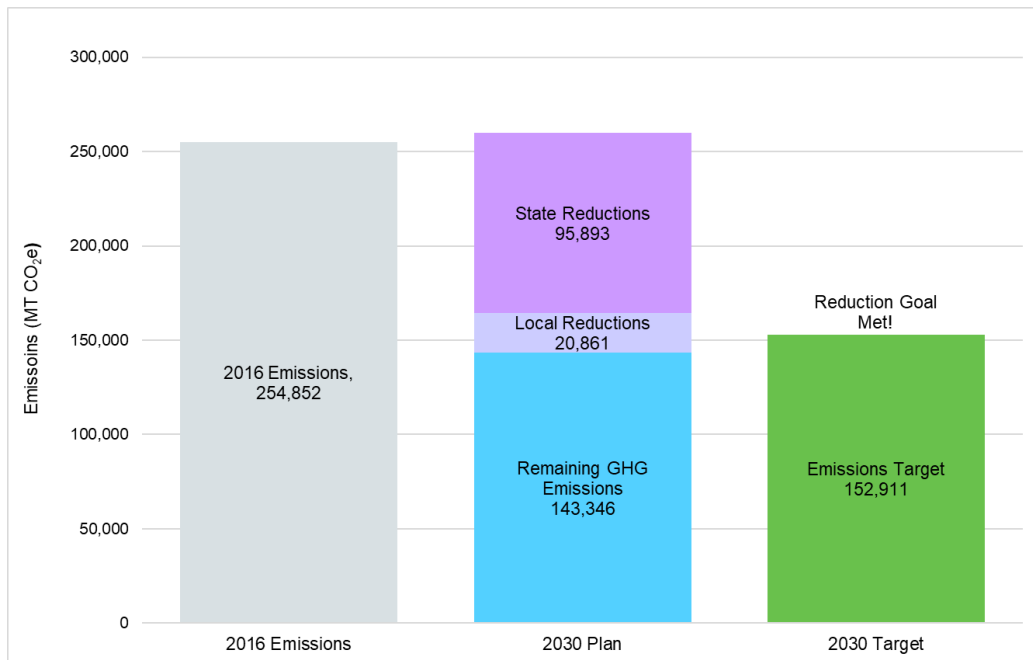


Figure 3-38. Emissions by Sector for Montclair

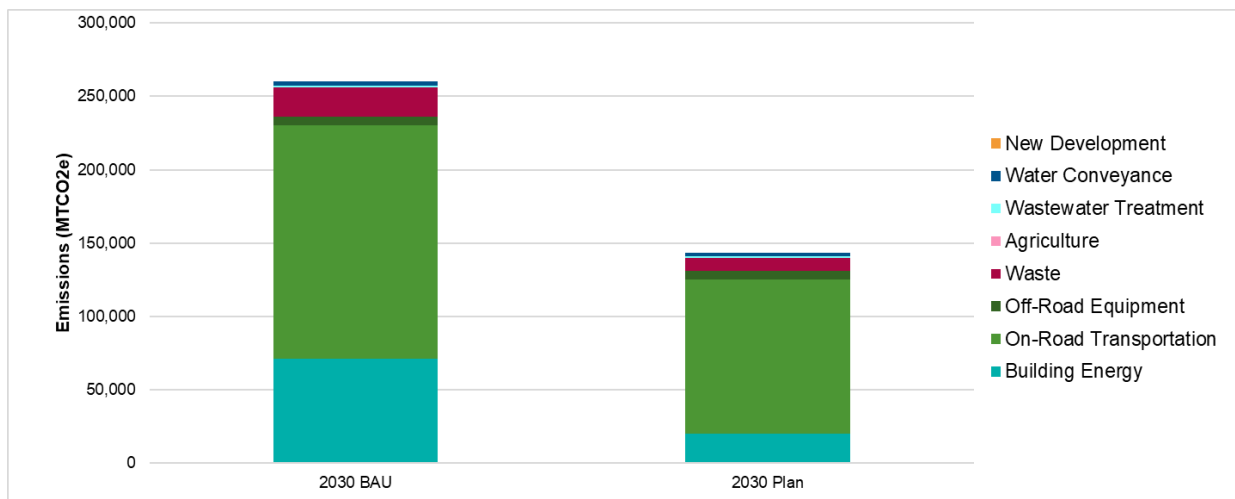


Table 3-38. Emission Reductions by Sector for Montclair

Sector	2016 Emissions (MTCO₂e)	2030 BAU (MTCO₂e)	2030 Reductions (MTCO₂e)	2030 Emissions with Reduction Plan (MTCO₂e)	Reduction (percent)
Building Energy	66,920	71,261	51,341	19,920	72.0%
On-Road Transportation	161,783	158,922	53,761	105,161	33.8%
Off-Road Equipment	4,531	6,023	60	5,963	1.0%
Waste	17,991	19,976	11,164	8,811	55.9%
Agriculture	0	0	0	0	NA
Wastewater Treatment	1,212	1,346	64	1,282	4.7%
Water Conveyance	2,415	2,572	364	2,208	14.2%
GHG Performance Standard*	-	-	-	-	-
Total	254,852	260,101	116,754	143,346	44.9%
Goal	-	-	-	152,911	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	9,565	-

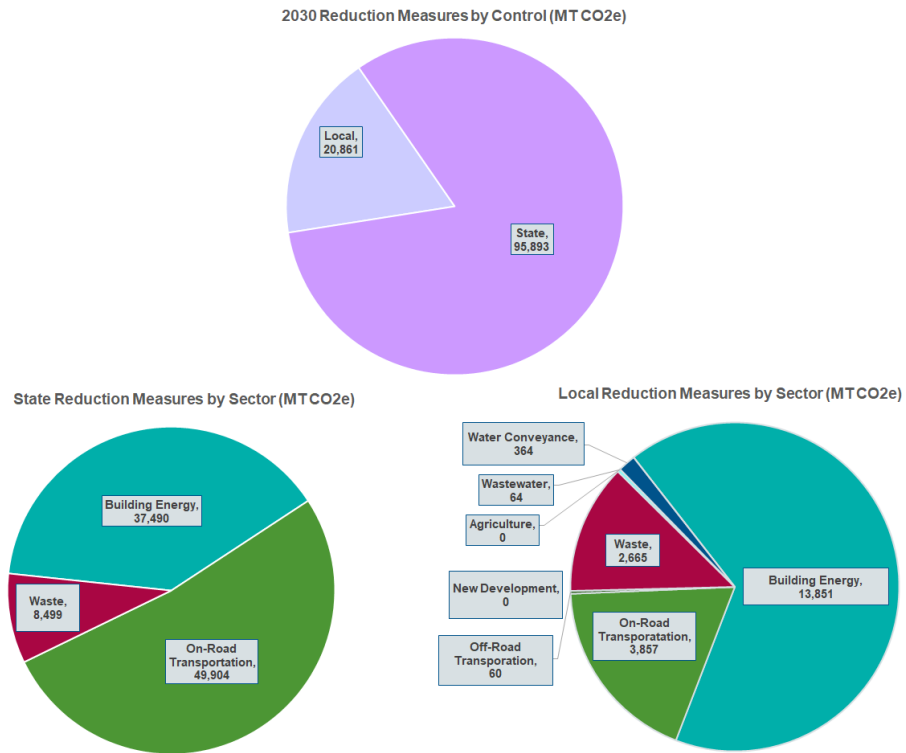
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City's reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-39. Emission Reductions by Control and by Sector for Montclair.



3.14.3 Reduction Measures

Table 3-39 presents each reduction measure evaluated for Montclair. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-39. GHG Reduction Measures and Estimated 2030 Reductions for Montclair

Measure Number	Measure Description	Reductions (MTCO_{2e})
State Measures		
State-SB 100	SB 100	20,176
State-SB 350	SB 350	16,507
State-T24	Title 24 (Energy Efficiency Standards)	722
State-Solar Water Heater	Solar Water Heaters (Residential)	21
State-Increased CHP	Increased Combined Heat and Power (Commercial)	63
State-OnRoad	State Fuel Efficiency Measures	49,904
State-SB 1383	Methane Capture	8,499
Total State Reductions		95,893
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	1,086
Energy-2	Lighting Efficiency	180
Energy-3	All Electric Buildings	2,009
Energy-5	Renewable Energy – New Commercial/Industrial	196
Energy-6	Solar Energy for Warehouse Space	0
Energy-7	Solar Installation for Existing Housing	3,075
Energy-8	Solar Installation for Existing Commercial/Industrial	7,305
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	0
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	222
OnRoad-2	Encourage Use of Mass Transit	0
OnRoad-3	Transportation Demand Management and Synchronization	1,090
OnRoad-4	Expand Bike Routes	1,188
OnRoad-5	Community Fleet Electrification	1,358
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	0
OffRoad-2	Idling Ordinance	60
OffRoad-3	Electric Landscaping Equipment	0
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	2,665
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	0
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	64
<i>Water Conveyance</i>		

Water-1	Require Tier 1 Voluntary CALGreen Standards for New Construction	0
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	0
Water-3	Water-Efficient Landscaping Practices	364
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	0
Total Local Reductions		20,861
Total Reductions		116,754

Notes:

Values may not sum due to rounding.

3.14.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Montclair's GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Montclair 1999 General Plan unless otherwise noted (City of Montclair 1999). In addition to state level measures, selected GHG reduction measures related to building energy, transportation, waste, and wastewater related measures, as well as a Performance Standard for new development (Table 3-39). Relevant General Plan policies for selected reduction measures are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.14.4.1 Building Energy

- **Opportunities for Energy Conservation:** Design subdivisions which will provide adequate solar access for planned and future use of solar energy. Subdivision designs which best provide for solar access include a predominant east/west street pattern, orientation of the major access of homes so as to align within 25 degrees of due south, and provide adequate open space to the south of each home so as to provide a "window" to the sun.

3.14.4.2 On-Road

OnRoad-2. Encourage Use of Mass Transit

- **Opportunities for Energy Conservation:** Locate housing in areas served by public transportation and provide facilities which may better facilitate the use of that transportation.

OnRoad-3. Transportation Demand Management and Signal Synchronization

- **Opportunities for Energy Conservation:** Locate housing in reasonably close proximity to employment centers, services, schools, parks, and other facilities in order to reduce unnecessary automobile usage.
- **Opportunities for Energy Conservation:** Locate housing in areas served by public transportation and provide facilities which may better facilitate the use of that transportation.
- **Land Use Objective LU-1.5.0:** To ensure that commercial areas within the City are conveniently located, efficient, attractive, safe for pedestrian and vehicular circulation and concentrated into districts and centers in order to better serve a larger portion of the City's needs.

3.14.4.3 Solid Waste Management

Waste-2. Waste Diversion and Reduction

- **Opportunities for Energy Conservation:** Make use of refuse separation techniques and collection points in order to recycle such items as aluminum, glass, and paper.
- **Recycling:** The City has approved privately-owned commercial and industrial recycling facilities, which divert numerous materials from landfill disposal. These materials include household containers and materials, as well as concrete, asphalt, and aggregate materials.

3.14.4.4 Water Conveyance

Water-3. Water-Efficient Landscaping Practices

- **Opportunities for Energy Conservation:** Incorporate water conservation planning and design into the construction of homes. Low-flow water restrictors and the use of native, drought-resistant plant materials are ways of accomplishing this conservation.
- **Water Resources:** The City has enacted a Landscape Water Conservation Ordinance and encourages drought resistant planting designs for new developments.

3.15 City of Needles



3.15.1 City Summary

The City of Needles is located on the far eastern side of San Bernardino County, in the Mojave Valley on the California-Arizona border. The City sits alongside the Colorado River. The site and City were founded as a result of the construction of the Atchison, Topeka, and Santa Fe Railroad which crosses the Colorado River at this point. Route 66 also passes through Needles and brought many visitors to the City between the 1920s and 1960s. Needles is largely a residential community today, with limited local employment dominated by tourism, government (local, state, and the Bureau of Land Management), utilities (Southwest Gas), and the BNSF Railroad. Residents in Needles often commute to locations in Arizona and Nevada for work.

Needles is known for extreme heat and has reported some of the highest temperatures in the United States, often exceeding 120°F in July and August. Needles set a world record for the hottest thunderstorm on record, when rain fell at an ambient temperature of 115°F. The population of Needles was 5,031 in 2016. Needles’ demographic composition in 2018 was 60.4% Non-Hispanic White, 1.8% Non-Hispanic Black, 7.7% Non-Hispanic American Indian or Alaska Native, 1.5% Non-Hispanic Asian, and 3.9% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 24.7%. Needles’ has a larger than average White population (60.4% compared to the SCAG regional average of 31.4%) (SCAG, 2019). The City also has a low population density; 155 people per square mile in 2010 (U.S. Census Bureau, 2012).

Table 3-40 presents socioeconomic data for Needles, including population, housing, and employment (SBCOG, 2019).

Table 3-40. Socioeconomic Data for Needles

Category	2016	2030	2045
Population	5,031	7,636	10,281
Households	1,941	3,070	4,280
Jobs	1,731	1,928	2,140



3.15.2 Emission Reductions

ICF identified a suggested goal to reduce Needle’s community GHG emissions to a level that is ~36% (35.9%) below its 2020 GHG emissions level by 2030. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective through a combination of state (~70%) and local (~30%) efforts. The Pavley vehicle standards, the state’s low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in Needles’ on-road and building energy sectors in 2030. An additional reduction of 6,272 MTCO₂e will be achieved primarily through the following local measures, in order of reductions achieved: Solar Installation for Existing Commercial/Industrial Facilities (Energy-8); Solar Installation for Existing Housing

(Energy-7); and Waste Diversion and Reduction (Waste-2). Needles’ reduction plan has the greatest impacts on GHG emissions in the waste, building energy, and on-road transportation sectors.

The bars in Figure 3-40 show Needles’ 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City’s emissions reduction target (i.e., 40% below the 2020 emissions level). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total (“2030 plan”), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~70%) of the total reductions needed to achieve the 2030 target.

Figure 3-41 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or “Reduction Plan” scenarios. The largest emissions contributions are in the on-road transportation, building energy, and solid waste management emissions sectors.

Table 3-41 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction (“Reduction Plan”) results by sector. It shows the percent reduction in each sector’s emissions in 2030 and demonstrates that Needles exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the building energy, waste, and on-road transportation sectors.

Figure 3-42 presents emission reductions by sector and by control (i.e., state control versus local or City control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are in the waste sector.

Figure 3-40. Emissions Reduction Profile for Needles

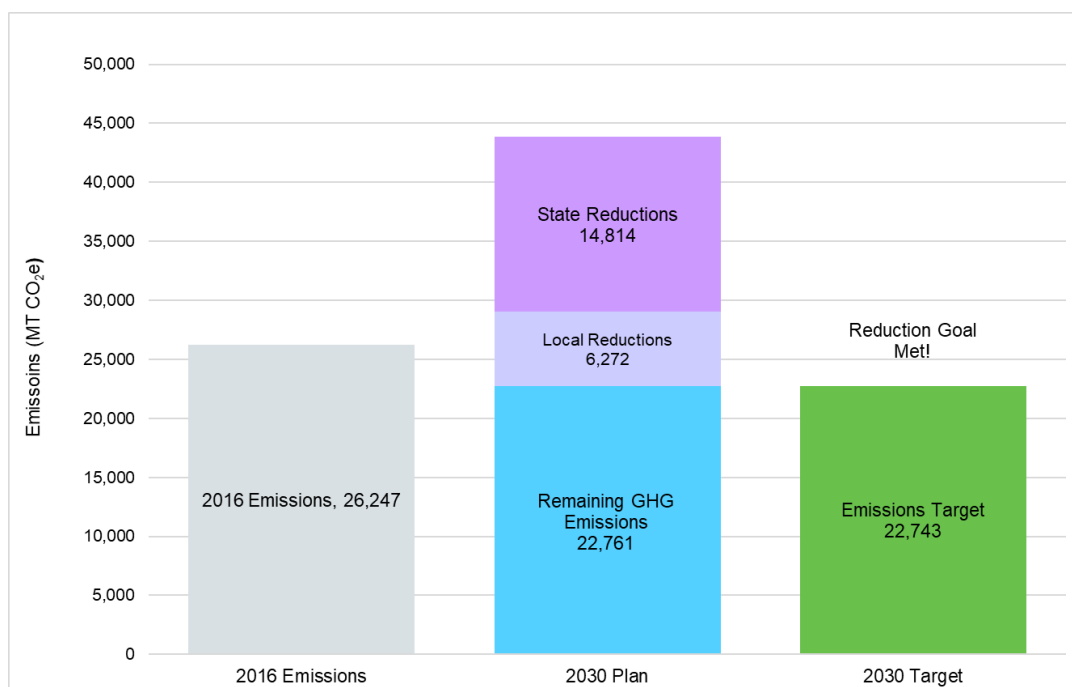


Figure 3-41. Emissions by Sector for Needles

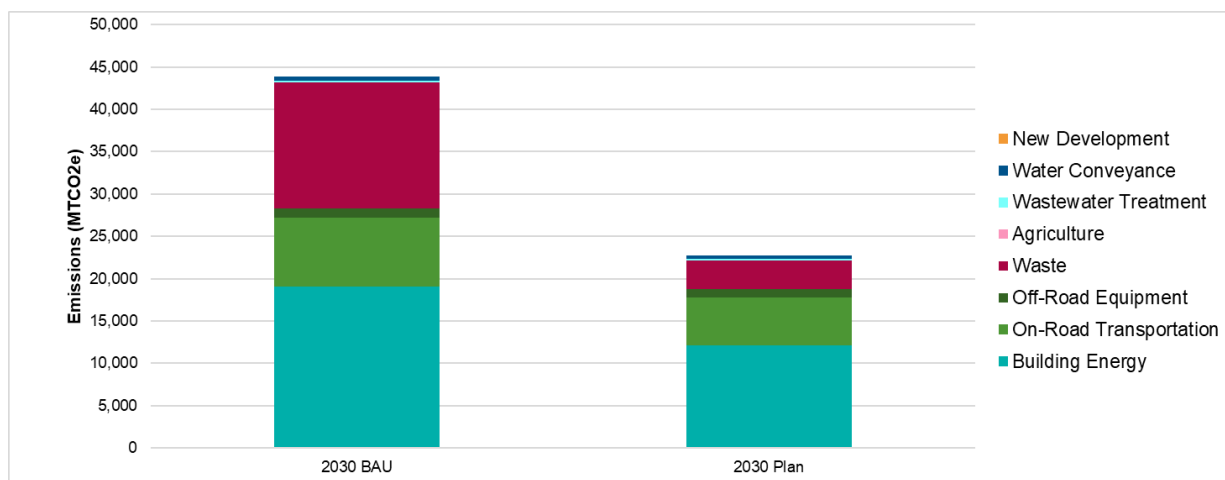


Table 3-41. Emission Reductions by Sector for Needles

Sector	2016 Emissions (MTCO _{2e})	2030 BAU (MTCO _{2e})	2030 Reductions (MTCO _{2e})	2030 Emissions with Reduction Plan (MTCO _{2e})	Reduction (percent)
Building Energy	7,998	19,099	6,954	12,145	36.4%
On-Road Transportation	7,384	8,138	2,493	5,645	30.6%
Off-Road Equipment	573	1,010	58	952	5.8%
Waste	9,827	14,916	11,517	3,398	77.2%
Agriculture	0	0	0	0	NA
Wastewater Treatment	158	239	3	236	1.2%
Water Conveyance	307	445	60	385	13.6%
GHG Performance Standard*	-	-	-	-	-
Total	26,247	43,847	21,086	22,761	48.1%
Goal	-	-	-	22,743	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	18	-

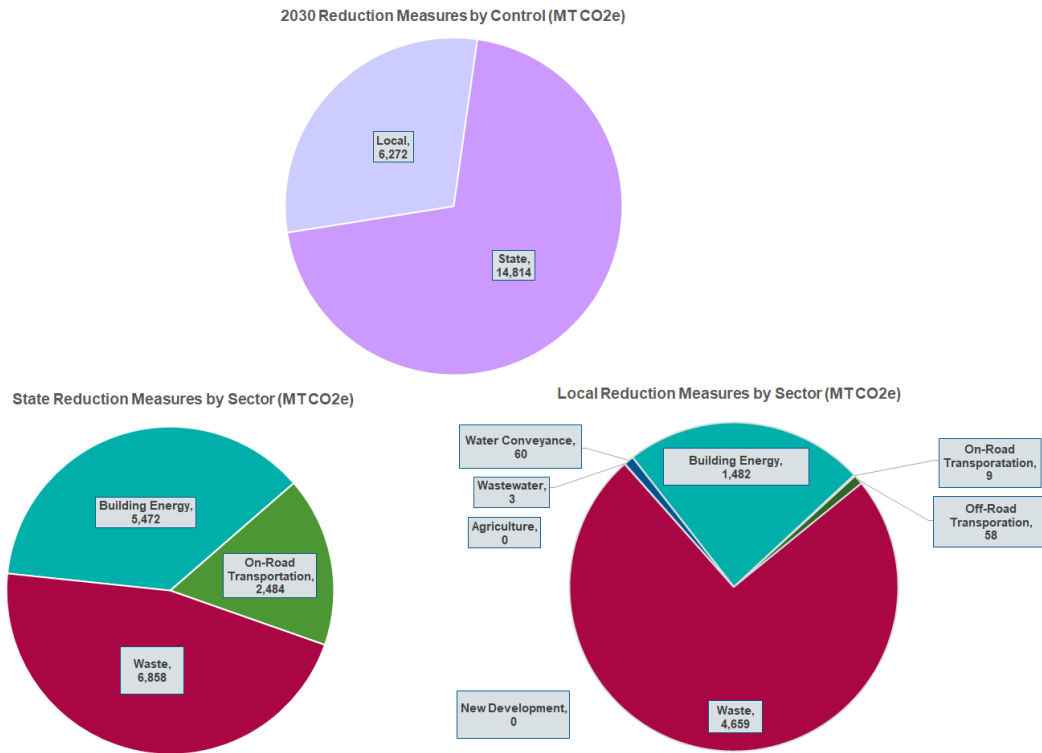
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City’s reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-42. Emission Reductions by Control and by Sector for Needles



3.15.3 Reduction Measures

Table 3-42 presents each reduction measure evaluated for Needles. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-42. GHG Reduction Measures and Estimated 2030 Reductions for Needles

Measure Number	Measure Description	Reductions (MTCO _{2e})
State Measures		
State-SB 100	SB 100	3,885
State-SB 350	SB 350	1,056
State-T24	Title 24 (Energy Efficiency Standards)	526
State-Solar Water Heater	Solar Water Heaters (Residential)	4
State-Increased CHP	Increased Combined Heat and Power (Commercial)	0
State-OnRoad	State Fuel Efficiency Measures	2,484
State-SB 1383	Methane Capture	6,858
Total State Reductions		14,814
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	210
Energy-2	Lighting Efficiency	0
Energy-3	All Electric Buildings	0
Energy-5	Renewable Energy – New Commercial/Industrial	0
Energy-6	Solar Energy for Warehouse Space	0
Energy-7	Solar Installation for Existing Housing	156
Energy-8	Solar Installation for Existing Commercial/Industrial	435
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	7
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	9
OnRoad-2	Encourage Use of Mass Transit	0
OnRoad-3	Transportation Demand Management and Synchronization	0
OnRoad-4	Expand Bike Routes	0
OnRoad-5	Community Fleet Electrification	0
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	25
OffRoad-2	Idling Ordinance	11
OffRoad-3	Electric Landscaping Equipment	22
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	4,659
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	0
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	3
<i>Water Conveyance</i>		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New	0

	Construction	
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	673
Water-3	Water-Efficient Landscaping Practices	60
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	0
Total Local Reductions		6,272
Total Reductions		21,086

Notes:

Values may not sum due to rounding.

3.15.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Needles’ GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Needles 1986 General Plan unless otherwise noted (City of Needles 1986). In addition to state level measures, the City of Needles selected GHG reduction measures related to increasing the energy and water efficiency of both existing and new buildings as well as increasing waste diversion (Table 3-42). However, the City’s General Plan includes policies and programs that broadly support energy efficiency and sustainability across all sectors, even if the City did not select a specific GHG reduction measure within the sector as part of this Reduction Plan. Relevant General Plan policies for the specific reduction measures the City selected are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.15.4.1 Building Energy

Energy-1. Building Energy Efficiency

- **Principles and Standards 4:** Ensure compliance of all State required energy conservation laws in future developments.

Energy-7. Solar Installation for Existing Housing

- **Principles and Standards 4:** Ensure compliance of all State required energy conservation laws in future developments.
- **Objective 5.3:** The City will actively pursue all viable new sources of energy.
- **Objective 5.6:** The City will create an alternative energy ordinance and encourage other viable forms of alternative energy, and will seek grants to be able to offer incentives.

Energy-8. Renewable Energy - Existing Commercial/Industrial

- **Principles and Standards 4:** Ensure compliance of all State required energy conservation laws in future developments.
- **Objective 5.3:** The City will actively pursue all viable new sources of energy.
- **Objective 5.6:** The City will create an alternative energy ordinance and encourage other viable forms of alternative energy, and will seek grants to be able to offer incentives.

Energy-10. Urban Tree Planting for Shading and Energy Savings

- **Principles and Standards 4:** Ensure compliance of all State required energy conservation laws in future developments.

3.15.4.2 On-Road Transportation

- **Principles and Standards 1:** Critical habitat areas should not encourage mass public use so as to avoid polluting and degrading the habitat.
- **Pedestrian Circulation:** A public activity trail system joining the various land uses and areas of the City and allowing for bicycles and horses would be recommended.
- **Principles and Standards 18:** Access to the golf course should be provided by an arterial street and public transit should be available.
- **Principles and Standards 22:** Convalescent hospitals, nursing homes and related services for the elderly should be located in multi-family areas of the City. Locations near major medical facilities and public transportation are essential.
- **Principles and Standards 24, 25:** A community conference centers, museums, and regional cultural facilities should contain parking and should be served by public transportation.
- **Principles and Standards 30:** Major commercial developments should be located so as to have direct street access and be served by public transportation.

3.15.4.3 Solid Waste Management

Waste-2. Waste Diversion and Reduction

- **Policy 4:** Insure the protection of people or wildlife from hazardous materials in the community.

3.15.4.4 Wastewater Treatment

- **Policy 6:** Explore the feasibility of using treated wastewater for landscaping of park, golf course and greenbelt areas.

3.15.4.5 Water Conveyance

- **Policy 1:** Vigorously pursue the conservation and preservation of historical and natural resources.
- **Policy 4:** Manage existing land uses and future development to insure minimization of pollution of the City's water supply or the Colorado River.
- **Policy 5:** Promote the use of water conservation in the community.
- **Principles and Standards 3:** Encourage the use of low flush toilets and low flow shower heads in the community.
- **Principles and Standards 2:** Wherever appropriate, drought resistant native plants should be utilized in developments emphasizing wildlife value.

3.16 City of Ontario



3.16.1 City Summary

The City of Ontario is located in the West San Bernardino Valley, north of Chino and west of Fontana. Like other valley jurisdictions, Ontario's location close to major southern California transportation arteries and to the juncture of Los Angeles, Riverside, Orange, and San Bernardino Counties make Ontario a favorable place for commerce and residences. The Ontario International Airport, one of the larger cargo airports in the United States, is also located within the City's boundaries. Thus, the economy in Ontario is anchored by trucking, freight, shipping, and warehousing (i.e., the logistics industry) and much of what arrives in the ports of Los Angeles and Long Beach eventually passes through Ontario. A significant portion of the northern and eastern portion of the City is designated for business park and industrial uses.

Historically the region was known for agriculture and dairy farming. Much of the dairy land will be devoted to other uses by 2020. These land uses are reflected in the City's GHG inventory, with primary emissions sources in the light and medium duty vehicles, commercial and industrial (commercial electricity, and natural gas and stationary sources) and agriculture sectors.

Ontario's population in 2016 was 172,249 (163,924 in 2010). The population is expected to grow to 221,806 by 2030, an increase of 29% compared to 2016, and employment by 26%. Ontario's demographic composition in 2018 was 16.1% Non-Hispanic White, 5.7% Non-Hispanic Black, 0.2% Non-Hispanic American Indian or Alaska Native, 5.7% Non-Hispanic Asian, and 2.3% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 70.0% (SCAG, 2019).

Table 3-43 presents socioeconomic data for Ontario, including population, housing, and employment (SBCOG, 2019).

Table 3-43. Socioeconomic Data for Ontario

Category	2016	2030	2045
Population	172,249	221,806	269,050
Households	46,001	60,602	74,521
Jobs	113,859	143,699	169,331



The City of Ontario adopted a Climate Action Plan in 2014, with an GHG emissions reduction goal of 30% below business as usual (City of Ontario, 2014). This goal roughly aligns with the Scoping Plan adopted by the State of California in 2008, recommending a target of 15% below current emissions levels. The Climate Action Plan identified feasible actions to reduce GHG emissions generated from community actions. The largest reductions from the City's CAP came from the building and renewable energy sector, on-road transportation, and off-road equipment (City of Ontario, 2014).

3.16.2 Emission Reductions

The City of Ontario selected a goal in its adopted General Plan to reduce its community GHG emissions to a level that is 40% below its 2016 emissions level in 2030. Unlike other Partnership jurisdictions, the City is *required* to meet this goal, as it was adopted as mitigation to the General Plan. The City of Ontario is unique from other Partnership jurisdictions in that they are completing a comprehensive CAP, in parallel to this analysis. Using the reduction tools for this Regional Plan, the City identified similar measures to those that will likely form Ontario's actual CAP. The reductions identified below are considered to be representative of the likely reductions Ontario will be able to achieve with their CAP.

The City will meet and exceed their goal through a combination of state (~70%) and local (~30%) efforts. The Pavley vehicle standards, the state's low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in Ontario's on-road and building energy sectors in 2030. An additional reduction of 312,180 MTCO_{2e} will be achieved primarily through the following local measures, in order of reductions achieved: Solar Energy for Warehouse Space (Energy-6); Waste Diversion and Reduction (Waste-2); GHG Performance Standard for Existing Development (PS-1). Ontario's reduction plan has the greatest impacts on GHG emissions in the building energy, waste, and on-road transportation sectors.

The City of Ontario has adopted the Ontario Plan, which is a City planning framework that contains many transportation and land use-related actions to reduce vehicle-related GHG emissions throughout the SBCOG region. The Ontario Plan will support the goals of SB 375 and the Sustainable Communities Strategy (Transportation-1) through a wide range of actions which include the following.

- Integrate state, regional and local Sustainable Community/Smart Growth principles into the development and entitlement process.
- Develop a system of trails and corridors that facilitates and encourages bicycling and walking, including the Multipurpose Trails & Bikeway Corridor Plan.
- Require new development to provide transit facilities, such as bus shelters, transit bays and turnouts, as necessary.
- Require the future development of community-wide serving facilities to be sited in transit-ready areas that can be served and made accessible by public transit.
- Provide development-related incentives for projects that promote transit use.
- Ensure the development of a multimodal transit center near LAONT airport to serve as a transit hub for local buses, BRT, the Gold Line, high-speed rail, the proposed Ontario Airport Metro Center circulator and other future transit modes.
- Support extension of the Metro Rail Gold Line to Ontario and advocating the expansion of Metrolink service to include the Downtown and the multimodal transit center.
- Designate and maintain a network of City truck routes that provide for the effective transport of goods while minimizing negative impacts on local circulation and noise-sensitive land uses, as shown in the Truck Routes Plan.

The bars in Figure 3-43 show Ontario's 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City's emissions reduction target (i.e., 40%

below its 2016 emissions level). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total (“2030 plan”), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~70%) of the total reductions needed to achieve the 2030 target.

Figure 3-44 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or “Reduction Plan” scenarios. The largest emissions contributions are in the on-road transportation and building energy.

Table 3-44 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction (“Reduction Plan”) results by sector. It shows the percent reduction in each sector’s emissions in 2030 and demonstrates that Ontario exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include building energy, waste, and on-road transportation sectors.

Figure 3-45 presents emission reductions by sector and by control (i.e., state control versus local or City control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are in the building energy sector.

Figure 3-43. Emissions Reduction Profile for Ontario

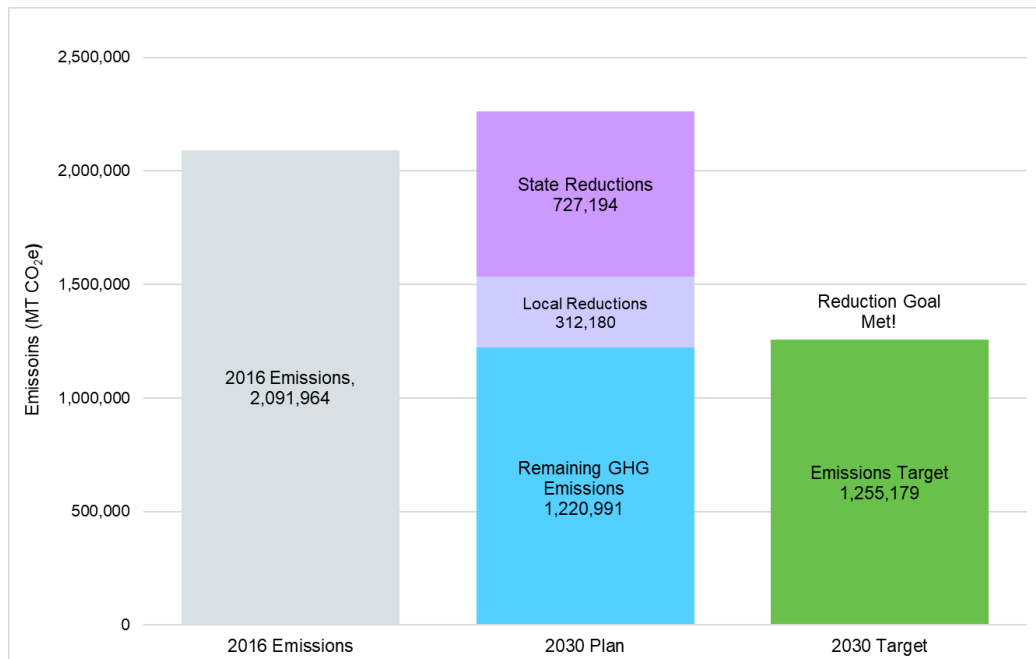


Figure 3-44. Emissions by Sector for Ontario

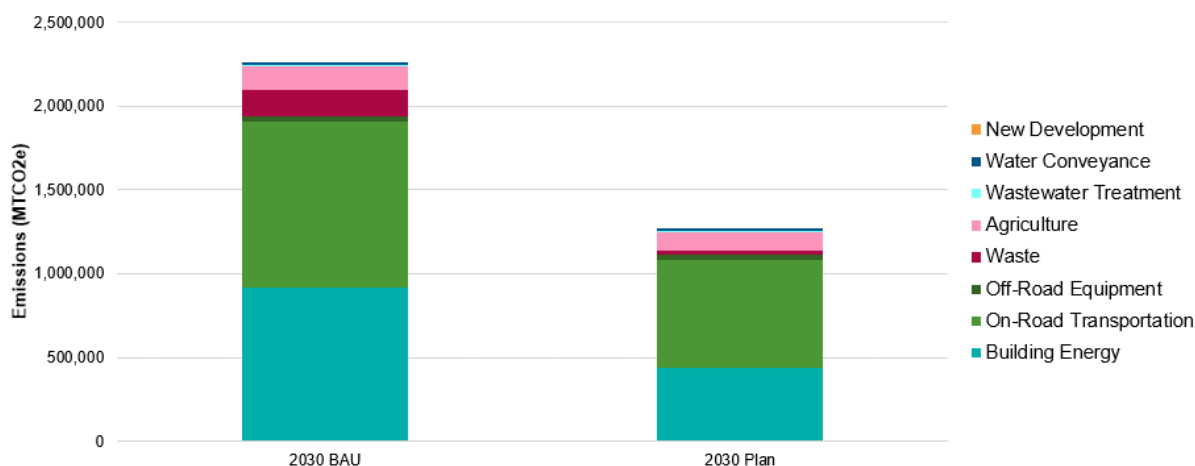


Table 3-44. Emission Reductions by Sector for Ontario

Sector	2016 Emissions (MTCO _{2e})	2030 BAU (MTCO _{2e})	2030 Reductions (MTCO _{2e})	2030 Emissions with Reduction Plan (MTCO _{2e})	Reduction (percent)
Building Energy	716,692	918,396	477,878	440,518	52.0%
On-Road Transportation	858,558	990,657	347,214	643,442	35.0%
Off-Road Equipment	21,904	33,452	1,234	32,218	3.7%
Waste	118,949	153,171	132,051	21,120	86.2%
Agriculture	356,588	140,594	32,647	107,947	23.2%
Wastewater Treatment	5,396	6,949	354	6,595	5.1%
Water Conveyance	13,878	17,145	1,620	15,525	9.4%
GHG Performance Standard*	-	-	46,375	-	-
Total	2,091,964	2,260,363	1,039,373	1,220,991	45.6%
Goal	-	-	-	1,255,179	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	34,188	-

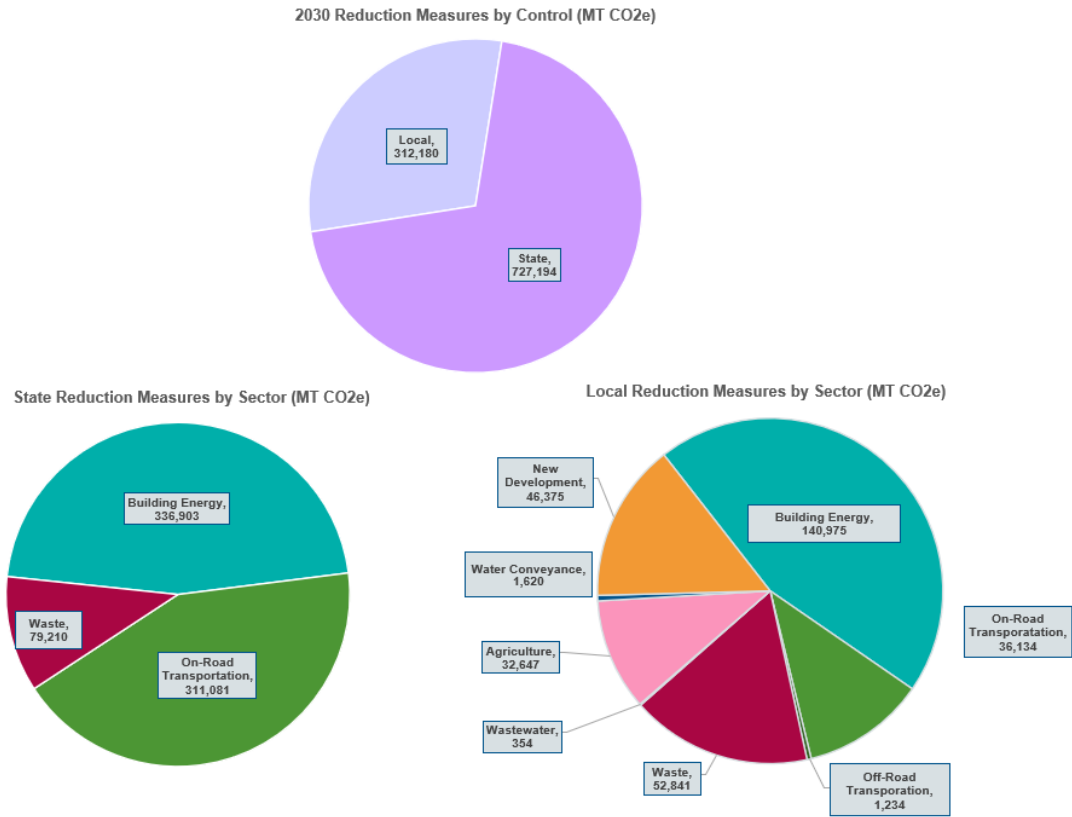
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City's reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-45. Emission Reductions by Control and by Sector for Ontario



3.16.3 Reduction Measures

Table 3-45 presents each reduction measure evaluated for Ontario. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-45. GHG Reduction Measures and Estimated 2030 Reductions for Ontario

Measure Number	Measure Description	Reductions (MTCO_{2e})
State Measures		
State-SB 100	SB 100	254,537
State-SB 350	SB 350	47,410
State-T24	Title 24 (Energy Efficiency Standards)	31,820
State-Solar Water Heater	Solar Water Heaters (Residential)	111
State-Increased CHP	Increased Combined Heat and Power (Commercial)	3,025
State-OnRoad	State Fuel Efficiency Measures	311,081
State-SB 1383	Methane Capture	79,210
Total State Reductions		727,194
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	1,040
Energy-2	Lighting Efficiency	1,340
Energy-3	All Electric Buildings	0
Energy-5	Renewable Energy – New Commercial/Industrial	0
Energy-6	Solar Energy for Warehouse Space	99,865
Energy-7	Solar Installation for Existing Housing	10,036
Energy-8	Solar Installation for Existing Commercial/Industrial	21,735
Energy-9	Rooftop Gardens	1
Energy-10	Urban Tree Planting for Shading and Energy Savings	5
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	288
OnRoad-2	Encourage Use of Mass Transit	15,300
OnRoad-3	Transportation Demand Management and Synchronization	6,796
OnRoad-4	Expand Bike Routes	10,365
OnRoad-5	Community Fleet Electrification	3,385
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	442
OffRoad-2	Idling Ordinance	308
OffRoad-3	Electric Landscaping Equipment	483
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	52,841
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	32,647
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	24
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	329
<i>Water Conveyance</i>		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New	0

	Construction	
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	6,952
Water-3	Water-Efficient Landscaping Practices	1,620
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	46,375
Total Local Reductions		312,180
Total Reductions		1,039,373

Notes:

Values may not sum due to rounding.

3.16.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Ontario's GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Ontario 2010 General Plan unless otherwise noted (City of Ontario, 2010). In addition to state level measures, the City of Ontario selected a variety of measures across nearly all sectors (Table 3-45). However, the City's General Plan includes policies and programs that broadly support energy efficiency and sustainability even if it is not closely tied to a specific measure as part of this Reduction Plan. Relevant General Plan policies for the specific reduction measures the City selected are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.16.4.1 Building Energy

- **Environmental Resources 3-1:** We require conservation as the first strategy to be employed to meet applicable energy-saving standards.
- **Environmental Resources 3-3:** We require new construction to incorporate energy efficient building and site design strategies, which could include appropriate solar orientation, maximum use of natural daylight, passive solar and natural ventilation.
- **Environmental Resources 3-4:** We require all new and substantially renovated City buildings in excess of 10,000 square feet achieve a LEED Silver Certification standard, as determined by the U.S. Green Building Council.

Energy-4. Solar Installation for New Housing

- **Environmental Resources 3-3:** We require new construction to incorporate energy efficient building and site design strategies, which could include appropriate solar orientation, maximum use of natural daylight, passive solar and natural ventilation.
- **Environmental Resources 3-6:** We promote the use of renewable energy sources to serve public and private sector development.

Energy-5. Renewable Energy – New Commercial/Industrial

- **Environmental Resources 3-3:** We require new construction to incorporate energy efficient building and site design strategies, which could include appropriate solar orientation, maximum use of natural daylight, passive solar and natural ventilation.
- **Environmental Resources 3-6:** We promote the use of renewable energy sources to serve public and private sector development.

Energy-6. Solar Energy for Warehouse Space

- **Environmental Resources 3-6:** We promote the use of renewable energy sources to serve public and private sector development.

Energy-7. Solar Installation for Existing Housing

- **Environmental Resources 3-6:** We promote the use of renewable energy sources to serve public and private sector development.

Energy-8. Solar Installation for Existing Commercial/Industrial

- **Environmental Resources 3-6:** We promote the use of renewable energy sources to serve public and private sector development.

Energy-10. Urban Tree Planting for Shading and Energy Savings

- **Environmental Resources 4-8:** We protect healthy trees within the City and plant new trees to increase carbon sequestration and help the regional/local air quality.

3.16.4.2 On-Road

- **Mobility 3-3:** We require walkways that promote safe and convenient travel between residential areas, businesses, schools, parks, recreation areas, and other key destination points.
- **Environmental Resources 3-2:** We require the use of best practices identified in green community rating systems to guide the planning and development of all new communities.
- **Environmental Resources 4-1:** We reduce GHG and other local pollutant emissions through compact, mixed use, and transit-oriented development and development that improves the regional jobs-housing balance.

OnRoad-2. Encourage Use of Mass Transit

- **Mobility 3-4:** We work with regional transit agencies to implement BRT service to target destinations and along corridors, as shown in the Transit Plan.
- **Mobility 3-1:** We maintain a proactive working partnership with transit providers to ensure that adequate public transit service is available.
- **Mobility 3-2:** We require new development to provide transit facilities, such as bus shelters, transit bays and turnouts, as necessary.
- **Mobility 3-5:** We support extension of the Metro Rail Gold Line to Ontario.
- **Mobility 3-6:** We advocate expansion of Metrolink service to include the Downtown and the multimodal transit center.
- **Mobility 3-8:** We work with regional transit agencies to secure convenient feeder service from the Metrolink station and the proposed multimodal transit center to employment centers in Ontario.
- **Mobility 3-11:** We require the future development of community-wide serving facilities to be sited in transit-ready areas that can be served and made accessible by public transit.
- **Land Use 1-2:** We integrate state, regional and local Sustainable Community/Smart Growth principles into the development and entitlement process.

OnRoad-3. Transportation Demand Management and Signal Synchronization

- **Policy LU-3.3:** Locate regionally serving land uses with immediate access to the regional transportation network that is designed to provide maximum access capabilities and permit maximum dispersal of traffic.

OnRoad-4. Expand Bike Routes

- **Land Use 1-4:** We require development and urban design, where appropriate, that reduces reliance on the automobile and capitalizes on multi-modal transportation opportunities.
- **Mobility 3-1:** We maintain our Multipurpose Trails & Bikeway Corridor Plan to create a comprehensive system of on- and off-street bikeways that connect residential areas, businesses, schools, parks, and other key destination points.
- **Mobility 3-2:** We provide off-street multipurpose trails and Class II bikeways as our primary paths of travel and use the Class III for connectivity in constrained circumstances.
- **Mobility 3-4:** We explore opportunities to expand the pedestrian and bicycle networks.

3.16.4.3 Solid Waste Management

Waste-2. Waste Diversion and Reduction

- **Environmental Resources 3-1:** We shall meet or exceed AB 939 requirements.

3.16.4.4 Water Conveyance

- **Environmental Resources 1-3:** We require conservation strategies that reduce water usage.

3.17 City of Rancho Cucamonga



3.17.1 City Summary

The City of Rancho Cucamonga is just north of Ontario in the western portion of the San Bernardino Valley. Similar to the nearby communities of Ontario and Fontana, Rancho Cucamonga’s proximity to freeways and the Ontario airport have fostered the growth of the logistics industry and the City contains numerous jobs and land uses related to trucking, warehousing, distribution, and light industry. The general plan identifies approximately 12% of land area for industrial/commercial uses and nearly 50% for residential and open space. These land uses are reflected below in the City’s GHG inventory and selected reduction strategies. Reliant Energy operates a power plant in Rancho Cucamonga, the emissions of which are captured in the building energy sector for any City that receives power from the plant; plant emissions are not uniquely attributed to Rancho Cucamonga. Attractions in Rancho Cucamonga include Victoria Gardens, Foothills Crossing the Epicenter Sports Park which bring visitors to Rancho Cucamonga from throughout the region.

The population of Rancho Cucamonga in 2016 was 176,503 (165,269 in 2010) making it the third largest City in San Bernardino County. Rancho Cucamonga has a higher-than-average median household income (\$83,736 versus \$64,989 for the SCAG region). Rancho Cucamonga’s demographic composition in 2018 was 37.6% Non-Hispanic White, 8.8% Non-Hispanic Black, 0.4% Non-Hispanic American Indian or Alaska Native, 12.8% Non-Hispanic Asian, and 3.0% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 37.4%. As of 2010, 90% of the City’s residents graduated high school, and 29% had a bachelor’s degree or higher (U.S. Census Bureau, 2012). The City’s population is expected to increase to 186,120 by 2030.

Table 3-46 presents socioeconomic data for Rancho Cucamonga, including population, housing, and employment (SBCOG, 2019).

Table 3-46. Socioeconomic Data for Rancho Cucamonga

Category	2016	2030	2045
Population	176,503	186,120	201,255
Households	56,764	61,426	66,421
Jobs	88,314	96,434	105,135



3.17.2 Emission Reductions

The City of Rancho Cucamonga selected a goal to reduce its community GHG emissions to a level that is 40% below its 2016 GHG emissions level by 2030. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective through a combination of state (~75%) and local (~25%) efforts. The Pavley vehicle standards, the state’s low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in Rancho

Cucamonga’s on-road and building energy sectors in 2030. An additional reduction of 156,417 MTCO₂e will be achieved primarily through the following local measures, in order of reductions achieved: Solar Installation for Existing Commercial/Industrial (Energy-8); Waste Diversion and Reduction (Waste-2); and Encourage Use of Mass Transit (OnRoad-2). Rancho Cucamonga’s reduction plan has the greatest impacts on GHG emissions in the building energy, waste, and on-road transportation sectors.

The City of Rancho Cucamonga General Plan provides many transportation and land use related actions to reduce vehicle related GHG emissions. The General Plan will support the goals of SB 375 and the Sustainable Communities Strategy (Transportation-1) through a wide range of actions, which include the following.

- Promoting sustainable development that reduces environmental impacts.
- Working towards a sustainable jobs-housing balance.
- Implementing land use patterns and policies that incorporate smart growth practices.
- Reducing operational energy requirements through sustainable and complementary land use patterns.
- Promoting pedestrian-friendly development.
- Supporting development projects that are designed to facilitate convenient access for pedestrians, bicycles, transit, and automobiles.

The bars in Figure 3-46 show Rancho Cucamonga’s 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City’s emissions reduction target (i.e., 46% below the 2008 emissions level). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total (“2030 plan”), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~75%) of the total reductions needed to achieve the 2030 target.

Figure 3-47 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or “Reduction Plan” scenarios. The largest emissions contributions are in the on-road transportation and building energy emissions sectors.

Table 3-47 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction (“Reduction Plan”) results by sector. It shows the percent reduction in each sector’s emissions in 2030 and demonstrates that Rancho Cucamonga exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the building energy, waste, and on-road transportation sectors.

Figure 3-48 presents emission reductions by sector and by control (i.e., state control versus local or City control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are in the building energy sector.

Figure 3-46. Emissions Reduction Profile for Rancho Cucamonga

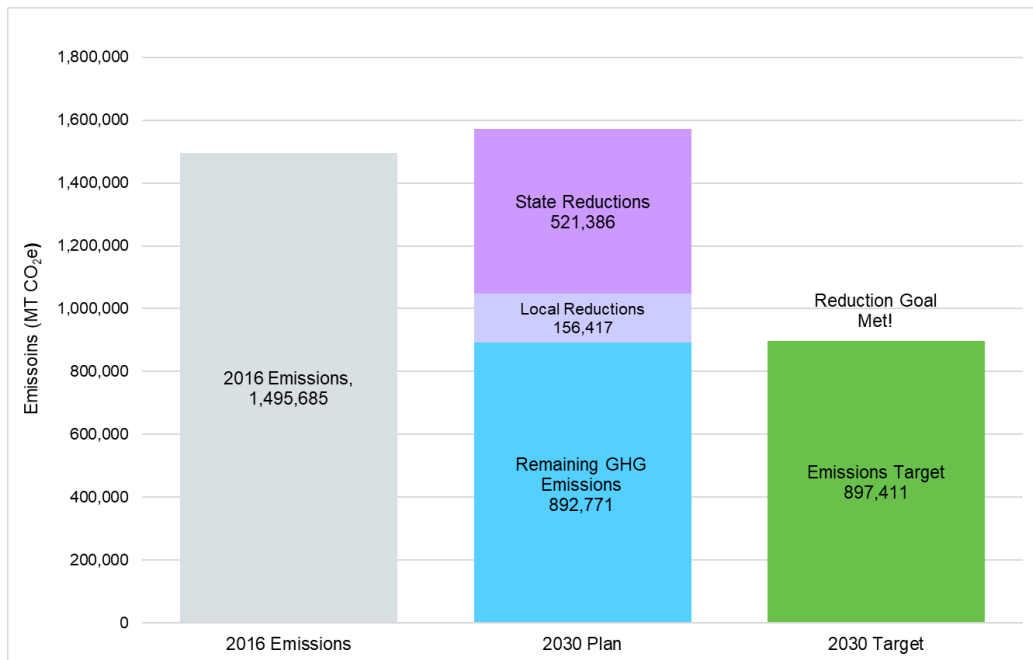


Figure 3-47. Emissions by Sector for Rancho Cucamonga

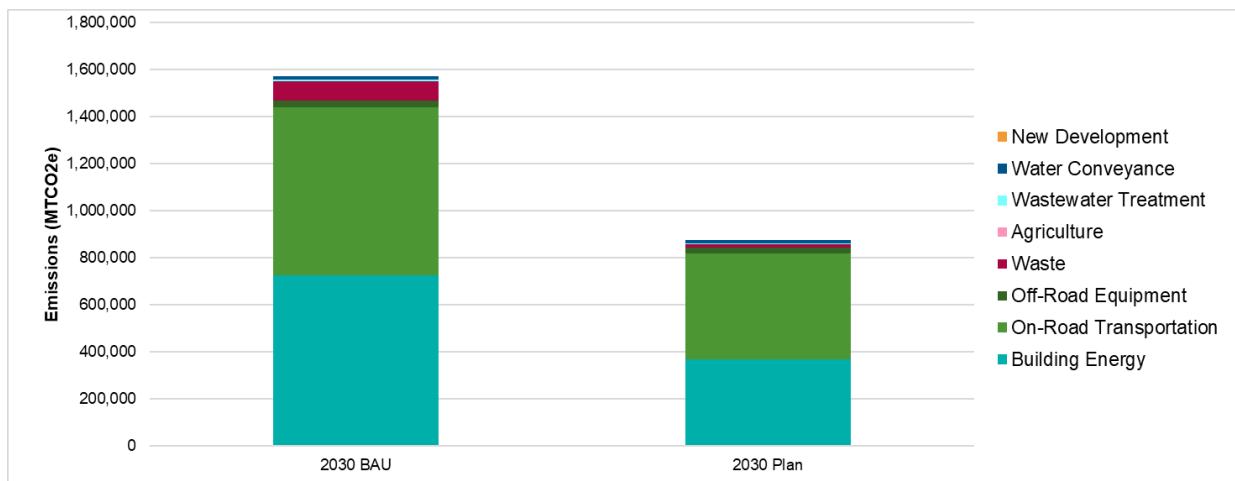


Table 3-47. Emission Reductions by Sector for Rancho Cucamonga

Sector	2016 Emissions (MTCO₂e)	2030 BAU (MTCO₂e)	2030 Reductions (MTCO₂e)	2030 Emissions with Reduction Plan (MTCO₂e)	Reduction (percent)
Building Energy	668,997	724,400	333,832	290,567	46.1%
On-Road Transportation	707,753	715,986	266,830	449,156	37.3%
Off-Road Equipment	20,897	26,598	0	26,598	0.0%
Waste	79,716	84,059	72,591	11,468	86.4%
Agriculture	330	186	0	186	0.0%
Wastewater Treatment	5,529	5,831	429	5,402	7.4%
Water Conveyance	13,406	13,515	4,121	9,393	30.5%
GHG Performance Standard*	-	-	-	-	-
Total	1,495,685	1,570,575	677,803	892,771	43.2%
Goal	-	-	-	897,411	-
Goal Met?	-	-	-	Yes	-
Reductions Beyond Goal	-	-	-	4,640	-

Notes:

Values may not sum due to rounding.

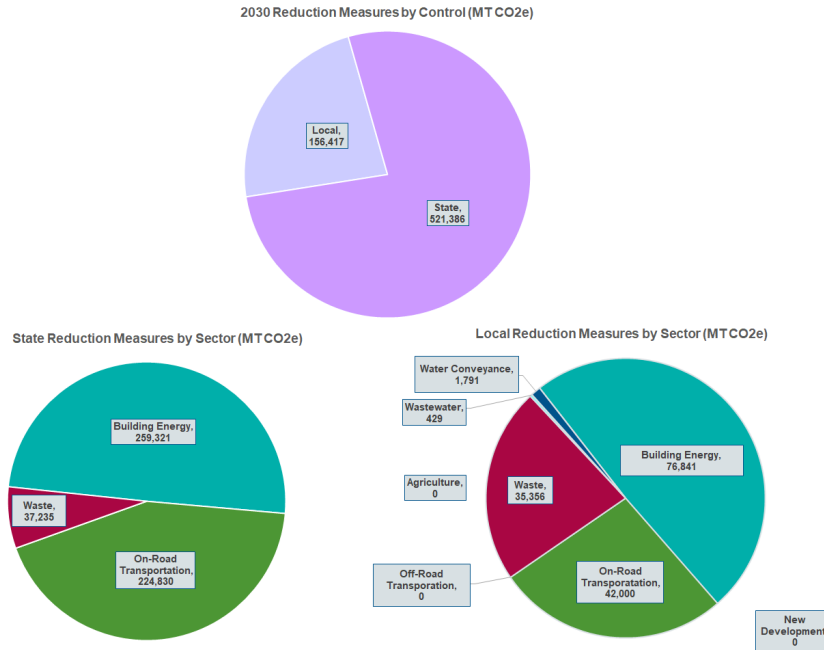
Dashes indicate no value or not applicable.

Negative 2030 reduction emissions indicate that emissions will be higher than 2016 emissions.

Negative 2030 emissions with reduction plan values indicate that emissions reductions are larger than the projected 2030 BAU emissions.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City's reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-48. Emission Reductions by Control and by Sector for Rancho Cucamonga



3.17.3 Reduction Measures

Table 3-48 presents each reduction measure evaluated for Rancho Cucamonga. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-48. GHG Reduction Measures and Estimated 2030 Reductions for Rancho Cucamonga

Measure Number	Measure Description	Reductions (MTCO _{2e})
State Measures		
State-SB 100	SB 100	183,819
State-SB 350	SB 350	63,893
State-T24	Title 24 (Energy Efficiency Standards)	10,893
State-Solar Water Heater	Solar Water Heaters (Residential)	123
State-Increased CHP	Increased Combined Heat and Power (Commercial)	593
State-OnRoad	State Fuel Efficiency Measures	224,830
State-SB 1383	Methane Capture	37,235
Total State Reductions		521,386
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	0
Energy-2	Lighting Efficiency	0
Energy-3	All Electric Buildings	0
Energy-5	Renewable Energy – New Commercial/Industrial	0
Energy-6	Solar Energy for Warehouse Space	16,774
Energy-7	Solar Installation for Existing Housing	10,191
Energy-8	Solar Installation for Existing Commercial/Industrial	47,545
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	3
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	1,319
OnRoad-2	Encourage Use of Mass Transit	22,116
OnRoad-3	Transportation Demand Management and Synchronization	4,912
OnRoad-4	Expand Bike Routes	7,491
OnRoad-5	Community Fleet Electrification	6,162
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	0
OffRoad-2	Idling Ordinance	0
OffRoad-3	Electric Landscaping Equipment	0
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	35,356
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	163
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	265
<i>Water Conveyance</i>		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New	0

	Construction	
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	2,330
Water-3	Water-Efficient Landscaping Practices	1,791
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	0
Total Local Reductions		156,417
Total Reductions		677,803

Notes:

Values may not sum due to rounding.

3.17.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Rancho Cucamonga's GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Rancho Cucamonga 2010 General Plan unless otherwise noted (City of Rancho Cucamonga 2010). In addition to state level measures, the City of Rancho Cucamonga selected a variety of measures across nearly all sectors (Table 3-48). The City's General Plan includes policies and programs that broadly support energy efficiency and sustainability even if it is not closely tied to a specific measure as part of this Reduction Plan. Relevant General Plan policies for the specific reduction measures the City selected are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.17.4.1 Building Energy

Energy-1. Building Energy Efficiency

- **Policy RC-4.1:** Pursue efforts to reduce energy consumption through appropriate energy conservation and efficiency measures throughout all segments of the community.
- **Policy RC-6.2:** Encourage green practices for new and existing buildings throughout the community.
- **Policy RC-6.4:** Promote green practices and the use of energy saving designs and devices for new and existing buildings throughout the community. Consult with energy providers such as Southern California Edison, Southern California Gas, the Rancho Cucamonga Municipal Utility, and others to establish and coordinate energy efficiency programs that promote energy efficient design in all projects and assist residential, commercial, and industrial users.

Energy-2. Lighting Efficiency

- **Policy RC-5.2:** Investigate the feasibility of using solar (photovoltaic) lights for City operated parking lots instead of conventional street and pedestrian lights that are powered by electricity in an effort to conserve energy.

Energy-5. Renewable Energy – New Commercial/Industrial

- **Policy RC-4.2:** Promote the use of renewable energy and alternative energy technology, and support efforts to develop small-scale, distributed energy generation (e.g., solar, wind, cogeneration, and biomass) to reduce the amount of electricity drawn from the regional power grid and reduce the use of natural gas, while providing Rancho Cucamonga with a greater degree of energy and economic self-sufficiency.

- **Policy RC-4.3:** Encourage the use of solar energy systems in homes and commercial businesses.
- **Policy RC-4.5:** Support the development of private sources of sustainable and environmentally friendly energy supplies, provided these are consistent with City aesthetic and public safety goals.

Energy-6. Solar Energy for Warehouse Space

- **Policy RC-4.2:** Promote the use of renewable energy and alternative energy technology, and support efforts to develop small-scale, distributed energy generation (e.g., solar, wind, cogeneration, and biomass) to reduce the amount of electricity drawn from the regional power grid and reduce the use of natural gas, while providing Rancho Cucamonga with a greater degree of energy and economic self-sufficiency.
- **Policy RC-4.3:** Encourage the use of solar energy systems in homes and commercial businesses.
- **Policy RC-4.5:** Support the development of private sources of sustainable and environmentally friendly energy supplies, provided these are consistent with City aesthetic and public safety goals.

Energy-7. Solar Installation for Existing Housing

- **Policy RC-4.2:** Promote the use of renewable energy and alternative energy technology, and support efforts to develop small-scale, distributed energy generation (e.g., solar, wind, cogeneration, and biomass) to reduce the amount of electricity drawn from the regional power grid and reduce the use of natural gas, while providing Rancho Cucamonga with a greater degree of energy and economic self-sufficiency.
- **Policy RC-4.3:** Encourage the use of solar energy systems in homes and commercial businesses.
- **Policy RC-4.5:** Support the development of private sources of sustainable and environmentally friendly energy supplies, provided these are consistent with City aesthetic and public safety goals.

Energy-8. Solar Installation for Existing Commercial/Industrial

- **Policy RC-4.2:** Promote the use of renewable energy and alternative energy technology, and support efforts to develop small-scale, distributed energy generation (e.g., solar, wind, cogeneration, and biomass) to reduce the amount of electricity drawn from the regional power grid and reduce the use of natural gas, while providing Rancho Cucamonga with a greater degree of energy and economic self-sufficiency.
- **Policy RC-4.3:** Encourage the use of solar energy systems in homes and commercial businesses.
- **Policy RC-4.5:** Support the development of private sources of sustainable and environmentally friendly energy supplies, provided these are consistent with City aesthetic and public safety goals.

3.17.4.2 On-Road

- **Policy LU-3.5:** Work toward a sustainable jobs-housing balance by accommodating a range and balance of land uses within Rancho Cucamonga.
- **Policy LU-3.7:** Encourage new development projects to build on vacant infill sites within a built-out area, and/or redevelop previously developed properties that are underutilized.
- **Policy LU-4.4:** Concentrate commercial uses near major intersections.
- **Policy LU-5.1:** Create a central business hub at the intersection of Foothill Boulevard and Haven Avenue, extending south to 4th Street, with higher-intensity office, commercial, and public/quasi-public uses.

- **Policy LU-5.4:** Promote a pedestrian-friendly corridor where employees can walk to restaurants, commercial services, and other amenities in the area.
- **Policy CM-3.10:** Continue to complete the installation of sidewalks and require new development to provide sidewalks.
- **Policy CM-3.11:** Continue to require pedestrian amenities on sidewalks on major streets that are key pedestrian routes, including the provision of benches, shade trees, and trash cans.
- **Policy CM-3.13:** Establish a number of bike hubs in the City (centralized locations with convenient bike parking for trip destinations or transfer to other transportation modes) at key transit nodes and at commercial nodes.
- **Policy CM-3.14:** Enhance pedestrian and bicycle access to local and regional transit, including facilitating connections to transit.
- **Policy LU-12.3:** Support development projects that are designed to facilitate convenient access for pedestrians, bicycles, transit, and automobiles.
- **Policy LU-12.4:** Retrofit, where feasible, existing neighborhoods to allow for convenient, multi-modal access to schools, parks, and shopping centers.
- **Policy CM-1.1:** Provide a safe and efficient street system in the City to support mobility goals, all transportation modes, and the goals of the Managing Land Use, Community Design, and Historic Resources Chapter.
- **Policy CM-1.2:** Provide an integrated network of roadways that provides for convenient automobile, transit, bicycle, and pedestrian circulation movement around the City.
- **Policy CM-3.7:** Continue to develop and maintain a City-wide bicycle network of off-street bike paths, on-street bike lanes, and bike streets to provide connections between neighborhoods, schools, parks, civic center/facilities, recreational facilities, and major commercial centers.
- **Policy CM-4.3:** Continue to implement Intelligent Transportation System (ITS) measures and advanced traffic management technologies where appropriate.
- **Policy CM-4.1:** Continue to implement traffic management and traffic signal operation measures along the arterial roadway to minimize delay and congestion for all modes, without adversely impacting transit, bicycles, and pedestrians.
- **Policy CM-4.2:** Continue to design and operate arterials and intersections for the safe operation of all modes of transportation, including transit, bicyclists, and pedestrians.
- **Policy CM-6.4:** Require the provision of appropriate mitigation of traffic impacts in the surrounding communities resulting from development in Rancho Cucamonga. Work with the surrounding communities to ensure that traffic impacts in Rancho Cucamonga resulting from development outside the City are adequately mitigated.

OnRoad-1. Alternative Fueled Transit Fleets

- **Policy CM-2.3:** Support the use of hybrid, electric, and low/zero emission vehicles.
- **Policy CM-2.4:** Replace City vehicles with energy-efficient and alternative fuel source models when replacing vehicles or adding to the City's fleet.
- **Policy CM-2.5:** Establish priority parking locations for hybrid, electric, and low/zero emission, and alternative fuel vehicles.

On-Road-2. Encourage Use of Mass Transit

- **Policy CM-3.1:** Consult with regional transit operators to maintain and improve the coverage and frequency of transit service in the City.

- **Policy CM-3.3:** Provide local transit circulator service in the City to serve local neighborhoods, Victoria Gardens, the Metrolink Station, the Civic Center, Central Park, and key destinations.
- **Policy CM-8.1:** Support regional transit options that improve access between Rancho Cucamonga and LA/Ontario International Airport.
- **Policy CM-1.3:** Complete the circulation system by constructing new roadway facilities and freeway interchanges pursuant to the Circulation Plan.
- **Policy CM-2.2:** Encourage all feasible measures to reduce total vehicle miles traveled by automobiles, including enhanced transit access and land use approaches that provide compact and focused development along major transit corridors.
- **Policy CM-6.2:** Support appropriate regional plans for high-occupancy vehicle lanes, Bus Rapid Transit and express bus, rail transit, and high-speed rail, provided it does not negatively impact the City.
- **Policy RC-4.4:** Reduce operational energy requirements through sustainable and complementary land use and circulation planning. Support implementation of State mandates regarding energy consumption and greenhouse gas reduction, including AB32 and SB375.
- **Policy LU-4.1:** Provide new Mixed-Use development opportunities along the Foothill Boulevard Corridor to allow residential, commercial, and civic uses, and to accommodate both transit and automobiles.
- **Policy LU-5.6:** Support the integration of transportation facilities, including transit, to support the office environment.
- **Policy LU-7.2:** Support infrastructure improvements to attract light industrial and manufacturing uses, green technology uses, energy-related businesses, and research and development uses.
- **Policy LU-9.5:** Establish Mixed Use areas as higher intensity "urban centers" where there is sensitive integration of land uses, convenient modes of transportation, and a focused "sense of place" that emanates from the architectural and landscape design.
- **Policy CM-3.12:** Continue to require that the siting and architectural design of new development promotes safety, pedestrian-friendly design, and access to transit facilities.

3.17.4.3 Solid Waste Management

Waste-2. Waste Diversion and Reduction

- **Policy PF-7.1:** Continue to adopt programs and practices that minimize the amount of materials entering the waste stream. Encourage recycling and composting in all sectors of the community, including recycling of construction and demolition materials, in order to divert items from entering landfills.
- **Policy PF-7.2:** Consult with public agencies and private contractors to ensure adequate refuse collection and disposal facilities are available.
- **Policy PF-7.3:** Embrace the sustainability principle that recognizes and takes advantage of the life cycle of goods and materials.
- **Policy PF-7.5:** Continue to educate the community regarding the benefits of solid waste diversion, recycling and composting, and maintain programs that make it easy for all people in Rancho Cucamonga to work toward and achieve City waste reduction objectives.

3.17.4.4 Wastewater Treatment

- **Policy RC-3.3:** Support efforts to expand the recycled water distribution system and actively promote the widespread use of recycled water in Rancho Cucamonga.
- **Policy PF-6.1:** Continue to ensure an adequate treatment and collection system capacity for Rancho Cucamonga's wastewater that is conveyed to the Inland Empire Utilities Agency water reclamation facilities, while protecting water quality and public health and minimizing adverse impacts to the environment.
- **Policy PF-6.2:** Consult with the Inland Empire Utilities Agency and the Cucamonga Valley Water District to ensure that the treatment facility has sufficient capacity to meet future wastewater treatment needs.

3.17.4.5 Water Conveyance

- **Policy RC-3.3:** Support efforts to expand the recycled water distribution system and actively promote the widespread use of recycled water in Rancho Cucamonga.
- **Policy LU-10.1:** Continue to require implementation of the City's Water Efficiency Ordinance, which should be reviewed and updated periodically.
- **Policy LU-10.3:** Promote low water usage, and emphasize fire-safe defensible space.
- **Policy LU-10.2:** Encourage the planting of edible landscapes, using citrus trees, box gardens, vineyards, and other edible plant materials whenever possible.
- **Policy RC-3.2:** Encourage the conversion of water-intensive turf/landscape areas to landscaping that uses climate-appropriate plants, efficient irrigation systems, and water efficient site maintenance.

Water-2. Renovate Existing Buildings

- **Policy RC-3.1:** Require the use of cost-effective methods to conserve water in new developments, and promote appropriate water conservation and efficiency measures for existing businesses and residences.

3.18 City of Redlands



3.18.1 City Summary

The City of Redlands is located on the far southeastern portion of the San Bernardino Valley, south of Highland and northwest of the San Gorgonio pass on I-10. The city’s history is tied to the railroads (late 1800s), the citrus industry (early 1900s) and the growth of the aerospace industry (1950s). Redlands contains numerous historic landmarks and homes. Only the city’s far western areas are allocated to industrial uses, with much of the city devoted to residential, parks, agriculture, and resources preservation. Attractions such as the Fox Event Center, Redlands Bowl, University of Redlands, and San Bernardino County Museum bring visitors from both San Bernardino and Riverside Counties. Redlands’ GHG emissions profile below reflects these land uses, with primary emissions sources in the on-road transportation, residential energy use, commercial energy use, and stationary sources sectors.

Redlands covers 36 square miles and the population in 2016 was 69,531 (68,747 in 2010). Redlands’ demographic composition in 2018 was 49.3% Non-Hispanic White, 7.1% Non-Hispanic Black, 0.2% Non-Hispanic American Indian or Alaska Native, 7.6% Non-Hispanic Asian, and 3.6% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 32.2%. As of 2010, 37% of residents had a bachelor’s degree or higher (U.S. Census Bureau, 2012). The city is expected to grow to a population of 74,690 by 2030, an increase of 7% from 2016. Employment in Redlands is expected to increase by around 16% by 2030.

Table 3-49 presents socioeconomic data for Redlands, including population, housing, and employment (SBCOG, 2019).

Table 3-49. Socioeconomic Data for Redlands

Category	2016	2030	2045
Population	69,531	74,690	80,832
Households	24,421	27,516	30,832
Jobs	42,569	49,220	56,347



The City of Redlands adopted a Climate Action Plan in 2017, demonstrating how the city will reduce GHG emission through 2035 (City of Redlands, 2017). The Climate Action Plan includes a GHG inventory, GHG emissions projections through 2035, monitoring and reporting process to track progress, and options to reduce GHG emissions beyond what is required by the State of California. The plan covers emissions from ten sectors: residential, commercial, industrial, transportation, solid waste, water, wastewater, off-road equipment, public lighting, and agriculture. Based on the Plan’s inventory, the sector with the most emissions was transportation, followed by residential and commercial (City of Redlands, 2017).

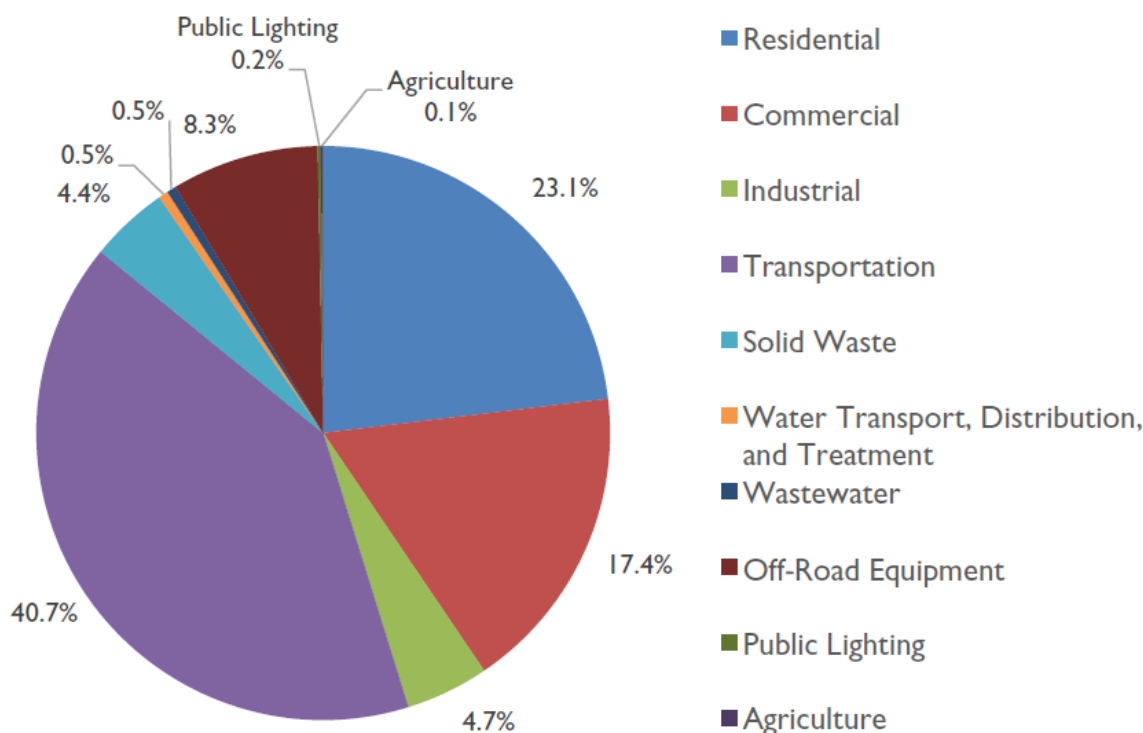
3.18.2 Emission Reductions

The City of Redlands 2017 Climate Action Plan presents a 2015 inventory, forecasts for 2030 and 2035, and outlines emission reductions in the building energy, waste, and on-road transportation sectors. Redland’s CAP has a GHG reduction target for 2030 based on the California Air Resources Board recommended minimum local jurisdiction target. The California Air Resources Board, in the 2017 Scoping Plan, recommended that local jurisdictions reduce GHG emissions to support the state’s overall reduction target under SB 32. CARB suggested that local jurisdictions should strive to reduce emissions to at least level of 6.0 MTCO₂e per capita by 2030. For Redlands, a target of 6.0 MTCO₂e per capita for 2030 corresponds to a mass emissions level of approximately 308,290 MTCO₂e, which is 35.1% below 2008 emission levels of 475,023 MT CO₂e.

The information on current and future emissions below is derived from the Redlands 2017 Climate Action Plan. The analysis was done following the methodology in the Redlands 2017 CAP and not the methodology used for the other jurisdictions in this study. The methodology used by Redlands in described in their adopted CAP document.

Figure 3-49 shows Redland’s 2015 GHG emissions by sector. Figure 3-50 shows 2030 Emissions and emission reductions with implementation of the plan. Table 3-50 presents modified future forecasts with implementation of Redlands general plan use and circulation systems, state actions and additional general plan policies. Figure 3-51 presents modified future forecasts with implementation of Redlands general plan use and circulation systems, state actions and additional general plan policies.

Figure 3-49. Redlands, 2015 Emissions by Sector



Source: City of Redlands, Climate Action Plan, 2017, Figure 2-1

Figure 3-50. Emissions by Sector for Redlands for 2030

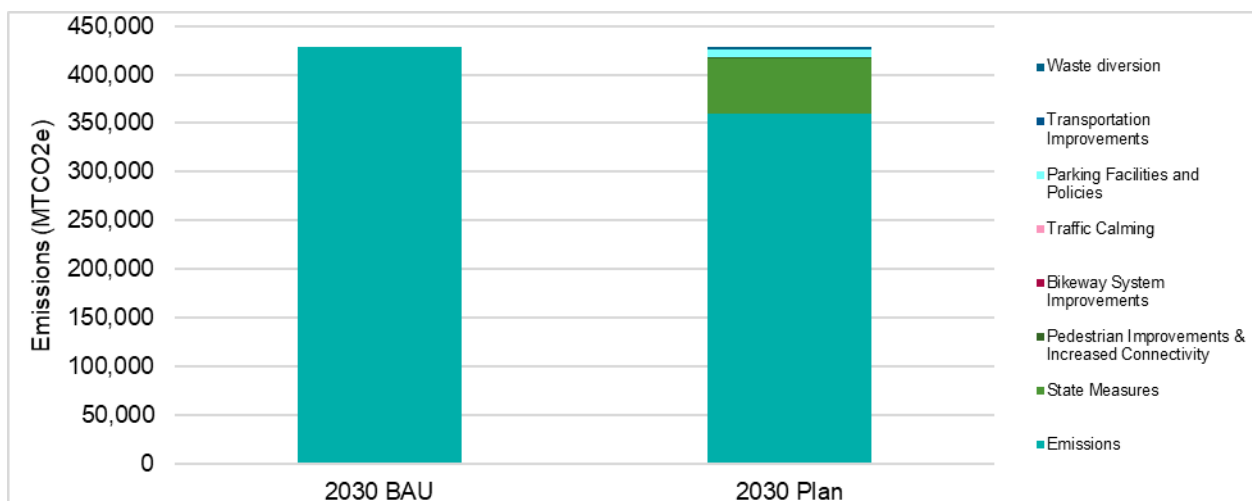


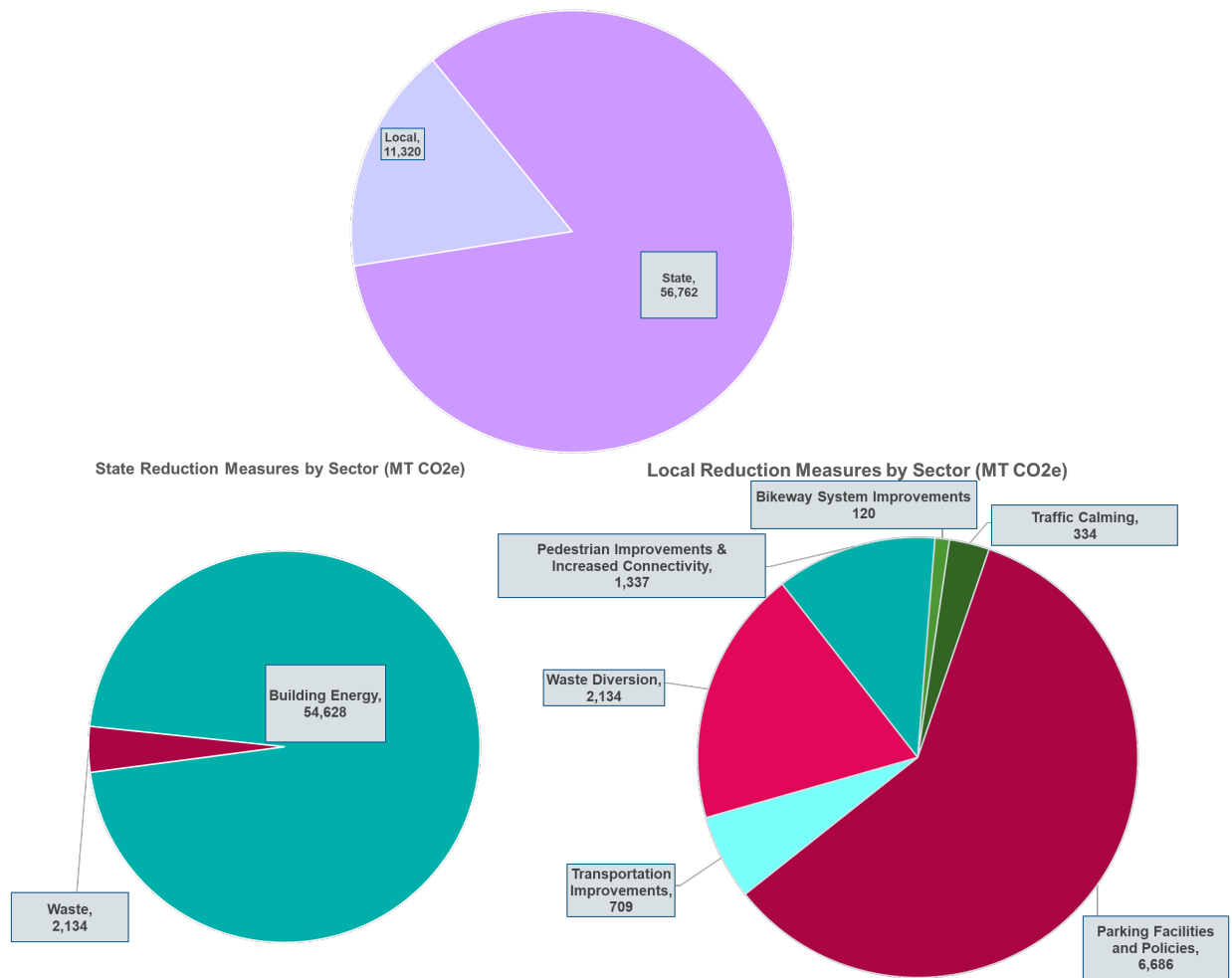
Table 3-50. Emissions Forecasts with Implementation of the Redlands CAP

Year	Emissions (MTCO _{2e} /Year)	Emissions per capita with CAP Implementation (MTCO _{2e} per capita per year)	Emissions Targets (MTCO _{2e} per capita per year)
2015	419,417	6.1	-
2030	362,092	4.8	6.0
2035	359,358	4.5	5.0

Source: City of Redlands, Climate Action Plan, 2017

Dashes indicate no value or not applicable.

Figure 3-51. Emission Reductions by Control and by Sector for Redlands



Source: City of Redlands, Climate Action Plan, 2017, Figure 3-4.

3.18.3 Reduction Measures

The Redlands CAP included the effect of implementing the City’s General Plan land use and circulation system in its BAU forecasts, so there was no separate estimate of the reductions relative to the implementation of land use and circulation policies. Table 3-51 presents the state and additional local reduction measures evaluated in the Redlands CAP. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control.

Table 3-51. State and Additional GHG Reduction Measures Effectiveness for Redlands

Measure Number	Reductions (MTCO_{2e})
State Measures	
SB 100	47,918
Title 24	6,710
Waste Diversion	2,134
Total State Reductions	56,762
Local Measures	
Pedestrian Improvements and Increased Connectivity	1,337
Bikeway System Improvements	120
Traffic Calming	334
Parking Facilities and Policies	6,686
Transportation Improvements	709
Pedestrian Improvements and Increased Connectivity	1,337
Total Local Reductions	9,186
Total Reductions	65,948

Note: Values may not sum due to rounding.

Source: City of Redlands Climate Action, 2017.

3.18.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Redlands' GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Redlands 2017 General Plan unless otherwise noted (City of Redlands 2017). The City's General Plan includes policies and programs that broadly support energy efficiency and sustainability and align with the City of Redland's Climate Action Plan. Relevant General Plan policies are listed by sector (e.g., Off-Road).

3.18.4.1 Building Energy

- **8-A.10:** Integrate trees and shade into the built environment to mitigate issues such as stormwater runoff and the urban heat island effect.
- **8-P.1:** Promote energy efficiency and conservation technologies and practices that reduce the use and dependency on nonrenewable resources of energy by both City government and the community.
- **8-P.2:** Promote energy awareness community-wide by educating the community regarding energy audits and incentive programs (tax credits, rebates, exchanges, etc.) available for energy conservation.
- **8-P.3:** Proactively review and update City plans, resolutions, and ordinances to promote greater energy efficiency in both existing and new construction in regard to site planning, architecture, and landscape design.
- **8-A.14:** Seek funding programs to assist low and moderate-income households in energy conservation.

- **8-A.12:** Explore participating in new high-efficiency technology programs such as LED lighting for City facilities, safety lighting in parks and other public spaces, and LED street lighting conversion for all City-owned streetlights.
- **8-P.2:** Promote energy awareness community-wide by educating the community regarding energy audits and incentive programs (tax credits, rebates, exchanges, etc.) available for energy conservation.
- **8-P.10:** Demonstrate leadership by reducing the use of energy and fossil fuel consumption in municipal operations, including transportation, waste reduction, and recycling, and by promoting efficient building design and use.
- **8-P.9:** Undertake initiatives to enhance sustainability by reducing the community's GHG emissions.
- **8-P.9:** Undertake initiatives to enhance sustainability by reducing the community's GHG emissions.
- **8-A.20:** Support energy resiliency through a diversified system of energy sources including zero and near-zero emission technologies.
- **8-A.20:** Support energy resiliency through a diversified system of energy sources including zero and near-zero emission technologies.
- **8-P.9:** Undertake initiatives to enhance sustainability by reducing the community's GHG emissions.
- **8-A.20:** Support energy resiliency through a diversified system of energy sources including zero and near-zero emission technologies.
- **8-P.9:** Undertake initiatives to enhance sustainability by reducing the community's GHG emissions.
- **8-A.21:** Support the development of distributed energy resources (DER), such as combined heat and power (CHP) from microturbines, fuel cells, etc., to assist in local energy security.
- **8-A.20:** Support energy resiliency through a diversified system of energy sources including zero and near-zero emission technologies.

3.18.4.2 On-Road

- **8-P.10:** Demonstrate leadership by reducing the use of energy and fossil fuel consumption in municipal operations, including transportation, waste reduction, and recycling, and by promoting efficient building design and use.
- **8-A.7:** Seek alternatives to reduce non-renewable energy consumption attributable to transportation within the Planning Area. Seek funding and other assistance from the South Coast Air Quality Management District (AQMD) for installation of electric vehicle charging stations at appropriate locations throughout the City.
- **4-P.44:** Provide choices for travel options, including walking, biking, vehicular, and transit.
- **4-P.52:** Encourage stops of larger trains (Metrolink) in stations that can adequately accommodate their size and have greater availability of and access to parking.
- **8-P.9:** Undertake initiatives to enhance sustainability by reducing the community's GHG emissions.
- **4-P.41:** Foster a connected, accessible, and active community by creating attractively designed pedestrian- and transit-oriented villages with a mix of uses in a compact area.
- **4-A.105:** Create an active and compact transit-oriented core with a mix of residential and commercial/office uses. Allow for the reuse of commercial sites as office centers.

- **4-A.101:** Implement bicycle route improvements that provide intra-City and regional connections, connecting to Loma Linda, the City of San Bernardino, and north to the Santa Ana River Trail.
- **4-A.100:** Provide streetscape improvements along the major corridors of California Street and Redlands Boulevard to enhance comfort and safety for all modes of travel.
- **4-A.116:** Implement bicycle route improvements that provide strong east-west connections to other Transit Villages as well as north-south connections to improve access to existing neighborhoods to the north. Routes would include the Orange Blossom Trail, the Lugonia Trail on New York Street, and a route along Texas Street.
- **8-P.9:** Undertake initiatives to enhance sustainability by reducing the community's GHG emissions.

3.18.4.3 Off-Road

- **8-P.9:** Undertake initiatives to enhance sustainability by reducing the community's GHG emissions.
- **8-P.9:** Undertake initiatives to enhance sustainability by reducing the community's GHG emissions.
- **8-P.9:** Undertake initiatives to enhance sustainability by reducing the community's GHG emissions.

3.18.4.4 Solid Waste Management

- **8-P.10:** Demonstrate leadership by reducing the use of energy and fossil fuel consumption in municipal operations, including transportation, waste reduction, and recycling, and by promoting efficient building design and use.
- **8-A.42:** Adopt a construction and demolition waste recycling ordinance that requires, except in unusual circumstances, all construction, demolition and renovation projects that meet a certain size or dollar value to divert from landfills 100 percent of all cement concrete and asphalt concrete, and an average of at least 75 percent of all remaining non-hazardous debris.

3.18.4.5 Wastewater Treatment

- **8-A.29:** Reduce consumption of carbon-based fuels for conveyance and treatment of water and wastewater.
- **8-A.27:** Seek funding sources to implement renewable energy sources determined to be feasible for water and wastewater operations.
- **8-A.29:** Reduce consumption of carbon-based fuels for conveyance and treatment of water and wastewater.

3.18.4.6 Water Conveyance

- **8-P.4:** Promote residential and commercial water conservation using multiple strategies.
- **8-P.5:** Conserve the highest quality of water reasonably available for domestic use.
- **8-P.6:** Minimize dependence on imported water through efficient use of local surface sources, using wise groundwater management practices, conservation measures, and the use of reclaimed wastewater and non-potable water for irrigation of landscaping and agriculture, where feasible.
- **8-P.6:** Minimize dependence on imported water through efficient use of local surface sources, using wise groundwater management practices, conservation measures, and the use of reclaimed wastewater and non-potable water for irrigation of landscaping and agriculture, where feasible.

- **8-P.8:** Promote sustainability by reducing the community’s greenhouse gas (GHG) emissions and fostering green development patterns – including buildings, sites, and landscapes.

3.19 City of Rialto



3.19.1 City Summary

The City of Rialto is located in the San Bernardino Valley, between the cities of Fontana and San Bernardino, along the I-10 corridor. As with other neighboring cities, Rialto’s history has been shaped by the railroad, the construction of Route 66, agriculture, and the suburban housing boom of the 1970s and 1980s. Also, Rialto’s prime location near major Southern California freeways, railroad corridors, and airports make it favorable for the logistics industry. Large distribution centers for Target, Staples, and FedEx are located in Rialto, as is the nation’s largest fireworks company, Pyro Spectaculars. These businesses bring workers and other work-related trips to Rialto every day.

Much of the northern portion of the city is devoted to residential uses and/or is open for additional residential uses, although it also includes many commercial/industrial uses including the Rialto Municipal Airport. The City’s general plan outlines an expansion of both residential (31% increase in dwelling units by buildout of the General Plan) and nonresidential uses (77% increase in nonresidential square feet by buildout). These current and future land uses are reflected in the city’s GHG emissions profile and selected reductions.

Rialto’s population in 2016 was 99,318 (99,171 in 2010) and is expected to increase to 119,193 by 2030. Rialto’s demographic composition in 2018 was 10.8% Non-Hispanic White, 11.8% Non-Hispanic Black, 0.1% Non-Hispanic American Indian or Alaska Native, 2.4% Non-Hispanic Asian, and 1.9% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 73.0%. As of 2010, almost 15% of firms in the City were Non-Hispanic Black-owned, and 48% were Hispanic-owned. This compared to the statewide averages of 4% and 16.5%, respectively (U.S. Census Bureau, 2012). The City expects a 39% increase in employment between 2016 and 2030.

Table 3-52 presents socioeconomic data for Rialto, including population, housing, and employment (SBCOG, 2019).

Table 3-52. Socioeconomic Data for Rialto

Category	2016	2030	2045
Population	99,318	119,193	139,068
Households	26,485	31,785	37,085
Jobs	25,472	30,837	35,524



3.19.2 Emission Reductions

ICF consultants prepared a reduction scenario for the City of Rialto as city staff were unable to assist due to other City priorities (including responding to the COVID health emergency, among other pressing matters). ICF identified a reduction goal to reduce its community GHG emissions to a level

that is 40% below its 2016 GHG emissions level by 2030 to match the AB 32 targets. ICF consultants identified reduction measures based on selections in the prior regional plan and identification of other local reduction measures suitable for the City. The reduction scenario identified by ICF show that Rialto can meet and exceed the goal subject to reduction measures that are technologically feasible and cost-effective through a combination of state (~75%) and local (~25%) efforts. The Pavley vehicle standards, the state's low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in Rialto's on-road, solid waste and building energy sectors in 2030. An additional reduction of 75,519 MTCO₂e will be achieved primarily through the following local measures in order of importance: All Electric Buildings (Energy-3); Solar Energy for Warehouse Space (Energy-6); Waste Diversion and Reduction (Waste-2). Rialto's reduction plan has the greatest impacts on GHG emissions in the building energy, waste, and on-road transportation emissions sectors.

The 2010 Rialto General Plan contains many transportation and land use-related actions to reduce vehicle-related GHG emissions in the City of Rialto. The General Plan will support the goals of SB 375 and the Sustainable Communities Strategy (Transportation-1) through a wide range of actions, which include the following.

- Encourage development of transit-oriented and infill development and encourage a mix of uses that foster walking and alternative transportation in Downtown and along Foothill Boulevard.
- Establish a balanced land use pattern, and facilitate developments that provide jobs for City residents in order to reduce vehicle trips Citywide.
- Support a complementary mix of land uses, including residential densities to support a multi-modal transit node at the rail station.
- Design new streets to be pedestrian friendly. Require developers to investigate and provide features that will enhance the pedestrian environment.
- Implement the Bikeway Master Plan which promotes a safe and efficient network of bikeways for recreational and commuter use within the City.
- Provide for all residents and businesses to have equal access to reliable and convenient public transit services.
- Promote activity centers and transit-oriented development projects around the Rialto Metrolink Station and in Downtown.
- Require that new development projects incorporate design features that encourage ridesharing, transit use, park and ride facilities, and bicycle and pedestrian circulation.

The bars in Figure 3-52 show Rialto's 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City's emissions reduction target (i.e., 42% below the 2016 emissions level). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total ("2030 plan"), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~75%) of the total reductions needed to achieve the 2030 target.

Figure 3-53 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation and building energy emissions sectors.

Table 3-53 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction (“Reduction Plan”) results by sector. It shows the percent reduction in each sector’s emissions in 2030 and demonstrates that Rialto exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the building energy, waste, and on-road transportation emissions sectors.

Figure 3-54 presents emission reductions by sector and by control (i.e., state control versus local or City control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are in the building energy sector.

Figure 3-52. Emissions Reduction Profile for Rialto

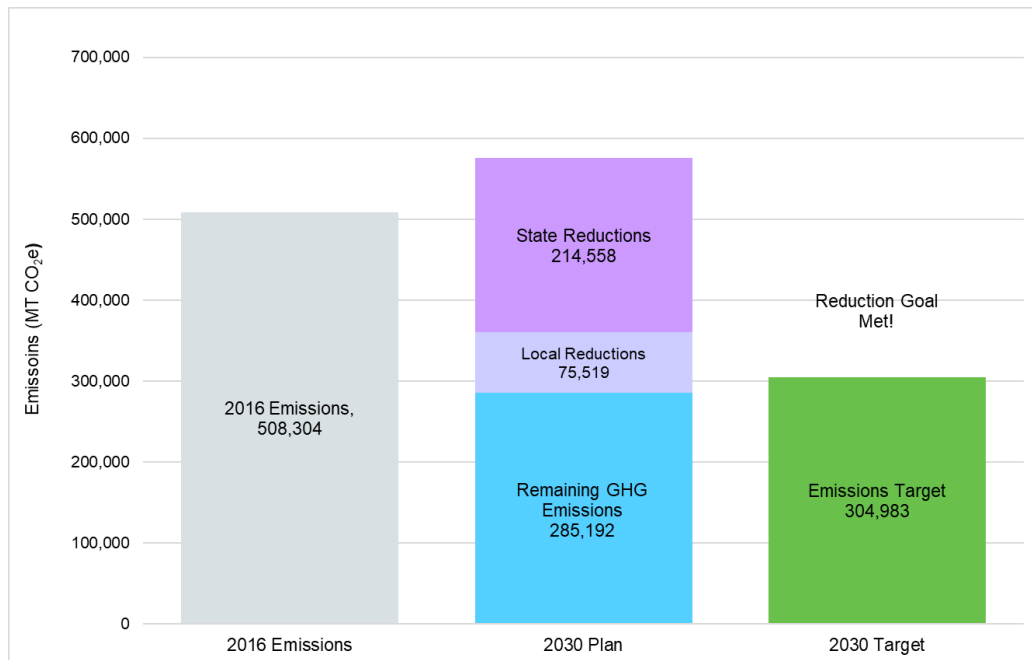


Figure 3-53. Emissions by Sector for Rialto

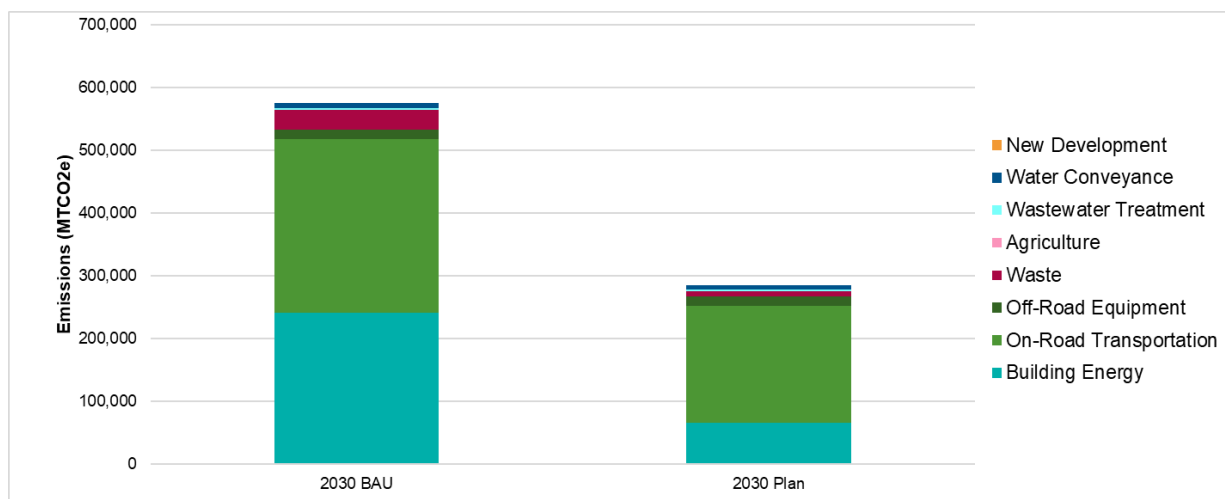


Table 3-53. Emission Reductions by Sector for Rialto

Sector	2016 Emissions (MTCO _{2e})	2030 BAU (MTCO _{2e})	2030 Reductions (MTCO _{2e})	2030 Emissions with Reduction Plan (MTCO _{2e})	Reduction (percent)
Building Energy	200,714	241,936	175,814	66,122	72.7%
On-Road Transportation	261,846	276,230	89,509	186,721	32.4%
Off-Road Equipment	10,796	15,597	1,000	14,596	6.4%
Waste	25,459	30,554	22,769	7,785	74.5%
Agriculture	212	119	0	119	0.0%
Wastewater Treatment	3,111	3,734	255	3,479	6.8%
Water Conveyance	6,166	7,099	729	6,370	10.3%
GHG Performance Standard*	-	-	-	-	-
Total	508,304	575,269	290,077	285,192	50.4%
Goal	-	-	-	304,983	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	19,791	-

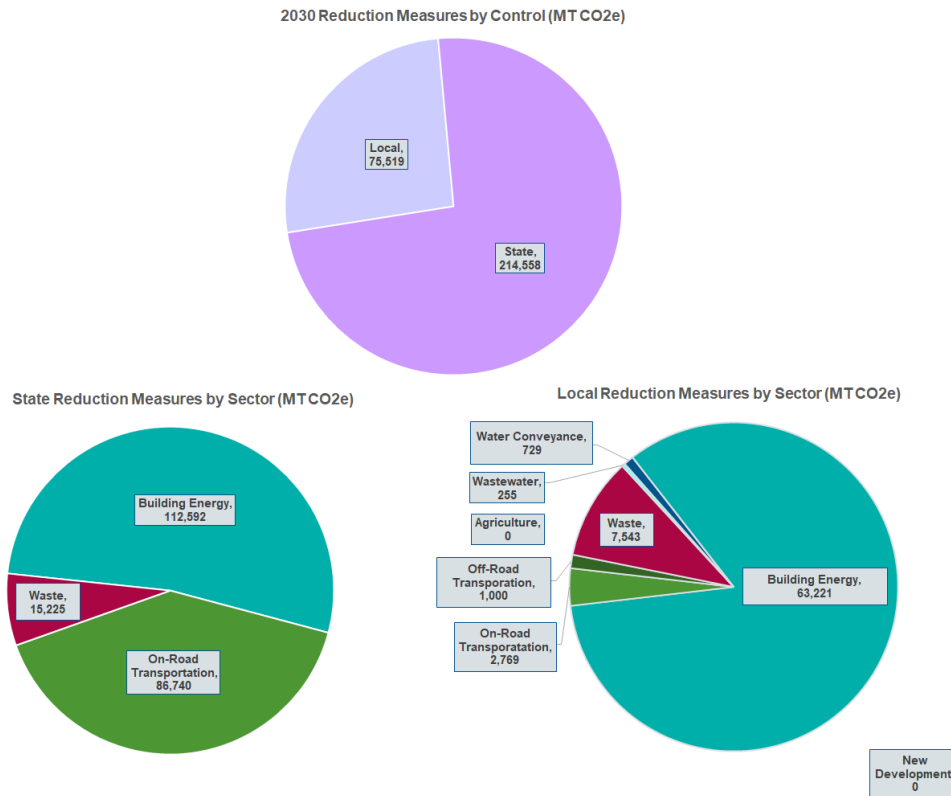
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City’s reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-54. Emission Reductions by Control and by Sector for Rialto



3.19.3 Reduction Measures

Table 3-54 presents each reduction measure evaluated for Rialto. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-54. GHG Reduction Measures and Estimated 2030 reductions for Rialto

Measure Number	Measure Description	Reductions (MTCO _{2e})
State Measures		
State-SB 100	SB 100	66,672
State-SB 350	SB 350	40,214
State-T24	Title 24 (Energy Efficiency Standards)	4,907
State-Solar Water Heater	Solar Water Heaters (Residential)	62
State-Increased CHP	Increased Combined Heat and Power (Commercial)	737
State-OnRoad	State Fuel Efficiency Measures	86,740
State-SB 1383	Methane Capture	15,225
Total State Reductions		214,558
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	2,579
Energy-2	Lighting Efficiency	141
Energy-3	All Electric Buildings	34,906
Energy-5	Renewable Energy – New Commercial/Industrial	1,034
Energy-6	Solar Energy for Warehouse Space	13,328
Energy-7	Solar Installation for Existing Housing	4,953
Energy-8	Solar Installation for Existing Commercial/Industrial	4,538
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	0
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	409
OnRoad-2	Encourage Use of Mass Transit	0
OnRoad-3	Transportation Demand Management and Synchronization	0
OnRoad-4	Expand Bike Routes	0
OnRoad-5	Community Fleet Electrification	2,360
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	792
OffRoad-2	Idling Ordinance	166
OffRoad-3	Electric Landscaping Equipment	43
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	7,543
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	78
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	177
<i>Water Conveyance</i>		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New	1,742

	Construction	
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	0
Water-3	Water-Efficient Landscaping Practices	729
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	0
Total Local Reductions		75,519
Total Reductions		290,077

Notes:

Values may not sum due to rounding.

3.19.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Rialto's GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Rialto 2010 General Plan unless otherwise noted (City of Rialto 2010). In addition to state level measures, a variety of measures across nearly all sectors were selected (Table 3-54). Relevant General Plan policies for selected reduction measures are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.19.4.1 Building Energy

- **Parking Lot Design 3-23.1:** Require mature trees and landscaping in off-street parking areas to make them more inviting and aesthetically appealing, and to provide sufficient shading to reduce heat.
- **Open Space and Recreation 3-26.2** Enhance street corridors by incorporating small green areas, extensive landscaping, and street trees.
- **Planned Development 3-21.7:** Require parkways to be placed on the outside of the public sidewalk immediately adjoining the curb to provide shade for pedestrians, and provide a canopy of trees to be either uniformly spaced or informally grouped.
- **Public Realm— Streetscapes Policy 2-11.2:** Provide and maintain street trees and parkway landscaping within the public right-of-way for developed properties within Rialto. Require private development to do the same as per City design regulations.
- **Public Realm—Streetscapes Policy 2-11.4:** Incorporate street trees and other landscape treatments along corridors to provide sufficient shade canopy and promote pedestrian comfort.
- **Private Realm Policy 2-17.1:** Require the planting of street trees along public streets and inclusion of trees and landscaping for private developments to improve airshed, minimize urban heat island effect, and lessen impacts of high winds.
- **Private Realm Policy 2-17.2:** Require all new development to incorporate tree plantings dense enough to shade and beautify residential and commercial areas.
- **Parking Lot Design Policy 2-23.1:** Require mature trees and landscaping in off-street parking areas to make them more inviting and aesthetically appealing, and to provide sufficient shading to reduce heat.
- **Open Space Policy 2-26.1:** Require that private open space be integrated into new development by providing green spaces and landscaped plazas between buildings.

- **Open Space Policy 2-26.2:** Enhance street corridors by incorporating small green areas, extensive landscaping, and street trees.
- **Open Space Policy 2-26.3:** Explore opportunities to create pocket parks within urbanized areas for public and/or private use.

Energy-1. Building Energy Efficiency

- **Sustainable Building Practices and Energy Conservation Policy 2-31.2:** Provide incentives for the installation of energy conservation measures in existing multi-unit residential and commercial developments, including technical assistance and possibly low-interest loans.
- **Sustainable Building Practices and Energy Conservation Policy 2-31.3:** Educate the public regarding the need for energy conservation techniques which can be employed and systems which are available.

3.19.4.2 On-Road

- **Public Realm—Pedestrian Friendly Environment 2-12.5:** Maximize potential pedestrian connections through the use of highly visible gateways, walkways, and directional signs and the installation of traffic-calming devices where appropriate.
- **Expanding Rialto's Mobility Policy 4-1.15:** Support the construction of High Occupancy Vehicle (HOV) lanes on I-10 between Ontario and Redlands.
- **Accommodating Bicyclists and Pedestrians Policy 4-8.4:** Require provision of secure bicycle storage, including bicycle racks and lockers, at the Metrolink station, public parks, schools, shopping centers, park-and-ride facilities, and other major activity centers.
- **Accommodating Bicyclists and Pedestrians Policy 4-8.5:** Require major developments to include bicycle storage facilities, including bicycle racks and lockers.
- **Air Quality and Climate Policy 2-38.3:** Provide enhanced bicycling and walking infrastructure, and support public transit, including public bus service, the Metrolink, and the potential for Bus Rapid Transit (BRT).
- **Public Realm—Pedestrian Friendly Environment 2-12.7:** Shade bus shelters and other outdoor use areas from the sun. Commercial projects along major corridors in Rialto shall incorporate at least one bus shelter, taxi stop, bicycle rack, and/or similar transportation or pedestrian features. The design of these features shall be consistent with the identity, feel, and theme of that corridor.
- **Encouraging Rail and Bus Ridership Policy 4-6.1:** Support the establishment of an east-west Bus Rapid Transit line through the Valley along on Foothill Boulevard.
- **Encouraging Rail and Bus Ridership Policy 4-6.3:** Require major developments to include bus turnouts, bus shelters, and other transit facilities as appropriate.
- **Encouraging Rail and Bus Ridership Policy 4-6.4:** Encourage accessible, flexible, and efficient public transit to all major activity areas in the Inland Empire.
- **Encouraging Rail and Bus Ridership Policy 4-6.5:** Encourage clean, lighted, and convenient bus shelters and transit stops that are within walking distance of major activity areas and residential neighborhoods and along arterial roadways.
- **Encouraging Rail and Bus Ridership Policy 4-7.1:** Support Metrolink regional rail services, and work with the Southern California Regional Rail Authority to expand services.
- **Encouraging Rail and Bus Ridership Policy 4-7.2:** Achieve better integration of all transit and multimodal options at the Rialto Metrolink Station.

- **Encouraging Rail and Bus Ridership Policy 4-7.3:** Promote activity centers and transit-oriented development projects around the Rialto Metrolink Station and in Downtown.
- **Encouraging Rail and Bus Ridership Policy 4-7.4:** Support the High Speed Train project sponsored by the California High Speed Railroad Authority.
- **Expanding Rialto’s Mobility Policy 4-1.4:** Reduce delays to local traffic, facilitate emergency response, and enhance safety by pursuing railroad grade separations.
- **Expanding Rialto’s Mobility Policy 4-1.7:** Cooperate with SBCOG in the implementation of Tier 1 through Tier 4 of the San Bernardino Valley Coordinated Traffic Signal System Plan.
- **Expanding Rialto’s Mobility Policy 4-1.9:** Work with Caltrans to improve coordination of traffic signals at freeway interchanges with those on City streets.
- **Downtown Rialto Policy 2-5.2:** Support a complementary mix of land uses, including residential densities to support a multi-modal transit node at the rail station.
- **Air Quality and Climate Policy 2-35.3:** Establish a balanced land use pattern, and facilitate developments that provide jobs for City residents in order to reduce vehicle trips Citywide.
- **Air Quality and Climate Policy 2-38.1:** Consult with State agencies, SCAG, and SBCOG to implement AB 32 and SB 375 by utilizing incentives to facilitate infill and transit-oriented development.
- **Air Quality and Climate Policy 2-38.2:** Encourage development of transit-oriented and infill development, and encourage a mix of uses that foster walking and alternative transportation in Downtown and along Foothill Boulevard.
- **Air Quality and Climate Policy 2-35.2:** Require that new development projects incorporate design features that encourage ridesharing, transit use, park and ride facilities, and bicycle and pedestrian circulation.
- **Air Quality and Climate Policy 2-38.3:** Provide enhanced bicycling and walking infrastructure, and support public transit, including public bus service, the Metrolink, and the potential for Bus Rapid Transit (BRT).
- **Accommodating Bicyclists and Pedestrians Policy 4-9.4:** Accommodate pedestrians and bicyclists — in addition to automobiles — when considering new development projects.
- **Accommodating Bicyclists and Pedestrians Policy 4-8.6:** Coordinate recreational trail plans with neighboring jurisdictions and San Bernardino County to ensure linkage of local trails across jurisdictional boundaries and with regional trail systems.
- **Accommodating Bicyclists and Pedestrians Policy 4-9.1:** Install sidewalks where they are missing, and make improvements to existing sidewalks for accessibility purposes. Priority should be given to needed sidewalk improvement near schools and activity centers. Provide wider sidewalks in areas with higher pedestrian volumes.
- **Accommodating Bicyclists and Pedestrians Policy 4-8.2:** Pursue a “rails-to-trails” conversion of the Pacific Electric Railroad right-of-way to a bicycle or multi-use path.
- **Accommodating Bicyclists and Pedestrians Policy 4-8.3:** Connect school facilities, parks, and other activity nodes within residential neighborhoods with bicycle trails on neighborhood streets.
- **Accommodating Bicyclists and Pedestrians Policy 4-9.2:** Require sidewalks and parkways on all streets in new development.
- **Accommodating Bicyclists and Pedestrians Policy 4-8.1:** Expand Class I bicycle trails with amenities, particularly adjacent to open space areas, utility and flood control corridors, and abandoned rail corridors.

OnRoad-1. Alternative Fueled Transit Fleets

- **Air Quality and Climate Policy 2-35.1:** Replace Rialto’s vehicle fleet with low-emission, economically sensible vehicles.

3.19.4.3 Solid Waste Management

Waste-2. Waste Diversion and Reduction

- **Recycling Policy 2-34.1:** Develop programs that promote reuse and recycling throughout the community.
- **Recycling Policy 2-34.2:** Utilize source reduction, recycling, and other appropriate measures to reduce the amount of solid waste generated in Rialto that is disposed of in landfills.
- **Recycling Policy 2-34.3:** Encourage the maximum diversion from landfills of construction and demolition materials through recycling and reuse programs.
- **Solid Waste and Recycling Policy 3-10.1:** Encourage additional recycling in all sectors of the community.
- **Solid Waste and Recycling Policy 3-10.2:** Encourage the recycling of construction and demolition materials in an effort to divert these items from entering landfills.
- **Solid Waste and Recycling Policy 3-10.3:** Continue to provide and improve flexible fees and schedules for solid waste collection and recycling programs.
- **Solid Waste and Recycling Policy 3-10.4:** Continue to educate the community regarding the benefits of solid waste diversion and recycling, and maintain programs that make it easy for all residents and businesses to work toward City waste reduction objectives.

3.19.4.4 Wastewater Treatment

- **Wastewater Policy 3-9.1:** Require that all new development or expansion of existing facilities bear the cost of expanding the wastewater disposal system to handle the increased loads which they are expected to generate.
- **Wastewater Policy 3-9.2:** Evaluate the wastewater disposal system routinely to ensure its adequacy to meet changes in demand and changes in types of waste.

3.19.4.5 Water Conveyance

- **Conserve Water Resources Policy 2-29.3:** Educate the community about the importance of water conserving techniques and avoiding wasteful water habits.

Water-1. Require Tier 1 Voluntary CALGreen Standards for New Construction

- **Conserve Water Resources Policy 2-29.1:** Require new development to use features, equipment, technology, landscaping, and other methods to reduce water consumption.

Water-3. Water-Efficient Landscaping Practices

- **Private Realm Policy 2-17.3:** Require the use of drought-tolerant, native landscaping and smart irrigation systems for new development to lower overall water usage.
- **Parking Lot Design Policy 2-23.3:** Require use of drainage improvements designed, with native vegetation where possible, to retain or detain water runoff and minimize pollutants into drainage system.

- **Water Policy 3-8.9:** Conserve potable water and utilize reclaimed water for meeting landscaping and irrigation demands as much as possible.
- **Water Policy 3-8.10:** Support water conservation through requirements for landscaping with drought-tolerant plants and efficient irrigation for all new development and City projects.
- **Conserve Water Resources Policy 2-29.1:** Require new development to use features, equipment, technology, landscaping, and other methods to reduce water consumption.
- **Conserve Water Resources Policy 2-29.2:** Use reclaimed water as available for irrigation of City parks, median strips, and other public areas, and encourage its use in industrial applications, large turf and expansive landscaped areas, golf courses, mining, and other uses where potable quality of water is not necessary to its application.

3.20 City of San Bernardino



3.20.1 City Summary

The City of San Bernardino is one of the region’s anchor jurisdictions, located 65 miles east of Los Angeles. San Bernardino is surrounded by Rialto to the west, Colton to the southwest, Loma Linda to the south, Redlands to the southeast, Highland to the east, and the San Bernardino National Forest to the north. San Bernardino’s location makes it a gateway to the mountain resorts.

San Bernardino spans 71 square miles and had a population of 216,326 as of 2016. San Bernardino’s demographic composition in 2018 was 15.3% Non-Hispanic White, 13.2% Non-Hispanic Black, 0.2% Non-Hispanic American Indian or Alaska Native, 4.2% Non-Hispanic Asian, and 2.9% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 64.2%. San Bernardino is the 17th largest City in California, and the 102nd largest City in the United States. Population is expected to reach 220,565 by 2030, an increase of 20% from 2016. The City contains both residential and commercial and industrial areas. This combination is reflected in the City’s GHG inventory.

Attractions in San Bernardino include California State University, San Bernardino; Coussoulis Arena; Fox Performing Arts Center; McDonald's Museum; California Theatre; San Bernardino Mountains, and San Manuel Amphitheater. In addition, the City is home to the Inland Empire 66ers of San Bernardino baseball team.

Table 3-55 presents socioeconomic data for San Bernardino, including population, housing, and employment (SBCOG, 2019).

Table 3-55. Socioeconomic Data for San Bernardino

Category	2016	2030	2045
Population	216,326	220,565	230,532
Households	59,709	64,084	68,771
Jobs	101,330	113,030	125,566



3.20.2 Emission Reductions

ICF selected a suggested goal to reduce the City of San Bernardino community GHG emissions to a level that is 40% below its 2016 GHG emissions level by 2030. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective through a combination of state (~75%) and local (~25%) efforts. The Pavley vehicle standards, the state’s low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in San Bernardino’s on-road, solid waste, and building energy sectors in 2030. An additional reduction of 175,254 MTCO_{2e} will be achieved primarily through the following local measures, in order of reductions achieved: All Electric Buildings (Energy-3); Waste Diversion and Reduction (Waste-2);

and Encourage Use of Mass Transit (OnRoad-2). San Bernardino’s Plan has the greatest impacts on GHG emissions in the building energy, on-road transportation, and waste sectors.

The bars in Figure 3-55 show San Bernardino’s 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City’s emissions reduction target (i.e., 42% below the 2016 emissions level). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total (“2030 plan”), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~75%) of the total reductions needed to achieve the 2030 target.

Figure 3-56 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or “Reduction Plan” scenarios. The largest emissions contributions are in the on-road transportation and building energy emissions sectors.

Table 3-56 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction (“Reduction Plan”) results by sector. It shows the percent reduction in each sector’s emissions in 2030 and demonstrates that San Bernardino exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the on-road transportation, waste, and building energy sectors.

Figure 3-57 presents emission reductions by sector and by control (i.e., state control versus local or City control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are in the building energy sector.

Figure 3-55. Emissions Reduction Profile for San Bernardino

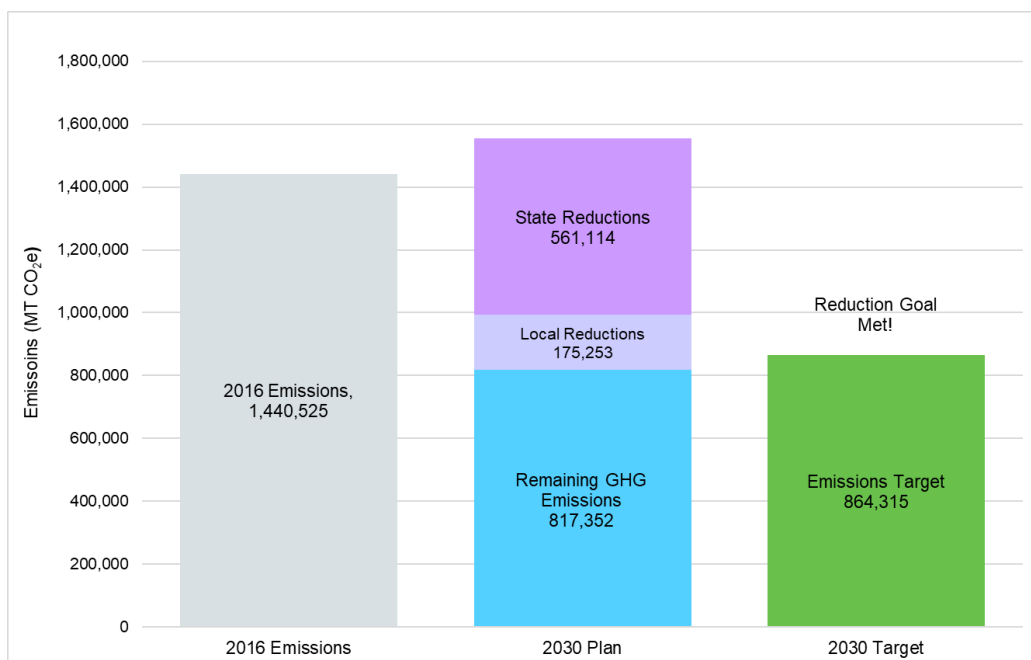


Figure 3-56. Emissions by Sector for San Bernardino

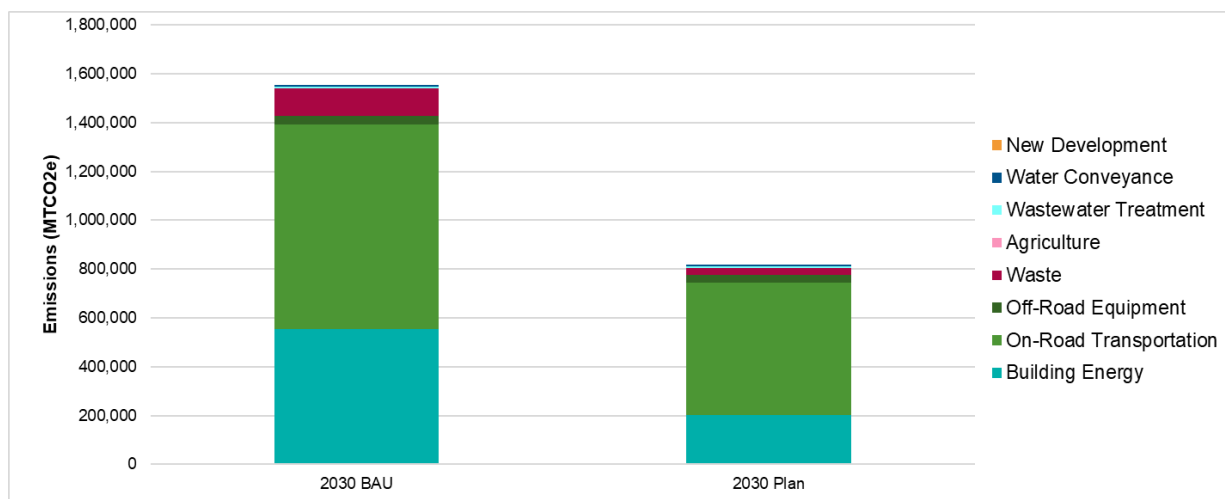


Table 3-56. Emission Reductions by Sector for San Bernardino

Sector	2016 Emissions (MTCO _{2e})	2030 BAU (MTCO _{2e})	2030 Reductions (MTCO _{2e})	2030 Emissions with Reduction Plan (MTCO _{2e})	Reduction (percent)
Building Energy	508,547	553,539	351,776	201,763	63.6%
On-Road Transportation	779,187	839,757	296,363	543,394	35.3%
Off-Road Equipment	27,788	33,744	3,225	30,519	9.6%
Waste	110,556	112,723	83,944	28,779	74.5%
Agriculture	1,096	617	0	617	0.0%
Wastewater Treatment	6,777	6,910	0	6,910	0.0%
Water Conveyance	6,573	6,430	1,060	5,369	16.5%
GHG Performance Standard*	-	-	-	-	-
Total	1,440,525	1,553,719	736,367	817,352	47.4%
Goal	-	-	-	864,315	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	46,963	-

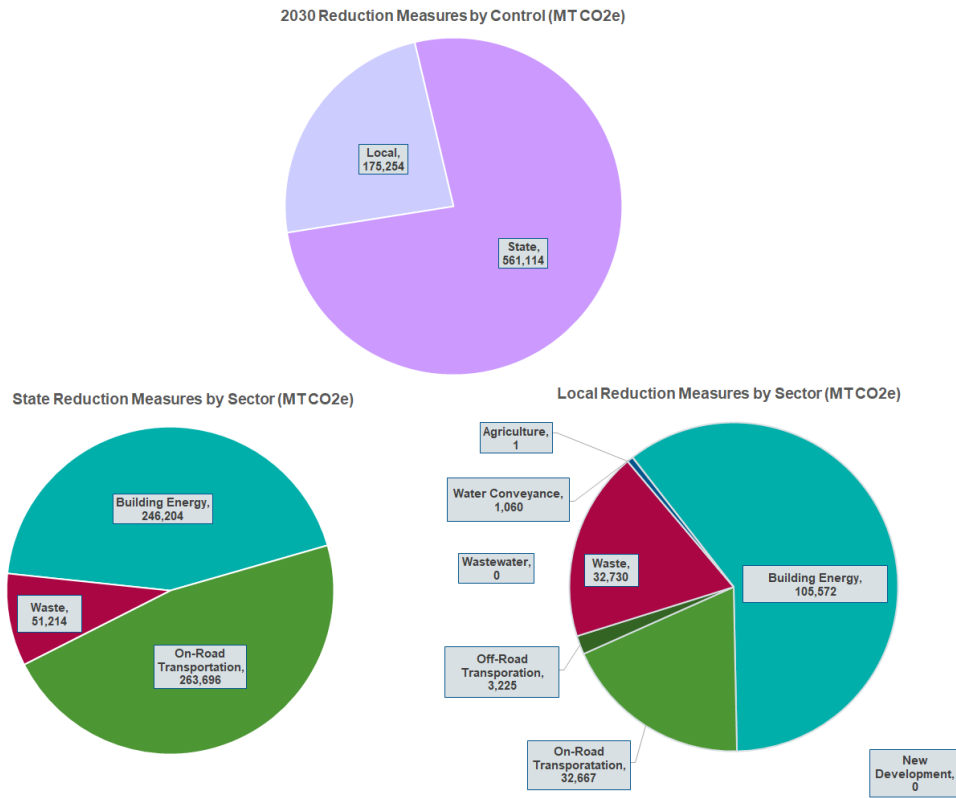
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City’s reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-57. Emission Reductions by Control and by Sector for San Bernardino



3.20.3 Reduction Measures

Table 3-57 presents each reduction measure evaluated for San Bernardino. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sectors.

Table 3-57. GHG Reduction Measures and Estimated 2030 reductions for San Bernardino

Measure Number	Measure Description	Reductions (MTCO_{2e})
State Measures		
State-SB 100	SB 100	152,964
State-SB 350	SB 350	84,881
State-T24	Title 24 (Energy Efficiency Standards)	7,586
State-Solar Water Heater	Solar Water Heaters (Residential)	130
State-Increased CHP	Increased Combined Heat and Power (Commercial)	642
State-OnRoad	State Fuel Efficiency Measures	263,696
State-SB 1383	Methane Capture	51,214
Total State Reductions		561,114
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	6,853
Energy-2	Lighting Efficiency	121
Energy-3	All Electric Buildings	78,875
Energy-5	Renewable Energy – New Commercial/Industrial	950
Energy-6	Solar Energy for Warehouse Space	2,344
Energy-7	Solar Installation for Existing Housing	3,722
Energy-8	Solar Installation for Existing Commercial/Industrial	5,913
Energy-9	Rooftop Gardens	1
Energy-10	Urban Tree Planting for Shading and Energy Savings	147
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	487
OnRoad-2	Encourage Use of Mass Transit	12,970
OnRoad-3	Transportation Demand Management and Synchronization	5,761
OnRoad-4	Expand Bike Routes	6,276
OnRoad-5	Community Fleet Electrification	7,173
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	2,197
OffRoad-2	Idling Ordinance	307
OffRoad-3	Electric Landscaping Equipment	721
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	32,730
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	0
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	0
<i>Water Conveyance</i>		

Water-1	Require Tier 1 Voluntary CALGreen Standards for New Construction	511
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	6,134
Water-3	Water-Efficient Landscaping Practices	1,060
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	0
Total Local Reductions		175,254
Total Reductions		736,367

Notes:

Values may not sum due to rounding.

3.20.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of San Bernardino's GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the San Bernardino 2005 General Plan unless otherwise noted (City of San Bernardino 2005). In addition to state level measures, the City of San Bernardino selected a variety of measures across nearly all sectors, including a GHG Performance Standard for new development (Table 3-57). The City's General Plan includes policies and programs that broadly support energy efficiency and sustainability even if it is not closely tied to a specific measure as part of this Reduction Plan. Relevant General Plan policies for the specific reduction measures the City selected are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.20.4.1 Building Energy

Energy-1. Building Energy Efficiency

- **Conserve scarce energy resources 13.1.1:** Reduce the City's ongoing electricity use by 10% and set an example for residents and businesses to follow.
- **Conserve scarce energy resources 13.1.3:** Consider enrollment in the Community Energy Efficiency Program (CEEP), which provides incentives for builders who attain energy savings 30% above the National Model Energy Code, the Energy Star Program, which is sponsored by the United States Department of Energy and the Environmental Protection Agency and encourages superior energy efficiency by residents and businesses, or the State's Energy Efficiency and Demand Reduction Program, which offer rebates and incentives to agencies and developers who reduce energy consumption and use energy efficient fixtures and energy-saving design elements. (EWC-1)
- **Conserve scarce energy resources 13.1.4:** Require energy audits of existing public structures and encourage audits of private structures, identifying levels of existing energy use and potential conservation measures. (EWC-3)
- **Conserve scarce energy resources 13.1.5:** Encourage energy-efficient retrofitting of existing buildings throughout the City. (EWC-1)
- **Conserve scarce energy resources 13.1.6:** Consider program that awards incentives to projects that install energy conservation measures, including technical assistance and possible low-interest loans.

- **Conserve scarce energy resources 13.1.8:** Educate the public regarding the need for energy conservation, environmental stewardship, and sustainability techniques and about systems and standards that are currently available for achieving greater energy and resource efficiency, such as the U.S. Green Building Council's LEED standards for buildings.

Energy-2. Lighting Efficiency

- **Electricity 9.6.5:** Encourage and promote the use of energy-efficient (U.S. Department of Energy "Energy Star®" or equivalent) lighting fixtures, light bulbs, and compact fluorescent bulbs in residences, commercial, and public buildings, as well as in traffic signals and signs where feasible.

Energy-3. All Electric Buildings

- **Conserve scarce energy resources 13.1.5:** Encourage energy-efficient retrofitting of existing buildings throughout the City. (EWC-1)

Energy-5. Renewable Energy - New Commercial/Industrial

- **Conserve scarce energy resources 13.1.9:** Encourage increased use of passive and active solar and wind design in existing and new development (e.g., orienting buildings to maximize exposure to cooling effects of prevailing winds, day lighting design, natural ventilation, space planning, thermal massing and locating landscaping and landscape structures to shade buildings).

Energy-6. Solar Energy for Warehouse Space

- **Conserve scarce energy resources 13.1.9:** Encourage increased use of passive and active solar and wind design in existing and new development (e.g., orienting buildings to maximize exposure to cooling effects of prevailing winds, day lighting design, natural ventilation, space planning, thermal massing and locating landscaping and landscape structures to shade buildings).

Energy-7. Solar Installation - Existing Housing

- **Conserve scarce energy resources 13.1.9:** Encourage increased use of passive and active solar and wind design in existing and new development (e.g., orienting buildings to maximize exposure to cooling effects of prevailing winds, day lighting design, natural ventilation, space planning, thermal massing and locating landscaping and landscape structures to shade buildings).

Energy-8. Renewable Energy - Existing Commercial/Industrial

- **Conserve scarce energy resources 13.1.9:** Encourage increased use of passive and active solar and wind design in existing and new development (e.g., orienting buildings to maximize exposure to cooling effects of prevailing winds, day lighting design, natural ventilation, space planning, thermal massing and locating landscaping and landscape structures to shade buildings).

Energy-9. Rooftop Gardens

- **Conserve scarce energy resources 13.1.9:** Encourage increased use of passive and active solar and wind design in existing and new development (e.g., orienting buildings to maximize exposure to cooling effects of prevailing winds, day lighting design, natural ventilation, space planning, thermal massing and locating landscaping and landscape structures to shade buildings).

Energy-10. Urban Tree Planting for Shading and Energy Savings

- **Conserve scarce energy resources 13.1.9:** Encourage increased use of passive and active solar and wind design in existing and new development (e.g., orienting buildings to maximize exposure to cooling effects of prevailing winds, day lighting design, natural ventilation, space planning, thermal massing and locating landscaping and landscape structures to shade buildings).

3.20.4.2 On-Road

OnRoad-1. Alternative Fueled Transit Fleets

- **Air Quality 12.6.1 through 12.6.3, 12.6.5, and 12.6.7**

OnRoad-2. Encourage Use of Mass Transit

- **Public Transit 6.6.1, 6.6.2, and 6.6.7 through 6.6.10**
- **CI 3.1:** Encourage the reduction of automobile usage through various incentive programs.

OnRoad-3. Transportation Demand Management and Signal Synchronization

- **Distinct Character and Identity 2.3.2:** Promote development that is compact, pedestrian-friendly, and served by a variety of transportation options along major corridors and in key activity areas.
- **Distinct Character and Identity 2.3.1:** Commercial centers, open spaces, educational facilities, and recreational facilities should be linked to residential neighborhoods.
- **GOAL CI 4:** The County will coordinate land use and transportation planning to ensure adequate transportation facilities to support planned land uses and ease congestion.
- **Redevelopment and Revitalization 2.4.1**
- **Specific Areas 5.5.3 and 5.5.5**
- **10. Downtown Strategic Area, Strategies 1,3,7, and 13**

OnRoad-4. Expand Bike Routes

- **District/Neighborhood Design Features 5.3.3:** A well-integrated network of bike and pedestrian paths should connect residential areas to schools, parks, and shopping centers.

OnRoad-5. Community Fleet Electrification

- **Air Quality 12.6.1 through 12.6.3, 12.6.5, and 12.6.7**

3.20.4.3 Solid Waste Management

Waste-2. Waste Diversion

- **Solid Waste 9.5.3:** Continue to reduce the amount of solid waste that must be disposed of in area landfills, to conserve energy resources, and be consistent with the County Solid Waste Management Plan and State law.
- **Solid Waste 9.5.4 through 9.5.6**

3.21 City of Twentynine Palms



3.21.1 City Summary

The City of Twentynine Palms is located the desert region east of the San Bernardino Mountains, north of Joshua Tree National Park in southern San Bernardino County. This area, known as the Morongo Basin, is part of the Mojave Desert. Although founded as a rest stop on one of the western wagon trains, the City’s economy for recent decades is largely tied to the U.S. Marine Corps Facility and the national park. The City of Twentynine Palms covers approximately 60 square miles and an additional 30 square miles within its sphere of influence, most of which is devoted to rural residential (desert) and residential uses. The City is nearly devoid of industrial activity and is known for its access to natural landscapes and vistas. These uses are reflected in the City’s GHG emissions inventory below.

In 2016 the City’s population was 26,487 (25,487 in 2010) and is expected to increase to 29,768 by 2030. Twentynine Palms’ demographic composition in 2018 was 55.4% Non-Hispanic White, 9.3% Non-Hispanic Black, 1.4% Non-Hispanic American Indian or Alaska Native, 3.5% Non-Hispanic Asian, and 8.1% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 22.3% (SCAG, 2019). Twentynine Palms has a larger than average White population (55.4% versus to the region’s average of 31.4%). As of 2010 over 22% of firms were Hispanic-owned (compared to the statewide average of 16.5%) (U.S. Census Bureau, 2012). Employment is expected to increase by 45% between 2016 and 2030.

Table 3-58 presents socioeconomic data for Twentynine Palms, including population, housing, and employment (SBCOG, 2019).

Table 3-58. Socioeconomic Data for Twentynine Palms

Category	2016	2030	2045
Population	26,487	29,768	33,266
Households	8,367	10,031	11,814
Jobs	4,427	6,440	8,596



3.21.2 Emission Reductions

The City of Twentynine Palms selected a goal to reduce its community GHG emissions to a level that is 46% below its 2008 GHG emissions level by 2030. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective through a combination of state (~90%) and local (~10%) efforts. The Pavley vehicle standards, the state’s low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in Twentynine Palms’ on-road, solid waste and building energy sectors in 2030. An additional reduction of 6,219 MTCO_{2e} will be achieved primarily through the following local measures, in order of reductions achieved: All

Electric Buildings (Energy-3); Solar Installation for Existing Housing (Energy-7); Community Fleet Electrification (OnRoad-5). The City of Twentynine Palms’ Plan has the greatest impacts on GHG emissions in the waste, building energy, and on-road transportation sectors.

The bars in Figure 3-58 show Twentynine Palms’ 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City’s emissions reduction target (i.e., 46% below the 2008 emissions level). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total (“2030 plan”), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~90%) of the total reductions needed to achieve the 2030 target.

Figure 3-59 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or “Reduction Plan” scenarios. The largest emissions contributions are in the on-road transportation, building energy, waste emissions sectors.

Table 3-59 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction (“Reduction Plan”) results by sector. It shows the percent reduction in each sector’s emissions in 2030 and demonstrates that Twentynine Palms exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the building energy, waste, and on-road transportation sectors.

Figure 3-60 presents emission reductions by sector and by control (i.e., state control versus local or City control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are in the building energy sector.

Figure 3-58. Emissions Reduction Profile for Twentynine Palms

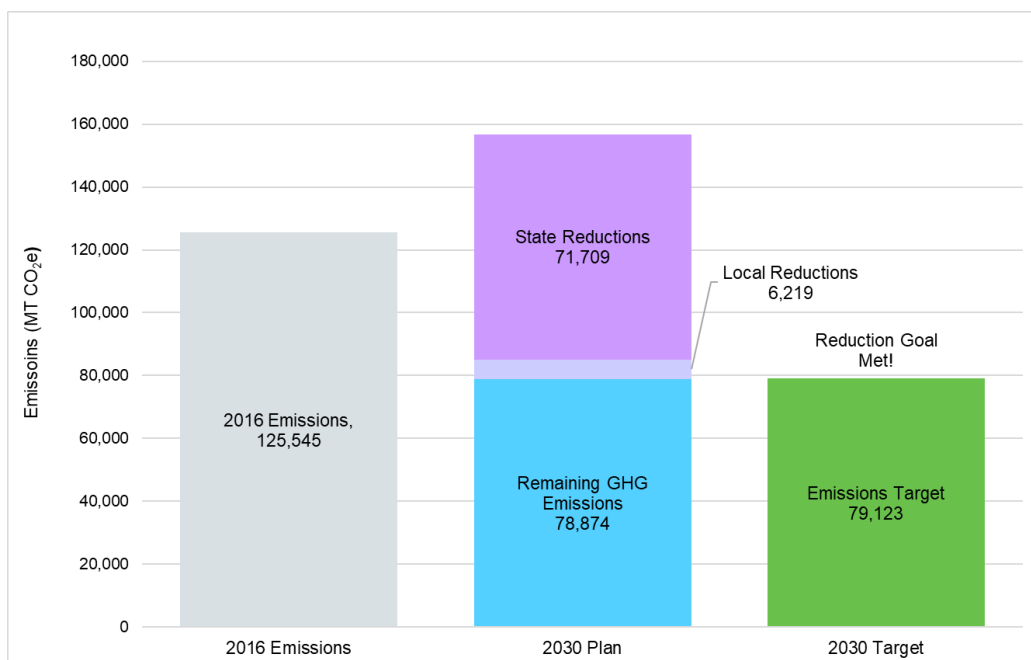


Figure 3-59. Emissions by Sector for Twentynine Palms

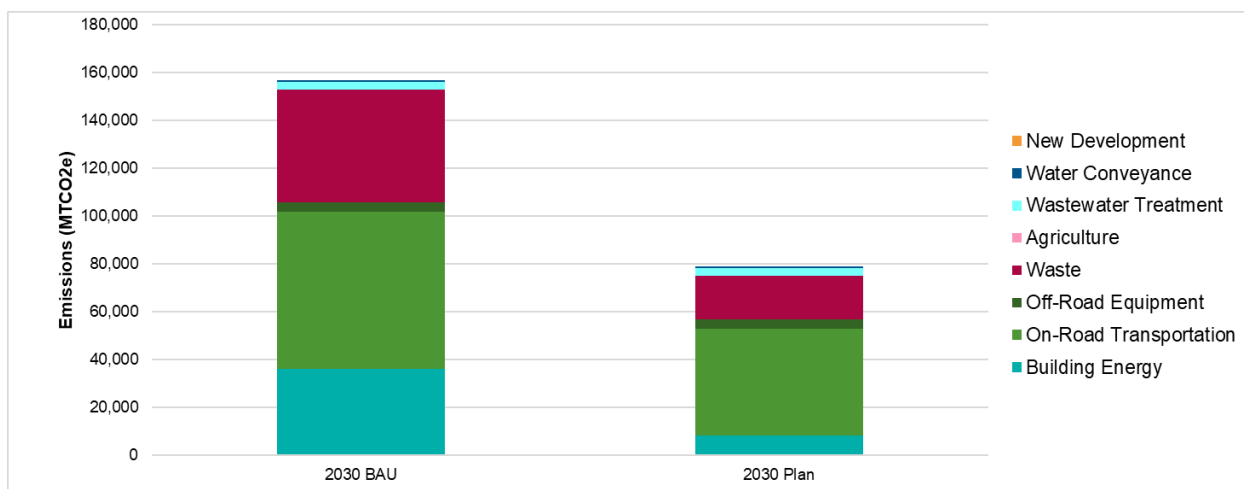


Table 3-59. Emission Reductions by Sector for Twentynine Palms

Sector	2016 Emissions (MTCO _{2e})	2030 BAU (MTCO _{2e})	2030 Reductions (MTCO _{2e})	2030 Emissions with Reduction Plan (MTCO _{2e})	Reduction (percent)
Building Energy	29,167	35,999	27,733	8,266	77.0%
On-Road Transportation	48,029	65,803	21,129	44,674	32.1%
Off-Road Equipment	2,802	3,843	0	3,843	0.0%
Waste	41,972	47,171	28,906	18,265	61.3%
Agriculture	0	0	0	0	NA
Wastewater Treatment	2,898	3,257	0	3,257	0.0%
Water Conveyance	676	729	160	569	21.9%
GHG Performance Standard*	-	-	-	-	-
Total	125,545	156,802	77,928	78,874	49.7%
Goal	-	-	-	79,123	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	249	-

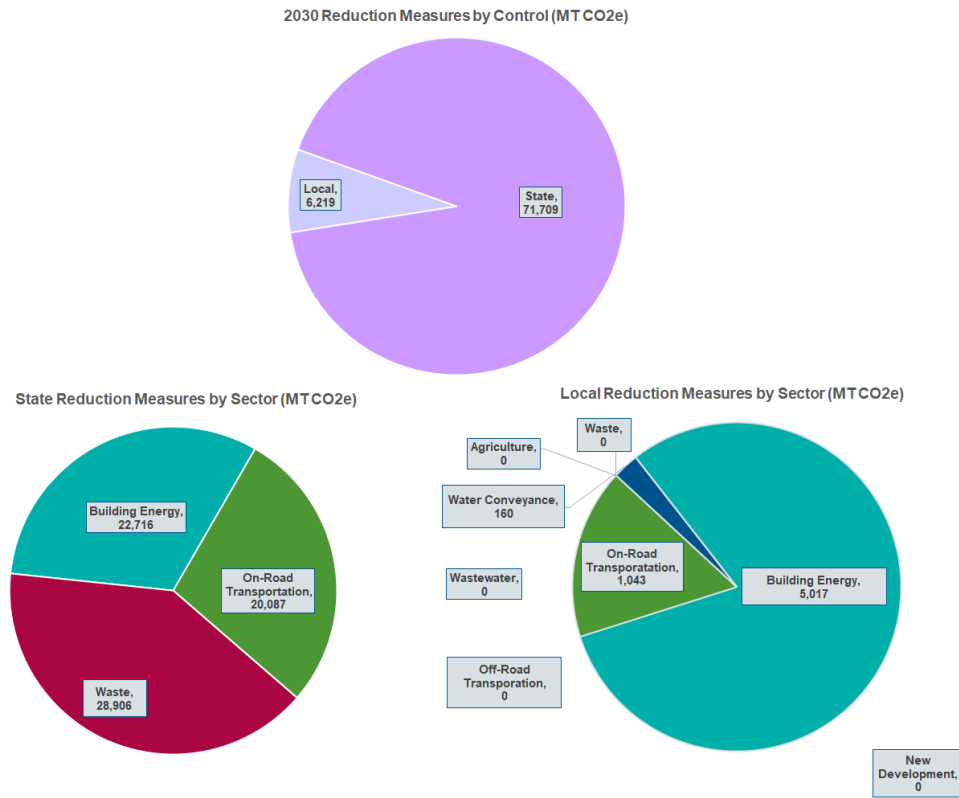
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City’s reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-60. Emission Reductions by Control and by Sector for Twentynine Palms



3.21.3 Reduction Measures

Table 3-60 presents each reduction measure evaluated for Twentynine Palms. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-60. GHG Reduction Measures and Estimated 2030 reductions for Twentynine Palms

Measure Number	Measure Description	Reductions (MTCO_{2e})
State Measures		
State-SB 100	SB 100	10,803
State-SB 350	SB 350	10,709
State-T24	Title 24 (Energy Efficiency Standards)	1,103
State-Solar Water Heater	Solar Water Heaters (Residential)	19
State-Increased CHP	Increased Combined Heat and Power (Commercial)	83
State-OnRoad	State Fuel Efficiency Measures	20,087
State-SB 1383	Methane Capture	28,906
Total State Reductions		71,709
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	269
Energy-2	Lighting Efficiency	107
Energy-3	All Electric Buildings	2,099
Energy-5	Renewable Energy – New Commercial/Industrial	188
Energy-6	Solar Energy for Warehouse Space	0
Energy-7	Solar Installation for Existing Housing	1,304
Energy-8	Solar Installation for Existing Commercial/Industrial	202
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	0
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	0
OnRoad-2	Encourage Use of Mass Transit	0
OnRoad-3	Transportation Demand Management and Synchronization	0
OnRoad-4	Expand Bike Routes	0
OnRoad-5	Community Fleet Electrification	1,043
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	0
OffRoad-2	Idling Ordinance	0
OffRoad-3	Electric Landscaping Equipment	0
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	0
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	0
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	0
<i>Water Conveyance</i>		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New	0

Water-2	Construction Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	848
Water-3	Water-Efficient Landscaping Practices	160
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	0
Total Local Reductions		6,219
Total Reductions		77,928

Notes:

Values may not sum due to rounding.

3.21.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Twentynine Palms' GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Twentynine Palms 2012 General Plan unless otherwise noted (City of Twentynine Palms, 2012). In addition to state level measures, the City of Twentynine Palms selected a variety of measures across nearly all sectors, including a GHG Performance Standard for new development (Table 3-60). However, the City's General Plan includes policies and programs that broadly support energy efficiency and sustainability even if it is not closely tied to a specific measure as part of this Reduction Plan. Relevant General Plan policies for the specific reduction measures the City selected are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.21.4.1 Building Energy

- **Implementation Policy CO-4.12:** Cooperate with SCAG and SANBAG to develop a local climate action plan.
- **Implementation Policy CO-4.13:** Develop and implement greenhouse gas emissions reduction measures, including discrete, early-action greenhouse gas reducing measures that are technologically feasible and cost effective, for both public and private development projects.

Energy-1. Building Energy Efficiency

- **Implementation Policy CO-4-17:** Work with local energy providers on voluntary incentive-based programs to encourage developer to use energy efficient designs and equipment beyond the requirements of Title 24. Encourage development to utilize CEC's voluntary Tier II Energy Efficiency standards in effect at the time building construction begins in combination with space heating, cooling, and water heating energy.
- **Implementation Policy CO-7.1:** Use the City's building codes and development code to encourage sustainable construction practices and the use of energy-saving technology within buildings.
- **Implementation Policy HS-2.12:** Improve housing affordability by promoting energy conservation programs and sustainable development as outlined in the Conservation Element of the General Plan.

- **Implementation Policy LU-6.2:** Require that new development protect the City’s natural resources by implementing sustainable design principles, including, but not limited to, California’s Green Building Code standards.

Energy-2. Lighting Efficiency

- **Implementation Policy CO-6.3:** Require lighting in and near residential areas to be minimal and shielded to prevent nuisance glare.

Energy-5. Renewable Energy - New Commercial/Industrial

- **Implementation Policy CO-7.1:** Use the City’s building codes and development code to encourage sustainable construction practices and the use of energy-saving technology within buildings.
- **Implementation Policy CO-4.14:** Ensure the use of alternative and/or renewable energy sources for all new City facilities. Where and when feasible and practical, retrofit existing City facilities for the use of alternative and/or renewable energy.

Energy-6. Solar Energy for Warehouse Space

- **Implementation Policy CO-7.1:** Use the City’s building codes and development code to encourage sustainable construction practices and the use of energy-saving technology within buildings.

Energy-7. Solar Installation for Existing Housing

- **Implementation Policy CO-7.1:** Use the City’s building codes and development code to encourage sustainable construction practices and the use of energy-saving technology within buildings.

Energy-8. Renewable Energy - Existing Commercial/Industrial

- **Implementation Policy CO-4.14:** Ensure the use of alternative and/or renewable energy sources for all new City facilities. Where and when feasible and practical, retrofit existing City facilities for the use of alternative and/or renewable energy.
- **Implementation Policy CO-7.1:** Use the City’s building codes and development code to encourage sustainable construction practices and the use of energy-saving technology within buildings.

3.21.4.2 On-Road

- **Implementation Policy RE-2.1** Implement the bikeways and off-street trails as proposed in the Trails Plan.
- **Implementation Policy RE-2.4** Encourage developers to provide pathways within their proposed developments to link with the Citywide pathway system.

- **Implementation Policy RE-2.5** Locate and design trails to provide a diversity of challenges. Enhance accessibility wherever possible, with high priority given to loop or destination opportunities on portions of trails near staging areas.
- **Implementation Policy RE-2.6** Where routes use existing streets, design pathways to minimize potential conflicts between motorists and trail users.
- **Implementation Policy RE-2.7** Coordinate with other agencies to provide hiking and equestrian trail access from Twentynine Palms into desert areas and onto public lands.
- **Implementation Policy RE-2.8** Provide a comprehensive trails system that provides access, connectivity, and circulation throughout the planning area, as well as providing a source for recreation activity.
- **Implementation Policy RE-2.9** Develop a Trails Improvement Plan. The plan shall identify trail locations within offset streets, provide trail section standards for each type of trail, and identify priority trails focused on routes connecting residential areas, schools, parks, and other recreational areas.
- **Implementation Policy RE-2.10** Provide and preserve trail alignments within, adjacent to and that connect to conservation and open space areas.
- **Implementation Policy RE-2.12** Require bicycle parking facilities and storage for commercial and institutional facilities located along planned bikeway routes.
- **Implementation Policy RE-2.13** Require trail network accessible and consistent with American Disability Act Implementation Policy RE-2.14 Coordinate with CalTrans on the provision of non-motorized transportation routes, facilities, and enhancements within the Twentynine Palms Highway right-of-way.
- **Implementation Policy LU-6.1** Promote orderly growth and development through smart growth and planning principles.
- **Goal LU-7.** Protect and preserve Twentynine Palms natural resources, promote the existing quality of life, and prepare for future residents and businesses by promoting superior sustainable development.
- **Implementation Policy CI-1.19.** Sustain the primary function of mobility for the circulation plan while fostering economic development, preserving the environment, reducing energy consumption, promoting transportation-friendly development patterns, and encouraging fair and equitable access to all citizens.
- **Implementation Policy: CO-4.11** Develop a system of trails, paths, and other rights-of-way for the use of non-motorized transportation, including bicycles and walking.
- **Implementation Policy: CO-4.5** Locate commercial services near population centers to reduce the length of travel trips.

OnRoad-2. Encourage Use of Mass Transit

- **Implementation Policy: CO-4.8** Coordinate with the California Department of Transportation and other regional agencies to implement transportation programs with employers to reduce the amount of vehicle miles traveled by their employees.
- **Implementation Policy: CO-4.9** Coordinate with the Morongo Basin Transit Authority to plan, develop and implement a mass transit program for both regional and local trips.
- **Goal CI-6.** A public transportation system that provides effective transportation alternatives to the automobile.
- **Implementation Policy LU-4.6** Encourage development that complements the circulation and infrastructure network, meets the circulation demand of residents and businesses, and provides opportunities for non-automobile circulation.

OnRoad-5. Community Fleet Electrification

- **Implementation Policy: CO-4.10** Expand the use of CNG, electric powered and other non-gasoline vehicles for City activities.
- **Implementation Policy: CO-7.4** Develop provisions within the development and building codes to encourage and allow alternative energy facilities and equipment to be installed and developed on individual properties to serve that property.

3.21.4.3 Solid Waste

Waste-2. Waste Diversion and Reduction

- **Implementation Policy: CO-7.3** Coordinate with the local land fill agencies to identify and develop programs to reduce the deposit of waste into landfills.
- **Implementation Policy: CO-7.2** Develop regulations requiring the separation of various types of waste being disposed and require as much of that waste as possible to be recycled.

3.21.4.4 Water Conveyance

- **Goal LU-8.** Maintain Twentynine Palms as a clean and healthy place to live, while protecting the City's groundwater supply.

Water-2. Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency

- **Implementation Policy: CO-3.16** Conduct an analysis to determine practical and reasonable means for reducing water consumption as detailed in the 2005 Urban Water Management Plan Update.
- **Implementation Policy: CO-3.8** Prepare and adopt development policies, which respect the biological values and dynamic nature of water movement on alluvial fans and leaves intermittent and perennial streams in a natural unobstructed state.

- **Implementation Policy: CO-3.12** To the extent feasible, encourage the efforts of County Flood Control and the Twentynine Palms Water District to design flood control facilities that enhance opportunities for groundwater recharge.
- **Implementation Policy: CO-3.13** Adopt regulations to require new development to incorporate features into site drainage plans to reduce impermeable surface area, increase surface water infiltration, and minimize surface water runoff during storm events.
- **Implementation Policy: CO-3.2** Require that all new development within the City comply with City, water district and state mandates concerning the conservation and treatment of water.
- **Implementation Policy: CO-3.3** Coordinate and cooperate with the Twentynine Palms Water District to develop and implement water conservation and treatment programs.
- **Implementation Policy: CO-3.4** Work with the Twentynine Palms Water District to develop and implement incentive programs to encourage residents and businesses in the City to practice water conservation.

Water-3. Water-efficient Landscaping Practices

- **Implementation Policy: CO-1.8** Encourage developers to preserve, protect and at a minimum salvage naturally occurring desert plant materials for incorporation into project landscaping to the greatest extent possible.
- **Implementation Policy: CO-1.9** Encourage preservation and utilization of on-site indigenous materials on project landscape plans.
- **Implementation Policy: CO-3.5** Work with the Twentynine Palms Water District to develop programs that educate the public about the importance of water conservation and water-efficient landscaping.
- **Implementation Policy: CO-3.1** Prepare and adopt laws and regulations to require climate appropriate and drought resistant landscape for all public and private landscaping within the City.
- **Implementation Policy: CO-3.14** Adopt a landscape ordinance to regulate the amount of water consumed for irrigation purposes for both residential and non-residential development in the City.
- **Implementation Policy LU-3.17** Develop a clear and specific set of architectural and landscape standards and guidelines. The standards/guidelines should address architectural themes, site development, drought tolerant landscaping, and desert friendly irrigation systems for commercial, industrial, and residential developments and State requirements for water efficient landscapes.

3.22 City of Upland



3.22.1 City Summary

The City of Upland is located on the northern edge of San Bernardino Valley, approximately 35 miles east of Los Angeles. It is bordered on the east by Rancho Cucamonga, to the west by Claremont, to the south by Ontario and Montclair, and to the north by the highest part of the San Gabriel mountains. Upland has a semi-arid climate with summertime high temperatures around 90°F and wintertime lows around 45°F.

Upland spans 16 square miles and a significant portion of the area in the southern section of the City is designated as single-family low-density area. Other land uses in the jurisdiction include commercial/industrial mixed use and medium density residential areas.⁶ The jurisdiction had a population of 76,403 as of 2016. The education sector was the largest job sector in 2017, accounting for 32.4% of total jobs in the City. The median household income was \$65,349 in 2018. Upland’s demographic composition in 2018 was, 5.3% Non-Hispanic Black, 41.0% Non-Hispanic White, 8.8% Non-Hispanic Asian, 0.1% Non-Hispanic American Indian or Alaska Native, and 3.1% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 41.7% (SCAG, 2019).

Table 3-61 presents socioeconomic data for Upland, including population, housing, and employment (SBCOG, 2019).⁷

Table 3-61. Socioeconomic Data for Upland

Category	2016	2030	2045
Population	76,403	84,208	92,963
Households	26,088	29,336	32,817
Jobs	35,893	38,960	42,247



The City of Upland adopted a Climate Action Plan in 2015. The Climate Action Plan provides a framework of strategies and actions to reach GHG emissions targets consistent with the State of California’s reduction targets (City of Upland, 2015). The Climate Action Plan also describes Upland’s emissions sources, provides projections of future emissions, includes best practices for addressing climate change impacts, and provides recommendations for measuring progress (City of Upland, 2015). The Plan focuses on addressing the largest GHG emissions sources for the area, which include energy consumed in buildings and for transportation, as well as the solid waste sent to landfills (City of Upland, 2015).

⁶ Upland General Plan Land Use Map: https://beta.ci.upland.ca.us/uploads/ftp/city_departments/development_services/planning/general_plan_map/pdfs/01_Land%20Use%20Element%20-%20revised%20LU%20map.pdf.

3.22.2 Emission Reductions

The City of Upland selected a goal to reduce its community GHG emissions to a level that is 40% below its 2016 GHG emissions level by 2030. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective through a combination of state (~70%) and local (~30%) efforts. The Pavley vehicle standards, the state’s low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in Upland’s on-road, off-road, and building energy sectors in 2030. An additional reduction of 77,070 MTCO₂e will be achieved primarily through the following local measures, in order of reductions achieved: All Electric Buildings (Energy-3); Solar Installation for Existing Commercial/Industrial Facilities (Energy-8); and Waste Diversion and Reduction (Waste-2). Upland’s reduction plan has the greatest effect on GHG emissions in the building energy, on-road transportation, and waste sectors.

The City of Upland’s General Plan (adopted in 2015) includes an Open Space and Conservation Element, which emphasizes environmental sustainability and put forth the goal of reducing greenhouse gas emissions to 1990 levels by 2020.

- Integrate state, regional and local sustainable community/smart growth principles into the development and entitlement process.
- Develop a system of trails and corridors that facilitates and encourages bicycling and walking.
- Require new development to provide transit facilities, such as bus shelters, transit bays and turnouts, as necessary.
- Require the future development of community-wide servicing facilities to be sites in transit-ready areas that can be served and made accessible by public transit.
- Provide development-related incentives for projects that promote transit use.
- Designate and maintain a network of City truck routes that provide for the effective transport of goods while minimizing negative impacts on local circulation and noise sensitive land uses.
- Transition City Fleet to low emission/fuel efficient vehicles as they are retired from service.
- Encourage Carpooling.
- Work with the regional transit provider to provide shade, weather protection, seating, and lighting at all stops.

The bars in Figure 3-61 show Upland’s 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City’s emissions reduction target (i.e., 42% below the 2016 GHG emissions level by 2030). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total (“2030 Plan”), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~70%) of the total reductions needed to achieve the 2030 target.

Figure 3-62 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or “Reduction Plan” scenarios. The largest emissions contributions are in the on-road transportation and building energy emissions sectors.

Table 3-62 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction (“Reduction Plan”) results by sector. It shows the percent reduction in each sector’s emissions in 2030 and demonstrates that Upland exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the building energy, on-road transportation, and waste sectors.

Figure 3-63 presents emission reductions by sector and by control (i.e., state control versus local or City control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are in the building energy sector.

Figure 3-61. Emissions Reduction Profile for Upland

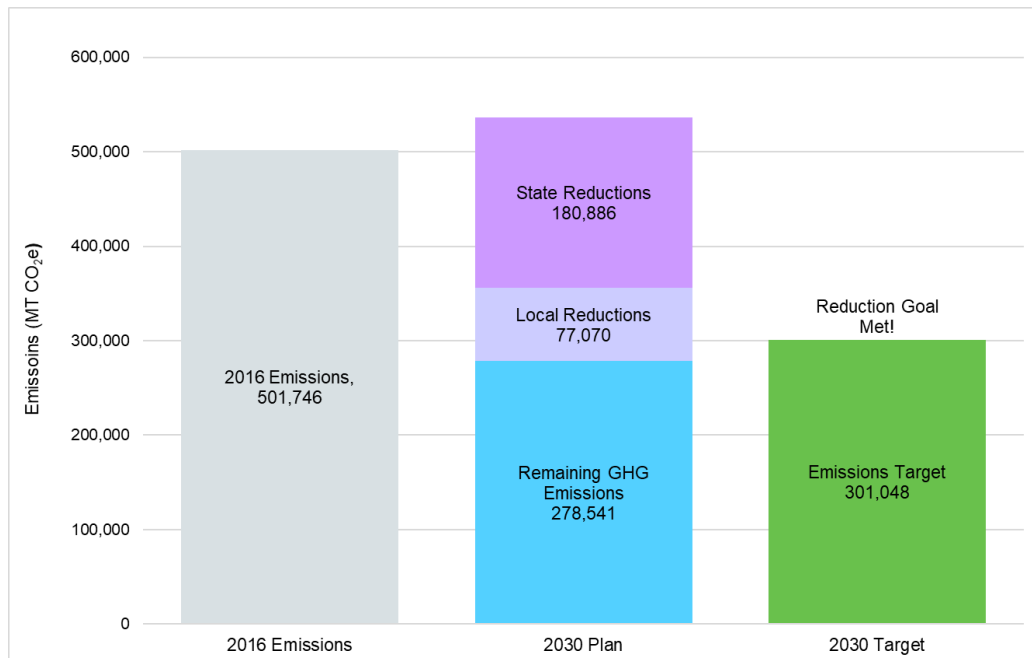


Figure 3-62. Emissions by Sector for Upland

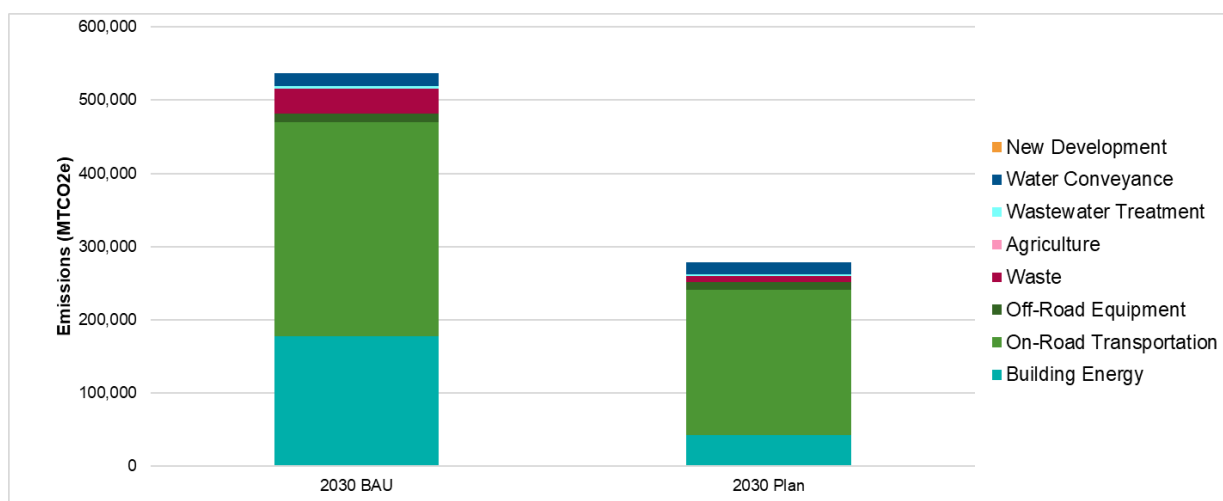


Table 3-62. Emission Reductions by Sector for Upland

Sector	2016 Emissions (MTCO _{2e})	2030 BAU (MTCO _{2e})	2030 Reductions (MTCO _{2e})	2030 Emissions with Reduction Plan (MTCO _{2e})	Reduction (percent)
Building Energy	161,241	177,201	134,152	43,049	75.7%
On-Road Transportation	281,398	292,902	95,048	197,854	32.5%
Off-Road Equipment	8,909	11,824	1,419	10,405	12.0%
Waste	31,210	34,399	26,308	8,091	76.5%
Agriculture	32	18	0	18	0.0%
Wastewater Treatment	2,394	2,638	125	2,513	4.7%
Water Conveyance	16,563	17,514	904	16,611	5.2%
GHG Performance Standard*	-	-	-	-	-
Total	501,746	536,496	257,955	278,541	48.1%
Goal	-	-	-	301,048	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	22,507	-
Per-Capita Emissions	-	-	-	-	-
Per-Job Emissions	-	-	-	-	-
Excluded Emissions: Stationary Sources	-	-	-	-	-

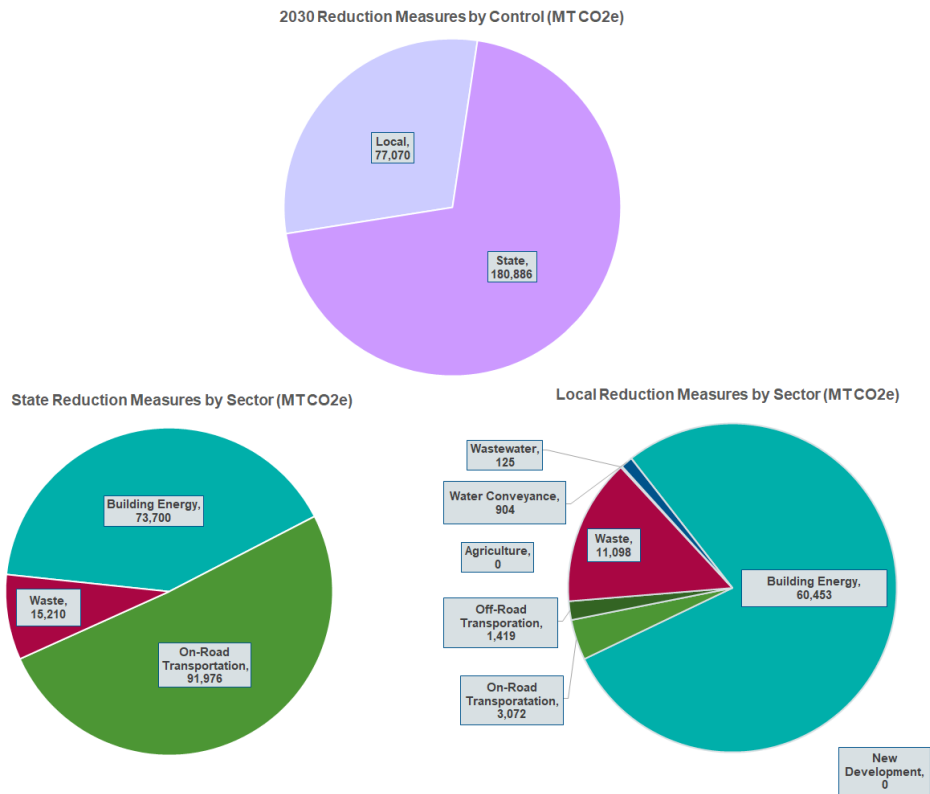
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City's reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-63. Emission Reductions by Control and by Sector for Upland



3.22.3 Reduction Measures

Table 3-63 presents each reduction measure evaluated for Upland. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-63. GHG Reduction Measures and Estimated 2030 reductions for Upland

Measure Number	Measure Description	Reductions (MTCO _{2e})
State Measures		
State-SB 100	SB 100	39,536
State-SB 350	SB 350	31,047
State-T24	Title 24 (Energy Efficiency Standards)	3,000
State-Solar Water Heater	Solar Water Heaters (Residential)	58
State-Increased CHP	Increased Combined Heat and Power (Commercial)	59
State-OnRoad	State Fuel Efficiency Measures	91,976
State-SB 1383	Methane Capture	15,210
Total State Reductions		180,886
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	1,850
Energy-2	Lighting Efficiency	142
Energy-3	All Electric Buildings	33,665
Energy-5	Renewable Energy – New Commercial/Industrial	182
Energy-6	Solar Energy for Warehouse Space	0
Energy-7	Solar Installation for Existing Housing	4,066
Energy-8	Solar Installation for Existing Commercial/Industrial	17,465
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	3
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	118
OnRoad-2	Encourage Use of Mass Transit	452
OnRoad-3	Transportation Demand Management and Synchronization	0
OnRoad-4	Expand Bike Routes	0
OnRoad-5	Community Fleet Electrification	2,502
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	1,118
OffRoad-2	Idling Ordinance	117
OffRoad-3	Electric Landscaping Equipment	184
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	11,098
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	0
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	125
<i>Water Conveyance</i>		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New	669

	Construction	
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	2,412
Water-3	Water-Efficient Landscaping Practices	904
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	0
Total Local Reductions		77,070
Total Reductions		257,955

Notes:

Values may not sum due to rounding.

3.22.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Upland’s GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Upland 2015 General Plan unless otherwise noted (City of Upland, 2015). In addition to state level measures, the City of Upland selected GHG reduction measures across most sectors (Table 3-63). The City’s General Plan includes policies and programs that broadly support energy efficiency and sustainability across all sectors, even if the City did not select a specific GHG reduction measure within the sector as part of this Reduction Plan. Relevant General Plan policies for the specific reduction measures the City selected are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.22.4.1 Building Energy

- **Policy OSC-6.5:** City Facilities. Set an example for others to follow by using alternative energy sources such as solar for City facilities.

Energy-1. Building Energy Efficiency

- **Policy OSC-5.11:** Minimum Green Building Standards. Require new development to comply with the California Green Building Code (CalGreen) adopted by the California Building Standards Commission at the time of building permit application.
- **Policy OSC-5.12:** LEED Standard for Public Buildings. Evaluate the feasibility of constructing new public buildings to meet, at a minimum, a LEED-Silver building standard or an equivalent standard, and construct said buildings toward meeting this standard to the extent feasible, using these buildings to demonstrate green building practices to builders, developers, homeowners, and others.
- **Policy OSC-6.1:** Compliance with Energy Efficiency Standards. Require existing residential and commercial buildings to meet adopted energy efficiency standards prior to a completion of sale.

Energy-2. Lighting Efficiency

- **Goal NR 1:** preserve and protect the area's renewable and nonrenewable resources to the maximum extent possible.

Energy-5. Renewable Energy - New Commercial/Industrial

- **Policy OSC-6.2:** New Development. Encourage solar-oriented design and passive solar heating and cooling in all new residential, commercial, and civic development.
- **Policy OSC-6.3:** Renewable Energy. Encourage the installation and construction of renewable energy systems and facilities such as wind, solar, hydropower, geothermal, and biomass facilities.

Energy-6. Solar Energy for Warehouse Space

- **Policy OSC-6.3:** Renewable Energy. Encourage the installation and construction of renewable energy systems and facilities such as wind, solar, hydropower, geothermal, and biomass facilities.

Energy-7. Solar Installation for Existing Housing

- **Policy OSC-6.3:** Renewable Energy. Encourage the installation and construction of renewable energy systems and facilities such as wind, solar, hydropower, geothermal, and biomass facilities.

CityEnergy-8. Renewable Energy - Existing Commercial/Industrial

- **Policy OSC-6.3:** Renewable Energy. Encourage the installation and construction of renewable energy systems and facilities such as wind, solar, hydropower, geothermal, and biomass facilities.

CityEnergy-10. Urban Tree Planting for Shading and Energy Savings

- **Goal OSC-2:** Upland's urban forest and rich landscaping tradition is managed and enjoyed as a valuable resource that imparts a character to the community.
- **Policy OSC-6.4:** Deciduous Trees. Require that deciduous trees be planted on the south- and west-facing sides of new buildings onsite to reduce energy use in the summer and winter months.
- **Policy OSC-3.17:** Trees. Maintain or plant trees where appropriate to provide shade, absorb carbon, reduce the heat island effect, and reduce cooling loads in shaded buildings.
- **Policy OSC-2.5:** Shade Trees. Prioritize the planting of large street tree species (greater to or equal to 50 feet in height) over smaller species to facilitate a larger canopy of trees that will serve to reduce the heat island effect, lower energy costs, sequester carbon dioxide in the atmosphere, reduce stormwater runoff, and increase water retention and water quality.

3.22.4.2 On-Road

- **Goal HC-2:** An active living environment that offers ample parks, community facilities, recreation activities, and multiuse pedestrian and bicycle trails, and development types that encourage a healthy and active lifestyle.
- **Policy OSC-4.1:** Land Use Patterns. Promote land use patterns that reduce the number and length of motor vehicle trips.
- **Policy OSC-4.2:** Compact Development. Where development opportunities near shopping areas and transit corridors exist, prioritize higher-density residential development.
- **Policy OSC-4.3:** Mixed Retail Development. Encourage employment areas to include a mix of retail support services, and allow new small-scale retail and service uses within established residential neighborhoods to reduce vehicle trips.
- **Policy OSC-4.8:** Reduction in Commuting. Promote expansion of employment opportunities within Upland to reduce commuting to areas outside of the City.
- **Policy OSC-4.9:** Rideshare Incentives. Encourage employers to offer employees incentives for ridesharing.

- **Policy OSC-4.10:** Vehicle Idling. Continue to enforce the vehicle idling restrictions established by the State.
- **Policy OSC-5.2:** Greenhouse Gas Reduction in New Development. Reduce greenhouse gas emissions from new development by promoting water conservation and recycling; promoting development that is compact, mixed use, pedestrian friendly, and transit oriented; promoting energy-efficient building design and site planning; improving the jobs/housing ratio; and other methods of reducing emissions.

OnRoad-1. Alternative Fueled Transit Fleets

- **Policy HC-3.1:** Air Quality. Improve indoor and outdoor air quality through land use siting, appropriate mitigation, education, enforcement, and coordinated planning with business, government, and residents (cf: OSC-3).
- **Policy OSC-5.6:** Reduced Emissions for City Operations. Promote reduced idling, trip reduction, routing for efficiency, and the use of public transportation, carpooling, and alternate modes of transportation for operating City departments.
- **Policy OSC-5.7:** Fleet Operations. Purchase low-emission vehicles for the City's fleet and use available clean fuel sources for trucks and heavy equipment, where economically feasible.

OnRoad-2. Encourage Use of Mass Transit

- **Policy CIR-1.3:** Transit Priority Roadways. Designate certain roadways as Transit Priority Roadways, which are intended to prioritize high efficiency transit services such as Bus Rapid Transit (BRT). These transit priority roadways will be designated through cooperative activities between the City, Omnitrans, and SANBAG.
- **Policy CIR-1.8:** Regional Coordination. Participate in the planning of regional roadway and transit improvements such as interchange improvements along I-10, other regional freeway and arterial improvements, and transit planning efforts such as the development of a regional Bus Rapid Transit (BRT).
- **Goal CIR-2:** An interconnected network of bicycle, pedestrian, and transit facilities that accommodate and encourage travel through non-automotive modes.
- **Policy OSC-5.10:** Transportation Systems Management and Trip Reduction. Encourage all City employees to use means other than a single-occupant vehicle for their daily work commute.

OnRoad-5. Community Fleet Electrification

- **Policy HC-3.1:** Air Quality. Improve indoor and outdoor air quality through land use siting, appropriate mitigation, education, enforcement, and coordinated planning with business, government, and residents (cf: OSC-3).
- **Policy OSC-5.8:** Zero-Emission and Low-Emission Vehicle Use. Encourage the use of zero-emission vehicles, low-emission vehicles, non-motorized vehicles, and bicycles, and carsharing programs by requiring sufficient and convenient infrastructure and parking facilities in residential developments and employment centers to accommodate these vehicles.

3.22.4.3 Off-Road

Off-Road-1. Electric-Powered Construction Equipment

- **Policy OSC-5.9:** Preference for Reduced-Emission Equipment. Give preference to professional maintenance providers using reduced emission equipment for contracts for services (e.g., landscape maintenance), as well as businesses which practice sustainable operations, to the extent that it is economically feasible to do so.

Off-Road-2. Idling Ordinance

- **Policy HC-3.1:** Air Quality. Improve indoor and outdoor air quality through land use siting, appropriate mitigation, education, enforcement, and coordinated planning with business, government, and residents (cf: OSC-3).
- **Policy OSC-5.6:** Reduced Emissions for City Operations. Promote reduced idling, trip reduction, routing for efficiency, and the use of public transportation, carpooling, and alternate modes of transportation for operating City departments.

Off-Road-3. Electric Landscaping Equipment

- **Policy OSC-5.9:** Preference for Reduced-Emission Equipment. Give preference to professional maintenance providers using reduced emission equipment for contracts for services (e.g., landscape maintenance), as well as businesses which practice sustainable operations, to the extent that it is economically feasible to do so.

3.22.4.4 Solid Waste Management

Waste-2. Waste Diversion and Reduction

- **Policy HC-3.4:** Hazardous Waste. Work with government agencies, private industry, and stakeholders to manage the generation, transport, and use of toxic and/or hazardous wastes, and reduce their accidental release.
- **Policy OSC-3.14:** Sustainable Materials. Use sustainable materials—reused, renewable, locally sourced and/or recycled—to the greatest extent possible in new parks and recreational facilities.
- **Goal PFS-14:** Solid waste generation is minimized and collected, stored, transported, and recycled in safe, sanitary, and environmentally acceptable ways.
- **Policy PFS-14.1:** State Diversion Goal. Strive to exceed the State’s goal of diverting solid waste from landfills.
- **Policy PFS-14.7:** Recycle Asphalt Pavement. Promote the use of recycled asphalt pavement (RAP) for streets and parking lots, where feasible.

3.22.4.5 Wastewater Management

Wastewater-1. Methane Recovery at Wastewater Treatment Plants

- **Policy OSC-3.16:** Stormwater Management. Integrate low impact development techniques that retain natural features for stormwater management to the greatest extent possible for all parks facilities.

Wastewater-2. Equipment Upgrades and Wastewater Treatment Plants

- **Policy HC-3.2:** Water Quality. Improve and maintain the quality of water resources by controlling runoff, managing the watershed, and implementing other best management practices (cf: PFS-7).
- **Goal PFS-12:** Storm-water collected, conveyed, stored, and disposed of to protect property from flooding and to recharge groundwater.
- **Policy PFS-8.6:** Water Infrastructure. Maintain water storage, conveyance, and treatment infrastructure in good working condition in order to supply domestic water to all users with adequate quantities, flows, and pressures.

3.22.4.6 Water Conveyance

Water-1. Require Tier 1 Voluntary CALGreen Standards for New Construction

- **Policy OSC-5.2:** Greenhouse Gas Reduction in New Development. Reduce greenhouse gas emissions from new development by promoting water conservation and recycling; promoting development that is compact, mixed use, pedestrian friendly, and transit oriented; promoting energy-efficient building design and site planning; improving the jobs/housing ratio; and other methods of reducing emissions.
- **Goal PFS-9:** A community that supports the use of water conservation measures and the provision of recycled water to minimize the demand on potable water resources.

Water-2. Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency

- **Policy HC-3.2:** Water Quality. Improve and maintain the quality of water resources by controlling runoff, managing the watershed, and implementing other best management practices (cf: PFS-7).
- **Policy OSC-5.2** Greenhouse Gas Reduction in New Development. Reduce greenhouse gas emissions from new development by promoting water conservation and recycling; promoting development that is compact, mixed use, pedestrian friendly, and transit oriented; promoting energy-efficient building design and site planning; improving the jobs/housing ratio; and other methods of reducing emissions.

Water-3. Water-Efficient Landscaping Practices

- **Policy HC-3.2:** Water Quality. Improve and maintain the quality of water resources by controlling runoff, managing the watershed, and implementing other best management practices (cf: PFS-7).
- **Policy OSC-3.15:** California Friendly Plant Species. When feasible, utilize California friendly noninvasive plants for landscaping park and recreational facilities.
- **Policy OSC-2.3:** California-Friendly Species. Encourage new and existing public and private development to incorporate California-friendly and drought-tolerant vegetation into landscape plans to reduce water demand.

3.23 City of Victorville



3.23.1 City Summary

The City of Victorville is located in the western part of the Mojave Desert, also known as the Victor Valley. Victorville is bordered by Adelanto to the west, Apple Valley to the east, and Hesperia to the south. These jurisdictions are separated from the San Bernardino Valley by the San Bernardino Mountains to the south, accessible through the Cajon Pass on I-15.

Local deposits of limestone and granite brought cement manufacturing to the area during the mid-twentieth century, which remains to this day in the CEMEX facility, one of only 14 cement manufacturing facilities in California. Victorville also owes much of its history and growth to George Air Force Base. Although decommissioned in 1992, a portion of the facility is now the Southern California Logistics Airport, which is one of the largest employers in Victorville. These uses are reflected in Victorville’s GHG emissions inventory and reductions selected below. Because cement manufacturing is a highly GHG intense industrial process, these emissions dominate Victorville’s GHG emissions profile but are not considered in Victorville’s GHG emissions reduction target because the City has no control over plant operations, which are regulated by both the state and local air district.

Victorville covers 75 square miles. The City’s general plan indicates that 38% of land uses will be devoted to residential uses but that commercial and industrial uses will continue in Victorville (with approximately 14% of total land use areas). The City has historically been a commerce center for the Victor Valley and will continue to be so. In 2016, the City’s population was 123,309 (115,903 in 2010) and the population is expected to grow to 158,601 by 2030, the highest in the county. Victorville’s demographic composition in 2018 was 22.0% Non-Hispanic White, 15.2% Non-Hispanic Black, 0.2% Non-Hispanic American Indian or Alaska Native, 3.7% Non-Hispanic Asian, and 3.6% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 55.3%. Employment in Victorville is projected to increase by 23% between 2016 and 2030.

Table 3-64 presents socioeconomic data for Victorville, including population, housing, and employment (SBCOG, 2019).

Table 3-64. Socioeconomic Data for Victorville

Category	2016	2030	2045
Population	123,309	158,601	194,522
Households	33,932	47,392	61,813
Jobs	41,180	50,848	61,207



3.23.2 Emission Reductions

The City of Victorville selected a goal to reduce its community GHG emissions to a level that is 40% below its 2008 GHG emissions level by 2030. In doing so, the City considered a suite of local measures across all emissions sectors and selected the most viable options. The City will meet and exceed its GHG goal for 2030 primarily through state measures (~75%) as well as through the selected local (~25%) measures. The Pavley vehicle standards, the state's low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in Victorville's on-road and building energy sectors in 2030. These state measures exceed the local measures by a large amount. An additional reduction of 130,819 MTCO₂e will be achieved primarily through the following local measures in order of greatest emissions reduction: Solar Installation for Existing Commercial/Industrial Facilities (Energy-8); All Electric Buildings (Energy-3); and Waste Diversion and Reduction (Waste-2). Victorville's reduction plan has the greatest impacts on GHG emissions in the building energy, on-road transportation, and waste sectors.

The bars in Figure 3-64 show Victorville's 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City's emissions reduction target (i.e., 46% below its 2008 GHG emissions level by 2030). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total ("2030 plan"), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~75%) of the total reductions needed to achieve the 2030 target.

Figure 3-65 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation and building energy emissions sectors.

Table 3-65 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2030 and demonstrates that Victorville exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the building energy, on-road transportation, and waste sectors.

Figure 3-66 presents emission reductions by sector and by control (i.e., state control versus local or City control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are in the building energy sector.

Figure 3-64. Emissions Reduction Profile for Victorville

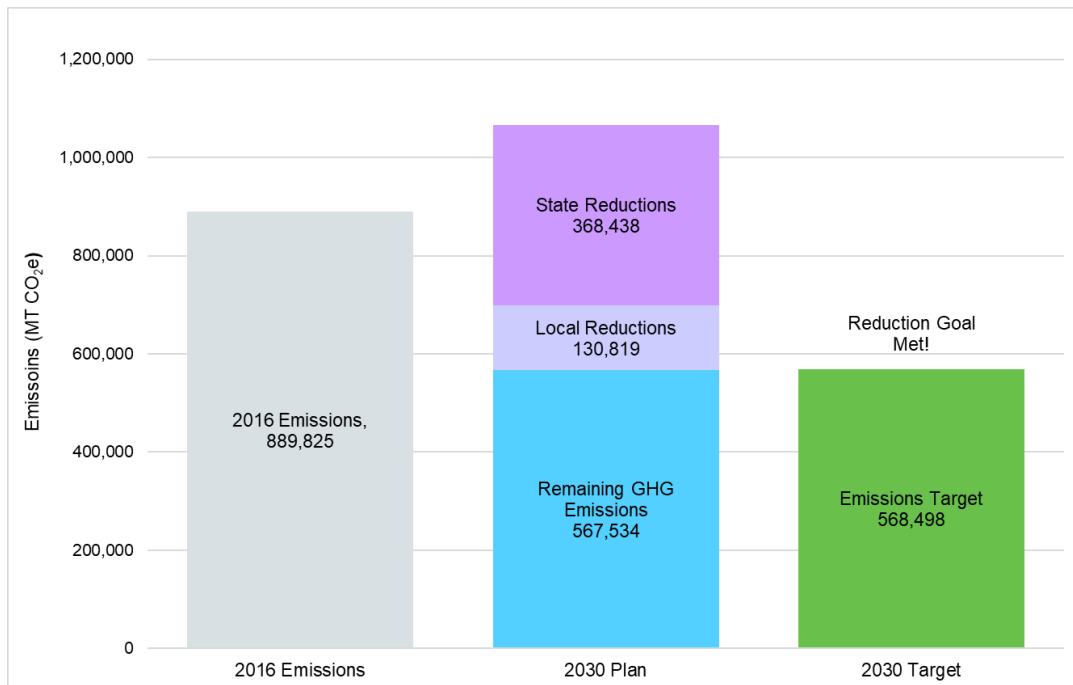


Figure 3-65. Emissions by Sector for Victorville

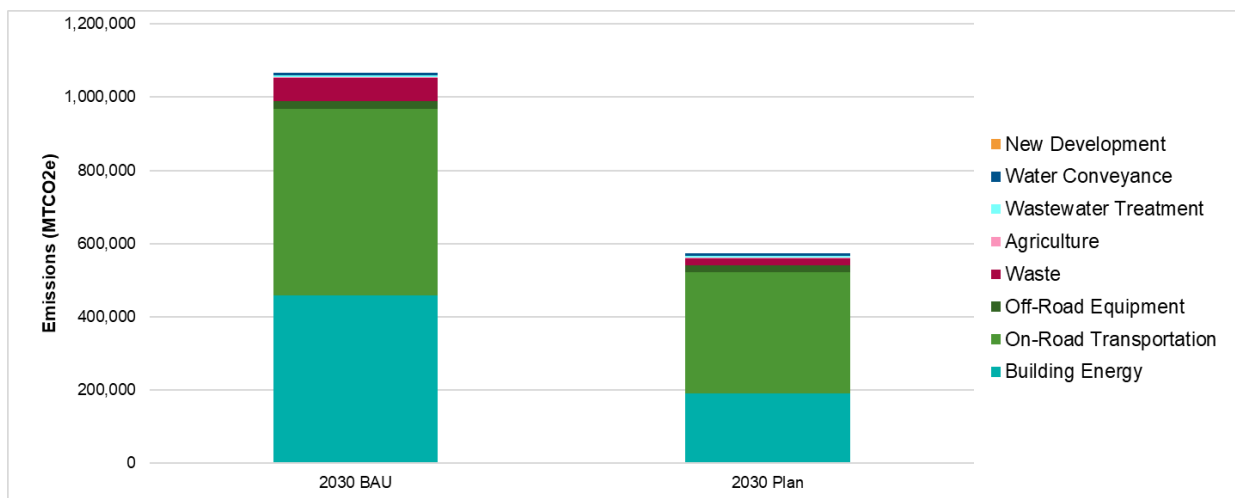


Table 3-65. Emission Reductions by Sector for Victorville

Sector	2016 Emissions (MTCO₂e)	2030 BAU (MTCO₂e)	2030 Reductions (MTCO₂e)	2030 Emissions with Reduction Plan (MTCO₂e)	Reduction (percent)
Building Energy	351,859	458,588	268,012	190,575	58.4%
On-Road Transportation	460,633	509,079	177,688	331,390	34.9%
Off-Road Equipment	13,609	21,094	1,619	19,475	7.7%
Waste	49,081	63,129	45,807	17,322	72.6%
Agriculture	5,020	2,826	0	2,826	0.0%
Wastewater Treatment	3,863	4,969	254	4,715	5.1%
Water Conveyance	5,759	7,107	564	6,543	7.9%
GHG Performance Standard*	-	-	5,311	-	-
Total	889,825	1,066,792	499,257	567,534	46.8%
Goal	-	-	-	568,498	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	963	-

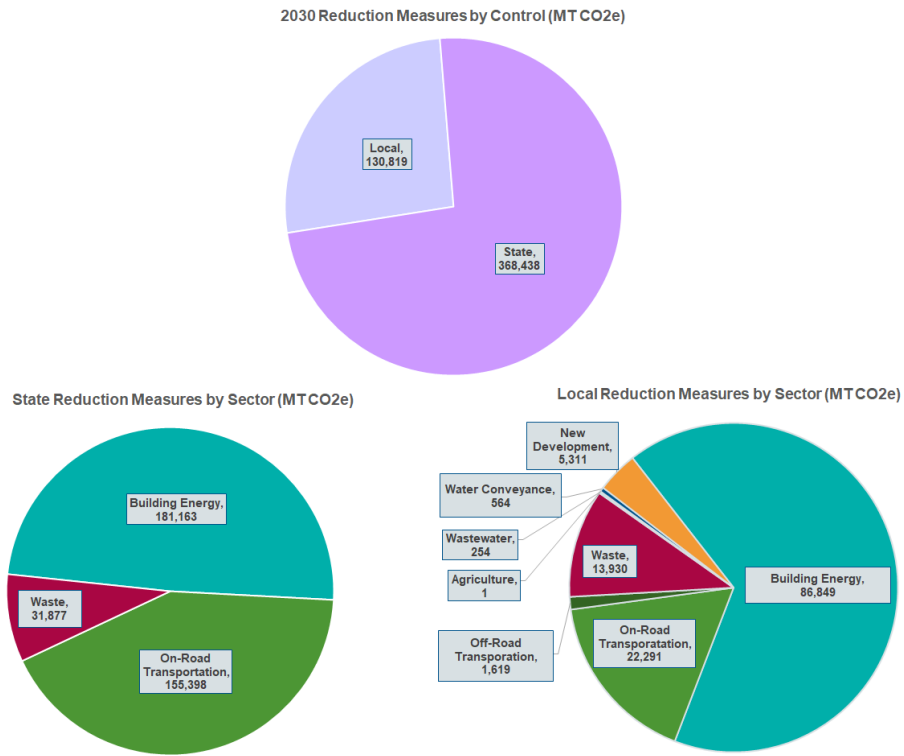
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City's reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-66. Emission Reductions by Control and by Sector for Victorville



3.23.3 Reduction Measures

Table 3-66 presents each reduction measure evaluated for Victorville. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-66. GHG Reduction Measures and Estimated 2030 reductions for Victorville

Measure Number	Measure Description	Reductions (MTCO _{2e})
State Measures		
State-SB 100	SB 100	121,872
State-SB 350	SB 350	41,838
State-T24	Title 24 (Energy Efficiency Standards)	16,526
State-Solar Water Heater	Solar Water Heaters (Residential)	82
State-Increased CHP	Increased Combined Heat and Power (Commercial)	845
State-OnRoad	State Fuel Efficiency Measures	155,398
State-SB 1383	Methane Capture	31,877
Total State Reductions		368,438
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	8,140
Energy-2	Lighting Efficiency	4,448
Energy-3	All Electric Buildings	18,496
Energy-5	Renewable Energy – New Commercial/Industrial	5,322
Energy-6	Solar Energy for Warehouse Space	7,037
Energy-7	Solar Installation for Existing Housing	10,620
Energy-8	Solar Installation for Existing Commercial/Industrial	24,502
Energy-9	Rooftop Gardens	1
Energy-10	Urban Tree Planting for Shading and Energy Savings	1
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	513
OnRoad-2	Encourage Use of Mass Transit	10,567
OnRoad-3	Transportation Demand Management and Synchronization	3,537
OnRoad-4	Expand Bike Routes	3,196
OnRoad-5	Community Fleet Electrification	4,479
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	1,053
OffRoad-2	Idling Ordinance	220
OffRoad-3	Electric Landscaping Equipment	346
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	13,930
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	17
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	236
<i>Water Conveyance</i>		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New	3,668

Water-2	Construction Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	4,615
Water-3	Water-Efficient Landscaping Practices	564
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (52% below projected BAU emissions for the project)	5,311
Total Local Reductions		130,819
Total Reductions		499,257

Notes:

Values may not sum due to rounding.

3.23.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Victorville’s GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Victorville 2008 General Plan unless otherwise noted (Victorville 2008). In addition to state level measures, the City of Victorville selected a variety of measures across nearly all sectors, including a GHG Performance Standard for new development (Table 3-66). The City’s General Plan includes policies and programs that broadly support energy efficiency and sustainability even if it is not closely tied to a specific measure as part of this Reduction Plan. Relevant General Plan policies for the specific reduction measures the City selected are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.23.4.1 Building Energy

Energy-1. Building Energy Efficiency

- **Implementation Measure 7.2.1.2:** Minimize energy use of new residential, commercial, and industrial projects by requiring high efficiency heating, lighting, and other appliances, such as cooking equipment, refrigerators, furnaces, overhead and area lighting, and low NO_x water heaters.
- **Implementation Measure 7.2.1.1:** Incorporate green building principles and practices, to the extent practicable and financially feasible, into the design, development and operation of all City owned facilities.
- **Implementation Measure 7.2.1.6:** Establish a program for retrofitting existing residential and commercial projects to bring existing structures into compliance with 2008 standards.

Energy-2. Lighting Efficiency

- **Implementation Measure 7.2.1.2:** Minimize energy use of new residential, commercial, and industrial projects by requiring high efficiency heating, lighting, and other appliances, such as cooking equipment, refrigerators, furnaces, overhead and area lighting, and low NO_x water heaters.
- **Implementation Measure 7.2.1.1:** Incorporate green building principles and practices, to the extent practicable and financially feasible, into the design, development and operation of all City owned facilities.
- **Implementation Measure 7.2.1.6:** Establish a program for retrofitting existing residential and commercial projects to bring existing structures into compliance with 2008 standards.

- **Implementation Measure 7.2.1.9:** Set target to retrofit City streetlights with goal of 100% replacement (High pressure sodium cut-off or similar streetlights).
- **Implementation Measure 7.2.1.10:** Incandescent lighting is discouraged for all new construction; all City facilities should replace incandescent lighting with CF or LED lighting unless light fixture does not exist for particular use.
- **Implementation Measure 7.2.1.11:** Replace traffic signals lights with LED lighting.

Energy-3. All Electric Buildings

- **Implementation Measure 7.1.1.1:** Continue to work with energy companies and energy developers to develop non-fossil fuel reliant power generation plants within the Planning Area.

Energy-5. Renewable Energy - New Commercial/Industrial

- **Implementation Measure 7.1.1.1:** Continue to work with energy companies and energy developers to develop non-fossil fuel reliant power generation plants within the Planning Area.
- **Implementation Measure 7.1.1.3:** Establish a photovoltaic target and require new construction to contribute to that target.
- **Implementation Measure 7.1.1.4:** Require all new commercial or industrial development to generate electricity on site to maximum extent feasible.

Energy-6. Solar Energy for Warehouse Space

- **Implementation Measure 7.1.1.1:** Continue to work with energy companies and energy developers to develop non-fossil fuel reliant power generation plants within the Planning Area.
- **Implementation Measure 7.1.1.3:** Establish a photovoltaic target and require new construction to contribute to that target.
- **Implementation Measure 7.1.1.4:** Require all new commercial or industrial development to generate electricity on site to maximum extent feasible.

Energy-7. Solar Installation - Existing Housing

- **Implementation Measure 7.1.1.1:** Continue to work with energy companies and energy developers to develop non-fossil fuel reliant power generation plants within the Planning Area.
- **Implementation Measure 7.2.1.4:** Implement Assembly Bill 811: Financing for Residential Solar, to the maximum extent feasible.
- **Implementation Measure 7.1.1.5:** Require all new residential projects over 100 units to generate electricity on site to maximum extent feasible.

Energy-8. Renewable Energy - Existing Commercial/Industrial

- **Implementation Measure 7.1.1.1:** Continue to work with energy companies and energy developers to develop non-fossil fuel reliant power generation plants within the Planning Area.
- **Implementation Measure 7.1.1.3:** Establish a photovoltaic target and require new construction to contribute to that target.
- **Implementation Measure 7.1.1.4:** Require all new commercial or industrial development to generate electricity on site to maximum extent feasible.

3.23.4.2 On-Road

- **Implementation Measure 6.1.1.6:** Any City-operated parking facility must have carpool passes (reduced rate or preferential parking for vehicles with two or more passengers to be verified by attendant).

OnRoad-1. Alternative Fueled Transit Fleets

- **Implementation Measure 6.1.1.5:** Replace fleet vehicles with more efficient vehicles with a goal of 100% low emission vehicle fleet.
- **Implementation Measure 6.1.1.4:** Replace existing gasoline powered City vehicles and equipment with clean fuels and vehicles and equipment.

OnRoad-2. Encourage Use of Mass Transit

- **Implementation Measure 6.1.1.1:** Require large projects (exceeding 150,000 square feet of development) to incorporate Transportation Demand Management (TDM) techniques, such as promoting carpooling and transit, as a condition of project approval.
- **Implementation Measure 6.1.1.1:** Create a Transit-Oriented Development Plan: identify ideal locations for residential housing near public transportation, identify areas for mixed use development, walkable development near transportation hubs.
- **Implementation Measure 6.1.1.3:** Maintain parking standards that encourage and facilitate alternative transportation modes, including reduced parking standards for transit-oriented developments, mixed-use developments, and preferential parking for carpoolers.
- **Implementation Measure 2.2.1.1:** Consult with the VVTA during planning/design of major new development and redevelopment projects and public facilities, to incorporate appropriate public transit improvements, in optimal locations.

OnRoad-5. Community Fleet Electrification

- **Implementation Measure 6.1.1.9:** Encourage the provision of on-site electrical outlets at all commercial facilities.
- **Implementation Measure 6.1.1.7:** Designate preferential parking for hybrid vehicles at City buildings.

3.23.4.3 Off-Road

Off-Road-1. Electric-Powered Construction Equipment

- **Implementation Measure 6.1.1.4:** Replace existing gasoline powered City vehicles and equipment with clean fuels and vehicles and equipment.

Off-Road-2. Idling Ordinance

- **Implementation Measure 6.1.1.8:** Adopt diesel idling restrictions to limit idling at all commercial facilities.

Off-Road-3. Electric Landscaping Equipment

- **Implementation Measure 6.1.1.4:** Replace existing gasoline powered City vehicles and equipment with clean fuels and vehicles and equipment.

3.23.4.4 Wastewater Treatment

Wastewater-1. Methane Recovery at Wastewater Treatment Plants

- **Implementation Measure 7.1.1.1:** Continue to work with energy companies and energy developers to develop non-fossil fuel reliant power generation plants within the Planning Area.

Wastewater-2. Equipment Upgrades and Wastewater Treatment Plants

- **Implementation Measure 1.1.1.1:** Offer incentives for projects that demonstrate significant water conservation through use of innovative water consumption technologies. For example, offer discounted water rates for projects that achieve U.S. Green Building Council LEED standards for certification relative to water efficiency.

3.23.4.5 Water Conveyance

Water-1. Require Tier 1 Voluntary CALGreen Standards for New Construction

- **Policy 1.1.1:** Require water conservation measures in the design of new development and major redevelopment, for both public and private projects, such as low water consuming indoor plumbing devices and use of xerophytic landscape materials that require minimal irrigation.
- **Implementation Measure 1.1.1.1:** Offer incentives for projects that demonstrate significant water conservation through use of innovative water consumption technologies. For example, offer discounted water rates for projects that achieve U.S. Green Building Council LEED standards for certification relative to water efficiency.

Water-2. Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency

- **Policy 1.1.1:** Require water conservation measures in the design of new development and major redevelopment, for both public and private projects, such as low water consuming indoor plumbing devices and use of xerophytic landscape materials that require minimal irrigation.
- **Implementation Measure 1.1.1.1:** Offer incentives for projects that demonstrate significant water conservation through use of innovative water consumption technologies. For example, offer discounted water rates for projects that achieve U.S. Green Building Council LEED standards for certification relative to water efficiency.

Water-3. Water-Efficient Landscaping Practices

- **Policy 1.1.1:** Require water conservation measures in the design of new development and major redevelopment, for both public and private projects, such as low water consuming indoor plumbing devices and use of xerophytic landscape materials that require minimal irrigation.
- **Implementation Measure 7.2.2.2:** Require drought tolerant landscaping in all City public developments, including buildings, parks, and street rights-of-way.

3.24 City of Yucaipa



3.24.1 City Summary

The City of Yucaipa is located in the foothills of the San Bernardino Mountains, at the far eastern end of the San Bernardino Valley. Yucaipa is located 10 miles east of San Bernardino, and just southeast of Redlands along the I-10 freeway before it ascends over the San Gorgonio Pass. Yucaipa’s altitude of 2,600 feet provides for a more moderate climate than other Valley jurisdictions. The City has access to state parks in the San Bernardino Mountains. Yucaipa contains some of the oldest dwellings in the county, including the Yucaipa Rancheria and Yucaipa Adobe.

Yucaipa covers approximately 28 square miles and is largely residential. Because commercial and industrial activity in the City is limited, residents typically commute to other areas of San Bernardino and Riverside counties for work. These land uses are reflected in the City’s GHG profile, with primary emissions sources in the on-road transportation, residential building energy use, and commercial energy use sectors.

The population of Yucaipa in 2016 was 53,779 (51,367 in 2010) and is expected to increase to 66,706 by 2030. Yucaipa’s demographic composition in 2018 was 60.0% Non-Hispanic White, 1.1% Non-Hispanic Black, 0.1% Non-Hispanic American Indian or Alaska Native, 2.6% Non-Hispanic Asian, and 2.1% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 34.1%. The majority of the population in Yucaipa is White (60% compared to the SCAG regional average of 31.4%). The City also has a high homeownership rate of 72.4% (SCAG, 2018).

Table 3-67 presents socioeconomic data for Yucaipa, including population, housing, and employment (SBCOG, 2019).

Table 3-67. Socioeconomic Data for Yucaipa

Category	2016	2030	2045
Population	53,779	66,706	75,209
Households	19,987	23,716	27,349
Jobs	10,824	13,500	17,624



The City of Yucaipa adopted a Climate Action Plan in 2014, with the goal of reducing its community GHG emissions to 15% below its 2008 GHG emissions level by 2020 (City of Yucaipa, 2014). The City planned to meet this goal through a combination of state (~81%) and local (~19%) efforts. The selected measures in Yucaipa's Climate Action Plan had the greatest impacts on GHG emissions in the on-road transportation, building energy, and water conveyance sectors (City of Yucaipa, 2014).

3.24.2 Emission Reductions

The City of Yucaipa selected a goal to reduce its community GHG emissions to a level that is 46% below its 2008 GHG emissions level by 2030. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective through a combination of state (~70%) and local (~30%) efforts. The Pavley vehicle standards, the state's low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in Yucaipa's on-road and building energy sectors in 2030. An additional reduction of 54,579 MTCO₂e will be achieved primarily through the following local measures, in order of reductions achieved: GHG Performance Standard for Existing Development (PS-1); Waste Diversion and Reduction (Waste-2); and Solar Installation for Existing Housing (Energy-7). Yucaipa's Plan has the greatest impacts on GHG emissions in the waste, building energy, and on-road transportation sectors.

The bars in Figure 3-67 show Yucaipa's 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the City's emissions reduction target (i.e., 42% below the 2016 emissions level). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total ("2030 plan"), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~80%) of the total reductions needed to achieve the 2030 target.

Figure 3-68 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation and building energy emissions sectors.

Table 3-68 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2030 and demonstrates that Yucaipa exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the waste, building energy, and on-road transportation sectors.

Figure 3-69 presents emission reductions by sector and by control (i.e., state control versus local or City control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are in the building energy sector.

Figure 3-67. Emissions Reduction Profile for Yucaipa

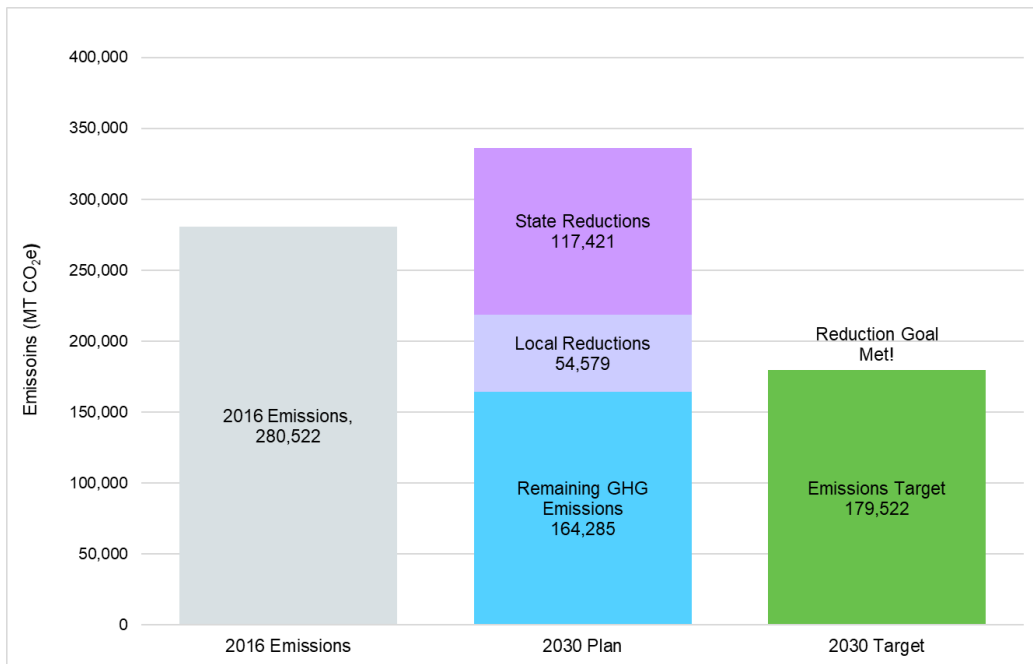


Figure 3-68. Emissions by Sector for Yucaipa

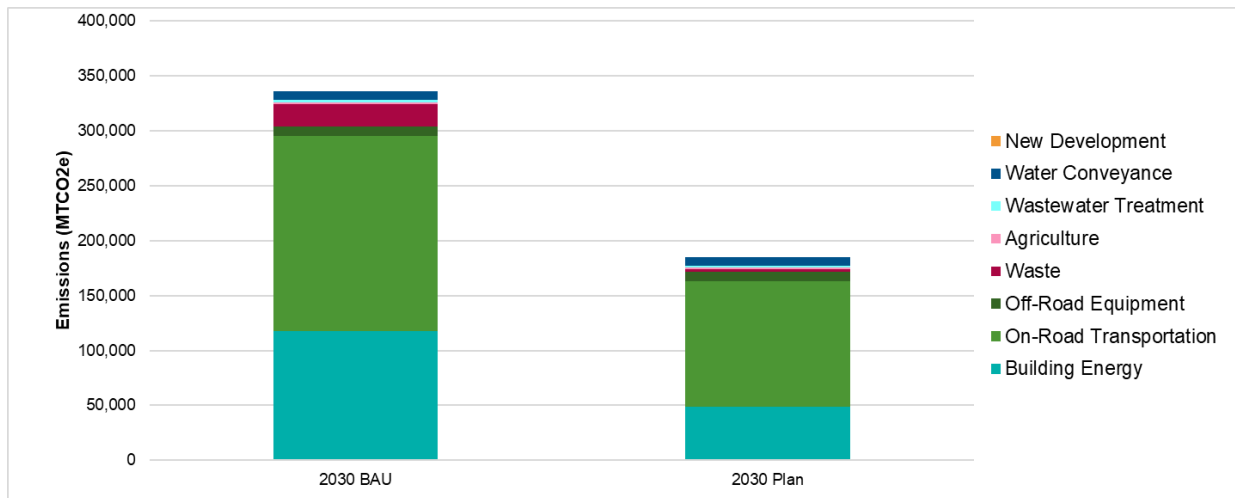


Table 3-68. Emission Reductions by Sector for Yucaipa

Sector	2016 Emissions (MTCO₂e)	2030 BAU (MTCO₂e)	2030 Reductions (MTCO₂e)	2030 Emissions with Reduction Plan (MTCO₂e)	Reduction (percent)
Building Energy	96,836	117,872	69,154	48,718	58.7%
On-Road Transportation	150,348	177,578	63,154	114,424	35.6%
Off-Road Equipment	5,929	8,756	230	8,526	2.6%
Waste	16,422	20,369	17,745	2,625	87.1%
Agriculture	2,313	1,302	0	1,302	0.0%
Wastewater Treatment	1,685	2,090	194	1,896	9.3%
Water Conveyance	6,990	8,318	472	7,846	5.7%
GHG Performance Standard*	-	-	21,052	-	-
Total	280,522	336,285	172,001	164,285	51.1%
Goal	-	-	-	179,522	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	15,237	-

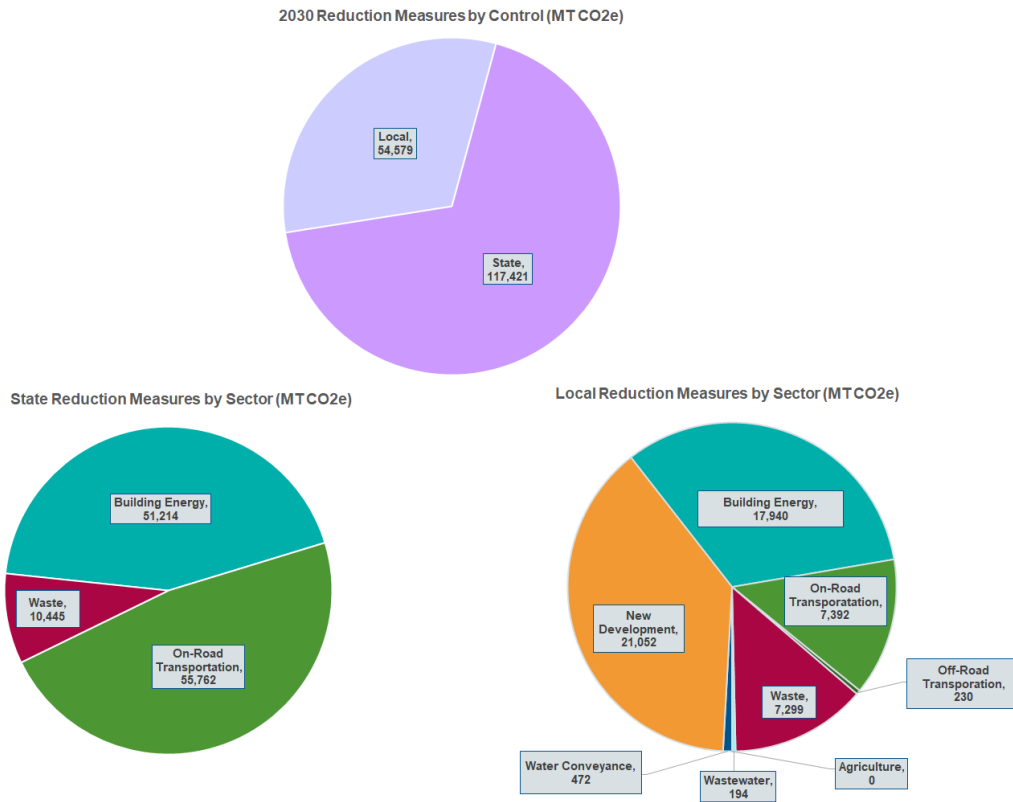
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City's reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-69. Emission Reductions by Control and by Sector for Yucaipa



3.24.3 Reduction Measures

Table 3-69 presents each reduction measure evaluated for Yucaipa. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-69. GHG Reduction Measures and Estimated 2030 reductions for Yucaipa

Measure Number	Measure Description	Reductions (MTCO₂e)
State Measures		
State-SB 100	SB 100	25,792
State-SB 350	SB 350	20,400
State-T24	Title 24 (Energy Efficiency Standards)	4,901
State-Solar Water Heater	Solar Water Heaters (Residential)	45
State-Increased CHP	Increased Combined Heat and Power (Commercial)	75
State-OnRoad	State Fuel Efficiency Measures	55,762
State-SB 1383	Methane Capture	10,445
Total State Reductions		117,421
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	1,868
Energy-2	Lighting Efficiency	303
Energy-3	All Electric Buildings	0
Energy-5	Renewable Energy – New Commercial/Industrial	520
Energy-6	Solar Energy for Warehouse Space	0
Energy-7	Solar Installation for Existing Housing	5,607
Energy-8	Solar Installation for Existing Commercial/Industrial	4,517
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	0
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	441
OnRoad-2	Encourage Use of Mass Transit	1,371
OnRoad-3	Transportation Demand Management and Synchronization	1,218
OnRoad-4	Expand Bike Routes	1,327
OnRoad-5	Community Fleet Electrification	3,034
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	89
OffRoad-2	Idling Ordinance	93
OffRoad-3	Electric Landscaping Equipment	48
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	7,299
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	95
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	99
<i>Water Conveyance</i>		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New	1,546

	Construction	
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	3,581
Water-3	Water-Efficient Landscaping Practices	472
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	21,052
Total Local Reductions		54,579
Total Reductions		172,001

Notes:

Values may not sum due to rounding.

3.24.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Yucaipa’s GHG reduction measures or would contribute to GHG reductions and sustainable practices in the City. All policies listed below are from the Yucaipa 2016 General Plan unless otherwise noted (City of Yucaipa, 2016.) In addition to state level measures, the City of Yucaipa GHG reduction measures related to residential and commercial solar installations, transportation, wastewater treatment, water conservation, and a Performance Standard for new development (Table 3-69). The City’s General Plan includes policies and programs that broadly support energy efficiency and sustainability across all sectors, even if the City did not select a specific GHG reduction measure within the sector as part of this Reduction Plan. Relevant General Plan policies for the specific reduction measures the City selected are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.24.4.1 Building Energy

Energy-1. Building Energy Efficiency

- **HN-3.7:** Resource Conservation. Design and build homes to incorporate cost-effective best practices in energy conservation and water conservation (including dual plumbing for recycled water) that will effectively address and comply with state and federal mandates.
- **S-7.5:** Energy Usage. Support the reduction and conservation of energy usage in residential and nonresidential buildings through adoption of building codes, promotion of energy-saving equipment, solar power, and other technology.

Energy-2. Lighting Efficiency

- **CDL-10.14:** Lighting. Exterior lighting should be subdued and avoid glare for occupants of adjacent properties. Lighting should enhance building design, improve safety and security, and wisely use energy; lighting intensity should be sensitive to surrounding properties and other environmental considerations.

Energy-5. Renewable Energy - New Commercial/Industrial

- **S-7.5:** Energy Usage. Support the reduction and conservation of energy usage in residential and nonresidential buildings through adoption of building codes, promotion of energy-saving equipment, solar power, and other technology.

Energy-7. Solar Installation for Existing Housing

- **S-7.5:** Energy Usage. Support the reduction and conservation of energy usage in residential and nonresidential buildings through adoption of building codes, promotion of energy-saving equipment, solar power, and other technology.

Energy-8. Renewable Energy - Existing Commercial/Industrial

- **S-7.5:** Energy Usage. Support the reduction and conservation of energy usage in residential and nonresidential buildings through adoption of building codes, promotion of energy-saving equipment, solar power, and other technology.

3.24.4.2 On-Road

- **CDL-9.1:** Land Use Mix. Allow a sustainable mix of quasi-public/institutional and educational uses, housing (including faculty, student, and veteran-student housing), and a range of commercial uses, including office and retail, throughout the overlay area.
- **CDL-9.2:** Sustainable Development. Promote infill, transit-oriented development, and other forms of sustainable development on or adjacent to the College Village site.
- **CDL-9.3:** Pedestrian Design. Provide enhanced pedestrian amenities and improvements, including benches, pedestrian-scale lighting, theme paving, sidewalk improvements, and fully accessible ramp improvements at intersections.
- **PR-3.1:** Trail Development. Develop a multipurpose trail system for hiking, biking, and equestrians throughout Yucaipa, focusing on drainage channels, hillsides, parks, and other public use areas.
- **PR-3.2:** Trail Access. Trails that navigate through residential neighborhoods shall be designed to be unobtrusive, respect the privacy of bordering residences, and not detract from the safety of neighborhoods.
- **T-1.5:** Multimodal Access. Assess roadway operations for new development and infrastructure projects so that roadways can accommodate safe and convenient access and travel for all users, including motorists, bicyclists, pedestrians, and transit users.
- **T-2.3:** Advanced Technology. Utilize advanced technology, intelligent transportation systems, and traffic signal synchronization to improve traffic flow on arterial streets and reduce greenhouse gas emissions.
- **T-2.5:** Environmental Concerns. Minimize environmental impacts from the construction, use, and improvement of roadways on air and water quality, heat island effects, noise levels, view sheds, street-level aesthetics, drainage, and stormwater runoff whenever feasible.
- **Goal T-3:** An interconnected network of bicycle and pedestrian infrastructure that is safe, efficient, and accessible for walkers and bicyclists.
- **S-7.1:** Integrated Planning. Integrate air quality planning with land use, economic development, and transportation-related planning to allow for the control and management of air quality.

OnRoad-1. Alternative Fueled Transit Fleets

- **S-7.6:** Greenhouse Gas Reductions. Reduce communitywide greenhouse gas emissions locally through the implementation of Yucaipa's Climate Action Plan; actively support regional efforts to reduce greenhouse gases throughout the county.

OnRoad-2. Encourage Use of Mass Transit

- **CDL-9.6:** Multimodal Access. Improve transit, bicycle, and pedestrian access from the site to the college and to other local and regional destinations; internal pedestrian pathways should feed into existing trails at Crafton Hills College and other trails in the area.
- **Goal T-4:** Transit Services. Comprehensive transit services that improves mobility and connectivity, reduces single-occupancy vehicle trips and related greenhouse gas emissions, and improves air quality.
- **S-7.2:** Transportation Sources. Encourage the expansion of transit, buildout of the pedestrian and bicycle route network, support of regional ride-share programs, and other efforts to reduce vehicle miles travelled from Yucaipa and associated vehicle emissions.
- **S-7.4:** Regional Cooperation. Work with the South Coast Air Quality Management District, San Bernardino Association of Governments, local jurisdictions, and other agencies and stakeholders in implementing programs that reduce air pollution.

OnRoad-5. Community Fleet Electrification

- **S-7.6:** Greenhouse Gas Reductions. Reduce communitywide greenhouse gas emissions locally through the implementation of Yucaipa’s Climate Action Plan; actively support regional efforts to reduce greenhouse gases throughout the county.

3.24.4.3 Off-Road

OffRoad-1. Electric-Powered Construction Equipment

- **S-7.5:** Energy Usage. Support the reduction and conservation of energy usage in residential and nonresidential buildings through adoption of building codes, promotion of energy-saving equipment, solar power, and other technology.

OffRoad-2. Idling Ordinance

- **S-7.6:** Greenhouse Gas Reductions. Reduce communitywide greenhouse gas emissions locally through the implementation of Yucaipa’s Climate Action Plan; actively support regional efforts to reduce greenhouse gases throughout the county.

OffRoad-3. Electric Landscaping Equipment

- **S-7.5:** Energy Usage. Support the reduction and conservation of energy usage in residential and nonresidential buildings through adoption of building codes, promotion of energy-saving equipment, solar power, and other technology.

3.24.4.4 Solid Waste Management

Waste-2. Waste Diversion and Reduction

- **CDL-10.13:** Sustainable Designs. Designs should incorporate sustainability concepts: incorporate measures to wisely reduce, conserve, or manage energy and water; control off-site drainage; and recycle construction and demolition debris as practical and cost-effective.
- **Goal PSF-9:** Waste Management. A cost-effective, integrated waste management system that meets or exceeds recycling and waste diversion mandates and community expectations.

3.24.4.5 Wastewater Treatment

- **CDL-8.2:** Infrastructure. Improve the circulation, water, sewer, and drainage infrastructure along Outer Highway and Dunlap Boulevard to attract reinvestment in the Dunlap Industrial Corridor and along the freeway.
- **PSF-5.2:** Water Supply Infrastructure. Work with water providers to plan, build, and manage a water supply, treatment, storage, and distribution system capable of ensuring reliable water supplies to Yucaipa.

3.24.4.6 Water Conveyance

- **CDL-3.1:** Public Landscaping. Ensure that all public landscaping in public right-of-ways (landscaping outside of parks) is attractive, adequately maintained, and utilizes California native, drought-tolerant, and/or other sustainable plant material.
- **CDL-7.9:** Area Resources. Protect and preserve sensitive wildlife habitat, waterways, wildlife corridors, cultural and paleontological resources, and other assets in accordance with state and federal law.
- **CDL-10.13:** Sustainable Designs. Designs should incorporate sustainability concepts: incorporate measures to wisely reduce, conserve, or manage energy and water; control off-site drainage; and recycle construction and demolition debris as practical and cost-effective.
- **CDL-10.15:** Landscaping. Implement creative landscape design transitions and buffers to create visual interest and reduce conflicts between different land uses. Promote water conservation with natural landscaping.
- **HN-3.7:** Resource Conservation. Design and build homes to incorporate cost-effective best practices in energy conservation and water conservation (including dual plumbing for recycled water) that will effectively address and comply with state and federal mandates.
- **PSF-5.4:** Use of Recycled Water. Increase use of recycled water in development projects and landscaping; implement best practices (e.g., dual plumbing) to expand recycled water use when safe, practical, and available.
- **PSF-5.5:** Water Conservation. Support water conservation measures that comply with state and federal legislation and that are consistent with measures adopted in the urban water management plan.
- **PSF-5.7:** Groundwater Management. Continue to pursue capital projects that stabilize groundwater levels, recharge the aquifer, and ensure water demands do not exceed the sustainable groundwater supply.

3.25 Town of Yucca Valley



3.25.1 Town Summary

Yucca Valley is located the desert region east of the San Bernardino Mountains, north of Joshua Tree National Park in southern San Bernardino County. This area, known as the Morongo Basin, is part of the Mojave Desert. Yucca Valley is 20 miles west of Twentynine Palms and 35 miles north of Palm Springs. At an altitude of 3,300 feet, Yucca Valley’s climate is more moderate than other desert jurisdictions. Yucca Valley serves as a commercial and residential center for the Morongo Valley, supporting the major economic drivers in the region, Joshua Tree National Park, and the U.S. Marine Corps Facility. Yucca Valley is known for its rural desert and quiet life, natural vistas, and access to natural areas in both the mountains and the desert. The Town’s general plan land use element allocates nearly 90% of the land area to residential land uses. The Town’s GHG inventory and reductions selections reflect these land uses.

The town’s population in 2016 was 21,445 (20,700 in 2010) and is projected to grow to 23,447 by 2030. Yucca Valley’s demographic composition in 2018 was 67.4% Non-Hispanic White, 6.2% Non-Hispanic Black, 1.3% Non-Hispanic American Indian or Alaska Native, 1.4% Non-Hispanic Asian, and 4.9% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 18.8%. The majority of the town’s population is White, at 67.4% compared to the SCAG regional average of 31.4%.

Table 3-70 presents socioeconomic data for Yucca Valley, including population, housing, and employment (SBCOG, 2019).

Table 3-70. Socioeconomic Data for Yucca Valley

Category	2016	2030	2045
Population	21,445	23,447	25,810
Households	8,358	9,566	10,861
Jobs	6,937	8,857	10,914



3.25.2 Emission Reductions

Yucca Valley selected a goal to reduce its community GHG emissions to a level that is 40% below its 2020 GHG emissions level by 2030. The Town will meet and exceed this goal through a combination of state (~80%) and local (~20%) efforts. The Pavley vehicle standards, the state’s low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in Yucca Valley’s on-road, solid waste and building energy sectors in 2030. An additional reduction of 22,158 MTCO₂e will be achieved primarily through the following local measures, in order of reductions achieved: Waste Diversion and Reduction (Waste-2); Solar Installation for Existing Commercial/Industrial Facilities (Energy-8); and Solar Installation for Existing Housing (Energy-7). Yucca Valley’s reduction plan has

the greatest impacts on GHG emissions in the on-road transportation, waste, and building energy sectors.

The bars in Figure 3-70 show Yucca Valley’s 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the town’s emissions reduction target (i.e., 40% below the 2020 emissions level). The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total (“2030 plan”), representing the total emissions reductions achieved in 2030. As stated above, state reductions account for the majority (~80%) of the total reductions needed to achieve the 2030 target.

Figure 3-71 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or “Reduction Plan” scenarios. The largest emissions contributions are in the on-road transportation, building energy, and waste emissions sectors.

Table 3-71 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction (“Reduction Plan”) results by sector. It shows the percent reduction in each sector’s emissions in 2030 and demonstrates that Yucca Valley exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the on-road transportation, waste, and building energy sectors.

Figure 3-72 presents emission reductions by sector and by control (i.e., state control versus local or town control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are in the building energy and waste sectors.

Figure 3-70. Emissions Reduction Profile for Yucca Valley

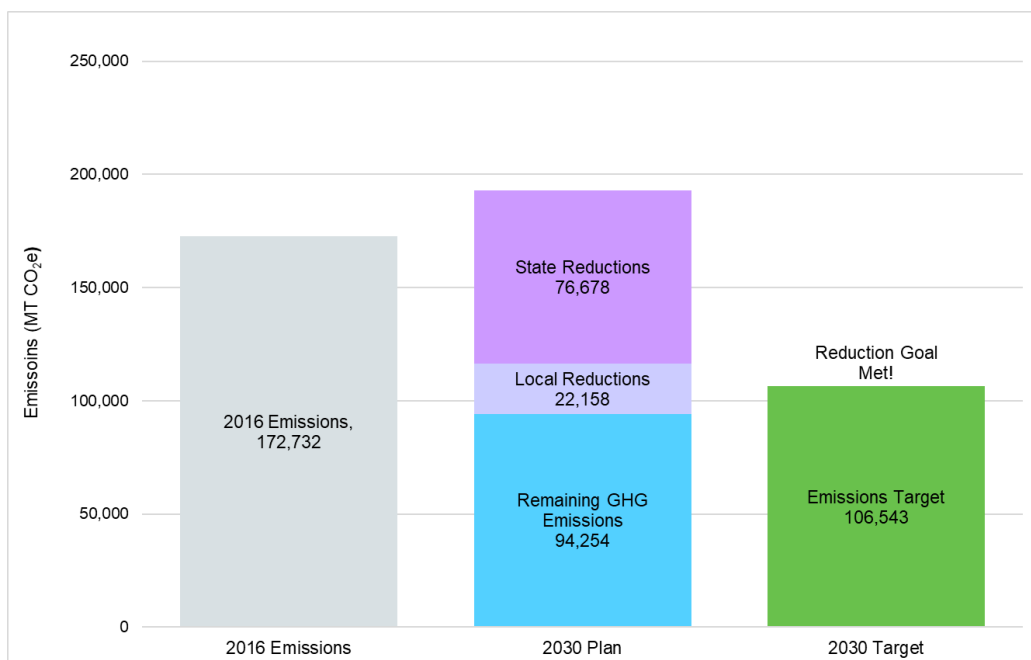


Figure 3-71. Emissions by Sector for Yucca Valley

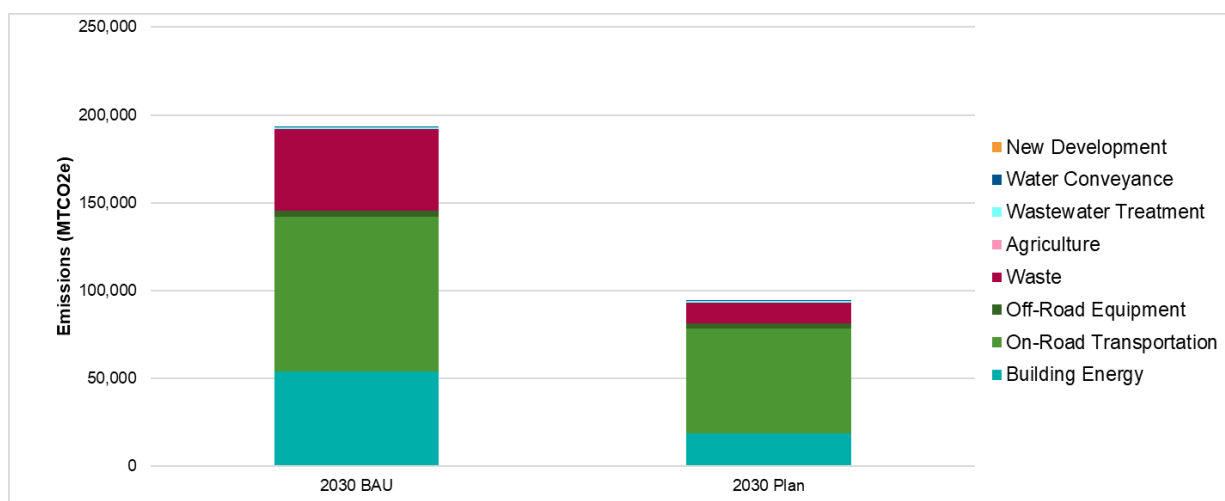


Table 3-71. Emission Reductions by Sector for Yucca Valley

Sector	2016 Emissions (MTCO _{2e})	2030 BAU (MTCO _{2e})	2030 Reductions (MTCO _{2e})	2030 Emissions with Reduction Plan (MTCO _{2e})	Reduction (percent)
Building Energy	46,334	53,799	34,850	18,949	64.8%
On-Road Transportation	78,565	88,250	28,801	59,449	32.6%
Off-Road Equipment	2,386	3,199	72	3,127	2.3%
Waste	42,706	46,694	35,034	11,660	75.0%
Agriculture	0	0	0	0	NA
Wastewater Treatment	2,347	735	0	735	0.0%
Water Conveyance	394	414	79	334	19.2%
GHG Performance Standard*	-	-	-	-	-
Total	172,732	193,090	98,836	94,254	51.2%
Goal	-	-	-	106,543	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	12,289	-
Per-Capita Emissions	-	-	-	-	-
Per-Job Emissions	-	-	-	-	-
Excluded Emissions: Stationary Sources	-	-	-	-	-

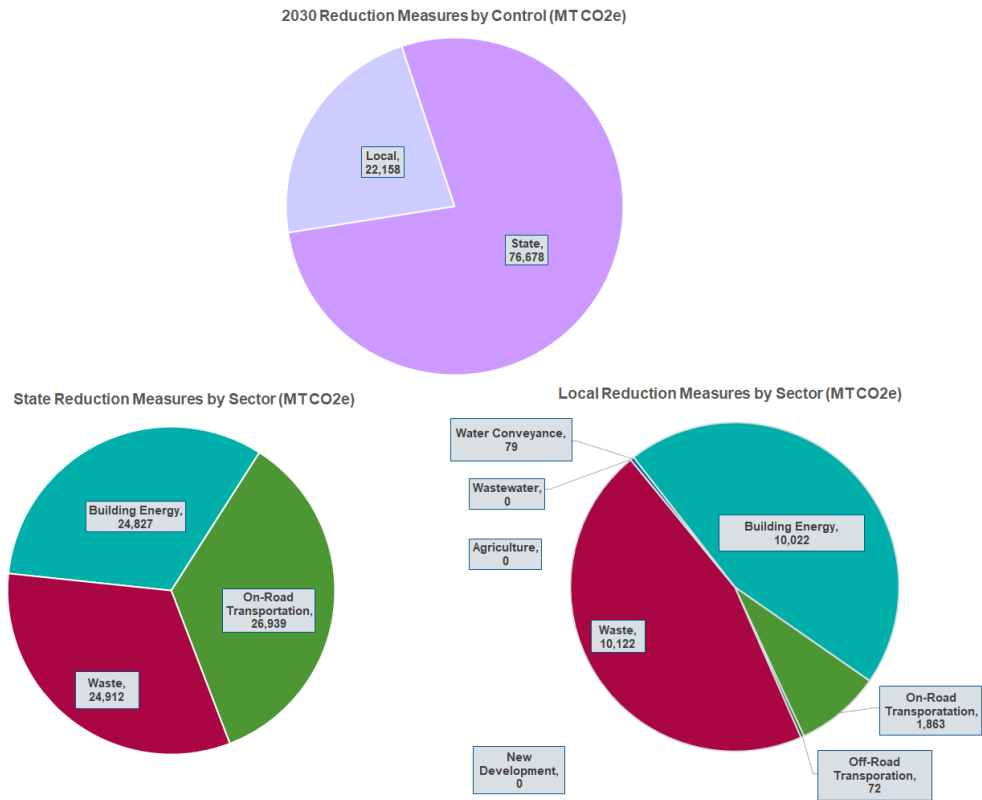
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City’s reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-72. Emission Reductions by Control and by Sector for Yucca Valley



3.25.3 Reduction Measures

Table 3-72 presents each reduction measure evaluated for Yucca Valley. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-72. GHG Reduction Measures and Estimated 2030 reductions for Yucca Valley

Measure Number	Measure Description	Reductions (MTCO_{2e})
State Measures		
State-SB 100	SB 100	15,251
State-SB 350	SB 350	7,876
State-T24	Title 24 (Energy Efficiency Standards)	1,597
State-Solar Water Heater	Solar Water Heaters (Residential)	19
State-Increased CHP	Increased Combined Heat and Power (Commercial)	85
State-OnRoad	State Fuel Efficiency Measures	26,939
State-SB 1383	Methane Capture	24,912
Total State Reductions		76,678
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	1,114
Energy-2	Lighting Efficiency	158
Energy-3	All Electric Buildings	0
Energy-5	Renewable Energy – New Commercial/Industrial	614
Energy-6	Solar Energy for Warehouse Space	0
Energy-7	Solar Installation for Existing Housing	2,605
Energy-8	Solar Installation for Existing Commercial/Industrial	4,577
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	0
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	82
OnRoad-2	Encourage Use of Mass Transit	458
OnRoad-3	Transportation Demand Management and Synchronization	613
OnRoad-4	Expand Bike Routes	554
OnRoad-5	Community Fleet Electrification	155
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	31
OffRoad-2	Idling Ordinance	33
OffRoad-3	Electric Landscaping Equipment	9
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	10,122
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	-
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	0
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	0
<i>Water Conveyance</i>		

Water-1	Require Tier 1 Voluntary CALGreen Standards for New Construction	257
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	698
Water-3	Water-Efficient Landscaping Practices	79
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	0
Total Local Reductions		22,158
Total Reductions		98,836

Notes:

Values may not sum due to rounding.

3.25.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the Town of Yucca Valley's GHG reduction measures or would contribute to GHG reductions and sustainable practices in the Town. All policies listed below are from the Yucca Valley 2014 General Plan unless otherwise noted (Yucca Valley, 2014). In addition to state level measures, the Town of Yucca Valley selected GHG reduction measures related to residential and commercial solar installations, energy efficiency in existing buildings and a Performance Standard for new development (Table 3-72). The Town's General Plan includes policies and programs that broadly support energy efficiency and sustainability across all sectors, even if the Town did not select a specific GHG reduction measure within the sector as part of this Reduction Plan. Relevant General Plan policies for the specific reduction measures the Town selected are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

3.25.4.1 Building Energy

Energy-1. Building Energy Efficiency

- **Policy H2-2:** Encourage new development and rehabilitation efforts to maximize energy efficiency through architectural and landscape design and the use of renewable resources and conservation.
- **Program H2-5:** Encourage the use of LEED design principles and other energy efficiency programs to lower energy costs for residents in the long term. Applicants shall be encouraged to use LEED principles in their designs during the pre-application meeting and application review process.
- **Policy OSC 9-1:** Develop, promote, and implement long-term energy efficiency and demand management policies and standards for Town facilities, vehicles, and new development.

Energy-2. Lighting Efficiency

- **Policy H2-2:** Encourage new development and rehabilitation efforts to maximize energy efficiency through architectural and landscape design and the use of renewable resources and conservation.

Energy-5. Renewable Energy – New Commercial/Industrial

- **Policy OSC 11-2:** Encourage new development to be designed to take advantage of the desert climate through solar orientation, shading patterns, and other green building practices and technologies.
- **Policy OSC 9-3:** Encourage the use of clean and/or renewable alternative energy sources for transportation, heating, cooling, and construction.
- **Policy OSC 9-7:** Encourage development proposals to participate in state, federal, and/or regional solar rebate and incentive programs.
- **Policy OSC 9-8:** Encourage new construction provided for in whole or in part with Town funds to incorporate passive solar design features, such as daylighting and passive solar heating, where feasible.
- **Policy OSC 9-9:** Promote building design and construction that integrates alternative energy systems, including but not limited to solar, thermal, photovoltaics, and other clean energy systems.
- **Policy OSC 9-2:** Support the development of renewable energy generation within the Town, provided that significant adverse environmental impacts associated with such development can be successfully mitigated.

Energy-6. Solar Energy for Warehouse Space

- **GOAL OSC 9:** Conservation of energy and fuels of all types and promotion of a sustainable energy supply.
- **Policy OSC 9-3:** Encourage the use of clean and/or renewable alternative energy sources for transportation, heating, cooling, and construction.
- **Policy OSC 11-1:** Continue to participate in and support the provisions of the San Bernardino Regional Greenhouse Gas Reduction Plan.

Energy-7. Solar Installation for Existing Housing

- **GOAL OSC 9:** Conservation of energy and fuels of all types and promotion of a sustainable energy supply.
- **Policy OSC 9-3:** Encourage the use of clean and/or renewable alternative energy sources for transportation, heating, cooling, and construction.
- **Policy OSC 11-1:** Continue to participate in and support the provisions of the San Bernardino Regional Greenhouse Gas Reduction Plan.

Energy-8. Renewable Energy - Existing Commercial/Industrial

- **GOAL OSC 9** Conservation of energy and fuels of all types and promotion of a sustainable energy supply.
- **Policy OSC 9-3** Encourage the use of clean and/or renewable alternative energy sources for transportation, heating, cooling, and construction.
- **Policy OSC 11-1** Continue to participate in and support the provisions of the San Bernardino Regional Greenhouse Gas Reduction Plan.

3.25.4.2 On-Road

- **Policy C 1-7:** Encourage development designs that integrate multiple modes of access, including pedestrian, bicycle, and public transportation.
- **Policy C 1-8:** Apply complete street strategies that accommodate pedestrian, bicycle, and transit modes whenever practicable and feasible.
- **Policy C 1-2:** Pursue funding, including updating the transportation impact mitigation fee program, to assist in implementing the transportation system by expanding its roadway capacity, pedestrian sidewalk facilities, bicycle facilities, and trail facilities.
- **Policy C 1-5:** Prioritize low-cost transportation enhancements, such as signal timing improvements, that maximize the Town's return on infrastructure investment related to the efficiency of the transportation system.
- **Policy C 1-14:** Encourage employers to support Transportation Demand Management techniques, such as bus transit passes or other measures that reduce reliance on the single-occupant vehicle.
- **Policy C 1-17:** Ensure funding is available to implement and maintain signal coordination.

OnRoad-1. Alternative Fueled Transit Fleets

- **Policy OSC 9-3:** Encourage the use of clean and/or renewable alternative energy sources for transportation, heating, cooling, and construction.

OnRoad-2. Encourage Use of Mass Transit

- **Policy C 1-10:** Encourage MBTA to provide enhanced bus service to employment areas outside of the Town, such as the Coachella Valley or other nearby areas in the County of San Bernardino.
- **Policy C 1-11:** Encourage MBTA to work with area religious facilities or other sites where underutilized parking or hours of operation could provide opportunities for implementing shared park-and-ride facilities.
- **Policy C 1-12:** Encourage MBTA to implement regional transportation solutions that reduce vehicle miles traveled and greenhouse gas emissions.
- **Policy OSC 9-6:** Promote use of ride-sharing and mass transit as means of reducing transportation-related energy demand.

OnRoad-5. Community Fleet Electrification

- **Policy OSC 9-3:** Encourage the use of clean and/or renewable alternative energy sources for transportation, heating, cooling, and construction.

3.25.4.3 Solid Waste Management

Waste-2. Waste Diversion and Reduction

- **Policy OSC 9-4:** Encourage the reduction and recycling of household and business waste.
- **Policy OSC 9-5:** Ensure that any planned construction, demolition, addition, alteration, repair, remodel, landscaping, or grading projects divert all reusable, salvageable, and recyclable debris from landfill disposal.

Wastewater-2. Equipment Upgrades and Wastewater Treatment Plants

- **Policy LU 2-9:** Coordinate with the Hi-Desert Water District to facilitate development of a new wastewater treatment plant in the area.

3.26 Unincorporated San Bernardino County

3.26.1 Summary

Unincorporated San Bernardino County encompasses all unincorporated communities throughout San Bernardino County. Zoning in Unincorporated San Bernardino County is regulated by the County of San Bernardino.

San Bernardino County is bordered by Inyo County to the north, Orange and Riverside counties to the south, the states of Arizona and Nevada to the east, and Kern and Los Angeles counties to the west. San Bernardino County is the largest county in the nation. The county is defined primarily by its four geographical subregions—the Valley, Mountain, North Desert, and East Desert. For the county as a whole, most acreage is undeveloped (95%), followed by single-family residential (1.2%), rural residential (1%), transportation (0.8%), and industrial (0.8%). In the unincorporated areas, the most common land use is undeveloped (96%), followed by rural residential (1%), industrial (0.6%), and transportation, communications, and utilities (0.6%) (County of San Bernardino, 2019).

The Valley Region is the most populated and urbanized in the county. About 85% of the region is in cities. Nonetheless, when including both incorporated and unincorporated areas, the most widespread existing land use in the Valley Region is undeveloped (30%), followed by single-family residential (27%), then transportation, communications, and utilities (1%), and industrial (10%). When only considering unincorporated lands, the Valley Region is 40% undeveloped, 24% single-family residential, 9% industrial, and 12% transportation, communications, and utilities (County of San Bernardino, 2019).

The Mountain Region is dominated by federally managed public lands, including the San Bernardino National Forest, Angeles National Forest, and Sand to Snow National Monument. Approximately 7% of the region is developed, and less than 1% is within a city. When including incorporated lands, the Mountain Region is 93% undeveloped, 2.5% single-family residential, 1% rural residential, and 1% water. The remaining 2.5% is a mixture of commercial and services, transportation, communications and utilities, open space and recreational, agricultural, industrial, educational, and public facility uses. Undeveloped comprises 93% of unincorporated lands in the Mountain region, followed by single-family residential (2%), rural residential (1%), and water (1%) (County of San Bernardino 2019).

The North Desert region includes large swaths of federally administered lands, including the Mojave National Preserve, the southern end of Death Valley National Park, portions of the Mojave Desert, and several military installations. Approximately 2% of the region is developed. Overall, the most common land use is undeveloped (96%) followed by military installations (1%), rural residential (1%), single-family residential (1%), and transportation, communications, and utilities (1%). In unincorporated areas the most common land use in the North Desert region is undeveloped (97%), followed by rural residential (0.8%), military installations (0.6%), and transportation, communications, and utilities (0.6%) (County of San Bernardino, 2019).

The East Desert region is characterized by vacant land and very low intensity uses. Approximately 4% of the region is developed. The most common uses are undeveloped (95%), rural residential (2%), and industrial (1%). Similarly, when considering only unincorporated areas, the most

common land uses are also undeveloped (96%), rural residential (2%), and industrial (1%) (County of San Bernardino, 2019).

The area’s population in 2016 was 308,079, and the demographic composition was 45.5% Non-Hispanic White, 4.2% Non-Hispanic Black, 0.4% Non-Hispanic American Indian or Alaska Native, 2.6% Non-Hispanic Asian, and 2.5% from all other non-Hispanic races. Persons of Hispanic or Latino origin were 44.8%.

Table 3-73 presents socioeconomic data for Unincorporated San Bernardino County, including population, housing, and employment (SCAG, 2018).

Table 3-73. Socioeconomic Data for Unincorporated San Bernardino County

Category	2016	2030	2045
Population	308,079	328,897	353,053
Households	97,066	105,700	114,950
Employment	58,795	65,587	72,864



San Bernardino County released a Greenhouse Gas Emissions Reduction Plan in 2011 for the 1.9 million acres of land within San Bernardino County that fall under the County Board of Supervisor's jurisdiction (County of San Bernardino, 2011).

The plan sets out a comprehensive set of actions to reduce the County’s GHG emissions to 15% below 2011 levels by 2020, consistent with the AB 32 Scoping Plan. These actions address both internal emissions (emissions associated with County government operations including those associated with County buildings, fleet operations, solid waste management, and other government functions), and external emissions such as emissions from transportation, housing, community waste and recycling, industry, forestry, water, agriculture, electricity, and natural gas sectors (County of San Bernardino, 2011).

3.26.2 Emission Reductions

Unincorporated San Bernardino selected a goal to reduce its community GHG emissions to a level that is 40% below its 2020 GHG emissions level by 2030. The area will meet and exceed this goal through a combination of state (~80%) and local (~20%) efforts. The Pavley vehicle standards, the state’s low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in the on-road, solid waste and building energy sectors in 2030. An additional reduction of 254,625 MTCO_{2e} will be achieved primarily through the following local measures, in order of reductions achieved: Solar Installation for Existing Commercial/Industrial (Energy-8); Waste Diversion and Reduction (Waste-2); Solar Installation for Existing Housing (Energy-7). Unincorporated San Bernardino County’s reduction plan has the greatest impacts on GHG emissions in the waste, on-road transportation, and building energy sectors.

The bars in Figure 3-73 show Unincorporated San Bernardino County’s 2016 GHG emissions total, 2030 BAU emissions forecast total, and the total emissions remaining after meeting the County’s emissions reduction target. The contribution of state and local reductions are overlaid on the 2030 BAU emissions forecast total (“2030 plan”), representing the total emissions reductions achieved in

2030. As stated above, state reductions account for the majority (~80%) of the total reductions needed to achieve the 2030 target.

Figure 3-74 presents emissions by sector, for both the 2030 BAU and the 2030 reduction or “Reduction Plan” scenarios. The largest emissions contributions are in the on-road transportation and building energy emissions sectors.

Table 3-74 summarizes the 2016 inventory, 2030 BAU forecast, and GHG reduction (“Reduction Plan”) results by sector. It shows the percent reduction in each sector’s emissions in 2030 and demonstrates that Unincorporated San Bernardino County exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the waste, on-road transportation, and water conveyance sectors.

Figure 3-75 presents emission reductions by sector and by control (i.e., state control versus local or town control). As stated previously, the majority of emissions reductions are due to state measures. Of the state measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are in the building energy sector.

Figure 3-73. Emissions Reduction Profile for Unincorporated San Bernardino County

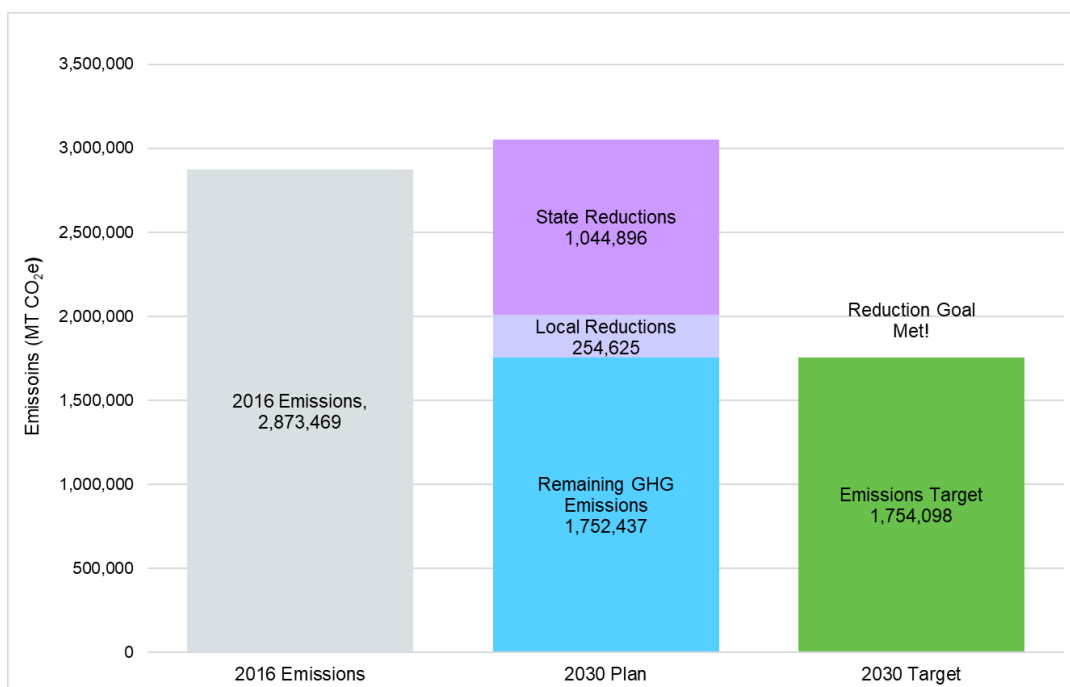


Figure 3-74. Emissions by Sector for Unincorporated San Bernardino County

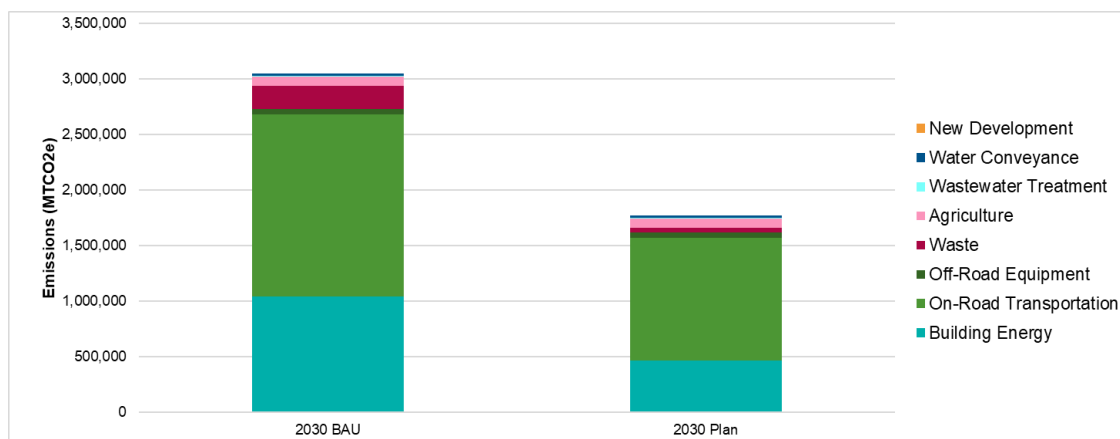


Table 3-74. Emission Reductions by Sector for Unincorporated San Bernardino County

Sector	2016 Emissions (MTCO ₂ e)	2030 BAU (MTCO ₂ e)	2030 Reductions (MTCO ₂ e)	2030 Emissions with Reduction Plan (MTCO ₂ e)	Reduction (percent)
Building Energy	948,183	1,043,581	578,818	464,763	55.5%
On-Road Transportation	1,519,146	1,641,251	531,893	1,109,358	32.4%
Off-Road Equipment	35,618	44,682	457	44,224	1.0%
Waste	197,260	210,590	168,492	42,098	80.0%
Agriculture	143,146	80,591	0	80,591	0.0%
Wastewater Treatment	9,651	10,304	0	10,304	0.0%
Water Conveyance	20,465	20,960	2,973	17,988	14.2%
GHG Performance Standard*	-	-	16,889	-	-
Total	2,873,469	3,051,959	1,299,521	1,752,437	42.6%
Goal	-	-	-	1,754,098	
Goal Met?	-	-	-	Yes	
Reductions Beyond Goal	-	-	-	1,660	-

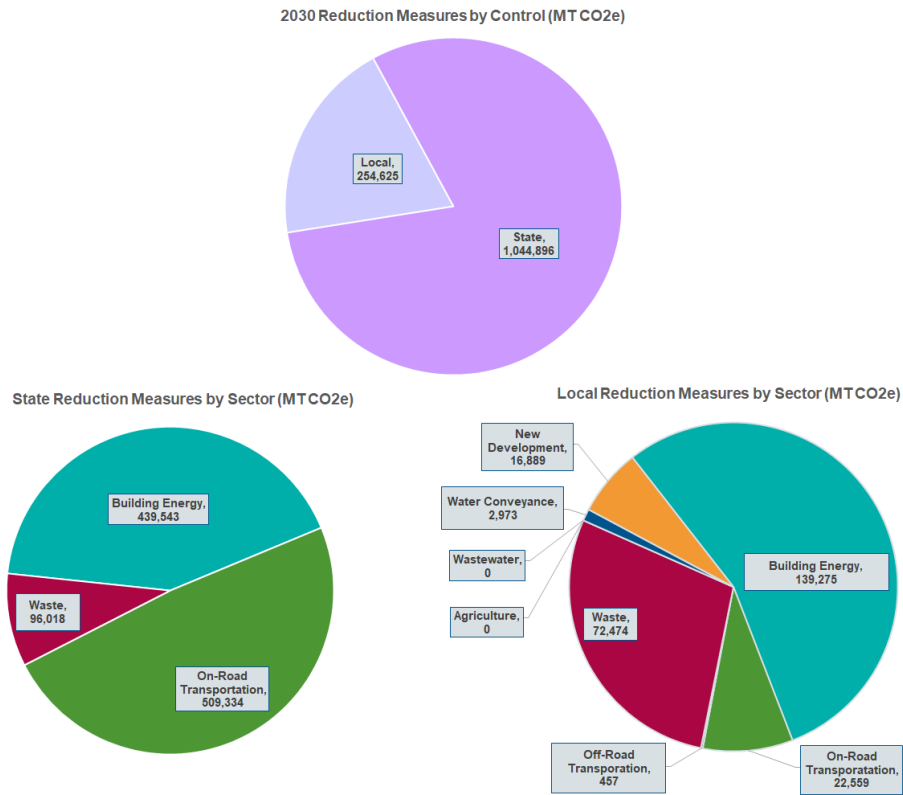
Notes:

Values may not sum due to rounding.

Dashes indicate no value or not applicable.

* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City’s reduction goal by promoting reductions in multiple sectors. See Chapter 4 for a complete description of this measure.

Figure 3-75. Emission Reductions by Control and by Sector for Unincorporated San Bernardino County



3.26.3 Reduction Measures

Table 3-75 presents each reduction measure evaluated for Unincorporated San Bernardino County. For each measure, the short title and estimated GHG reductions in 2030 are listed. Measures are organized by state control and local control and listed by sector.

Table 3-75. GHG Reduction Measures and Estimated 2030 reductions for Unincorporated San Bernardino County

Measure Number	Measure Description	Reductions (MTCO _{2e})
State Measures		
State-SB 100	SB 100	303,807
State-SB 350	SB 350	132,965
State-T24	Title 24 (Energy Efficiency Standards)	1,302
State-Solar Water Heater	Solar Water Heaters (Residential)	213
State-Increased CHP	Increased Combined Heat and Power (Commercial)	1,257
State-OnRoad	State Fuel Efficiency Measures	509,334
State-SB 1383	Methane Capture	96,018
Total State Reductions		1,044,896
Local Measures		
<i>Building Energy</i>		
Energy-1	Building Energy Efficiency	20,775
Energy-2	Lighting Efficiency	0
Energy-3	All Electric Buildings	0
Energy-5	Renewable Energy – New Commercial/Industrial	0
Energy-6	Solar Energy for Warehouse Space	0
Energy-7	Solar Installation for Existing Housing	30,274
Energy-8	Solar Installation for Existing Commercial/Industrial	88,198
Energy-9	Rooftop Gardens	0
Energy-10	Urban Tree Planting for Shading and Energy Savings	28
<i>On-Road Transportation</i>		
OnRoad-1	Alternative Fueled Transit Fleets	0
OnRoad-2	Encourage Use of Mass Transit	0
OnRoad-3	Transportation Demand Management and Synchronization	11,319
OnRoad-4	Expand Bike Routes	11,239
OnRoad-5	Community Fleet Electrification	0
<i>Off-Road Equipment</i>		
OffRoad-1	Electric-Powered Construction Equipment	0
OffRoad-2	Idling Ordinance	457
OffRoad-3	Electric Landscaping Equipment	0
<i>Waste</i>		
Waste-1	Methane Capture - Local	0
Waste-2	Waste Diversion and Reduction	72,474
<i>Agriculture</i>		
Agriculture-3	Methane Capture at Large Dairies	0
<i>Wastewater</i>		
Wastewater-1	Methane Recovery at Wastewater Treatment Plants	0
Wastewater-2	Equipment Upgrades and Wastewater Treatment Plants	0

<i>Water Conveyance</i>		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New Construction	0
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	0
Water-3	Water-Efficient Landscaping Practices	2,973
<i>GHG Performance Standard for New Development</i>		
PS-1	GHG Performance Standard for New Development (40% below projected BAU emissions for the project)	16,889
Total Local Reductions		254,625
Total Reductions		1,299,521

Notes:

Values may not sum due to rounding.

4.1 Introduction

This section contains a detailed description of all reduction strategies discussed in the Reduction Plan. Strategies are organized below into state and local categories. For local strategies, the following sectors are included: energy efficiency, renewable energy, land use, on-road transportation, off-road equipment, solid waste management, agriculture, wastewater treatment and discharge, and new development. Each sector description includes an overview, summary results, relative importance, and major opportunities for reductions.

For each strategy, the following information is provided.

- Strategy Description
- Entity Responsible for Implementation
- Strategy Implementation Details
- Level of Commitment
- Co-Benefits

At the end of this chapter, Table 4-1 summarizes the GHG reductions strategies and indicates the number of jurisdictions participating, and percent contribution to total state or local GHG reductions achieved for the region based on the reductions of the jurisdictions that selected each strategy. Jurisdictions differed in which strategies they chose; all jurisdictions did not select all strategies. Thus, the level of participation in each strategy differs among jurisdictions. All jurisdictions benefitted from state strategies.

The methods used for the reduction strategies calculations are included in Appendix B of this GHG Reduction Plan. The strategies selected by each Partnership jurisdiction and the reductions potential for each jurisdiction are presented in Chapter 3.

4.2 State Strategies

Actions undertaken by the state will contribute to GHG reductions in each Partnership jurisdiction. For example, the state requires electric utility companies to increase their procurement of renewable resources to specified levels by 2030 and 2045. Renewable resources such as wind and solar power produce the same amount of energy as coal and other traditional sources, but do not emit any GHGs. By generating a greater amount of energy through renewable resources, electricity provided to each jurisdiction would be cleaner and less GHG intensive than if the state had not required the renewable standard. Even though state measures do not always require local government action, emissions reductions achieved by this and other state measures would help lower GHG emissions in each jurisdiction. This Reduction Plan includes seven statewide initiatives that will contribute to GHG reductions in each jurisdiction. The majority of these programs would improve building energy efficiency and renewable energy generation. Specifically, Title 24 energy efficiency standards for new residential and nonresidential buildings would require building shells

and components to be designed to conserve energy and water. Similarly, energy efficiency strategies required by SB 350 would double energy efficiency savings by 2030. Finally, the state's RPS would increase the amount of electricity generated by renewable resources.

Over the past several decades, California has become a leader in establishing initiatives to reduce fuel consumption and on-road vehicle emissions. CARB has also adopted the LCFS, which requires a 20% reduction in the carbon intensity of California's transportation fuels by 2030, and has outlined several VMT-reducing measures in the 2017 Scoping Plan. Together, these measures would reduce light- and heavy-duty vehicle emissions.

A complete list of state programs included in the Reduction Plan, as well as anticipated GHG reductions, is presented below. Appendix B provides more details for each state measure.

4.2.1 State-1: Senate Bill 1078 (2002), Senate Bill 107 (2006), Senate Bill 2 (2011), and SB 100 (2018) Renewable Portfolio Standard

Measure Description: This measure obligates IOUs, ESPs, and CCAs to procure 33% of retail sales per year from eligible renewable sources by 2020 and sets forth a longer-term target of procuring for 2030 and 2045.

Entity Responsible for Implementation: IOUs, ESPs, and CCAs are responsible for implementing this measure.

Measure Implementation Details: The responsible entities will procure incremental amounts of retail sales each year from renewable sources. By 2020, 33% of retail sales will be procured from renewable sources, 50% of retail sales will be procured from renewable sources by 2030, and 100% of retail sales will be procured from renewable sources by 2045.

Co-Benefits: Reduced air pollution, waste reduction, energy diversity and security, reduced price volatility, economic development, and public health improvements.

4.2.2 State-2: Title 24 Standards for Non-Residential and Residential Buildings (Energy Efficiency Standards and CALGreen)

Measure Description: Requires that building shells and building components be designed to conserve energy and water. Mandatory and voluntary measures became effective on January 1, 2020, and the guidelines are periodically updated. Local governments are responsible for adoption and enforcement of the standards. The next energy efficiency update of standards will occur in 2022 and the CEC intends to update them approximately every 3 years in future years. Note that in some instances, implementation of the CALGreen *voluntary* measures has been identified by local jurisdictions as part of their selected local measures.

Entity Responsible for Implementation: Local governments are responsible for implementation and enforcement of the standards.

Measure Implementation Details: This measure would be implemented in the Partnership cities gradually as new homes are built.

Co-Benefits: Reduced energy use, reduced air pollution, resource conservation, increased property value, public health improvements, and increased quality of life.

4.2.3 State-3: SB 350 Clean Energy and Pollution Reduction Act

Measure Description: SB 350 requires the state to double statewide energy efficiency savings in electricity and natural gas end uses by 2030.

Entity Responsible for Implementation: The California Energy Commission (CEC), working with state agencies, including the California Public Utilities Commission (CPUC), CARB, California Independent System Operator, large utilities, and electrical corporations.

Measure Implementation Details: This measure would double savings from energy efficiency by 2050.

Co-Benefits: Reduced energy use, reduced air pollution, increased property values, and increased quality of life.

4.2.4 State-4: AB 1470 (Huffman), AB 797 Solar Water Heating

Measure Description: AB 1470 created a 10-year incentive program funded at \$25 million per year to encourage the installation of 200,000 solar water heating systems that offset natural gas use in homes and businesses throughout the state. AB 797 extended the operation of the program through July 31, 2020, reserving 50% of the total program budget for the installation of solar thermal systems in low-income residential housing or in buildings in disadvantaged communities and expanding the program to homeowners that lack access to natural gas, among other things.

Entity Responsible for Implementation: The State of California is responsible for implementing this measure.

Measure Implementation Details: This measure would be implemented gradually as residents replace their heaters with solar water heating systems.

Co-Benefits: Reduced energy use, reduced air pollution, increased property values.

4.2.5 State-5: Co-Generation Facilities

Measure Description: The CPUC administers a Qualifying Facilities and Combined Heat and Power (QF/CHP) Program. Qualifying facilities are co-generation CHP facilities that meet certain size and efficiency criteria. The QF/CHP Settlement is implemented through this program, and requires that California's three largest IOUs (PG&E, SDG&E, and SCE) collectively procure 3,000 MW of capacity from CHP facilities by 2018. The QF/CHP Settlement also requires that California's three largest IOUs reduce GHG emissions by 4.82 MMT by 2020, consistent with targets in the 2017 CARB scoping plan. This goal was modified later by CPUC in 2015's Decision 15-06-028 to 2.72 MMT.

Entity Responsible for Implementation: California's three largest IOUs are responsible for implementing this measure.

Measure Implementation Details: This measure would be implemented by qualifying facilities that sell the energy they generate to IOUs at predetermined prices and conditions.

Co-Benefits: Reduced energy use and reduced air pollution.

4.2.6 State-6a: AB 1493 (Pavley I and II) Greenhouse Reductions from New Passenger Vehicles

Measure Description: AB 1493 (Pavley I), requires CARB to adopt vehicle standards that started lowering GHG emissions from new light-duty autos in 2009. Additional strengthening of the Pavley standards (Pavley II or Advanced Clean Cars measure) has been adopted by California for vehicle model years 2017–2025. Together, the two standards are expected to increase average fuel economy through 2025 and to reduce GHG emissions from the transportation sector in California.¹

Entity Responsible for Implementation: The State of California, EPA, NHTSA, and vehicle manufacturers are responsible for implementing the Pavley and CAFE standards.

Measure Implementation Details: The 2011–2016 standards would be implemented through 2016 and the 2017–2025 standards would be implemented through 2020. Implementation in the Partnership jurisdictions would be gradual through 2016 and 2020 as older vehicles are replaced with more fuel-efficient vehicles.

Co-Benefits: Reduced energy use, reduced air pollution, public health improvements, and energy security.

4.2.7 State-6b: (On-Road) and State-8 (Off-Road): Executive Order S-1-07 Low Carbon Fuel Standard

Measure Description: This measure mandates the following: (1) that a statewide goal be established to reduce the carbon intensity of California’s transportation fuels by at least 10% by 2020, and (2) that a LCFS for transportation fuels be established in California.

Entity Responsible for Implementation: The State of California and vehicle fuel manufacturers are responsible for implementing this measure.

Measure Implementation Details: The standard will be fully implemented by 2020. Implementation in the Partnership jurisdictions would occur as fuel is improved statewide.

Co-Benefits: Reduced air pollution, public health improvements, energy security, reduced price volatility, and economic development.

4.2.8 State-7: AB 32 Methane Capture

Measure Description: The Landfill Methane Rule requires gas collection and control systems on landfills with greater than 450,000 tons of waste-in-place. The rule requires a 40% reduction in

¹ Please note that the new federal SAFE rules finalized in 2020 have lower vehicle standards than what California has adopted (and what the Obama Administration had adopted) and the Trump administration has also withdrawn California’s waiver to set its own standards. California and many other states have challenged the new federal rules in court. This report presumes that California is successful in defending its standards.

landfill methane emission by 2030 from a 2013 baseline. The rule also requires the installation of methane capture technology and associated monitoring systems on all landfills without methane capture with a goal of increasing the facility level methane capture rate to the highest extent feasible (i.e., approaching 100%) The measure also establishes statewide performance standards to maximize methane capture efficiencies.

Entity Responsible for Implementation: Landfill owners and operators are responsible for complying with the landfill regulation.

Measure Implementation Details: This measure would be implemented gradually beginning in 2020 as landfill operators comply.

Co-Benefits: Reduced air pollution, resource conservation, and increased quality of life.

4.3 Local Strategies

4.3.1 Building Energy

Building energy use from residential, commercial, and industrial buildings is a large component of the regional GHG inventory, accounting for 26% of the total regional emissions in 2016. Building energy consumption includes electricity and natural gas usage. Electricity use in buildings results in indirect emissions from the power plants that produce electricity outside of city boundaries. Natural gas consumption by furnaces and other appliances in buildings results in direct emissions where the natural gas is combusted.

The building energy sector is typically the largest or second largest contributor of GHG emissions to a jurisdiction's GHG inventory. Consequently, building energy-related reduction measures typically yield substantial reductions.

Reduction measures to address GHG emissions from building energy use are separated into two categories: energy efficiency and renewable energy. Energy efficiency measures are intended to promote efficient energy usage, whereas renewable energy measures are intended to change the carbon content of electricity.

Energy consumption typically represents a large portion of GHG emissions for regions. Reducing electricity usage and improving energy performance are therefore vital to the Reduction Plan. Energy retrofits have upfront costs, but can result in savings over the long term. In this sector, private residents, businesses, and the municipal governments would incur costs to upgrade to energy efficient technologies but would also realize the resulting energy cost savings. Costs to the city governments would mainly be associated with staff time for development of the incentive programs, as well as costs of retrofits to existing municipal buildings and upfront costs for building new city facilities.

The building energy measures would also result in other benefits for both small and large businesses, as well as households in each jurisdiction. Reductions in electricity use and the generation of renewable energy from clean technologies (e.g., wind, solar) would contribute to reductions of regional criteria pollutants. Less combustion of natural gas may also result in local air quality and public health benefits. Overall, reductions in energy consumption and expenditures would enhance the ability of homeowners and business to withstand unexpected surges in future

energy costs. Energy retrofits would also improve home values and likely contribute to economic growth by providing new jobs within the community.

Tree planting and rooftop gardens would both reduce energy use from the building energy sector and increase the carbon sequestration potential of the cities. Emission reductions occur in the building energy sector; carbon sequestration was not calculated. Land uses strategies related to reducing transportation emissions were addressed separately in Section 4.3.3, *On-Road Transportation*.

Large scale tree planting creates dynamic ecosystems within the Participating jurisdictions that provide environmental and aesthetic benefits. Trees help to clean the air and water, strengthen the quality of place, reduce storm water runoff, create walkable communities, and raise property values. Trees also reduce the heat island effect and provide shading for buildings, reducing air conditioning electricity use. Rooftop gardens provide a cooling effect to the buildings beneath through insulation, reducing energy consumption that would be used to power a central air conditioning system. Reduction measures in this sector are typically the smallest contributor to GHG reductions.

The Reduction Plan includes the following seven building energy measures. Reductions for these measures are presented in Appendix B.

4.3.1.1 Energy Efficiency Measures

Energy-1: Energy Efficiency Incentives and Programs to Promote Energy Efficiency for Existing Buildings

Measure Description: Promote energy efficiency in existing residential and nonresidential buildings, and remove funding barriers to energy-efficiency improvements. The following implementation strategies can be used to help achieve these goals:

- Promote energy efficiency in *residential* buildings:
 - Implement a low-income weatherization program.
 - Partner with community services agencies, utilities, nonprofits, and other entities to incentivize energy-efficiency projects, including HVAC, lighting, water heating equipment, insulation, and weatherization for low-income residents. Residential energy-efficiency projects can be financed through programs such as PACE or California First, which allow property owners to finance improvements that are repaid through an assessment on their property taxes for up to 20 years. Incentives, such as those available from California Energy Upgrade, can also assist. These and similar programs are often administered through the participating local government entity.
 - Launch energy-efficiency campaigns targeted at residents. Provide public education on the need for energy efficiency and emissions reduction programs and incentives.
 - Promote Smart Grid².
- Promote energy efficiency in *nonresidential* buildings:

² Smart Grid refers to an electrical grid that uses digital information and controls technology to improve reliability, security, and efficiency of the grid.

- Incentivize schedule energy-efficiency “tune-ups” of existing buildings. Energy audit and tune-up programs are typically run by the local utility. Jurisdictions would work with utilities to take advantage of energy audit programs for municipal buildings and promote awareness of these programs for private commercial buildings.
- Promote individualized energy management services for large energy users. Jurisdictions would work with utilities to take advantage of energy audit programs for municipal buildings and promote awareness of these programs for private commercial buildings.
- Partner with utilities to leverage the Savings by Design incentive program for commercial projects. The Savings by Design incentive requires efficiency standards to be 10% better than Title 24 energy in order to qualify; up to \$200,000 in performance rebates per project are available.
- Remove funding barriers to energy-efficiency improvements. For example, leverage federal tax credits or local rebates, such as those offered by Southern California Edison. Participate in programs (national, state, or regional) that provide innovative, low-interest financing for energy-efficiency and alternative energy projects. Promote incentives to encourage the use of energy-efficient equipment and lighting. Provide financial incentives for adoption of identified efficiency measures.
 - Launch energy-efficiency campaigns targeted at business. Provide public education on the need for energy efficiency and emissions reduction programs and incentives. Outreach programs can be sponsored by individual jurisdictions or by a region-wide consortium.
 - Remove funding barriers to energy-efficiency improvements. For example, leverage federal tax credits or local rebates, such as those offered by Southern California Edison. Identify funding sources to assist affordable housing managers in incorporating energy-efficient designs and features.
 - Participate in PACE programs such as California First or similar programs, as feasible. These programs allow property owners to finance improvements that are repaid through an assessment on their property taxes for up to 20 years. These and similar programs are often administered through the participating local government entity.

Entity Responsible for Implementation: This measure would be implemented by individual jurisdiction governments and, in part, by utilities. It would also involve collaboration between jurisdictions (sub-regional implementation).

Measure Implementation Details: SBCOG is supporting potential PACE-style funding district development in San Bernardino for interested jurisdictions. To implement this measure, the jurisdiction governments can leverage external funding sources, develop educational campaigns, and other strategies outlined in the measure description. Implementation of this measure would be gradual through 2030 as residents change their energy consumption behavior and as existing buildings undergo energy-efficiency improvements. Implementation would vary by jurisdictions.

Level of Commitment: The jurisdictions selecting this measure would retrofit a portion of existing homes and nonresidential buildings by 2030 based on their selected levels of commitment.

Co-Benefits: Reduced energy use, reduced air pollution, increased property values, public health improvements, and increased quality of life.

Energy-2: Outdoor Lighting Upgrades for Existing Development

Measure Description: Adopt outdoor lighting standards in the zoning ordinance to reduce electricity consumption. This could be achieved by requiring a percentage of outdoor lighting fixtures to use LED bulbs by 2030. The lighting standards could also include the following provisions.

- Encourage lighting along the urban-rural edge, not to exceed one-half the current maximum lighting standard.
- Prohibit continuous all-night outdoor lighting in parks, sport facilities, construction sites, and other relevant areas (unless it compromises safety).
- Implement or exceed CALGreen’s nonresidential voluntary mandatory measures related to outdoor lighting controls and equipment (Section A5.209.3) and outdoor lighting (Section A5.209.4), (i.e., achieve CALGreen Tier 1 lighting standards or otherwise demonstrate that energy efficiency of lighting fixtures exceeds mandatory Title 24 by a minimum 15%).

Entity Responsible for Implementation: The individual jurisdictions governments are responsible for implementing this measure.

Measure Implementation Details: To implement this measure, jurisdiction governments can adopt outdoor lighting standards in their zoning ordinances. Implementation would be gradual through 2030 as an increasing number of outdoor lighting fixtures and traffic lights are replaced with energy-efficient fixtures.

Level of Commitment: Each city selecting this measure would require a certain percentage of all nonresidential outdoor lighting to be LED lights, and a certain percentage of all traffic signals to be LED lights.

Co-Benefits: Reduced energy use, reduced air pollution, increased property values, and increased quality of life.

Energy-3: Building Electrification

Measure Description: Adopt building electrification targets and incentives, for both new commercial and residential buildings and retrofits. Establish a goal that a percentage of new and existing buildings use electric HVAC and water heating systems. This goal could be supported through nonfinancial incentives or streamlined permitting.

Entity Responsible for Implementation: The individual jurisdiction governments are responsible for implementing this measure.

Measure Implementation Details: The jurisdiction governments can each establish a building electrification goal. This measure would be implemented when each jurisdiction adopts an ordinance. Benefits from the measure would be gradual as new buildings are constructed to fully run on electricity and existing buildings are retrofitted. SCE has programs and incentive funding such as rebates for heat pump water heaters, central HVAC heat pumps, and mini split HVAC heat pumps.

Level of Commitment: Each jurisdiction selecting this measure would incentivize a percentage of new and existing buildings to be built to or retrofit to eliminate gas consumption.

Co-Benefits: Reduced energy use, reduced air pollution, resource conservation, increased property values, public health improvement, and increased quality of life.

4.3.1.2 Renewable Energy

Energy-4: Solar Installations for New Commercial/Industrial Development

Measure Description: Establish a goal for solar installations on new commercial and industrial development to be achieved before 2030. Potential goals might be:

- **Aggressive commitment** —30% of energy requirements for new development supplied by onsite solar power.
- **Medium commitment** —15% of energy requirements for new development supplied by onsite solar power.
- **Low commitment**—5% of energy requirements for new development supplied by onsite solar power.

These goals could be supported through nonfinancial incentives or streamlined permitting through the jurisdictions. Primary funding would likely be through state- or utility-level programs or through private funding such as a PPA. Jurisdictions may also act as a resource for connecting project proponents with funding opportunities.

Entity Responsible for Implementation: The individual jurisdiction governments, in coordination with various private companies, are responsible for implementing this measure.

Measure Implementation Details: To implement this measure, the jurisdiction governments can work with private companies to provide funding for solar energy projects. Implementation of this measure would be gradual through 2030 as new commercial and industrial developments are constructed and equipped with solar installations.

Level of Commitment: Each jurisdiction selecting this measure would establish a percentage goal of new commercial/industrial buildings to install solar to provide a minimum percentage of the building's onsite energy needs.

Co-Benefits: Reduced air pollution, waste reduction, energy diversity and security, reduced price volatility, economic development, public health improvements, and increased property values.

Energy-5: On-site Solar Energy for New and Existing Warehouse Space

Measure Description: Promote and incentivize solar installations on existing and new warehouse space through partnerships with SCE and other private sector funding sources including SunRun, Tesla, and other solar lease or PPA companies. Establish a goal that a percentage of new and existing warehousing projects install solar on a percentage of the building's roof space. This goal could be supported through nonfinancial incentives or streamlined permitting. Jurisdictions may also act as a resource for connecting project proponents with funding opportunities.

Entity Responsible for Implementation: The individual city governments, in coordination with various private companies, are responsible for implementing this measure.

Measure Implementation Details: To implement this measure, jurisdiction governments can work with private companies and utilities to provide funding for solar energy projects. Implementing this measure would be gradual through 2030 as new warehouse spaces are constructed and equipped with solar installations and existing warehouse spaces are retrofitted.

Level of Commitment: Each jurisdiction selecting this measure would incentivize a percentage of new and existing warehouses to install solar on a minimum percentage of the building's roof space.

Co-Benefits: Reduced air pollution, waste reduction, energy diversity and security, reduced price volatility, economic development, public health improvements, and increased property values.

Energy-6: Solar Installations for Existing Housing

Measure Description: Establish a goal for solar installations on existing single-family homes to be achieved before 2030. Potential goals might be:

- **Aggressive commitment**—25% of existing single-family homes install solar.
- **Medium commitment**—20% of existing single-family homes install solar.
- **Low commitment**—15% of existing single-family homes install solar.

These goals could be supported through nonfinancial incentives or streamlined permitting through the jurisdictions. Primary funding would likely be through state- or utility-level programs or through private funding such as a PPA. Jurisdictions may also act as a resource for connecting project proponents with funding opportunities.

Entity Responsible for Implementation: The individual jurisdiction governments, in coordination with various private companies, are responsible for implementing this measure.

Measure Implementation Details: To implement this measure, the jurisdiction governments can work with private companies to provide funding for solar energy projects. Implementation of this measure would be gradual through 2030 as new single-family residential developments are constructed and equipped with solar installations.

Level of Commitment: Each jurisdiction selecting this measure would establish a percentage goal of existing single-family homes to install solar.

Co-Benefits: Reduced air pollution, waste reduction, energy diversity and security, reduced price volatility, economic development, public health improvements, and increased property values.

Energy-7: Solar Installations for Existing Commercial/Industrial Buildings

Measure Description: Establish a goal for solar installations on existing commercial/industrial buildings to be achieved before 2030. Potential goals might be:

- **Aggressive commitment**—30% of existing buildings have solar installations.
- **Medium commitment**—20% of existing buildings have solar installations.
- **Low commitment**—10% of existing buildings have solar installations.

The selected goal could be achieved in part through private funding from SunRun, Tesla, or other solar lease PPAs. Additionally, nonfinancial incentives and streamlined permitting at the local level can support this goal. Jurisdictions may also act as resources for connecting property owners with

funding opportunities. This measure could complement voluntary CALGreen measures related to solar photovoltaic systems.

Entity Responsible for Implementation: The individual jurisdiction governments, in coordination with external funding programs and/or private companies, are responsible for implementing this measure.

Measure Implementation Details: To implement this measure, the jurisdiction governments can work with building owners, state funding programs, and private companies to provide funding for solar energy projects. Implementation of this measure would be gradual through 2030 as solar is installed on existing buildings.

Level of Commitment: Each jurisdiction selecting this measure would establish a percentage goal of existing commercial and industrial buildings (private and/or public buildings) to install solar to provide a minimum of 15% of the building's onsite energy needs.

Co-Benefits: Reduced air pollution, waste reduction, energy diversity and security, reduced price volatility, economic development, public health improvements, and increased property values.

4.3.2 Land Use

4.3.2.1 Land Use-1: Promote Rooftop Gardens

Measure Description: Establish a goal for 5% of new multifamily residences and 15% of new commercial facilities over 100,000 square feet to construct rooftop gardens. Rooftop green space insulates the building underneath and increases energy efficiency. Rooftop gardens also cool the surrounding area through moisture retention and surface reflectivity. This measure could also reduce energy consumption and associated GHG emissions in the building energy sector. This measure could be implemented through the following incentives.

- Consider offering nonfinancial incentives, as feasible, to encourage rooftop gardens.
- Consider providing informational materials to contractors, homeowners, and businesses about the benefits of and incentives for rooftop gardens.

Entity Responsible for Implementation: The individual jurisdiction governments are responsible for implementing this measure.

Measure Implementation Details: The jurisdiction governments can set goals for new multifamily residences and commercial facilities to have rooftop green space. Implementation of this measure would be gradual as new developments are constructed with rooftop gardens.

Level of Commitment: Each jurisdiction selecting this measure would require a certain percentage (e.g., 5%) of new multifamily residences and a certain percentage (e.g., 15%) of new commercial facilities over 100,000 square feet to construct rooftop gardens.

Co-Benefits: Reduced energy consumption, reduced air pollution, reduced urban heat island effect, and increased quality of life.

4.3.2.2 Land Use-2: Urban Tree Planting

Measure Description: Establish a jurisdiction-wide tree planting goal or tree preservation goal. Possible implementation mechanisms might include a requirement to account for trees removed and planted as part of new construction and/or establishing a goal and funding source for new trees planted on jurisdiction property. This measure will reduce energy consumption and associated GHG emissions in the building energy sector by reducing the heat island effect.

Entity Responsible for Implementation: The individual jurisdiction governments are responsible for implementing this measure.

Measure Implementation Details: The jurisdiction governments can require trees to be planted as part of new construction, possibly as part of CEQA review and approval of new projects. Implementation of this measure would be gradual as new developments are constructed with accompanying trees.

Level of Commitment: Each jurisdiction selecting this measure chooses a certain number of trees to plant each year. They can choose from 10 trees per year.

Co-Benefits: Reduced energy consumption, reduced air pollution, reduced urban heat island effect, and increased quality of life.

4.3.3 On-Road Transportation

On-road transportation emissions include emissions from light- and medium-duty vehicles and heavy-duty trucks associated with land use activity in each of the jurisdictions. Emissions originate from the combustion of fossil fuels (such as diesel, gasoline, and compressed natural gas) to power the vehicles. These emissions are direct emissions and accounted for approximately 38% of total regional emissions in 2016.

The total VMT by residents and employees in the jurisdictions is expected to increase by the years 2030 and 2045 under BAU conditions as new housing units are developed and new jobs are created. The transportation sector represents the largest source of GHG emissions in the jurisdictions' future community GHG inventory. As a result, transportation-related reduction measures must be a part of reducing the region's overall GHG emissions in 2030 and 2045.

Reduction measures in the on-road transportation sector have among the highest GHG reduction potential relative to other sectors. It is important to note that the measures outlined below would also contribute to significant reductions in GHG emissions beyond 2045 because they would create a transportation and land use network that supports mixed-use, high density development, and alternative modes of transportation.

On-road transportation measures can achieve significant benefits for both individual residents and the region as a whole. Reductions in VMT and traffic congestion would reduce smog-forming emissions, toxic air contaminants, and diesel particulate matter. Alternative modes of transportation, such as bicycling, walking, and transit, may also help reduce many serious health risks associated with vehicle exhaust. Community well-being and quality of life may also be improved as individuals spend less time commuting, waiting for the bus, and/or sitting in heavily congested traffic.

4.3.3.1 On-Road-1: Alternative Fueled Transit Fleets – CNG to Electric

Measure Description: The majority of the transit fleet in the County is currently compressed natural gas (CNG). Converting from CNG to electric would reduce GHG emissions because electricity from renewable sources produces less emissions than natural gas.

Entity Responsible for Implementation: Transit authorities serving the County are primarily responsible for this measure, including OmniTrans, Victor Valley Transit Authority, Morongo Basin Transit Authority, Mountain Transit, and Needles Area Transit. The jurisdiction governments would coordinate with transit authorities as appropriate.

Measure Implementation Details: To implement this measure, the jurisdictions would coordinate with transit authorities in the region to convert CNG transit buses to electric. Implementation of this measure would most likely be achieved in increments because the electric transit bus technology is evolving.

Level of Commitment: Transit authorities are primarily responsible for this measure. Therefore, no local action is required from the jurisdictions.

Co-Benefits: Reduced air pollution and public health improvements.

4.3.3.2 On-Road-2: Encourage Use of Mass Transit, Carpooling, Ridesharing, and Telecommuting

Measure Description: Commute Trip Reduction programs aim to reduce commute trips and VMT through various strategies. The strategies include encouraging the use of mass transit, carpooling, ridesharing, and telecommuting. The level of VMT reductions that this measure could achieve depends on the level of commitment, from completely voluntary to required implementation with monitoring and performance standards. Jurisdictions could start implementing this measure for government employees, and then expand to adopting an ordinance to require businesses to implement Commute Trip Reduction programs. This measure only reduces commute trip VMT; it is assumed that commute trip VMT makes up 30% of total VMT.

The COVID-19 pandemic caused an unexpected increase in telecommuting in 2020. According to Gallup,³ at the height of the pandemic in April, 51% of the U.S. workforce worked remotely full time, and 18% of the workforce was able to work remotely part time. By September, the percentage of full-time telecommuters dropped to 33% and part-time telecommuters increased to 25%. Although this high level of telecommuting is anticipated to significantly reduce VMT in 2020 (and possibly in future years now that it has been demonstrated to be feasible for many), it is not reflected in the current modeling scenarios used for this plan.

Entity Responsible for Implementation: The individual jurisdiction governments are responsible for implementing this measure.

Measure Implementation Details: Jurisdictions could adopt a Commute Trip Reduction Ordinance and require businesses to implement Commute Trip Reduction programs to achieve the highest level of VMT reductions. Alternatively, jurisdictions could implement this measure on government employees and encourage businesses to provide employer support on commute trip reductions.

³ Gallup. 2020. "COVID-19 and Remote Work: An Update." October 13, 2020. Available online at: <https://news.gallup.com/poll/321800/covid-remote-work-update.aspx>.

Level of Commitment: Jurisdictions choosing this measure should identify the percent of employees eligible for this measure. For government employees only, no more than 10% of total employees would be eligible. Jurisdictions adopting a Commute Trip Reduction Ordinance could assume 80–100% of employees eligible.

Co-Benefits: Reduced energy use, increased quality of life, reduced air pollution, public health improvements, and energy security.

4.3.3.3 On-Road-3: Improve Efficiency through Signal Synchronization

Measure Description: Signal synchronization could improve traffic flow and reduce GHG emissions due to less idling time and less stop-and-go driving. Signal timing optimization could be done with or without real-time traffic data.

Entity Responsible for Implementation: The individual jurisdiction governments are responsible for implementing this measure.

Measure Implementation Details: The jurisdiction’s traffic engineers would study all signaled intersections in the jurisdiction and develop a signal timing optimization plan, and then adjust the signal timing. New signals need to be designed consistent with the signal timing optimization plan before approval for installation.

Level of Commitment: Jurisdictions choosing this measure and implementing signal synchronization would reduce 1% of on-road transportation GHG emissions from reduced idling time and reduced stop-and-go.

Co-Benefits: Reduced energy use, increased quality of life, reduced air pollution, public health improvements, and energy security.

4.3.3.4 On-Road-4: Expand Bike Routes Including Pedestrian and Bicycle Friendly Streets

Measure Description: Pedestrian- and bicycle-friendly roads are crucial to promoting walking and bicycle use as a transportation method. People tend to walk or bicycle if sidewalks and bicycle routes are available and separate from motor vehicles so that pedestrians’ and bicyclists’ safety can be ensured. Adopting and implementing a bicycle master plan and constructing more bicycle routes would encourage more bicycle rides and would help to reduce VMT.

Entity Responsible for Implementation: The individual jurisdiction governments are responsible for implementing this measure.

Measure Implementation Details: The jurisdiction governments are encouraged to develop and adopt a bicycle master plan that sets a goal for miles of bicycle lanes to be constructed within the jurisdiction.

Level of Commitment: Jurisdictions choosing this measure need to compare the existing miles of bicycle lanes with the future planned miles of bicycle lanes. Potential commitment levels could be 2 miles of bicycle lanes per square mile, 4 miles of bicycle lanes per square mile, or 8 miles of bicycle lanes per square mile.

Co-Benefits: Reduced energy use, increased quality of life, reduced air pollution, public health improvements, and energy security.

4.3.3.5 On-Road-5 Community Fleet Electrification

Measure Description: Hybrid electric vehicles, plug-in hybrid electric vehicles, and all-electric vehicles (EVs) produce lower emissions than conventional vehicles. All EV types emit at least 40% less GHG emissions than conventional vehicles. However, more than 95% of people still drive conventional gasoline or diesel vehicles, so programs to encourage the use of EV or hybrid vehicle ownership are greatly needed.

Executive Order (EO) B-16-2012 tasked the California Energy Commission (CEC) and other State agencies to support benchmarks to bring 1.5 million zero emission vehicles (ZEVs) to California's roads, and in conjunction to make sure that Californians have easy access to ZEV infrastructure to charge those vehicles by 2025. SBCTA projected that to comply with EO B-16-2012, there would be 44,846 ZEVs in San Bernardino County by 2025, and a total of 4,761 Level 2 and Level 3 charging stations would be needed to support the ZEVs.⁴ Each jurisdiction would be responsible for a portion of the charging station needs to support increased number of ZEVs.

Entity Responsible for Implementation: Jurisdictions would cooperate with SBCTA to implement this measure.

Measure Implementation Details: Jurisdictions choosing this measure would need to require new residential and commercial development to install charging stations on site. In addition, jurisdiction governments could work with businesses to install charging stations in office parking lots and provide incentives to encourage residences to install charging stations at home.

Level of Commitment: Each jurisdiction is assigned a goal for the number of ZEV charging stations to comply with the 1.5 million ZEVs by the 2025 target. Jurisdictions choosing this measure could commit to installing all or a portion of the targeted charging stations.

Co-Benefits: Reduced air pollution and public health improvements.

4.3.4 Off-Road Equipment

Off-road equipment emissions accounted for approximately 1% of the total regional emissions in 2016. These emissions are direct emissions resulting from equipment fuel combustion. Off-road equipment includes construction equipment and off-road vehicles. Typical industries that use off-road equipment include the agricultural, construction, industrial, entertainment, rail yards, and dredging sectors. In addition, recreational vehicles (e.g., all-terrain vehicles [ATVs]), pleasure craft (e.g., jet skis), and lawn and garden equipment (e.g., mowers) are sources of off-road emissions.

Reduction measures in the off-road equipment sector typically provide modest GHG reductions relative to other sectors.

The Partnership jurisdictions have identified the following measures to increase the use of alternative fuels in off-road equipment and reduce the consumption of fossil fuels. These measures would also achieve significant benefits for both individuals and the region as a whole. For example, electrification of off-road equipment would reduce fossil fuel consumption, thereby contributing to

⁴ San Bernardino Council of Governments. (2019). Zero-Emission Vehicle Readiness and Implementation Plan. August.

reductions in smog-forming emissions, toxic air contaminants, and diesel particulate matter (California Air Resources Board 2008). Serious health risks associated with heavy-duty vehicles may also be reduced accordingly, resulting in improvements in community health and well-being.

4.3.4.1 Off-Road Equipment-1: Electric-Powered Construction Equipment

Measure Description: Establish a goal such that a percentage of construction equipment utilizes electricity to power. With current technology, equipment with relatively low horsepower could be converted to electric. Potential goals might be to require 80-100% of equipment that is less than 120 horsepower to be electric powered.

Achieving the goal would require close coordination with the air district that sets requirements related to air quality on construction vehicles, and would also require providing mitigation options related to construction vehicles through Voluntary Emission Reduction Agreement (VERA) programs, which may overlap with this measure.

Entity Responsible for Implementation: Jurisdictions, SCAQMD, and the Mojave Desert Air Quality Management District could all share in implementing this measure.

Measure Implementation Details: Because the air districts sometimes have mitigation programs for air quality that focus on construction equipment and sometimes have funding to assist with equipment swap-out, jurisdictions choosing this measure would benefit from coordinating with the air districts in implementing this measure. Once the goals are adopted, implementation of this measure would be complete, and benefits would be achieved.

Level of Commitment: Each jurisdiction choosing this measure would provide a percentage goal of construction equipment less than 120 horsepower in the jurisdictions to be electric powered by 2030 and 2045.

Co-Benefits: Reduced air pollution, public health improvements, and increased quality of life.

4.3.4.2 Off-Road Equipment-2: Idling Ordinance

Measure Description: Adopt an ordinance that limits idling time for heavy-duty diesel trucks beyond CARB or local air district regulations and if not already required as part of CEQA mitigation. Recommended idling limit is 3 minutes. As part of permitting requirements or city contracts, encourage contractors to submit a construction vehicle management plan that includes such things as idling time requirements; requiring hour meters on equipment; and documenting the serial number, horsepower, age, and fuel of all on-site equipment. State law currently requires all off-road equipment fleets to limit idling to no more than 5 minutes.

Entity Responsible for Implementation: The individual jurisdiction governments are responsible for implementing this measure.

Measure Implementation Details: The jurisdiction governments can adopt ordinances restricting idling time. Implementation of this measure would be a one-time action. Once the ordinance is adopted, the measure would begin to yield benefits.

Level of Commitment: Each jurisdiction choosing this measure would have to adopt an ordinance that limits idling time for heavy-duty construction equipment to 3 minutes.

Co-Benefits: Reduced energy use, reduced air pollution, and public health improvements.

4.3.4.3 Off-Road Equipment-3: Electric Landscaping Equipment

Measure Description: Adopt an ordinance that reduces gasoline or diesel-powered landscaping equipment use. With current technology, equipment with relatively low horsepower could be converted to electric. Potential goals might be to require 80-100% of equipment that is less than 120 horsepower to be electric powered. Jurisdictions would work in close cooperation with the air district in drafting an ordinance or developing outreach programs to be consistent with current air district rules and CEQA guidelines. The ordinance could also include the following provisions for community landscaping equipment.

- Sponsor a lawnmower exchange program that allows residents to trade in their gasoline or diesel-powered mower for an electric mower at a low or discounted price.
- Require exterior electrical outlets on all new building developments.

Entity Responsible for Implementation: The individual jurisdiction governments are responsible for implementing this measure.

Measure Implementation Details: The jurisdiction governments can each adopt an ordinance that would result in compliance with the measure. Implementation of this measure would be gradual through 2030 and 2045 as residents exchange equipment, and as the jurisdictions swap old equipment for new equipment.

Level of Commitment: Each jurisdiction choosing this measure would provide a percentage goal of landscaping equipment less than 120 horsepower in the jurisdictions to be electric powered by 2030 and 2045.

Co-Benefits: Reduced air pollution, public health improvements, and increased quality of life.

4.3.5 Solid Waste Management

Total emissions from solid waste generated by the cities account for approximately 5% of total regional emissions for 2016. These emissions are fugitive emissions of methane that occur at numerous landfills spread throughout the state, and are considered an indirect emissions source. The materials disposed of by each Partnership city are recycled, composted, or placed in a landfill. Organic waste that is buried in landfills decomposes under anaerobic conditions to produce methane. Landfill-related emissions from waste are primarily methane, which is released over time when waste decomposes.

Reducing the Partnership cities' GHG emissions from the solid waste management sector includes two approaches: 1) methane capture and 2) waste reduction through diversion programs. Methane capture reduces fugitive methane emissions that are emitted from waste in landfills as a result of the decomposition process. Capturing the fugitive methane prevents it from reaching the atmosphere. Captured methane can also be utilized as an energy source onsite at a landfill, which reduces the need for external energy from a utility.

Waste diversion programs are designed to reduce the amount of waste sent to landfills. In addition to GHG emissions and cost savings, diversion programs may reduce waste-hauling fees, as well as fuel combustion emissions for transporting waste to landfills. Likewise, reductions in landfilled waste would reduce the need for landfill space, which may contribute to future land conservation.

Increased recycling and reuse would reduce the need for raw material and energy for manufacturing, thereby contributing to fuel savings and criteria pollutant reductions.

Reduction measures in the solid waste management sector typically provide modest GHG reductions relative to other sectors.

4.3.5.1 Waste-1: Increased Waste Diversion

Measure Description: Exceed the waste diversion goal (75%) required by AB 341 by adopting citywide waste goals to divert more than 75% of waste. In instances where cities operate their own waste services programs, they will have responsibility to expand or establish composting, recycling, and yard waste programs to residences and businesses. Cities would work with waste providers to identify a baseline, opportunities, and achievable diversion goals before a certain time period, all of which can be incorporated into the waste provider's contract with a jurisdiction. This measure could include:

- Expand educational programs to inform residents about reuse, recycling, composting, waste to energy, and zero waste programs. Encourage local recycling and composting initiatives at the neighborhood level.
- Adopt a construction and demolition waste recovery ordinance that meets or exceeds the CALGreen voluntary guidance of a 65-75% reduction in nonhazardous construction and demolition waste.
- Encourage local businesses to expand their recycling and composting efforts and to reduce packaging of products manufactured in the cities.
- Establish a reuse/recycling center where furniture, appliances, building materials, and other useful, nonhazardous items may be dropped off or purchased for a nominal fee.
- Enhance regional coordination on waste management, to take advantage of economies of scale of recycling, composting, and other diversion programs.

Entity Responsible for Implementation: The individual jurisdiction governments, along with waste service providers, are responsible for implementing this measure.

Measure Implementation Details: Jurisdiction governments that operate their own waste services programs can develop educational programs to encourage residents to reduce waste. Jurisdiction governments that utilize a private contractor for waste collection can work with that contractor to expand education and outreach programs. Waste diversion generally increases gradually on an annual basis.

Level of Commitment: Each jurisdiction selecting this measure would provide a diversion goal (e.g., at least 75%) of diversion of waste from landfills.

Co-Benefits: Reduced air pollution and resource conservation.

4.3.6 Water Conveyance

Water consumption emissions accounted for approximately 1% of total regional emissions in 2016. Each city's water consumption includes the following indirect emissions by activity: electricity consumption for water supply and conveyance, water treatment, water distribution, and wastewater treatment. Water is not only an important resource with limited supplies, but the treatment, distribution, and conveyance of water requires considerable amounts of electricity. The

generation of this electricity consumes fossil fuels and releases GHGs. Reducing water demand and conserving water can therefore save energy and avoid future emissions. Reduction measures in the water conveyance sector typically contribute small GHG reductions relative to other sectors.

The Partnership jurisdictions have identified the following strategies to enhance community-wide water and resource conservation. These strategies would collectively reduce water consumption, which would likewise contribute to reductions in building energy use. For example, efficient faucets that use less water would require less electricity and natural gas for hot water heating. Additionally, energy required to transport, distribute, and treat water would be reduced. The consumption of less electricity and natural gas would ultimately translate to reductions in region and local criteria pollutants, which may improve community health and well-being. Water measures that encourage building retrofits also have an additional benefit of enhancing building value and resale.

It is important to note that the water conservation measures would achieve reductions in the building energy sector. However, the emissions savings are reported as part of the water sector because they are a direct result of implementation of water conservation measures.

4.3.6.1 Water-1: Require Adoption of the Voluntary CALGreen Water Efficiency Measures for New Construction

Measure Description: Require adoption of the voluntary CALGreen water efficiency measures (at least Tier 1) for new construction. CALGreen voluntary measures recommend use of certain water-efficient appliances, plumbing and irrigation systems, as well as more aggressive water-savings targets. Update building standards and codes for new residential and nonresidential buildings to require adoption of these voluntary measures, including:

- Use of low-water irrigation systems.
- Installation of rainwater and gray water systems.
- Installation of water-efficient appliances and plumbing fixtures, as well as composting toilets.

Entity Responsible for Implementation: The individual jurisdiction governments are responsible for implementing this measure.

Measure Implementation Details: The jurisdiction governments can choose to include the voluntary CALGreen measures in their building codes. Implementation would be gradual beginning in 2020 as new buildings are constructed with water-efficient fixtures.

Level of Commitment: Each jurisdiction selecting this measure would have to require adoption of the voluntary CALGreen water-efficiency measures (at least Tier 1) for new construction.

Co-Benefits: Reduced energy use, reduced air pollution, resource conservation, and increased property values.

4.3.6.2 Water-2: Require Adoption of the Voluntary CALGreen Water Efficiency Measures for Existing Construction

Measure Description: Require adoption of the voluntary CALGreen water efficiency measures for existing construction. CALGreen voluntary measures recommend use of certain water-efficient appliances, plumbing and irrigation systems, as well as more aggressive water-savings targets.

Update building standards and codes for existing residential and nonresidential buildings to require adoption of these voluntary measures, including:

- Use of low-water irrigation systems.
- Installation of water-efficient appliances and plumbing fixtures, as well as composting toilets.
- A 30-40% reduction over baseline in indoor water use, and a 55-60% reduction in outdoor potable water use (CALGreen Tier 1 or 2).

Entity Responsible for Implementation: The individual jurisdiction governments are responsible for implementing this measure.

Measure Implementation Details: The jurisdiction governments can choose to include the voluntary CALGreen measures in their building codes. Implementation would be gradual beginning in 2020 as existing buildings are retrofitted with water-efficient fixtures.

Level of Commitment: Each jurisdiction selecting this measure would have to require adoption of the voluntary CALGreen water-efficiency measures for existing construction.

Co-Benefits: Reduced energy use, reduced air pollution, resource conservation, and increased property values.

4.3.6.3 Water-3: Encourage Water-Efficient Landscaping Practices

Measure Description: Encourage water-efficient landscaping practices. Adopt a landscaping water conservation ordinance that exceeds the requirements in the Model Landscape Ordinance (AN 1881). The conservation plan could include provisions for any of the following.

- Reducing the ET Adjustment factor listed in the Model Ordinance further.
- Limiting turf grass areas.
- Providing approved plant lists.
- Implement a public education and outreach campaign to promote water conservation. The program should highlight specific water-wasting activities to discourage, such as the watering of non-vegetated surfaces and using water to clean sidewalks and driveways, as well as educate the community about the importance of water conserving techniques. Water efficiency training and certification for irrigation designers, installers, and property managers should also be offered.
- Encourage alternatives to lawns and turf uses, except for parks, playing fields, children's play areas and other specialized uses.
- Promote underground irrigation techniques.
- Encourage extensive use of mulch in landscape areas to improve the water-holding capacity of the soil by reducing evaporation and soil compaction.
- Require drought-tolerate landscape plantings for all municipal buildings.
- Establish landscape maintenance districts along streets for water conservation purposes.
- Promote and Incentivize the use of smart-irrigation technologies such as irrigation sensors.

Entity Responsible for Implementation: The individual jurisdiction governments are responsible for implementing this measure in concert with water retailers.

Measure Implementation Details: The individual jurisdiction governments can adopt water conservation plans that surpass the requirements of the Model Landscape Ordinance. Implementation would be gradual from 2020 onward as residents adopt new water conservation behaviors, and as new developments utilize less water-demanding plants, alternatives to lawns, and gray water infrastructure.

Level of Commitment: Each jurisdiction selecting this measure would adopt a landscaping water conservation plan that exceeds the requirements in the Model Landscape Ordinance (AN 1881) to achieve outdoor water use reductions for a certain percentage of residential and nonresidential buildings.

Co-Benefits: Reduced energy use, reduced air pollution, and resource conservation.

4.3.7 Agriculture

Agriculture emissions accounted for approximately 3% of the total regional emissions in 2016. These emissions are direct emissions resulting from livestock activity and the application of fertilizer. The three general sources of agricultural emissions evaluated in this inventory include livestock enteric fermentation, livestock manure management, and N₂O emissions from the application of fertilizer. Reduction measures in the agriculture sector typically provide modest GHG reductions relative to other sectors.

Reducing the jurisdictions' GHG emissions from the agriculture sector includes methane capture and combustion at large dairies and animal operations facilities. The large dairies with more than 1,000 cattle are located in Chino, Ontario, and Unincorporated County. Methane capture reduces fugitive methane emissions that are emitted from livestock as a result of decomposing manure. Capturing the fugitive methane prevents it from reaching the atmosphere. Captured methane can also be utilized as an energy source to generate electricity or produce vehicle fuel, which reduces the need for external energy or fuel from a utility.

4.3.7.1 Agriculture-1: Methane Capture at Large Dairies

Measure Description: This is a voluntary measure to be undertaken by large dairies and encourages the installation of methane digesters to capture methane emissions from the decomposing manure. The methane could be used on site as an alternative to natural gas in combustion, power production, or as a transportation fuel. Further, individual project proponents may be able to sell GHG credits associated with these installations on the voluntary carbon market.

Entity Responsible for Implementation: Large dairies within the applicable Partnership jurisdictions are responsible for implementing this measure.

Measure Implementation Details: Dairies would need to install methane capture and control equipment at their facilities and employ other best-management practices for reducing fugitive methane emissions. The City of Chino, City of Ontario, Unincorporated San Bernardino County, along with the air districts, can collaborate with the dairies to achieve this. The installation of equipment is a one-time event, and implementation would be complete once the equipment begins operating.

Level of Commitment: Chino, Ontario, and Unincorporated County would have to collaborate with the relevant dairies to help establish methane recovery systems.

Co-Benefits: Reduced air pollution, resource conservation, and economic development.

4.3.8 Wastewater Treatment and Discharge

Total emissions from wastewater treatment account for approximately less than 1% of the total regional emissions in 2016. There are numerous large and small wastewater treatment plants (WWTPs) located within the County that serve the County's residents and businesses. Twentynine Palms and Yucca Valley utilize septic systems. The Inland Empire Utilities Agency (IEUA) operates four plants, servicing the more metropolitan areas of Chino, Chino Hills, Fontana, Ontario, Rancho Cucamonga, Montclair, Upland, and unincorporated portions of the County. The City of San Bernardino also operates several WWTPs, servicing the cities of San Bernardino, Loma Linda, Highland, and unincorporated portions of the County. The Cities of Big Bear Lake, Victorville, and Hesperia are served by the smaller regional agencies, Big Bear Area Regional Wastewater Agency (BBARWA) and Victor Valley Wastewater Agency (VVWA). The remaining jurisdictions (Adelanto, Barstow, Colton, Grand Terrace, Needles, Redlands, Rialto, and Yucaipa) have individual plants. GHG emissions result from electricity and/or natural gas used to power the facilities. These indirect emissions are included in the inventory in either the building energy or the water sectors, depending on where the WWTP is located. Additional emissions of CH₄ and N₂O result from the treatment and breakdown of waste in the facility. These are commonly referred to as fugitive emissions and are classified as direct emissions. In general, the fugitive emissions associated with septic systems are higher than those at a centralized WWTP. Wastewater generated in each jurisdiction would be sent to WWTPs, which may be outside the jurisdiction. Consequently, some of these emissions would not occur within the boundaries of the jurisdiction generating the wastewater, but each jurisdiction is responsible for creating this wastewater. Reduction measures in the wastewater treatment and discharge sector typically provide modest GHG reductions relative to other sectors.

Reducing the jurisdictions' GHG emissions from the wastewater treatment sector includes methane capture and combustion at the WWTPs, and improving the efficiency of equipment such as pumps. These types of retrofits are for centralized WWTP systems and do not apply to septic systems. WWTP operators confirmed the presence of or plans for methane capture and the status of their respective energy efficiency projects. For plants operated by an individual jurisdiction, the jurisdiction's selection of any measure related to capital improvements at the plant was considered equivalent to the commitment of a plant operator.

Methane capture reduces fugitive methane emissions that are emitted during the wastewater treatment process. Capturing the fugitive methane prevents it from reaching the atmosphere. Captured methane can also be utilized as an energy source to generate electricity or produce vehicle fuel, which reduces the need for external energy or fuel from a utility. Equipment upgrades can reduce the amount of electricity and natural gas used to power the equipment, which in turn reduces emissions associated with fuel combustion.

4.3.8.1 Wastewater-1: Methane Recovery

Measure Description: Work with the IEUA or other local wastewater treatment providers to identify funding and cooperating agencies for establishing methane recovery systems at all WWTPs that service the County residents. WWTPs in the region operated by IEUA, City of San Bernardino, and VVWA already have approximately 62% methane capture rate. Jurisdictions serviced by these providers would only benefit from this measure if the methane capture rate could be increased. For WWTPs that currently do not have methane capture systems, plants operators would work with regional power providers, local jurisdictions, or other entities to identify funding for methane capture system installation.

Entity Responsible for Implementation: The WWTPs that serve the region are responsible for implementing this measure. However, they may be funded through public private partnership.

Measure Implementation Details: This measure would require the individual WWTPs to install methane recovery equipment. The installation of equipment is a one-time event and implementation would be complete once the equipment begins operating.

Level of Commitment: Each jurisdiction selecting this measure would have to collaborate with the IEUA or other local wastewater treatment provider to establish methane recovery systems.

Co-Benefits: Reduced energy use, resource conservation, and economic development.

4.3.8.2 Wastewater-2: Energy Efficiency Equipment Upgrades at Wastewater Treatment Plants (Regional)

Measure Description: Work with IEUA or other local wastewater treatment provider to upgrade and replace wastewater treatment and pumping equipment with more energy-efficient equipment, as is financially feasible, at the existing facilities. Require all pumping and treatment equipment to be 25% more energy efficient at the time of replacement. Utilize best management practices for the treatment of waste. This measure could also include assessing the feasibility of using advance treatment of recycled water with microfiltration or reverse osmosis for future potable water use. Assess associated energy/GHG tradeoffs and out of basin water supply.

Entity Responsible for Implementation: The WWTPs that serve the region are responsible for implementing this measure.

Measure Implementation Details: This measure would require the individual wastewater treatment plants to upgrade pumping and treatment equipment. The upgrade of equipment is a one-time event, and implementation would be complete once the upgraded equipment begins operating.

Level of Commitment: Each jurisdiction selecting this measure would have to collaborate with the IEUA or other local wastewater treatment provider to upgrade pumping and treatment equipment.

Co-Benefits: Reduced energy use and reduced air pollution.

4.3.9 GHG Performance Standard for New Development

4.3.9.1 PS-1: GHG Performance Standard for New Development

Measure Description: Individual jurisdictions may adopt a GHG Performance Standard for New Development (PS-1) that would provide a streamlined and flexible program for new residential and nonresidential projects to reduce their emissions. The PS would be a reduction standard for new private developments as part of the discretionary approval process under CEQA. Under PS-1, new projects would be required to quantify project-generated GHG emissions and adopt feasible reduction measures to reduce project emissions to a level that is a certain percent below BAU project emissions. PS-1 does not require project applicants to implement a pre-determined set of measures. Rather, project applicants are allowed to choose the most appropriate measures for achieving the percent reduction goal, while taking into consideration cost, environmental or economic benefits, schedule, and other project requirements.

A jurisdiction may select a suite of other local measures that may already meet the PS-1 percent reduction goal specified by that jurisdiction. In these cases, a jurisdiction can still select PS-1 and use it to support those local measures, even though direct reductions from PS-1 for those jurisdictions

may be zero. An effort was made to not to double-count emissions reductions from PS-1 and overlapping local measures.

Entity Responsible for Implementation: The individual jurisdiction governments are responsible for implementing this measure.

Measure Implementation Details: Measurable reductions of GHG emissions would be achieved through each jurisdiction's review and discretionary approval of residential, commercial, and industrial development projects. It is expected that project proponents would often include energy-efficiency and alternative energy strategies to help reduce their project's GHG emissions because these are often the most cost-effective approach to reducing GHG emissions, but are free to propose any valid measures that would achieve the overall reduction goal.

One means of implementing the Performance Standard would be through development of a point-based "screening table" that identifies a wide-range of project-level measures that could be used to provide GHG reductions. The screening table provides the points for different types of measures and level of commitment and allows an easy way for project applicants to tally up their different proposed measures and see whether they meet the jurisdiction's specific PS. San Bernardino County has developed screening tables and guidance of how to apply them that are presently being used by new project applicants in the County as a means to help streamline project review. Each jurisdiction that ultimately chooses a PS approach as part of their local plan could develop its own screening tables. In addition, the jurisdictions participating in the regional reduction plan have discussed a potential to develop regional screening tables that could apply to multiple cities which may further streamline reviews for cities that choose this approach.

In order to calculate the reductions from this measure, state measures and local mandatory measures were quantified for new development for each jurisdiction. These measures achieve a certain portion of the PS goal, depending on the jurisdiction. The PS contributes the remaining percent reduction required to achieve the PS goal in new developments. The reduction amounts for each individual project within each jurisdiction from state or other local measures would vary; however, state and local mandatory measures are still expected to result in the largest share of the burden in meeting the PS reduction target for all cities.

Some jurisdictions already require discretionary projects, through the CEQA process, to identify their GHG emissions and to mitigate those emissions when feasible mitigation is available and there are no overriding circumstances.

Level of Commitment: Each jurisdiction selecting this measure would have to adopt a GHG Performance Standard for New Development, requiring a certain percent reduction in new development emissions within the cities. The percent reduction goals selected by the jurisdictions range from 29% to 87% for new development emissions.

Co-Benefits: Co-benefits would depend on the exact measures selected by individual project proponents, but would be the same as the corresponding strategies described for the other measures (e.g., if a project proponent were to select energy efficiency measures as part of meeting project reductions, the benefits would be similar in character to those described for energy-efficiency retrofits).

Table 4-1. Regional GHG Reductions for All GHG Reduction Measures

Measure No.	GHG Reduction Measure	GHG reductions	Percent of State/County reductions (for state measures)	Percent of local reductions (for local measures)	Number of cities selecting/benefitting from measure (for local measures)	Notes
<i>State and County Measures</i>						
State-1	Renewable Portfolio Standard	1,741,332	29%	NA	NA	
State-2	Title 24 (Energy Efficiency Standards)	812,849	13%	NA	NA	
State-3	SB 350	146,388	2%			
State-4	Solar Water Heating	1,427	<1%	NA	NA	
State-5	Co-Generation Facilities	812,849	<1%	NA	NA	
State-6	Pavley plus LCFS	2,791,668	46%	NA	NA	
State-7	AB 32 Methane Capture	602,052	10%	NA	NA	
<i>Local Measures</i>						
<i>Building Energy</i>						
Energy-1	Energy Efficiency for Existing Buildings	10,032	NA	5%	24	
Energy-2	Outdoor Lighting	82,810	NA	1%	18	
Energy-3	Building Electrification	20,876	NA	20%	9	
Energy-4	Solar Installations for New Commercial/Industrial Development	342,851	NA	2%	17	
Energy-5	On-site Solar Energy for New and Existing Warehouse Space	28,124	NA	5%	9	
Energy-6	Solar Installations for Existing Housing	78,538	NA	6%	24	
Energy-7	Solar Installations for Existing Commercial Buildings	102,296	NA	12%	23	
<i>On Road Transportation</i>						
On-Road-1	Alternative Fueled Transit Fleets – CNG to Electric	3,354	NA	<1%	19	

Measure No.	GHG Reduction Measure	GHG reductions	Percent of State/County reductions (for state measures)	Percent of local reductions (for local measures)	Number of cities selecting/benefitting from measure (for local measures)	Notes
Transportation-2	Encourage Use of Mass Transit, Carpooling, Ridesharing, and Telecommuting	73,489	NA	4%	15	
Transportation-3	Improved Efficiency through Transportation Demand Management and Signal Synchronization	28,820		2%	17	
Transportation-4	Expand Bike Routes	37,397		2%	18	
Transportation-5	Community Fleet Electrification	49,586		3%	18	
<i>Off Road Transportation and Equipment</i>						
Off Road-1	Electric-Powered Construction Equipment	8,512	NA	1%	17	
Off Road-2	Idling Ordinance	4,593	NA	<1%	19	
Off Road-3	Electric Landscaping Equipment	7,159	NA	<1%	18	
<i>Solid Waste Management</i>						
Waste-1	Waste Diversion	379,076	NA	22%	23	
<i>Water Conveyance</i>						
Water-1	Require Adoption of the Voluntary CALGREEN water efficiency measures for New Construction	0	NA	<1%	12	GHG reductions also include reductions in the building energy
Water-2	Require Adoption of the Voluntary CALGREEN water efficiency measures for Existing Buildings	63,912	NA	4%	20	GHG reductions also include reductions in the building energy
Water-3	Encourage Water-Efficient Landscaping Practices	9,101	NA	1%	23	GHG reductions also include reductions in the building energy
<i>Wastewater Treatment and Discharge</i>						
Wastewater-1	Methane Recovery	1,194	NA	<1%	8	
Wastewater-2	Equipment Upgrades	3,149	NA	<1%	16	GHG reductions occur in the building energy sector

Measure No.	GHG Reduction Measure	GHG reductions	Percent of State/County reductions (for state measures)	Percent of local reductions (for local measures)	Number of cities selecting/benefitting from measure (for local measures)	Notes
<i>Agriculture</i>						
Agriculture-1	Methane Capture at Large Dairies	0	NA	<1%	2	
<i>Land Use and Urban Design</i>						
Land Use-1	Urban Tree Planting	2	NA	<1%	18	GHG reductions occur in the building energy sector
Land Use-2	Promote Rooftop Gardens	323	NA	<1%	5	GHG reductions occur in the building energy sector
<i>GHG Performance Standard for New Development</i>						
PS-1	GHG Performance Standard for New Development	169,203	NA	10%	12	

Chapter 5

Implementation of Local Climate Action Plans and Regional Coordination

5.1 Implementation of the Local Climate Action Plans

Meeting the individual reduction targets set by the Partnership jurisdictions and achieving GHG reduction benefits will require participation of both jurisdiction governments and the communities at large. Full implementation of the local CAPs, for those jurisdictions that choose to adopt one, will also benefit from communication and coordination among the Partnership jurisdictions and SBCOG to identify cost-effective means of implementation wherever possible. This section outlines the key steps that a Partnership jurisdiction could follow to ensure that the measures it has identified for inclusion in this Reduction Plan can be implemented effectively and efficiently. This section assumes that each jurisdiction reviews the information in this Reduction Plan and then adopts its own local, jurisdiction-specific CAP. This section refers to implementation of individual jurisdiction CAPs.

Successful implementation of each jurisdiction's local CAP would require the following components. These are described in more detail below.

- Administration and/or staffing
- Financing and budgeting
- Timelines for measure implementation
- Community outreach and education
- Monitoring, reporting, and adaptive management
- Regional coordination

The components above are basic steps that any jurisdiction might take and that other California communities have taken to implement a GHG reduction plan. These are suggested, not required, and are intended to guide a jurisdiction in its implementation planning.

5.2 Local CAP Implementation Steps

5.2.1 Administration and Staffing

It is recommended that a jurisdiction should develop a CAP Implementation Team (CIT), consisting of jurisdiction staff from key departments, to support implementation of the GHG reduction measures. Some jurisdictions may wish to have the CIT work primarily as part of the development review process for new projects. The CIT team may comprise existing staff and does not necessarily require dedicated full-time staff for these roles. For example, the CIT could comprise individuals from the following primary departments; additional members may be added as needed to ensure coordinated and effective leadership.

- Office of the Jurisdiction Attorney—Responsible for providing legal advice related to the development of new policies, programs, and requirements.
- Office of the Jurisdiction Clerk—Responsible for maintaining monitoring and reporting records.
- Community Development/Planning—Responsible for providing expertise in evaluating and managing the community impacts of the CAP, including implementation of the Building Energy measures and the Transportation Measures (in regard to planning in cooperation with the Public Works Department).
- Public Works—Responsible for providing expertise on the development and implementation of transportation (as it relates to capital projects and maintenance), water, wastewater, urban forestry, and solid waste reduction measures.

Alternatively, or in addition, the jurisdiction could appoint a single CAP Implementation Coordinator (CIC) to oversee the successful implementation and tracking of all selected GHG reduction strategies. The CIC would primarily be responsible for coordinating with contacts across departments to gather data, report on progress, track completed projects, and ensure that scheduling and funding of upcoming projects is discussed at key jurisdiction meetings.

For smaller communities, in lieu of a team, the CIC could be responsible for communicating with the relevant offices and ensuring their input on key decisions related to projects outlined in the jurisdiction's local CAP is considered. In addition, the CIC could have the following responsibilities.

- Secure long-term financing for GHG reduction measures (i.e., grant application primary contact).
- Coordinate CIT meetings.
- Serve as the external communication hub to local and regional planning and climate action organizations, including SBCOG.
- Conduct public outreach to inform the community of the jurisdiction's reduction planning efforts.
- Investigate methods to utilize existing resources and harness community support to better streamline implementation of the local CAP.
- Develop a protocol for monitoring the effectiveness of emissions reduction programs.
- Establish guidelines for reporting and documenting emissions reduction progress.
- Submit annual reports to the jurisdiction council.
- Develop a protocol for utilizing the real-time information collected through the verification process to modify and revise existing reduction programs.
- Track state and federal legislation and its applicability to the jurisdiction.

Administration of a local CAP does not necessarily require a new full-time employee position, although a jurisdiction may certainly opt to have a single dedicated person if numerous and disparate jurisdiction departments will be involved in implementing the CAP, if the jurisdiction will be applying for multiple grants to fund GHG reduction measures, or if the CAP is particularly ambitious and requires numerous new jurisdiction initiatives. In general, the goal in implementing

the CAP is not to create new administrative tasks or new staff positions necessarily, but rather to leverage existing programs and staff to the maximum extent feasible. Jurisdictions should seek to fold GHG planning and long-term reduction goals into their existing procedures, institutional organization, reporting, and long-term planning; a process that will be unique to each jurisdiction.

5.2.2 Financing and Budgeting

5.2.2.1 Funding Mechanisms

Implementation of the local GHG reduction measures would require the jurisdiction and other public agencies, local businesses, developers/builders, and existing commercial building owners, residential homeowners, and individuals to incur increased costs for the capital improvements and other investments and increased operations and maintenance costs. However, in some cases operating costs are anticipated to decrease, resulting in offsetting savings. This section presents a summary of funding and financing options (Table 5-1) available at the writing of this document. Some funding sources are not necessarily applicable to a jurisdiction but to a larger regional agency, such as SBCOG, a JPA, or a waste services provider serving multiple jurisdictions. Jurisdictions should continually monitor private and public funding sources for new grant and rebate opportunities and to better understand how larger agencies are accessing funds that can be used for GHG reductions in their area. Leveraging financing sources is one of the most important roles a local government can play in helping the community to implement many of the GHG reduction measures.

Table 5-1. Potential Funding Sources to Support GHG Reduction Measures

State and Federal Funds	
Federal Tax Credits for Energy Efficiency	<ul style="list-style-type: none"> • Tax credits for energy efficiency can be promoted to residents. • Tax credits available through the end of 2021 include renewable energy products, specifically: geothermal heat pumps, small (residential) wind turbines, solar energy systems, and fuel cells (residential fuel cell and microturbine system). • The tax credit is for 22% of cost for geothermal heat pumps, wind turbines, and solar energy systems in service before 01/01/2022. • For fuel cells, the maximum tax credit is \$500 per 0.5 kW of power capacity in a principal residence.
Energy Efficient Mortgages (EEM)	<ul style="list-style-type: none"> • An EEM is a mortgage that credits a home’s energy efficiency in the mortgage itself. • Residents can finance energy saving measures as part of a single mortgage. • To verify a home’s energy efficiency, an EEM typically requires a home energy rating of the house by a home energy rater before financing is approved. • EEMs are typically used to purchase a new home that is already energy efficient, such as an ENERGY STAR® qualified home.
California Department of Resources Recycling and Recovery (CalRecycle)	<ul style="list-style-type: none"> • CalRecycle grant and loan programs allow jurisdictions to assist public and private entities in management of waste streams. • Incorporated jurisdictions and counties, and other organizations in California are eligible for funds. • Program funds are intended to: <ul style="list-style-type: none"> ○ Reduce, reuse, and recycle all waste. ○ Manage food waste and other organics responsibly through the use of

- composting facilities.
 - Encourage development of recycled-content products and markets.
 - Protect public health and safety and foster environmental sustainability.
- California Air Resources Board (CARB)
- CARB offers several grants, incentives, and credits programs to reduce on-road and off-road transportation emissions. Residents, businesses, and fleet operators can receive funds or incentives depending on the program.
 - The following programs can be utilized to fund local measures:
 - Air Quality Improvement Program (AB 118)
 - Carl Moyer Program – Voucher Incentive Program
 - Goods Movement Emission Reduction Program (Prop 1B Incentives)
 - Loan Incentives Program
- Existing Capital Improvement Program
- State and federal funds would most likely continue to local governments, builders, and homeowners in the following forms.
 - Grants
 - Transportation and transit funding
 - Tax credit and rebate programs
 - The Capital Improvement Program can be utilized for measures relating to traffic or transit.
- State Funding for Infrastructure
- The state’s Infill Infrastructure Grant Program may potentially be used to help fund measures that promote infill housing development.
 - Grants can be used for gap funding for infrastructure improvements necessary for specific residential or mixed-use infill development projects.
- Transportation-Related Federal and State Funding
- For funding measures related to transit, bicycle, or pedestrian improvements, the following funding sources may be utilized.

Surface Transportation Block Grant Program (STBG)	FTA Section 5311(f)
Congestion Mitigation and Air Quality Improvement Program, Section 1110 (CMAQ)	California's Active Transportation Program (ATP)
Transportation Enhancement Activities (TEA)	Environmental Enhancement and Mitigation (EEM) Program
National Recreational Trails Program	Federal Transit Administration (FTA) 5309
National Highway System Fund (NHS)	Office of Traffic Safety (OTS)
National Highway Safety Act, Section 402	Transportation Development Act (TDA) Article III
Transportation Funds for Clean Air (TFCA, formerly AB 434)	U.S. DOT Better Utilizing Investments to Leverage Development (BUILD) Transportation Grant
Section 3 Mass Transit Capital Grants	Flexible Congestion Relief (FCR) Program
Bridge Repair & Replacement Program (BRRP)	State Highway Operations and Protection Program (SHOPP)

- Strategic Growth council
- Transformative climate communities
 - Affordable housing and sustainable communities
 - Climate change research
 - Health in all policies
 - Sustainable ag. Lands conservation
 - Community assistance for climate equity
 - Prop 84 wildfire resilience and recovery planning grants
 - Tribal programs

Jurisdiction-Level Funding

- Public Utility Enterprises
- Jurisdictions that operate water and sewer public utilities can utilize increased rates to fund capital improvements associated with water or wastewater measures.
- Other Local/Regional Funding Sources
- SCAQMD has several grant programs related to air quality improvement, some of which may apply to various reduction measures.
 - Bus Stop Sponsorships—Advertisement sponsorship of bus stops has been utilized as a revenue source.
 - Transit Fare Increases—Transit fares could be increased to help fund capital improvements, though increases also have the potential to decrease ridership in the short term.
 - Parcel Tax—An election consistent with Proposition 218 could serve to increase the existing level of taxation and provide additional funding for transit-related capital improvements. However, in the current economic climate, this may not be a likely financing source unless economic conditions improve and community support for such a taxation approach is favorable.

Utility Rebates

- California Solar Initiative
- SoCal Edison is one of the three utilities participating in the Go Solar initiative.
 - A variety of rebates are available for existing and new homes.
 - Photovoltaics, thermal technologies, and solar hot water projects are eligible.
 - Single-family homes, commercial development, and affordable housing are eligible.
 - Budget for solar generation for 2007–2020: \$2.7 billion.
 - Budget for new solar hot water systems for 2010–2017: \$260 million.
- Energy Upgrade California
- Program is intended for home energy upgrades.
 - Utilities administer the program, offering homeowners rebates on equipment and appliances and energy efficiency financing.
 - Homeowners are connected to home energy professionals.
 - Rebates, incentives, and financing are available.

Private Funding

- Private equity can be used to finance energy improvements, with returns realized as future cost savings.
- Rent increases can fund retrofits in commercial buildings.
- Net energy cost savings can fund retrofits in households.
- Power Purchase Agreements (PPA) involve a private company that purchases, installs, and maintains a renewable energy technology through a contract that typically lasts 15 years. After 15 years, the company would uninstall the technology or sign a new contract.
- Power produced from a PPA is sold to customers. In the past, SBCOG has approved contracts for solar power site assessments, bringing together a number of jurisdictions and agencies to aggregate their solar sites.
- On-Bill Financing (OBF) can be promoted to businesses for energy-efficiency retrofits. Funding from OBF is a no-interest loan that is paid back through the monthly utility bill. Lighting, refrigeration, HVAC, and LED streetlights are all eligible projects.

Other Funding Mechanisms for Implementation

- Increased operating costs can be supported by grants from the State Department of Conservation (DOC) to fund sustainable community planning, natural resource conservation, and development, adoption, and implementation of Sustainable Community planning elements, including climate action plans and general plan amendments.

Future Funding Options: Funding Mechanisms for Capital and/or Implementation Costs

New Development Impact Fees	<ul style="list-style-type: none"> • These types of fees may have some potential to provide funding, but such fees are best implemented when the real estate market and overall regional economic conditions are strong.
Utility User Tax Increase	<ul style="list-style-type: none"> • Increasing this tax could help fund ongoing implementation, operations, and maintenance efforts. Any increase of tax rates will need to be highly sensitive to current local economic conditions and overall local, state, and national economic and financial context.
Additional Local Sales Parcel Tax	<ul style="list-style-type: none"> • Increasing local sales or parcel taxes would require voter approval and could provide funding for measures related to transit improvements or retrofit programs. Any increase of tax rates will need to be highly sensitive to current local economic conditions and overall local, state, and national economic and financial context.
Community Facilities District (CFD) Special Taxes	<ul style="list-style-type: none"> • Creating this special tax would require voter approval and could be best directed towards measures with broad benefits for the community (e.g., transit, pedestrian and bicycle facilities, safe routes to schools). Any increase of tax rates will need to be highly sensitive to current local economic conditions and overall local, state, and national economic and financial context.
General Obligation Bond	<ul style="list-style-type: none"> • A general obligation bond is a form of long-term borrowing and could be utilized to fund municipal improvements.

AB 811 Districts
Property-Assessed
Clean Energy (PACE)

- AB 811 is intended to help municipalities accomplish goals outlined in AB 32.
 - The PACE finance program is intended to finance energy and water improvements within a home or business through a land-secured loan, and funds are repaid through property assessments.
 - Municipalities are authorized to designate areas where property owners can enter into contractual assessments to receive long-term, low-interest loans for energy and water efficiency improvements, and renewable energy installation on their property.
 - Financing is repaid through property tax bills.
 - As of 2020, there are several active PACE programs that are available for property owners in California.
-

5.2.2.2 Additional Considerations

In addition to pursuing the funding options above and monitoring the availability of others, Partnership jurisdictions would need to take the following steps in order to best inform decisions related to the cost of GHG reductions measures.

Perform and refine cost estimates. Cost estimates for local reduction measures should be performed to identify the cost-effectiveness of each measure to inform and guide the implementation process. This analysis will likely be based on a variety of participation, per-unit, and other assumptions. As programs are developed, cost estimates should be refined and updated over time with more precise implementation-level data.

Integrate GHG measures into existing jurisdiction budget and CIP. Certain capital improvements, particularly those identified in Energy and Land Use/Transportation Measures, may need to be added to the jurisdiction's CIP and facility master plan programs, as well as those of the jurisdiction utility enterprises and other public agencies (such as transit agencies) that have control for project implementation. For CIPs completely under the jurisdiction's control, new projects would need to be assessed for consistency with a jurisdiction's local CAP or adherence to some minimum energy efficiency standard similar to that achieved by the local plan.

Adopt or update ordinances and/or codes. Some local reduction measures may represent a continuation of recently enacted ordinances, while others would require new ordinances (e.g., Trans-1: Idling ordinance, if not previously adopted by a jurisdiction that selected this measure). Staff would need to coordinate these efforts in conjunction with planning departments, planning commissions, and jurisdiction councils.

Pursue outside funding sources. A range of funding from state and federal agencies has been identified in Table 5-1 above. The jurisdiction would need to pursue these (and other emerging) funding sources as a part of implementation efforts.

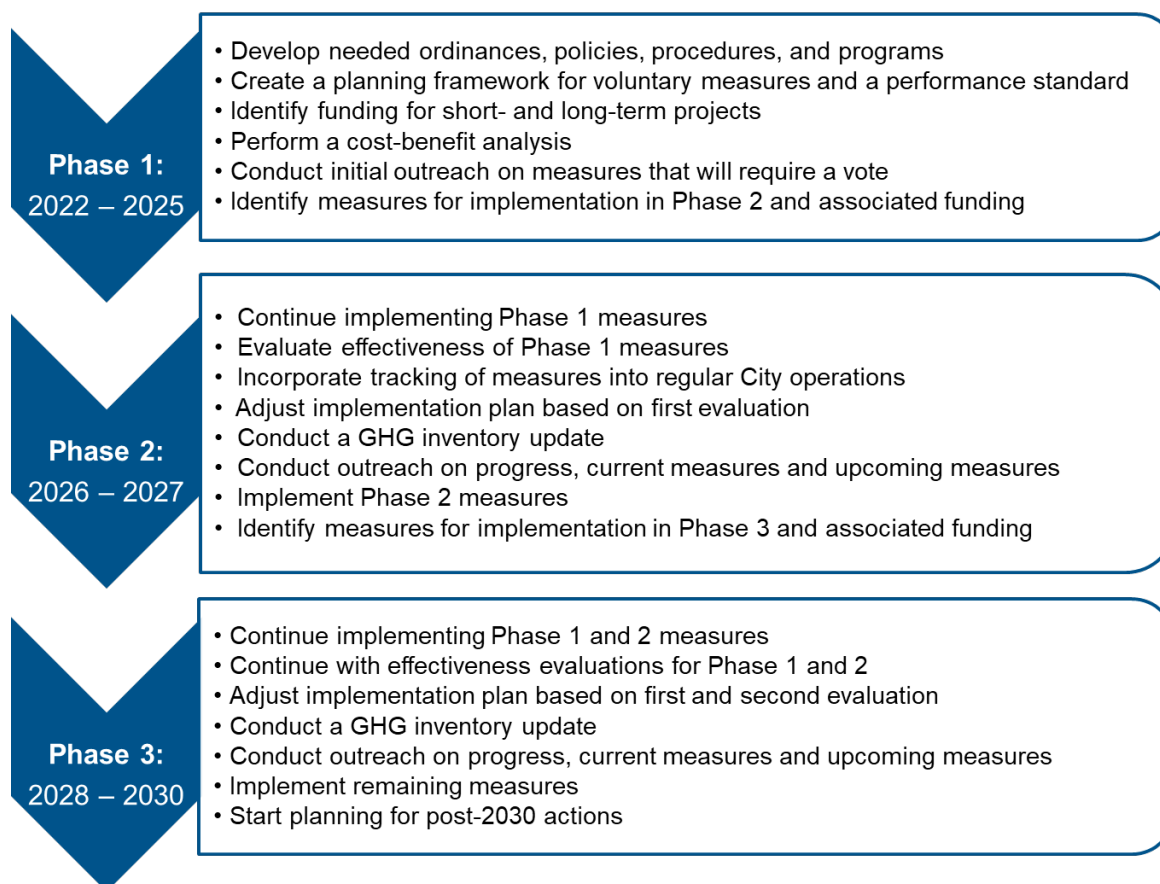
Implement and direct preferred jurisdiction funding sources. While jurisdiction funding sources are limited in most jurisdictions, the jurisdiction, when financially able as a part of its budget process, could appropriate funding from general sources or make changes in its fee schedules, utility rates, and other sources as needed to support funding the implementation of the GHG reduction measures.

Create monitoring/tracking processes. Local reduction measures will usually require program development, tracking, and/or monitoring. For example, Energy-1 (Promote Energy Efficiency for Existing Buildings) would require staff time to promote the replacement of water fixtures; the jurisdiction may also want to track the number of households that participate in the program and the amount of electricity, natural gas, water, and cost savings over time.

Identify economic indicators to consider future funding options. Economic recovery may occur rapidly or slowly. Whatever the timeframe, the jurisdiction would need to determine the point at which certain additional funding sources may become feasible and/or favorable. Identification and monitoring of economic indicators and trends, such as home prices, energy costs per kWh on solar installations, unemployment rates, or real wage increases can help the jurisdiction decide when to further explore the potential for funding local reduction measures through different financing mechanisms.

5.2.3 Timelines for Measure Implementation

If a Partnership jurisdiction uses the Reduction Plan to develop its own jurisdiction-specific CAP, it is anticipated that the jurisdiction would implement its CAP in phases. Figure 5-1 shows an outline of potential key priorities for three potential implementation phases for the jurisdiction's CAP. The phasing described requires as a first step that each Partnership jurisdiction develop a CAP Implementation Timeline. Conceptually, phasing could be broken out into Phase 1 (2022–2025), Phase 2 (2026–2027), or Phase 3 (2028–2030), as proposed below. Although it would be optimal to start in 2021, given the economic downturn due to the COVID-19 health emergency, it is expected that economic recovery activities will be the priority until at least 2022. Also, the first phase has been extended to 2025 recognizing that phasing in the plan may take time given long-term economic and fiscal impacts of the COVID health emergency. However, where feasible, jurisdictions may be able to incorporate low-cost/no cost/net saving GHG reduction strategies earlier, as well as potential use of economic recovery funding that may be available from the state or federal government during Phase 1. Each conceptual phase is discussed in more detail below.

Figure 5-1. Sample Implementation Timeline for a Jurisdiction CAP

Phase 1 (2022–2025): During Phase 1, the jurisdiction would develop key ordinances, programs, policies, and procedures required to support and enforce the local mandatory GHG reduction measures. Likewise, the jurisdiction would create a planning framework that would guide implementation of the voluntary measures and performance standards. Also, funding would be secured, and a detailed finance plan would be developed. The jurisdiction would encourage implementation of cost-effective measures identified in the CAP. A cost-benefit analysis of measures not previously analyzed in the CAP could be completed. The jurisdiction could begin to evaluate the effectiveness of implemented measures and adapt management procedures accordingly.

Phase 2 (2026–2027): During Phase 2, the jurisdiction would continue to implement measures that were begun in Phase 1. The jurisdiction would evaluate the effectiveness of these measures and adapt management procedures accordingly. Likewise, the jurisdiction would conduct an updated community GHG inventory to monitor emissions trends. The jurisdiction would also select and encourage implementation of Phase 2 measures.

Phase 3 (2028–2030): During Phase 3, the jurisdiction would continue to implement and support measures begun in Phases 1 and 2, and encourage implementation of all remaining CAP measures (Phase 3 measures). An analysis of the effectiveness of Phase 1 and 2 measures would

be conducted, as well as an updated community GHG inventory. The jurisdiction could also begin developing plans for post-2030 actions during this period (see further discussion below)

To encourage implementation of all reduction measures, the CIT or CIC, with consultation from the planning commission, jurisdiction council, jurisdiction staff and/or other key stakeholders, would develop a CAP Implementation Timeline. Measure prioritization could be based on the following factors.

- **Cost/Funding**—How much does the measure cost? Is funding already in place for the measure?
- **GHG Reductions**—How effective is the measure at reducing GHGs?
- **Other Benefits**—For example, does the measure improve water quality or conserve resources? Would it create jobs or enhance community well-being?
- **Consistency with Existing Programs**—Does the measure complement or extend existing programs?
- **Impact on the Community**—What are the advantages and disadvantages of the measure to the community as a whole?
- **Speed of Implementation**—How quickly can the measure be implemented and when would the jurisdiction begin to see benefits?
- **Implementation Effort**—How difficult will it be to develop and implement the program?

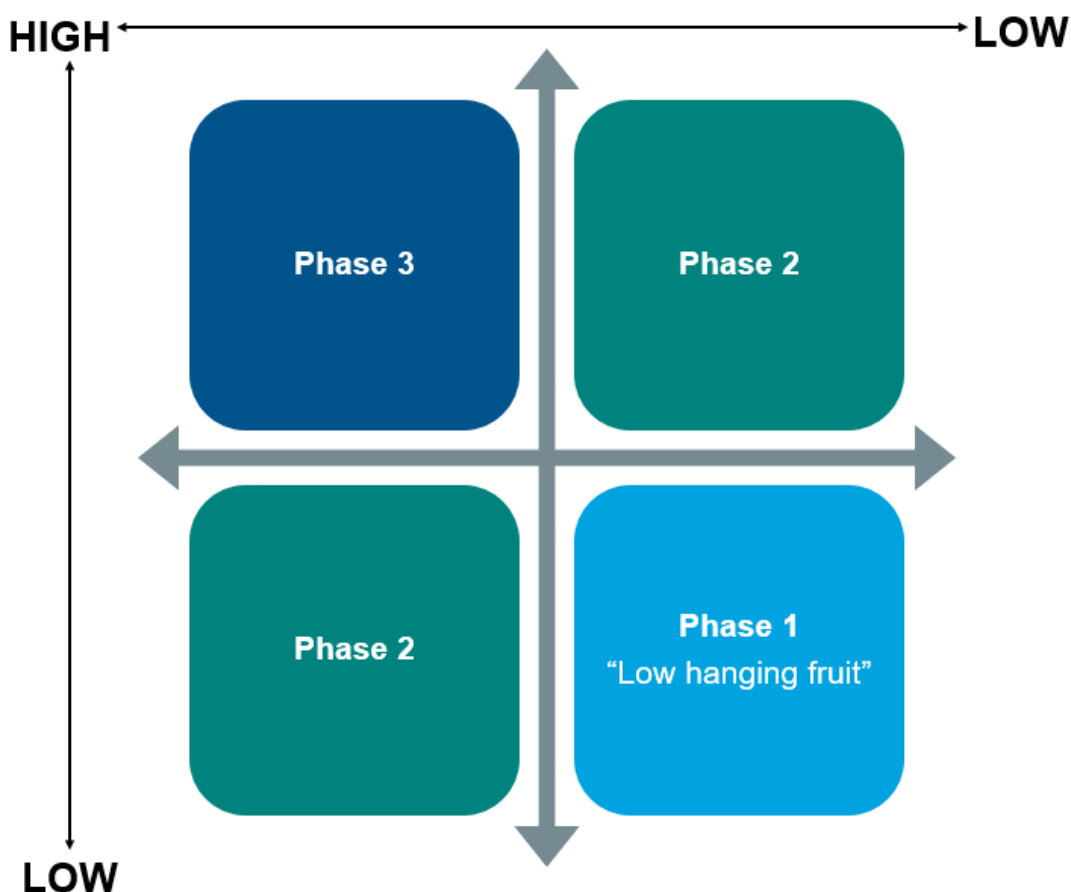
A qualitative appraisal of implementation effort for the jurisdiction is also provided. Measures can be categorized based on the convention of low, medium, or high, with low-level measures being the most likely to be pursued immediately (i.e., the low hanging fruit).

Table 5-2. Implementation Matrix

Implementation Effort Level	Sample Criteria
Low	<ul style="list-style-type: none"> • Requires limited staff resources to develop. • Existing programs in place to support implementation. • Required internal and external coordination is limited. • Required revisions to policy or code are limited.
Medium	<ul style="list-style-type: none"> • Requires staff resources beyond typical daily level. • Policy or code revisions necessary. • Internal and external coordination (e.g., with stakeholders, other jurisdictions or agencies, or general public) is necessary.
High	<ul style="list-style-type: none"> • Requires extensive staff time and resources. • Requires development of completely new policies or programs and potential changes to the general plan. • Robust outreach program required to alert residents and businesses of program requirements and eligibility. • Requires regional cooperation and securing long term funding.

The Action Priority Matrix (Figure 5-2) shows an example of how different GHG reduction measures can be categorized and scheduled based on implementation effort and cost.

Figure 5-2. Activity Priority Matrix



5.2.3.1 Community Outreach and Education

The citizens and businesses in Partnership jurisdictions are integral to the success of the individual CAPs and to overall reductions in GHG emissions for the region. Their involvement is essential, considering that several measures depend on the voluntary commitment, creativity, and participation of the community.

Each jurisdiction could educate stakeholders, such as businesses, business groups, residents, developers, and property owners, about the GHG reduction measures that require their participation, encourage their participation in these programs, and alert them to program requirements, incentives and/or rebate availability, depending on the measure. The CIT or CIC would schedule periodic meetings to facilitate formal community involvement in CAP implementation and adaptation over time. This could include focused meetings for a specific measure or program such as the PACE program and/or agenda items at planning commission, jurisdiction council, or other public meetings. These meetings would be targeted to particular stakeholder groups and provide information on CAP implementation progress as well as the implementation of a specific program or new policy. Alternatively, periodic written updates could be provided in jurisdiction newsletters, SBCOG’s newsletter, on jurisdiction websites, or through other media communications with the general public such as press releases and public service announcements. Stakeholders would be provided an opportunity to comment on potential

improvements or changes to the CAP. The CIT or CIC would also sponsor periodic outreach events to directly inform and solicit the input, suggestions, and participation of the community at large.

5.2.3.2 Monitoring and Reporting

Regular monitoring is critical to ensure programs are functioning as they were originally intended. Early identification of effective strategies and potential issues would enable the jurisdiction to make informed decisions on future priorities, funding, and scheduling. Moreover, monitoring provides concrete data to document the jurisdiction's progress in reducing GHG emissions. The CIT or CIC would be responsible for developing a protocol for monitoring the effectiveness of emissions reduction programs as well as for undertaking emissions inventory updates.

- **Update GHG Inventory**—It is recommended that each jurisdiction inventory its emissions at a minimum for 2014, 2017, and 2019, including regular data collection in each of the primary inventory sectors (utility, regional VMT, waste, wastewater, and water), and compare to the jurisdiction's baseline GHG emissions in 2016. If Participating Jurisdictions were interested, a combined inventory effort could be conducted through SBCOG similar to the inventory preparation that was done for this Regional Plan. The CIT or CIC would consolidate information in a database or spreadsheet that can be used to evaluate the effectiveness of individual reduction measures. If feasible at a reasonable cost/effort, annual GHG inventory monitoring may be conducted starting in 2014, but this would not be a commitment of the jurisdiction until funding mechanisms and resource availability were better understood.
- **Track State Progress**—For many jurisdictions, the CAP will rely heavily on state-level measures. The CIT or CIC would be responsible for tracking the state's progress on implementing state-level programs. Close monitoring of the real gains being achieved by state programs would allow the jurisdiction to adjust its CAP, if needed.
- **Track Completion of GHG Reduction Measures**—The CIT or CIC would keep track of measures implemented as scheduled in the CAP, including progress reports on each measure, funding, and savings. This will allow at least a rough attribution of gains when combined with regular GHG inventory updates.
- **Regular Progress Reports**—The CIT or CIC may report annually (or semi-annually or at other intervals) to the jurisdiction council on CAP implementation progress. If annual reports, periodic inventories, or other information indicates that the GHG reduction measures are not as effective as originally anticipated, the CAP may need to be adjusted, amended, or supplemented. At a minimum, the jurisdiction may conduct a four-year review of CAP effectiveness as part of annual reporting in 2017, which would allow making mid-course adjustments in the CAP if needed to effect change prior to 2030.

5.2.3.3 Regional Cooperation

There are substantial opportunities to enhance the effectiveness of the CAP through regional collaboration. Partnership jurisdictions would explore the potential to leverage resources through regional cooperation. Potential opportunities and partners include the following.

SBCOG: As the regional council of governments and the regional transportation agency, SBCOG is a logical communication hub for Participating jurisdictions to use to share the progress of their CAPs. Further, SBCOG will be the responsible implementing agency for many transportation-

related measures that result in local GHG reductions. SBCOG is also administering telework and rideshare programs for participating jurisdictions.

Air Districts: The South Coast and Mojave Air Districts are the local agencies responsible for developing and implementing air quality plans. The agencies also sponsor various air quality programs that may support implementation of several energy-efficiency, transportation, and renewable energy measures.

Energy Providers: SCE and other local energy providers offer numerous incentives and rebate programs to encourage energy efficiency. Resources offered by the energy providers may reduce the costs of program implementation and administration. There may also be opportunities for cooperation on community-scale alternative energy installations (e.g., wind, solar).

Transportation Agencies (Omnitrans, Mountain Area Regional Transit, Foothill Transit Agency, et al.): Continued coordination with regional transportation agencies would be necessary to fully implement the transportation reduction measures that promote mixed use development. With SB 375 and its linkage to transportation funding, it would also be crucial for the jurisdiction and transportation agencies to develop a shared vision of how land use and transportation can be consistent with the next RTP and the required SCS.

San Bernardino County: The County operates the landfills that receive most of the jurisdictions' waste and has committed as part of its own CAP to improve methane control for its landfills which will help reduce emissions associated with jurisdiction landfilled waste. Coordination with the county to provide the necessary facilities, programs, and incentives would help ensure this goal can be achieved by 2030, as waste services are often shared across several jurisdictions, including the unincorporated portions of the county.

Local Water Providers: The jurisdictions can work with the both the wholesalers and retailers of water in each jurisdiction to promote reductions in indoor and outdoor water use from existing developments.

Regional and Local Wastewater Agencies. Jurisdictions can partner with IEUA or their local wastewater treatment authority in promoting reduction of emissions associated with WWTP operations and to reduce wastewater generations through reduction of stormwater runoff through land use measures promoting infiltration and other non-WWTP treatment methods.

5.2.3.4 Reducing GHG Emissions after 2030

In order to assess whether implementing this Reduction Plan achieves the state's long-term climate goals, one must look beyond 2030 to see whether the emissions reduction measures included for the 2030 milestone set the region on the trajectory toward future greater reductions in the post-2030 period.

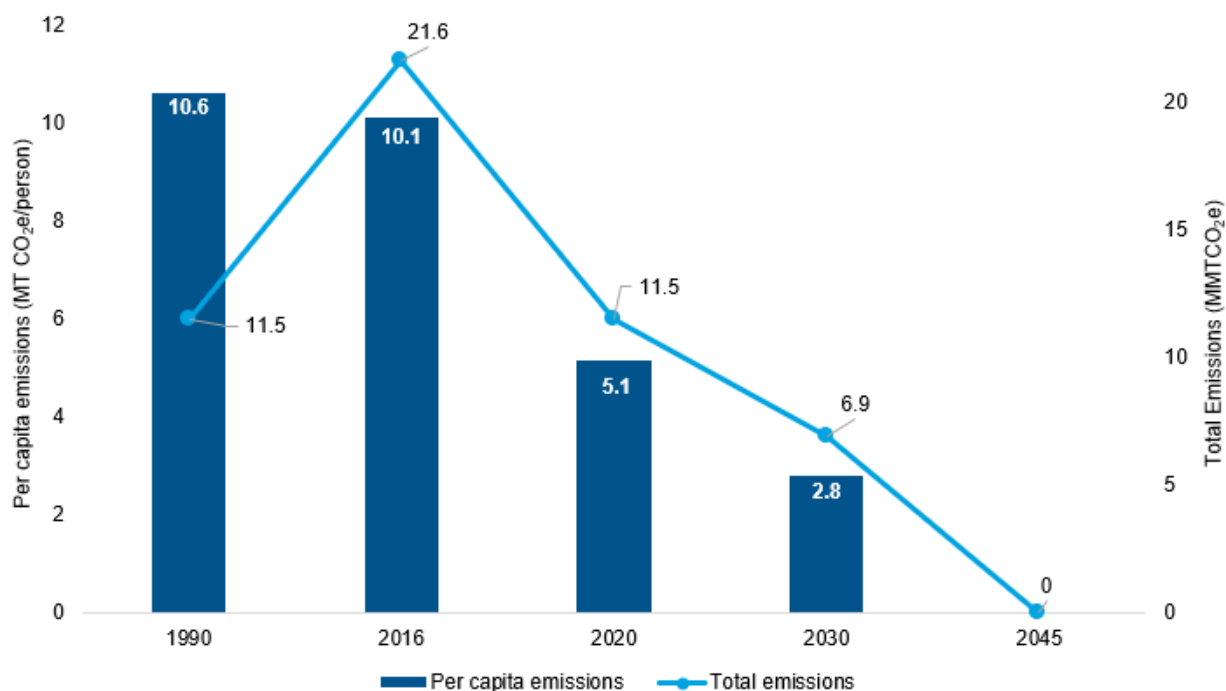
To date, there is no state or federal mandate requiring reduction of GHG emissions after 2030. SB 32 contains no post-2030 reduction target but it does provide CARB with the authority to maintain GHG reductions post 2030. SB 375, while it contains requirements for transportation planning for the MPO (SCAG in this region) to promote reductions in the passenger and light duty vehicle sector, does not contain mandatory requirements for local jurisdictions to reduce their GHG emissions overall.

Governor Brown's Executive Order B-55-18 calls for California to be carbon neutral by 2045. Although not a legal mandate, the goal in this order is an indication of the additional effort needed beyond 2030 to address climate change.

As noted earlier in this report, an executive order is only binding on state agencies, and does not represent a legal mandate for local governments or the private sector. Nevertheless, B-55-18 contains a reduction target that is based on a rough agreement on the basis of scientific understanding of the level of reduction needed in developed countries of the world in order to avoid the more catastrophic effects of climate change that could result from unabated rise in anthropogenic GHG emission. However, there is currently (as of December 2020), there is no state or federal plan as to how to achieve carbon neutrality by 2045. The CARB 2017 SB 32 Scoping Plan did discuss a general scenario of potential reductions. CARB is continuing to develop pathways for the post-2030 period. Similar to the SB 32 Scoping Plan, this Reduction Plan shows a potential trajectory of GHG emissions reductions due to expansion of measures after 2030.

Figure 5-3 depicts what an emissions trajectory might look like, assuming the region follows a linear path from the 2030 reduction target to a 2045 carbon neutral goal matching that in B-55-18. While the specific measures needed to meet the 2045 goal are too far in the future to define in detail, one can examine the level of achievement that would be needed to keep the region on track through 2030. Table 5-3 examines a continuation and strengthening of measures already identified through 2030.

Figure 5-3. Required GHG Reductions in the Region to Meet the State’s 2045 Target



It is reasonably foreseeable that as California approaches the 2030 milestone, focus would shift to the 2045 target. A detailed plan for how the state would meet this target is expected accordingly. Partnership jurisdictions will monitor developments at the national and state levels.

Beginning in Phase 3, it is recommended that the Partnership jurisdictions and SBCOG commence planning for the post-2030 period. At this point, the Partnership jurisdictions would have a better understanding of the effectiveness and efficiency of different reduction strategies and approaches. The new post-2030 reduction plan should include a specific target for GHG reductions for at least 2040 and if supported by long-term planning at the state level, should also include preliminary

planning for 2045. The targets should be consistent with broader state and federal reduction targets and with the scientific understanding of the reductions needed by 2045.

Partnership jurisdictions can do their part to be on track to meet the 2045 goal by implementing the following.

- Increase energy efficiency and green building efforts (for jurisdiction municipal buildings as well as private buildings in the region) to reach full zero net energy for both new development and existing development between 2030 and 2045.
- Continue to implement land use and transportation measures to lower VMT and shift travel modes.
- Capture all methane from landfills receiving regional waste, move toward zero waste and utilize landfill gas further as an energy source.
- Continue to improve local water efficiency and conservation.
- Continue to support and leverage incentive and rebate and other financing programs for residential and commercial energy efficiency and renewable energy installations to shorten payback period and costs and to develop programs that encourage increased use of small-scale renewable power as it becomes more economically feasible.

The conceptual effects of these strategies are presented in Table 5-3 and would represent an approximate doubling of effort for most jurisdictions from that planned at the state and jurisdiction level for 2030. While the potential mix of future GHG reduction measures presented in this section is only an example, it serves to demonstrate that the current measures in the CARB Scoping Plan and the Reduction Plan can not only move the region to its 2030 goal, but can also provide an expandable framework for much greater long-term GHG emissions reductions beyond 2030.

Table 5-3. Potential Regional Reduction Measures to Reach 2045 Goal

Sector	Reductions by 2030 (This Plan)				Scenario for Reductions by 2045	
	State	Local	TOTAL	% below 2016	Additional Reductions Needed for 2030–2045	Effort Relative to 2020–2030
	MTCO _{2e}	MTCO _{2e}	MTCO _{2e}	%	MTCO _{2e}	%
Building Energy (Residential, Commercial, Industrial)	2,618,157	931,841	3,549,998	63%	3,097,785	87%
On-Road Transportation	2,690,435	246,072	2,936,507	36%	6,018,701	205%
Off-Road Transportation and Equipment	NA	13,526	13,526	8%	328,111	2,426%
Solid Waste Management	584,621	356,035	940,655	91%	293,807	31%
Agriculture	NA	3,754	3,754	<1%	81,005	2,158%
Wastewater Treatment	NA	15,551	15,551	6%	78,835	507%
Water Conveyance	NA	90,025	90,025	50%	146,037	162%
GHG Performance Standard for New Development	NA	230,315	230,315	NA	Not estimated	Not estimated
TOTAL	5,893,212	1,919,770	7,812,982	64%	9,861,470	126%

Notes:
 NA indicates “not applicable.”

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