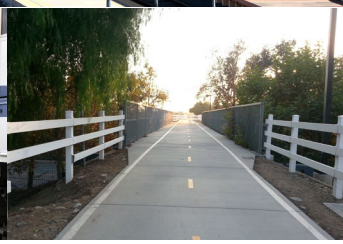
San Bernardino County
Regional Greenhouse Gas Reduction Plan

Public Draft | June 2013



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

Prepared for:
San Bernardino Associated Governments (SANBAG)
1170 W. 3rd Street, 2nd Floor
San Bernardino, CA 92410-1715
Contact: Steve Smith, Director of Planning

Prepared by:
ICF International
620 Folsom Street, Suite 200
San Francisco, CA 94107
Contact: Rich Walter (415) 677-7167

PUBLIC DRAFT

SAN BERNARDINO COUNTY REGIONAL GREENHOUSE GAS REDUCTION PLAN

PREPARED FOR:

San Bernardino Associated Governments (SANBAG)
1170 W. 3rd Street, 2nd Floor
San Bernardino, CA 92410-1715
Contact: Steve Smith, Director of Planning

PREPARED BY:

ICF International
620 Folsom Street, 2nd Floor
San Francisco, CA 94107
Contact: Rich Walter
415.677.7167

June 2013

ICF International. 2013. San Bernardino County Regional Greenhouse Gas Reduction Plan. Public Draft. June. (ICF 00543.12.) San Francisco, CA. Prepared for San Bernardino Associated Governments, San Bernardino, California.

Contents

List of Tables vi
List of Figures xi
List of Acronyms and Abbreviations xv

Page

Executive Summary ES-1
San Bernardino Associated Governments and San Bernardino County Cities Partnership ES-1
Reduction Plan Purpose and Description ES-2
Why Prepare a Greenhouse Gas Reduction Plan? ES-2
Regional Summary—Growth, Emissions and Reductions ES-3
Challenges—How the Region Will Grow ES-3
GHG Emissions for the Partnership Cities ES-8
Regional GHG Reductions—Sector View ES-11
Regional GHG Reductions—City View ES-11
Next Steps ES-16

Chapter 1 Introduction 1-1
1.1 What Is This Document? 1-1
1.2 Benefits of a Regional GHG Reduction Plan 1-1
1.3 SANBAG's Role 1-2
1.4 How Do I Use This Document? 1-2
1.5 Next Steps 1-4

Chapter 2 Background Information 2-1
2.1 Greenhouse Gas Reduction and Climate Action Planning In California 2-1
2.1.1 Federal Regulation 2-1
2.1.2 State Regulation 2-3
2.1.3 Local Governments 2-6
2.2 What Are We Already Doing? 2-7
2.2.1 Regional Transportation Planning 2-7
2.2.2 Utility Incentive Programs 2-8
2.2.3 SANBAG's Long Range Transit Plan 2-12
2.2.4 Unincorporated San Bernardino County 2-13
2.2.5 Other Climate Action Planning Efforts in San Bernardino County 2-13
2.3 Basic Terms and Concepts 2-14
2.3.1 Basic Terms 2-14

2.3.2 Emissions Sectors Explained 2-15
2.3.3 Climate Change and Global Warming 2-16
2.3.4 Principal Greenhouse Gases 2-17
2.3.5 Greenhouse Gas Inventories and Emissions Sources 2-19
2.3.6 Impacts of Climate Change on Southern California 2-19
2.4 Relationship of Climate Action Plans to CEQA and Local General Plans 2-20
Chapter 3 Reduction Profiles 3-1
3.1 Introduction 3-1
3.2 City of Adelanto 3-3
3.2.1 City Summary 3-3
3.2.2 Emission Reductions 3-4
3.2.3 Reduction Measures 3-8
3.2.4 Relevant General Plan Policies 3-10
3.3 City of Big Bear Lake 3-15
3.3.1 City Summary 3-15
3.3.2 Emission Reductions 3-16
3.3.3 Reduction Measures 3-19
3.3.4 Relevant General Plan Policies 3-20
3.4 City of Chino 3-23
3.4.1 City Summary 3-23
3.4.2 Emission Reductions 3-24
3.4.3 Reduction Measures 3-27
3.4.4 Relevant General Plan Policies 3-29
3.5 City of Chino Hills 3-31
3.5.1 City Summary 3-31
3.5.2 Emission Reductions 3-32
3.5.3 Reduction Measures 3-35
3.5.4 Relevant General Plan Policies 3-36
3.6 City of Colton 3-39
3.6.1 City Summary 3-39
3.6.2 Emission Reductions 3-39
3.6.3 Reduction Measures 3-44
3.6.4 Relevant General Plan Policies 3-45
3.7 City of Fontana 3-48
3.7.1 City Summary 3-48
3.7.2 Emission Reductions 3-49
3.7.3 Reduction Measures 3-53

3.7.4 Relevant General Plan Policies 3-55
3.8 City of Grand Terrace 3-58
3.8.1 City Summary 3-58
3.8.2 Emission Reductions 3-58
3.8.3 Reduction Measures 3-62
3.8.4 Relevant General Plan Policies 3-63
3.9 City of Hesperia 3-67
3.9.1 City Summary 3-67
3.9.2 Emission Reductions 3-68
3.9.3 Reduction Measures 3-72
3.9.4 Relevant General Plan Policies 3-74
3.10 City of Highland 3-79
3.10.1 City Summary 3-79
3.10.2 Emission Reductions 3-79
3.10.3 Reduction Measures 3-83
3.10.4 Relevant General Plan Policies 3-84
3.11 City of Loma Linda 3-89
3.11.1 City Summary 3-89
3.11.2 Emission Reductions 3-89
3.11.3 Reduction Measures 3-94
3.11.4 Relevant General Plan Policies 3-96
3.12 City of Montclair 3-101
3.12.1 City Summary 3-101
3.12.2 Emission Reductions 3-102
3.12.3 Reduction Measures 3-106
3.12.4 Relevant General Plan Policies 3-108
3.13 City of Needles 3-110
3.13.1 City Summary 3-110
3.13.2 Emission Reductions 3-111
3.13.3 Reduction Measures 3-114
3.13.4 Relevant General Plan Policies 3-116
3.14 City of Ontario 3-118
3.14.1 City Summary 3-118
3.14.2 Emission Reductions 3-119
3.14.3 Reduction Measures 3-123
3.14.4 Relevant General Plan Policies 3-125
3.15 City of Rancho Cucamonga 3-128

3.15.1 City Summary 3-128
3.15.2 Emission Reductions 3-129
3.15.3 Reduction Measures 3-132
3.15.4 Relevant General Plan Policies 3-134
3.16 City of Redlands 3-140
3.16.1 City Summary 3-140
3.16.2 Emission Reductions 3-141
3.16.3 Reduction Measures 3-144
3.16.4 Relevant General Plan Policies 3-145
3.17 City of Rialto 3-149
3.17.1 City Summary 3-149
3.17.2 Emission Reductions 3-150
3.17.3 Reduction Measures 3-154
3.17.4 Relevant General Plan Policies 3-156
3.18 City of San Bernardino 3-162
3.18.1 City Summary 3-162
3.18.2 Emission Reductions 3-163
3.18.3 Reduction Measures 3-167
3.18.4 Relevant General Plan Policies 3-169
3.19 City of Twentynine Palms 3-172
3.19.1 City Summary 3-172
3.19.2 Emission Reductions 3-172
3.19.3 Reduction Measures 3-176
3.19.4 Relevant General Plan Policies 3-178
3.20 City of Victorville 3-181
3.20.1 City Summary 3-181
3.20.2 Emission Reductions 3-182
3.20.3 Reduction Measures 3-186
3.20.4 Relevant General Plan Policies 3-188
3.21 City of Yucaipa 3-193
3.21.1 City Summary 3-193
3.21.2 Emission Reductions 3-194
3.21.3 Reduction Measures 3-198
3.21.4 Relevant General Plan Policies 3-199
3.22 Town of Yucca Valley 3-202
3.22.1 Town Summary 3-202
3.22.2 Emission Reductions 3-202

3.22.3 Reduction Measures 3-206
3.22.4 Relevant General Plan Policies 3-207

Chapter 4 Reduction Measures 4-1

4.1 Introduction 4-1
4.2 State Measures 4-1
4.2.1 State-1: Senate Bill 1078 (2002)/Senate Bill 107 (2006) and Senate Bill 2 (2011) Renewable Portfolio Standard 4-2
4.2.2 State-2: Title 24 Standards for Non-Residential and Residential Buildings (Energy Efficiency Standards and CALGreen) 4-2
4.2.3 State-3: AB 1109 (Huffman) Lighting Efficiency and Toxics Reduction Act 4-3
4.2.4 State-4: AB 1470 (Huffman) Solar Water Heating 4-3
4.2.5 State-5: Industrial Boiler Efficiency 4-3
4.2.6 State-6a: AB 1493 (Pavley I and II) Greenhouse Reductions from New Passenger Vehicles 4-4
4.2.7 State-6b: (On-Road) and State-8 (Off-Road): Executive Order S-1-07 Low Carbon Fuel Standard 4-4
4.2.8 State-7: Assembly Bill 32 (AB 32) Transportation Reduction Strategies 4-4
4.2.9 State-9: AB 32 Methane Capture 4-5
4.3 County Measures 4-5
4.3.1 County-1: San Bernardino County GHG Reduction Plan Landfill Controls 4-6
4.4 Building Energy 4-6
4.4.1 Energy Efficiency Measures 4-7
4.4.2 Renewable Energy 4-10
4.5 On-Road Transportation 4-14
4.5.1 On Road-1: SB 375 Sustainable Communities Strategy (Regional) 4-14
4.6 Off-Road Equipment 4-19
4.6.1 Off-Road Equipment-1: Electric-Powered Construction Equipment 4-20
4.6.2 Off-Road Equipment-2: Idling Ordinance 4-20
4.6.3 Off-Road Equipment-3: Electric Landscaping Equipment 4-21
4.7 Agriculture 4-21
4.7.1 Agriculture-1: Methane Capture at Large Dairies 4-21
4.7.2 Agriculture-2: Utilize Methane Captured at Dairies 4-22
4.8 Other Land Use Measures (non-Transportation) 4-22
4.8.1 Land Use-1: Tree Planting Programs 4-23
4.8.2 Land Use-2: Promote Rooftop Gardens 4-23
4.9 Solid Waste Management 4-24
4.9.1 Waste-1: Increased Waste Diversion 4-24
4.10 Wastewater Treatment and Discharge 4-25

4.10.1 Wastewater-1: Methane Recovery 4-26
4.10.2 Wastewater-2: Energy Efficiency Equipment Upgrades at Wastewater Treatment Plants (Regional) 4-26
4.10.3 Wastewater-3: Recycled Water 4-27
4.11.1 Water-1: Require Adoption of the Voluntary CALGreen Water Efficiency Measures for New Construction 4-28
4.11.2 Water-2: Implement a Program to Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency 4-29
4.11.3 Water-3: Encourage Water-Efficient Landscaping Practices 4-29
4.11.4 Water-4: Senate Bill X7-7—The Water Conservation Act of 2009 4-30
4.12.1 PS-1: GHG Performance Standard for New Development 4-31

Chapter 5 Implementation of Local Climate Action Plans and Regional Coordination 5-1
5.1 Implementation of the Local Climate Action Plans 5-1
5.2 Local CAP Plan Implementation Steps 5-1
5.2.1 Administration and Staffing 5-1
5.2.2 Financing and Budgeting 5-3
5.2.3 Timelines for Measure Implementation 5-8

Chapter 6 References 6-1

Appendix A San Bernardino County Regional 2008 Community Greenhouse Gas Inventories

Appendix B GHG Reduction Measure Methods

Tables

		Page
ES-1	Socioeconomic Data for Partnership Cities 2008 and 2020	ES-7
1-1	Document Map	1-3
2-1	Emissions Sectors and Reduction Measures	2-15
2-2	Lifetimes and Global Warming Potentials of Several Greenhouse Gases	2-17
2-3	Global, National, State, and Local GHG Emissions Inventories	2-19
3-1	Socioeconomic Data for Adelanto	3-3
3-2	Emission Reductions by Sector for Adelanto	3-7
3-3	GHG Reduction Measures and Estimated 2020 Reductions for Adelanto	3-9
3-4	Socioeconomic Data for Big Bear Lake	3-15
3-5	Emission Reductions by Sector for Big Bear Lake	3-18
3-6	GHG Reduction Measures and Estimated 2020 Reductions for Big Bear Lake	3-20
3-7	Socioeconomic Data for Chino	3-23
3-8	Emission Reductions by Sector for Chino	3-26
3-9	GHG Reduction Measures and Estimated 2020 Reductions for Chino.	3-28
3-10	Socioeconomic Data for Chino Hills	3-31
3-11	Emission Reductions by Sector for Chino Hills	3-34
3-12	GHG Reduction Measures and Estimated 2020 Reductions for Chino Hills	3-36
3-13	Socioeconomic Data for Colton	3-39
3-14	Emission Reductions by Sector for Colton	3-43
3-15	GHG Reduction Measures and Estimated 2020 Reductions for Colton	3-44
3-16	Socioeconomic Data for Fontana	3-48
3-17	Emission Reductions by Sector for Fontana	3-52
3-18	GHG Reduction Measures and Estimated 2020 Reductions for Fontana	3-54
3-19	Socioeconomic Data for Grand Terrace	3-58
3-20	Emission Reductions by Sector for Grand Terrace	3-61

3-21 GHG Reduction Measures and Estimated 2020 Reductions for Grand Terrace 3-63
3-22 Socioeconomic Data for Hesperia 3-67
3-23 Emission Reductions by Sector for Hesperia 3-71
3-24 GHG Reduction Measures and Estimated 2020 Reductions for Hesperia 3-73
3-25 Socioeconomic Data for Highland 3-79
3-26 Emission Reductions by Sector for Highland 3-82
3-27 GHG Reduction Measures and Estimated 2020 Reductions for Highland 3-84
3-28 Socioeconomic Data for Loma Linda 3-89
3-29 Emission Reductions by Sector Loma Linda 3-93
3-30 GHG Reduction Measures for Loma Linda 3-95
3-31 Socioeconomic Data for Montclair 3-102
3-32 Emission Reductions by Sector for Montclair 3-105
3-33 GHG Reduction Measures and Estimated 2020 Reductions for Montclair 3-107
3-34 Socioeconomic Data for Needles 3-111
3-35 Emission Reductions by Sector for Needles 3-113
3-36 GHG Reduction Measures and Estimated 2020 Reductions for Needles 3-115
3-37 Socioeconomic Data for Ontario 3-118
3-38 Emission Reductions by Sector for Ontario 3-122
3-39 GHG Reduction Measures and Estimated 2020 Reductions for Ontario 3-124
3-40 Socioeconomic Data for Rancho Cucamonga 3-128
3-41 Emission Reductions by Sector for Rancho Cucamonga 3-131
3-42 GHG Reduction Measures and Estimated 2020 Reductions for Rancho Cucamonga 3-133
3-43 Socioeconomic Data for Redlands 3-140
3-44 Emission Reductions by Sector for Redlands 3-143
3-45 GHG Reduction Measures and Estimated 2020 Reductions for Redlands 3-145
3-46 Socioeconomic Data for Rialto 3-150
3-47 Emission Reductions by Sector for Rialto 3-153
3-48 GHG Reduction Measures and Estimated 2020 Reductions for Rialto 3-155

3-49 Socioeconomic Data for San Bernardino 3-162

3-50 Emission Reductions by Sector for San Bernardino 3-166

3-51 GHG Reduction Measures and Estimated 2020 Reductions for San Bernardino 3-168

3-52 Socioeconomic Data for Twentynine Palms 3-172

3-53 Emission Reductions by Sector for Twentynine Palms 3-175

3-54 GHG Reduction Measures and Estimated 2020 Reductions for Twentynine Palms 3-177

3-55 Socioeconomic Data for Victorville 3-182

3-56 Emission Reductions by Sector for Victorville 3-185

3-57 GHG Reduction Measures and Estimated 2020 Reductions for Victorville 3-187

3-58 Socioeconomic Data for Yucaipa 3-193

3-59 Emission Reductions by Sector for Yucaipa 3-197

3-60 GHG Reduction Measures and Estimated 2020 Reductions for Yucaipa 3-199

3-61 Socioeconomic Data for Yucca Valley 3-202

3-62 Emission Reductions by Sector for Yucca Valley 3-205

3-63 GHG Reduction Measures and Estimated 2020 Reductions for Yucca Valley 3-207

4-1 Regional GHG Reductions for All GHG Reduction Measures 4-33

5-1 Potential Funding Sources to Support GHG Reduction Measures 5-3

5-3 Implementation Matrix 5-10

5-4 Potential Regional Reduction Measures to Reach 2030 Goal 5-17

Figures

		Page
ES-1A	Map of Percent Growth in Population for Partnership Cities from 2008 to 2020	ES-5
ES-1B	Map of Percent Growth in Jobs for Partnership Cities from 2008 to 2020	ES-6
ES-2	2008 Baseline GHG Emissions and 2020 Business as Usual (BAU) GHG Emissions Forecast for the 21 Partnership Cities	ES-9
ES-3	2008 Baseline GHG Emissions and 2020 BAU GHG Emissions Forecast for the Partnership Cities	ES-10
ES-4	Total Identified GHG Reductions in 2020 for the 21-Partnership Cities ($MTCO_2e$)	ES-12
ES-5	2020 BAU GHG Emissions Forecast and Identified GHG Reductions in 2020 for All Partnership Cities ($MTCO_2e$)	ES-13
ES-6	Distribution of Regional BAU Emissions in 2020 by Sector ($MTCO_2e$)	ES-14
ES-7a	Distribution of Projected Emissions in 2020 for all Partnership Cities ($MTCO_2e$)	ES-15
ES-7b	Distribution of Identified Emissions Reductions in 2020 for all Partnership Cities ($MTCO_2e$)	ES-15
2-1	Milestones in Federal and State Legislation and Regulation	2-2
2-2	CAP, General Plans and CEQA	2-20
3-1	Emissions Reduction Profile for Adelanto	3-5
3-2	Emissions by Sector for Adelanto	3-6
3-3	Emission Reductions by Control and by Sector for Adelanto	3-8
3-4	Emissions Reduction Profile for Big Bear Lake	3-17
3-5	Emissions by Sector Big Bear Lake	3-18
3-6	Emission Reductions by Control and by Sector for Big Bear Lake	3-19
3-7	Emissions Reduction Profile for Chino	3-25
3-8	Emissions by Sector for Chino	3-26
3-9	Emission Reductions by Control and by Sector for Chino	3-27
3-10	Emissions Reduction Profile for Chino Hills	3-33

3-11 Emissions by Sector for Chino Hills 3-34
3-12 Emission Reductions by Control and by Sector for Chino Hills 3-35
3-13 Emissions Reduction Profile for Colton 3-42
3-14 Emissions by Sector for Colton 3-43
3-15 Emission Reductions by Control and by Sector for Colton 3-44
3-16 Emissions Reduction Profile for Fontana 3-51
3-17 Emissions by Sector for Fontana 3-52
3-18 Emission Reductions by Control and by Sector for Fontana 3-53
3-19 Emissions Reduction Profile for Grand Terrace 3-60
3-20 Emissions by Sector for Grand Terrace 3-61
3-21 Emission Reductions by Control and by Sector for Grand Terrace 3-62
3-22 Emissions Reduction Profile for Hesperia 3-70
3-23 Emissions by Sector for Hesperia 3-71
3-24 Emission Reductions by Control and by Sector for Hesperia 3-72
3-25 Emissions Reduction Profile for Highland 3-81
3-26 Emissions by Sector for Highland 3-82
3-27 Emission Reductions by Control and by Sector for Highland 3-83
3-28 Emissions Reduction Profile for Loma Linda 3-92
3-29 Emissions by Sector for Loma Linda 3-93
3-30 Emission Reductions by Control and by Sector for Loma Linda 3-94
3-31 Emissions Reduction Profile for Montclair 3-104
3-32 Emissions by Sector for Montclair 3-105
3-33 Emission Reductions by Control and by Sector for Montclair. 3-106
3-34 Emissions Reduction Profile for Needles 3-112
3-35 Emissions by Sector for Needles 3-113
3-36 Emission Reductions by Control and by Sector for Needles 3-114
3-37 Emissions Reduction Profile for Ontario 3-121
3-38 Emissions by Sector for Ontario 3-122

3-39 Emission Reductions by Control and by Sector for Ontario 3-123
3-40 Emissions Reduction Profile for Rancho Cucamonga 3-130
3-41 Emissions by Sector for Rancho Cucamonga 3-131
3-42 Emission Reductions by Control and by Sector for Rancho Cucamonga 3-132
3-43 Emissions Reduction Profile for Redlands 3-142
3-44 Emissions by Sector for Redlands 3-143
3-45 Emission Reductions by Control and by Sector for Redlands 3-144
3-46 Emissions Reduction Profile for Rialto 3-152
3-47 Emissions by Sector for Rialto 3-153
3-48 Emission Reductions by Control and by Sector for Rialto 3-154
3-49 Emissions Reduction Profile for San Bernardino 3-164
3-50 Emissions by Sector for San Bernardino 3-165
3-51 Emission Reductions by Control and by Sector for San Bernardino 3-167
3-52 Emissions Reduction Profile for Twentynine Palms 3-174
3-53 Emissions by Sector for Twentynine Palms 3-175
3-54 Emission Reductions by Control and by Sector for Twentynine Palms 3-176
3-55 Emissions Reduction Profile for Victorville 3-184
3-56 Emissions by Sector for Victorville 3-185
3-57 Emission Reductions by Control and by Sector for Victorville 3-186
3-58 Emissions Reduction Profile for Yucaipa 3-195
3-59 Emissions by Sector for Yucaipa 3-196
3-60 Emission Reductions by Control and by Sector for Yucaipa 3-198
3-61 Emissions Reduction Profile for Yucca Valley 3-204
3-62 Emissions by Sector for Yucca Valley 3-205
3-63 Emission Reductions by Control and by Sector for Yucca Valley 3-206
5-1 Sample Implementation Timeline for a City CAP 5-9
5-2 Activity Priority Matrix 5-11
5-3 Required GHG Reductions in the Region to Meet the State's 2050 Target 5-16

Acronyms and Abbreviations

20X2020 goal	20% reduction in urban per capita use by December 31, 2020 (referred to as the
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	hydrofleorocarbons
HQTA	High Quality Transit Areas
HVAC	heating/venting and air conditioning
I	Interstate
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
LRTP	Long Range Transit Plan
MCAP	municipal inventory and reduction plan
MEU	Mobile Energy Unit
$MMTCO_2e$	million MTCO2e
MPOs	metropolitan planning organizations
$MTCO_2e$	metric tons of carbon dioxide equivalent
MW	megawatt
N_2O	nitrous oxide
NPV	Net Present Values
ODS	ozone-depleting substances
PACE	Property Assessed Clean Energy
Partnership	San Bernardino Associated 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
SANBAG	San Bernardino Associated Governments
SB	Senate Bill
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 Associated Governments and San Bernardino County Cities 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. The law directed the California Air Resources Board (CARB) to develop a plan (AB 32 Scoping Plan) that charts a path towards the GHG reduction goal using all technologically feasible and cost effective means. The Scoping Plan recommends that California cities and counties seek to reduce their GHG emissions consistent with statewide reductions. Senate Bill (SB) 375, passed in 2008, requires regional transportation planning to promote reductions in passenger and light duty vehicle GHG emissions.

In response to these initiatives, an informal project partnership, led by the San Bernardino Associated Governments (SANBAG), is cooperating in compiling an inventory of GHG emissions and an evaluation of reduction measures that could be adopted by the 21 Partnership Cities of San Bernardino County. For the purposes of this report, this group is referred to as the San Bernardino Associated Governments and Participating San Bernardino County Cities Partnership (Partnership).

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

1. Prepare a current year (2008) GHG emissions inventory for each of the 21 Partnership cities in the county.
2. Prepare a future year (2020) GHG emissions forecast for each of the cities.
3. Develop a tool for each city to develop its municipal inventory (i.e., emissions due only to the city's municipal operations and sometimes referred to as municipal inventory) and municipal reduction plan.
4. Develop GHG reduction measures and city selection of measures appropriate for each jurisdiction.
5. 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 cities aim to more effectively address emissions from activities that are affected or influenced by the region as a whole.

The 21 Partnership cities participating in this study are Adelanto, Big Bear Lake, Chino, Chino Hills, Colton, Fontana, Grand Terrace, Hesperia, Highland, Loma Linda, Montclair, Needles, Ontario, Rancho Cucamonga, Redlands, Rialto, San Bernardino, Twentynine Palms, Victorville, Yucaipa, and Yucca Valley.

Reduction Plan Purpose and Description

This *San Bernardino County Regional Greenhouse Gas Reduction Plan* (Reduction Plan). This document satisfies the Partnership goals 1, 2, 4 and 5 listed above. A tool for inventorying municipal GHG emissions and planning for their reduction was developed and provided to the Partnership cities separately in 2011. This Reduction Plan includes *San Bernardino County Regional 2008 Community Greenhouse Gas Inventories,* as Appendix A to this document.

This Reduction Plan summarizes the actions that each city has selected in order to reduce GHG emissions, state-mandated actions, GHG emissions avoided in 2020 associated with each local and state action, and each city's predicted progress towards their selected GHG reduction goal. Chapter 4 of this report includes a detailed description of each GHG reduction strategy (or action) organized as follows.

- Measure description
- Entity responsible for implementing the action
- Measure implementation details
- Level of commitment
- Range of GHG reductions
- Other co-benefits

This Reduction Plan is intended to be used as a reference document and is not intended to be read continuously from beginning to end. Each city has its own section which details the city's 2008 GHG emissions inventory, 2020 GHG emissions forecast, reduction goal and city-selected GHG reduction strategies, and related General Plan policies or other ongoing programs in the city. The city sections are largely graphical and the reader is encouraged to utilize the reduction measure descriptions in Chapter 4, the implementation guidelines in Chapter 5, and the Appendices together with each city section. The city reduction plans developed as part of this document are intended to serve as a foundation upon which each individual jurisdiction may decide to develop its own customized and comprehensive CAP This effort leveraged work efforts that would be common to all jurisdictions and allowed each city to select its own individual programs and policies, which differ from city to city. SANBAG anticipates that individual cities may choose to utilize the information in this document to complete and adopt their own CAPs.

Why Prepare a Greenhouse Gas Reduction Plan?

There are a number of benefits of preparing a local greenhouse gas reduction plan including the following:

- Assessment of all GHG emission sources comprehensively and consistently instead of individually for different projects.
- Streamlining of project approvals and CEQA by providing tiering from a local reduction plan and its associated CEQA document.
- Strategic evaluation of overall GHG emissions reductions measures, including reduction effectiveness, costs and savings, and other community co-benefits, such as improved air quality.

- Selection of feasible and cost-effective means to reduce GHG emissions including many that can save money for municipal governments, businesses, individuals, and the community as a whole.
- Identification of the local role in reducing GHG emissions in light of larger state efforts.
- Identification of credit for prior and ongoing city actions.

Preparation of a regional reduction plan as the predecessor to a local CAP offers the following benefits.

- Consistency: Use of consistent methodologies in preparing GHG inventories and in calculating GHG reductions avoids inconsistencies between neighboring cities in how they account for emissions and reductions and promotes fair comparisons across cities in the region.
- Economies of Scale for Plan Preparation: The cost of preparing inventories, developing reduction strategies, 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, cities can identify areas of common action where working together can result in cost savings in implementation. For example, SANBAG is working with Partnership cities on a regional approach to financing for energy-efficiency retrofits and renewable energy. In the future, the Partnership cities can also seek external grant funding and other opportunities together, which can reduce implementing cost by leveraging economies of scale.
- Unified Approach to CEQA: By preparing a single EIR covering a wide range of potential city reduction measures, individual cities can avoid the cost of preparing separate CEQA documents for their own local CAPs or can minimize their need to prepare CEQA documentation from scratch.

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. On July 1, 2008 (the baseline year for the inventories), the county's total population was 2,015,862 (Southern California Association of Governments 2012). The population of only the 21 Partnership cities on July 1, 2008 was 1,562,363. The county also hosts nearly 700,000 jobs, 600,000 in Partnership cities (Southern California Association of Governments 2012).

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 cities in the Partnership. Partnership cities expected to experience the largest increase in population from 2008 to 2020 are Adelanto (48%), Ontario (32%) and Victorville (30%). Partnership cities expected to experience the largest growth in jobs from 2008 to 2020 are Victorville (36%), Adelanto (35%) and

Ontario (32%). Overall the region will add approximately 265,000 residents and 120,000 jobs before 2020.

Partnership cities 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. Research conducted by the California Department of Finance shows that San Bernardino County ranked 17 of 58 California counties for expected growth between 2010 and 2020 (California Department of Finance 2012). Neighboring counties of Kern and Riverside ranked first and fourth, respectively. Partnership cities, and the state as a whole, will need to pursue comprehensive approaches to improve the efficiency of and reduce the energy associated with the day to day activities of workers and residents in the region.

Figure ES-1A. Map of Percent Growth in Population for Partnership Cities from 2008 to 2020

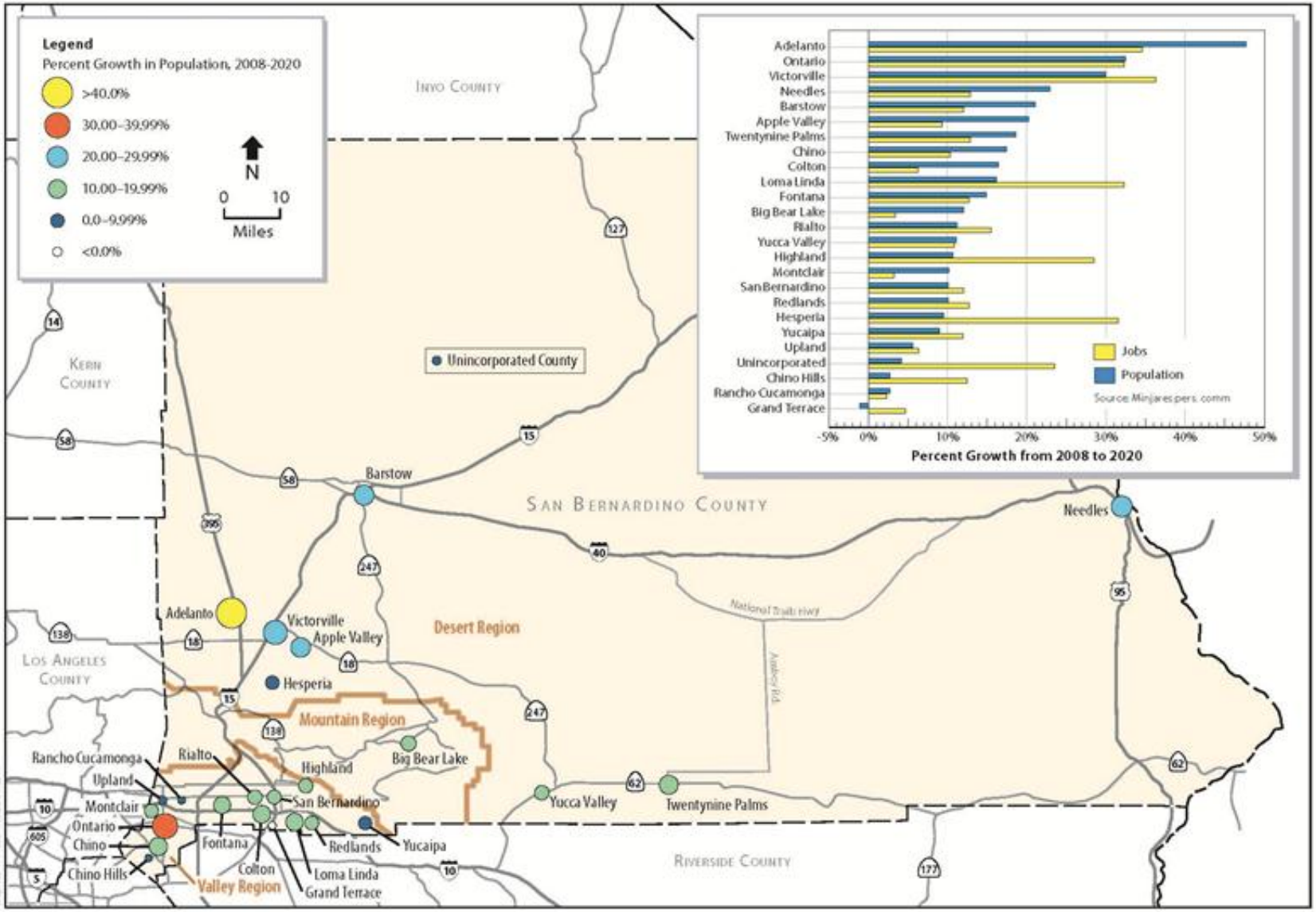


Figure ES-1B. Map of Percent Growth in Jobs for Partnership Cities from 2008 to 2020

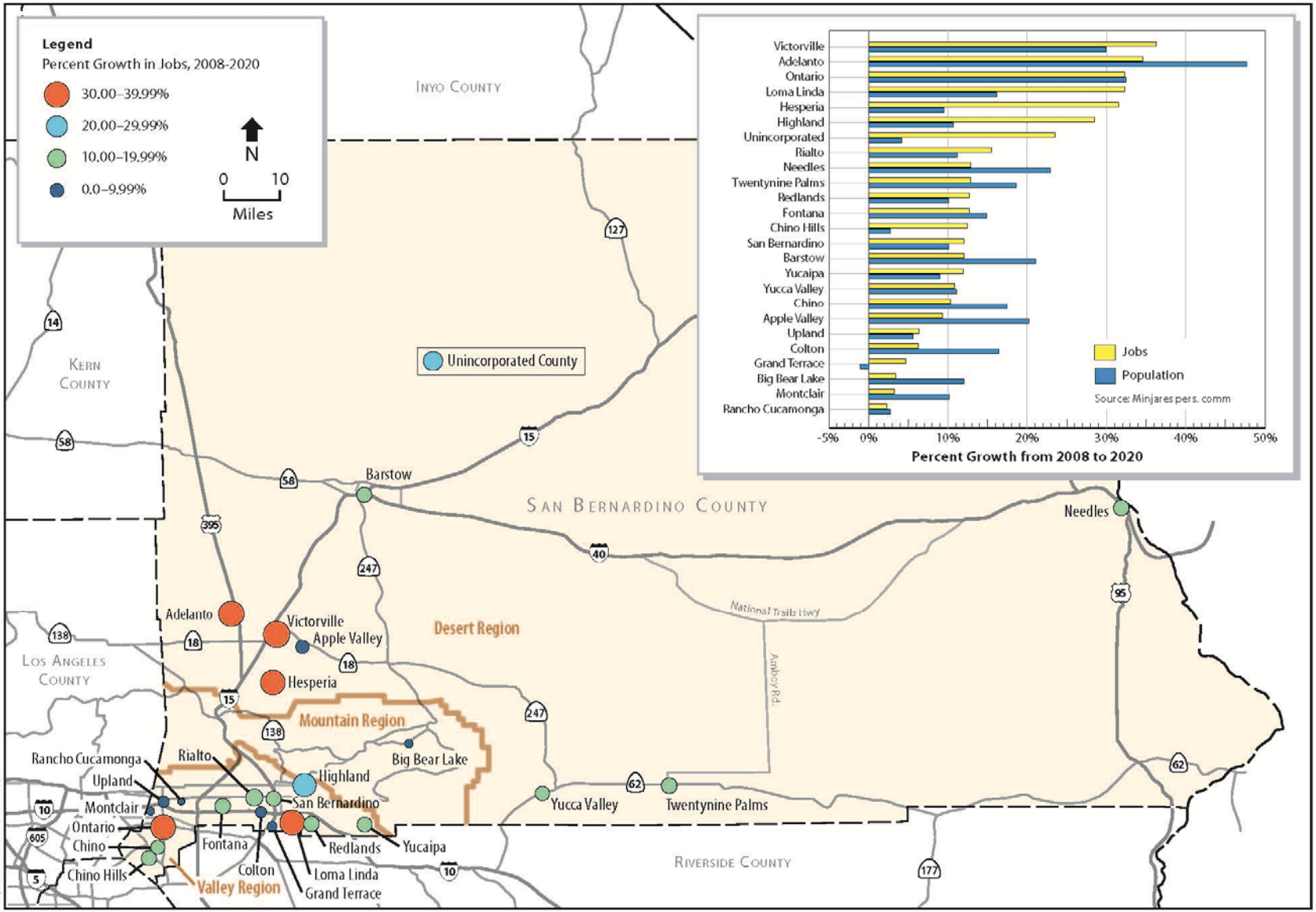


Table ES-1. Socioeconomic Data for Partnership Cities 2008 and 2020

	Year 2008			Year 2020		
City	Population	Employment	Housing	Population	Employment	Housing
Adelanto	31,200	5,432	7,670	46,084	7,313	11,900
Big Bear Lake	5,019	6,212	2,196	5,619	6,423	2,400
Chino	75,596	48,495	20,135	88,772	53,470	24,569
Chino Hills	74,571	9,302	22,870	76,558	10,452	23,999
Colton	52,103	24,023	14,955	60,652	25,529	17,842
Fontana	193,913	47,622	48,573	222,717	53,652	57,482
Grand Terrace	11,768	3,019	4,303	11,644	3,160	4,554
Hesperia	89,617	15,537	26,266	98,163	20,438	28,892
Highland	52,986	6,037	15,436	58,646	7,757	17,713
Loma Linda	23,027	17,597	8,675	26,746	23,281	10,459
Montclair	35,987	16,527	9,346	39,667	17,049	10,446
Needles	4,844	3,323	1,918	5,954	3,752	2,351
Ontario	162,871	114,339	44,639	215,765	151,279	61,128
Rancho Cucamonga	162,792	62,462	53,564	167,118	63,869	56,303
Redlands	68,576	41,435	24,701	75,494	46,682	28,262
Rialto	98,923	22,877	25,137	109,970	26,425	29,396
San Bernardino	209,924	101,253	59,310	231,151	113,357	66,924
Twentynine Palms	24,905	3,211	8,048	29,538	3,625	9,623
Victorville	111,872	33,705	31,423	145,345	45,930	43,687
Yucaipa	51,217	9,761	18,176	55,821	10,923	20,692
Yucca Valley	20,652	4,575	8,254	22,953	5,071	9,856
Total	1,562,363	596,744	455,595	1,794,377	699,437	538,478

Source: Southern California Association of Governments 2012

GHG Emissions for the Partnership Cities

Total GHG emissions[1], excluding stationary sources[2], for the combination of all Partnership cities in 2008 were 13,543,455 metric tons of carbon dioxide equivalent ($MTCO_2e$). Projected Business as Usual (BAU) GHG emissions for the combination of all Partnership cities in 2020 would be 15,491,136 $MTCO_2e$. The contribution of activity within various sectors to the total GHG emissions in the region is shown in Figure ES-2.

In 2008 and in 2020, the largest sources of GHG emissions in the region are combustion of transportation fuels and the use of electricity and natural gas by residential and commercial buildings. Consequently, the on-road transportation and building energy sectors will figure prominently in city GHG reduction plans.

Total GHG emissions in 2008 and projected GHG emissions in 2020 are shown for each of the Partnership cities in Figure ES-3.

Partnership cities were given the option of using either the 2008 baseline or the 2020 projection when setting a GHG emissions reduction target for 2020. Both are considered acceptable methods in order to evaluate consistency with AB 32 reduction targets for the state. Reduction targets are discussed in more detail in Chapter 2.

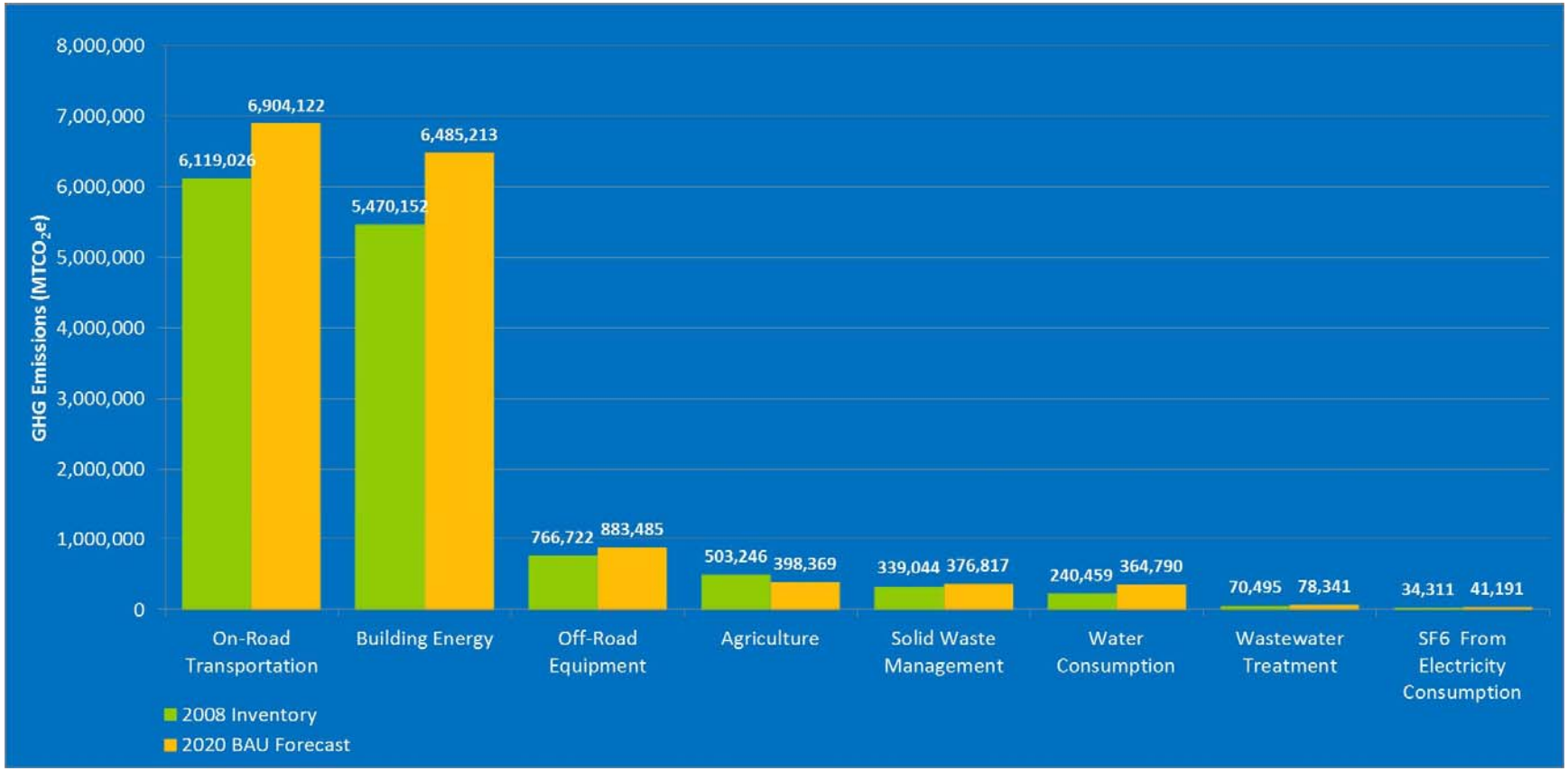
Including stationary sources, the emissions in 2008 would be 17,487,636 $MTCO_2e$ and 2020 BAU emissions are estimated as 19,988,054 $MTCO_2e$. Stationary sources would be the third largest source of emissions if you included it in regional totals. The stationary sources sector is not shown in figure ES-2 or ES-3, although these sources are discussed in each city's summary in Chapter 3.

A detailed description of each city's GHG inventory is provided in Appendix A, *San Bernardino County Regional 2008 Community Greenhouse Gas Inventories*.

[1] 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 city 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)

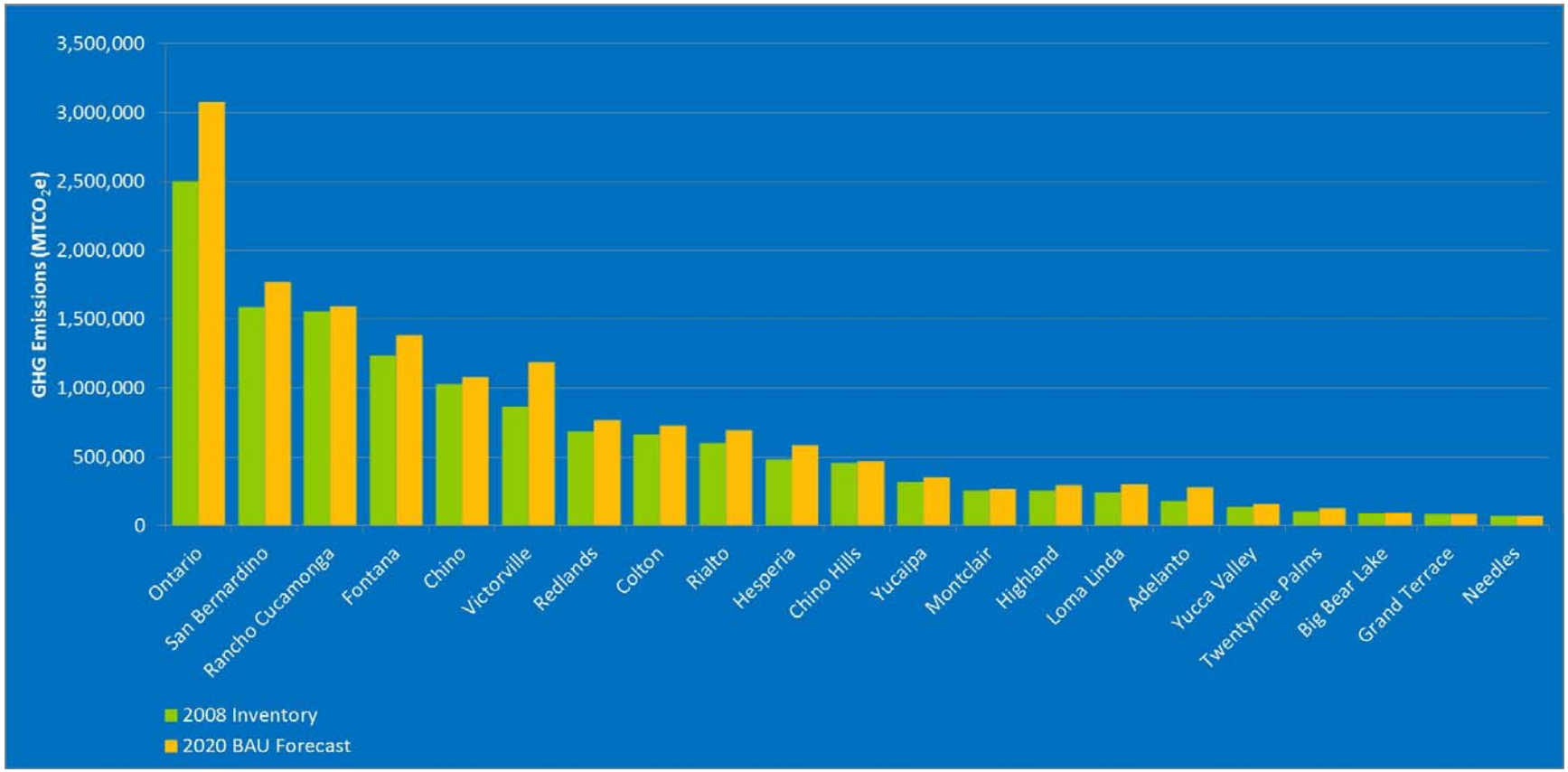
[2] Stationary sources are disclosed in the inventories, but are not included in the totals for local reduction planning as local municipalities have limited authority over large stationary sources, which are being regulated for GHG emissions by both the state (CARB) and by the federal government (U.S.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

Figure ES-2. 2008 Baseline GHG Emissions and 2020 Business as Usual (BAU)[3] GHG Emissions Forecast for the 21 Partnership Cities



[3] Business as Usual (abbreviated as BAU) reflects conditions that would exist in the future without any local or state action to reduce GHG actions. The 2020 BAU conditions are a raw projections of emissions using the 2008 emissions as a base and then inflating the emissions for 2020 based on the increases in population, housing and employment. Methods used to develop the 2020 BAU forecast are described in Appendix A.

Figure ES-3. 2008 Baseline GHG Emissions and 2020 BAU GHG Emissions Forecast for the Partnership Cities



Regional GHG Reductions—Sector View

Through this project, Partnership cities identified actions that could become the basis of each city'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), those enacted at the regional level such as the programs and policies in the Southern California Association of Governments (SCAG) 2012 Regional Transportation Plan, and those implemented individually by each Partnership city such as a green building code, local energy efficiency retrofits, or waste diversion requirements. Through the combination of these actions, each Partnership city and the region as a whole would be able to reduce GHG emissions. Reduction targets are only identified on a per city basis; however based on the identified reduction measures selected by the Partnership cities, the collective local and state actions would result in a reduction of emission for the region as a whole by 20% compared to 2008 baseline levels and 30% compared to 2020 business-as-usual (BAU) levels. These levels roughly match the state's goals for reductions to meet AB 32[4].

Additionally, some GHG reduction actions are best suited to regional planning and cooperation and the benefits are best monitored at the regional as opposed to the city level. The results presented in this document can be used to support both city-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 cities within that sector, including state level programs). Figure ES-4 shows that there is a potential for approximately 4.6 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, an additional 17% from measures implemented at the local level in the building energy sector, and additional 8% from other local programs.

Regional GHG Reductions—City View

Figure ES-5 shows the amount of GHG reductions that have been identified by each of the Partnership cities relative to their 2020 BAU projection and their identified target. Figure ES-5 shows that all cities 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 cities are either 15% below 2008 GHG emissions levels or a range of levels between and 20% and 30% below 2020 BAU GHG emissions levels. Figure ES-6 shows a comparison of emissions by sector in 2020 and reductions by sector in 2020. The pie charts show a similar distribution across sectors, indicating that emissions are projected to be reduced proportionally in the sectors where projected 2020 emissions are the highest, such as building energy and on-road transportation. Figure ES-7a shows projected 2020 emissions for each city, excluding stationary source emissions, and figures ES-7b shows the contribution of each city to the overall GHG reductions in the region. These contributions generally parallel the distribution of population and employment in the region.

[4] Using CARB's latest inventory data for greenhouse gas emissions for 2008, in order to reach 1990 emission levels (as required by AB 32), state emissions in 2020 need to be 9% to 10% below 2008 levels and 20% to 22% below 2020 levels levels, depending on whether carbon sinks are included.

Figure ES-4. Total Identified GHG Reductions in 2020 for the 21-Partnership Cities ($MTCO_2e$)

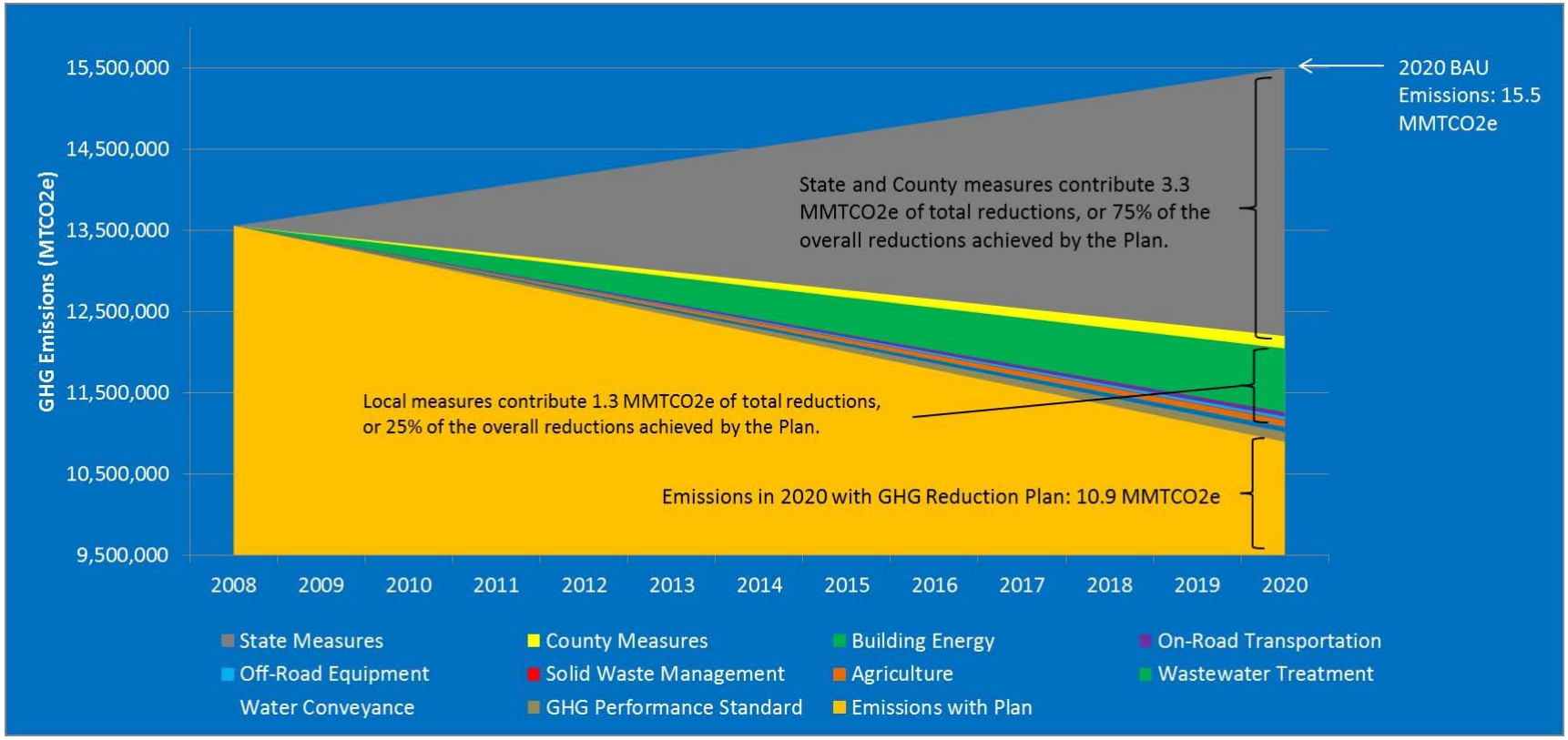


Figure ES-5. 2020 BAU GHG Emissions Forecast and Identified GHG Reductions in 2020 for All Partnership Cities ($MTCO_2e$)

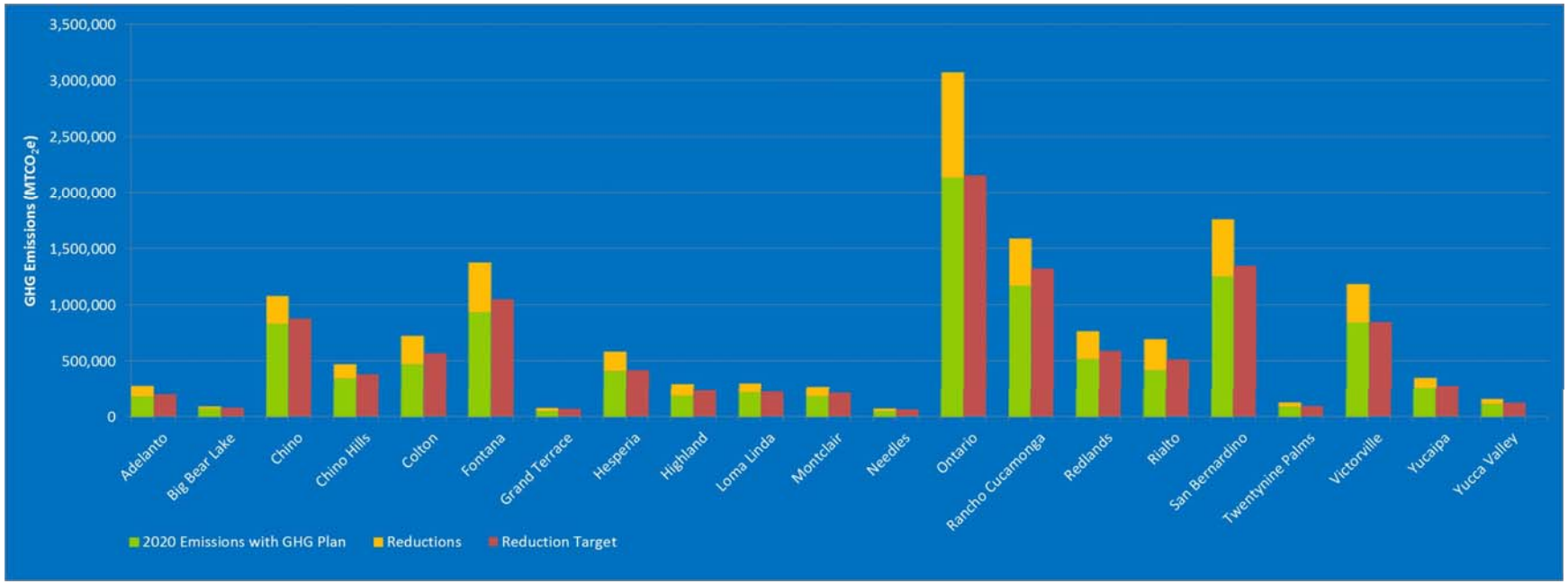


Figure ES-6. Distribution of Regional BAU Emissions in 2020 by Sector ($MTCO_2e$)

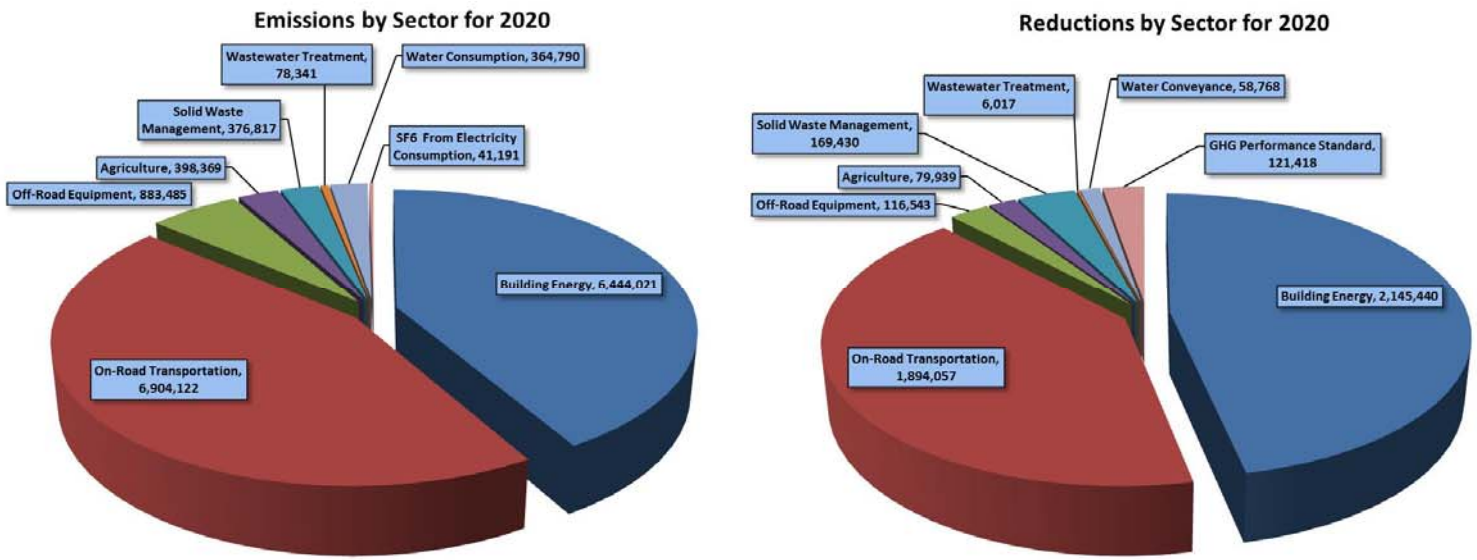


Figure ES-7a. Distribution of Projected Emissions in 2020 for all Partnership Cities ($MTCO_2e$)

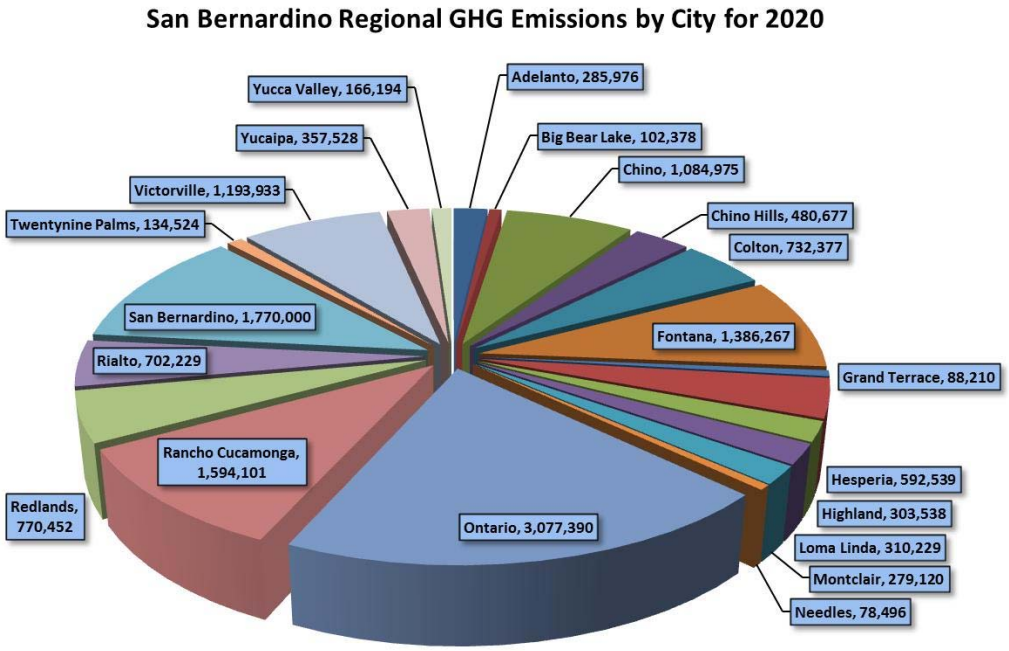
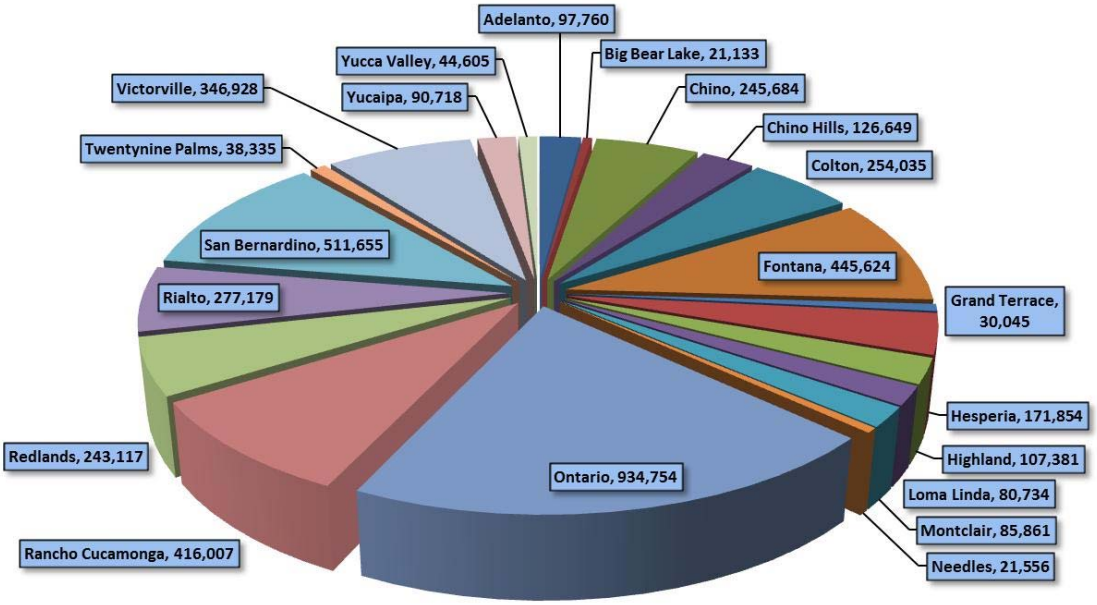


Figure ES-7b. Distribution of Identified Emissions Reductions in 2020 for all Partnership Cities ($MTCO_2e$)



Next Steps

This Reduction Plan identifies state measures applicable to every Partnership city and local measures selected by each local city that could reduce future GHG emissions within the jurisdictional boundary of the city. Through the development of this Reduction Plan, each Partnership city has individually selected GHG reduction strategies, tailored the level of commitment for reduction strategies and set unique GHG reduction goals for the year 2020. Neither SANBAG nor the region, as a whole, has set a regional GHG reduction goal and this Reduction Plan is not a mandate from SANBAG. Instead it represents the collective effect of the individual cities actions. This document describes the projected GHG reductions that can be achieved for the region through the combined efforts of all Partnership cities, if they were to fully implement the reduction strategies identified in this Reduction Plan.

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

1. **Plan Adoption**—Partnership cities 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 here. This would occur after SANBAG approves this Reduction Plan and certifies the EIR (see step #2 below). Development of a CAP may require the development of a city-specific implementation plan identifying responsible parties, funding and tracking protocols, and the scheduling of actions. Each Partnership city would undertake steps needed to formally adopt the CAP in their city such as gathering input from stakeholders, conducting public meetings, review by city council, planning commission or board of supervisors, California Environmental Quality Act (CEQA) analysis as needed, and/or vote by a governing body.
2. **Environmental Impact Report (EIR) on the Regional Reduction Plan**—To fulfill the requirements of CEQA, an EIR will be completed to assess the potential environmental impacts associated with implementation of the this Reduction Plan. The EIR will rely on the assumption that all cities will implement the measures selected in this Reduction Plan prior to 2020 but does not require that all Partnership cities formally adopt this Reduction Plan. Additional CEQA analyses will only be required at the city level if Partnership cities choose to change their GHG reduction measures from those identified in this Reduction Plan and those measures have potentially significant secondary impacts on the environment.
3. **Implementation and Tracking of the Reduction Plan(s)**—Crucial to the success of implementing the Reduction Plan and to adaptive management of GHG reductions strategies going forward is tracking the progress of the Reduction Plan, monitoring the real benefits, and reporting these results. Each Partnership city is expected to monitor the progress of actions identified as well as monitor metrics reflecting the gains of the program such as energy consumption, water consumption or waste diversion. SANBAG can take a lead role in communicating with each Partnership city, tracking regional progress and regularly updating and communicating with issues relevant to the whole Partnership, including future updates to the Reduction Plan if desired by the Partnership cities. This is discussed further in Chapter 5.
4. **Tiering of CEQA Analysis of Greenhouse Gas Emissions—**Those Partnership cities choosing to complete and adopt local CAPs that are consistent with this GHG Reduction Plan and with the Regional Plan Program EIR prepared by SANBAG will be able to tier their future project-level

CEQA analyses of GHG emissions off of the Regional Plan Program EIR. This can help to streamline project-level CEQA review, as a benefit of local climate action planning.

Chapter 1
Introduction

1.1 What Is This Document?

This document presents greenhouse gas (GHG) inventories, identifies the effectiveness of California initiatives to reduce GHG emissions, and identifies local measures that were selected by each of 21 Partnership cities to reduce GHG emissions under their jurisdiction. 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 Assembly Bill (AB) 32, the "Global Warming Solutions Act of 2006" and Senate Bill (SB) 375. Partnership cities will use this document in a variety of ways, depending on their needs.

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

1.2 Benefits of a Regional GHG Reduction Plan

Partnership cities have chosen to prepare GHG inventories and evaluate local GHG reduction measures in concert. San Bernardino Associated Governments (SANBAG) and the Partnership cities see several advantages to this approach.

Economies of Scale: Although many aspects of GHG planning and policy making are unique to each city, certain steps are standard and would be conducted in exactly the same way by all cities. These steps include: GHG inventory data collection; GHG inventory calculations; 2020 GHG forecast; review of standard GHG reduction measures; quantification of the benefit of state level GHG reduction measures; and preparation of basic regulatory language and text common to GHG reduction plan documents in California. Completing these standard steps together saves both money and time for all Partnership cities.

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 cities. Of particular importance to a comparison are the selection of baseline year, the type of data that was collected, methodologies, and boundaries. With a regional inventory and reduction plan, Partnership cities can be assured of an "apples to apples" comparison across all sectors for city-to-city comparisons as well as city-to-region comparisons.

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

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

Program EIR to Streamline CEQA Compliance: The State 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 larger (and certified) GHG reduction plan. Thus, individual projects do not need to each conduct a GHG analysis as part of CEQA if they can demonstrate consistency with the larger plan. By completing a common basic plan and a subsequent program EIR, all projects in the region can tier off the EIR and be considered less than significant under CEQA if they show consistency with the regional reduction plan.

1.3 SANBAG's Role

The *San Bernardino County Regional Greenhouse Gas Reduction Plan* has been sponsored and facilitated by SANBAG, the regional transportation planning agency in San Bernardino County. SANBAG is leveraging its role as a transportation planning agency and the regional scope of its authority to reduce GHG emissions in several emissions sectors in the region. As a regional agency, SANBAG is in a unique position to support coordinated city efforts and facilitate regional dialogue and cooperation on GHG issues. As the transportation agency, SANBAG also has a critical role in reducing the region's GHG emissions. On-road transportation contributes 35% of the region's GHG emissions. SANBAG worked closely with Southern California Association of Governments (SCAG) in the development and adoption of SCAG's *2012–2035 Regional Transportation Strategy and Sustainable Communities Strategy*, the benefits of which are captured for the region in this analysis. SANBAG is also spearheading efforts to bring Metrolink to Redlands and is leading other regional efforts related to energy efficiency and renewable energy. SANBAG is planning to implement a regional energy efficiency and water conservation improvement loan program (AB 181 and AB 474 - PACE) for retrofits to existing buildings and is participating in a regional joint solar power purchase agreement.

1.4 How Do I Use This Document?

This document is organized so that it does not need to be read through sequentially. Rather, it can be used as a reference document. The document map (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, SANBAG, other regional agencies and individual cities can result in reduced GHG emissions for the region	→	Go to the Executive Summary
For descriptions of all the GHG measures considered by the cities	→	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 city'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 city'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

This Reduction Plan is intended to serve several purposes for the Partnership cities.

Reference Document: This Reduction Plan establishes a baseline GHG inventory for all cities 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 (city-specific or regional) or in communicating to a larger audience.

Climate Action Plan Template: The Reduction Plan provides the technical information to support a city'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 cities understand their GHG emissions and their options for local reductions. This Reduction Plan is provided in an electronic format that will allow cities to utilize relevant portions in developing their own local CAPs. At a minimum, it is

expected that cities will develop their own schedule, funding, and implementation plans in harmony with their existing infrastructure and procedures and in tune with each city's unique priorities and needs. Beyond that, it is expected that many cities will use the Reduction Plan to develop a local CAP.

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. Elements that have already been developed as part of this Reduction Plan are identified and areas where local refinement is needed are also noted.

- An inventory of GHG emissions (included in this Reduction Plan).
- A forecast of future GHG emissions (included in this Reduction Plan).
- An identified GHG reduction goal (included in this Reduction Plan).
- Measures to reduce GHG emissions under the control of the jurisdiction (included in this Reduction Plan).
- Implementation actions to ensure that the measures result in actual reductions (included in this Reduction Plan, requires local refinement).
- Monitoring of the Reduction Plan's success over time (included in this Reduction Plan, requires local refinement).
- Adaptation and revision of the Reduction Plan over time as needed to meet the adopted goal (included in this Reduction Plan, requires local refinement).

This study provides most of the required components of a GHG reduction plan, as listed above. Thus, a city 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 cities, cities 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.

1.5 Next Steps

Following completion of the Program EIR in spring of 2013 and SANBAG's approval of this Reduction Plan, Partnership cities anticipate developing their own CAPs or adopting the regional CAP as their local CAP. Next, Partnership cities may begin working together and with stakeholders, residents, and businesses within their respective communities to implement GHG reduction measures and systems to track their success. Partnership cities will continue to communicate with each other on progress through the auspices of SANBAG.

Chapter 2
Background Information

2.1 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 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 activity.

2.1.1 Federal Regulation

Although there is currently no comprehensive federal law specifically related to climate change or the reduction of GHGs, regulation under the federal Clean Air Act is being implemented with the U.S. Environmental Protection Agency (EPA) in a lead role. The following federal regulations are related to climate change and GHG emissions.

2.1.1.1 Mandatory Greenhouse Gas Reporting Rule (2009)

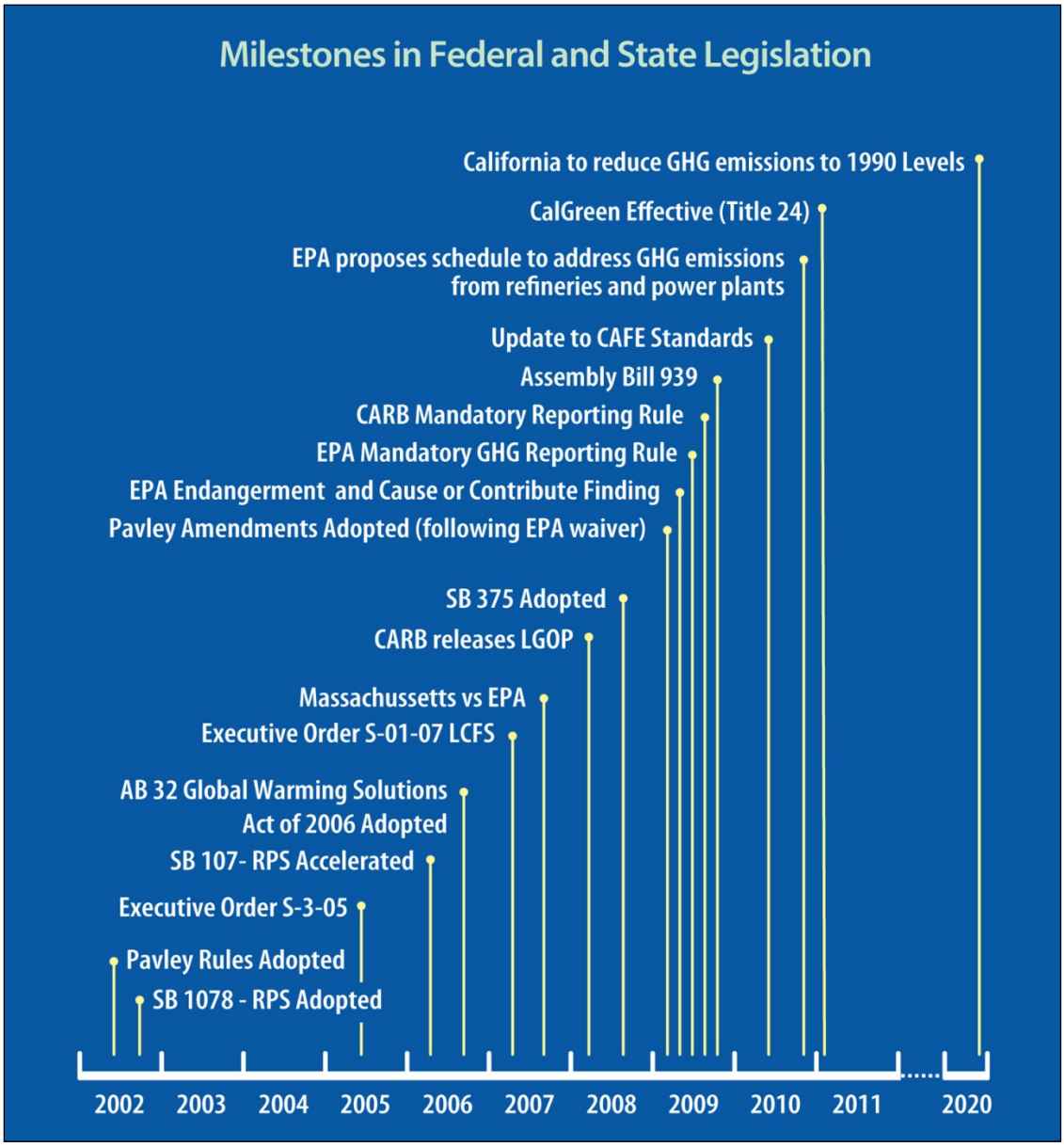
On September 22, 2009, EPA released its final Greenhouse Gas Reporting Rule (Reporting Rule). The Reporting Rule is a response to the fiscal year (FY) 2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110-161), which required EPA to develop "mandatory reporting of greenhouse gasses above appropriate thresholds in all sectors of the economy…" The Reporting Rule would apply 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 in order for EPA to verify annual GHG emissions reports.

2.1.1.2 U.S. Environmental Protection Agency Endangerment and Cause and Contribute Findings (2009)

On December 7, 2009, EPA signed the Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act (CAA). Under the Endangerment Finding, EPA finds that the current and projected concentrations of the six key well-mixed GHGs—carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), perfluorinated carbons (PFCs), sulfur hexafluoride (SF_6), and hydrofluorocarbons (HFCs)—in the atmosphere threaten the public health and welfare of current and future generations. Under the Cause or Contribute Finding, 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.

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



2.1.1.3 Updates to Corporate Average Fuel Economy Standards (2010/2012)

The current CAFE standards (for model years 2011 to 2016) incorporate stricter fuel economy requirements promulgated by the federal government and the state of California into one uniform standard. Additionally, automakers are required to cut GHG emissions in new vehicles by roughly 25% by 2016 (resulting in fleet average of 35.5 miles per gallon or mpg by 2016). Rulemaking to adopt these new standards was completed in 2010. California agreed to allow automakers who show compliance with the national program to also be deemed in compliance with state requirements. The federal government issued new standards in summer 2012 for model years 2017–2025, which will require a fleet average in 2025 of 54.5 mpg.

2.1.1.4 U.S. Environmental Protection Agency Regulation of Stationary Sources under Clean Air Act Authority (ongoing)

The EPA is currently considering regulations to require GHG reductions from large stationary sources such as power plants. In 2010, EPA get GHG emissions thresholds to define when permits under the New Source Review Prevention of Significant Deterioration(PSD a) and Title V Operating Permit programs are required for new and existing facilities and the final rule limited coverage to power plants, refineries and cement production facilities. In 2012, EPA proposed a carbon pollution standard for new power plants. EPA is also working on GHG standards for other sources.

2.1.2 State Regulation

California has adopted statewide legislation addressing various aspects of climate change and GHG emissions mitigation. Much of this legislation is not directed at citizens or jurisdictions specifically, but rather establishes a broad framework for the state's long-term GHG reduction and climate change adaptation program. Several executive orders related to the state's evolving climate change policy have also been adopted. The following state regulations related to climate change and GHGs may apply to implementation of the climate change element.

2.1.2.1 Executive Order S-03-05 (2005)

Signed by Governor Arnold Schwarzenegger on June 1, 2005, Executive Order S-3-05 asserts that California is vulnerable to the effects of climate change. 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 on the impacts of global warming on California, mitigation and adaptation plans, and progress made toward reducing GHG emissions to meet the targets established in this executive order.

2.1.2.2 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. Additional strengthening of the Pavley standards (referred to previously as "Pavley II", now referred to as the "Advanced Clean Cars" measure) has been proposed for vehicle model years 2017–2025. Together, the two standards are expected to increase average fuel economy to roughly 43 miles per gallon by 2020 (and more for years beyond 2020) and reduce GHG emissions from the transportation sector in California by approximately 14%. In June 2009, EPA granted California's waiver request enabling the state to enforce its GHG emissions standards for new motor vehicles beginning with the current model year.

EPA and CARB have worked together on a joint rulemaking to establish GHG emissions standards for model-year 2017–2025 passenger vehicles. As noted above, the federal government completed rulemaking in summer 2012 resulting in adoption of new standards that would lead to fleet average of 54.5 mpg in 2025.

2.1.2.3 Senate Bills 1078 (2002), Senate Bill 107 (2006) and Senate Bill 2 (2011)—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, 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.

2.1.2.4 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.

- 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.

Adopt regulations needed to achieve the maximum technologically feasible and cost-effective reductions in GHGs

2.1.2.5 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 developed the LCFS regulation pursuant to the authority under AB 32 and adopted it in 2009. In late 2011, a federal judge issued a preliminary injunction blocking enforcement of the LCFS, ruling that the LCFS violates the interstate commerce clause (Georgetown Climate Center 2012). The injunction was lifted in April 2012 so that CARB can continue enforcing the LCFS pending CARB's appeal of the federal district court ruling.

2.1.2.6 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.

SCAG is the MPO responsible for the southern California region that includes San Bernardino County. SCAG adopted an RTP/SCS in April 2012 designed 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 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.

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

California has adopted aggressive energy efficiency standards for new buildings and has been continually updating them for many years. The latest updated standards were adopted in 2008. Also, 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 voluntary standards took effect on January 1, 2011. The next update of the Title 24 energy efficiency standards was adopted in mid-2012 and will take effect in 2014.

2.1.2.8 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 had 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.

2.1.2.9 State CEQA Guidelines (2010)

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. 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.

2.1.2.10 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 will create a market-based system with an overall emissions limit for affected sectors. The program is currently proposed to regulate more than 85% of California's emissions and will stagger compliance requirements according to the following schedule: (1) electricity generation and large industrial sources (2012); (2) fuel combustion and transportation (2015). The first auction was in late 2012 with the first compliance year in 2013.

2.1.3 Local Governments

The AB 32 Scoping Plan lays out California's plan for achieving the GHG reductions required by AB 32. Specifically the Scoping Plan describes a list of measures that the state will undertake, and the expected GHG reductions associated with these measures before 2020. Because the state does not have jurisdictional control over many of the activities that produce GHG emissions in California, the AB 32 Scoping Plan articulates a unique role for local governments in achieving the state's GHG reduction goals. The AB 32 Scoping Plan recommends local governments reduce GHG emissions from both their municipal operations and the community at large to a level that is 15% below current levels. The 15% recommendation was based on CARB's estimate of 2005–2008 emissions at the time of the scoping plan because at that time CARB had not yet completed actual inventories for those years. In subsequent years, CARB completed the inventories for the 2005–2008 years. In order to meet the AB 32 target of 1990 levels, the state would have to reduce its emissions by 9 to 11% below 2005–2008 levels. CARB has not updated its recommendations to local governments since the

2008 adoption of the Scoping Plan.

In response to the AB 32 and the AB 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).

More than 50 jurisdictions in southern California have completed a community or municipal CAP, or both, including the City of Los Angeles, San Bernardino County, Anaheim, Beverly Hills, Pasadena, Hesperia, Apple Valley, and many others.

2.2 What Are We Already Doing?

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

2.2.1 Regional Transportation Planning

On April 4, 2012, the Regional Council of SCAG adopted the *2012–2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS): Towards a Sustainable Future.* 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 2012–2035 RTP/SCS includes the following key points.

- A strong commitment to reduce emissions from transportation sources to comply with SB 375, improve public health, and meet the National Ambient Air Quality Standards as set forth by the federal Clean Air Act. As such, the 2012–2035 RTP/SCS contains a regional commitment for the broad deployment of zero- and near-zero criteria pollutant emission transportation technologies in the 2023–2035 time frame and clear steps to move toward this objective. This strategy will have many co-benefits, including energy security, cost certainty, increased public support for infrastructure, GHG reduction, and economic development.
- A transportation infrastructure investment strategy that will benefit southern California, the state, and the nation in terms of economic development, competitive advantage, and overall competitiveness in the global economy in terms of attracting and retaining employers in the southern California region.
- A blueprint for improving quality of life for southern California residents by providing more choices for where they will live, work, and play, and how they will move around. It emphasizes transit and active transportation to allow residents to lead healthier, more active lifestyles.
- It is important to note that the land use pattern adopted in the SCS is not a mandatory land use pattern and no local government is obligated to amend their general plans to be consistent with

the assumed land use pattern in the SCS if there are differences between a city's general plan and the land use pattern assumed in the SCS. SB 375 gave no authority to MPOs for local land use planning which is reserved for the authority of local cities and counties.

2.2.2 Utility Incentive Programs

Local and regional utility providers, including Southern California Edison, Southern California Gas Company, Southwest Gas Corporation, and Bear Valley Electric Service, have a wide range of incentive programs aimed at promoting energy efficiency and renewable energy use. These are summarized below.

2.2.2.1 Southern California Edison Programs

- **Income Qualified Programs—Energy Management Assistance Program:** This program helps income-qualified households conserve energy and reduce their electricity costs. Southern California Edison (SCE) pays all the costs of purchasing and installing energy-efficient appliances and equipment, which are free to eligible customers.
- **Mobile Energy Unit:** The Mobile Energy Unit (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 20MW) that leads to quicker execution of the project, relative to other procurement processes.
- **California Solar Initiative:** CE provides financial incentives for installing eligible photovoltaic 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.
- **Solar Training Classes:** Through the California Solar Initiative, SCE provides multiple solar training classes for homeowners, contractors, commercial entities, and thermal contractors.
- **Solar Rooftop Program:** SCE incurs photovoltaic installation costs and leases rooftop space from building owners in this solar rooftop 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 under SCE's Self Generation Incentive Program.
- **Green Jobs Education Initiative:** The Green Jobs Education Initiative helps students pursue education in green jobs fields. SCE's commitment of $1 million provides grants of $100,000 each to ten California community colleges that offer green jobs training programs.

2.2.2.2 Southern California Gas Company Programs

- **Direct Assistance Program:** Southern California Gas Corporation (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 dwelling 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 teaches 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.

2.2.2.3 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.

2.2.2.4 Bear Valley Electric Service Programs

- **Program for Income Qualified customers:** Bear Valley Electric Service (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.

2.2.2.5 Inland Empire Utilities Agency

Residential Conservation Rebates: the Inland Empire Utilities Agency (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 H_2O 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.

2.2.3 SANBAG's Long Range Transit Plan

SANBAG's *Long Range Transit Plan* (LRTP) (San Bernardino Associated Governments 2009) 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 draft LRTP considers four major alternatives to transit mobility, one of which will be designated the "final alternative." The LRTP identifies premium transit routes and station locations that helped to develop the SCS for areas in the county.

2.2.4 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.

2.2.5 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.

2.2.5.1 Town of Apple Valley

On July 13, 2010, the Town of Apple Valley adopted the *Town of Apple Valley Climate Action Plan*. The Apple Valley CAP identifies measures to reduce community-wide GHG emissions to a target of 15% below 2005 levels by 2020. The Apple Valley CAP also includes the same goal for municipal GHG emissions. Major actions outlined in the Apple Valley CAP include land use-related measures which reduce VMT by 20%, vehicle fuel efficiency measures which increase average fuel efficiency to 46 miles per gallon, residential retrofits of over 22,000 homes, and 29 gigawatt-hours (GWh) of solar energy production.

2.2.5.2 City of Hesperia

On June 20, 2010, the City of Hesperia adopted the *City of Hesperia Climate Action Plan*. The Hesperia CAP outlines a course of action for the City government and the community of Hesperia to reduce per capita greenhouse gas emissions 29% below currently projected levels by 2020 and adapt to 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.

2.3 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.

2.3.1 Basic Terms

Assembly Bill 32 (AB 32): The California Global Warming Solutions Act of 2006, widely known as AB 32, requires CARB to develop and enforce regulations for the reporting and verification of statewide GHG emissions. The heart of the bill is the requirement that statewide GHG emissions must be reduced to 1990 levels by the year 2020 of the AB 32 Scoping Plan.

AB 32 Scoping Plan: The Scoping Plan for AB 32 was developed by CARB and approved in December 2008. The Scoping Plan has a range of GHG reduction actions, which include direct regulations, compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system. CARB has already adopted numerous regulations and is currently conducting additional rulemaking for reducing GHG emissions to achieve the emissions cap by 2020. In August 2011, the Scoping Plan was reapproved by the Board, and includes the Final Supplement to the Scoping Plan Functional Equivalent Document (FED).

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 $MTCO_2e$. Presenting inventories in CO_2 equivalence allows characterization of the complex mixture of GHG as a single

unit taking into account that each gas has a different global warming potential (GWP). A million $MTCO_2e$ is abbreviated as $MMTCO_2e$.

2.3.2 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. A brief description of each sector considered in this document follows in Table 2-1, with a list of the GHG reduction measures that work in 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 Measures

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; changes in behavior or building management to be more 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, Energy-8, Energy-9; 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, State-7, State-8; On-Road-1, On-Road-2; 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.	State-7; 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 and the decreased use of synthetic fertilizers.	Agriculture-1; Agriculture-2.
Solid Waste Management Emissions result from the decay of garbage under the anaerobic conditions present in landfills.	Waste reduction and increased methane capture at relevant landfills.	State-9; County-1; Waste-1, Waste-2; PS-1.

Sector	How GHG emissions are avoided	Associated Reduction Measures
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.		
Wastewater Treatment Emissions result from the energy used to power plants and pump water and also from the chemical and biological breakdown of the waste.	Increased energy efficiency at wastewater treatment plants, water conservation and installation of biogas capture and gas to energy technologies.	Wastewater-1, Wastewater-2, Wastewater-3.
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.	More efficient water pumping equipment and both indoor and outdoor water conservation.	Water-1, Water-2, Water-3, Water-4; PS-1.

2.3.3 Climate Change and Global Warming

Climate change is a term used to describe large-scale shifts in existing (i.e., historically observed) patterns in earth's climate system. Although the climate has historically responded to natural drivers, recent climate change has been unequivocally linked to increasing concentrations of GHGs in earth's lower atmosphere and the rapid timescale on which these gases have accumulated (Intergovernmental Panel on Climate Change 2007a). The rapid loading of GHGs into the atmosphere is primarily due to the burning of fossil fuels since the industrial revolution.

Higher concentrations of heat-trapping GHGs in the atmosphere result in increasing global surface temperatures, a phenomenon commonly referred to as *global warming*. In absence of anthropogenic (i.e., manmade) emissions, GHGs play a critical role in maintaining the earth's temperature for successful habitation by humans and other forms of life.

Increases in fossil fuel combustion and deforestation have exponentially increased concentrations of GHGs in the atmosphere since the industrial revolution. 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. Warming of the earth's lower atmosphere induces large-scale changes in planetary systems, including ocean circulation patterns, precipitation patterns, global ice cover, and biological distributions (Intergovernmental Panel on Climate Change 2007a, 2007b). Some of those changes would 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: CO_2, CH_4, N_2O, PFCs, SF_6, and HFCs (Intergovernmental Panel on Climate Change 2007a). Each is discussed in detail below.

To simplify reporting and analysis, methods have been established to describe emissions of GHGs in terms of a single gas. The most commonly accepted method to compare GHG emissions is the 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 CO_2e, which compares the gas in question to that of the same mass of CO_2 (CO_2 has a GWP of 1 by definition).

Table 2-2 lists the global warming potential of CO_2, CH_4, N_2O, PFCs, SF_6, and HFCs; their lifetimes; and abundances in the atmosphere.

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

Greenhouse Gases	Global Warming Potential (100 years)	Lifetime (years)	2005 Atmospheric Abundance
CO_2 (ppm)[a]	1	50–200	379
CH_4 (ppb)	21	9–15	1,774
N_2O (ppb)	310	120	319
CF_4 (ppt) [a]	6,500	50,000	74
C_2F_6 (ppt) [a]	9,200	10,000	2.9
SF_6 (ppt)	23,900	3,200	5.6
HFC-23 (ppt)	11,700	264	18
HFC-134a (ppt)	1,300	14.6	35
HFC-152a (ppt)	140	1.5	3.9

Sources: Intergovernmental Panel on Climate Change 1996, 2001:388–390.

Notes: ppm = parts per million
ppb = parts per billion
ppt = parts per trillion
[a] CF_4 and C_2F_6 are PFCs

2.3.4 Principal Greenhouse Gases

2.3.4.1 Carbon Dioxide

CO_2 is the most important anthropogenic GHG and accounts for more than 75% of all GHG emissions caused by humans. Its atmospheric lifetime of 50–200 years ensures that atmospheric concentrations of CO_2 will remain elevated for decades, even after mitigation efforts to reduce GHG concentrations are promulgated (Intergovernmental Panel on Climate Change 2007a). The primary sources of anthropogenic CO_2 in the atmosphere include the burning of fossil fuels (including motor vehicles), gas flaring, cement production, and land use changes (e.g., deforestation, oxidation of elemental carbon). CO_2 can be removed from the atmosphere by photosynthetic organisms (e.g., plants and certain bacteria).

Atmospheric CO_2 has increased from a preindustrial concentration of 280 parts per billion (ppb) to 391 parts per million (ppm) in 2005 (Carbon Dioxide Information Analysis Center 2012).

2.3.4.2 Methane

CH_4, the main component of natural gas, is the second most abundant GHG and has a GWP of 21 (Intergovernmental Panel on Climate Change 1996). Sources of anthropogenic emissions of CH_4 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 a both a source and sink for CH_4. For example, the primary terrestrial source of CH_4 are wetlands, whereas undisturbed, aerobic soils act as a CH_4 sink (i.e., they remove CH_4 from the atmosphere).

Atmospheric CH_4 has increased from a pre-industrial concentration of 715 ppb to 1,871 ppb in 2005 (Carbon Dioxide Information Analysis Center 2012).

2.3.4.3 Nitrous Oxide

N_2O is a powerful GHG, with a GWP of 310 (Intergovernmental Panel on Climate Change 1996). Anthropogenic sources of N_2O include agricultural processes (e.g., fertilizer application), nylon production, combustion of fossil fuel by power plants, nitric acid production, and vehicle emissions. N_2O also is used in rocket engines, racecars, and as an aerosol spray propellant. Natural processes, such as nitrification and denitrification, can also produce N_2O, which can be released to the atmosphere by diffusion. In the United States more than 70% of N_2O emissions are related to agricultural soil management practices, particularly fertilizer application.

N_2O concentrations in the atmosphere have increased 19%, to 319 ppb in 2008 from pre-industrial levels of 270ppb to 322 ppb (World Meteorological Association, 2008).

2.3.4.4 Perfluorinated Carbons

The most abundant PFCs are CF_4 (PFC-14) and C_2F_6 (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, which results in very long lifetimes. They have high GWPs ranging from 6,500 for CF_4 to 9,200 for C_2F_6 (Intergovernmental Panel on Climate Change 1996)

2.3.4.5 Sulfur Hexafluoride

SF_6 is a human-made chemical used as an electrical insulating fluid for power distribution equipment, in the magnesium industry, semiconductor manufacturing, and also as a tracer chemical for the study of oceanic and atmospheric processes (U.S. Environmental Protection Agency 2006). In 2005, atmospheric concentrations of SF_6 were 7.4 parts per trillion (ppt) and steadily increasing (Carbon Dioxide Information Analysis Center 2012). SF_6 is the most powerful of all GHGs listed in IPCC studies, with a GWP of 23,900 (Intergovernmental Panel on Climate Change 1996).

2.3.4.6 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. As seen in Table 2-2, the most abundant HFCs, in descending order, are HFC-134a, HFC-23, and HFC-152a.

2.3.5 Greenhouse Gas Inventories and Emissions Sources

A GHG inventory is a quantification of all GHG emissions and sinks within a selected physical and/or economic boundary. GHG inventories can be performed on a large scale (i.e., for global and national entities) or on a small scale (i.e., for a particular building or person). Although many processes are difficult to evaluate, several agencies have developed tools to quantify emissions from certain sources.

The majority (83%) of GHG emissions in the United States result from burning fossil fuels. 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, the landfilling of waste, 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	CO_2e (metric tons)
2004 IPCC Global GHG Emissions Inventory	49,000,000,000
2010 EPA National GHG Emissions Inventory	6,821,800,000
2009 CARB State GHG Emissions Inventory	452,970,000

Sources: Intergovernmental Panel on Climate Change 2007a; U.S. Environmental Protection Agency 2012; California Air Resources Board 2011.

2.3.6 Impacts of Climate Change on Southern California

Increases in the globally averaged atmospheric concentration of GHGs would cause the lower atmosphere to warm, in turn inducing a myriad of changes to the global climate system. These large scale changes would have unique and potentially severe impacts in the western United States, California, and the region surrounding the 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 could impact the natural environment in the following ways, among others.

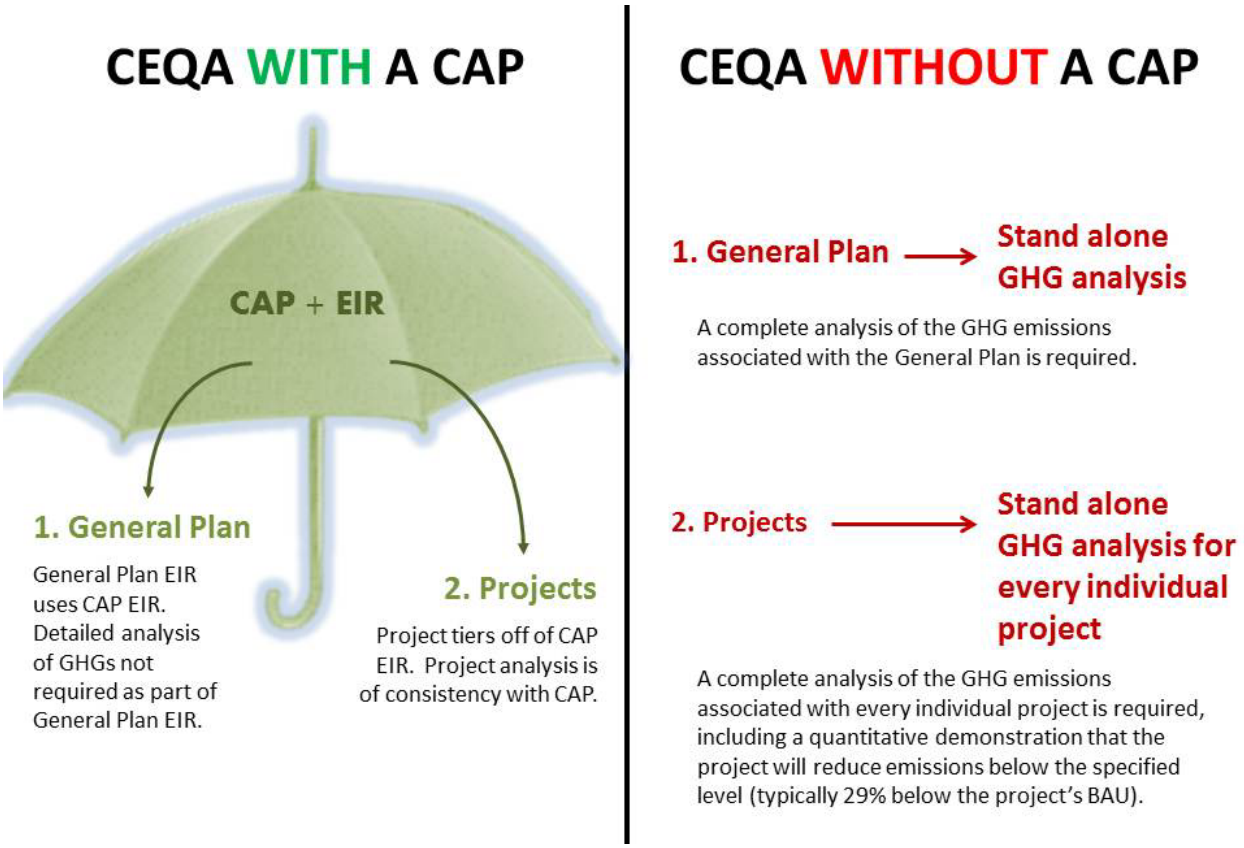
- Rising sea levels along the coastline.
- Extreme-heat conditions, such as heat waves and very high temperatures, which could last longer and become more frequent.
- An increase in the frequency, intensity, and duration of conditions that are conducive to forming air pollution, further exacerbating air quality issues.
- An increase in heat-related human deaths, infectious diseases, and a higher risk of respiratory problems caused by deteriorating air quality.

- Reduced water supplies (all end uses).
- Potential increase in the severity of winter storms, affecting peak stream flows and flooding.
- Changes in growing season conditions that could affect agriculture, causing variations in crop quality and yield.
- Changes in distribution of plant and wildlife species due to changes in temperature, competition from colonizing species, changes in hydrologic cycles, changes in sea levels, and other climate-related effects.
- Decreased Sierra snowpack and altered timing and amount of snowmelt; effects on California water supplies and water management including those serving southern California.
- Increased frequency and intensity of wildfires.

2.4 Relationship of Climate Action Plans to CEQA and Local General Plans

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

Figure 2-2. CAP, General Plans and CEQA



As a discretionary action, prior to adoption of the GHG reduction plan by local cities, CEQA review is required. SANBAG has prepared an EIR that analyzes the physical impacts of the measures selected by the Partnership cities 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 SANBAG and to each individual city.

Amendments to the CEQA guidelines in March 2010 describe that CEQA project evaluation 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 greenhouse gas 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 city for 2008 and 2020. Partnership cities 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 cities. The collective measures proposed by the Partnership cities, in combination with state measures, would reduce emissions by 16% below 2008 levels and by 27% below 2020 BAU levels, which are roughly consistent with the recommendations in the AB 32 Scoping Plan for municipalities to support the overall AB 32 reduction targets
- *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 city as a whole and includes predicted growth expected by 2020.
- *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 cities) 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 city that chooses to do so, a CAP would be adopted in a public process. The EIR prepared for this Reduction Plan can be used to support local city compliance with CEQA.

Once adopted, subsequent project-level CEQA evaluations of greenhouse gas emissions can tier off of the adopted city CAP, provided that they are being fully implemented by the Partnership city where the project is located, and that 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 AB 32 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 city-adopted GHG reduction plans can be considered less than significant and their contributions to cumulative emissions are not considered cumulatively considerable. Clearly, projects that are consistent with the city-adopted plans would still create emissions; however, they can be approved knowing that overall emissions projected to occur in 2020 would be less than the emissions that would occur in 2020 under BAU. This determination only relies on an individual city'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 cities 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.

Chapter 3
Reduction Profiles

3.1 Introduction

This chapter presents the GHG inventory, 2020 BAU forecast, and GHG emission reductions for each Partnership city in the Reduction Plan.

For each Partnership city, the following items are presented.

1. **City Summary**—Presents background information for each city, such as its location, socioeconomics, and key points of interest. Demographic information consistent with the 2010 U.S. Census is summarized. An overview of the city's emissions and selected reduction measures is also provided.
2. **Emission Reductions Graphics**—Three graphics are presented here: 1) a bar chart showing the city's 2008 inventory, state/county reductions, local reductions, and unmitigated emissions in 2020, along with the 2020 emissions goal identified by each city; 2) a bar chart showing the 2020 BAU emissions by sector and the 2020 emissions with full implementation of the Reduction Plan; and 3) pie charts showing 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 city's 2008 inventory, 2020 BAU forecast, and reductions by sector.
4. **Reduction Measures Table**—This table presents all reduction measures considered by the city for this Reduction Plan, along with GHG reductions and simple descriptions of each measure.
5. **Relevant General Plan Policies**—For each city, a summary of general plan policies that are relevant to avoiding or reducing GHG emissions in general, or 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 city has selected a goal to reduce their community GHG emissions from BAU levels by the year 2020. Each city has selected their goal based on what each city considers feasible given the local conditions within that city.

A number of cities meet their selected goal through state and county measures alone, but these cities have also committed to several additional local measures to strengthen their plan. Cities have chosen local measures in these cases for a number of reasons, including: 1) state and county measures may not have the exact local effect on each city's emissions in the exact way that was projected in this Reduction Plan, and local measures will help close any gaps left by these state measures; 2) many of the local measures are part of regional efforts to reduce emissions that affect all or most cities; and 3) where the GHG Performance Standard is selected by a city, it provides a consistent approach to review of new development.

Each city has selected their own set of measures independently of other cities' selections. Some cities 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, cities that chose to include Energy Efficiency for Existing Buildings (Energy-1) also chose the specific percentage of homes and businesses that will be retrofit by the year 2020; this can vary greatly city-to-city. The measure selections were based on each city's best judgment about what is feasible for their jurisdiction, and depend on the specific emissions source profile (i.e. inventory) and the anticipated growth within each city. For example, cities that are expected to construct many new homes to support a rising population may select a measure for new homes, while cities that are fully built-out would have limited use for a measures aimed at new home. Not all cities selected the same measures and there is reasonable variation between the measures selected for each city.

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 the cities 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 summer time 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 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 31,765 as of the 2010 census. In 2020 the population of Adelanto is expected to be 46,084, an increase of 48% over 2008, the highest increase in San Bernardino County. Employment in the area is expected to increase by 35%, also one of the highest increases in the county. Adelanto's demographic composition in 2010 was 43.8% White, 20.5% Black, 1.3% American Indian and Alaska Native, 1.9% Asian, 0.6% Native Hawaiian and Other Pacific Islander, 26.2% from other races, and 5.6% from two or more races. Persons of Hispanic or Latino origin were 58.3%. Adelanto has a larger than average population of Black persons and persons of Hispanic or Latino origin and Black (compared to the California average of 37.6% and 6.2%, respectively). Adelanto also has a fairly young population (37% of residents are under 18, compared to 25% for California) (U.S. Census Bureau 2012).

Table 3-1 presents socioeconomic data for Adelanto, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

Table 3-1. Socioeconomic Data for Adelanto

Category	2008	2020
Population	31,200	46,084
Housing	7,670	11,900
Single-Family	*5,666*	*8,418*
Multifamily	*2,004*	*3,482*
Employment	5,432	7,313
Agricultural	*0*	*0*
Industrial	*2,329*	*2,942*
Retail	*846*	*1,228*
Non-Retail	*2,257*	*3,142*

3.2.2 Emission Reductions

The City of Adelanto selected a goal to reduce its community GHG emissions to a level that is 30% below its projected GHG emissions level in 2020. The city will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective per AB 32 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 reduce GHG emissions in Adelanto's on-road, off-road, and building energy sectors in 2020. An additional reduction of 33,780 $MTCO_2e$ will be achieved primarily through the following local measures, in order of importance: Implement SB X7-7 (Water-4); GHG Performance Standard for New Development (PS-1); and Solar Installations for Existing Housing (Energy-7). Adelanto's reduction plan has the greatest effect on GHG emissions in the building energy, on-road transportation, and water conveyance sectors.

The City of Adelanto is in the process of adopting 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 greenhouse gas emissions throughout the region. This community 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.
- 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 3-1 show Adelanto's 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the city's emissions reduction target (i.e., 30% below the projected GHG emissions level in 2020). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~65%) of the total reductions needed to achieve the 2020 target.

Figure 3-2 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and off-road equipment emissions sectors.

Table 3-2 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and demonstrates that Adelanto exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the building energy, on-road transportation, and water conveyance sectors.

Figure 3-4 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county 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 due to the implementation of SB X7-7 (Water-4).

Figure 3-1. Emissions Reduction Profile for Adelanto

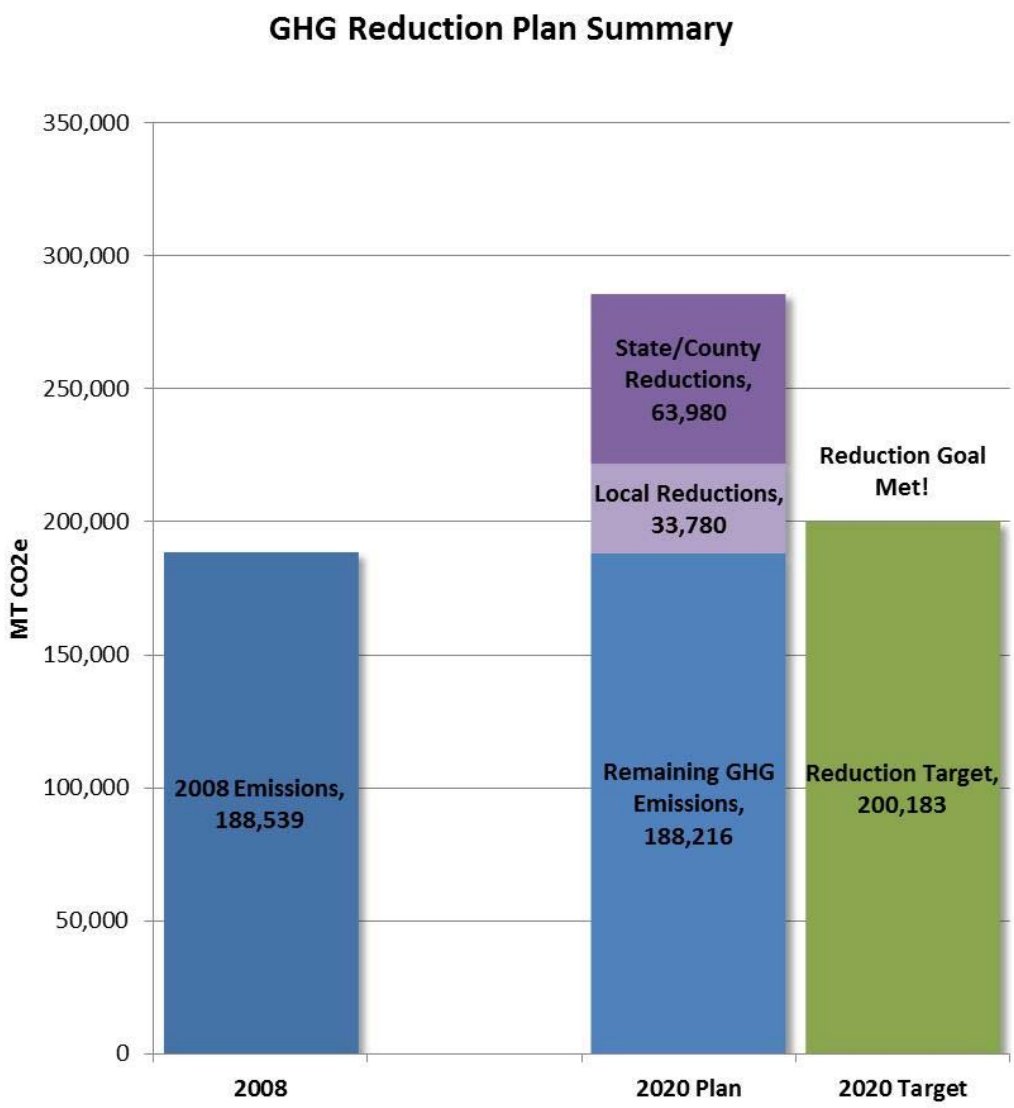


Figure 3-2. Emissions by Sector for Adelanto

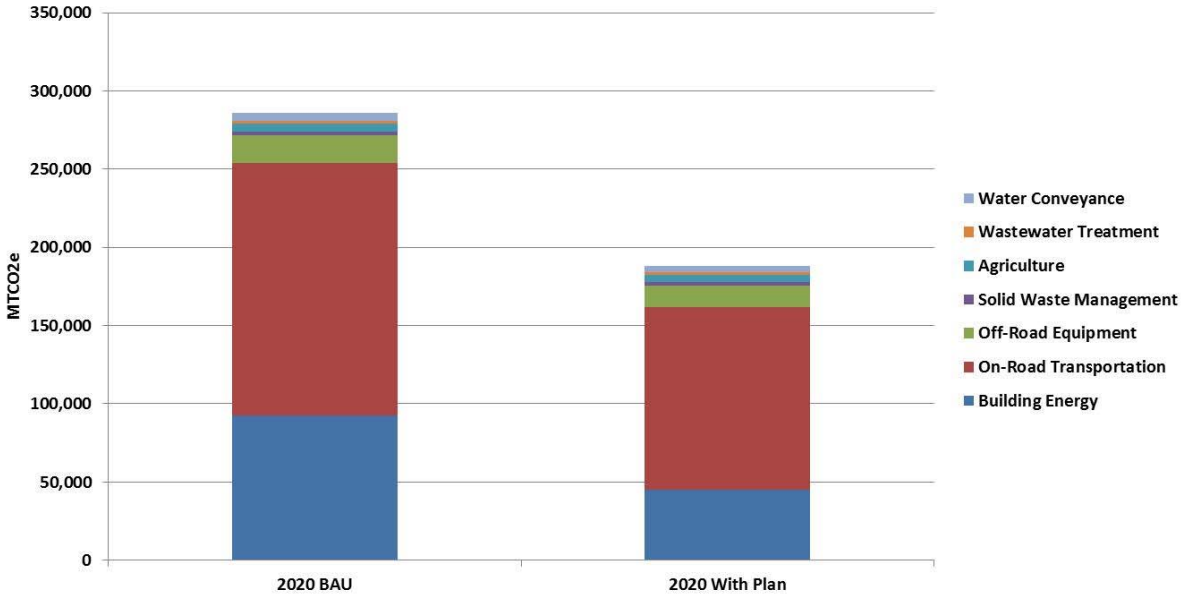


Table 3-2. Emission Reductions by Sector for Adelanto

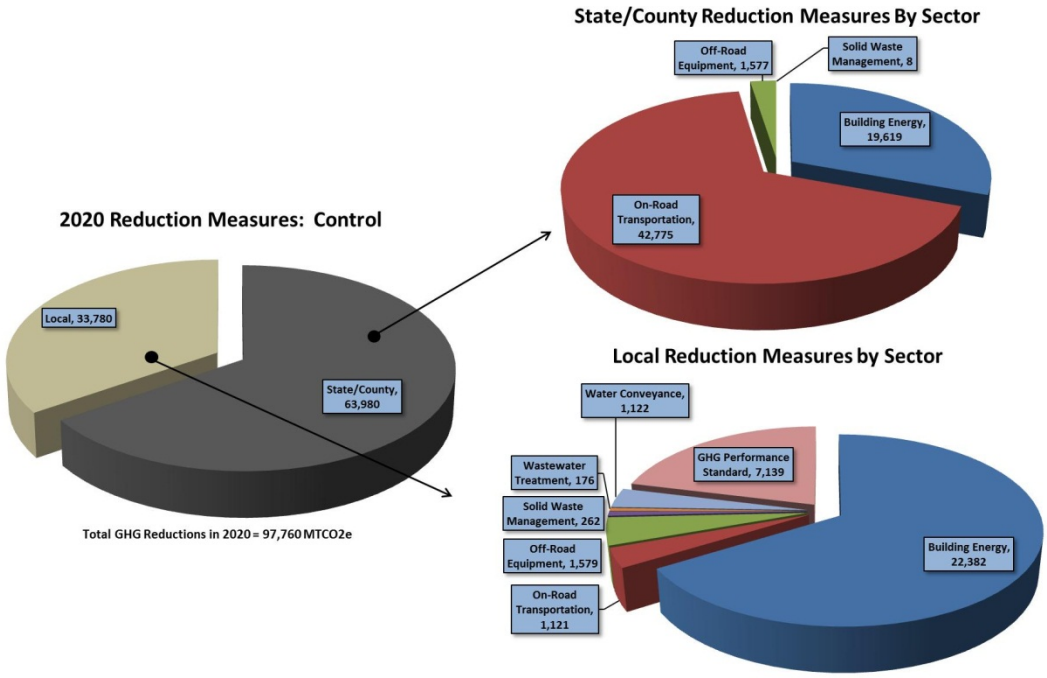
Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	63,173	92,446	42,001	50,445	45.4%
On-Road Transportation	97,508	161,472	43,896	117,576	27.2%
Off-Road Equipment	12,144	17,655	3,157	14,498	17.9%
Solid Waste Management	1,744	2,381	270	2,110	11.3%
Agriculture	9,664	4,925	0	4,925	0.0%
Wastewater Treatment	1,262	1,876	176	1,699	9.4%
Water Conveyance	3,045	5,222	1,122	4,100	21.5%
GHG Performance Standard*	-	-	7,139	-	-
Total Emissions	188,539	285,976	97,760	188,216	34.2%
Goal	-	-	*85,793*	*200,183*	*30.0%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Reductions Beyond Goal	-	-	*11,967*	-	-
Per-Capita Emissions	6.0	6.2	-	4.1	-
Per-Job Emissions	34.7	39.1	-	25.7	-
Excluded Emissions: Stationary Sources	*16,597*	*22,015*	-	-	-

Notes:

Values may not sum due to rounding.

* 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. Please 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 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

Table 3-3. GHG Reduction Measures and Estimated 2020 Reductions for Adelanto

Measure Number	Measure Description	Reductions
State/County Measures		
State-1	Renewable Portfolio Standard	11,147
State-2	Title 24 (Energy Efficiency Standards)	5,870
State-3	AB 1109	2,265
State-4	Solar Water Heating	99
State-5	Industrial Boiler Efficiency	238
State-6	Pavley plus LCFS	39,199
State-7	AB 32 Transportation Reduction Strategies	3,576
State-8	LCFS: Off-Road	1,577
State-9	AB 32 Methane Capture	6
County-1	San Bernardino County GHG Plan Landfill Controls	2
Local Measures		
Building Energy		
Energy-1	Energy Efficiency for Existing Buildings	832
Energy-2	Outdoor Lighting	726
Energy-3	Green Building Ordinance	1,702
Energy-4	Solar Installation for New Housing	1,817
Energy-5	Solar Installation for New Commercial	765
Energy-7	Solar Installation for Existing Housing	2,700
Energy-8	Solar Installation for Existing Commercial / Industrial	379
Energy-9	Co-Generation Facilities	23
LandUse-1 (BE)	*Tree Planting Programs*	*172*
*LandUse-2 (BE)**	*Promote Rooftop Gardens*	*4*
Wastewater-2 (BE)	*Equipment Upgrades*	*303*
Water-1 (BE)	*Require Tier 1 Voluntary CALGreen Standards for New Construction*	*842*
Water-2 (BE)	*Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency*	*1,068*
Water-4 (BE)	*Implement SB X7-7*	*11,049*
On-Road Transportation		
Transportation-1	Sustainable Communities Strategy	1,121
Off-Road Equipment		
OffRoad-1	Electric-Powered Construction Equipment	1,347
OffRoad-2	Idling Ordinance	172
OffRoad-3	Electric Landscaping Equipment	60
Solid Waste Management		
Waste-2	Waste Diversion	262
Wastewater Treatment		
*Water-1 (WT)**	*Require Tier 1 Voluntary CALGreen Standards for New Construction*	*25*
*Water-2 (WT)**	*Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency*	*19*

Measure Number	Measure Description	Reductions
Water-4 (WT)	*Implement SB X7-7*	*133*
Water Conveyance		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New Construction	203
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	144
Water-3	Water-Efficient Landscaping Practices	155
Water-4	Implement SB X7-7	614
Wastewater-3 (WC)	*Recycled Water*	*6*
GHG Performance Standard for New Development		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	7,139
Total Reductions		97,760

Notes:

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance.

* These are measures where the avoided annual GHG emissions are small relative to the effort to implement the measure on the City's part. Although the City has selected this measure, ICF recommends that the City not pursue this GHG reduction measure.

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. Energy Efficiency for Existing Buildings

- **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.

- **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. Outdoor Lighting

- **Goal NR 1:** 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.

Energy-3. Green Building Ordinance

- **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.

Energy-4. Solar Installation for New 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-5. Solar Installation for New Commercial

- **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-9. Co-generation Facilities

- **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.

- **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.

Land Use-1 (BE). Tree Planting

- **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.

Land Use-2 (BE). Promote Rooftop Gardens

- **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.

3.2.4.2 On-Road

Transportation-1. Sustainable Communities Strategy

- **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).
- **Policy AQ 1.8:** The City will consider all feasible means of reducing vehicle miles traveled by City employees and residents.

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

- **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-1. Voluntary CALGreen: New Construction

- **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.

Water-2. Renovate Existing Buildings

- **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 City of Big Bear Lake

3.3.1 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 5,019 (2010 census) can swell by a factor of 10 or 20 on weekends. Big Bear's demographic composition in 2010 was 83.8% White, 0.4% Black, 1% American Indian and Alaska Native, 1.6% Asian, 0.2% Native Hawaiian and Other Pacific Islander, 9.8% from other races, and 3.3% from two or more races. Big Bear Lake also has with generally older residents (20% persons over 65, compared to the California average of 11%) (U.S. Census Bureau 2012).

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. Data collected by local ski resorts on vehicle occupancy and trip numbers indicate that approximately 70% of light and medium duty VMT is due to tourists accessing the area (InfraConsult 2011.). Consequently, nearly 50% of the city's GHG emissions are related to tourist activity. 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 cities as described below in the Emissions Reductions section.

Table 3-4 presents socioeconomic data for Big Bear Lake, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012). Please note, Table 3-4 reflects socioeconomic data for permanent residents only.

Table 3-4. Socioeconomic Data for Big Bear Lake

Category	2008	2020
Population	5,019	5,619
Housing	2,196	2,400
Single-Family	*1,754*	*1,924*
Multifamily	*442*	*476*
Employment	6,212	6,423
Agricultural	*4*	*7*
Industrial	*845*	*1,079*
Retail	*3,222*	*3,050*
Non-Retail	*2,141*	*2,287*

3.3.2 Emission Reductions

The City of Big Bear Lake selected a goal to reduce its community GHG emissions to a level that is 15% below its 2008 emissions level by 2020. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective per AB 32 through combination of state (~99%) and local (~1%) efforts. The City actually exceeds the goal with only state/county level actions (101% of goal), but has committed to several additional local measures. 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 2020. An additional reduction of 163 $MTCO_2e$ will be achieved primarily through the following local measures, in order of importance: GHG Performance Standard for New Development (PS-1) and Energy Efficiency for Existing Buildings (Energy-1). Big Bear Lake's reduction plan has the greatest impacts on GHG emissions in the solid waste, on-road transportation, and off-road equipment 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 3-4 show Big Bear Lake's 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the City's emissions reduction target (i.e., 15% below the 2008 emissions level). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~99%) of the total reductions needed to achieve the 2020 target.

Figure 3-5 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and off-road equipment emissions sectors.

Table 3-5 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and demonstrates that Big Bear Lake exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the solid waste, on-road transportation, and off-road equipment sectors.

Figure 3-6 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county measures, the majority of reductions are in the solid waste management and on-road transportation sectors. Of the local measures, all reductions are due to the GHG Performance Standard for New Development (PS-1).

Figure 3-4. Emissions Reduction Profile for Big Bear Lake

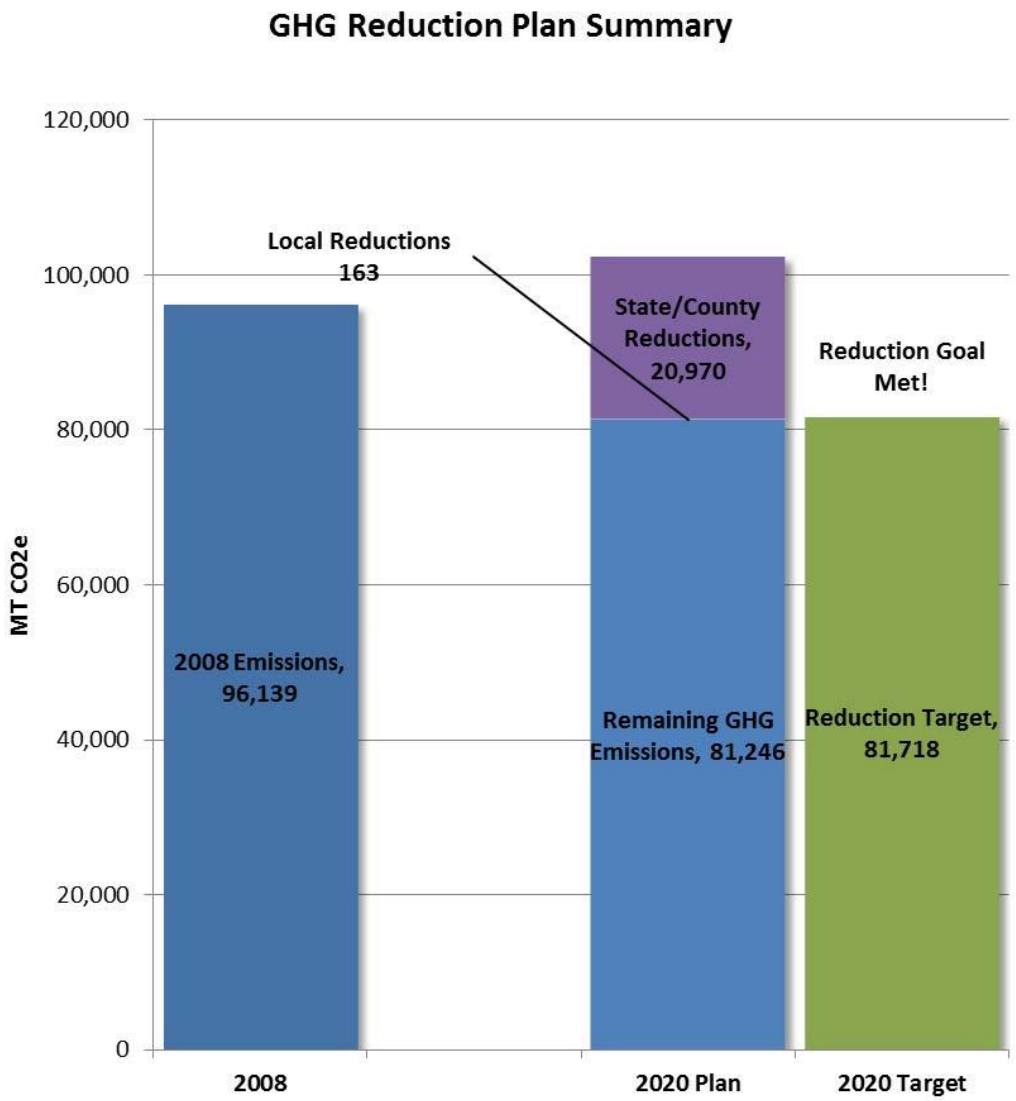


Figure 3-5. Emissions by Sector Big Bear Lake

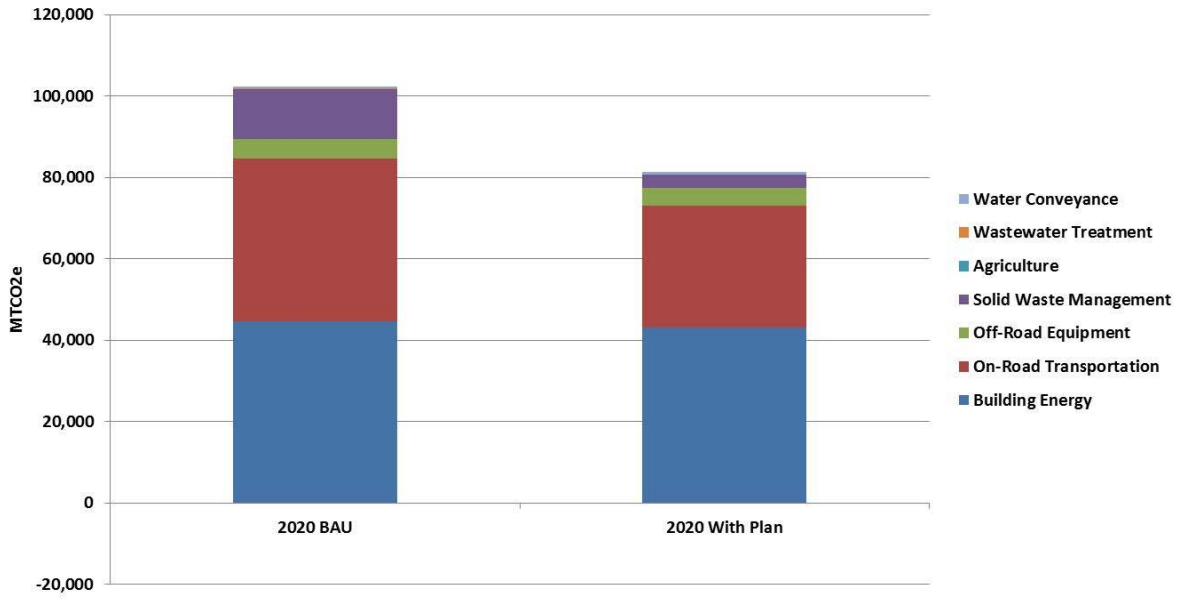
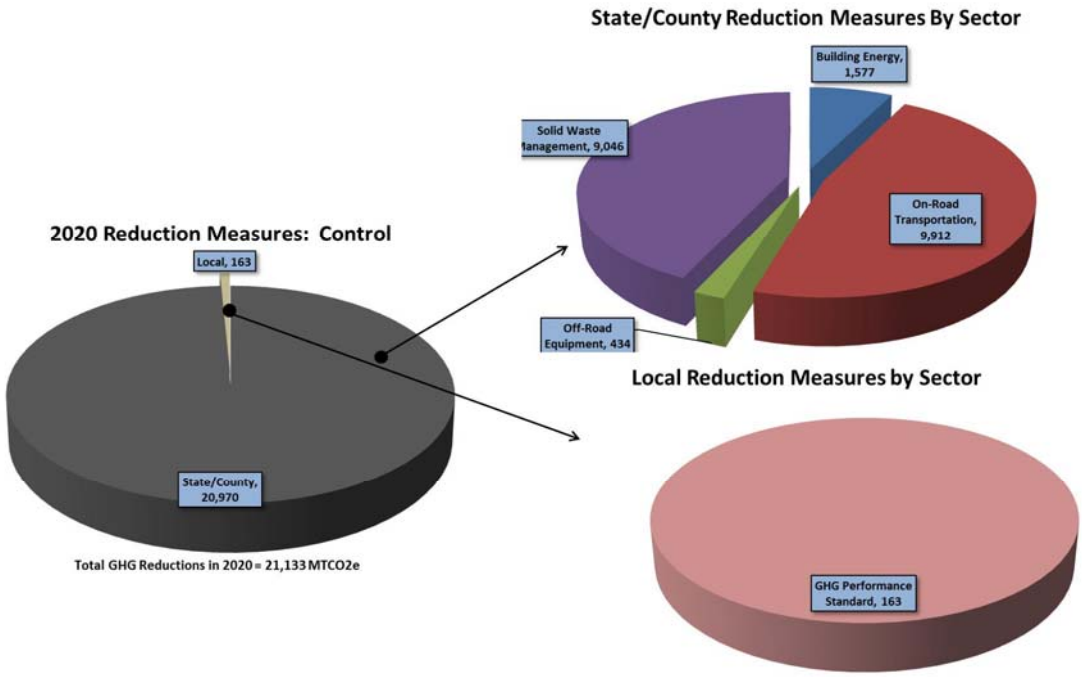


Table 3-5. Emission Reductions by Sector for Big Bear Lake

Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	42,010	44,645	1,577	43,068	3.5%
On-Road Transportation	37,301	39,895	9,912	29,983	24.8%
Off-Road Equipment	4,362	4,863	434	4,428	8.9%
Solid Waste Management	11,929	12,250	9,046	3,203	73.8%
Agriculture	0	0	0	0	0.0%
Wastewater Treatment	203	229	0	229	0.0%
Water Conveyance	334	498	0	498	0.0%
GHG Performance Standard*	-	-	163	-	-
Total Emissions	96,139	102,378	21,133	81,246	20.6%
Reduction Goal	-	-	*20,660*	*81,718*	*20.2%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Reductions Beyond Goal	-	-	*473*	-	-
Per-Capita Emissions	19.2	18.2	-	14.5	-
Per-Job Emissions	15.5	15.9	-	12.6	-
Excluded Emissions: Stationary Sources	*14,019*	*15,271*	-	-	-

Notes:
Values may not sum due to rounding.
* 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. Please see Chapter 4 for a complete description of this measure.

Figure 3-6. Emission Reductions by Control and by Sector for Big Bear Lake



3.3.3 Reduction Measures

Table 3-6 presents each reduction measure evaluated for Big Bear Lake. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

Table 3-6. GHG Reduction Measures and Estimated 2020 Reductions for Big Bear Lake

Measure Number	Measure Description	Reductions
State/County Measures		
State-1	Renewable Portfolio Standard	466
State-2	Title 24 (Energy Efficiency Standards)	666
State-3	AB 1109	125
State-4	Solar Water Heating	20
State-5	Industrial Boiler Efficiency	300
State-6	Pavley plus LCFS	9,030
State-7	AB 32 Transportation Reduction Strategies	882
State-8	LCFS: Off-Road	434
State-9	AB 32 Methane Capture	8,626
County-1	San Bernardino County GHG Plan Landfill Controls	421
Local Measures		
GHG Performance Standard for New Development		
PS-1	GHG Performance Standard for New Development (19% below projected BAU emissions for the project)	163
Total Reductions		21,133

Notes:

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance.

3.3.4 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 3-6). 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).

3.3.4.1 Building Energy

- **Program P2.4**: Work with the state of California Department of Housing and Community Development to bring the city's mobile home parks into conformance with City Zoning as much as possible. Coordinate rehabilitation of damaged units and promote weatherization programs with county and state agencies.

- **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.
- **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.
- **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.
- **Program OPR 1.1.2:** Investigate and coordinate development of a Village "green" as an active open space area within the Village Retail District of the Village Specific Plan area to be used for community activities and special events.

3.3.4.2 On-Road

- **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.
- **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 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.
- **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.

3.3.4.3 Solid Waste Management

- **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.

3.3.4.4 Wastewater Treatment

- **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.
- **Policy ER 6.4:** The City shall encourage the use of clean alternative energy sources for transportation, heating and cooling whenever practical.

- **Program PS 3.1.2:** Cooperate with Big Bear Area Regional Wastewater Agency (BBARWA) in assuring that new development pays its fair share of future development, expansion, and operating costs for wastewater treatment.

3.3.4.5 Water Conveyance

- **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 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 P4.1:** Provide adequate water supply and storage. Promote such efforts as wastewater re-use, water conservation measures, and acquisition of new water sources.
- **Program PS 2.1.3:** Encourage conservation of ground water resources.

3.4 City of Chino

3.4.1 City Summary

The City of Chino is one of the westernmost cities 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 according to the 2010 census was 77,983. Chino is currently the eighth largest city in San Bernardino County. Chino's demographic composition in 2010 was 56.4% White, 6.2% Black, 1% American Indian and Alaska Native, 10.5% Asian, 0.2% Native Hawaiian and Other Pacific Islander, 21.2% from other races, and 4.6% from two or more races. Persons of Hispanic or Latino origin were 53.8%. Chino has a very high home ownership rate (72% compared to 57% average for the state) and also has a higher than average median household income ($71,659 versus $60,883 for the state) (U.S. Census Bureau 2012). Chino's population is expected to grow to 88,772 by 2020 (a 17% increase over 2008) and GHG emissions are expected to grow to 1,084,975 $MTCO_2e$ (excluding stationary sources), an increase of 5%. 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 3-7 presents socioeconomic data for Chino, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

Table 3-7. Socioeconomic Data for Chino

Category	2008	2020
Population	75,596	88,772
Housing	20,135	24,569
Single-Family	*14,356*	*17,426*
Multifamily	*5,779*	*7,143*
Employment	48,495	53,470
Agricultural	*625*	*812*
Industrial	*17,699*	*20,093*
Retail	*12,547*	*13,067*
Non-Retail	*17,624*	*19,498*

3.4.2 Emission Reductions

The City of Chino selected a goal to reduce its community GHG emissions to a level that is 15% below its 2008 emissions level by 2020. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective per AB 32 through a combination of state (~85%) and local (~15%) efforts. The City actually exceeds the goal with only state/county level actions (100% of goal), but has committed to several additional local measures. 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 2020. An additional reduction of 36,879 $MTCO_2e$ will be achieved primarily through the following local measures, in order of importance: Implement SB X7-7 (Water-4); Solar Installation for Existing Housing (Energy-7); and Energy Efficiency for Existing Buildings (Energy-1). Chino's reduction plan has the greatest impacts on GHG emissions in the on-road transportation, building energy, and solid waste management sectors.

The bars in Figure 3-7 show Chino's 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the City's emissions reduction target (i.e., 15% below the 2008 emissions level). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~85%) of the total reductions needed to achieve the 2020 target.

Figure 3-8 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and off-road equipment emissions sectors.

Table 3-8 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and demonstrates that Chino exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the on-road transportation, building energy, and solid waste management sectors.

Figure 3-9 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county 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 and due to the implementation of SB X7-7 (Water-4).

Figure 3-7. Emissions Reduction Profile for Chino

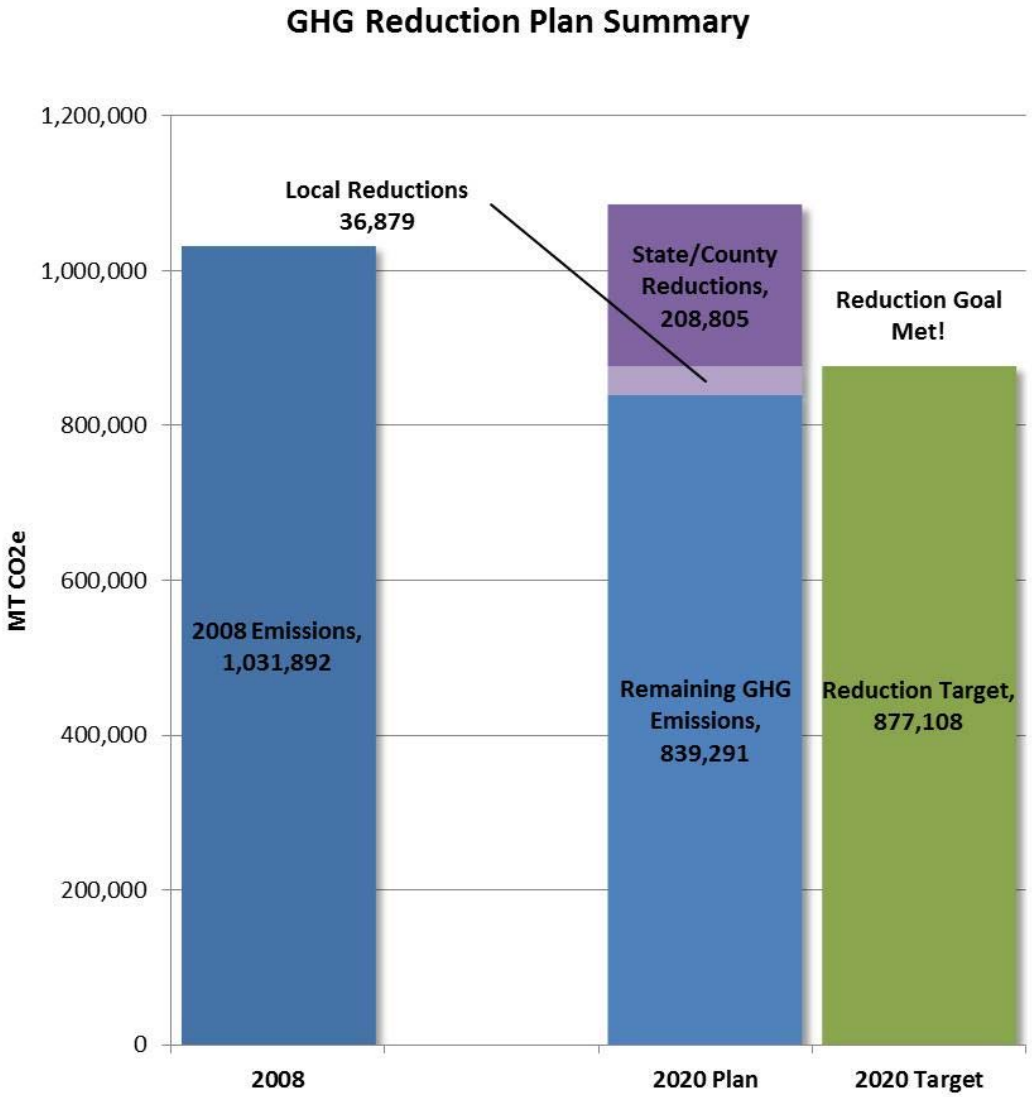


Figure 3-8. Emissions by Sector for Chino

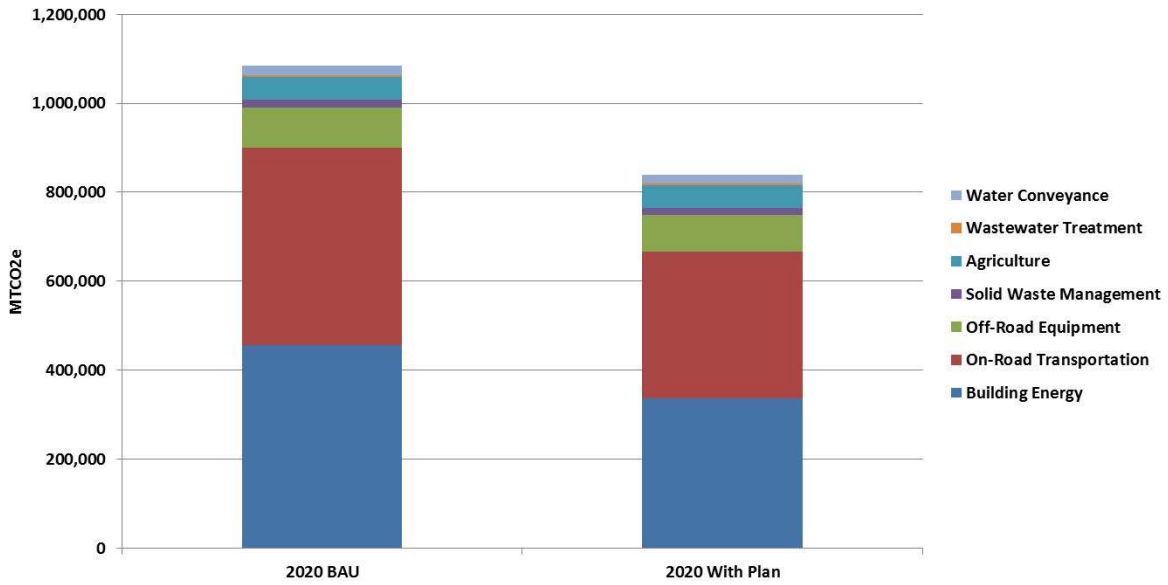


Table 3-8. Emission Reductions by Sector for Chino

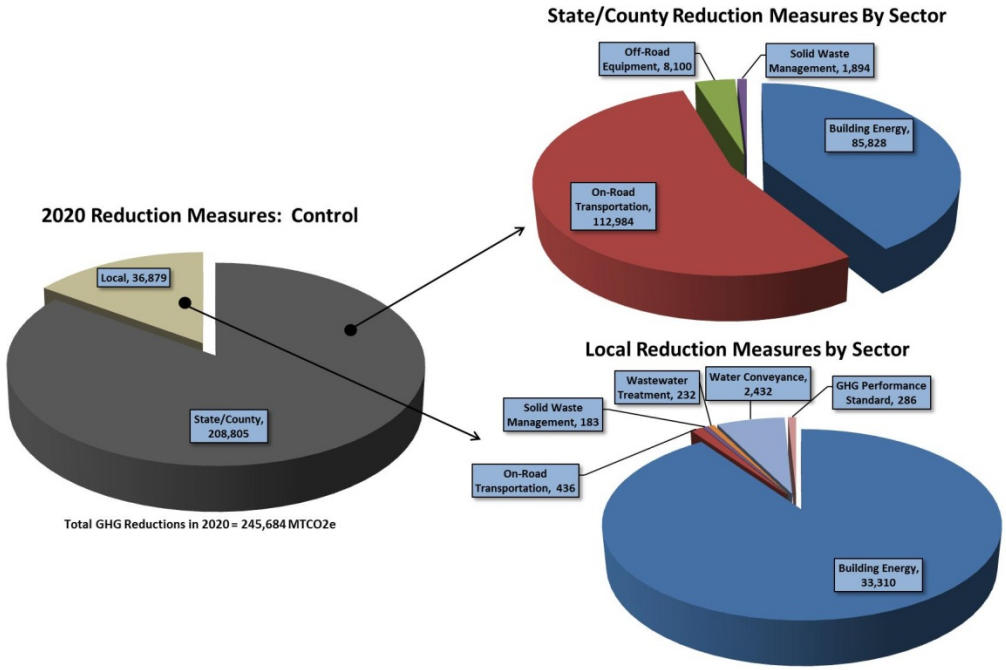
Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	403,585	456,978	119,138	337,840	26.1%
On-Road Transportation	407,132	443,060	113,419	329,640	25.6%
Off-Road Equipment	82,908	90,661	8,100	82,562	8.9%
Solid Waste Management	16,239	17,305	2,077	15,227	12.0%
Agriculture	101,287	51,623	0	51,623	0.0%
Wastewater Treatment	3,057	3,613	232	3,381	6.4%
Water Conveyance	17,684	21,736	2,432	19,305	11.2%
GHG Performance Standard*	-	-	286	-	-
Total Emissions	1,031,892	1,084,975	245,684	839,291	22.6%
Reduction Goal	-	-	*207,867*	*877,108*	*19.2%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Reductions Beyond Goal	-	-	*37,817*	-	-
Per-Capita Emissions	13.7	12.2	-	9.5	-
Per-Job Emissions	21.3	20.3	-	15.7	-
Excluded Emissions: Stationary Sources	*207,650*	*244,412*	-	-	-

Notes:

Values may not sum due to rounding.

* 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. Please see Chapter 4 for a complete description of this measure.

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



3.4.3 Reduction Measures

Table 3-9 presents each reduction measure evaluated for Chino. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

Table 3-9. GHG Reduction Measures and Estimated 2020 Reductions for Chino.

Measure Number	Measure Description	Reductions
State/County Measures		
State-1	Renewable Portfolio Standard	54,378
State-2	Title 24 (Energy Efficiency Standards)	13,112
State-3	AB 1109	14,256
State-4	Solar Water Heating	204
State-5	Industrial Boiler Efficiency	3,878
State-6	Pavley plus LCFS	103,180
State-7	AB 32 Transportation Reduction Strategies	9,804
State-8	LCFS: Off-Road	8,100
State-9	AB 32 Methane Capture	1
County-1	San Bernardino County GHG Plan Landfill Controls	1,893
Local Measures		
Building Energy		
Energy-1	Energy Efficiency for Existing Buildings	2,019
Energy-4	Solar Installation for New Housing	359
Energy-5	Solar Installation for New Commercial	1,104
Energy-7	Solar Installation for Existing Housing	2,629
Energy-8	Solar Installation for Existing Commercial / Industrial	1,569
Wastewater-2 (BE)	*Equipment Upgrades*	*1,249*
Water-4 (BE)	*Implement SB X7-7*	*24,381*
On-Road Transportation		
Transportation-2	Smart Bus Technologies	436
Solid Waste Management		
Waste-2	Waste Diversion	183
Wastewater Treatment		
Water-4 (WT)	*Implement SB X7-7*	232
Water Conveyance		
Water-3	Water-Efficient Landscaping Practices	754
Water-4	Implement SB X7-7	1,678
GHG Performance Standard for New Development		
PS-1	GHG Performance Standard for New Development (30% below projected BAU emissions for the project)	286
Total Reductions		245,684

Notes:

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance

3.4.4 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 a Green Building Ordinance, SmartBus technologies and GHG reduction measures in the wastewater, waste, and water 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

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

Energy-3. Green Building Ordinance

- **OSC-4.1—P7:** The City shall require that all new residences sold with appliances install all Energy Star-Rated appliances. All new residences shall use compact florescent lights in all standard light installations. Installation of these measures shall be confirmed.
- **OSC-4.1—P6:** All new public buildings constructed by the City shall adhere to green building standards and meet the U.S. Green Building Council's LEED certifications for green buildings, or an equivalent standard.

3.4.4.2 On-Road

- **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.
- **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.

Transportation-2. Smart Bus Technologies

- **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.

3.4.4.3 Solid Waste Management

Waste-2. Waste Diversion

- **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.

3.4.4.4 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.

3.4.4.5 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.

3.5 City of Chino Hills

3.5.1 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 2010 census, the population of Chino Hills was 74,799, making Chino Hills the ninth largest city in San Bernardino County. Population and employment are expected to grow modestly by 2020 in Chino Hills, by 3% and 12% respectively over 2008 baselines. Chino Hills' demographic composition in 2010 was 50.8% White, 4.6% Black, 0.5% American Indian and Alaska Native, 30.3% Asian, 0.2% Native Hawaiian and Other Pacific Islander, 8.7% from other races, and 4.9% from two or more races. Persons of Hispanic or Latino origin were 29.1%. Chino Hills has a higher Asian population (30%) than the statewide average (13%) and also has a high home ownership rate (83% versus 57% for the state). 42% of the population has a bachelor's degree or higher (compared to the statewide average of 30%) (U.S. Census Bureau 2012).

Table 3-10 presents socioeconomic data for Chino Hills, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

Table 3-10. Socioeconomic Data for Chino Hills

Category	2008	2020
Population	74,571	76,558
Housing	22,870	23,999
Single-Family	*19,061*	*19,964*
Multifamily	*3,809*	*4,035*
Employment	9,302	10,452
Agricultural	*35*	*78*
Industrial	*1,166*	*1,554*
Retail	*3,167*	*3,253*
Non-Retail	*4,933*	*5,567*

3.5.2 Emission Reductions

The City of Chino Hills selected a goal to reduce its community GHG emissions to a level that is 20% below its projected emissions level in 2020. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective per AB 32 through a combination of state (~85%) and local (~15%) efforts. The City actually exceeds the goal with only state/county level actions (112% of goal), but has committed to additional local measures and to support applicable regional measures. 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 2020. An additional reduction of 19,389 $MTCO_2e$ will be achieved primarily through the following local measures, in order of importance: Implement SB X7-7 (Water-4); Solar Installation for Existing Housing (Energy-7); and Equipment Upgrades at Wastewater Treatment Plants (Wastewater-2). Chino Hills' reduction plan has the greatest impacts on GHG emissions in the building energy, on-road transportation, and water conveyance sectors.

The bars in Figure 3-10 show Chino Hills' 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the city's emissions reduction target (i.e., 20% below its projected emissions level in 2020). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~85%) of the total reductions needed to achieve the 2020 target.

Figure 3-11 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and off-road equipment emissions sectors.

Table 3-11 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and demonstrates that Chino Hills exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the building energy, on-road transportation, and water conveyance sectors.

Figure 3-12 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county 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 due to the implementation of SB X7-7 (Water-4).

Figure 3-10. Emissions Reduction Profile for Chino Hills

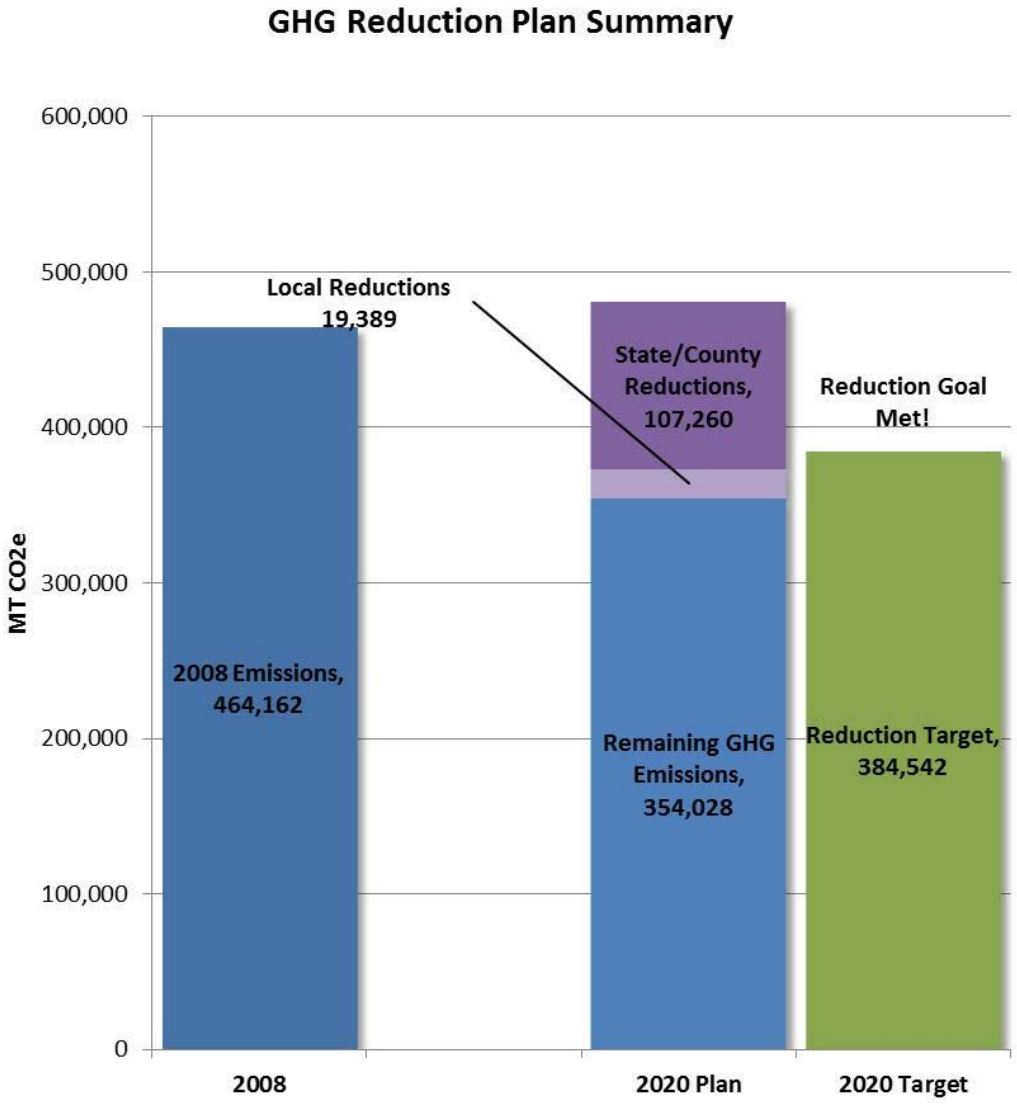


Figure 3-11. Emissions by Sector for Chino Hills

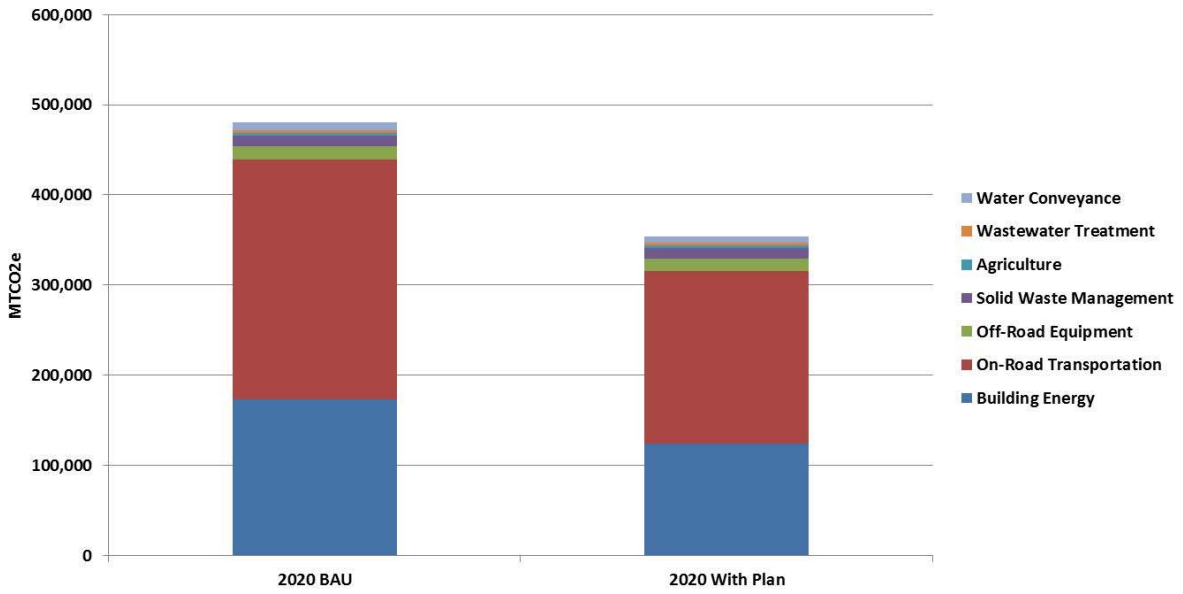


Table 3-11. Emission Reductions by Sector for Chino Hills

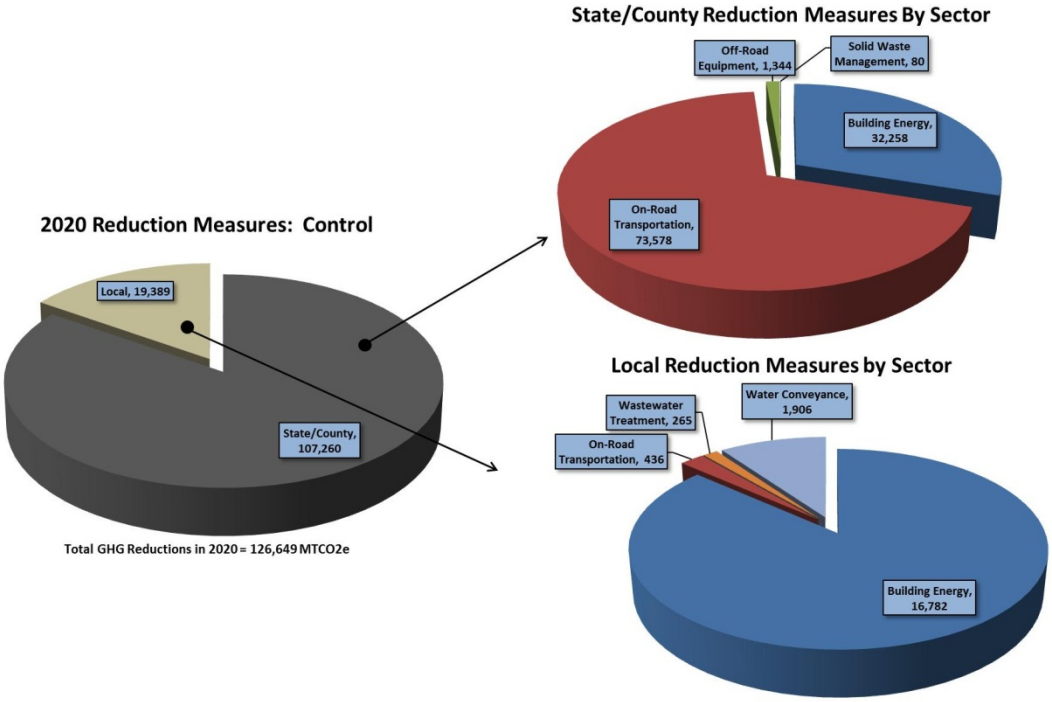
Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	162,380	173,369	49,040	124,328	28.3%
On-Road Transportation	265,707	265,709	74,014	191,696	27.9%
Off-Road Equipment	14,628	15,040	1,344	13,696	8.9%
Solid Waste Management	6,831	11,754	80	11,674	0.7%
Agriculture	5,691	2,900	0	2,900	0.0%
Wastewater Treatment	3,016	3,116	265	2,851	8.5%
Water Conveyance	5,909	8,790	1,906	6,883	21.7%
GHG Performance Standard*	-	-	0	-	-
Total Emissions	464,162	480,677	126,649	354,028	26.3%
Reduction Goal	-	-	*96,135*	*384,542*	*20.0%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Reductions Beyond Goal	-	-	*30,514*	-	-
Per-Capita Emissions	6.2	6.3	-	4.6	-
Per-Job Emissions	49.9	46.0	-	33.9	-
Excluded Emissions: Stationary Sources	*25,417*	*33,375*	-	-	-

Notes:

Values may not sum due to rounding.

* 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. Please see Chapter 4 for a complete description of this measure.

Figure 3-12. Emission Reductions by Control and by Sector for Chino Hills



3.5.3 Reduction Measures

Table 3-12 presents each reduction measure evaluated for Chino Hills. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

Table 3-12. GHG Reduction Measures and Estimated 2020 Reductions for Chino Hills

Measure Number	Measure Description	Reductions
State/County Measures		
State-1	Renewable Portfolio Standard	22,570
State-2	Title 24 (Energy Efficiency Standards)	2,566
State-3	AB 1109	6,657
State-4	Solar Water Heating	199
State-5	Industrial Boiler Efficiency	266
State-6	Pavley plus LCFS	67,686
State-7	AB 32 Transportation Reduction Strategies	5,892
State-8	LCFS: Off-Road	1,344
State-9	AB 32 Methane Capture	0
County-1	San Bernardino County GHG Plan Landfill Controls	80
Local Measures		
Building Energy		
Energy-7	Solar Installation for Existing Housing	1,654
Wastewater-2 (BE)	*Equipment Upgrades*	632
Water-4 (BE)	*Implement SB X7-7*	*14,496*
On-Road Transportation		
Transportation-2	Smart Bus Technologies	436
Wastewater Treatment		
Water-4 (WT)	*Implement SB X7-7*	*265*
Water Conveyance		
Water-4	Implement SB X7-7	1,906
Total Reductions		126,649

Notes:

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance.

3.5.4 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 1994 General Plan unless otherwise noted (City of Chino Hills 1994). The City is currently updating its General Plan, and will incorporate and update all of the policies listed below. In addition to state level measures, the City of Chino Hills selected GHG reduction measures across a wide range of sectors (Table 3-12). 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).

3.5.4.1 Building Energy

- **Objective 5-1:** Evaluate the energy conservation potential of individual projects during the development review process. Monitor citywide energy use and trends.
- **Policy 5-3:** Encourage new development and existing structures to install energy saving features beyond those required under State Title 24 energy regulations.
- **Policy 1-7:** For all future developments, require preservation of 80% of all native trees with trunks 4 or more inches in diameter.
- **Policy 7-3:** Protect and carefully maintain the landscape to foster its value for air pollution mitigation, fire safety, wildlife habitat and recreation activities.
- **Policy 5-2:** Encourage innovative site planning and building designs which minimize energy consumption by taking advantage of sun and shade patterns, prevailing winds, landscaping, and building materials.

3.5.4.2 On-Road

- **Policy 3-7:** Residential and regional employment centers shall be linked through roadway extensions
- **Policy 3-13**: Locate the community centers where they are accessible to public transportation systems.
- **Policy 3-4:** Require all new development projects to implement the Trails Master Plan.
- **Objective 4-1 (and all transportation and land use related policies associated with this objective):** Work toward meeting air pollution reduction goals established by SCAQMD and SCAG.

Transportation-2. Smart Bus Technologies

- **Policy 3-7:** Residential and regional employment centers shall be linked through roadway extensions
- **Policy 3-13**: Locate the community centers where they are accessible to public transportation systems.
- **Policy 3-4:** Require all new development projects to implement the Trails Master Plan.
- **Policy 4-1:** Reduce air pollution through coordinated land use, transportation, and energy use planning.
- **Policy 4-7:** Develop a coordinated system of pedestrian pathways.
- **Policy 4-14:** Promote all forms of transit serving the city and the urbanized portions of San Bernardino, Riverside, Los Angeles and Orange counties, including light rail and commuter rail service.

3.5.4.3 Off-Road

- **Policy 4-18:** Support to the extent possible State and federal legislation which would improve vehicle/transportation technology and cleaner fuels.
- **Policy 4-1:** Reduce air pollution through coordinated land use, transportation, and energy use planning.

- **Policy 4-2:** Endorse regional and local air quality and transportation management plans in order to reduce air pollution emissions and vehicle trips.

3.5.4.4 Solid Waste Management

- **Policy 6-2:** Publicize and educate the public about waste reduction techniques and facilities.
- **Policy 6-3:** Require new developments to incorporate recycling locations into their sites.
- **Policy 6-4:** Annually review waste collection performance to verify quality of service.
- **Policy 7-10:** Save water, control maintenance costs, reduce trash, and economize wherever possible through design, construction and management without sacrificing the quality of the landscape.
- **Policy 7-13:** Develop a program for recycling green waste.

3.5.4.5 Wastewater Treatment

- **Policy 3-1:** Use reclaimed water for non-potable water supplies (e.g., landscaping) wherever economically feasible and not precluded by public health considerations.
- **Policy 7-12**: Consider using reclaimed water for irrigation of City landscapes when this source of water becomes available
- **Policy 4-9:** Encourage the use of energy conservation devices in project design and construction to increase energy efficiency and decrease pollution from distant electrical power plants and on-site natural gas use.
- **Policy 4-2:** Endorse regional and local **air quality** and transportation management plans in order to reduce **air pollution emissions** and vehicle trips.

3.5.4.6 Water Conveyance

- **Policy 7-10**: Save water, control maintenance costs, reduce trash, and economize wherever possible through design, construction and management without sacrificing the quality of the landscape.
- **Policy 7-9:** Design park facilities to minimize water use and maintenance demands.
- **Policy 7-11:** Follow water conservation principles in all aspects of landscape maintenance including plant selection and development of irrigation systems.

3.6 City of Colton

3.6.1 City Summary

The City of Colton is located in the valley region of San Bernardino County, east of the City of Fontana and between the cities of San Bernardino and Riverside. Colton was incorporated in July of 1887, making it one of the oldest cities in the county. The city owes much of its historical growth to its location along a main artery of the Union Pacific Railroad (UPRR) 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 the 2010 census was 52,154 and is expected to grow to 60,652 by 2020 (16% increase). Colton's demographic composition in 2010 was 43.4% White, 9.7% Black, 1.3% American Indian and Alaska Native, 5% Asian, 0.3% Native Hawaiian and Other Pacific Islander, 35.3% from other races, and 5.1% from two or more races. Persons of Hispanic or Latino origin were 71%, which is notably larger than the statewide average of 37.6%. Colton also has a largely young population (32% under 18, compared to 25% for California) (U.S. Census Bureau 2012). 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 6% before 2020. Colton's location in the southern area of the county and its proximity to freeways have made it, like other valley cities, a desirable and fast-growing community in recent decades.

Table 3-13 presents socioeconomic data for Colton, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

Table 3-13. Socioeconomic Data for Colton

Category	2008	2020
Population	52,103	60,652
Housing	14,955	17,842
Single-Family	*9,024*	*10,771*
Multi-Family	*5,931*	*7,071*
Employment	24,023	25,529
Agricultural	*5*	*13*
Industrial	*3,962*	*4,504*
Retail	*4,463*	*4,599*
Non-Retail	*15,593*	*16,412*

3.6.2 Emission Reductions

The City of Colton selected a goal to reduce its community GHG emissions to a level that is 15% below its 2008 GHG emissions level by 2020. The City will exceed this goal through a combination of state (~84%) and local (~16%) efforts. The City actually exceeds the goal with only state/county

level actions (131% of goal), but has committed to several additional local measures. 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 2020. An additional reduction of 40,853 $MTCO_2e$ will be achieved primarily through the following local measures, in order of importance: Implement SB X7-7 (Water-4); Energy Efficiency for Existing Buildings (Energy-1); and GHG Performance Standard for Existing Development (PS-1). Colton's reduction plan has the greatest impacts on GHG emissions in the solid waste management, wastewater treatment, and building energy sectors.

The City of Colton has recently updated its General Plan Circulation (Mobility) Element and Land Use Element. The updated General Plan Elements contain many transportation and land use-related policies and actions to reduce vehicle-related GHG emissions throughout the SANBAG region. These Elements will support the goals of SB 375 and the Sustainable Communities Strategy (Transporation-1) through a wide range of policies and actions, which include the following.

Mobility

- Require all new non-residential, mixed-use, and large-scale residential development projects, through the development review process, to include public transit, bicycle, and pedestrian facilities.
- Plan for multi-use recreation trails and paths that allow for physical activities, including running, walking, and bicycling.
- 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 the use of public transit for short trips more convenient and available.
- 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.
- Work with Metrolink and the Southern California Regional Rail Authority to establish a Metrolink station in Colton along existing Metrolink rail lines.
- Develop and maintain a citywide comprehensive bicycle network of off-street bike paths, on-street bike lanes, and bike streets to provide connections between neighborhoods, schools, civic center/facilities, recreational facilities, and major commercial centers.
- Condition discretionary projects to require bicycle amenities such as bike racks and secure storage areas.
- 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 transit, ridesharing, bicycling and walking.
- Allow for joint use and the sharing of parking facilities in mixed-use developments and for other projects which demonstrate the benefits of alternative parking approaches.

Land Use

The Land Use Element has introduced two new land use designations that will support the goals of SB 375, and help reduce GHG emissions. The goal of these new land use designations/zoning districts is to "establish land use patterns and provide pedestrian amenities…that minimize the need for vehicle travel among the uses within a district" (Policy LU-10.4)

- Mixed-Use: Downtown—Provides for a downtown district that integrates civic, public, commercial, office and residential uses.
- Mixed-Use: Neighborhood—Allows for office, commercial, and residential uses within the same structure or adjacent to each other, including live/work units.

The Land Use Element has also introduced a "Residential Overlay" designation that provides, in addition to the base land use, the opportunity to develop residential uses in areas where convenient access to transit and neighborhood-serving land uses is available.

In addition, the Land Use Element has introduced the following policies that support the goals of SB 375 and the Sustainable Communities Strategy.

- Establish land use patterns that provide pedestrian amenities within the mixed-use districts that minimize the need for vehicle travel among the uses within a district.
- Require that new development projects reflect the principles of Traditional Neighborhood Development: walkable street patterns, pedestrian amenities, access to transit, a mix of complementary uses, comfortable and accessible open spaces, a range of housing types and densities, and quality design.
- Facilitate the use of green building standards and Leadership in Energy and Environmental Design (LEED) or similar programs in both private and public projects to conserve natural resources.
- Promote sustainable building practices that go beyond the requirements of Title 24 of the California Administrative Code, and encourage energy-efficient design elements, as appropriate.
- Support sustainable building practices that integrate building materials and methods that promote environmental quality, economic vitality, and social benefit through design, construction, and operation of the build environment.
- Pursue opportunities to locate higher-density residential development near activity centers such as parks and recreation facilities, commercial areas, employment centers, and transit.

The bars in Figure 3-13 show Colton's 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the city's emissions reduction target (i.e., 15% below the 2008 emissions level). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~85%) of the total reductions needed to achieve the 2020 target.

Figure 3-14 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and off-road equipment emissions sectors.

Table 3-14 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and demonstrates that Colton exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the solid waste management, wastewater treatment, and building energy sectors.

Figure 3-15 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to

state/county measures. Of the state/county 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 due to the implementation of SB X7-7 (Water-4).

Figure 3-13. Emissions Reduction Profile for Colton

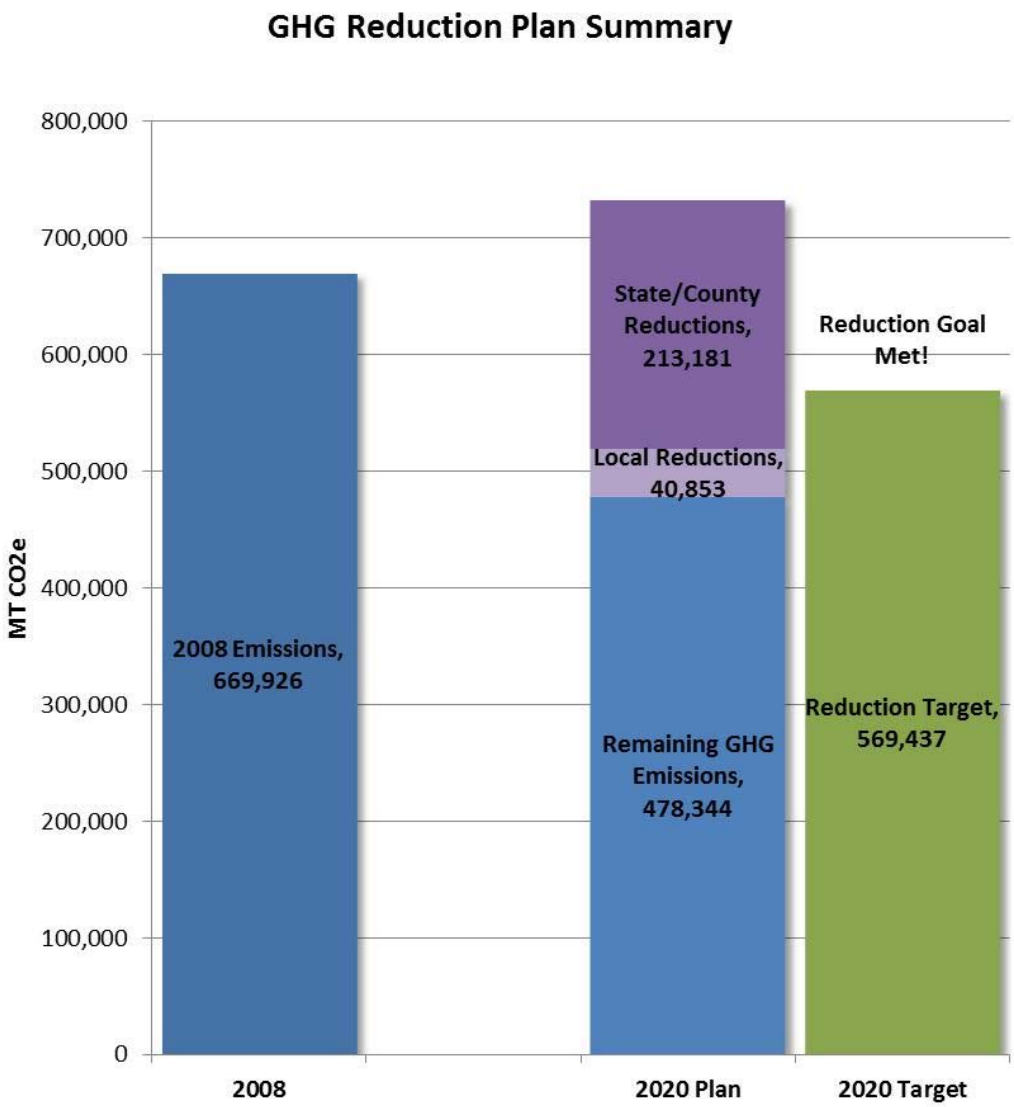


Figure 3-14. Emissions by Sector for Colton

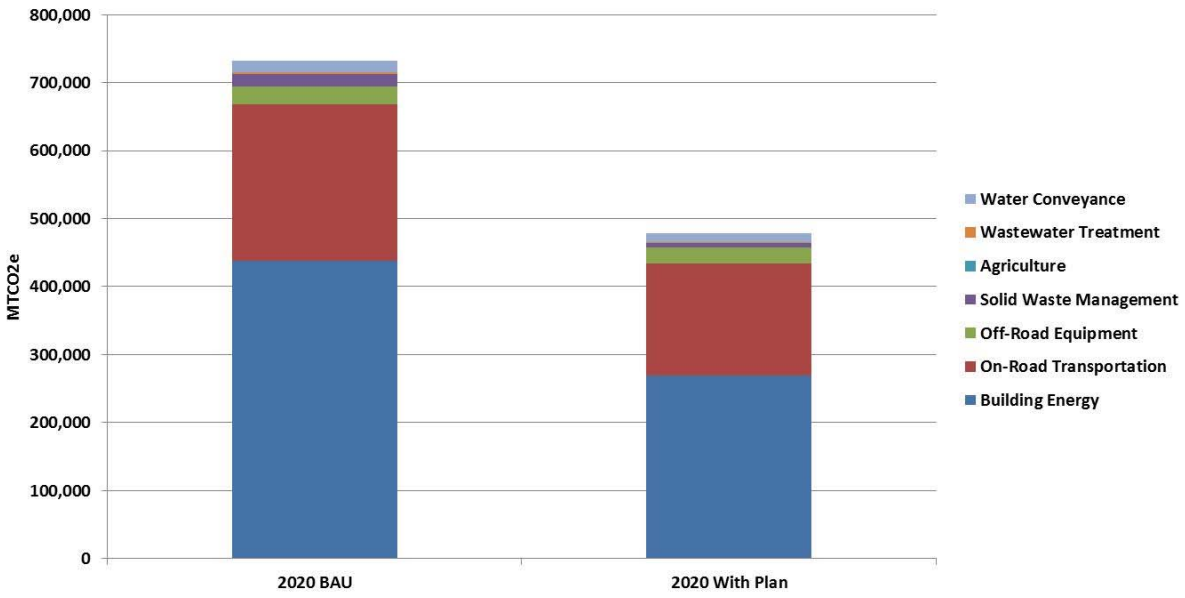
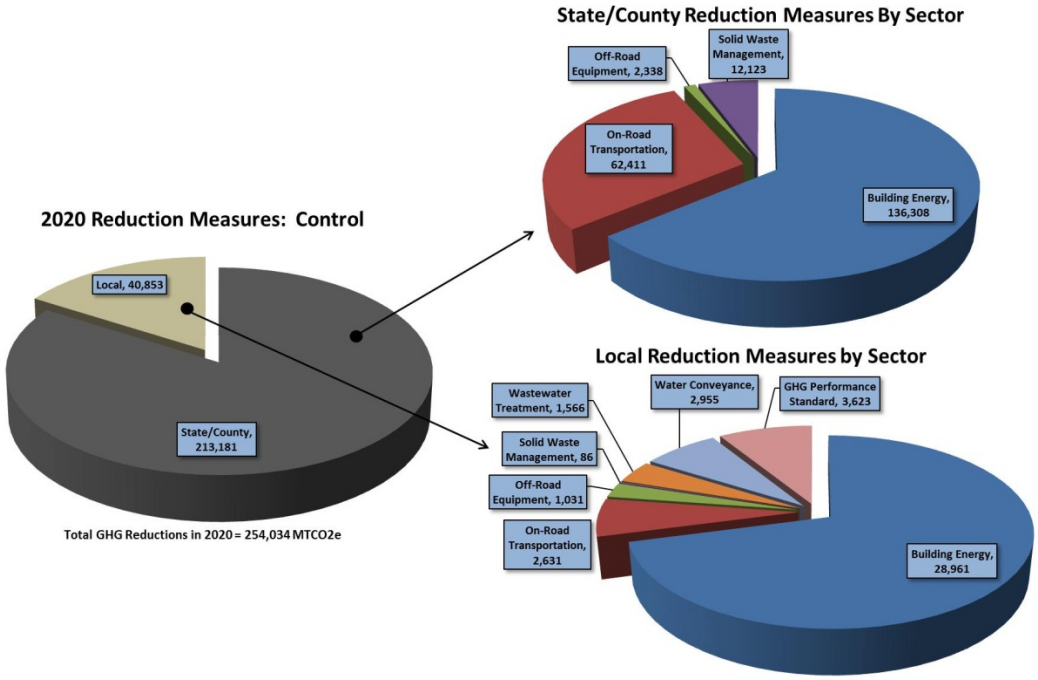


Table 3-14. Emission Reductions by Sector for Colton

Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	410,302	437,695	165,269	272,426	37.8%
On-Road Transportation	215,836	230,059	65,043	165,017	28.3%
Off-Road Equipment	22,891	26,167	3,368	22,799	12.9%
Solid Waste Management	18,037	18,826	12,209	6,616	64.9%
Agriculture	731	373	0	373	0.0%
Wastewater Treatment	2,128	2,519	1,566	953	62.2%
Water Conveyance	12,492	16,739	2,955	13,783	17.7%
GHG Performance Standard*	-	-	3,623	-	-
Total Emissions	682,418	732,377	254,034	478,344	34.7%
Reduction Goal	-	-	*162,940*	*569,437*	*22.2%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Reductions Beyond Goal	-	-	*98,684*	-	-
Per-Capita Emissions	13.1	12.1	-	7.9	-
Per-Job Emissions	28.4	28.7	-	18.7	-
Excluded Emissions: Stationary Sources	*55,509*	*60,605*	-	-	-

Notes:
Values may not sum due to rounding.
* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City's reduction goal. Please see Chapter 4 for a complete description of this measure.

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



3.6.3 Reduction Measures

Table 3-15 presents each reduction measure evaluated for Colton. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

Table 3-15. GHG Reduction Measures and Estimated 2020 Reductions for Colton

Measure Number[a]	Measure Description	Reductions
State/County Measures		
State-1	Renewable Portfolio Standard	105,399
State-2	Title 24 (Energy Efficiency Standards)	8,927
State-3	AB 1109	20,627
State-4	Solar Water Heating	180
State-5	Industrial Boiler Efficiency	1,175
State-6	Pavley plus LCFS	57,313
State-7	AB 32 Transportation Reduction Strategies	5,098
State-8	LCFS: Off-Road	2,338
State-9	AB 32 Methane Capture	0
County-1	San Bernardino County GHG Plan Landfill Controls	12,123
Local Measures		
Building Energy		
Energy-1	Energy Efficiency for Existing Buildings	6,966

Measure Number[a]	Measure Description	Reductions
Energy-2	Outdoor Lighting	1,251
Energy-4	Solar Installation for New Housing	1,766
Energy-8	Solar Installation for Existing Commercial / Industrial	2,101
LandUse-1 (BE)	*Tree Planting Programs*	52
Wastewater-2 (BE)	*Equipment Upgrades*	1,389
Water-1 (BE)	*Require Tier 1 Voluntary CALGreen Standards for New Construction*	672
Water-4 (BE)	*SB X7-7*	14,765
On-Road Transportation		
Transportation-1	Sustainable Communities Strategy	2,195
Transportation-2	Smart Bus Technologies	436
Off-Road Equipment		
OffRoad-1	Electric-Powered Construction Equipment	713
OffRoad-2	Idling Ordinance	256
OffRoad-3	Electric Landscaping Equipment	63
Solid Waste Management		
Waste-2	Waste Diversion	86
Wastewater Treatment		
Wastewater-1	Methane Recovery	1,495
*Water-1 (WT)**	*Require Tier 1 Voluntary CALGreen Standards for New Construction*	7
Water-4 (WT)	*SB X7-7*	64
Water Conveyance		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New Construction	644
Water-3	Water-Efficient Landscaping Practices	438
Water-4	SB X7-7	1,874
GHG Performance Standard for New Development		
PS-1	GHG Performance Standard for New Development (31% below projected BAU emissions for the project)	3,623
Total Reductions		254,034

Notes:

Values may not sum due to rounding.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance.

3.6.4 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 1987 General Plan unless otherwise noted (Colton 1987).

3.6.4.1 Building Energy

- **Air Quality GOAL 6:** Reduced emissions through reduced energy consumption.

3.6.4.2 On-Road

Transportation-1. Sustainable Communities Strategy

- **Air Quality Program 4.2.2:** Improve jobs/housing balance at a subregional level in relation to major activity centers as new development occurs by: Allowing/encouraging intensified development around transit nodes and along transit corridors.
- **Air Quality Goal 4:** A pattern of land uses which can be efficiently served by a diversified transportation system and land development projects which directly and indirectly generate the minimum feasible air pollutants (17).
- **Air Quality Policy 2.1.2:** Use incentives, regulations and Transportation Demand Management in cooperation with other jurisdictions in the South Coast Air Basin to reduce the vehicle miles traveled for auto trips which still need to be made.
- **Air Quality Policy 2.3.1:** Cooperate in efforts to expand bus, rail and other forms of transit in the portion of the South Coast Air Basin within San Bernardino.
- **Air Quality Policy 2.3.2:** Promote expansion of all forms of transit in the urbanized portions of San Bernardino, Orange, Los Angeles and Riverside Counties.
- **Air Quality Policy 4.2:** Improve the balance between jobs and housing in order to create a more efficient urban form.

Transportation-2. Smart Bus Technologies

- **Air Quality Program 2.3.2.2:** Support public transit providers in efforts to increase funding for transit improvements to supplement other means of travel.

3.6.4.3 Off-Road

Off-Road-1. Electric-Powered Construction Equipment

- **Air Quality GOAL 6:** Reduced emissions through reduced energy consumption.

Off-Road-2. Idling Ordinance

- **Air Quality GOAL 6:** Reduced emissions through reduced energy consumption.

Off-Road-3. Electric Landscaping Equipment

- **Air Quality GOAL 6:** Reduced emissions through reduced energy consumption.

3.6.4.4 Solid Waste Management

Waste-2. Waste Diversion

- **Air Quality Program 6.3.1**: Implement provisions of AB 939 and adopt incentives, regulations and procedures to specify local recycling requirements (18.b).

3.6.4.5 Wastewater Treatment

Wastewater-1. Methane Recovery

- **Air Quality GOAL 6:** Reduced emissions through reduced energy consumption.

Wastewater-2. Equipment Upgrades

- **Air Quality GOAL 6:** Reduced emissions through reduced energy consumption.

3.6.4.6 Water Conveyance

Water-3. Water-Efficient Landscaping Practices

- **Open Space & Conservation Element Standard 3:** The use of natural and drought-tolerant vegetation shall be encouraged for landscaping in order that maintenance and water consumption are minimized.

3.7 City of Fontana

3.7.1 City Summary

The City of Fontana is located in the valley, in southern San Bernardino County. Like other valley cities, 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 196,069 as of 2010 (193,913 in 2008), making Fontana the second largest city in San Bernardino County and the twentieth largest city in California. Fontana has grown at a rate of approximately 50% every 10 years, and is projected to reach a population of 222,717 by 2020 (an approximately 15% increase over 2008). Fontana's demographic composition in 2010 was 47.4% White, 10% Black, 1% American Indian and Alaska Native, 6.6% Asian, 0.3% Native Hawaiian and Other Pacific Islander, 29.8% from other races, and 4.9% from two or more races. Persons of Hispanic or Latino origin were 66.8%, which is larger than the statewide average of 38%. The homeownership rate of 70% is much higher than the state average of 57% (U.S. Census Bureau 2012).

Table 3-16 presents socioeconomic data for Fontana, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

Table 3-16. Socioeconomic Data for Fontana

Category	2008	2020
Population	193,913	222,717
Housing	48,573	57,482
Single-Family	*38,193*	*45,010*
Multifamily	*10,380*	*12,472*
Employment	47,622	53,652
Agricultural	*67*	*86*
Industrial	*12,968*	*15,150*
Retail	*14,528*	*15,383*
Non-Retail	*20,060*	*23,033*

3.7.2 Emission Reductions

The City of Fontana selected a goal to reduce its community GHG emissions to a level that is 15% below its 2008 GHG emissions level by 2020. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective per AB 32 through a combination of state (~72%) and local (~28%) 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 2020. An additional reduction of 124,090 $MTCO_2e$ will be achieved primarily through the following local measures, in order of importance: Implement SB X7-7 (Water-4); GHG Performance Standard for Existing Development (PS-1); and Implementation of the SCS (Transportation-1). Fontana's reduction plan has the greatest impacts on GHG emissions in the solid waste management, building energy, and water conveyance 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 SANBAG 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 3-16 show Fontana's 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the city's emissions reduction target (i.e., 15% below the 2008 emissions level). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~72%) of the total reductions needed to achieve the 2020 target.

Figure 3-17 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and off-road equipment emissions sectors.

Table 3-17 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and demonstrates that Fontana exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the solid waste management, building energy, and water conveyance sectors.

Figure 3-18 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county 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 due to the implementation of SB X7-7 (Water-4).

Figure 3-16. Emissions Reduction Profile for Fontana

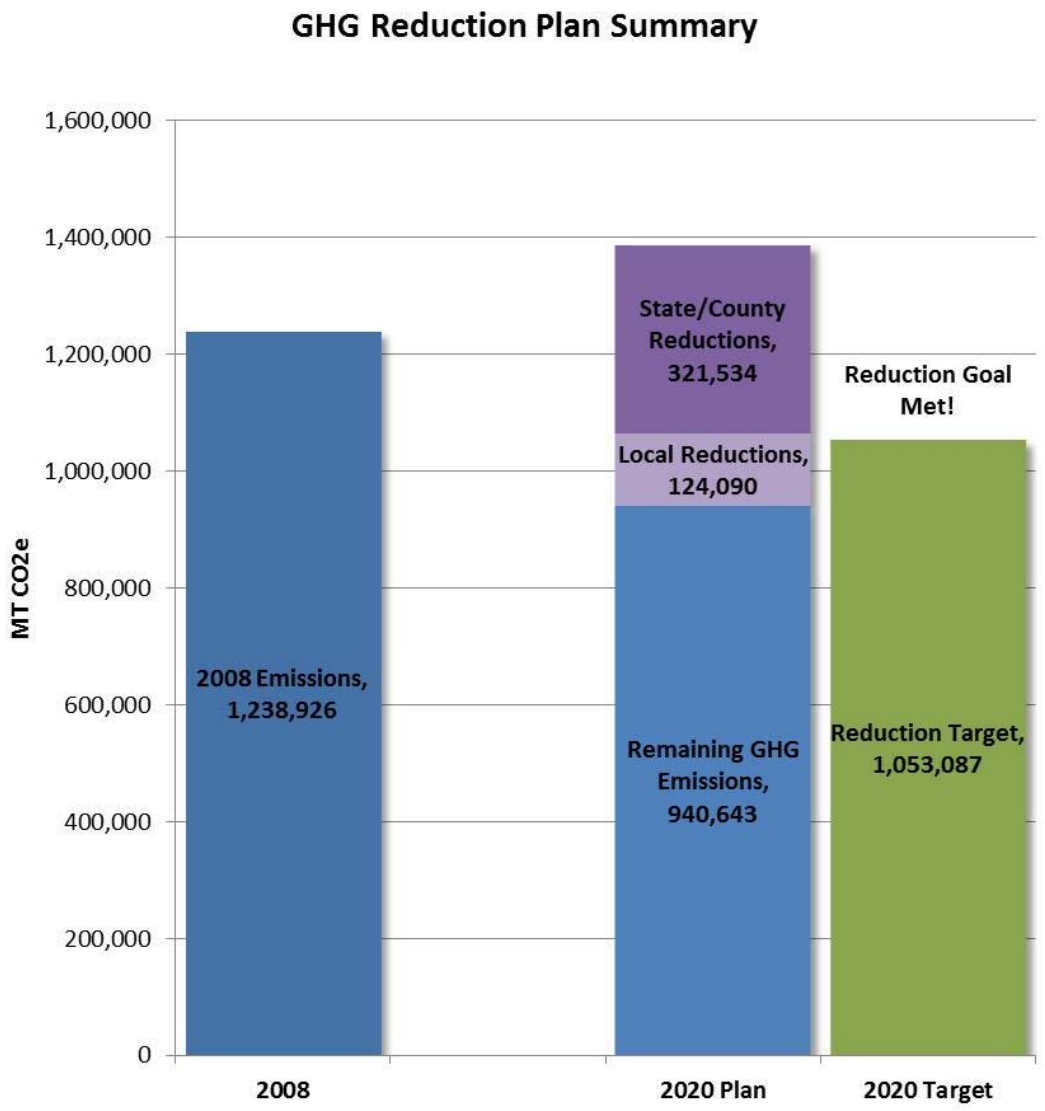


Figure 3-17. Emissions by Sector for Fontana

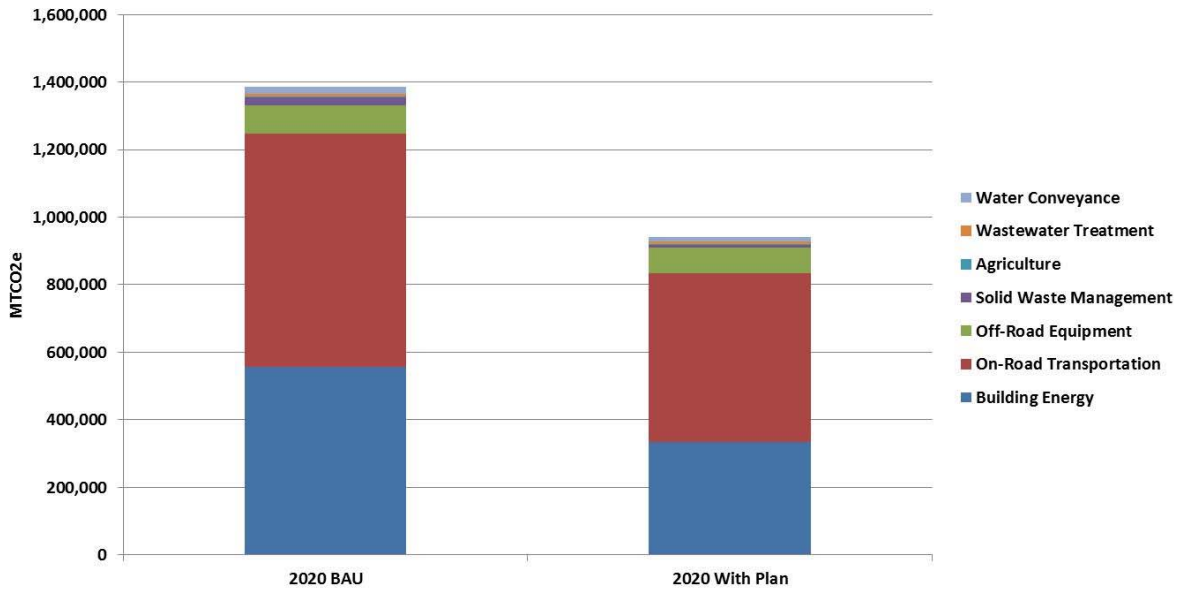


Table 3-17. Emission Reductions by Sector for Fontana

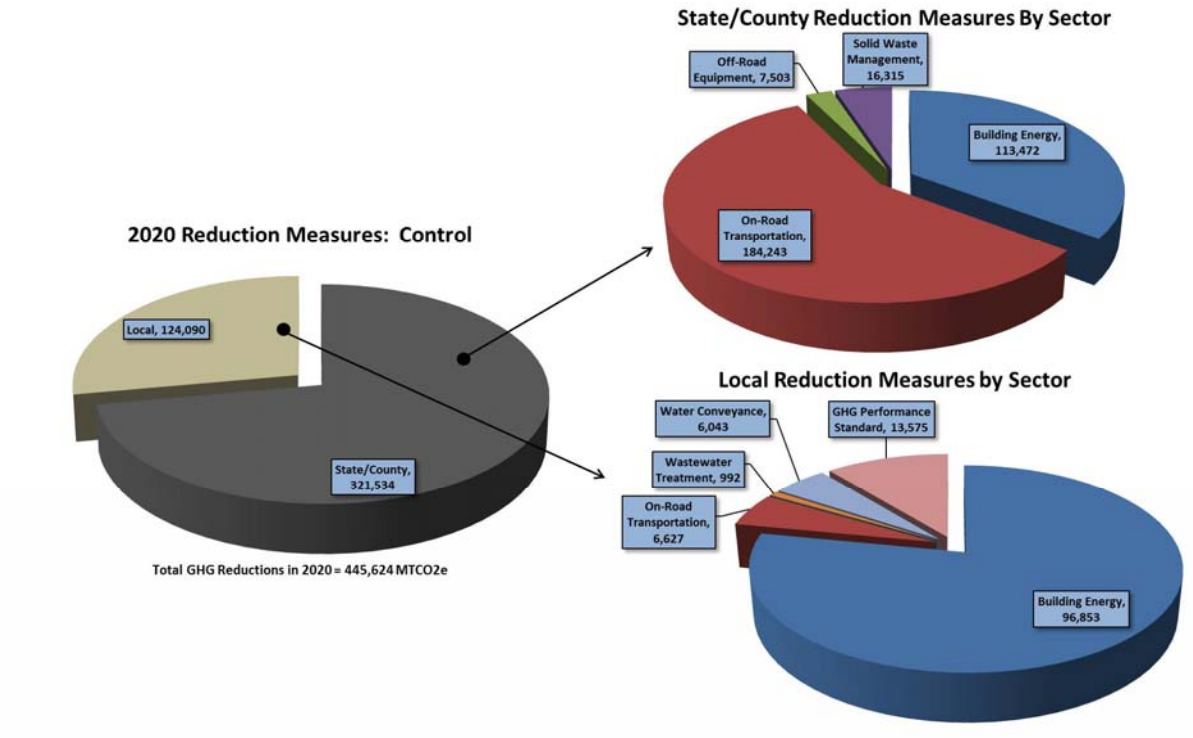
Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	483,683	556,973	210,326	346,647	37.8%
On-Road Transportation	635,066	690,099	190,870	499,229	27.7%
Off-Road Equipment	73,650	83,979	7,503	76,477	8.9%
Solid Waste Management	19,570	24,052	16,315	7,737	67.8%
Agriculture	3,850	1,962	0	1,962	0.0%
Wastewater Treatment	7,842	9,064	992	8,072	10.9%
Water Conveyance	15,265	20,138	6,043	14,095	30.0%
GHG Performance Standard*	-	-	13,575	-	-
Total Emissions	1,238,926	1,386,267	445,624	940,643	32.1%
Reduction Goal	-	-	*333,180*	*1,053,087*	*24.0%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Reductions Beyond Goal	-	-	*112,444*	-	-
Per-Capita Emissions	6.4	6.2	-	4.2	-
Per-Job Emissions	26.0	25.8	-	17.5	-
Excluded Emissions: Stationary Sources	*131,922*	*151,072*	-	-	-

Notes:

Values may not sum due to rounding.

* 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. Please see Chapter 4 for a complete description of this measure.

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



3.7.3 Reduction Measures

Table 3-18 presents each reduction measure evaluated for Fontana. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

Table 3-18. GHG Reduction Measures and Estimated 2020 Reductions for Fontana

Measure Number	Measure Description	Reductions
State/County Measures		
State-1	Renewable Portfolio Standard	73,007
State-2	Title 24 (Energy Efficiency Standards)	17,215
State-3	AB 1109	20,118
State-4	Solar Water Heating	477
State-5	Industrial Boiler Efficiency	2,656
State-6	Pavley plus LCFS	168,956
State-7	AB 32 Transportation Reduction Strategies	15,287
State-8	LCFS: Off-Road	7,503
State-9	AB 32 Methane Capture	2
County-1	San Bernardino County GHG Plan Landfill Controls	16,314
Local Measures		
Building Energy		
Energy-2	Outdoor Lighting	3,324
Wastewater-2 (BE)	*Equipment Upgrades*	*2,638*
Water-4 (BE)	*Implement SB X7-7*	*90,891*
On-Road Transportation		
Transportation-1	Sustainable Communities Strategy	6,191
Transportation-2	Smart Bus Technologies	436
Wastewater Treatment		
Water-4 (WT)	*Implement SB X7-7*	*992*
Water Conveyance		
Water-4	Implement SB X7-7	6,043
GHG Performance Standard for New Development		
PS-1	GHG Performance Standard for New Development(29% below projected BAU emissions for the project)	13,575
Total Reductions		445,624

Notes:

* These are measures where the avoided annual GHG emissions are small relative to the effort to implement the measure on the City's part. Although the City has selected this measure, ICF recommends that the City not pursue this GHG reduction measure.

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance

3.7.4 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 2003 General Plan unless otherwise noted (City of Fontana 2003). In addition to state level measures, the City of Fontana selected numerous GHG reduction measures in the building energy sector and several measures in wastewater and on-road sectors (Table 3-18). 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).

3.7.4.1 Building Energy

- **Air Quality Goal 3 Policy 7:** The City shall require residential building construction to comply with energy use guidelines detailed in Title 24 of the California Administrative Code and shall promote and provide incentives for residential building construction that goes beyond the guidelines detailed in Title 24.
- **Air Quality Goal 3 Policy 5**: The City shall promote and provide incentives for the use of efficient heating equipment and other appliances, such as water heaters, swimming pool heaters, cooking equipment, refrigerators, furnaces, and boiler units.
- **Open Space & Conservation Element Goal 3.1 Policy 3:** Encourage the preservation of natural habitat in conjunction with private or public development projects.
- **Air Quality Goal 3 Policy 2:** Energy conservation shall be achieved through a combination of incentives and regulations for private and public developments.
- **Air Quality Goal 3 Policy 3:** The City shall promote and provide incentives for the incorporation of energy-efficient design elements, including appropriate site orientation and the use of shade and windbreak trees to reduce fuel consumption for heating and cooling.
- **Public Facilities, Services & Infrastructure Goal 10 Policy 4:** "Smart" home design, equipped with sensors for efficient heating and cooling, supports "green building" concepts of energy efficiency and should be encouraged by the City when approving new development.

Energy-2. Outdoor Lighting

- **Air Quality Goal 3 Policy 2:** Energy conservation shall be achieved through a combination of incentives and regulations for private and public developments.
- **Air Quality Goal 3 Policy 4:** The City shall promote and provide incentives for the use of energy efficient building materials/methods that reduce emissions.
- **Air Quality Goal 3 Policy 11:** Alternative energy sources development shall be promoted in Fontana.

3.7.4.2 On-Road

Transportation-1. Sustainable Communities Strategy

- **Land Use Goal 3 Policy 3:** Circulation system improvements shall continue to be pursued that facilitate connectivity across freeway and rail corridors.

- **Land Use Goal 3 Policy 4**: Improvements shall be made to transportation corridors that promote physical connectivity and reflect consistently high aesthetic values.
- **Land Use Goal 5 Policy 4:** Downtown, its Metrolink Station and Transit Plaza, and the surrounding community shall be accessible and connected by multiple modes of transportation including pedestrian, bicycle, transit and automobile.
- **Air Quality Goal 2 Policy 7**: The City should manage parking supply to discourage auto use, while ensuring that economic development goals will not be sacrificed.
- **Air Quality Goal 2 Policy 6:** Developers in our community shall work to reduce vehicle trips and total vehicle miles traveled in projects that are approved here.

Transportation-2. Smart Bus Technologies

- **Circulation Element Goal 1 Policy 13:** Provide new bus turnouts along appropriate arterials based on and in coordination with, local and regional transit providers' bus routes and major stops.
- **Circulation Element Goal 4 Policy 2:** Establish connections between inter-city rail and major activity centers to improve freight transfers and provide passenger service.
- **Air Quality Goal 2 Policy 8:** Efforts to expand bus, rail, and other forms of transit in the portion of the South Coast Air Basin within San Bernardino County shall be cooperatively pursued with Omnitrans, MTA and other transit providers.
- **Air Quality Goal 2 Policy 10:** The City shall manage traffic flow through signal synchronization, while coordinating with and permitting the free flow of mass transit vehicles, as a way to achieve enhanced mobility.

3.7.4.3 Off-Road

- **Air Quality Goal 2 Policy 9:** The City should invest in clean fuel systems on new local government fleet vehicles as their service life ends, and promote similar actions by other units of government.
- **Air Quality Goal 2 Policy 11:** Work with local industry and warehousing facilities to reduce excessive idling at these facilities.
- **Air Quality Goal 2 Policy 12:** Work with local law enforcement to promote the citing of unmanned vehicles observed idling at the roadside.
- **Air Quality Goal 2 Policy 14**: Heavy trucks shall be discouraged from excessive idling both at the roadside and during unloading/loading operations.

3.7.4.4 Solid Waste Management

- **Public Facilities, Services & Infrastructure Goal 7 Policy 1:** Where joint programs offer improved efficiency or reduced cost, the City shall collaborate with other entities in waste recycling efforts.
- **Public Facilities, Services & Infrastructure Goal 7 Policy 2:** Services shall continue to be provided to resident and business citizens that facilitate community cleanup, curbside collections and diversion of oil and other hazardous waste materials.
- **Public Facilities, Services & Infrastructure Goal 7 Policy 3**: An aggressive public education program shall be maintained to stimulate recycling, reuse and waste reduction by its resident and business citizens

3.7.4.5 Wastewater Treatment

- **Air Quality Goal 3 Policy 11:** Alternative energy sources development shall be promoted in Fontana.
- **Public Facilities, Services & Infrastructure Goal 6 Policy 3**: An aggressive water-recycling program shall be established and maintained in City.
- **Open Space & Conservation Element Goal 3.1 Policy 1:** Promote use of xeric (adapted to arid conditions) landscaping techniques in master planned communities, and other new land use plans. Provide public information concerning xeric plant palettes and low water usage irrigation systems.
- **Open Space & Conservation Element Goal 3.1 Policy 3:** Participate with the Inland Empire Utilities Agency, the Fontana Water Company, the Cucamonga County Water District, and the West San Bernardino County Water District to develop and implement water conservation programs and to encourage the use of water conserving technologies, for indoor and outdoor applications.
- **Open Space & Conservation Element Goal 3.1 Policy 2:** Replace existing turf areas and other high water consuming landscaping within City street medians and parkways with xeric vegetation and miscellaneous hardscape materials.

Wastewater-2. Equipment Upgrades

- **Public Facilities, Services & Infrastructure Goal 6 Policy 4:** Sufficient financial support for wastewater system maintenance (repair, upgrade, replacement, preventive maintenance) shall be devoted so that current levels of service, health and safety are sustained or improved.

3.8 City of Grand Terrace

3.8.1 City Summary

The City of Grand Terrace is located in the valley of southern San Bernardino County between the cities of 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 2010 was 12,040, up from 11,768 in 2008. Population in Grand Terrace has grown at a slower pace relative to other cities 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 2010 was 65.7% White, 5.6% Black, 1% American Indian and Alaska Native, 6.5% Asian, 0.3% Native Hawaiian and Other Pacific Islander, 15.8% from other races, and 5.2% from two or more races. Persons of Hispanic or Latino origin were 39.1%. Grand Terrace is a mostly White and Hispanic/Latino community with a slightly higher-than-average median household income ($62,335 versus $60,883 for the state) (U.S. Census Bureau 2012). Population in 2020 is expected to be 11,644, a slight decrease since 2008, yet GHG emissions are expected to increase from 86,075 $MTCO_2e$ to 88,210 $MTCO_2e$ by 2020 (excluding stationary sources), an increase of 2.5%.

Table 3-19 presents socioeconomic data for Grand Terrace, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

Table 3-19. Socioeconomic Data for Grand Terrace

Category	2008	2020
Population	11,768	11,644
Housing	4,303	4,554
Single-Family	*2,689*	*2,842*
Multifamily	*1,614*	*1,712*
Employment	3,019	3,160
Agricultural	*0*	*0*
Industrial	*626*	*704*
Retail	*533*	*552*
Non-Retail	*1,860*	*1,904*

3.8.2 Emission Reductions

The City of Grand Terrace selected a goal to reduce its community GHG emissions to a level that is 15% below its 2008 GHG emissions level by 2020. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective per AB 32 through a

combination of state (~68%) and local (~32%) efforts. The City actually exceeds the goal with only state/county level actions (136% of goal), but has committed to several additional local measures. 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 2020. An additional reduction of 9,645 $MTCO_2e$ will be achieved primarily through the following local measures, in order of importance: Implement SB X7-7 (Water-4); Smart Bus Technologies (On-Road Transportation-2); and Equipment Upgrades at Wastewater Treatment Plants (Wastewater-2). Grand Terrace's reduction plan has the greatest impacts on GHG emissions in the solid waste management, building energy, and on-road transportation sectors.

The bars in Figure 3-19 show Grand Terrace's 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the city's emissions reduction target (i.e., 15% below the 2008 emissions level). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~68%) of the total reductions needed to achieve the 2020 target.

Figure 3-20 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and off-road equipment emissions sectors.

Table 3-20 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and demonstrates that Grand Terrace exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the solid waste management, building energy, and on-road transportation sectors.

Figure 3-21 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county 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 due to the implementation of SB X7-7 (Water-4).

Figure 3-19. Emissions Reduction Profile for Grand Terrace

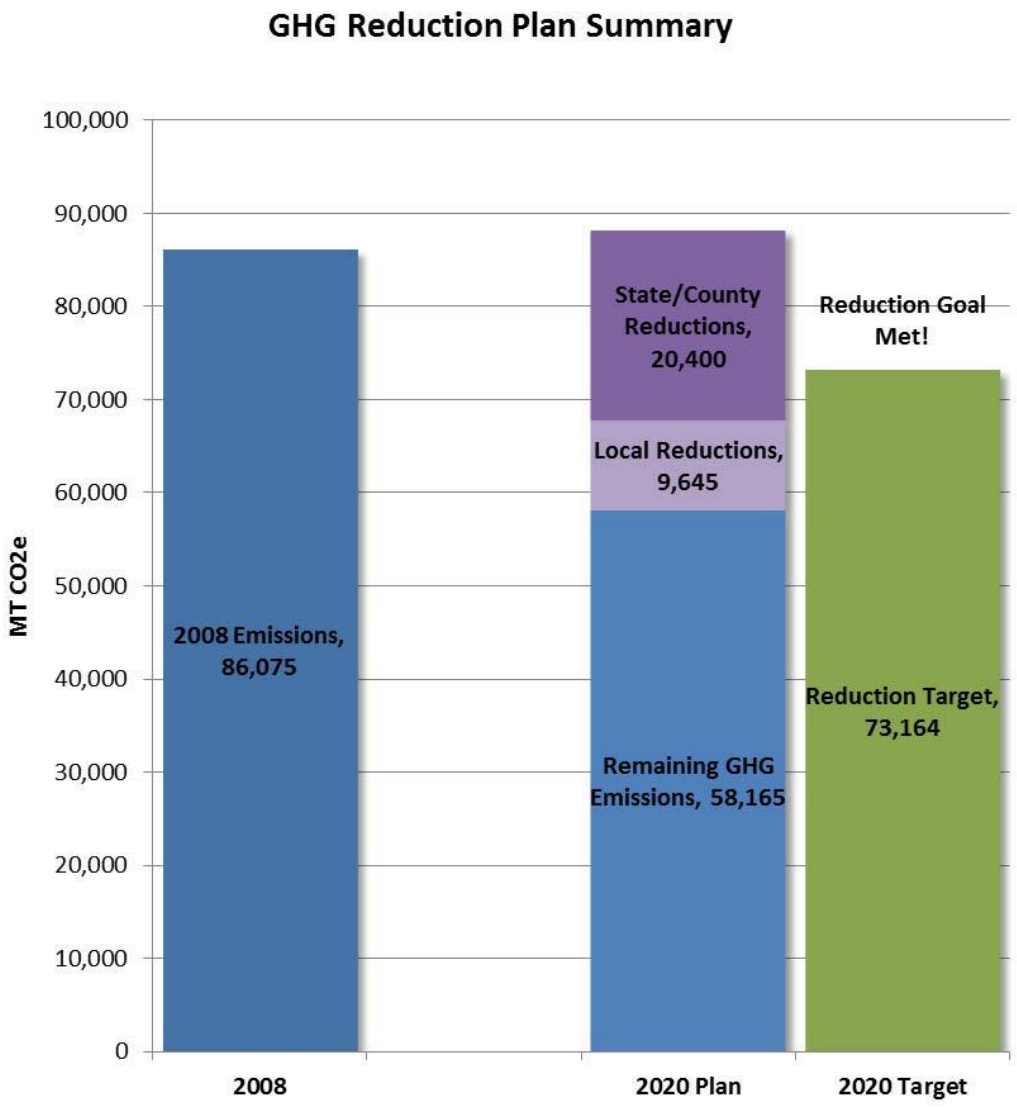


Figure 3-20. Emissions by Sector for Grand Terrace

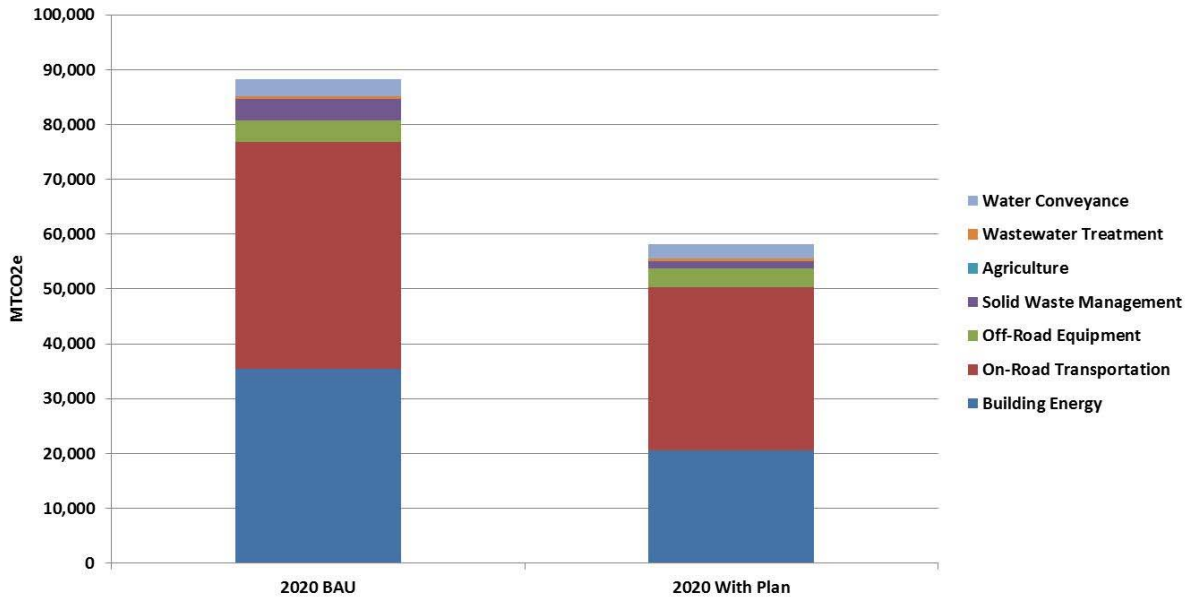


Table 3-20. Emission Reductions by Sector for Grand Terrace

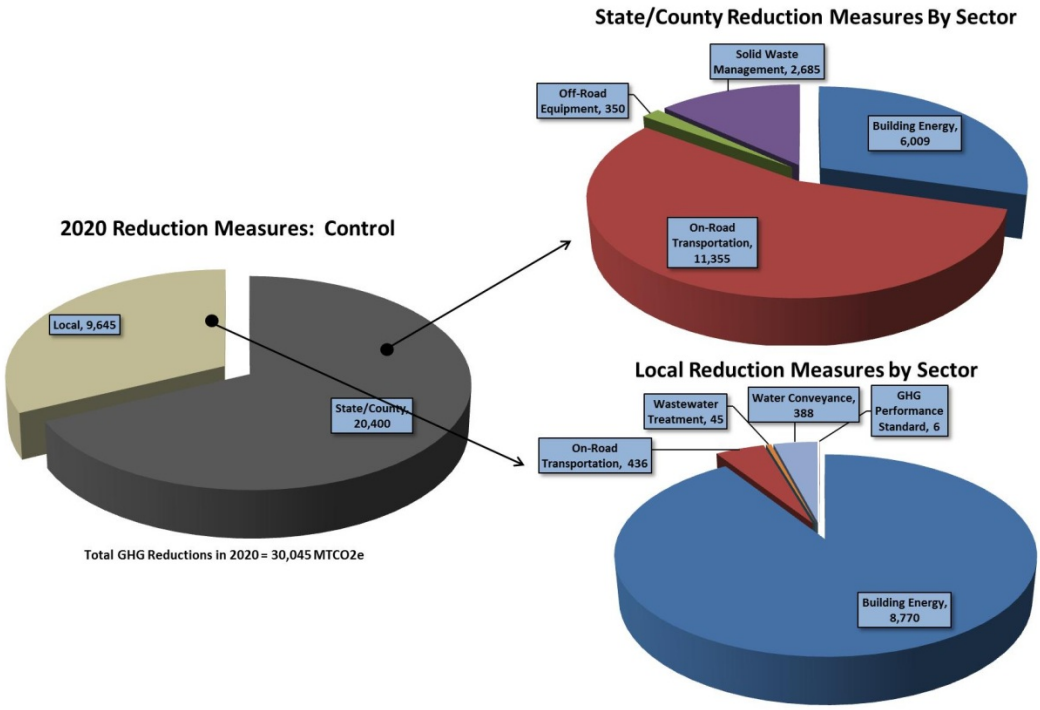
Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	33,593	35,395	14,780	20,615	41.8%
On-Road Transportation	41,756	41,436	11,791	29,645	28.5%
Off-Road Equipment	3,909	3,922	350	3,572	8.9%
Solid Waste Management	3,863	3,895	2,685	1,210	68.9%
Agriculture	116	59	0	59	0.0%
Wastewater Treatment	476	474	45	429	9.4%
Water Conveyance	2,362	3,029	388	2,641	12.8%
GHG Performance Standard*	-	-	6	-	-
Total Emissions	86,075	88,210	30,045	58,165	34.1%
Reduction Goal	-	-	*15,046*	*73,164*	*17.1%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Reductions Beyond Goal	-	-	*14,999*	-	-
Per-Capita Emissions	7.3	7.6	-	5.0	-
Per-Job Emissions	28.5	27.9	-	18.4	-
Excluded Emissions: Stationary Sources	*7,348*	*7,781*	-	-	-

Notes:

Values may not sum due to rounding.

* 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. Please see Chapter 4 for a complete description of this measure.

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



3.8.3 Reduction Measures

Table 3-21 presents each reduction measure evaluated for Grand Terrace. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

Table 3-21. GHG Reduction Measures and Estimated 2020 Reductions for Grand Terrace

Measure Number	Measure Description	Reductions
State/County Measures		
State-1	Renewable Portfolio Standard	4,071
State-2	Title 24 (Energy Efficiency Standards)	464
State-3	AB 1109	1,270
State-4	Solar Water Heating	38
State-5	Industrial Boiler Efficiency	166
State-6	Pavley plus LCFS	10,436
State-7	AB 32 Transportation Reduction Strategies	919
State-8	LCFS: Off-Road	350
State-9	AB 32 Methane Capture	0
County-1	San Bernardino County GHG Plan Landfill Controls	2,685
Local Measures		
Building Energy		
Energy-1	Energy Efficiency for Existing Buildings	129
Energy-2	Outdoor Lighting	160
Energy-4	Solar Installation for New Housing	63
Wastewater-2 (BE)	*Equipment Upgrades*	*316*
Water-4 (BE)	*Implement SB X7-7*	*8,103*
On-Road Transportation		
Transportation-2	Smart Bus Technologies	436
Wastewater Treatment		
Water-4 (WT)	*Implement SB X7-7*	*45*
Water Conveyance		
Water-4	Implement SB X7-7	388
GHG Performance Standard for New Development		
PS-1	GHG Performance Standard for New Development(29% below projected BAU emissions for the project)	6
Total Reductions		30,045

Notes:

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance

3.8.4 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 a variety of measures across nearly all sectors (Table 3-21). 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 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).

3.8.4.1 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.

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. Outdoor Lighting

- **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.

Energy-4. Solar Installation for New Housing

- **Policy 2.5.3** Energy efficiency shall be encouraged in all future development.
- **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.

3.8.4.2 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.

Transportation-2. Smart Bus Technologies

- **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.

3.8.4.3 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.

3.8.4.4 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.

3.8.4.5 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.

3.8.4.6 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.

3.9 City of Hesperia

3.9.1 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 cities 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 2010 was 90,173, up from 89,617 in 2008, making Hesperia the seventh largest city in San Bernardino County. Hesperia's demographic composition in 2010 was 61.1% White, 5.8% Black, 1.2% American Indian and Alaska Native, 2.1% Asian, 0.3% Native Hawaiian and Other Pacific Islander, 24.5% from other races, and 4.9% from two or more races. Persons of Hispanic or Latino origin were 48.9%. This is slightly higher than the statewide average population of residents of Hispanic or Latino origin (38%). The city also has a high homeownership rate of 71% (U.S. Census Bureau 2012). The population is expected to increase by 10% compared to 2008. GHG emissions are projected to increase by approximately 22%, due to expected growth in both commercial and residential activity. A 22% growth in employment is expected in Hesperia before 2020, one of the highest in the county.

Table 3-22 presents socioeconomic data for Hesperia, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

Table 3-22. Socioeconomic Data for Hesperia

Category	2008	2020
Population	89,617	98,163
Housing	26,266	28,892
Single-Family	*21,546*	*23,700*
Multifamily	*4,720*	*5,192*
Employment	15,537	20,438
Agricultural	*80*	*146*
Industrial	*4,217*	*6,184*
Retail	*3,993*	*4,762*
Non-Retail	*7,247*	*9,345*

3.9.2 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 29% below its projected level of GHG emissions in 2020. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective per AB 32 through a combination of state (~73%) and local (~27%) 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 2020. An additional reduction of 45,847 $MTCO_2e$ will be achieved primarily through the following local measures, in order of importance: Solar Installations for Existing Housing (Energy-7); GHG Performance Standard for Existing Development (PS-1); Water Efficiency Renovations for Existing Buildings (Water-2). Hesperia's Plan has the greatest impacts on GHG emissions in the wastewater treatment, building energy, and on-road transportation sectors.

In October 2008, the City adopted the Main Street and Freeway Corridor Specific Plan. This plan includes the Urban Design Framework, which establishes a network of multimodal corridors that feature open space, parks and street improvements to facilitate pedestrian and bicycle movement throughout the city. The Framework also includes bus routes and equestrian trails.

In addition, the City updated its General Plan in 2010. The Circulation Element includes the Transportation Plan, depicting the City's arterial street system. All of the City's arterial street sections include expanded sidewalks or bike paths.

The element also features the non-motorized Transportation Plan, which depicts a complete network of bike trails, linking the City's schools and parks. These maps and associated general plan goals will support the objectives of SB 375 and the Sustainable Communities Strategy (Transportation-1) through a wide range of implementation policies, including the following.

- **Implementation Policy CI-1.1:** Systematically improve the public roadway system to meet existing and future demands within the planning area.
- **Implementation Policy CI-1.2:** Establish and maintain standards for a variety of street classifications to serve both local and regional traffic.
- **Implementation Policy CI-1.3:** Ensure that the appropriate street design is provided for all streets based on their designation on the City's adopted Transportation Plan (Exhibit CI-1).
- **Implementation Policy CI-1.11:** Encourage alternative modes of transportation including bus, bicycle, pedestrian, and equestrian through street design.
- **Implementation Policy CI-1.12:** Provide for a safe and efficient pedestrian network.
- **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 San Bernardino Associated Governments (SANBAG) to provide additional park-and-ride lots at key locations near existing and proposed interchanges with Interstate 15.

- **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.

The bars in Figure 3-22 show Hesperia's 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the city's emissions reduction target (i.e., 29% below its projected level of GHG emissions in 2020). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~73%) of the total reductions needed to achieve the 2020 target.

Figure 3-23 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and off-road equipment emissions sectors.

Table 3-23 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and demonstrates that Hesperia exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the wastewater treatment, building energy, and on-road transportation sectors.

Figure 3-24 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county 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 and due to Solar Installation for Existing Housing (Energy-7).

Figure 3-22. Emissions Reduction Profile for Hesperia

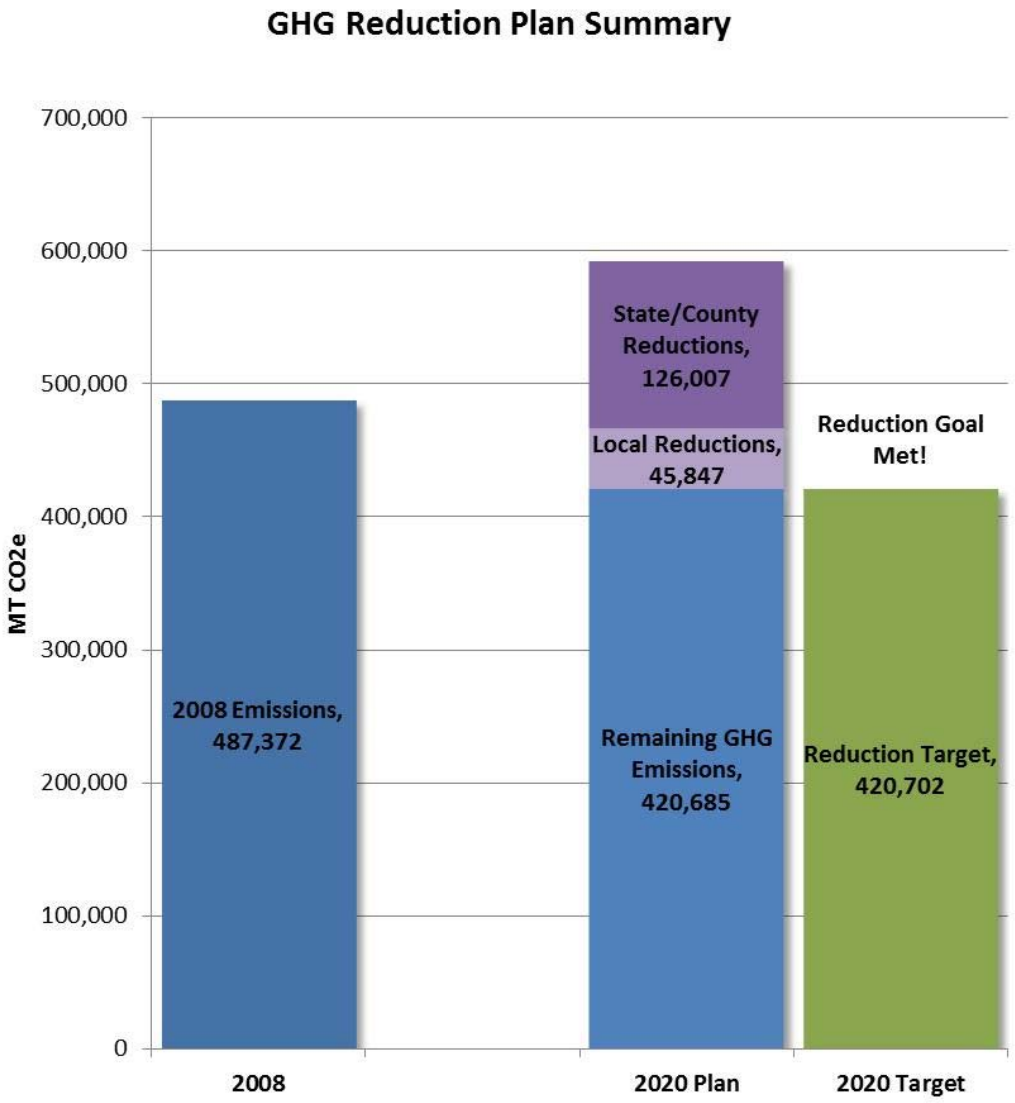


Figure 3-23. Emissions by Sector for Hesperia

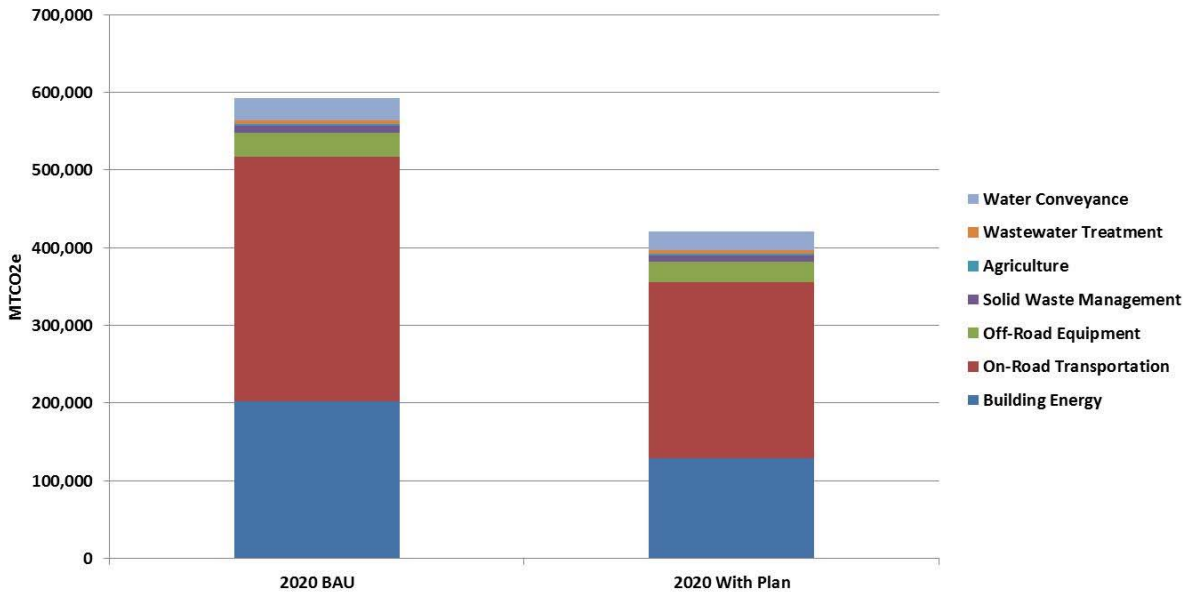


Table 3-23. Emission Reductions by Sector for Hesperia

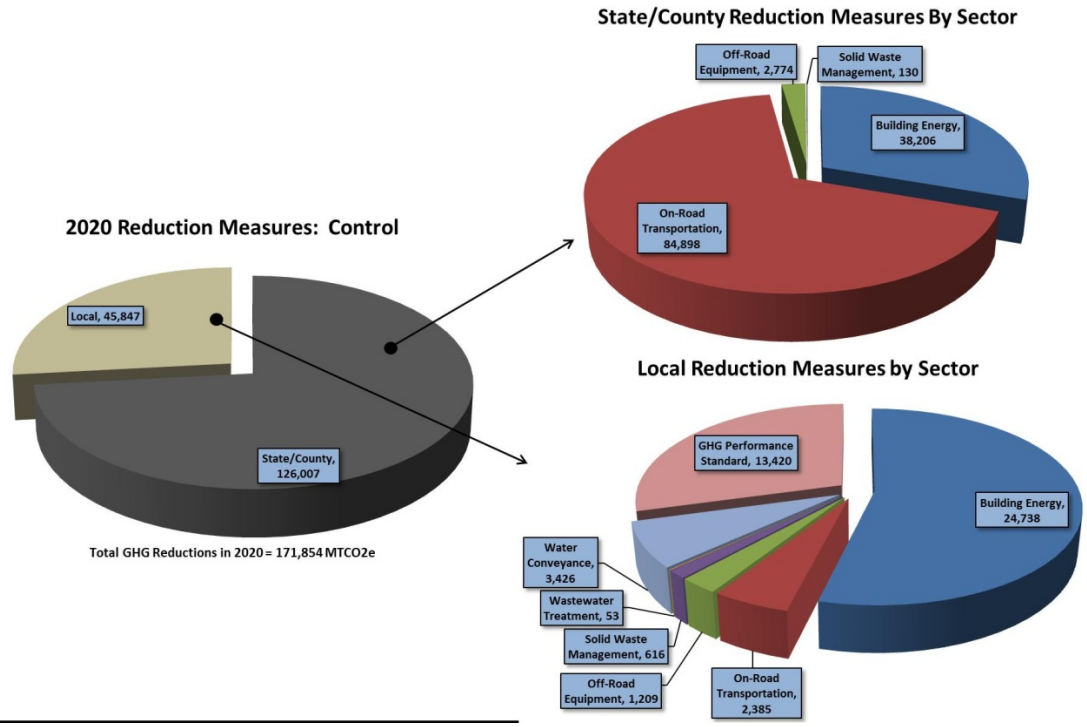
Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	175,682	202,584	62,945	139,639	31.1%
On-Road Transportation	255,860	314,249	87,282	226,967	27.8%
Off-Road Equipment	27,949	31,045	3,983	27,062	12.8%
Solid Waste Management	7,007	8,858	745	8,113	8.4%
Agriculture	5,572	2,840	0	2,840	0.0%
Wastewater Treatment	3,624	3,995	53	3,942	1.3%
Water Conveyance	11,677	28,968	3,426	25,542	11.8%
GHG Performance Standard*	-	-	13,420	-	-
Total Emissions	487,372	592,539	171,854	420,685	29.0%
Reduction Goal	-	-	*171,836*	*420,702*	*29.0%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Reductions Beyond Goal	-	-	*17*	-	-
Per-Capita Emissions	5.4	6.0	-	4.3	-
Per-Job Emissions	31.4	29.0	-	20.6	-
Excluded Emissions: Stationary Sources	*50,216*	*71,693*	-	-	-

Notes:

Values may not sum due to rounding.

* 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. Please see Chapter 4 for a complete description of this measure.

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



3.9.3 Reduction Measures

Table 3-24 presents each reduction measure evaluated for Hesperia. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

Table 3-24. GHG Reduction Measures and Estimated 2020 Reductions for Hesperia

Measure Number	Measure Description	Reductions
State/County Measures		
State-1	Renewable Portfolio Standard	24,924
State-2	Title 24 (Energy Efficiency Standards)	6,070
State-3	AB 1109	6,928
State-4	Solar Water Heating	240
State-5	Industrial Boiler Efficiency	45
State-6	Pavley plus LCFS	77,934
State-7	AB 32 Transportation Reduction Strategies	6,963
State-8	LCFS: Off-Road	2,774
State-9	AB 32 Methane Capture	102
County-1	San Bernardino County GHG Plan Landfill Controls	28
Local Measures		
Building Energy		
Energy-1	Energy Efficiency for Existing Buildings	2,911
Energy-2	Outdoor Lighting	1,447
Energy-4	Solar Installation for New Housing	138
Energy-6	Solar Energy for Warehouse Space	442
Energy-7	Solar Installation for Existing Housing	14,012
Energy-8	Solar Installation for Existing Commercial / Industrial	995
*LandUse-1 (BE)**	*Tree Planting Programs*	*1*
Wastewater-2 (BE)	*Equipment Upgrades*	*1,680*
Water-1 (BE)	*Require Tier 1 Voluntary CALGreen Standards for New Construction*	*280*
Water-2 (BE)	*Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency*	*2,832*
On-Road Transportation		
Transportation-1	Sustainable Communities Strategy	2,385
OffRoad-1	Electric-Powered Construction Equipment	1,085
OffRoad-3	Electric Landscaping Equipment	124
Solid Waste Management		
Waste-2	Waste Diversion	616
Wastewater Treatment		
Wastewater-1	Methane Recovery	21
*Water-1 (WT)**	*Require Tier 1 Voluntary CALGreen Standards for New Construction*	*4*
Water-2 (WT)	*Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency*	*28*
Water Conveyance		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New Construction	856
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	867

Measure Number	Measure Description	Reductions
Water-3	Water-Efficient Landscaping Practices	1,121
Wastewater-3 (WC)	*Recycled Water*	*581*
GHG Performance Standard for New Development		
PS-1	GHG Performance Standard for New Development (30% below projected BAU emissions for the project)	13,420
Total Reductions		171,854

Notes:

* These are measures where the avoided annual GHG emissions are small relative to the effort to implement the measure on the City's part. Although the City has selected this measure, ICF recommends that the City not pursue this GHG reduction measure.

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance

3.9.4 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 3-24). 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).

3.9.4.1 Building Energy

- **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-1. Energy Efficiency for Existing Buildings

- **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.

Energy-2. Outdoor Lighting

- **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-4. Solar Installation for New Housing

- **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.

Energy-6. Solar Energy for Warehouse Space

- **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.

Energy-7. Solar Installation for Existing Housing

- **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.

Energy-8. Solar Installation for Existing Commercial/Industrial

- **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.

Land Use-1 (BE). Tree Planting

- **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.

Land Use-2 (BE). Promote Rooftop Gardens

3.9.4.2 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.

Transportation-1. Sustainable Communities Strategy

- **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 SANBAG 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

3.9.4.3 Off-Road

Off-Road-1. Electric-Powered Construction Equipment

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

Off-Road-3. Electric Landscaping Equipment

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

3.9.4.4 Solid Waste Management

Waste-2. Waste Diversion

- **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.

3.9.4.5 Wastewater Treatment

Wastewater-1. Methane Recovery

- **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.

3.9.4.6 Water Conveyance

Water-1. Voluntary CALGreen: New Construction

- **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-1.6:** 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

- **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.

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.

3.10 City of Highland

3.10.1 City Summary

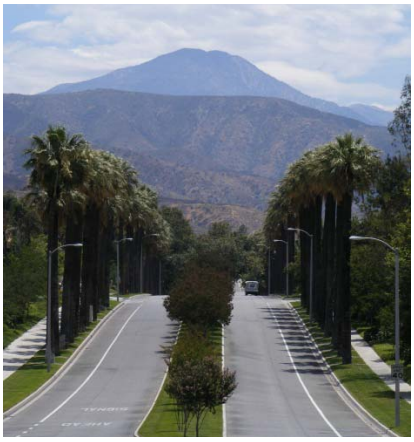
The City of Highland is located on the far eastern side of the San Bernardino Valley, east of the City of San Bernardino and north of the City of Redlands. The city is bordered on the north by the San Bernardino Mountains. Highland is primarily a residential community, with over 60% of the city's 19 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 cities, Highland was founded in the late 1800s with ties to agriculture and the railways. Highland's population was 53,014 in 2010 (52,986 in 2008), up from 29,500 in 1987 when the City incorporated, an increase of approximately 79%. Highland's demographic composition in 2010 was 52.4% White, 11.1% Black, 1% American Indian and Alaska Native, 7.4% Asian, 0.3% Native Hawaiian and Other Pacific Islander, 22.3% from other races, and 5.4% from two or more races. Persons of Hispanic or Latino origin were 48.1%. Highland has a higher than average percentage of Black and Hispanic/Latino residents (the statewide average is 6% and 38%, respectively). Over 22% of residents are foreign born (U.S. Census Bureau 2012). Population in 2020 is expected to be 58,646, an increase of only 11% since 2008. Highland anticipates a 28% increase in employment before 2020.

Table 3-25 presents socioeconomic data for Highland, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

Table 3-25. Socioeconomic Data for Highland

Category	2008	2020
Population	52,986	58,646
Housing	15,436	17,713
Single-Family	*11,439*	*13,109*
Multifamily	*3,997*	*4,604*
Employment	6,037	7,757
Agricultural	*0*	*2*
Industrial	*1,376*	*1,999*
Retail	*1,353*	*1,659*
Non-Retail	*3,309*	*4,097*



3.10.2 Emission Reductions

The City of Highland selected a goal to reduce its community GHG emissions to a level that is 22% below its projected emissions in 2020. The City will meet and exceed this goal subject to reduction

measures that are technologically feasible and cost-effective per AB 32 through a combination of state (~63%) and local (~37%) efforts. The City actually exceeds the goal with only state/county level actions (102% of goal), but has committed to several additional local measures. 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 2020. An additional reduction of 39,355 $MTCO_2e$ will be achieved primarily through the following local measures, in order of importance: Implement SB X7-7 (Water-4); GHG Performance Standard (PS-1); and Smart Bus Technologies (Transportation-2). Highland's reduction plan has the greatest impacts on GHG emissions in the building energy, solid waste management, and on-road transportation sectors.

The bars in Figure 3-25 show Highland's 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the city's emissions reduction target (i.e., 22% below its projected emissions in 2020). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~63%) of the total reductions needed to achieve the 2020 target.

Figure 3-26 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and off-road equipment emissions sectors.

Table 3-26 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and demonstrates that Highland exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the building energy, solid waste management, and on-road transportation sectors.

Figure 3-27 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county 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 due to the implementation of SB X7-7 (Water-4).

Figure 3-25. Emissions Reduction Profile for Highland

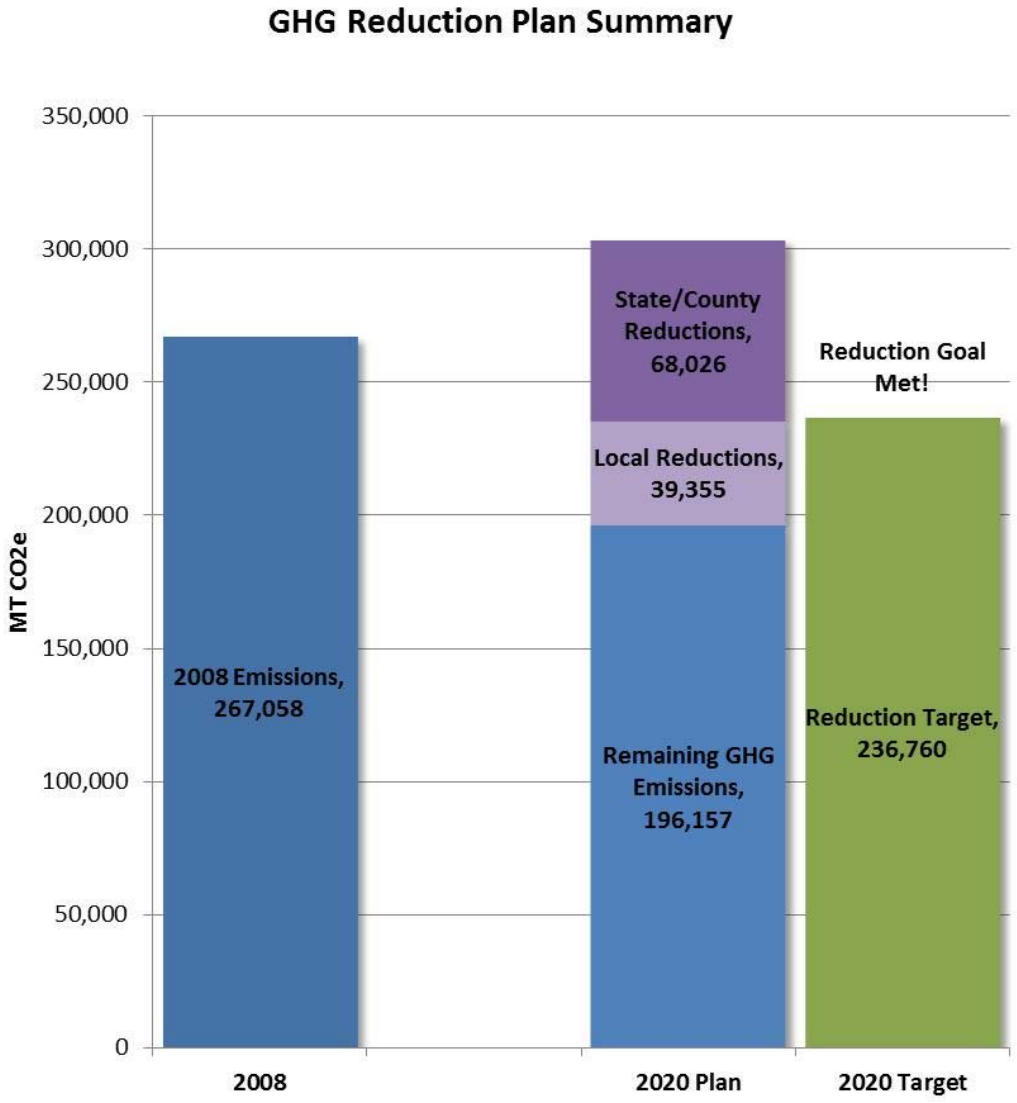


Figure 3-26. Emissions by Sector for Highland

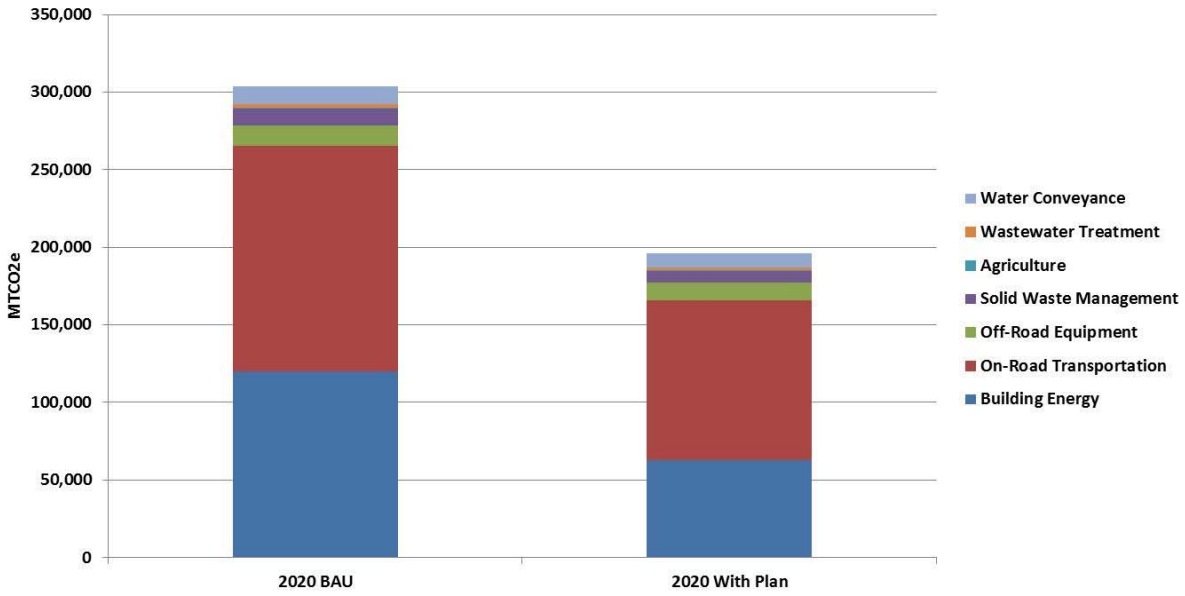


Table 3-26. Emission Reductions by Sector for Highland

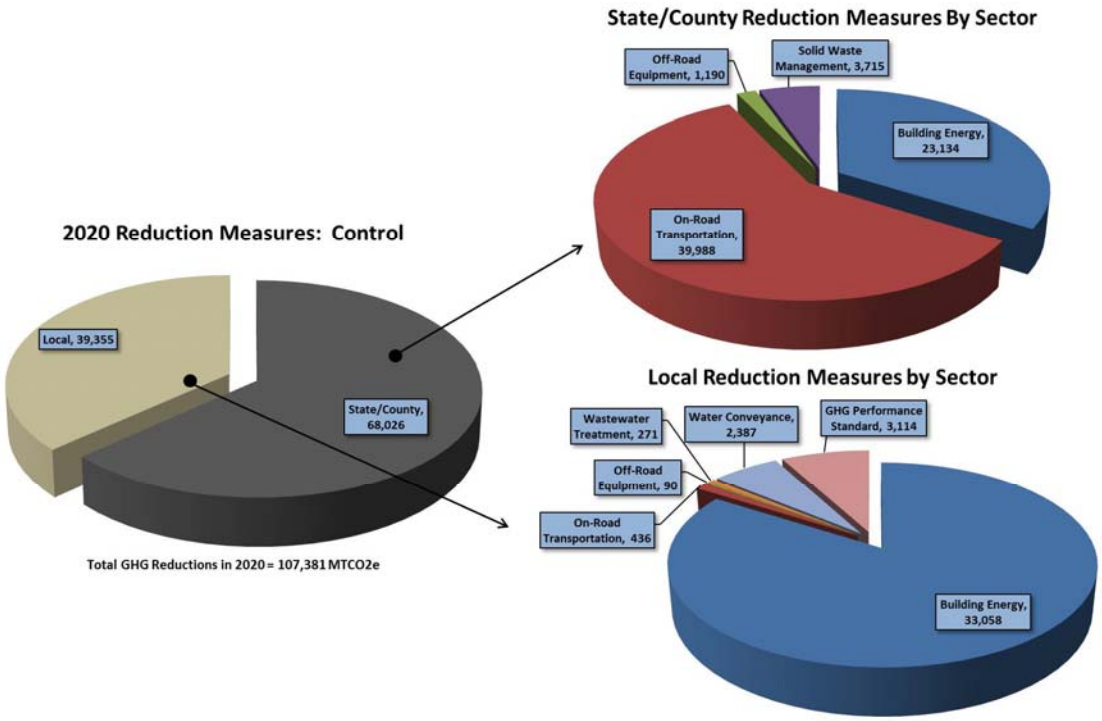
Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	100,948	120,044	56,192	63,852	46.8%
On-Road Transportation	133,010	145,050	40,424	104,626	27.9%
Off-Road Equipment	11,736	13,319	1,280	12,040	9.6%
Solid Waste Management	9,533	10,957	3,715	7,242	33.9%
Agriculture	715	364	0	364	0.0%
Wastewater Treatment	2,143	2,387	271	2,116	11.3%
Water Conveyance	8,974	11,417	2,387	9,030	20.9%
GHG Performance Standard*	-	-	3,114	-	-
Total Emissions	267,058	303,538	107,381	196,157	35.4%
Reduction Goal	-	-	*66,778*	*236,760*	*22.0%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Reductions Beyond Goal	-	-	*40,603*	-	-
Per-Capita Emissions	5.0	5.2	-	3.3	-
Per-Job Emissions	44.2	39.1	-	25.3	-
Excluded Emissions: Stationary Sources	*15,615*	*20,364*	-	-	-

Notes:

Values may not sum due to rounding.

* 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. Please see Chapter 4 for a complete description of this measure.

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



3.10.3 Reduction Measures

Table 3-27 presents each reduction measure evaluated for Highland. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

Table 3-27. GHG Reduction Measures and Estimated 2020 Reductions for Highland

Measure Number	Measure Description	Reductions
State/County Measures		
State-1	Renewable Portfolio Standard	14,504
State-2	Title 24 (Energy Efficiency Standards)	4,227
State-3	AB 1109	3,902
State-4	Solar Water Heating	147
State-5	Industrial Boiler Efficiency	354
State-6	Pavley plus LCFS	36,772
State-7	AB 32 Transportation Reduction Strategies	3,216
State-8	LCFS: Off-Road	1,190
State-9	AB 32 Methane Capture	0
County-1	San Bernardino County GHG Plan Landfill Controls	3,715
Local Measures		
Building Energy		
Energy-4	Solar Installation for New Housing	113
Energy-5	Solar Installation for New Commercial	138
Water-4 (BE)	*Implement SB X7-7*	32,807
On-Road Transportation		
Transportation-2	Smart Bus Technologies	*436*
Off-Road Equipment		
OffRoad-2	Idling Ordinance	90
Wastewater Treatment		
Water-4 (WT)	*Implement SB X7-7*	*271*
Water Conveyance		
Water-4	Implement SB X7-7	2,387
GHG Performance Standard for New Development		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	3,114
Total Reductions		107,381

Notes:

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance

3.10.4 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 related to solar energy, SmartBus Technologies and wastewater treatment as well as a Performance Standard for new Development (Table 3-27). 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).

3.10.4.1 Building Energy

- **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 5.19 Policy 13:** Continue comprehensive efforts to reduce energy consumption.
- **Goal 5.17 Policy 10:** Adopt LEED design standards for public buildings.
- **Goal 6.8 Policy 15:** Enforce compliance of new development with the Tree Preservation Ordinance.

Energy-4. Solar Installation for New Housing

- **Goal 5.16 Policy 1:** Consolidate and adopt energy-saving practices for all City departments.
- **Goal 5.16 Policy 5**: Coordinate energy-related policies and actions with local utilities and energy agencies.
- **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-5. Solar Installation for New Commercial

- **Goal 5.16 Policy 1:** Consolidate and adopt energy-saving practices for all City departments.

- **Goal 5.16 Policy 5**: Coordinate energy-related policies and actions with local utilities and energy agencies.
- **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 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.
- **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.

3.10.4.2 On-Road

- **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.
- **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 3.7**: Protect and encourage bicycle travel. (All Policies).
- **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.

Transportation-2. Smart Bus Technologies

- **Goal 3.5:** Promote bus service and paratransit improvements. (All Policies).
- **Goal 5.12 Policy 5**: Where possible, designate and design new trail development near transit routes or heavily traveled areas.

3.10.4.3 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.

3.10.4.4 Solid Waste Management

- **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.

3.10.4.5 Wastewater Treatment

- **Goal 5.16 Policy 1:** Consolidate and adopt energy-saving practices for all City departments.
- **Goal 5.16 Policy 2:** Monitor energy usage for all City facilities.
- **Goal 5.17 Policy 11**: Participate in the CEEP (Community Energy Efficiency Program) Certificate and Recognition Program.
- **Goal 4.3 Policy 3:** Encourage Grey Water Recycling, especially for residential use irrigation.
- **Goal 5.1 Policy 9:** Preserve mature trees, natural hydrology, native plant materials and areas of visual interest.
- **Goal 5.16 Policy 5**: Coordinate energy-related policies and actions with local utilities and energy agencies.
- **Goal 6.8 Policy 4:** Support the development and use of alternative fuel sources for transportation-related activities to reduce local government energy demand.
- **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.

- **Goal 10.12 Policy 1:** Encourage landscaping practices that increase energy efficiency and conserve natural resources
- **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.
- **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.
- **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 1**: Encourage landscaping practices that increase energy efficiency and conserve natural resources.
- **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 9**: Consider underground irrigation techniques to conserve water.
- **Goal 5.6 Policy 15:** Establish landscape maintenance districts along streets for water conservation purposes.

3.11 City of Loma Linda

3.11.1 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.

Climate in Loma Linda is similar to other valley cities 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 2010 was 23,261 (23,027 in 2008) and is expected to grow to 26,746 by 2020, an increase of 16% over the 2008 population. Loma Linda's demographic composition in 2010 was 47.8% White, 8.7% Black, 0.4% American Indian and Alaska Native, 28.3% Asian, 0.7% Native Hawaiian and Other Pacific Islander, 8.7% from other races, and 5.4% from two or more races. Persons of Hispanic or Latino origin were 22.2%. Loma Linda has a larger Asian population than average compared to the state (28% compared to 13%) and 33% of the population is foreign-born (U.S. Census Bureau 2012). The City seeks to increase and diversify economic activity and expects to increase employment by 32% before 2020.

Table 3-28 presents socioeconomic data for Loma Linda, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

Table 3-28. Socioeconomic Data for Loma Linda

Category	2008	2020
Population	23,027	26,746
Housing	8,675	10,459
Single-Family	*3,666*	*4,367*
Multifamily	*5,009*	*6,092*
Employment	17,597	23,281
Agricultural	*0*	*0*
Industrial	*395*	*1,166*
Retail	*1,042*	*1,896*
Non-Retail	*16,161*	*20,219*

3.11.2 Emission Reductions

The City of Loma Linda selected a goal to reduce its community GHG emissions to a level that is 26% below its projected emissions in 2020. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective per AB 32 through a combination of

state (~80%) and local (~20%) efforts. The City almost meets the goal with only state/county level actions (99% of goal), but has committed to several additional local measures. 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 2020. An additional reduction of 16,148 $MTCO_2e$ will be achieved primarily through the following local measures, in order of importance: GHG Performance Standard (PS-1); Energy Efficiency for Existing Buildings (Energy-1); and a Green Building Ordinance (Energy-3). Loma Linda's reduction plan has the greatest impacts on GHG emissions in the on-road transportation, building energy, and solid waste 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 (SANBAG 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 SANBAG.

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 3-28 show Loma Linda's 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the city's emissions reduction target (i.e., 26% below its projected emissions in 2020). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions

reductions achieved in 2020. As stated above, state/county reductions account for the majority (~80%) of the total reductions needed to achieve the 2020 target.

Figure 3-29 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and off-road equipment emissions sectors.

Table 3-29 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and demonstrates that Loma Linda exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the on-road transportation, building energy, and solid waste sectors.

Figure 3-30 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county 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 and due to the GHG Performance Standard for New Development (PS-1).

Figure 3-28. Emissions Reduction Profile for Loma Linda

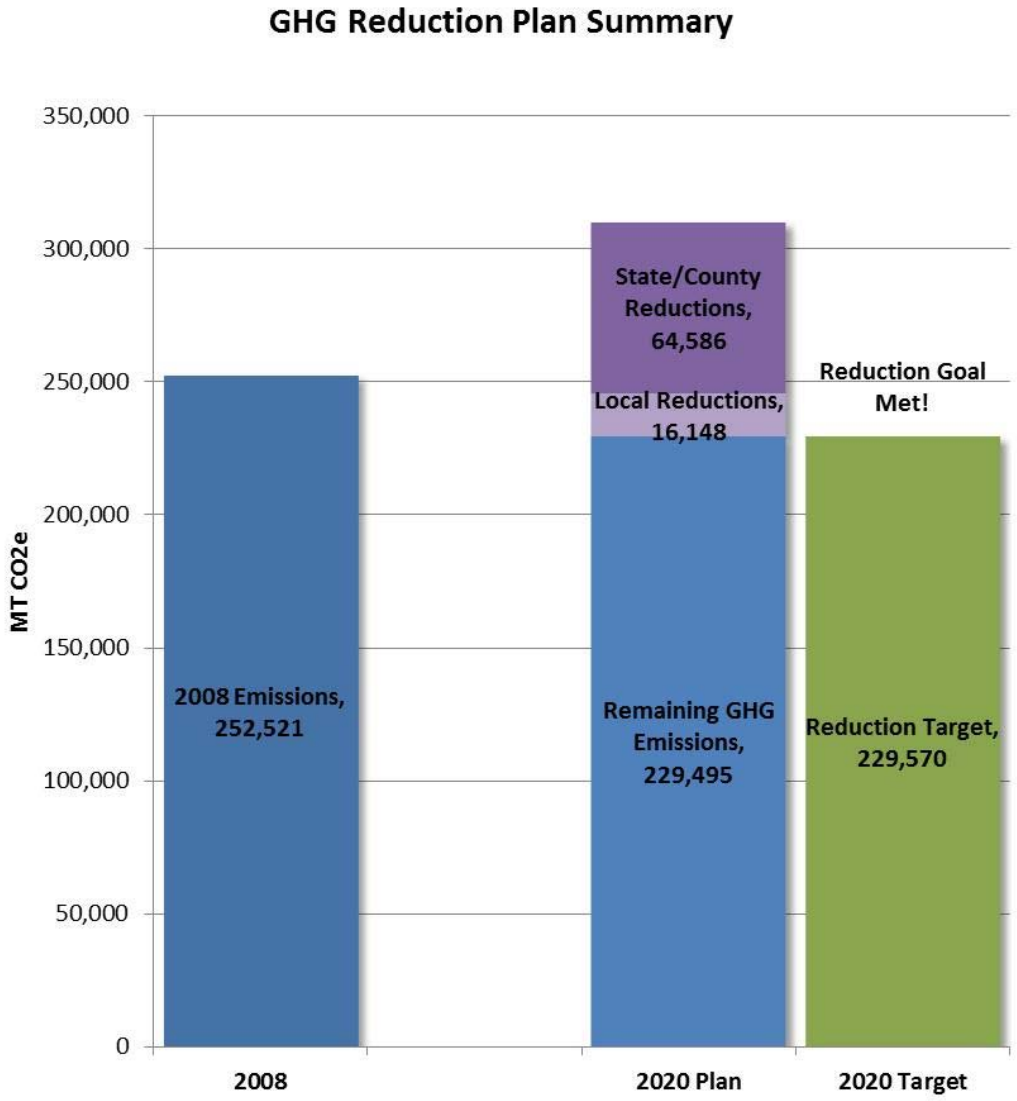


Figure 3-29. Emissions by Sector for Loma Linda

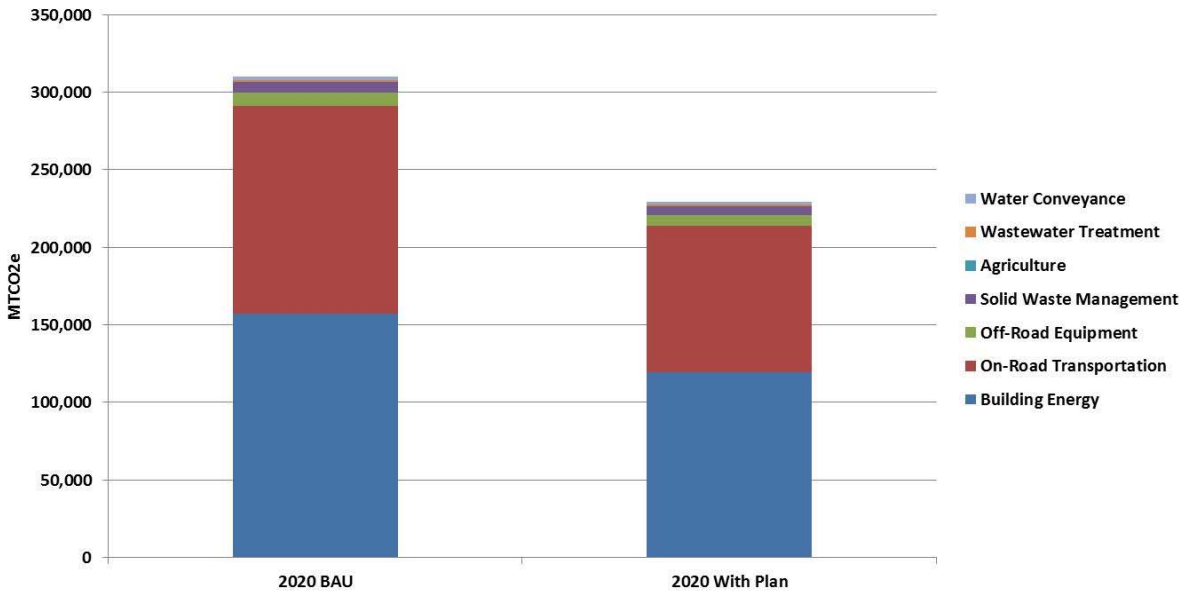


Table 3-29. Emission Reductions by Sector Loma Linda

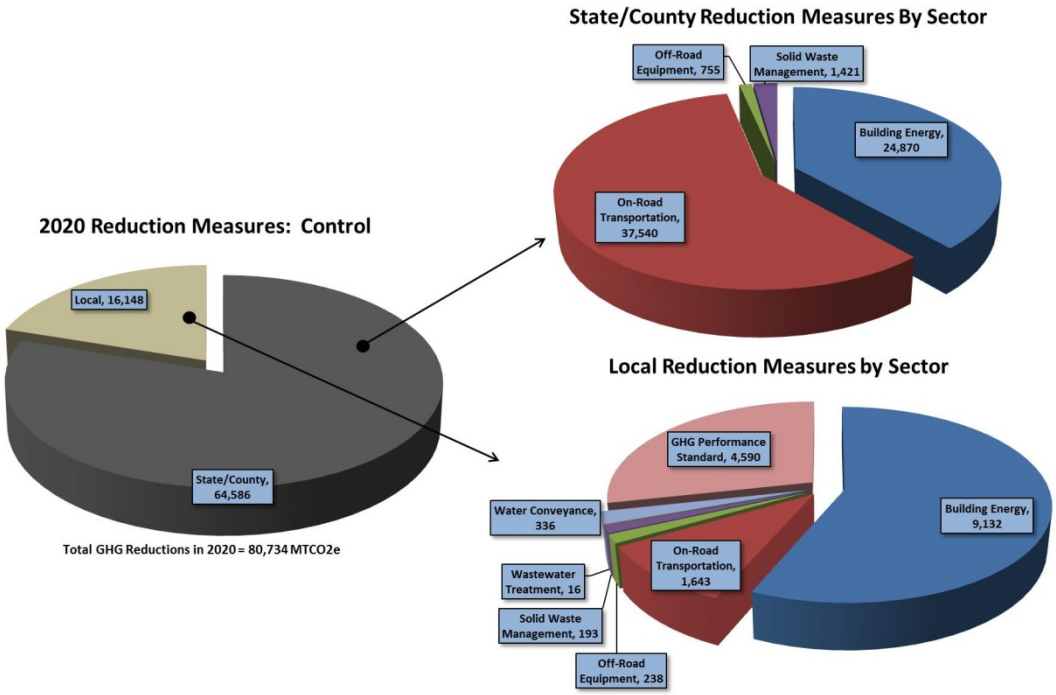
Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	123,772	157,122	34,002	123,120	21.6%
On-Road Transportation	111,850	133,966	39,183	94,783	29.2%
Off-Road Equipment	6,747	8,451	993	7,458	11.7%
Solid Waste Management	6,911	6,925	1,614	5,312	23.3%
Agriculture	675	344	0	344	0.0%
Wastewater Treatment	931	1,088	16	1,072	1.5%
Water Conveyance	1,636	2,332	336	1,996	14.4%
GHG Performance Standard*	-	-	4,590	-	-
Total Emissions	252,521	310,229	80,734	229,495	26.0%
Reduction Goal	-	-	*80,660*	*229,570*	*26.0%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Additional Reductions Needed to Meet Goal	-	-	*75*	-	-
Per-Capita Emissions	11.0	11.6	-	8.6	-
Per-Job Emissions	14.4	13.3	-	9.9	-
Excluded Emissions: Stationary Sources	*33,316*	*45,375*	-	-	-

Notes:

Values may not sum due to rounding.

* 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. Please see Chapter 4 for a complete description of this measure.

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



3.11.3 Reduction Measures

Table 3-30 presents each reduction measure evaluated for Loma Linda. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

Table 3-30. GHG Reduction Measures for Loma Linda

Measure Number	Measure Description	Reductions
State/County Measures		
State-1	Renewable Portfolio Standard	12,772
State-2	Title 24 (Energy Efficiency Standards)	8,906
State-3	AB 1109	3,099
State-4	Solar Water Heating	87
State-5	Industrial Boiler Efficiency	7
State-6	Pavley plus LCFS	34,569
State-7	AB 32 Transportation Reduction Strategies	2,971
State-8	LCFS: Off-Road	755
State-9	AB 32 Methane Capture	0
County-1	San Bernardino County GHG Plan Landfill Controls	1,421
Local Measures		
Building Energy		
Energy-1	Energy Efficiency for Existing Buildings	3,965
Energy-2	Outdoor Lighting	141
Energy-3	Green Building Ordinance	1,521
Energy-4	Solar Installation for New Housing	182
Energy-5	Solar Installation for New Commercial	479
Energy-7	Solar Installation for Existing Housing	987
Energy-8	Solar Installation for Existing Commercial / Industrial	614
*LandUse-1 (BE)**	*Tree Planting Programs*	*1*
Wastewater-2 (BE)	*Equipment Upgrades*	*275*
Water-1 (BE)	*Require Tier 1 Voluntary CALGreen Standards for New Construction*	*220*
Water-2 (BE)	*Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency*	*747*
On-Road Transportation		
Transportation-1	Sustainable Communities Strategy	1,207
Transportation-2	Smart Bus Technologies	436
Off-Road Equipment		
OffRoad-1	Electric-Powered Construction Equipment	180
OffRoad-2	Idling Ordinance	23
OffRoad-3	Electric Landscaping Equipment	35
Solid Waste Management		
Waste-2	Waste Diversion	193
Wastewater Treatment		
Water-1 (WT)	*Require Tier 1 Voluntary CALGreen Standards for New Construction*	*6*
Water-2 (WT)	*Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency*	10
Water Conveyance		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New	98

Measure Number	Measure Description	Reductions
	Construction	
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	131
Water-3	Water-Efficient Landscaping Practices	99
*Wastewater-3 (WC)**	*Recycled Water*	*8*
GHG Performance Standard for New Development		
PS-1	GHG Performance Standard for New Development (34% below projected BAU emissions for the project)	4,590
Total Reductions		80,734

Notes:

* These are measures where the avoided annual GHG emissions are small relative to the effort to implement the measure on the City's part. Although the City has selected this measure, ICF recommends that the City not pursue this GHG reduction measure.

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance

3.11.4 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 3-30). 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

Energy-1. Energy Efficiency for Existing Buildings

- **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-3. Green Building Ordinance

- **Policy 1.3.4:** Streamline the Permit Process: Expedite the permit process for "green" buildings.

Energy-4. Solar Installation for New 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-5. Solar Installation for New Commercial

- **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. Solar Installation for 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.

Land Use-1 (BE). Tree Planting

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

3.11.4.2 On-Road

Transportation-1. Sustainable Communities Strategy

- **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.

Transportation-2. Smart Bus Technologies

- **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 car pool 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.

3.11.4.3 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.

3.11.4.4 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

- **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.

3.11.4.5 Wastewater Treatment

- **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.

Wastewater-3. Recycled Water

- **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.

3.11.4.6 Water Conveyance

Water-1. Voluntary CALGreen: New Construction

- **Guiding Policy 9.6.2 Policy b**: Develop and encourage the implementation of water conservation programs by residents, employers, students, and service providers.
- **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.
- **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.

Water-2. Renovate Existing Buildings

- **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.

3.12 City of Montclair

3.12.1 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. An additional 42,224 $MTCO_2e$ of emissions are due to stationary sources (cement manufacturing[1], a highly GHG intensive industrial activity, occurs within city limits), although these are not considered when setting the city's GHG reduction target.

The population of Montclair was 36,664 in 2010 (35,987 in 2008) and the city encompasses 5.5 square miles. Montclair's demographic composition in 2010 was 52.7% White, 5.2% Black, 1.2% American Indian and Alaska Native, 9.3% Asian, 0.2% Native Hawaiian and Other Pacific Islander, 27% from other races, and 4.4% from two or more races. Persons of Hispanic or Latino origin were 70%, which is notably larger than the statewide average of 38%. 66% 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 39,667 by 2020, an increase of 10% beyond the 2008 population, and employment is expected to grow 3%, one of the lower job growth rates in the region.

Table 3-31 presents socioeconomic data for Montclair, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

[1] The city's cement plant closed in 2011.

Table 3-31. Socioeconomic Data for Montclair

Category	2008	2020
Population	35,987	39,667
Housing	9,346	10,446
Single-Family	*5,366*	*6,014*
Multifamily	*3,980*	*4,432*
Employment	16,527	17,049
Agricultural	*37*	*54*
Industrial	*2,799*	*3,034*
Retail	*6,028*	*5,971*
Non-Retail	*7,663*	*7,991*

3.12.2 Emission Reductions

The City of Montclair selected a goal to reduce its community GHG emissions to a level that is 20% below its 2008 GHG emissions level by 2020. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective per AB 32 through a combination of state (~76%) and local (~24%) efforts. The City actually exceeds the goal with only state/county level actions (101% of goal), but has committed to several additional local measures. 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 2020. An additional reduction of 21,018 $MTCO_2e$ will be achieved primarily through the following local measures, in order of importance: Implement SB X7-7 (Water-4); Implementation of the Sustainable Communities Strategy (Transportation-1); and Equipment Upgrades at Wastewater Treatment Plants (Wastewater-2). Montclair's reduction plan has the greatest impacts on GHG emissions in the solid waste management, building energy, and on-road transportation sectors.

In May 2006, the City of Montclair adopted the North Montclair Downtown Specific Plan, a form-based development framework for creating a transit-oriented community across approximately 150 acres around the Montclair Transcenter. The implementation of the Specific Plan is guided by the following characteristics.

- Proximity and easy access to the nearby multi-modal Transcenter, Montclair Plaza, and concentration of restaurants will encourage residents to consider alternative modes of transportation when possible and also to replace vehicle trips with walking trips to shopping and dining when possible.
- Create public places that provide goods and services to local residents in a convenient location without the need for a vehicle trip.
- Create a street network that is made up of an interconnected grid system of short, walkable blocks that encourage residents to walk rather than drive; design streets that are pedestrian-friendly, including wide sidewalks, parkways to separate vehicular traffic from pedestrian activity, and narrow pavement widths to slow traffic and facilitate easy, safe pedestrian crossings where desired.

- Create a land use framework that encourages live/work opportunities and local-serving businesses to appeal to a wide variety of individuals and families who want to live near the services they desire.
- Create a variety of housing choices, including lofts, courtyard housing, row houses, duplexes, triplexes, and quadplexes in rental and ownership configurations.
- Get the retail "right" by complementing, not competing with, the regional nature of Montclair Plaza and the surrounding commercial centers by developing pedestrian-oriented storefront shopping opportunities that encourage walking rather than driving.
- Create parking opportunities, through appropriately located lots and structures, which encourage "park once" activity where residents and visitors feel comfortable walking to complete multiple tasks rather than moving their car each time for a different task.

Over the past ten years, the City has required developers Citywide to construct bus shelters in conjunction with new residential and commercial development for the convenience and comfort of transit riders. In 2011, the City completed a rehabilitation of Mills Avenue from Holt Boulevard to Moreno Street, which included reducing the number of travel lanes in each direction from two to one and adding a Class 2 bike lane in each direction. Empirical evidence seems to indicate that the result has been slower vehicle speeds on this wide residential street and an increase in bicycle travel. It should be noted that the Mills Avenue bike lane connects with a previously existing bike lane on Mills Avenue and Claremont Boulevard in the City of Claremont, which intersects at the First Street/Huntington Drive intersection with the Pacific Electric Inland Empire Trail, a Class 1 bike route that currently extends east to Rialto and will eventually extend west into the San Gabriel Valley. The City is also considering pursuing funding to design and develop a bicycle master plan that would establish additional Class 2 bike trails in Montclair.

The City supports the ultimate extension of the Metro Gold Line to LA/Ontario International Airport, as the convenience of having rail transit directly into the airport is logical and would encourage users of the airport from points west to drive shorter distances to rail stations or leave their cars at home altogether.

The City also supports the efforts of Omnitrans to develop its network of sbX BRT (Bus Rapid Transit) lines and facilities throughout the Inland Empire, specifically Corridor 2, which would run along Foothill Boulevard and terminate at the Montclair Transcenter, and Corridor 6, the Holt Boulevard/4th Street project that would extend from the Pomona Transcenter on the west through Montclair and ultimately terminate at the Fontana Transit Center.

The bars in Figure 3-31 show Montclair's 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the city's emissions reduction target (i.e., 20% below its 2008 GHG emissions level by 2020). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~76%) of the total reductions needed to achieve the 2020 target.

Figure 3-32 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and off-road equipment emissions sectors.

Table 3-32 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and

demonstrates that Montclair exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the solid waste management, building energy, and on-road transportation sectors.

Figure 3-33 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county 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 due to the implementation of SB X7-7 (Water-4).

Figure 3-31. Emissions Reduction Profile for Montclair

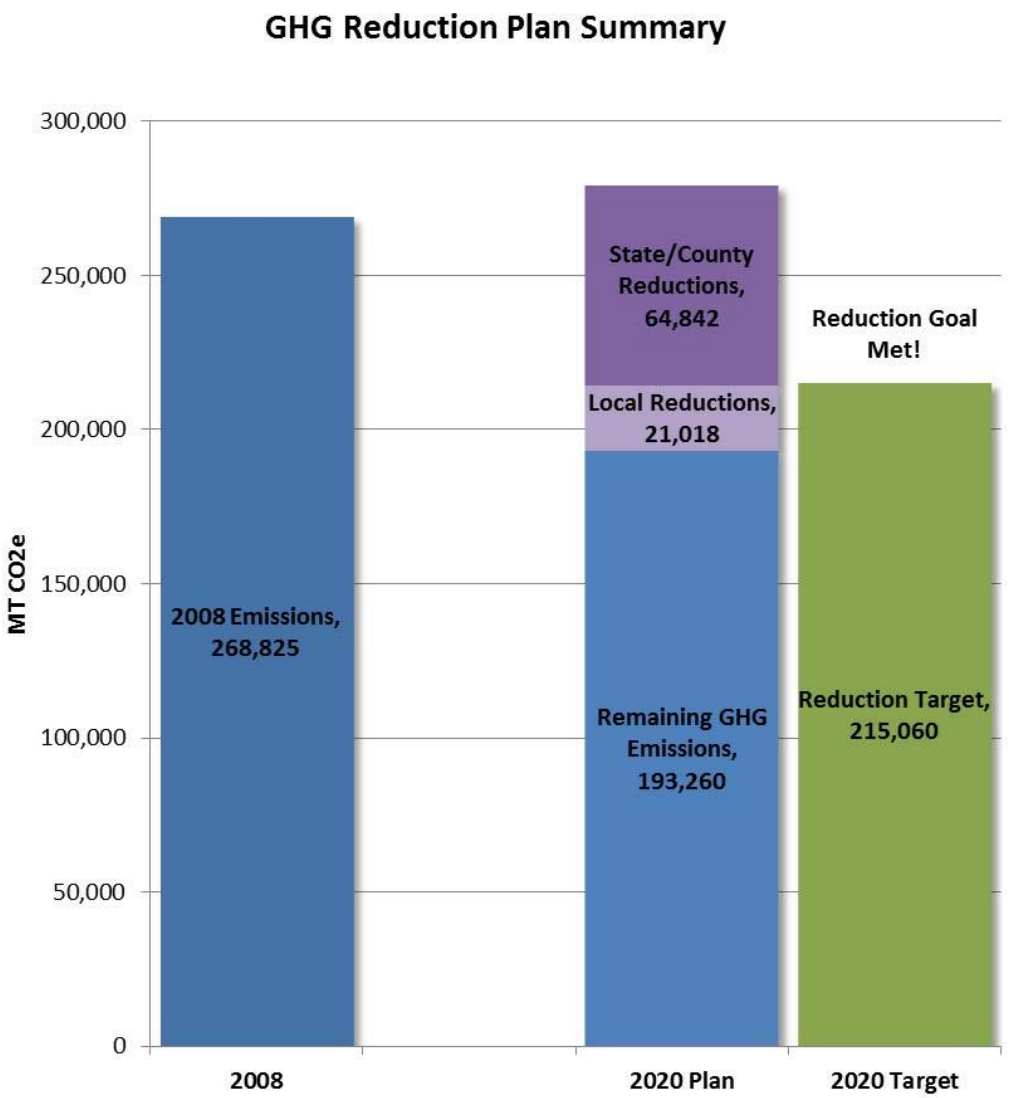


Figure 3-32. Emissions by Sector for Montclair

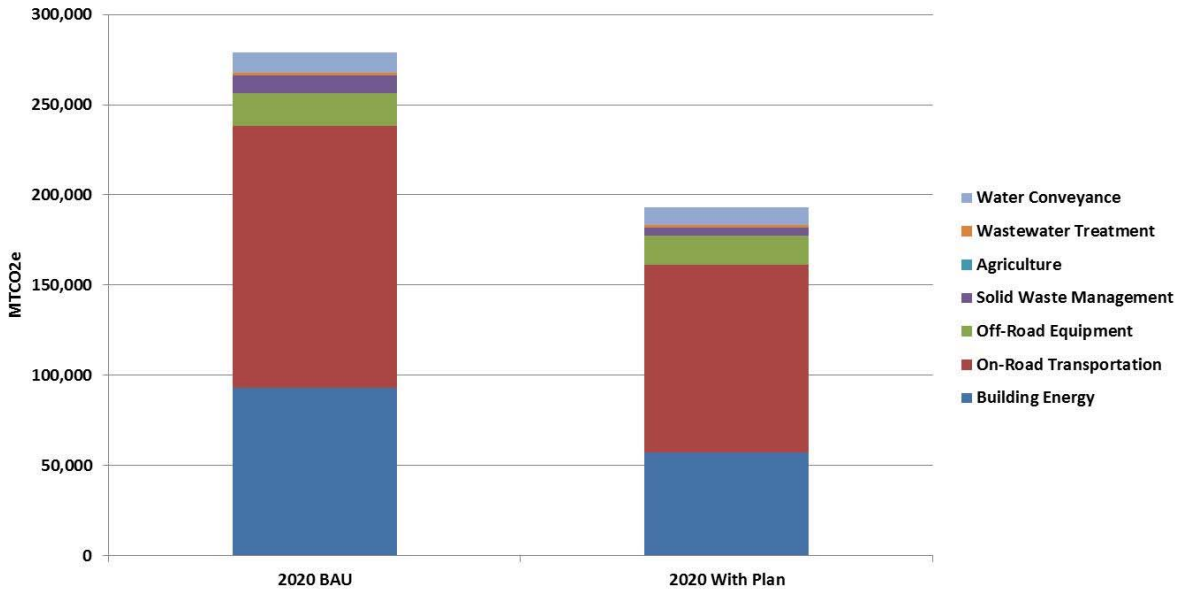


Table 3-32. Emission Reductions by Sector for Montclair

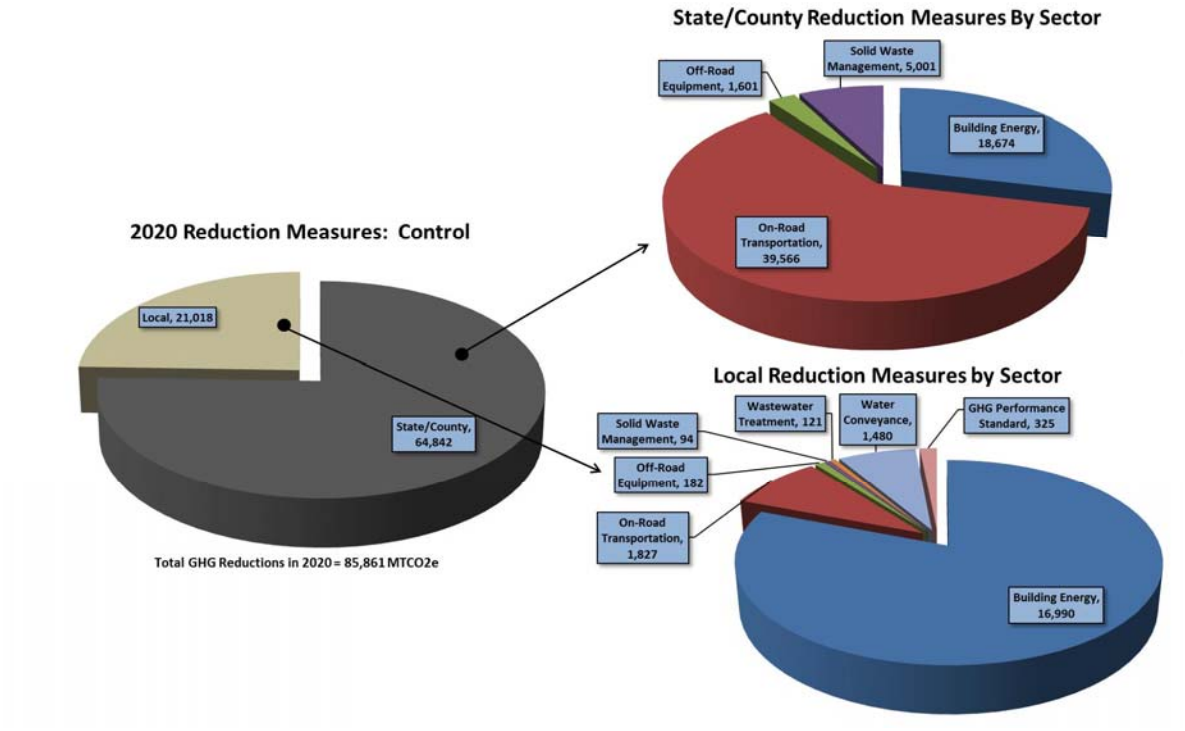
Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	87,088	93,284	35,664	57,620	38.2%
On-Road Transportation	144,013	145,119	41,393	103,726	28.5%
Off-Road Equipment	16,474	17,917	1,782	16,135	9.9%
Solid Waste Management	10,108	9,873	5,096	4,777	51.6%
Agriculture	0	0	0	0	0.0%
Wastewater Treatment	1,455	1,614	121	1,494	7.5%
Water Conveyance	9,687	11,313	1,480	9,833	13.1%
GHG Performance Standard*	-	-	325	-	-
Total Emissions	268,825	279,120	85,861	193,260	30.8%
Reduction Goal	-	-	*64,061*	*215,060*	*23.0%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Reductions Beyond Goal	-	-	*21,800*	-	-
Per-Capita Emissions	7.5	7.0	-	4.9	-
Per-Job Emissions	16.3	16.4	-	11.3	-
Excluded Emissions: Stationary Sources	*42,224*	*45,753*	-	-	-

Notes:

Values may not sum due to rounding.

* 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. Please see Chapter 4 for a complete description of this measure.

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



3.12.3 Reduction Measures

Table 3-33 presents each reduction measure evaluated for Montclair. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

Table 3-33. GHG Reduction Measures and Estimated 2020 Reductions for Montclair

Measure Number	Measure Description	Reductions
State/County Measures		
State-1	Renewable Portfolio Standard	13,251
State-2	Title 24 (Energy Efficiency Standards)	1,320
State-3	AB 1109	3,916
State-4	Solar Water Heating	87
State-5	Industrial Boiler Efficiency	100
State-6	Pavley plus LCFS	36,350
State-7	AB 32 Transportation Reduction Strategies	3,216
State-8	LCFS: Off-Road	1,601
State-9	AB 32 Methane Capture	0
County-1	San Bernardino County GHG Plan Landfill Controls	5,001
Local Measures		
Building Energy		
Energy-2	Outdoor Lighting	547
Energy-3	Green Building Ordinance	353
Energy-4	Solar Installation for New Housing	187
Wastewater-2 (BE)	*Equipment Upgrades*	*789*
Water-4 (BE)	*Implement SB X7-7*	*15,113*
On-Road Transportation		
Transportation-1	Sustainable Communities Strategy	1,391
Transportation-2	Smart Bus Technologies	436
Off-Road Equipment		
OffRoad-2	Idling Ordinance	182
Solid Waste Management		
Waste-2	Waste Diversion	94
Wastewater Treatment		
Water-4 (WT)	*Implement SB X7-7*	*121*
Water Conveyance		
Water-3	Water-Efficient Landscaping Practices	407
Water-4	Implement SB X7-7	1,074
GHG Performance Standard for New Development		
PS-1	GHG Performance Standard for New Development (29% below projected BAU emissions for the project)	325
Total Reductions		85,861

Notes:

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance

3.12.4 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, the City of Montclair selected GHG reduction measures related to building energy (including a Green Building Ordinance), wastewater related measures, SmartBus Technologies and a Performance Standard for new development (Table 3-33). 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).

3.12.4.1 Building Energy

Energy-3. Green Building Ordinance

- **Opportunities for Energy Conservation:** Construct homes utilizing full insulation and weatherization standards as required by State and federal regulations.

Energy-4. Solar Installation for New Housing

- **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.

3.12.4.2 On-Road

Transportation-1. Sustainable Communities Strategy

- **Opportunities for Energy Conservation:** Locate housing in reasonable 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

3.12.4.3 Solid Waste Management

Waste-2. Waste Diversion

- **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.

3.12.4.4 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.

3.13 City of Needles

3.13.1 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. Needles' demographic composition in 2010 was 75.7% White, 2% Black, 8.2% American Indian and Alaska Native, 0.7% Asian, 0.2% Native Hawaiian and Other Pacific Islander, 6.7% from other races, and 6.5% from two or more races. Persons of Hispanic or Latino origin were 22.4%. Needles' has a larger than average White population (76% compared to the state average of 58%) and the city also has a low population density of 155 people per square mile (U.S. Census Bureau 2012).

The population of Needles was 4,844 in 2010, slightly up from 2000, although greatly decreased from 1990 when 5,191 people lived there, a decrease of approximately 7%. Based on consultation with City staff, this analysis has assumed a 2% increase in both population and employment in Needles between 2010 and 2020, although this may be an overestimate given recent trends (employment decreased from 2008 to 2010, so a 2% growth from 2010 by 2020 is actually less than 2008 employment). Consequently, the City does not anticipate much new construction before 2020 and the GHG reduction measures selected below reflect the City's focus on existing infrastructure.

Table 3-34 presents socioeconomic data for Needles, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

Table 3-34. Socioeconomic Data for Needles

Category	2008	2020
Population	4,844	4,941
Housing	1,918	1,956
Single-Family	*1,106*	*1,116*
Multifamily	*812*	*840*
Employment	3,323	3,145
Agricultural	*1*	*6*
Industrial	*444*	*533*
Retail	*886*	*770*
Non-Retail	*1,993*	*1,836*

3.13.2 Emission Reductions

The City of Needles selected a goal to reduce its community GHG emissions to a level that is 15% below its 2008 GHG emissions level by 2020. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective per AB 32 through a combination of state (~93%) and local (~7%) 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 2020. An additional reduction of 1,485 $MTCO_2e$ will be achieved primarily through the following local measures, in order of importance: Energy Efficiency for Existing Housing (Energy-1); Solar Installations for Existing Housing (Energy-7); and Outdoor Lighting (Energy-2). Needles' reduction plan has the greatest impacts on GHG emissions in the building energy, wastewater treatment, and on-road transportation sectors.

Although Needles is implementing sustainable development practices in both current projects as well as in policies in the City's General Plan, the SCS implemented in the Mojave Desert (Transportation-1) will not result in any measureable GHG reductions for Needles itself.

The bars in Figure 3-34 show Needles' 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the city's emissions reduction target (i.e., 15% below the 2008 emissions level). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~93%) of the total reductions needed to achieve the 2020 target.

Figure 3-35 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and solid waste management emissions sectors.

Table 3-35 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and demonstrates that Needles exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the building energy, wastewater treatment, and on-road transportation sectors.

Figure 3-36 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county 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 and due to the Energy Efficiency for Existing Buildings (Energy-1).

Figure 3-34. Emissions Reduction Profile for Needles

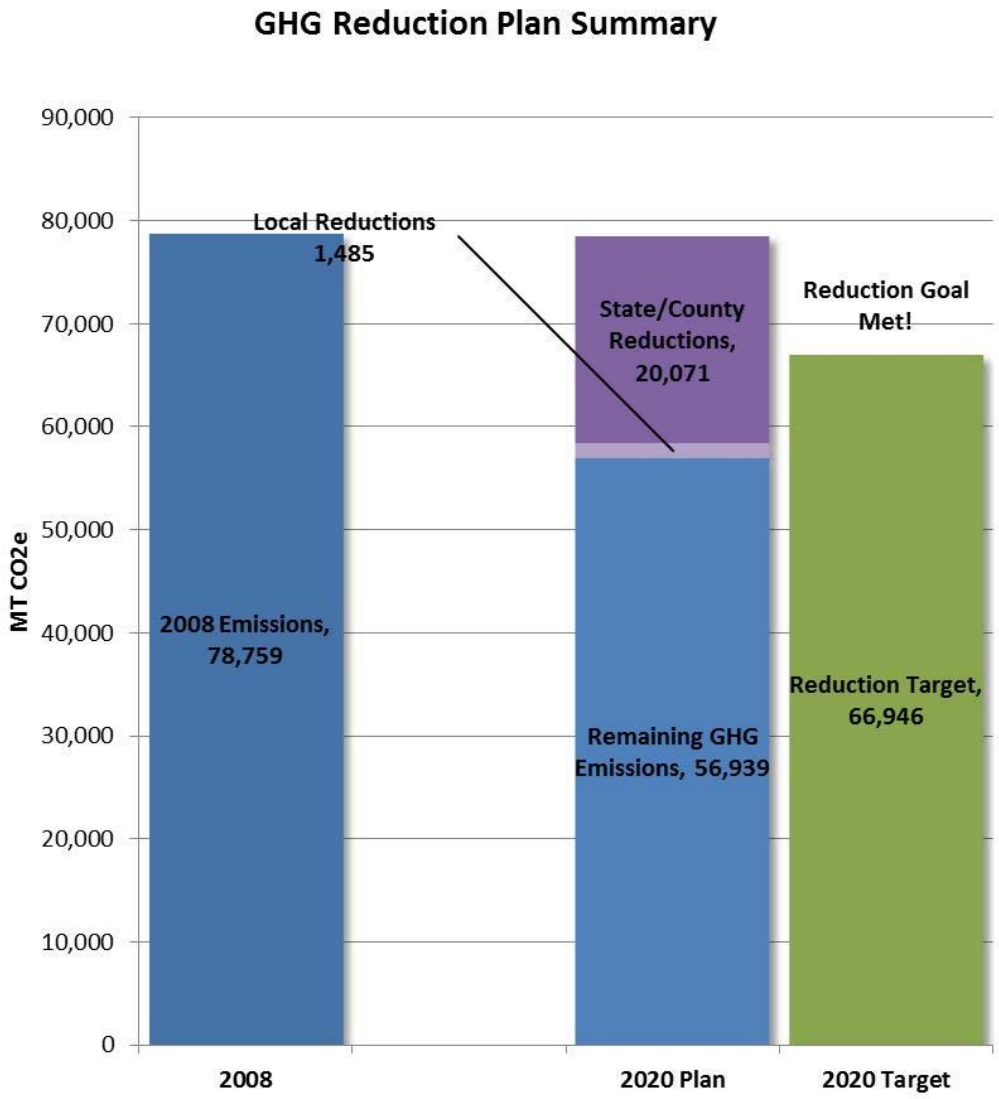


Figure 3-35. Emissions by Sector for Needles

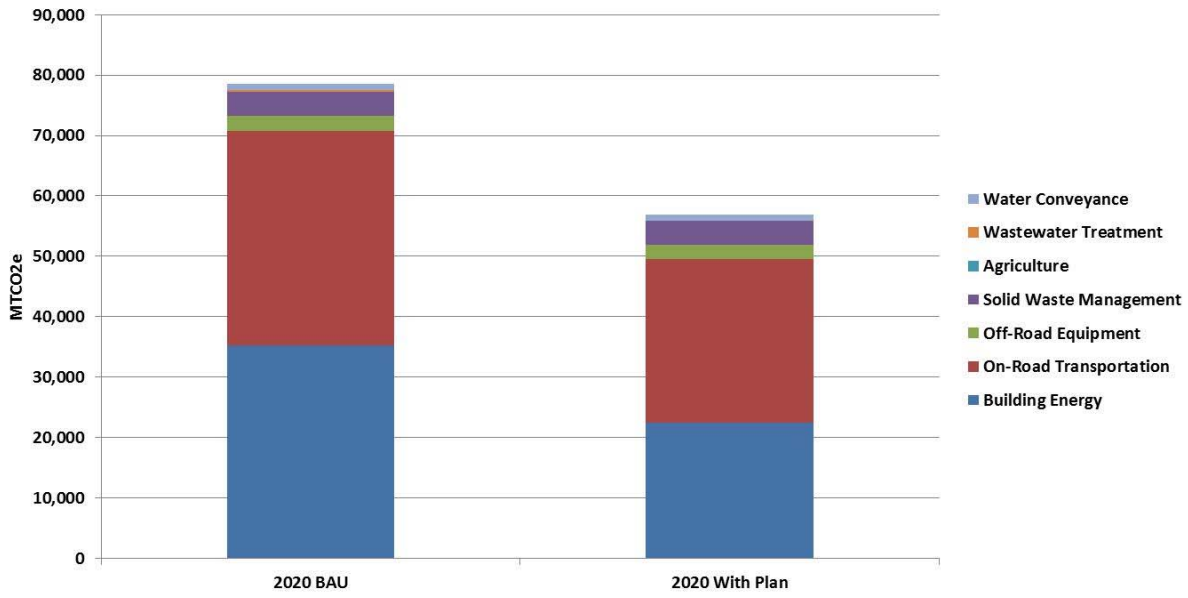


Table 3-35. Emission Reductions by Sector for Needles

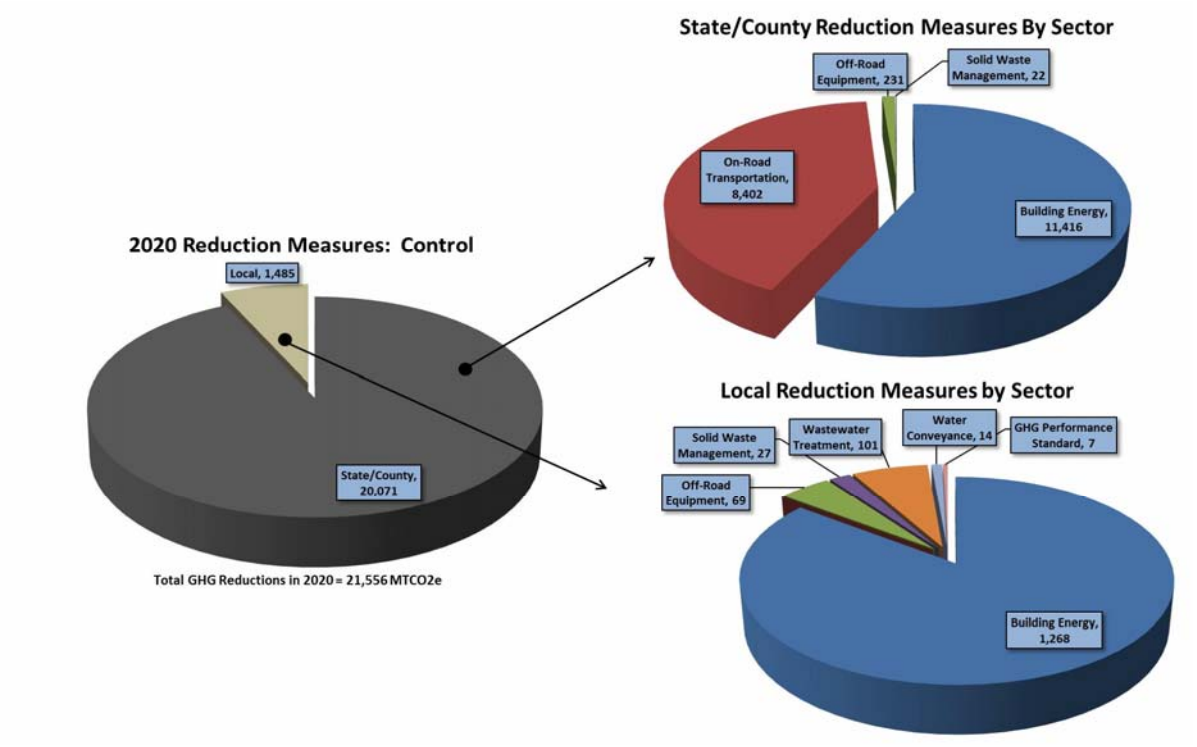
Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	35,964	35,232	12,685	22,547	36.0%
On-Road Transportation	35,135	35,468	8,402	27,066	23.7%
Off-Road Equipment	2,549	2,587	300	2,287	11.6%
Solid Waste Management	3,915	3,989	49	3,940	1.2%
Agriculture	0	0	0	0	0.0%
Wastewater Treatment	196	201	101	101	50.0%
Water Conveyance	999	1,019	14	1,005	1.4%
GHG Performance Standard*	-	-	7	-	-
Total Emissions	78,759	78,496	21,556	56,939	27.5%
Reduction Goal	-	-	*11,550*	*66,946*	*14.7%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Reductions Beyond Goal	-	-	*10,006*	-	-
Per-Capita Emissions	16.3	15.9	-	11.5	-
Per-Job Emissions	23.7	25.0	-	18.1	-
Excluded Emissions: Stationary Sources	*7,391*	*7,807*	-	-	-

Notes:

Values may not sum due to rounding.

* 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. Please see Chapter 4 for a complete description of this measure.

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



3.13.3 Reduction Measures

Table 3-36 presents each reduction measure evaluated for Needles. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

Table 3-36. GHG Reduction Measures and Estimated 2020 Reductions for Needles

Measure Number	Measure Description	Reductions
State Measures		
State-1	Renewable Portfolio Standard	9,178
State-2	Title 24 (Energy Efficiency Standards)	112
State-3	AB 1109	2,074
State-4	Solar Water Heating	18
State-5	Industrial Boiler Efficiency	34
State-6	Pavley plus LCFS	7,618
State-7	AB 32 Transportation Reduction Strategies	783
State-8	LCFS: Off-Road	231
State-9	AB 32 Methane Capture	21
County-1	San Bernardino County GHG Plan Landfill Controls	1
Local Measures		
Building Energy		
Energy-1	Energy Efficiency for Existing Buildings	671
Energy-2	Outdoor Lighting	119
Energy-3	Green Building Ordinance	16
Energy-4*	Solar Installation for New Housing	4
Energy-5*	Solar Installation for New Commercial	3
Energy-7	Solar Installation for Existing Housing	345
Energy-8	Solar Installation for Existing Commercial / Industrial	32
Energy-9*	Co-Generation Facilities	0.1
*LandUse-2 (BE)**	*Promote Rooftop Gardens*	*0.1*
Wastewater-2 (BE)	*Equipment Upgrades*	*79*
Off-Road Equipment		
OffRoad-1	Electric-Powered Construction Equipment	43
OffRoad-2	Idling Ordinance	26
Waste-2	Waste Diversion	27
Wastewater Treatment		
Wastewater-1	Methane Recovery	*101*
Water Conveyance		
*Wastewater-3 (WC)**	*Recycled Water*	*14*
GHG Performance Standard for New Development		
PS-1	GHG Performance Standard for New Development(16% below projected BAU emissions for the project)	7
Total Reductions		21,556

Notes:

* These are measures where the avoided annual GHG emissions are small relative to the effort to implement the measure on the City's part. Although the City has selected this measure, ICF recommends that the City not pursue this GHG reduction measure.

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water

Measure Number	Measure Description	Reductions
	consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance	

3.13.4 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 3-36). 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).

3.13.4.1 Building Energy

Energy-2. Outdoor Lighting

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

Energy-3. Green Building Ordinance

- **Principles and Standards 4:** Ensure compliance of all State required energy conservation laws in future developments.
- **Objective 5.1:** All new City buildings shall be constructed to meet or exceed the energy conservation standards in force at the time of their construction.

Energy-4. Solar Installation for New 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-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. Solar Installation for 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.

3.13.4.2 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.

3.13.4.3 Solid Waste Management

Waste-2. Waste Diversion

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

3.13.4.4 Wastewater Treatment

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

Wastewater-1. Methane Recovery

- **Objective 5.3:** The City will actively pursue all viable new sources of energy.

3.13.4.5 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.

3.14 City of Ontario

3.14.1 City Summary

The City of Ontario is located in the West San Bernardino Valley, north of Chino and west of Fontana. Like other valley cities, 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 2010 was 163,924 (162,871 in 2008) making Ontario the third largest city in the county and the 29th largest city in California. The population is expected to grow to 215,765 by 2020, an increase of 32% compared to 2008, and employment by a similar amount. Among the Partnership cities, only the city of Ontario is projected to have a larger increase in population before 2020.

Table 3-37 presents socioeconomic data for Ontario, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

Table 3-37. Socioeconomic Data for Ontario

Category	2008	2020
Population	162,871	215,765
Housing	44,639	61,128
Single-Family	*26,395*	*36,026*
Multifamily	*18,244*	*25,102*
Employment	114,339	151,279
Agricultural	*796*	*866*
Industrial	*39,335*	*50,611*
Retail	*34,529*	*42,602*
Non-Retail	*39,679*	*57,200*

3.14.2 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 30% below its projected emissions level in 2020. Unlike other Partnership cities, 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 cities 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 (~65%) and local (~35%) 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 2020. An additional reduction of 328,439 $MTCO_2e$ will be achieved primarily through the following local measures, in order of importance: Methane Capture at Large Dairies (Agriculture-1); Solar Energy for Warehouse Space (Energy-6); and Implement SB X7-7 (Water-4). Ontario's reduction plan has the greatest impacts on GHG emissions in the solid waste management, building energy, 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 SANBAG 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 3-37 show Ontario's 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the city's emissions reduction target (i.e., 30%

below its projected emissions level in 2020). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~65%) of the total reductions needed to achieve the 2020 target.

Figure 3-38 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and agriculture emissions sectors.

Table 3-38 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and demonstrates that Ontario exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the solid waste management, building energy, and on-road transportation sectors.

Figure 3-39 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county 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 due to Solar Energy for Warehouse Space (Energy-6), although the Methane Capture at Large Dairies (Agriculture-1) measure has the largest reduction of any local measure..

Figure 3-37. Emissions Reduction Profile for Ontario

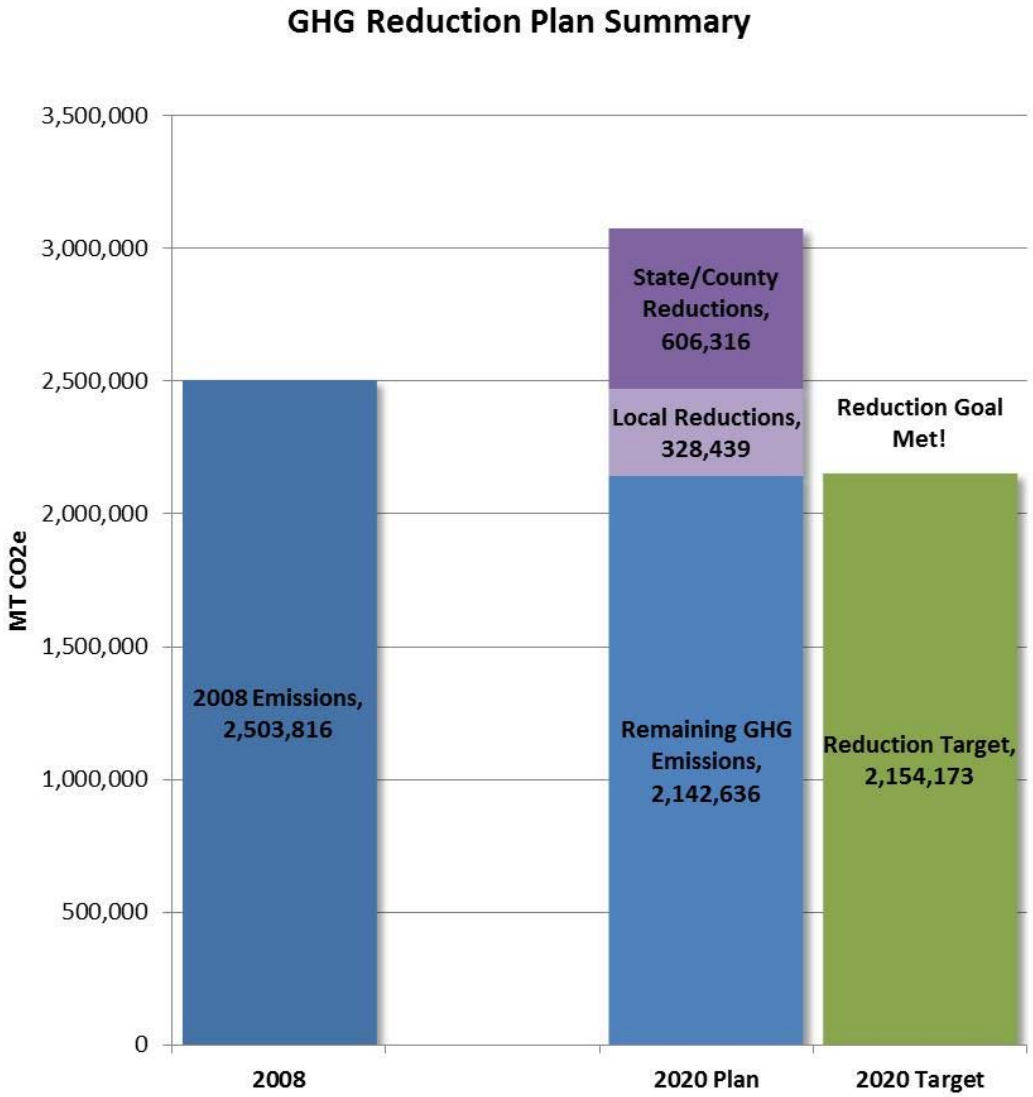


Figure 3-38. Emissions by Sector for Ontario

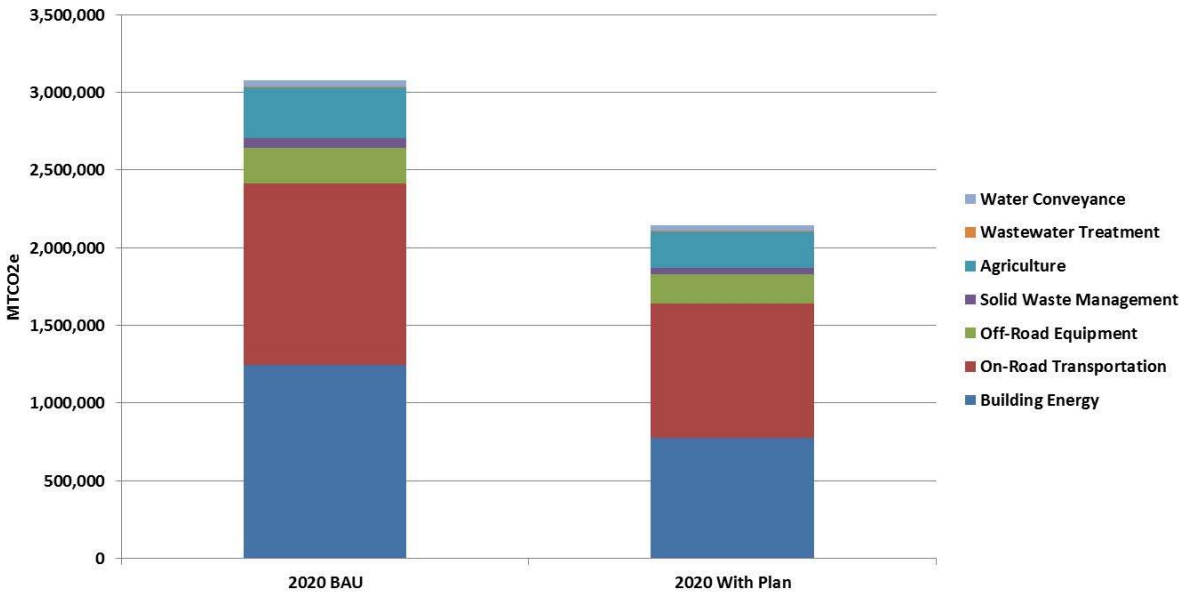


Table 3-38. Emission Reductions by Sector for Ontario

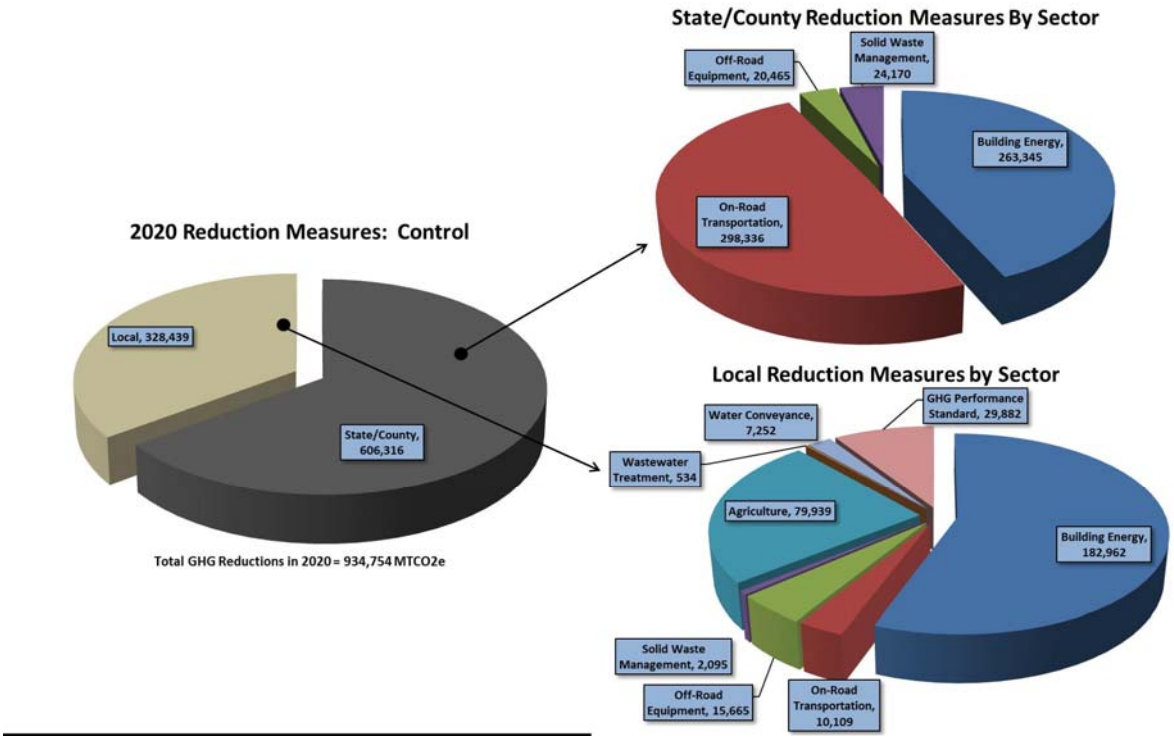
Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	933,718	1,244,079	446,307	797,772	35.9%
On-Road Transportation	942,020	1,169,171	308,445	860,726	26.4%
Off-Road Equipment	176,314	229,069	36,130	192,939	15.8%
Solid Waste Management	60,000	64,326	26,265	38,061	40.8%
Agriculture	356,131	323,390	79,939	243,450	24.7%
Wastewater Treatment	6,587	8,781	534	8,247	6.1%
Water Conveyance	29,044	38,575	7,252	31,323	18.8%
GHG Performance Standard*	-	-	29,882	-	-
Total Emissions	2,503,816	3,077,390	934,754	2,142,636	30.4%
Reduction Goal	-	-	*923,217*	*2,154,173*	*30.0%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Reductions Beyond Goal	-	-	*11,537*	-	-
Per-Capita Emissions	15.4	14.3	-	9.9	-
Per-Job Emissions	21.9	20.3	-	14.2	-
Excluded Emissions: Stationary Sources	*405,195*	*511,548*	-	-	-

Notes:

Values may not sum due to rounding.

* 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. Please see Chapter 4 for a complete description of this measure.

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



3.14.3 Reduction Measures

Table 3-39 presents each reduction measure evaluated for Ontario. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

Table 3-39. GHG Reduction Measures and Estimated 2020 Reductions for Ontario

Measure Number	Measure Description	Reductions
State/County Measures		
State-1	Renewable Portfolio Standard	138,133
State-2	Title 24 (Energy Efficiency Standards)	80,692
State-3	AB 1109	32,385
State-4	Solar Water Heating	507
State-5	Industrial Boiler Efficiency	11,629
State-6	Pavley plus LCFS	272,465
State-7	AB 32 Transportation Reduction Strategies	25,871
State-8	LCFS: Off-Road	20,465
State-9	AB 32 Methane Capture	0
County-1	San Bernardino County GHG Plan Landfill Controls	24,170
Local Measures		
Building Energy		
Energy-1	Energy Efficiency for Existing Buildings	24,928
Energy-2	Outdoor Lighting	2,195
Energy-4	Solar Installation for New Housing	3,244
Energy-5	Solar Installation for New Commercial	18,018
Energy-6	Solar Energy for Warehouse Space	60,635
Energy-7	Solar Installation for Existing Housing	9,760
Energy-8	Solar Installation for Existing Commercial / Industrial	10,287
LandUse-1 (BE)	*Tree Planting Programs*	*14*
Wastewater-2 (BE)	*Equipment Upgrades*	*2,832*
Water-2 (BE)	*Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency*	*5,427*
Water-4 (BE)	*Implement SB X7-7*	*45,621*
On-Road Transportation		
Transportation-1	Sustainable Communities Strategy	9,673
Transportation-2	Smart Bus Technologies	436
Off-Road Equipment		
OffRoad-1	Electric-Powered Construction Equipment	8,160
OffRoad-2	Idling Ordinance	2,884
OffRoad-3	Electric Landscaping Equipment	4,621
Solid Waste Management		
Waste-2	Waste Diversion	2,095
Agriculture		
Agriculture-1	Methane Capture at Large Dairies	77,556
Agriculture-2	Utilize Methane Captured at Dairies	2,383
Wastewater Treatment		
Water-2 (WT)	*Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency*	*73*
Water-4 (WT)	*Implement SB X7-7*	*461*

Measure Number	Measure Description	Reductions
Water Conveyance		
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	1,144
Water-3	Water-Efficient Landscaping Practices	2,217
Water-4	Implement SB X7-7	3,891
GHG Performance Standard for New Development		
PS-1	GHG Performance Standard for New Development (30% below projected BAU emissions for the project)	29,882
Total Reductions		934,754

Notes:

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance

3.14.4 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 3-39). 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).

3.14.4.1 Building Energy

Energy-1. Energy Efficiency for Existing Buildings

- **Environmental Resources 3-1:** We require conservation as the first strategy to be employed to meet applicable energy-saving standards.
- **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-2. Outdoor Lighting

- **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.

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. Solar Installation for New Commercial

- **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.

Land Use-1 (BE). Tree Planting

- **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.

3.14.4.2 On-Road

Transportation-1. Sustainable Communities Strategy

- **Land Use 1-2:** We integrate state, regional and local Sustainable Community/Smart Growth principles into the development and entitlement process.
- **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 3-3:** We require walkways that promote safe and convenient travel between residential areas, businesses, schools, parks, recreation areas, and other key destination points.
- **Mobility 3-4:** We explore opportunities to expand the pedestrian and bicycle networks.

- **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.
- **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.

Transportation-2. Smart Bus Technologies

- **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.

3.14.4.3 Solid Waste Management

Waste-2. Waste Diversion

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

3.14.4.4 Water Conveyance

Water-2. Renovate Existing Buildings

- **Environmental Resources 1-3:** We require conservation strategies that reduce water usage.

Water-3. Water-Efficient Landscaping Practices

- **Environmental Resources 1-3:** We require conservation strategies that reduce water usage.

3.15 City of Rancho Cucamonga

3.15.1 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 2010 was 165,269 (162,792 in 2008) making it the fourth largest city in San Bernardino County. Rancho Cucamonga has a higher-than-average median household income ($78,572 versus $60,883 for the state). Rancho Cucamonga's demographic composition in 2010 was 62% White, 9.2% Black, 0.7% American Indian and Alaska Native, 10.4% Asian, 0.3% Native Hawaiian and Other Pacific Islander, 12% from other races, and 5.4% from two or more races. Persons of Hispanic or Latino origin were 34.9%. 90% of the city's residents graduated high school, and 29% have a bachelor's degree or higher (U.S. Census Bureau 2012). The city's population is expected to increase to 167,118 by 2020, an increase of about 3% over 2008. Employment is also expected to increase only modestly (2%) by 2020, reflecting some of the lowest growth rates in the region.

Table 3-40 presents socioeconomic data for Rancho Cucamonga, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

Table 3-40. Socioeconomic Data for Rancho Cucamonga

Category	2008	2020
Population	162,792	167,118
Housing	53,564	56,303
Single-Family	*37,940*	*39,742*
Multifamily	*15,624*	*16,561*
Employment	62,462	63,869
Agricultural	*41*	*71*
Industrial	*15,725*	*17,078*
Retail	*17,347*	*17,007*
Non-Retail	*29,349*	*29,712*

3.15.2 Emission Reductions

The City of Rancho Cucamonga selected a goal to reduce its community GHG emissions to a level that is 15% below its 2008 GHG emissions level by 2020. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective per AB 32 through a combination of state (~85%) and local (~15%) efforts. The City actually exceeds the goal with only state/county level actions (132% of goal), but has committed to several additional local measures. 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 2020. An additional reduction of 61,949 $MTCO_2e$ will be achieved primarily through the following local measures, in order of importance: Implement SB X7-7 (Water-4); Implementation of the Sustainable Communities Strategy (Tranportation-1); and Equipment Upgrades at Wastewater Treatment Plants (Wastewater-2). Rancho Cucamonga's reduction plan has the greatest impacts on GHG emissions in the solid waste management, on-road transportation, and building energy sectors.

Rancho Cucamonga selected the GHG Performance Standard for New Development (PS-1) for their local plan, but the City's goal for reducing emissions from new development through PS-1 is already achieved through other local measures. Therefore, "N/A" is listed in the GHG reductions column next to PS-1 in Table 3-42 below. Because Rancho Cucamonga selected PS-1, which will help the City achieve their reduction goal, it was included in the table.

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 3-40 show Rancho Cucamonga's 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the city's emissions reduction target (i.e., 15% below the 2008 emissions level). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~85%) of the total reductions needed to achieve the 2020 target.

Figure 3-41 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and off-road equipment emissions sectors.

Table 3-41 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and

demonstrates that Rancho Cucamonga exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the solid waste management, on-road transportation, and building energy sectors.

Figure 3-42 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county 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 due to the implementation of SB X7-7 (Water-4).

Figure 3-40. Emissions Reduction Profile for Rancho Cucamonga

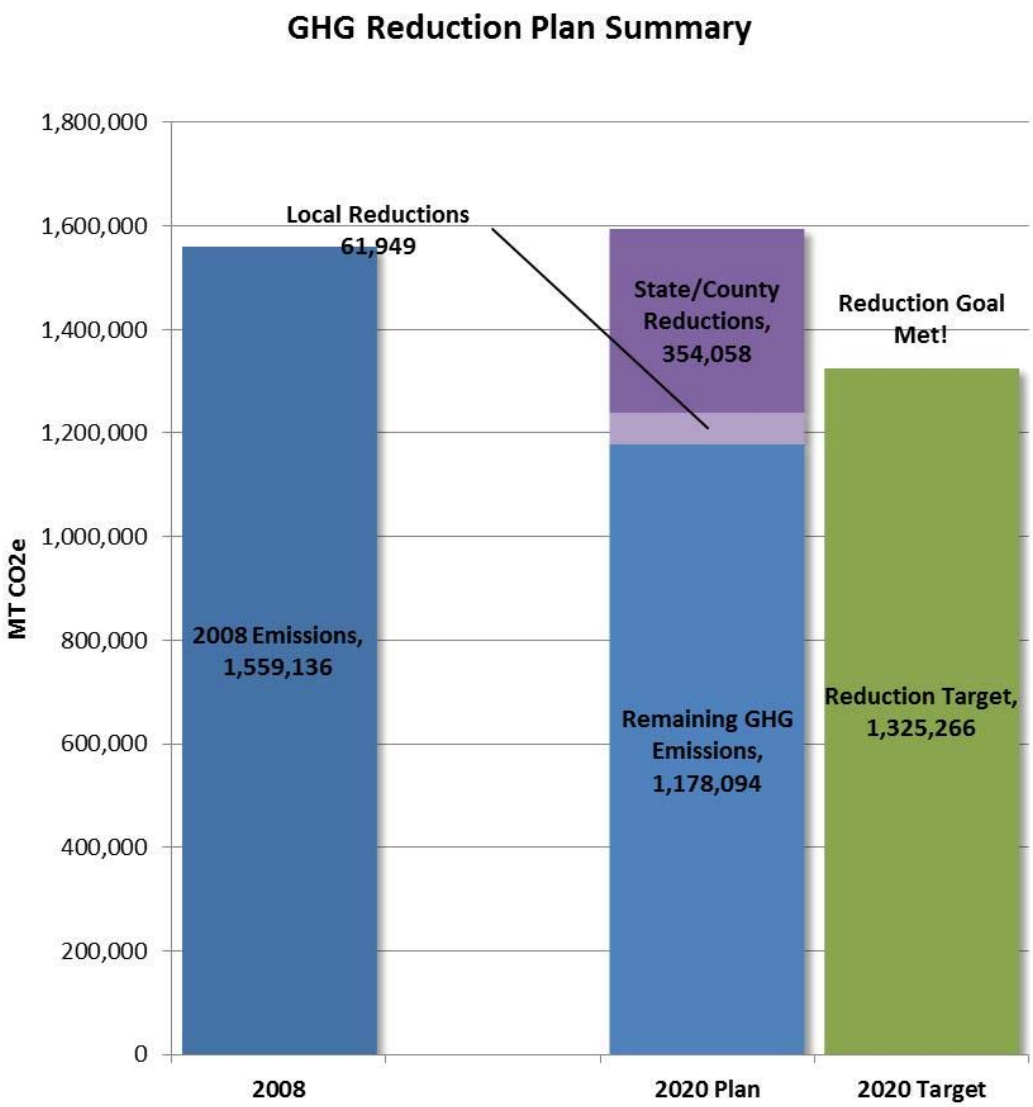


Figure 3-41. Emissions by Sector for Rancho Cucamonga

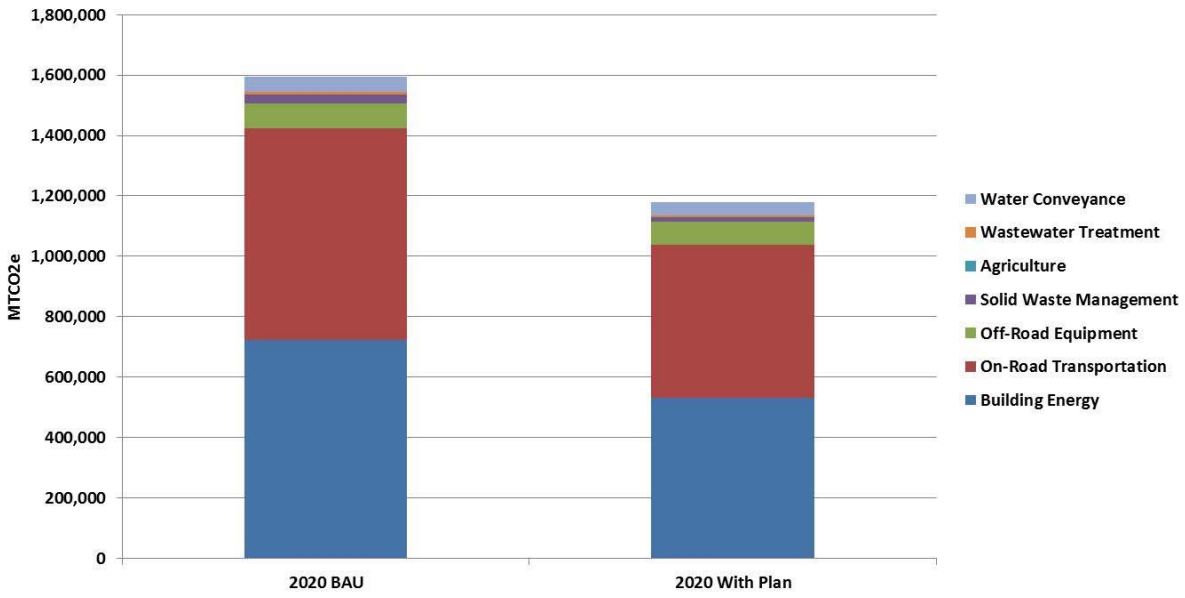


Table 3-41. Emission Reductions by Sector for Rancho Cucamonga

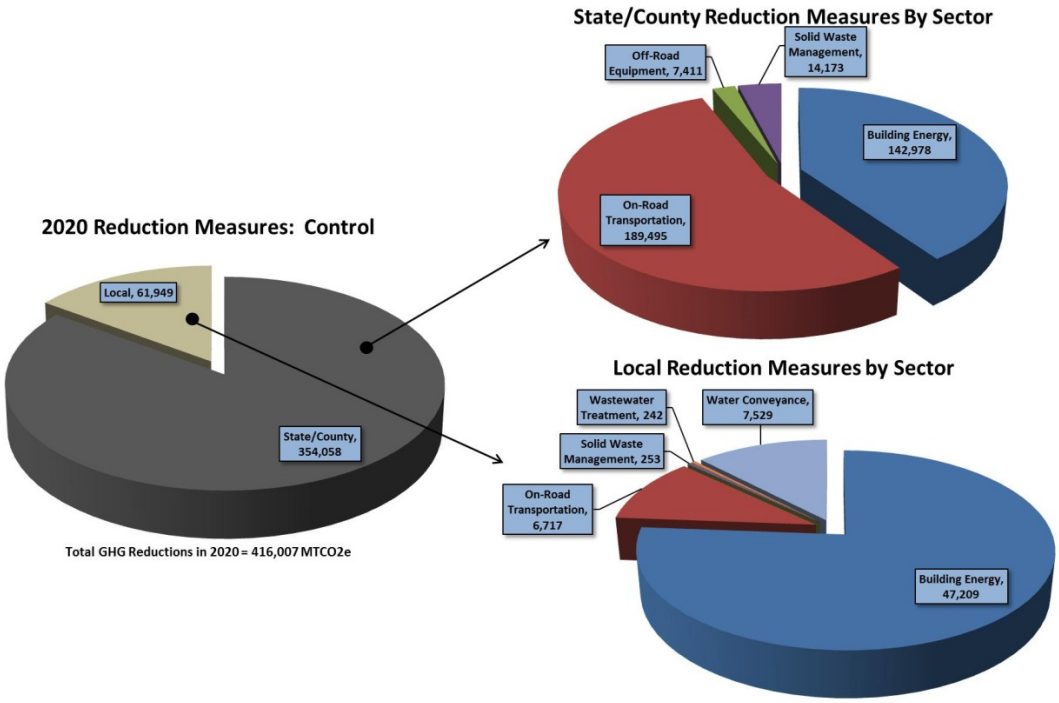
Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	693,422	722,126	190,187	531,939	26.3%
On-Road Transportation	702,904	701,998	196,212	505,786	28.0%
Off-Road Equipment	80,830	82,950	7,411	75,539	8.9%
Solid Waste Management	29,042	29,475	14,426	15,049	48.9%
Agriculture	300	153	0	153	0.0%
Wastewater Treatment	6,584	6,801	242	6,559	3.6%
Water Conveyance	46,054	50,598	7,529	43,069	14.9%
GHG Performance Standard*	-	-	0	-	-
Total Emissions	1,559,136	1,594,101	416,007	1,178,094	26.1%
Reduction Goal	-	-	*268,835*	*1,325,266*	*16.9%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Reductions Beyond Goal	-	-	*147,172*	-	-
Per-Capita Emissions	9.6	9.5	-	7.0	-
Per-Job Emissions	25.0	25.0	-	18.4	-
Excluded Emissions: Stationary Sources	*162,416*	*171,551*	-	-	-

Notes:

Values may not sum due to rounding.

* 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. Please see Chapter 4 for a complete description of this measure.

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



3.15.3 Reduction Measures

Table 3-42 presents each reduction measure evaluated for Rancho Cucamonga. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

Table 3-42. GHG Reduction Measures and Estimated 2020 Reductions for Rancho Cucamonga

Measure Number	Measure Description	Reductions
State/County Measures		
State-1	Renewable Portfolio Standard	100,205
State-2	Title 24 (Energy Efficiency Standards)	7,767
State-3	AB 1109	30,549
State-4	Solar Water Heating	467
State-5	Industrial Boiler Efficiency	3,990
State-6	Pavley plus LCFS	173,940
State-7	AB 32 Transportation Reduction Strategies	15,555
State-8	LCFS: Off-Road	7,411
State-9	AB 32 Methane Capture	1
County-1	San Bernardino County GHG Plan Landfill Controls	14,172
Local Measures		
Building Energy		
Energy-1	Energy Efficiency for Existing Buildings	469
Energy-3	Green Building Ordinance	522
Energy-4	Solar Installation for New Housing	84
Energy-5	Solar Installation for New Commercial	373
Energy-6	Solar Energy for Warehouse Space	2,725
Energy-7	Solar Installation for Existing Housing	665
Energy-8	Solar Installation for Existing Commercial / Industrial	300
Energy-9	Co-Generation Facilities	73
LandUse-1	*Tree Planting*	*91*
Wastewater-2 (BE)	*Equipment Upgrades*	*3,724*
Water-1 (BE)	*Require Tier 1 Voluntary CALGreen Standards for New Construction*	*154*
Water-4 (BE)	*Implement SB X7-7*	*38,031*
On-Road Transportation		
Transportation-1	Sustainable Communities Strategy	6,281
Transportation-2	Smart Bus Technologies	436
Solid Waste Management		
Waste-2	Waste Diversion	253
Wastewater Treatment		
Water-1 (WT)	*Require Tier 1 Voluntary CALGreen Standards for New Construction*	*2*
Water-4 (WT)	*Implement SB X7-7*	*240*
Water Conveyance		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New Construction	2,187
Water-3	Water-Efficient Landscaping Practices	2,470
Water-4	Implement SB X7-7	2,872
GHG Performance Standard for New Development		

Measure Number	Measure Description	Reductions
PS-1	GHG Performance Standard for New Development(29% below projected BAU emissions for the project)	N/A
Total Reductions		416,007

Notes:

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance

3.15.4 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 3-42). 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).

3.15.4.1 Building Energy

- **Policy LU-3.4:** Promote development that is sustainable in its use of land and that limits impacts to natural resources, energy, and air and water quality.
- **Policy RC-5.1:** The City should serve as a role model by adopting recognizable standards and incorporating the use of sustainable strategies for new and existing public buildings that maximize occupant health and productivity, minimize operating costs, and provide good environmental stewardship.
- **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-1. Energy Efficiency for Existing Buildings

- **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-3. Green Building Ordinance

- **Policy RC-6.1:** Add energy efficiency standards in the Rancho Cucamonga Municipal Code based on green building principles, to reduce energy consumption (particularly for heating, cooling, and lighting) in new construction.
- **Policy RC-6.2:** Encourage green practices for new and existing buildings throughout the community.
- **Policy RC-6.3:** Promote energy-efficient design features, including but not limited to, appropriate site orientation, use of light-colored roofing and building materials, and use of deciduous trees and wind-break trees to reduce fuel consumption for heating and cooling beyond the minimum requirements of Title 24 State Energy Codes.
- **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-4. Solar Installation for New 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.

Energy-5. Solar Installation for New Commercial

- **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.

Energy-9. Co-Generation Facilities

- **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-4.5:** Support the development of private sources of sustainable and environmentally friendly energy supplies, provided these are consistent with City aesthetic and public safety goals.

3.15.4.2 On-Road

Transportation-1. Sustainable Communities Strategy

Land Use

- **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.
- **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-3.8:** Implement land use patterns and policies that incorporate smart growth practices, including placement of higher densities near transit centers and along transit

corridors, allowing Mixed Use development, and encouraging and accommodating pedestrian movement.

- **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-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-5.2:** Encourage development along the Haven Avenue Corridor that incorporates appropriate intensity and design excellence for an important gateway to Rancho Cucamonga.
- **Policy LU-5.4:** Promote a pedestrian-friendly corridor where employees can walk to restaurants, commercial services, and other amenities in the area.
- **Policy LU-5.6:** Support the integration of transportation facilities, including transit, to support the office environment.
- **Policy LU-6.2:** Minimize impacts of industrial development and truck traffic in residential areas or on residential streets.
- **Policy LU-7.1:** Concentrate heavy industrial and utility-related uses in the area immediately surrounding the electrical power plant.
- **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 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.

Community Mobility

- **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-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-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.
- **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-3.7:** Continue to develop and maintain a citywide 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-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-3.12:** Continue to require that the siting and architectural design of new development promotes safety, pedestrian-friendly design, and access to transit facilities.
- **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 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-4.3:** Continue to implement Intelligent Transportation System (ITS) measures and advanced traffic management technologies where appropriate.
- **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 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.
- **Policy CM-7.1:** Continue to maintain a truck circulation system that defines truck routes, directs the movement of trucks safely along major roadways, and minimizes truck travel on local and collector streets.
- **Policy CM-8.1:** Support regional transit options that improve access between Rancho Cucamonga and LA/Ontario International Airport.

Transportation-2. Smart Bus Technologies

- **Policy CM-4.3:** Continue to implement Intelligent Transportation System (ITS) measures and advanced traffic management technologies where appropriate.

3.15.4.3 Solid Waste Management

Waste-2. Waste Diversion

- **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.

3.15.4.4 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.

3.15.4.5 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.

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

- **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 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.

Water-3. Water-Efficient Landscaping Practices

- **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.

3.16 City of Redlands

3.16.1 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 2010 was 68,747 (68,576 in 2008). Redlands' demographic composition in 2010 was 69% White, 5.2% Black, 0.9% American Indian and Alaska Native, 7.6% Asian, 0.3% Native Hawaiian and Other Pacific Islander, 12% from other races, and 4.9% from two or more races. Persons of Hispanic or Latino origin were 30.9%. The majority of the population in Redlands is White (69% compared to the state average of 58%), and only 15% of the population is foreign born. 37% of residents have a bachelor's degree or higher (U.S. Census Bureau 2012). The city was the tenth largest city in San Bernardino County in 2008 and is expected to grow to a population of 75,494 by 2020, an increase of 10% over 2008. Employment in Redlands is expected to increase by a similar amount before 2020.

Table 3-43 presents socioeconomic data for Redlands, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

Table 3-43. Socioeconomic Data for Redlands

Category	2008	2020
Population	68,576	75,494
Housing	24,701	28,262
Single-Family	*16,004*	*18,218*
Multifamily	*8,697*	*10,044*
Employment	41,435	46,682
Agricultural	*33*	*60*
Industrial	*4,641*	*6,447*
Retail	*9,579*	*10,176*
Non-Retail	*27,182*	*29,999*

3.16.2 Emission Reductions

The City of Redlands selected a goal to reduce its community GHG emissions to a level that is 15% below its 2008 GHG emissions level by 2020. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective per AB 32 through a combination of state (~66%) and local (~34%) efforts. The Pavley vehicle standards, the state's low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in Redlands' on-road and building energy sectors in 2020. An additional reduction of 83,766 $MTCO_2e$ will be achieved primarily through the following local measures, in order of importance: Implement SB X7-7 (Water-4); Sustainable Communities Strategy (Transportation-1), and Smart Bus Technologies (Transportation-2). Redlands' Plan has the greatest impacts on GHG emissions in the building energy, on-road transportation, and water conveyance sectors. The City will strive to reduce emissions further as part of the City's future CAP by including additional emission reduction measures or by strengthening the measures already included below.

The City of Redlands will support the goals of SB 375 and the Sustainable Communities Strategy (Transportation-1) through a wide range of actions. These actions include the San Bernardino-Redlands Passenger Rail project, the Orange Blossom bike and multi-purpose trail, and a new Downtown Specific Plan. Each of these are described below.

The proposed San Bernardino-Redlands Passenger Rail project has an estimated completion date of 2018. The project will initially feature three stops near high use areas within the city, including the University of Redlands, the city's pedestrian friendly downtown, and one of its largest employers, ESRI, and will also provide a connection to the Metrolink transit hub in the City of San Bernardino. The City Council has also recently adopted policy that allows for greater housing density adjacent to the proposed rail stations, which will promote High Quality Transit Areas (HQTA) along the rail corridor. These HQTAs will contain individual community-based themes, and will provide access to educational resources, entertainment, jobs, and housing within the city. In addition, Metrolink will adopt new bus and transit routes that take advantage of the passenger rail locations.

The City of Redlands has been actively pursuing and receiving grants to complete its Orange Blossom bike and multi-purpose trail, which will connect the city to the myriad of other bike trails located within the city and the greater Inland Empire region.

The City of Redlands is currently working on a new Downtown Specific Plan which will continue the downtowns pedestrian oriented feel, but also provide an urban downtown that allows for a greater variety of land uses. The objectives from the Specific Plan are to set forth land use designations and development standards that allow for a better balance between commercial and residential development in the area

The bars in Figure 3-43 show Redlands' 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the city's emissions reduction target (i.e., 15% below the 2008 emissions level). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~66%) of the total reductions needed to achieve the 2020 target.

Figure 3-44 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and off-road equipment emissions sectors.

Table 3-44 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and demonstrates that Redlands exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the solid waste management, on-road transportation, and building energy sectors.

Figure 3-45 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county 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 due to the implementation of SB X7-7 (Water-4).

Figure 3-43. Emissions Reduction Profile for Redlands

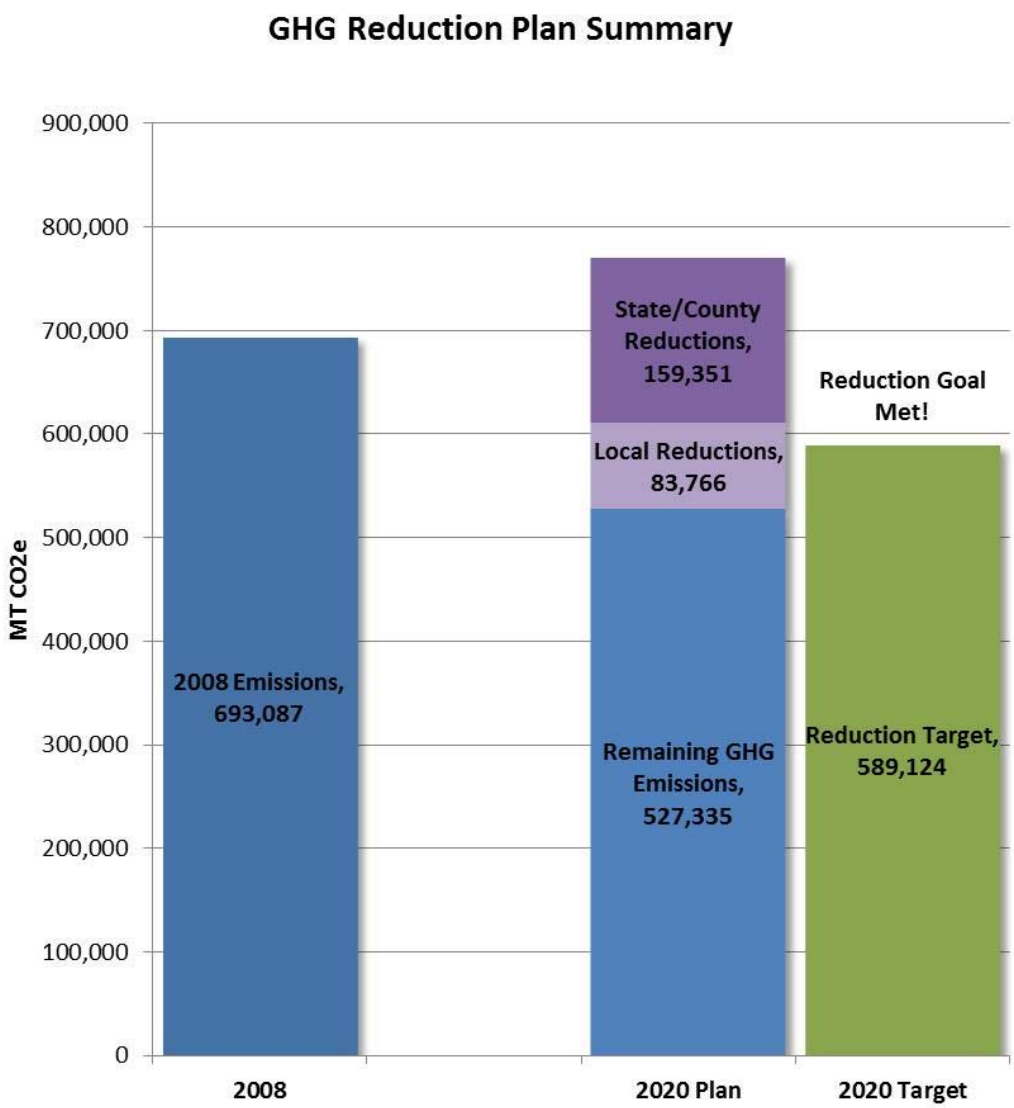


Figure 3-44. Emissions by Sector for Redlands

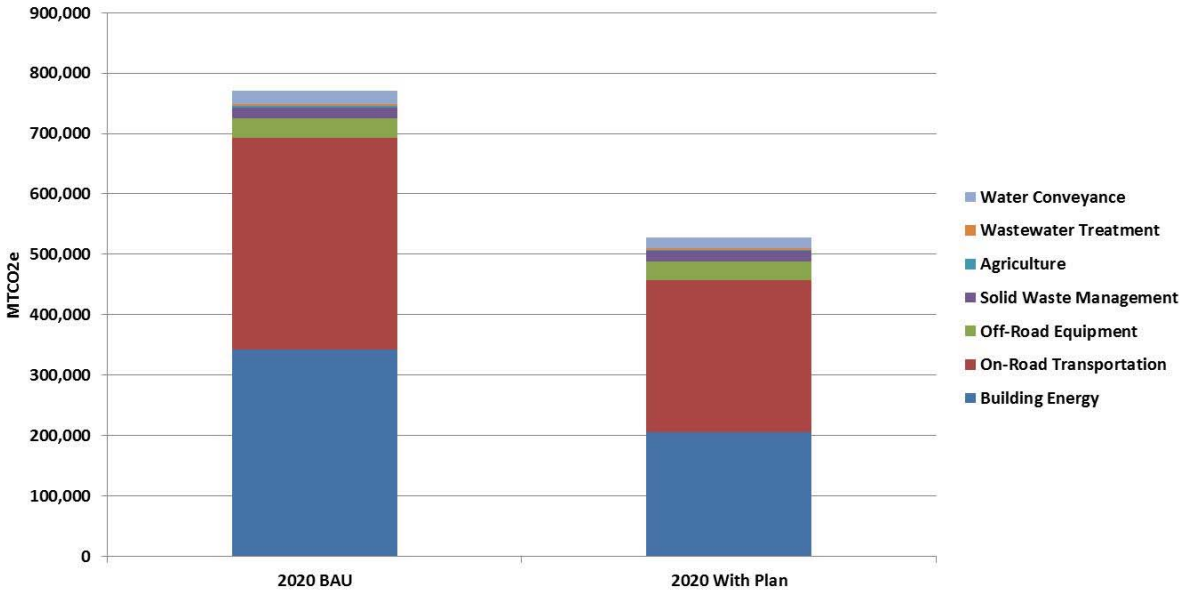


Table 3-44. Emission Reductions by Sector for Redlands

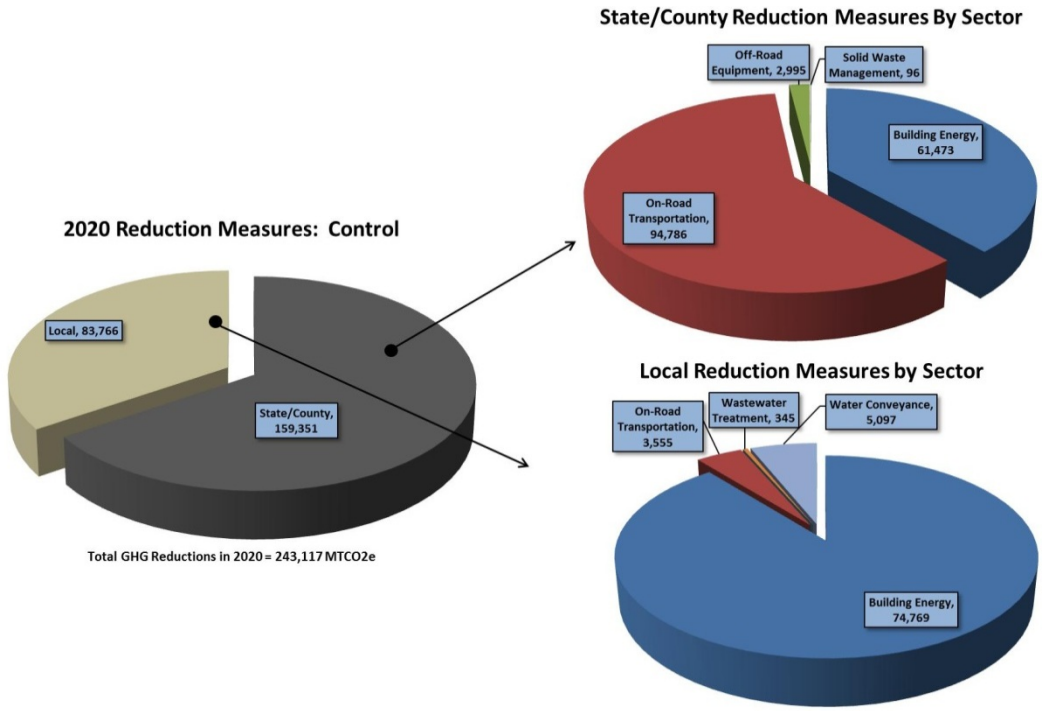
Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	302,160	342,534	136,242	206,292	39.8%
On-Road Transportation	319,157	349,518	98,342	251,176	28.1%
Off-Road Equipment	30,147	33,528	2,995	30,532	8.9%
Solid Waste Management	16,391	17,877	96	17,781	0.5%
Agriculture	3,298	1,681	0	1,681	0.0%
Wastewater Treatment	2,773	3,072	345	2,727	11.2%
Water Conveyance	19,161	22,242	5,097	17,146	22.9%
GHG Performance Standard*	-	-	0	-	-
Total Emissions	693,087	770,452	243,117	527,335	31.6%
Reduction Goal	-	-	*181,328*	*589,124*	*23.5%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Reductions Beyond Goal	-	-	*61,789*	-	-
Per-Capita Emissions	10.1	10.2	-	7.0	-
Per-Job Emissions	16.7	16.5	-	11.3	-
Excluded Emissions: Stationary Sources	*92,324*	*109,197*	-	-	-

Notes:

Values may not sum due to rounding.

* 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. Please see Chapter 4 for a complete description of this measure.

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



3.16.3 Reduction Measures

Table 3-45 presents each reduction measure evaluated for Redlands. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

Table 3-45. GHG Reduction Measures and Estimated 2020 Reductions for Redlands

Measure Number	Measure Description	Reductions
State/County Measures		
State-1	Renewable Portfolio Standard	38,189
State-2	Title 24 (Energy Efficiency Standards)	10,081
State-3	AB 1109	10,619
State-4	Solar Water Heating	235
State-5	Industrial Boiler Efficiency	2,350
State-6	Pavley plus LCFS	87,041
State-7	AB 32 Transportation Reduction Strategies	7,746
State-8	LCFS: Off-Road	2,995
State-9	AB 32 Methane Capture	0
County-1	San Bernardino County GHG Plan Landfill Controls	96
Local Measures		
Building Energy		
Water-4 (BE)	*Implement SB X7-7*	*74,769*
On-Road Transportation		
Transportation-1	Sustainable Communities Strategy	3,119
Transportation-2	Smart Bus Technologies	436
Wastewater Treatment		
Water-4 (WT)	*Implement SB X7-7*	*345*
Water Conveyance		
Water-4	Implement SB X7-7	5,097
Total Reductions		243,117

Notes:

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance

3.16.4 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 1995 General Plan unless otherwise noted (City of Redlands 1995). In addition to state level measures, the City of Redlands 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

Energy-2. Outdoor Lighting

- **Policy 7.8a**: Promote policies and actions that reduce residential energy use (Redlands 2010 General Plan Housing Element).
- **Policy 7.23b:** Support San Bernardino County in implementation of its energy-related policies.

Energy-3. Green Building Ordinance

- **Policy 7.8a:** Promote policies and actions that reduce residential energy use (Redlands 2010 General Plan Housing Element).
- **Policy 7.23b:** Support San Bernardino County in implementation of its energy-related policies.
- **Policy 7.23g**: The City shall implement and enforce Title 24 building standards to improve energy efficiency in new or substantially remodeled construction.

Energy-4. Solar Installation for New Housing

- **Proposed Program 7.8-5**: Pursue Energy efficiency/Alternative Energy Funding (Redlands 2010 General Plan Housing Element).
- **Policy 7.23b:** Support San Bernardino County in implementation of its energy-related policies.
- **Policy 7.23h:** Encourage the investigation and utilization of alternative energy sources to be integrated in individual project designs.

Energy-6. Solar Energy for Warehouse Space

- **Proposed Program 7.8-5**: Pursue Energy efficiency/Alternative Energy Funding (Redlands 2010 General Plan Housing Element).
- **Policy 7.23b:** Support San Bernardino County in implementation of its energy-related policies.
- **Policy 7.23h:** Encourage the investigation and utilization of alternative energy sources to be integrated in individual project designs.

Energy-7. Solar Installation for Existing Housing

- **Proposed Program 7.8-5:** Pursue Energy Efficiency/Alternative Energy Funding (Redlands 2010 General Plan Housing Element).
- **Policy 3.23h**: Encourage energy conservation alterations that are compatible with preservation.
- **Policy 7.23b**: Support San Bernardino County in implementation of its energy-related policies.
- **Policy 7.23h:** Encourage the investigation and utilization of alternative energy sources to be integrated in individual project designs.

3.16.4.2 On-Road

Transportation-1. Sustainable Communities Strategy

- **Proposed Program 7.8-3:** Encourage Land-Use Patterns and Densities to Facilitate Energy Efficient Public Transit Systems in New Development Areas.
- **Proposed Program 7.9-1:** Augment Density Bonus. The City will consider incentives beyond State law and will also consider offering bonuses to specifically encourage denser development

in proximity to planned Metrolink stations in addition to the Downtown station, where the City is already looking to implement a density bonus.

- **Proposed Program 7.9-3:** Explore Mixed-Use Development Possibilities for Redlands Metrolink Stations. (2010 General Plan Housing Element).
- **Policy 4.62f:** Adopt energy-efficient transportation strategies to implement state and county goals for reduced energy consumption and improved air quality.
- **Policy 7.23e:** Minimize energy consumption attributable to transportation within the Planning Area.
- **All Policies under 8.12:** Air Quality and Ground Transportation.

Transportation-2. Smart Bus Technologies

- **Proposed Program 7.8-3:** Encourage Land-Use Patterns and Densities to Facilitate Energy Efficient Public Transit Systems in New Development Areas.
- **Proposed Program 7.9-1:** Augment Density Bonus. The City will consider incentives beyond State law and will also consider offering bonuses to specifically encourage denser development in proximity to planned Metrolink stations in addition to the Downtown station, where the City is already looking to implement a density bonus (Redlands 2010 General Plan Housing Element).
- **Policy 4.62f**: Adopt energy-efficient transportation strategies to implement state and county goals for reduced energy consumption and improved air quality.
- **Policy 7.23e:** Minimize energy consumption attributable to transportation within the Planning Area.
- **All Transit Related Policies under 8.12:** Air Quality and Ground Transportation
- **All VMT Reducing Policies under 8.14:** Air Quality and Land Use

3.16.4.3 Off-Road

Off-Road-2. Idling Ordinance

- **Policy 4.62f:** Adopt energy-efficient transportation strategies to implement state and county goals for reduced energy consumption and improved air quality.
- **Policy 7.23e:** Minimize energy consumption attributable to transportation within the Planning Area.

Off-Road-3. Electric Landscaping Equipment

- **Policy 4.62f:** Adopt energy-efficient transportation strategies to implement state and county goals for reduced energy consumption and improved air quality.
- **Policy 8.15a:** Aim for the minimum practicable particulate emissions from the construction and operation of roads and buildings.

3.16.4.4 Solid Waste Management

- **Policy 7.24b:** Implement measures specified in the Source Reduction and Recycling Element and the Household Hazardous Waste Element.
- **Policy 7.24c:** Meet the mandatory waste diversion goals set by the State of 25% by 1995 and 50% by 2,000; reduce landfill disposal of household hazardous waste as much as feasibly possible.
- **Policy 7.23a**: Conserve scarce or nonrenewable energy resources.

- **Policy 7.24d:** Examine alternatives for reuse of the California Street Landfill site after its closure.

3.16.4.5 Wastewater Treatment

Policy 7.23f: Revise applicable City Codes to incorporate criteria for energy efficient design

Wastewater-1. Methane Recovery

- **Policy 7.23b**: Support San Bernardino County in implementation of its energy-related policies.
- **Policy 7.23h:** Encourage the investigation and utilization of alternative energy sources to be integrated in individual project designs.

3.16.4.6 Water Conveyance.

Water-1. Voluntary CALGreen: New Construction

- **Policy 7.22f:** If the City's updated Water Master Plan shows water supply to be inadequate, increase supply and reduce demand or curtail development until adequate supplies are secured.
- **Policy 7.22f:** If the City's updated Water Master Plan shows water supply to be inadequate, increase supply and reduce demand or curtail development until adequate supplies are secured.

3.17 City of Rialto

3.17.1 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, Toys-R-Us, 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 2010 was 99,171 (98,923 in 2008) and is expected to increase to 109,970 by 2020, an increase of 11% over 2008. Rialto's demographic composition in 2010 was 16.4% White, 44% Black, 1.1% American Indian and Alaska Native, 2.3% Asian, 0.4% Native Hawaiian and Other Pacific Islander, 31.3% from other races, and 4.7% from two or more races. Persons of Hispanic or Latino origin were 67.6%. Rialto has a higher than average percentage of Black and Hispanic/Latino residents (16% and 68%, respectively, versus the statewide average of 6% and 38%, respectively). Almost 15% of firms in the city are Black-owned, and 48% are Hispanic-owned. This compares to the statewide averages of 4% and 16.5%, respectively (U.S. Census Bureau 2012). The city expects a 16% increase in employment by 2020.

Table 3-46 presents socioeconomic data for Rialto, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

Table 3-46. Socioeconomic Data for Rialto

Category	2008	2020
Population	98,923	109,970
Housing	25,137	29,396
Single-Family	*18,486*	*21,602*
Multifamily	*6,651*	*7,794*
Employment	22,877	26,425
Agricultural	*44*	*65*
Industrial	*7,405*	*8,740*
Retail	*5,232*	*5,811*
Non-Retail	*10,197*	*11,809*

3.17.2 Emission Reductions

The City of Rialto selected a goal to reduce its community GHG emissions to a level that is 15% below its 2008 GHG emissions level by 2020. The City will meet this goal through a combination of state (~57%) and local (~43%) 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 2020. An additional reduction of 118,076 $MTCO_2e$ will be achieved primarily through the following local measures in order of importance: Implement SB X7-7 (Water-4); Solar Energy for Warehouse Space (Energy-6); and the GHG Performance Standard for New Development (PS-1). Rialto's reduction plan has the greatest impacts on GHG emissions in the solid waste management, building energy, and on-road transportation 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 3-46 show Rialto's 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the city's emissions reduction target (i.e., 15% below the 2008 emissions level). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~57%) of the total reductions needed to achieve the 2020 target.

Figure 3-47 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and off-road equipment emissions sectors.

Table 3-47 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and demonstrates that Rialto exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the solid waste management, building energy, and on-road transportation sectors.

Figure 3-48 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county 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 due to the implementation of SB X7-7 (Water-4).

Figure 3-46. Emissions Reduction Profile for Rialto

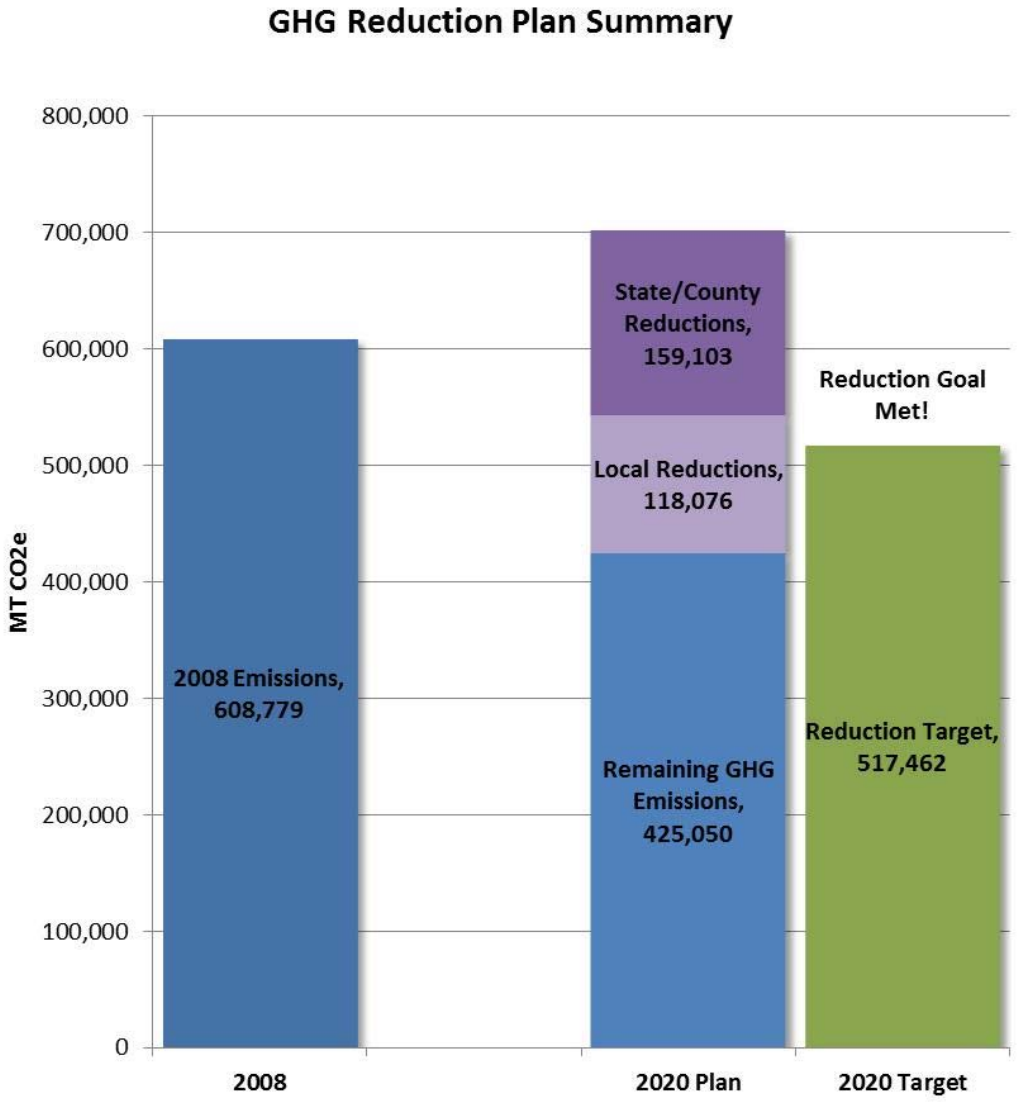


Figure 3-47. Emissions by Sector for Rialto

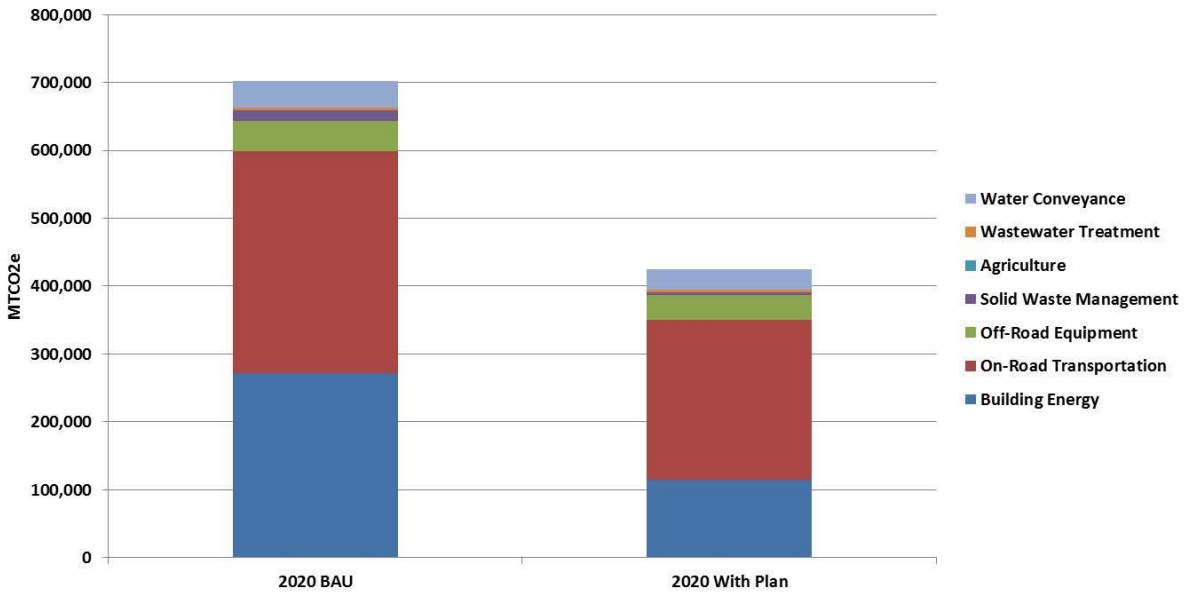


Table 3-47. Emission Reductions by Sector for Rialto

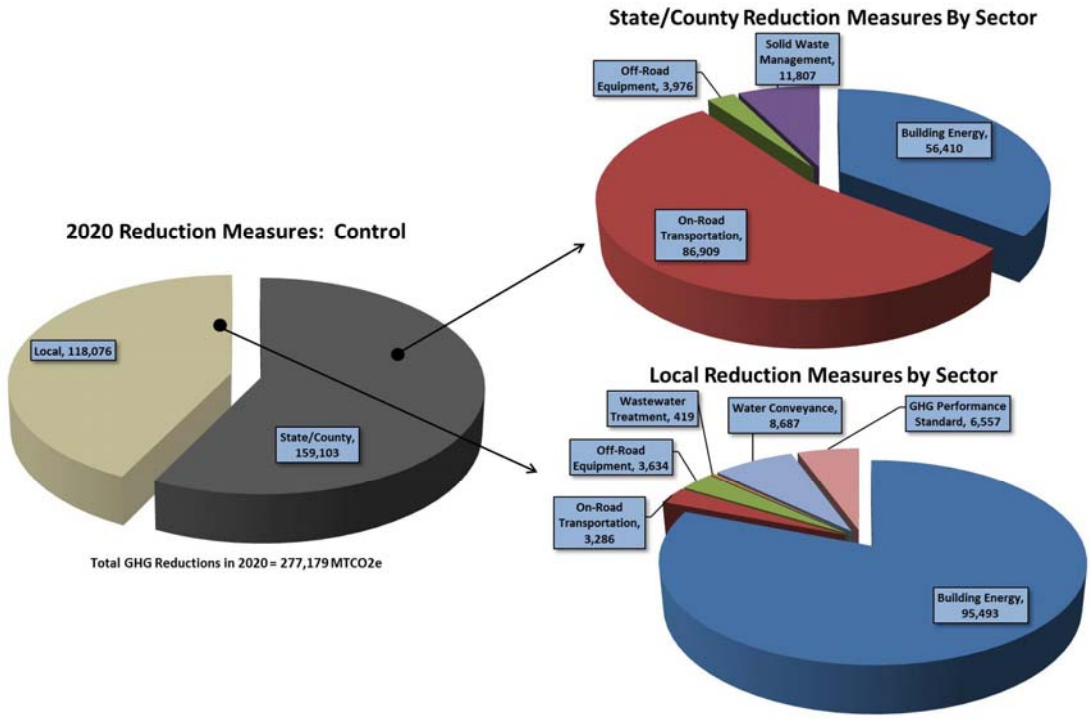
Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	233,905	271,828	151,903	119,925	55.9%
On-Road Transportation	302,001	326,257	90,195	236,062	27.6%
Off-Road Equipment	40,061	44,508	7,611	36,897	17.1%
Solid Waste Management	14,269	15,708	11,807	3,901	75.2%
Agriculture	245	125	0	125	0.0%
Wastewater Treatment	4,001	4,476	419	4,056	9.4%
Water Conveyance	14,297	39,327	8,687	30,640	22.1%
GHG Performance Standard*	-	-	6,557	-	-
Total Emissions	608,779	702,229	277,179	425,050	39.5%
Reduction Goal	-	-	*184,766*	*517,462*	*26.3%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Reductions Beyond Goal	-	-	*92,413*	-	-
Per-Capita Emissions	6.2	6.4	-	3.9	-
Per-Job Emissions	26.6	26.6	-	16.1	-
Excluded Emissions: Stationary Sources	*67,952*	*80,427*	-	-	-

Notes:

Values may not sum due to rounding.

* 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. Please see Chapter 4 for a complete description of this measure.

Figure 3-48. Emission Reductions by Control and by Sector for Rialto



3.17.3 Reduction Measures

Table 3-48 presents each reduction measure evaluated for Rialto. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

Table 3-48. GHG Reduction Measures and Estimated 2020 Reductions for Rialto

Measure Number	Measure Description	Reductions
State/County Measures		
State-1	Renewable Portfolio Standard	36,642
State-2	Title 24 (Energy Efficiency Standards)	8,764
State-3	AB 1109	9,864
State-4	Solar Water Heating	244
State-5	Industrial Boiler Efficiency	897
State-6	Pavley plus LCFS	79,682
State-7	AB 32 Transportation Reduction Strategies	7,227
State-8	LCFS: Off-Road	3,976
State-9	AB 32 Methane Capture	0
County-1	San Bernardino County GHG Plan Landfill Controls	11,807
Local Measures		
Building Energy		
Energy-1	Energy Efficiency for Existing Buildings	1,601
Energy-3	Green Building Ordinance	987
Energy-4	Solar Installation for New Housing	842
Energy-5	Solar Installation for New Commercial	1,573
Energy-6	Solar Energy for Warehouse Space	11,547
Energy-7	Solar Installation for Existing Housing	3,283
Energy-8	Solar Installation for Existing Commercial / Industrial	1,963
Energy-9	Co-Generation Facilities	24
*LandUse-1 (BE)**	*Tree Planting*	*1*
Wastewater-2 (BE)	*Equipment Upgrades*	*3,526*
Water-1 (BE)	*Require Tier 1 Voluntary CALGreen Standards for New Construction*	*3*
Water-4 (BE)	*Implement SB X7-7*	*70,142*
On-Road Transportation		
Transportation-1	Sustainable Communities Strategy	2,850
Transportation-2	Smart Bus Technologies	436
Off-Road Equipment		
OffRoad-1	Electric-Powered Construction Equipment	3,222
OffRoad-2	Idling Ordinance	412
Wastewater Treatment		
Wastewater-1	Methane Recovery	69
Water-1 (WT)	*Require Tier 1 Voluntary CALGreen Standards for New Construction*	*0.1*
Water-4 (WT)	*Implement SB X7-7*	*349*
Water Conveyance		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New Construction	669
Water-3	Water-Efficient Landscaping Practices	1,150

Measure Number	Measure Description	Reductions
Water-4	Implement SB X7-7	4,815
Wastewater-3 (WC)	*Recycled Water*	*2,053*
GHG Performance Standard for New Development		
PS-1	GHG Performance Standard for New Development(29% below projected BAU emissions for the project)	6,557
Total Reductions		277,179

Notes:

* These are measures where the avoided annual GHG emissions are small relative to the effort to implement the measure on the City's part. Although the City has selected this measure, ICF recommends that the City not pursue this GHG reduction measure.

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance

3.17.4 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, the City of Rialto selected a variety of measures across nearly all sectors (Table 3-48). 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).

3.17.4.1 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.

Energy-1. Energy Efficiency for Existing Buildings

- **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.

Energy-3. Green Building Ordinance

- **Sustainable Building Practices and Energy Conservation Policy 2-30.1:** Explore and adopt the use of green building standards and LEED or similar in both private and public projects.
- **Sustainable Building Practices and Energy Conservation Policy 2-30.2:** Promote sustainable building practices that go beyond the requirements of Title 24 of the California Administrative Code, and encourage energy-efficient design elements, as appropriate.
- **Sustainable Building Practices and Energy Conservation Policy 2-30.3:** Support sustainable building practices that integrate building materials and methods that promote environmental quality, economic vitality, and social benefit through the design, construction, and operation of the built environment.
- **Sustainable Building Practices and Energy Conservation Policy 2-31.1:** Require the incorporation of energy conservation features into the design of all new construction and site development activities.

Land Use-1. Tree Planting

- **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.

3.17.4.2 On-Road

Transportation-1. Sustainable Communities Strategy

- **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 2-35.1:** Replace Rialto's vehicle fleet with low-emission, economically sensible vehicles.

- **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 2-35.3**: 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 SANBAG 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 2-38.3:** 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 2-12.2:** Use textured paving or similar design features to define pedestrian crossings, particularly near pedestrian activity areas such as Downtown.
- **Public Realm—Pedestrian Friendly Environment 2-12.3:** Install curb extensions (i.e., bulb out or similar enhancements) at pedestrian crossings to shorten the crossing distance required, wherever feasible. Additional pedestrian protections, including bollards and defensible space landscape treatments, should be utilized as well.
- **Public Realm—Pedestrian Friendly Environment 2-12.4:** Enhance pedestrian walkways directly under building canopies by one or more of the following techniques: interlocking or textured paving, turf block walls, theme plantings, trees projecting through canopies, bollards and kiosks, pavilions or gazebos, and trellises and arbors planted with flowering vines.
- **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.
- **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 identify, feel, and theme of that corridor.
- **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 SANBAG 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.
- **Expanding Rialto's Mobility Policy 4-1.15:** Support the construction of High Occupancy Vehicle (HOV) lanes on I-10 between Ontario and Redlands.
- **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.
- **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.
- **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 4-8.4:** 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.
- **Accommodating Bicyclists and Pedestrians Policy 4-8.6:** Coordinate recreational trail plans with neighboring cities 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 4-9.2:** Require sidewalks and parkways on all streets in new development.
- **Accommodating Bicyclists and Pedestrians Policy 4-9.3:** Provide pedestrian-friendly and safety improvements, such as crosswalks and pedestrian signals, in all pedestrian activity areas.
- **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 4-9.5:** Seek to maintain pedestrian access in the event of any temporary or permanent street closures.
- **Accommodating Bicyclists and Pedestrians Policy 4-9.6:** Encourage new development to provide pedestrian paths through projects, with outlets to adjacent collectors, secondaries, and arterial roadways.

Transportation-2. Smart Bus Technologies

- **Expanding Rialto's Mobility Policy 4-1.8:** Cooperate with SANBAG and Omnitrans in the implementation of the Inland Intelligent Transportation Systems Strategic Plan.

3.17.4.3 Solid Waste Management

Waste-2. Waste Diversion

- **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.

3.17.4.4 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.

3.17.4.5 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.

3.18 City of San Bernardino

3.18.1 City Summary

The City of San Bernardino is one of the region's anchor cities, located 65 miles east of Los Angeles. San Bernardino is surrounded by the cities of 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 has a population of 209,924 as of the 2010 census. San Bernardino's demographic composition in 2010 was 45.6% White, 15% Black, 1.3% American Indian and Alaska Native, 4% Asian, 0.4% Native Hawaiian and Other Pacific Islander, 28.5% from other races, and 5.1% from two or more races. Persons of Hispanic or Latino origin were 60%. San Bernardino has a young population (32% under 18, compared to the state average of 25%) and a higher than average percentage of Black residents (15% versus the statewide average of 6%). Over 16% of firms in the city are Black-owned, and 32% are Hispanic-owned, compared to the statewide averages of 4% and 16.5%, respectively (U.S. Census Bureau 2012). San Bernardino is the 17th largest city in California, and the 99th largest city in the United States. Population is expected to reach 231,151 by 2020, an increase of 10% over 2008. 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 3-49 presents socioeconomic data for San Bernardino, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

Table 3-49. Socioeconomic Data for San Bernardino

Category	2008	2020
Population	209,924	231,151
Housing	59,310	66,924
Single-Family	*36,161*	*40,660*
Multifamily	*23,149*	*26,264*
Employment	101,253	113,357
Agricultural	*872*	*412*
Industrial	*13,411*	*17,552*
Retail	*23,920*	*26,062*
Non-Retail	*63,050*	*69,331*

3.18.2 Emission Reductions

The City of San Bernardino selected a goal to reduce its community GHG emissions to a level that is 15% below its 2008 GHG emissions level by 2020. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective per AB 32 through a combination of state (~85%) and local (~15%) efforts. The City actually exceeds the goal with only state/county level actions (104% of goal), but has committed to several additional local measures. 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 2020. An additional reduction of 76,172 $MTCO_2e$ will be achieved primarily through the following local measures, in order of importance: GHG Performance Standard for New Development (PS-1); Energy Efficiency for Existing Buildings (Energy-1); and Implementation of the Sustainable Communities Strategy (Tranportation-1). San Bernardino's Plan has the greatest impacts on GHG emissions in the solid waste management, on-road transportation, and building energy sectors.

The City of San Bernardino's Sustainability Master Plan Task Force, appointed by the City Council, is recommending various draft strategies for the Mayor and Common Council to consider adopting. This framework of strategies is located within the Land Use and Transportation section of the Draft Sustainable Master Plan (SMP). If adopted, the Draft SMP will support the goals of SB 375 and the Sustainable Communities Strategy (Transportation-1) through a wide range of actions. The Draft SMP will include GHG reduction measures similar to but different from the measures listed in the Plan below. The Draft SMP measures will generally be more specific to the City of San Bernardino than the measures listed below, but they will also support the goals of AB 32.

The bars in Figure 3-49 show San Bernardino's 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the city's emissions reduction target (i.e., 15% below the 2008 emissions level). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~85%) of the total reductions needed to achieve the 2020 target.

Figure 3-50 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and off-road equipment emissions sectors.

Table 3-50 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and demonstrates that San Bernardino exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the solid waste management, on-road transportation, and building energy sectors.

Figure 3-51 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county 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 and due to the GHG Performance Standard for New Development (PS-1).

Figure 3-49. Emissions Reduction Profile for San Bernardino

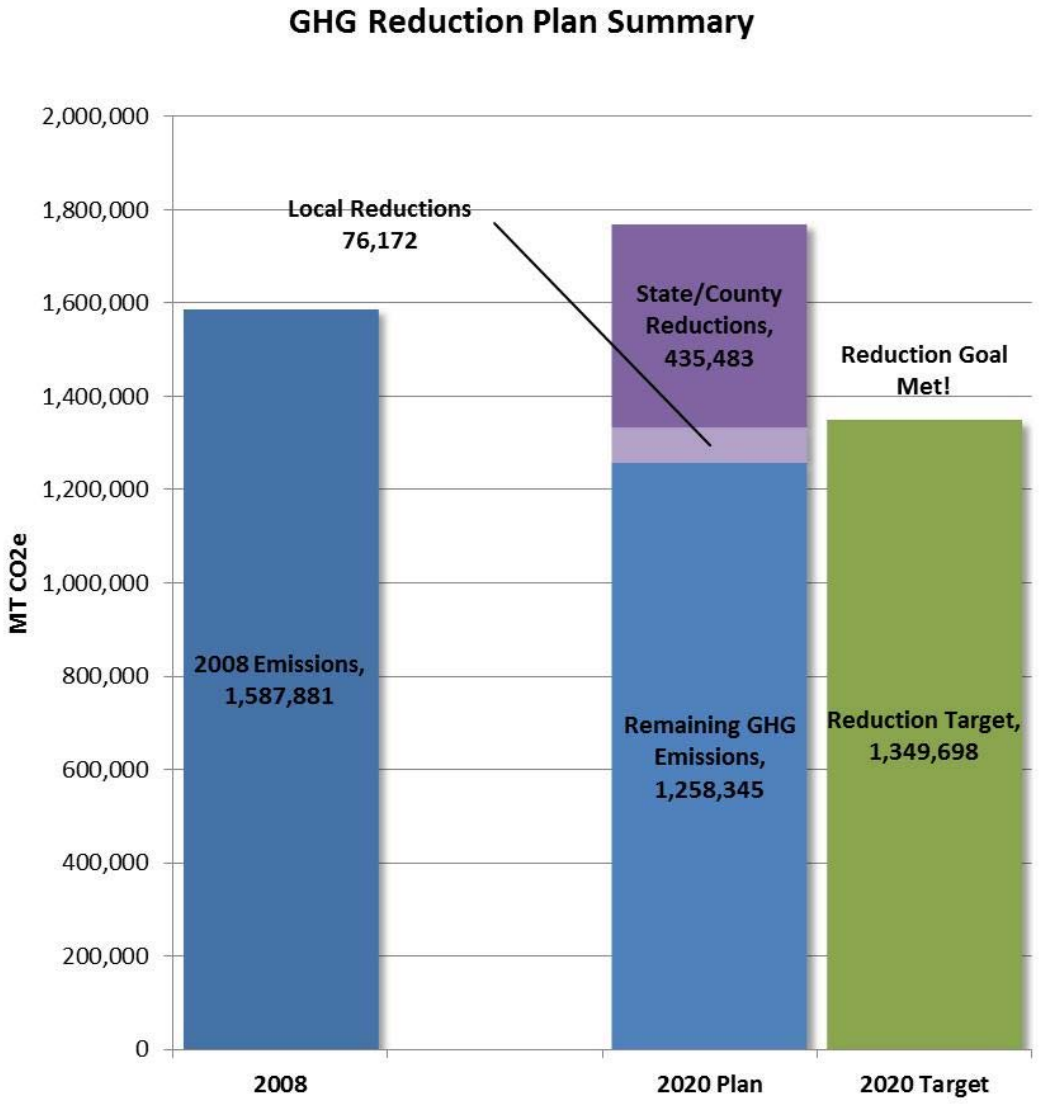


Figure 3-50. Emissions by Sector for San Bernardino

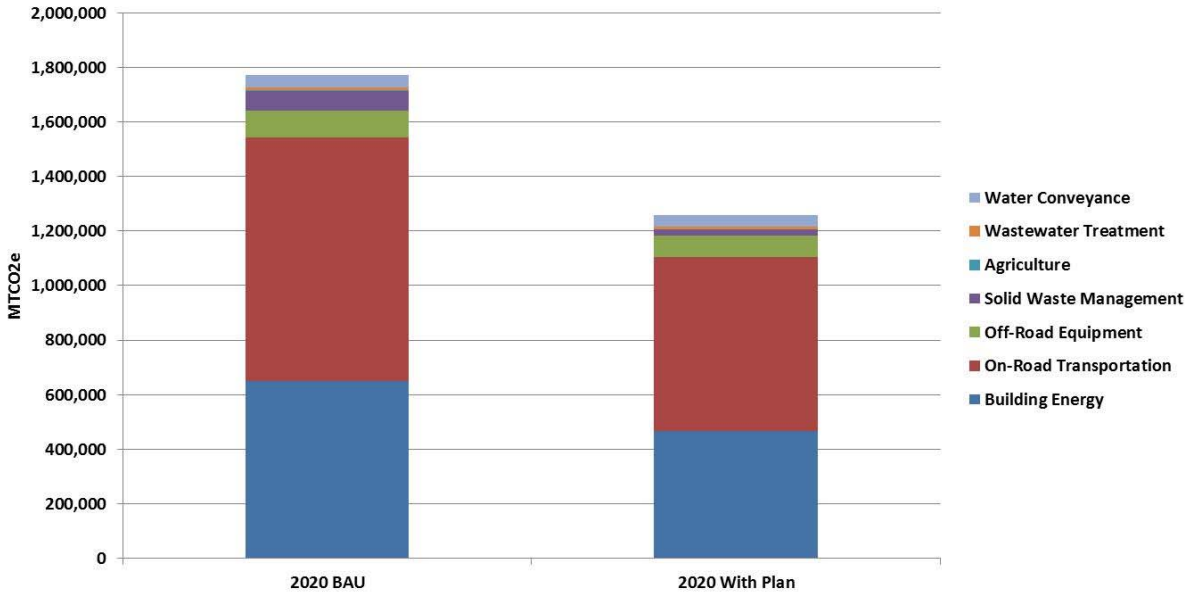


Table 3-50 presents the same information as shown in the graphics above, including San Bernardino's 2008 inventory, 2020 BAU forecast, and emission reductions by sector, along with the percent reduction in each sector.

Table 3-50. Emission Reductions by Sector for San Bernardino

Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	578,446	649,824	170,938	478,886	26.3%
On-Road Transportation	810,577	891,216	250,578	640,638	28.1%
Off-Road Equipment	96,602	100,337	18,455	81,882	18.4%
Solid Waste Management	66,492	72,386	48,520	23,866	67.0%
Agriculture	1,909	973	0	973	0.0%
Wastewater Treatment	8,490	9,407	176	9,231	1.9%
Water Conveyance	25,365	45,858	2,939	42,919	6.4%
GHG Performance Standard*	-	-	20,049	-	-
Total Emissions	1,587,881	1,770,000	511,655	1,258,345	28.9%
Reduction Goal	-	-	*420,302*	*1,349,698*	*23.7%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Reductions Beyond Goal	-	-	*91,353*	-	-
Per-Capita Emissions	7.6	7.7	-	5.4	-
Per-Job Emissions	15.7	15.6	-	11.1	-
Excluded Emissions: Stationary Sources	*322,801*	*301,927*	-	-	-

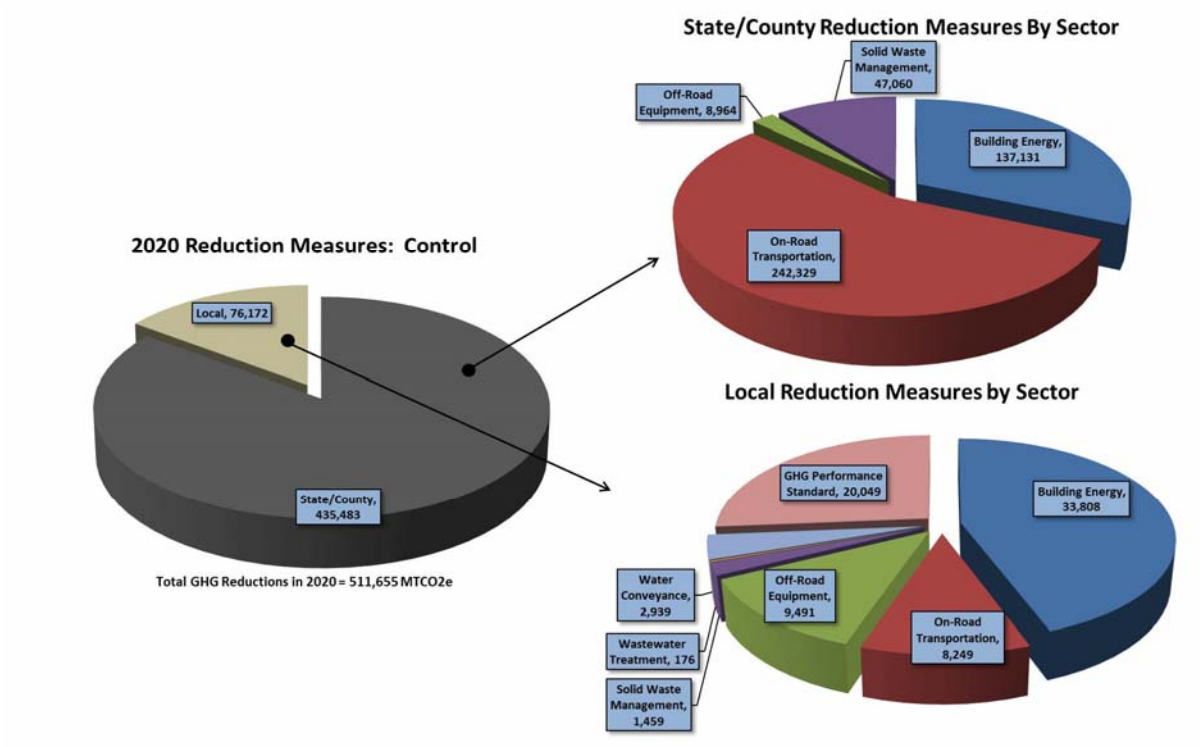
Notes:

Values may not sum due to rounding.

* 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. Please see Chapter 4 for a complete description of this measure.

Figure 3-51 presents 2008 Inventory and 2020 BAU emissions for the City of San Bernardino broken down by sector.

Figure 3-51. Emission Reductions by Control and by Sector for San Bernardino



3.18.3 Reduction Measures

Table 3-51 presents each reduction measure evaluated for San Bernardino. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sectors.

Table 3-51. GHG Reduction Measures and Estimated 2020 Reductions for San Bernardino

Measure Number	Measure Description	Reductions
State/County Measures		
State-1	Renewable Portfolio Standard	91,336
State-2	Title 24 (Energy Efficiency Standards)	17,395
State-3	AB 1109	25,615
State-4	Solar Water Heating	555
State-5	Industrial Boiler Efficiency	2,229
State-6	Pavley plus LCFS	222,577
State-7	AB 32 Transportation Reduction Strategies	19,752
State-8	LCFS: Off-Road	8,964
State-9	AB 32 Methane Capture	1
County-1	San Bernardino County GHG Plan Landfill Controls	47,059
Local Measures		
Building Energy		
Energy-1	Energy Efficiency for Existing Buildings	10,324
Energy-4	Solar Installation for New Housing	310
Energy-5	Solar Installation for New Commercial	980
Energy-6	Solar Energy for Warehouse Space	1,836
Energy-7	Solar Installation for Existing Housing	3,176
Energy-8	Solar Installation for Existing Commercial / Industrial	1,183
LandUse-1 (BE)	*Tree Planting Programs*	*149*
Wastewater-2 (BE)	*Equipment Upgrades*	*2,447*
Water-2 (BE)	*Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency*	*6,644*
Water-4 (BE)	*Implement SB X7-7*	*6,758*
On-Road Transportation		
Transportation-1	Sustainable Communities Strategy	7,813
Transportation-2	Smart Bus Technologies	436
Off-Road Equipment		
OffRoad-1	Electric-Powered Construction Equipment	5,781
OffRoad-2	Idling Ordinance	739
OffRoad-3	Electric Landscaping Equipment	2,970
Solid Waste Management		
Waste-2	Waste Diversion	1,459
Wastewater Treatment		
Water-2 (WT)	*Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency*	*100*
Water-4 (WT)	*Implement SB X7-7*	*76*
Water Conveyance		
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	1,461
Water-3	Water-Efficient Landscaping Practices	961

Measure Number	Measure Description	Reductions
Water-4	Implement SB X7-7	346
Wastewater-3 (WC)	*Recycled Water*	*172*
GHG Performance Standard for New Development		
PS-1	GHG Performance Standard for New Development(29% below projected BAU emissions for the project)	20,049
Total Reductions		511,655

Notes:

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance

3.18.4 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 3-51). 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).

3.18.4.1 Building Energy

Energy-1. Energy Efficiency for Existing Buildings

- **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.
- **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-4. Solar Installation for New 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-5. Solar Installation for New Commercial

- **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 for 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. Solar Installation for 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).

3.18.4.2 On-Road

Transportation-1. Sustainable Communities Strategy

- **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.
- **Public Transit 6.6.1, 6.6.2, and 6.6.7 through 6.6.10**
- **Air Quality 12.6.1 through 12.6.3, 12.6.5, and 12.6.7**
- **Distinct Character and Identity 2.3.1:** Commercial centers, open spaces, educational facilities, and recreational facilities should be linked to residential neighborhoods.
- **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.
- **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**

3.18.4.3 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**

3.19 City of Twentynine Palms

3.19.1 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 2010 the city's population was 25,048 (24,905 in 2008) and is expected to increase to 29,538 by 2020, an increase of 18% over 2008, one of the higher population increases in the county. Twentynine Palms' demographic composition in 2010 was 71.6% White, 8.2% Black, 1.3% American Indian and Alaska Native, 3.9% Asian, 1.4% Native Hawaiian and Other Pacific Islander, 6.7% from other races, and 6.9% from two or more races. Persons of Hispanic or Latino origin were 20.8%. Twentynine Palms has a larger than average White population (72% versus to the state average of 58%), but over 22% of firms are Hispanic-owned (compared to the statewide average of 16.5%). (U.S. Census Bureau 2012). Employment is expected to increase by 13% before 2020.

Table 3-52 presents socioeconomic data for Twentynine Palms, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

Table 3-52. Socioeconomic Data for Twentynine Palms

Category	2008	2020
Population	24,905	29,538
Housing	8,048	9,623
Single-Family	*5,191*	*6,208*
Multifamily	*2,857*	*3,415*
Employment	3,211	3,625
Agricultural	*29*	*31*
Industrial	*497*	*672*
Retail	*852*	*865*
Non-Retail	*1,833*	*2,057*

3.19.2 Emission Reductions

The City of Twentynine Palms selected a goal to reduce its community GHG emissions to a level that is 15% below its 2008 GHG emissions level by 2020. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective per AB 32 through a

combination of state (~86%) and local (~14%) 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 2020. An additional reduction of 5,412 $MTCO_2e$ will be achieved primarily through the following local measures, in order of importance: GHG Performance Standard for New Development (PS-1); Water Efficiency Renovations to Existing Buildings (Water-2); and Solar Installation for Existing Housing (Energy-7). The City of Twentynine Palms' Plan has the greatest impacts on GHG emissions in the solid waste management, building energy, and on-road transportation sectors.

Although the Twentynine Palms is implementing sustainable development practices in both current projects as well as in policies in the City's General Plan, the SCS implemented in the Morongo Basin (Transportation-1) will not result in any measureable GHG reductions for the City itself.

The bars in Figure 3-52 show Twentynine Palms' 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the city's emissions reduction target (i.e., 15% below the 2008 emissions level). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~86%) of the total reductions needed to achieve the 2020 target.

Figure 3-53 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and solid waste management emissions sectors.

Table 3-53 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and demonstrates that Twentynine Palms exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the solid waste management, building energy, and on-road transportation sectors.

Figure 3-54 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county 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 and due to the GHG Performance Standard for New Development (PS-1).

Figure 3-52. Emissions Reduction Profile for Twentynine Palms

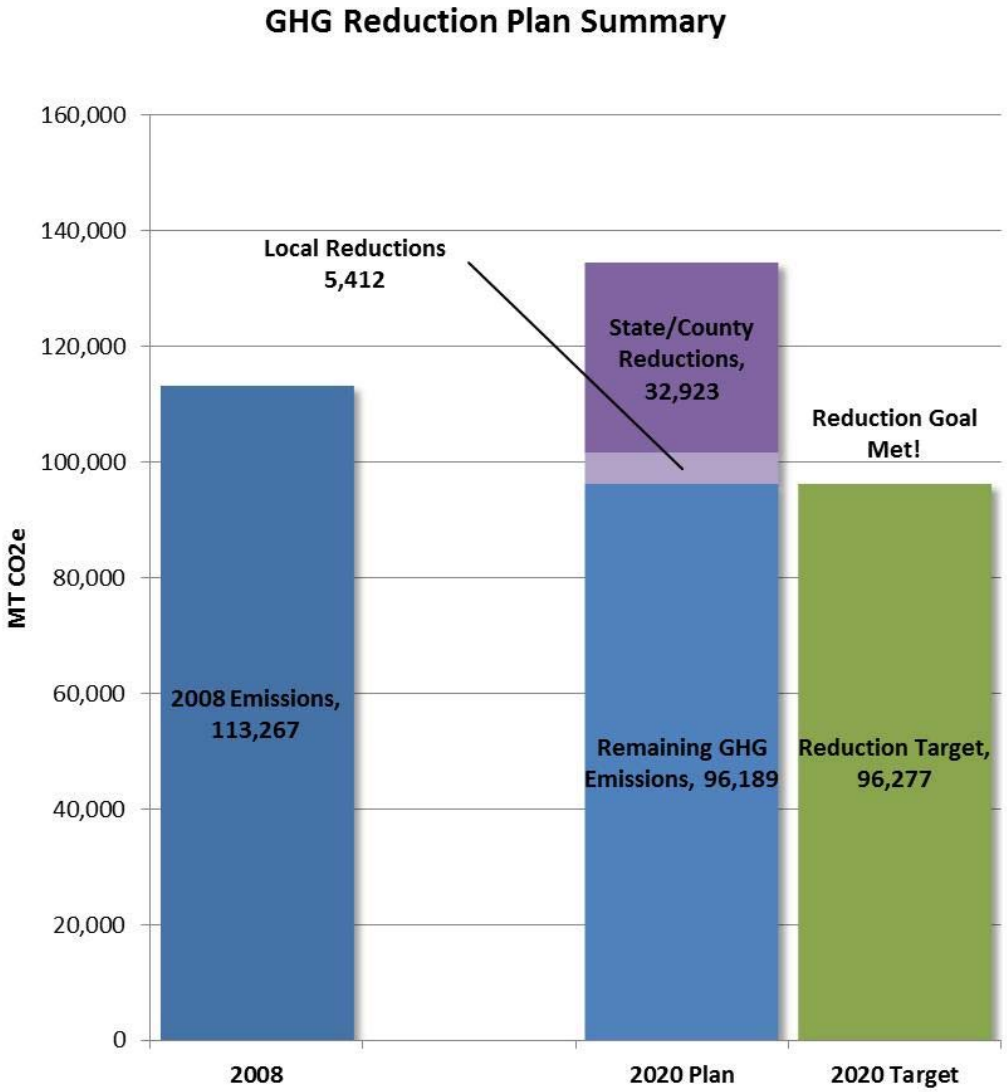


Figure 3-53. Emissions by Sector for Twentynine Palms

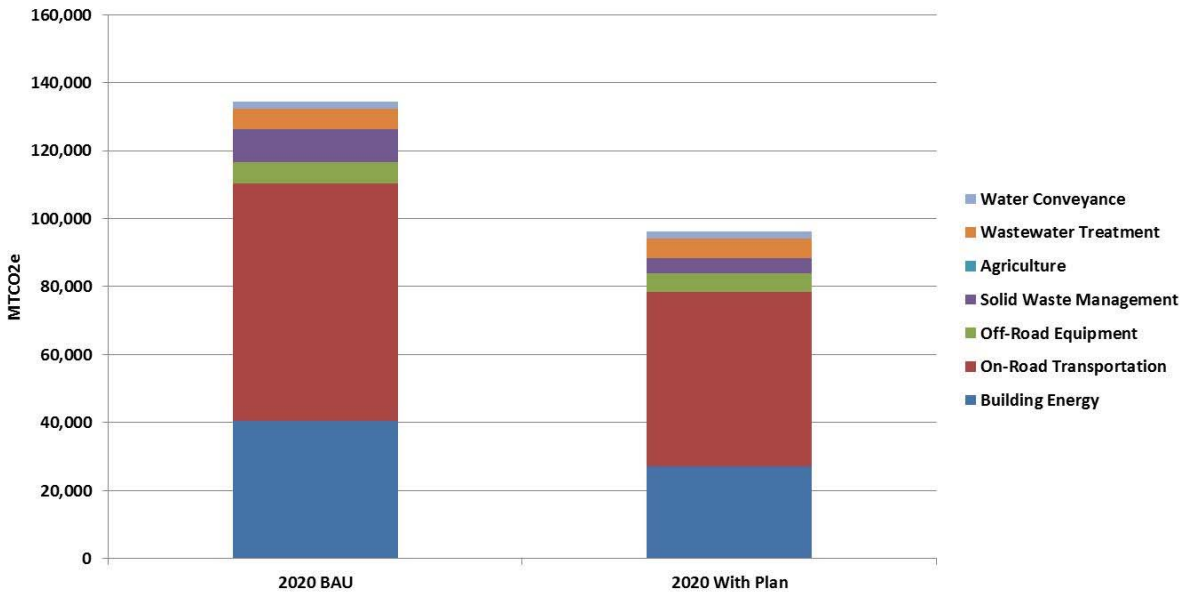


Table 3-53. Emission Reductions by Sector for Twentynine Palms

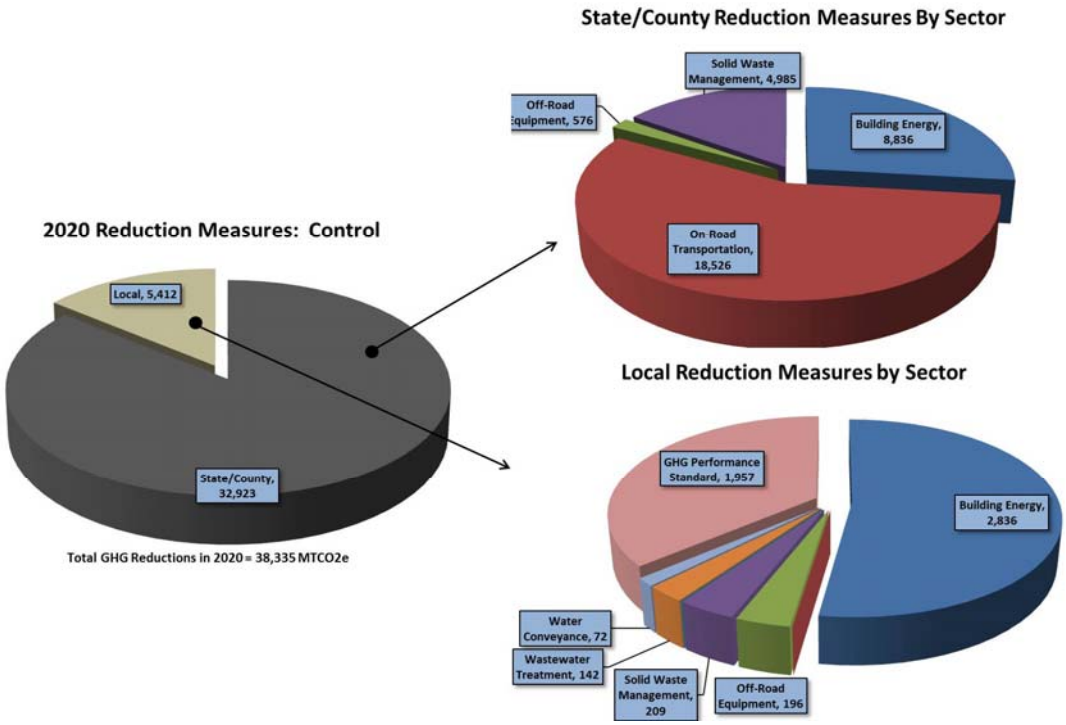
Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	34,430	40,471	11,672	28,799	28.8%
On-Road Transportation	59,176	69,737	18,526	51,211	26.6%
Off-Road Equipment	5,494	6,443	771	5,671	12.0%
Solid Waste Management	6,862	9,640	5,195	4,445	53.9%
Agriculture	0	0	0	0	0.0%
Wastewater Treatment	4,991	5,919	142	5,777	2.4%
Water Conveyance	2,314	2,314	72	2,242	3.1%
GHG Performance Standard*	-	-	1,957	-	-
Total Emissions	113,267	134,524	38,335	96,189	28.5%
Reduction Goal	-	-	*38,247*	*96,277*	*28.4%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Reductions Beyond Goal	-	-	*88*	-	-
Per-Capita Emissions	4.5	4.6	-	3.3	-
Per-Job Emissions	35.3	37.1	-	26.5	-
Excluded Emissions: Stationary Sources	*10,952*	*12,425*	-	-	-

Notes:

Values may not sum due to rounding.

* 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. Please see Chapter 4 for a complete description of this measure.

Figure 3-54. Emission Reductions by Control and by Sector for Twentynine Palms



3.19.3 Reduction Measures

Table 3-54 presents each reduction measure evaluated for Twentynine Palms. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

Table 3-54. GHG Reduction Measures and Estimated 2020 Reductions for Twentynine Palms

Measure Number	Measure Description	Reductions
State/County Measures		
State-1	Renewable Portfolio Standard	5,825
State-2	Title 24 (Energy Efficiency Standards)	1,204
State-3	AB 1109	1,649
State-4	Solar Water Heating	80
State-5	Industrial Boiler Efficiency	77
State-6	Pavley plus LCFS	16,981
State-7	AB 32 Transportation Reduction Strategies	1,545
State-8	LCFS: Off-Road	576
State-9	AB 32 Methane Capture	1,417
County-1	San Bernardino County GHG Plan Landfill Controls	3,569
Local Measures		
Building Energy		
Energy-1	Energy Efficiency for Existing Buildings	258
Energy-2	Outdoor Lighting	414
Energy-3	Green Building Ordinance	214
Energy-4	Solar Installation for New Housing	135
Energy-5	Solar Installation for New Commercial	94
Energy-7	Solar Installation for Existing Housing	465
Energy-8	Solar Installation for Existing Commercial / Industrial	38
Energy-9*	Co-Generation Facilities	6
LandUse-1 (BE)	*Tree Planting Programs*	*142*
*LandUse-2 (BE)**	*Promote Rooftop Gardens*	*1*
Water-1 (BE)	*Require Tier 1 Voluntary CALGreen Standards for New Construction*	*270*
Water-2 (BE)	*Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency*	*800*
Off-Road Equipment		
OffRoad-1	Electric-Powered Construction Equipment	92
OffRoad-2	Idling Ordinance	33
OffRoad-3	Electric Landscaping Equipment	71
Solid Waste Management		
Waste-2	Waste Diversion	209
Wastewater Treatment		
Water-1 (WT)	*Require Tier 1 Voluntary CALGreen Standards for New Construction*	*51*
Water-2 (WT)	*Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency*	*91*
Water Conveyance		
Water-1*	Require Tier 1 Voluntary CALGreen Standards for New Construction	18
Water-2	Renovate Existing Buildings to Achieve Higher Levels of	31

Measure Number	Measure Description	Reductions
	Water Efficiency	
Water-3	Water-Efficient Landscaping Practices	23
GHG Performance Standard for New Development		
PS-1	GHG Performance Standard for New Development(29% below projected BAU emissions for the project)	1,957
Total Reductions		38,335

Notes:

* These are measures where the avoided annual GHG emissions are small relative to the effort to implement the measure on the City's part. Although the City has selected this measure, ICF recommends that the City not pursue this GHG reduction measure.

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance

3.19.4 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 2010 General Plan unless otherwise noted (City of Twentynine Palms 2010). 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 3-54). 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).

3.19.4.1 Building Energy

- **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. Energy Efficiency for Existing Buildings

- **Implementation Policy: HS-2.13:** Improve housing affordability by promoting energy conservation programs and sustainable development as outlined in the Conservation Elements of the General Plan.

Energy-4. Solar Installation for New Housing

- **Implementation Policy: HS-2.13:** Improve housing affordability by promoting energy conservation programs and sustainable development as outlined in the Conservation Elements of the General Plan.

Energy-7. Solar Installation for Existing Housing

- **Implementation Policy: HS-2.13:** Improve housing affordability by promoting energy conservation programs and sustainable development as outlined in the Conservation Elements of the General Plan.

Land Use-2 (BE). Promote Rooftop Gardens

- **Implementation Policy LU-7.2:** Development shall be sustainable in its use of land and shall limit impacts to natural resources, energy, and air and water quality.
- **Implementation Policy CI-2.3:** Construct pedestrian facilities near school sites, along major transportation corridors, in the downtown area, and along open space corridors.
- **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: 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.
- **Program 3.1.2:** Bicycle systems will be constructed to serve the Downtown area.
- **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.

3.19.4.2 Off-Road

- **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.

3.19.4.3 Solid Waste Management

Waste-2. Waste Diversion

- **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.

3.19.4.4 Water Conveyance

Water-1. Voluntary CALGreen: New Construction

- **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.

Water-2. Renovate Existing Buildings

- **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.

Water-3. Water-Efficient Landscaping Practices

- **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.

3.20 City of Victorville

3.20.1 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 cities are separated from the San Bernardino Valley cities 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 2010, the city's population was 115,903 (111,872 in 2008) and the population is expected to grow to 145,345 by 2020, an increase of 30% over 2008, one of the highest in the county. Victorville's demographic composition in 2010 was 16.8% White, 1.4% Black, 4% American Indian and Alaska Native, 0.4% Asian, 22.5% Native Hawaiian and Other Pacific Islander, 6.3% from other races, and 47.8% from two or more races. Persons of Hispanic or Latino origin were 48.8%. Victorville has a higher than average percentage of Black and Hispanic/Latino residents (17% and 48%, respectively, versus the statewide average of 6% and 38%, respectively) and a homeownership rate of 65% (U.S. Census Bureau 2012). Employment in Victorville is projected to increase by 36% by 2020, the highest increase in the county.

Table 3-55 presents socioeconomic data for Victorville, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

Table 3-55. Socioeconomic Data for Victorville

Category	2008	2020
Population	111,872	145,345
Housing	31,423	43,687
Single-Family	*23,212*	*32,270*
Multifamily	*8,211*	*11,417*
Employment	33,705	45,930
Agricultural	*31*	*87*
Industrial	*4,549*	*8,132*
Retail	*11,951*	*14,426*
Non-Retail	*17,175*	*23,285*

3.20.2 Emission Reductions

The City of Victorville selected a goal to reduce its community GHG emissions to a level that is 29% below its projected GHG emissions level in 2020. 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 2020 primarily through state/county measures (~81%) as well as through the selected local (~19%) 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 2020. These state measures exceed the local measures by a large amount. An additional reduction of 67,443 $MTCO_2e$ will be achieved primarily through the following local measures in order of greatest emissions reduction: GHG Performance Standard for New Development (PS-1); Green Building Ordinance (Energy-3); and Energy Efficiency for Existing Buildings (Energy-1). Victorville's reduction plan has the greatest impacts on GHG emissions in the building energy, on-road transportation, and off-road equipment sectors.

Regarding on-road transportation, the City has incorporated the Sustainable Communities Strategy On-Road Transportation (Transportation-1) measure to meet the City's goal to reduce greenhouse gases as required by AB32. The measure will include the following.

- Implement the City's adopted Non-Motorized Transportation Plan which includes a citywide system of trails and bike lanes (Class I, II and III) which will reduce vehicle trip generation.
- Adopt the proposed Civic Center Sustainability Specific Plan which will facilitate and encourage walking, jogging and bicycling to reduce vehicle trip generation within the Civic Center area.
- Require new shopping centers, large multi-family developments and large subdivisions to provide bus turnouts for VVTA to facilitate and encourage mass transit, which will reduce vehicle trip generation.
- Support and advocate the City's longstanding goal to extend Metrolink service to downtown Victorville, which may reduce vehicle trip generation in Victorville, but will reduce vehicle trip generation for the region and beyond due to the very large number residents who drive elsewhere for work.

- Continue to encourage job growth within the city which may reduce vehicle trip generation in Victorville, but will reduce vehicle trip generation for the region and beyond due to the very large number residents who drive elsewhere for work.
- Extend the BNSF rail line to SCLA to reduce truck trip generation to and from the warehousing and manufacturing distribution center.
- Open the Nisqualli/La Mesa bridge interchange which will reduce on-road emission by relieving the region's worst traffic congestion, which occurs on Bear Valley Road.
- Encourage and facilitate carpooling to work, including City Hall, which will reduce vehicle trip generation.
- Designate, maintain and expand the city's network of truck routes to facilitate the delivery and export of goods throughout the city, which will reduce vehicle trip generation.
- Provide for development-related incentives for projects which promote transit use or provide shared parking lots for the community.

Integrate State, Regional and local Sustainability/Smart growth principles into the development and entitlement process.

The bars in Figure 3-56 show Victorville's 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the City's emissions reduction target (i.e., 29% below its projected GHG emissions level in 2020). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~81%) of the total reductions needed to achieve the 2020 target.

Figure 3-57 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and off-road equipment emissions sectors.

Table 3-57 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and demonstrates that Victorville exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the building energy, on-road transportation, and off-road equipment sectors.

Figure 3-58 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county 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 and due to the GHG Performance Standard for New Development (PS-1).

Figure 3-55. Emissions Reduction Profile for Victorville

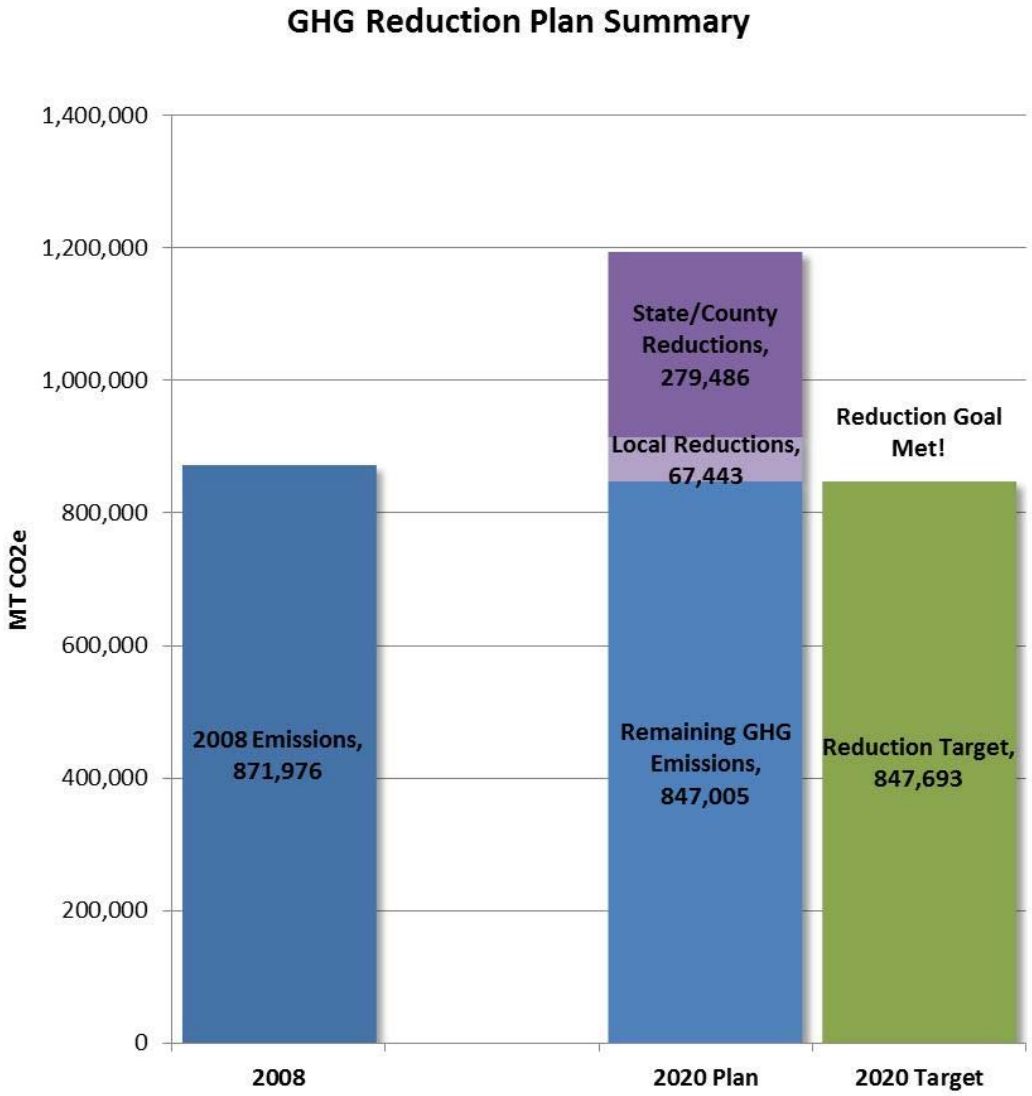


Figure 3-56. Emissions by Sector for Victorville

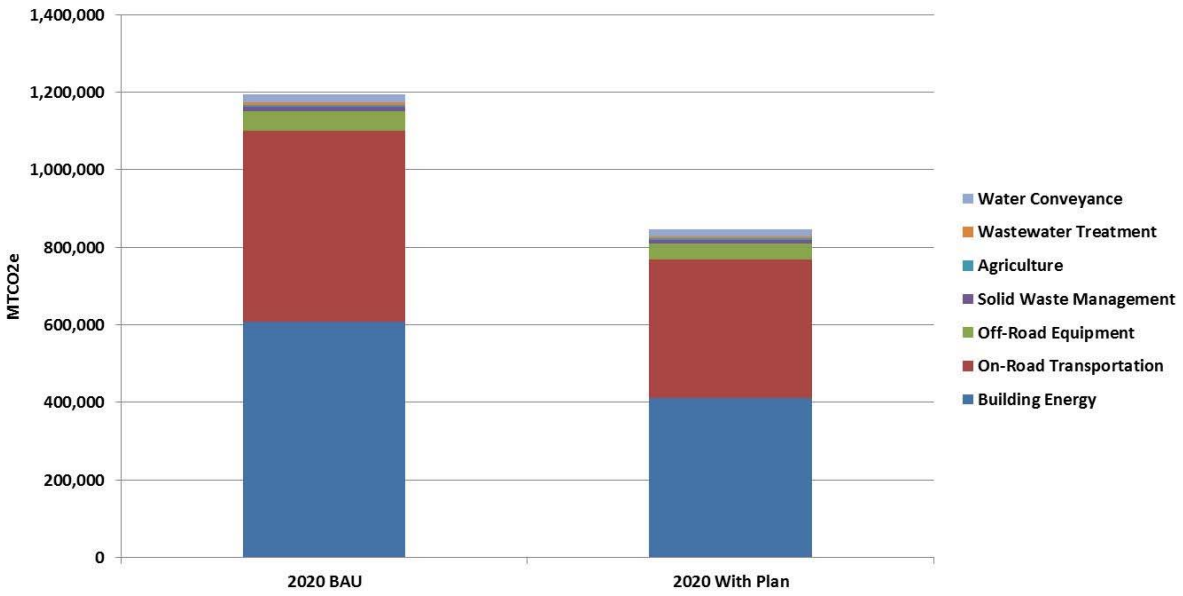


Table 3-56. Emission Reductions by Sector for Victorville

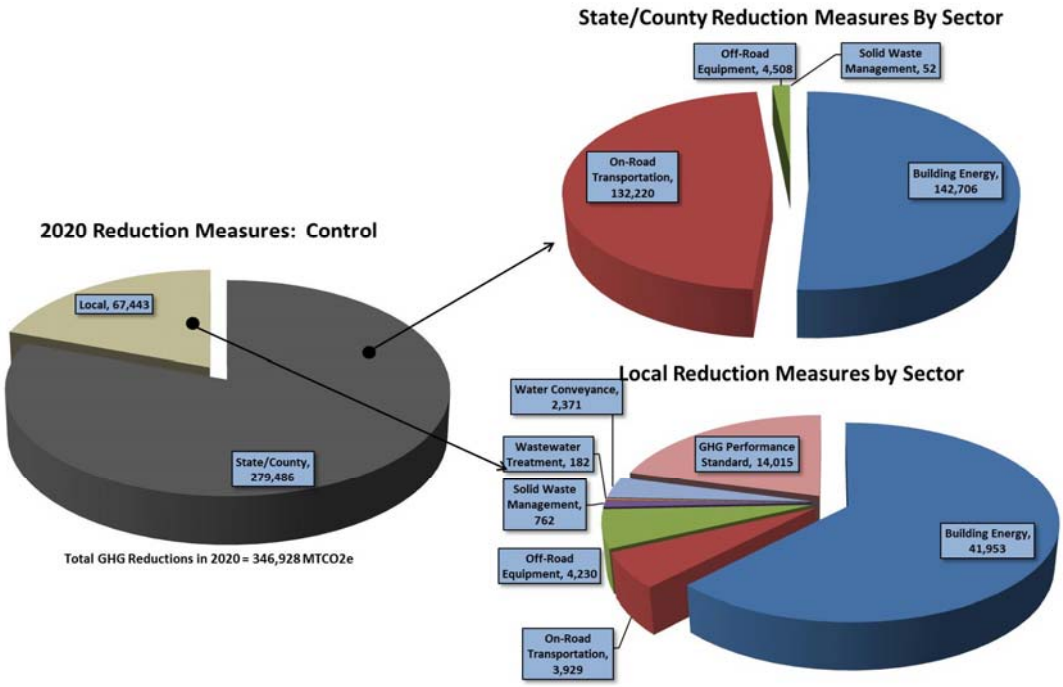
Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	442,667	607,252	184,659	422,592	30.4%
On-Road Transportation	363,283	493,825	136,149	357,676	27.6%
Off-Road Equipment	38,613	50,458	8,738	41,720	17.3%
Solid Waste Management	7,433	10,551	814	9,737	7.7%
Agriculture	9,095	4,635	0	4,635	0.0%
Wastewater Treatment	4,524	5,915	182	5,733	3.1%
Water Conveyance	6,361	21,298	2,371	18,927	11.1%
GHG Performance Standard*	-	-	14,015	-	-
Total Emissions	871,976	1,193,933	346,928	847,005	29.1%
Reduction Goal	-	-	*346,241*	*847,693*	*29.0%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Reductions Beyond Goal	-	-	*688*	-	-
Per-Capita Emissions	7.8	8.2	-	5.8	-
Per-Job Emissions	25.9	26.0	-	18.4	-
Excluded Emissions: Stationary Sources	*2,235,411*	*2,528,364*	-	-	-

Notes:

Values may not sum due to rounding.

* 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. Please see Chapter 4 for a complete description of this measure.

Figure 3-57. Emission Reductions by Control and by Sector for Victorville



3.20.3 Reduction Measures

Table 3-57 presents each reduction measure evaluated for Victorville. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

Table 3-57. GHG Reduction Measures and Estimated 2020 Reductions for Victorville

Measure Number	Measure Description	Reductions
State/County Measures		
State-1	Renewable Portfolio Standard	82,506
State-2	Title 24 (Energy Efficiency Standards)	37,980
State-3	AB 1109	18,927
State-4	Solar Water Heating	363
State-5	Industrial Boiler Efficiency	2,931
State-6	Pavley plus LCFS	121,280
State-7	AB 32 Transportation Reduction Strategies	10,940
State-8	LCFS: Off-Road	4,508
State-9	AB 32 Methane Capture	40
County-1	San Bernardino County GHG Plan Landfill Controls	11
Local Measures		
Building Energy		
Energy-1	Energy Efficiency for Existing Buildings	6,356
Energy-2	Outdoor Lighting	3,032
Energy-3	Green Building Ordinance	6,551
Energy-4	Solar Installation for New Housing	97
Energy-5	Solar Installation for New Commercial	6,031
Energy-6	Solar Energy for Warehouse Space	2,976
Energy-7	Solar Installation for Existing Housing	6,198
Energy-8	Solar Installation for Existing Commercial / Industrial	2,810
Energy-9	Co-Generation Facilities	360
LandUse-1 (BE)	*Tree Planting Programs*	*182*
LandUse-2 (BE)	*Promote Rooftop Gardens*	*47*
Wastewater-2 (BE)	*Equipment Upgrades*	*765*
Water-1 (BE)	*Require Tier 1 Voluntary CALGreen Standards for New Construction*	*2,146*
Water-2 (BE)	*Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency*	*3,766*
Water-4 (BE)	*Implement SB X7-7*	*637*
On-Road Transportation		
Transportation-1	Sustainable Communities Strategy	3,929
Off-Road Equipment		
OffRoad-1	Electric-Powered Construction Equipment	3,490
OffRoad-2	Idling Ordinance	538
OffRoad-3	Electric Landscaping Equipment	202
Solid Waste Management		
Waste-2	Waste Diversion	762
Wastewater Treatment		
Wastewater-1	Methane Recovery	31
Water-1 (WT)	*Require Tier 1 Voluntary CALGreen Standards for New*	*64*

Measure Number	Measure Description	Reductions
	Construction	
Water-2 (WT)	*Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency*	*78*
Water-4 (WT)	*Implement SB X7-7*	*10*
Water Conveyance		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New Construction	346
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	609
Water-3	Water-Efficient Landscaping Practices	784
Water-4	Implement SB X7-7	55
Wastewater-3 (WC)	*Recycled Water*	*577*
GHG Performance Standard for New Development		
PS-1	GHG Performance Standard for New Development(29% below projected BAU emissions for the project)	14,015
Total Reductions		346,928

Notes:

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance

3.20.4 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 3-57). 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).

3.20.4.1 Building Energy

Energy-1. Energy Efficiency for Existing Buildings

- **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. Outdoor Lighting

- **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 street lights).
- **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. Green Building Ordinance

- **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 7.2.1.1:** 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 7.2.1.5:** Require all new construction to be 15% more efficient than 2008 Title 24 Standards.
- **Implementation Measure 7.2.1.7:** Any new multifamily residential construction over 20 dwelling units install solar water heating.
- **Implementation Measure 7.2.1.8:** All new residential construction be pre-plumbed for solar water heating to the maximum extent feasible.
- **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.

Energy-4. Solar Installation for New 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 7.1.1.3:** Establish a photovoltaic target and require new construction to contribute to that target.
- **Implementation Measure 7.1.1.5:** Require all new residential projects over 100 units to generate electricity on site to maximum extent feasible.

Energy-5. Solar Installation for New Commercial

- **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 for 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 7.1.1.3:** Establish a photovoltaic target and require new construction to contribute to that target.
- **Implementation Measure 7.2.1.4:** Implement Assembly Bill 811: Financing for Residential Solar, to the maximum extent feasible.

Energy-8. Solar Installation for 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.

Energy-9. Co-generation Facilities

- **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 7.2.1.2:** 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.

3.20.4.2 On-Road

Transportation-1. Sustainable Communities Strategy

- **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.
- **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 6.1.1.5:** Replace fleet vehicles with more efficient vehicles with a goal of 100% low emission vehicle fleet.
- **Implementation Measure 6.1.1.6:** Any City-operated parking facility must have car pool passes (reduced rate or preferential parking for vehicles with two or more passengers to be verified by attendant).
- **Implementation Measure 6.1.1.7:** Designate preferential parking for hybrid vehicles at City buildings.
- **Implementation Measure 6.1.1.8:** Adopt diesel idling restrictions to limit idling at all commercial facilities.
- **Implementation Measure 6.1.1.9:** Encourage the provision of on-site electrical outlets at all commercial facilities.

3.20.4.3 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-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.

3.20.4.4 Wastewater Treatment

Wastewater-1. Methane Recovery

- **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.

3.20.4.5 Water Conveyance

Water-1. Voluntary CALGreen: 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

- **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.

3.21 City of Yucaipa

3.21.1 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 cities. 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, with only 665 of 17,763 acres devoted to commercial and industrial uses and more than 1,000 acres devoted to agriculture within the city limits, according to the City's general plan. 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 2010 was 51,367 (51,217 in 2008) and is expected to increase to 55,821 by 2020, an increase of 9% over 2008, one of the smallest in the county. Yucaipa's demographic composition in 2010 was 79.5% White, 1.6% Black, 0.9% American Indian and Alaska Native, 2.8% Asian, 0.1% Native Hawaiian and Other Pacific Islander, 10.9% from other races, and 4.1% from two or more races. Persons of Hispanic or Latino origin were 27.1%. The majority of the population in Yucaipa is White (80% compared to the state average of 58%), but nearly 27% of residents are of Hispanic or Latino origin. The city also has a high homeownership rate of 78% (U.S. Census Bureau 2012). Employment is expected to increase by a comparable amount before 2020.

Table 3-58 presents socioeconomic data for Yucaipa, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

Table 3-58. Socioeconomic Data for Yucaipa

Category	2008	2020
Population	51,217	55,821
Housing	18,176	20,692
Single-Family	*11,987*	*13,742*
Multifamily	*6,189*	*6,950*
Employment	9,761	10,923
Agricultural	*107*	*150*
Industrial	*1,837*	*2,409*
Retail	*2,078*	*2,107*
Non-Retail	*5,739*	*6,257*

3.21.2 Emission Reductions

The City of Yucaipa selected a goal to reduce its community GHG emissions to a level that is 15% below its 2008 GHG emissions level by 2020. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective per AB 32 through a combination of state (~81%) and local (~19%) 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 2020. An additional reduction of 17,126 $MTCO_2e$ will be achieved primarily through the following local measures, in order of importance: Implement SB X7-7 (Water-4); GHG Performance Standard for New Development (PS-1); and Solar Installations for Existing Housing (Energy-7). Yucaipa's Plan has the greatest impacts on GHG emissions in the on-road transportation, building energy, and water conveyance sectors.

The bars in Figure 3-58 show Yucaipa's 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the city's emissions reduction target (i.e., 15% below the 2008 emissions level). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~81%) of the total reductions needed to achieve the 2020 target.

Figure 3-59 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and off-road equipment emissions sectors.

Table 3-59 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and demonstrates that Yucaipa exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the on-road transportation, building energy, and water conveyance sectors.

Figure 3-60 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county 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 due to the implementation of SB X7-7 (Water-4).

Figure 3-58. Emissions Reduction Profile for Yucaipa

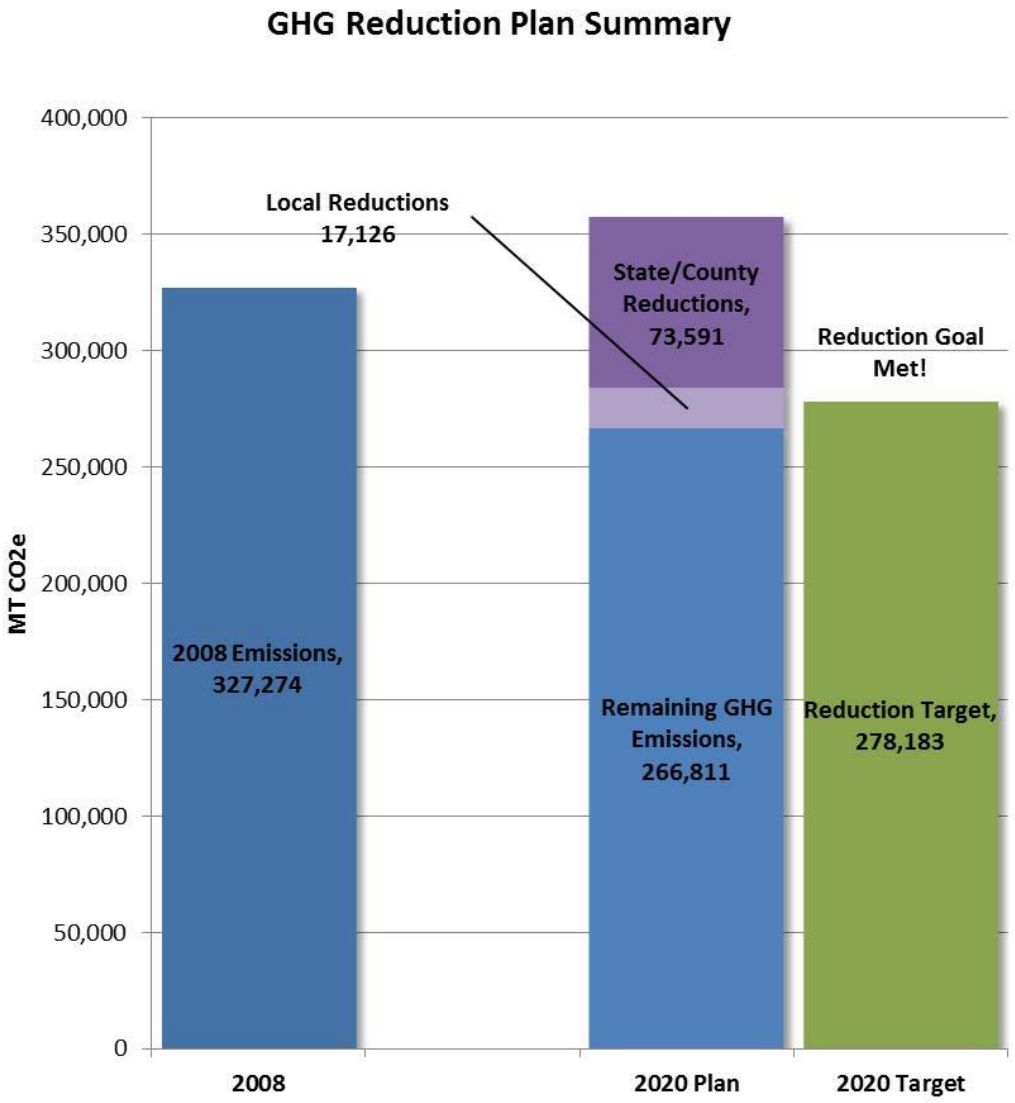


Figure 3-59. Emissions by Sector for Yucaipa

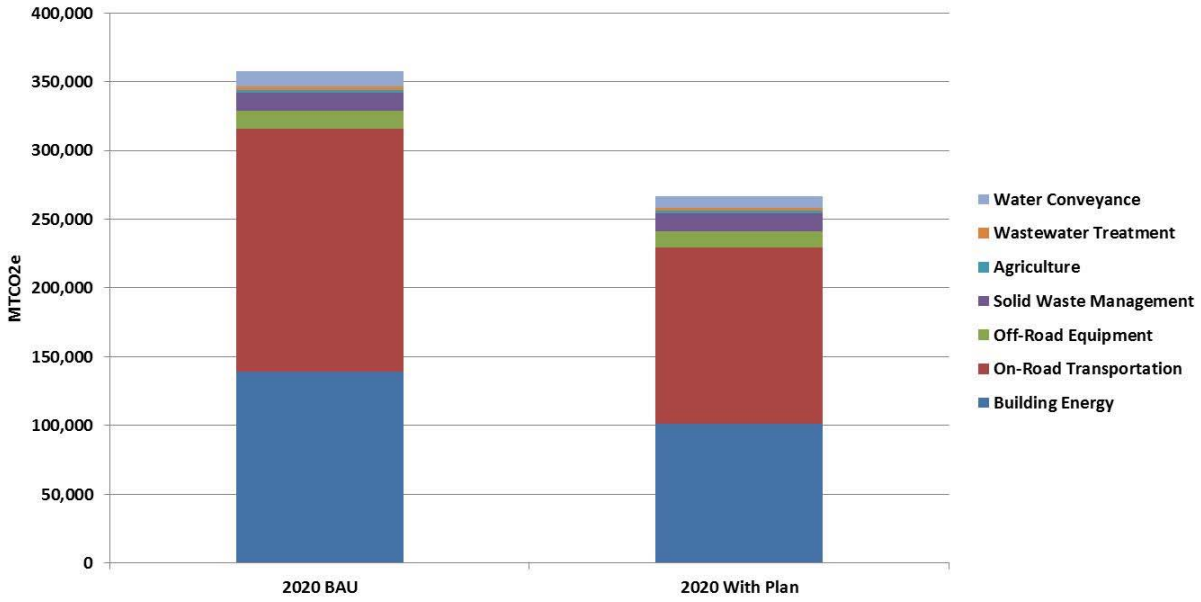


Table 3-59. Emission Reductions by Sector for Yucaipa

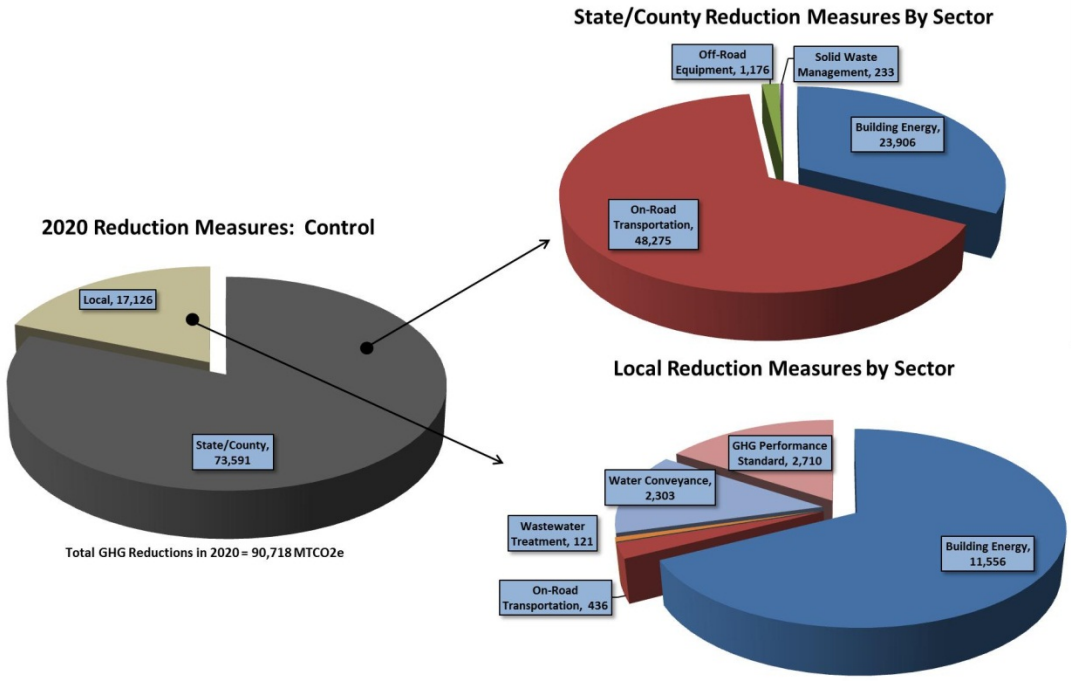
Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	122,591	139,098	35,462	103,635	25.5%
On-Road Transportation	168,613	176,393	48,711	127,682	27.6%
Off-Road Equipment	12,035	13,167	1,176	11,991	8.9%
Solid Waste Management	11,875	13,430	233	13,197	1.7%
Agriculture	3,967	2,022	0	2,022	0.0%
Wastewater Treatment	2,071	2,272	121	2,150	5.3%
Water Conveyance	6,122	11,147	2,303	8,844	20.7%
GHG Performance Standard*	-	-	2,710	-	-
Total Emissions	327,274	357,528	90,718	266,811	25.4%
Reduction Goal	-	-	*79,346*	*278,183*	*22.2%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Reductions Beyond Goal	-	-	*11,372*	-	-
Per-Capita Emissions	6.4	6.4	-	4.8	-
Per-Job Emissions	33.5	32.7	-	24.4	-
Excluded Emissions: Stationary Sources	*23,188*	*26,466*	-	-	-

Notes:

Values may not sum due to rounding.

* 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. Please see Chapter 4 for a complete description of this measure.

Figure 3-60. Emission Reductions by Control and by Sector for Yucaipa



3.21.3 Reduction Measures

Table 3-60 presents each reduction measure evaluated for Yucaipa. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

Table 3-60. GHG Reduction Measures and Estimated 2020 Reductions for Yucaipa

Measure Number	Measure Description	Reductions
State/County Measures		
State-1	Renewable Portfolio Standard	15,602
State-2	Title 24 (Energy Efficiency Standards)	3,389
State-3	AB 1109	4,574
State-4	Solar Water Heating	172
State-5	Industrial Boiler Efficiency	170
State-6	Pavley plus LCFS	44,365
State-7	AB 32 Transportation Reduction Strategies	3,910
State-8	LCFS: Off-Road	1,176
State-9	AB 32 Methane Capture	0
County-1	San Bernardino County GHG Plan Landfill Controls	233
Local Measures		
Building Energy		
Energy-7	Solar Installation for Existing Housing	1,087
Energy-8	Solar Installation for Existing Commercial / Industrial	96
Water-4 (BE)	*Implement SB X7-7*	*10,373*
On-Road Transportation		
Transportation-2	Smart Bus Technologies	436
Wastewater Treatment		
Water-4 (WT)	*Implement SB X7-7*	*121*
Water Conveyance		
Water-3	Water-Efficient Landscaping Practices	598
Water-4	Implement SB X7-7	974
Wastewater-3 (WC)	*Recycled Water*	*730*
GHG Performance Standard for New Development		
PS-1	GHG Performance Standard for New Development(29% below projected BAU emissions for the project)	2,710
Total Reductions		90,718

Notes:

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance

3.21.4 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 2004 General Plan unless otherwise noted (Yucaipa 2004). In

addition to state level measures, the City of Yucaipa GHG reduction measures related to residential and commercial solar installations, SmartBus Technologies, wastewater treatment, a Landscape Ordinance and a 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 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).

3.21.4.1 Building Energy

- **Program 6. a. b. i. (a)**: Implement plans and programs to phase in energy conservation improvement through the annual budget process.
- **Goal UD 4 Policy C Action 1:** In conjunction with the Beautification Committee establish specific tree preservation priorities.

3.21.4.2 On-Road

Transportation-1. Sustainable Communities Strategy

- **Goal T-2 Policy A:** Promote the establishment and development of a City bicycle lane program Use transportation right of ways for multiple transportation modes including recreation.
- **Goal T-6 Policy C**: Design land use patterns in new developments that minimize the number of automobile trips by providing neighborhood shopping facilities and pedestrian and bicycle paths.
- **Goal T-6 Policy D:** Encourage the design and implementation of land uses development standards and capital improvement programs which maximize the use of public transit.
- **Goal T-6 Policy F:** Designate existing Park and Ride Facilities on the General Plan Circulation Maps work with Caltrans to identify appropriate Future Park and Ride Facilities and develop a program to acquire and develop sites for such facilities in areas where there is an identified need.
- **Program 2.d.i.(c)**: Plan for commuter and main line rail service development including convenience facilities at rail stops through the intensification of planned land uses in the vicinity of transit stops and the consolidation of parking facilities to support transit as well as adjacent uses.
- **Program 2.d.ii.(b):** Influence the expansion of regional commuter and main line rail services particularly those linking with destinations in Yucaipa and the surrounding area.
- **Program 2.e.i.(a)**: Develop standards and guidelines for support facilities to incorporate into development plans for increased bicycle and pedestrian routes to link appropriate activity centers to nearby residential development.
- **Goal LU 4 Policy A:** Concentrate higher density residential land uses close to employment and commercial centers to help reduce the use of energy.
- • **Goal LU-4 B:** Provide for additional commercial and employment opportunities within the city to maintain a better housing balance and reduce the number of vehicle trips made out of the city for employment purposes.

Transportation-2. Smart Bus Technologies

- **Goal T-6 Policy E:** SCAG Caltrans SANBAG Commuter Computer to develop ridesharing programs and public transit.
- **Goal T-6 Policy G Action 2**: Urge the timely extension of public transit between residential areas and industrial employment centers.
- **Program 2.d.i.(c):** Coordinate with public transit providers to increase funding for transit improvements to supplement other means of travel.

3.21.4.3 Wastewater Treatment

- **Program 6. a. b. i. (a)**: Implement plans and programs to phase in energy conservation improvement through the annual budget process.

3.22 Town of Yucca Valley

3.22.1 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 cities. 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 2010 was 20,700 (20,652 in 2008) and is projected to grow to 22,953 by 2020, an increase of 11% over 2008. Yucca Valley's demographic composition in 2010 was 83.5% White, 3.2% Black, 1.1% American Indian and Alaska Native, 2.3% Asian, 0.2% Native Hawaiian and Other Pacific Islander, 5.7% from other races, and 4% from two or more races. Persons of Hispanic or Latino origin were 17.8%. Nearly 84% of the town's population is White, compared to the statewide average of 58%, and over 18% of the population is over 65 (compared to the statewide average of 11%). Over 84% of residents graduated high school (U.S. Census Bureau 2012). Employment is also expected to grow by a similar amount.

Table 3-61 presents socioeconomic data for Yucca Valley, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

Table 3-61. Socioeconomic Data for Yucca Valley

Category	2008	2020
Population	20,652	22,953
Housing	8,254	9,856
Single-Family	*6,516*	*7,780*
Multifamily	*1,738*	*2,076*
Employment	4,575	5,071
Agricultural	*9*	*26*
Industrial	*640*	*865*
Retail	*1,385*	*1,427*
Non-Retail	*2,541*	*2,753*

3.22.2 Emission Reductions

Yucca Valley selected a goal to reduce its community GHG emissions to a level that is 15% below its 2008 GHG emissions level by 2020. The Town will meet and exceed this goal through a combination

of state (~97%) and local (~3%) efforts. The Town actually exceeds the goal with only state/county level actions (108% of goal), but has committed to several additional local measures. 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 2020. An additional reduction of 1,172 $MTCO_2e$ will be achieved primarily through the following local measures, in order of importance: Implement SB X7-7 (Water-4); Solar Installations for Existing Housing (Energy-7); and Energy Efficiency for Existing Buildings (Energy-1). Yucca Valley's reduction plan has the greatest impacts on GHG emissions in the solid waste management, on-road transportation, and building energy sectors.

Although the Town is implementing sustainable development practices in both current projects as well as in policies in the Town's General Plan Update project, the SCS implemented in the Morongo Basin (Transportation-1) will not result in any measureable GHG reductions for the Town itself.

The bars in Figure 3-61 show Yucca Valley's 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the town's emissions reduction target (i.e., 15% below the 2008 emissions level). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~97%) of the total reductions needed to achieve the 2020 target.

Figure 3-62 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Reduction Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and solid waste management emissions sectors.

Table 3-62 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Reduction Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and demonstrates that Yucca Valley exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the solid waste management, on-road transportation, and building energy sectors.

Figure 3-63 presents emission reductions by sector and by control (i.e., state/county control versus local or town control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county 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 and due to the GHG Performance Standard for New Development (PS-1).

Figure 3-61. Emissions Reduction Profile for Yucca Valley

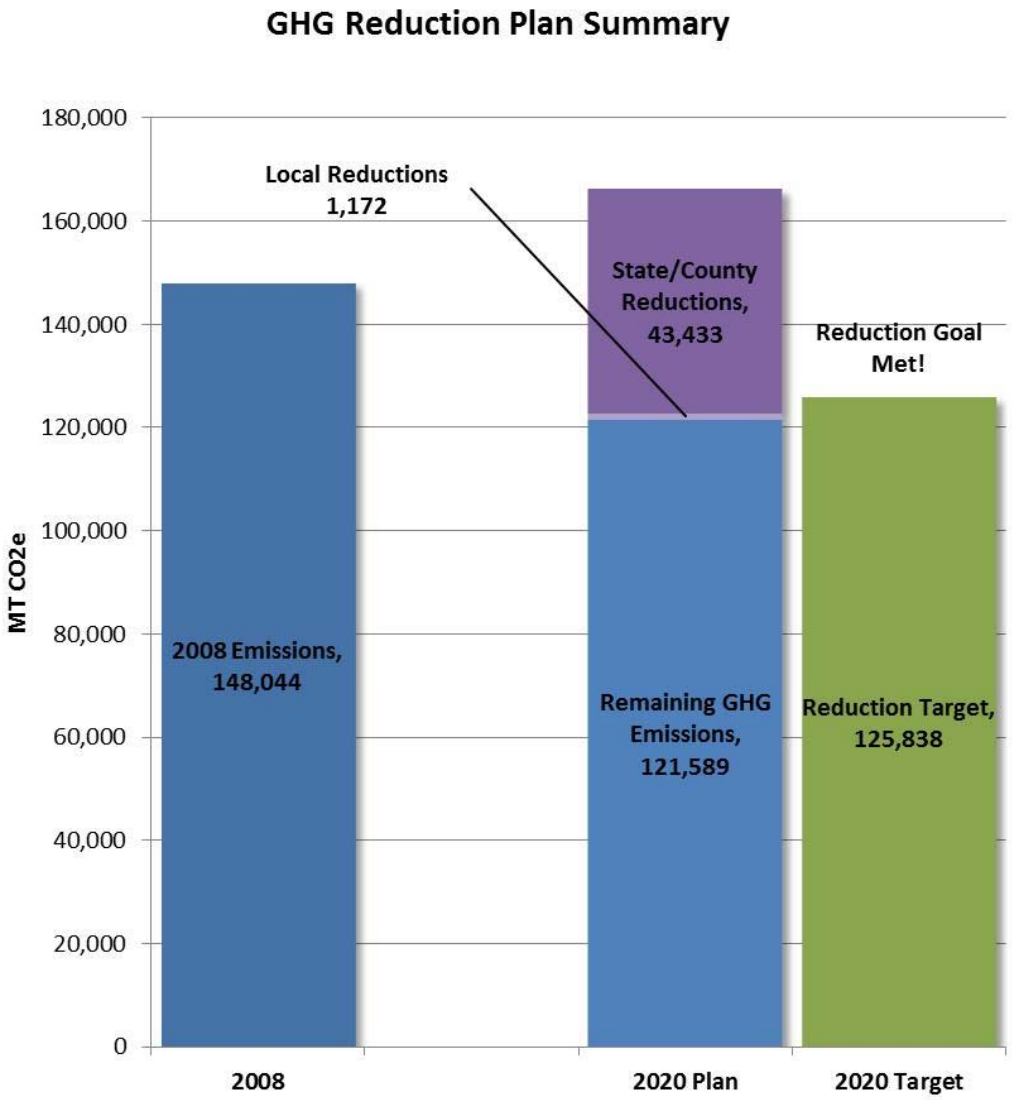


Figure 3-62. Emissions by Sector for Yucca Valley

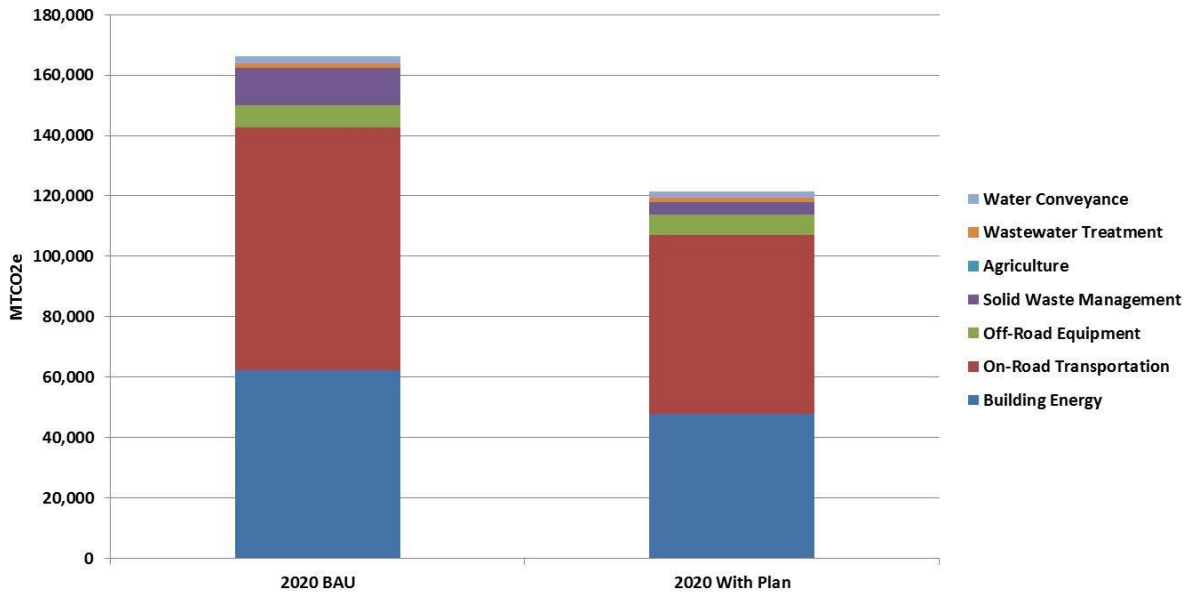


Table 3-62. Emission Reductions by Sector for Yucca Valley

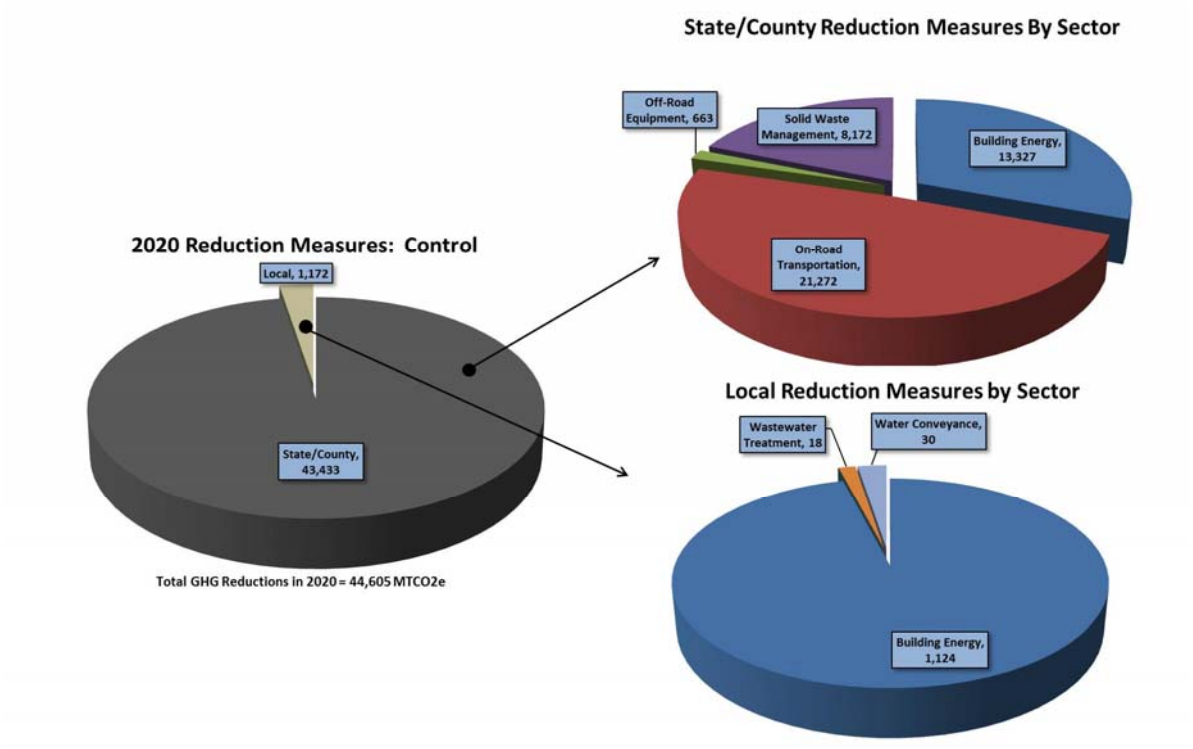
Sector	2008	2020 BAU	Reductions	2020 Emissions with Reduction Plan	% Reduction
Building Energy	53,437	62,236	14,451	47,785	23.2%
On-Road Transportation	71,120	80,427	21,272	59,155	26.4%
Off-Road Equipment	6,680	7,419	663	6,757	8.9%
Solid Waste Management	10,992	12,359	8,172	4,187	66.1%
Agriculture	0	0	0	0	0.0%
Wastewater Treatment	4,138	1,522	18	1,504	1.2%
Water Conveyance	1,677	2,231	30	2,201	1.3%
GHG Performance Standard*	-	-	0	-	-
Total Emissions	148,044	166,194	44,605	121,589	26.8%
Reduction Goal	-	-	*40,357*	*125,838*	*24.3%*
Goal Met?	-	-	*Yes*	*Yes*	*Yes*
Reductions Beyond Goal	-	-	*4,248*	-	-
Per-Capita Emissions	7.2	7.2	-	5.3	-
Per-Job Emissions	32.4	32.8	-	24.0	-
Excluded Emissions: Stationary Sources	*16,719*	*29,491*	-	-	-

Notes:

Values may not sum due to rounding.

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

Figure 3-63. Emission Reductions by Control and by Sector for Yucca Valley



3.22.3 Reduction Measures

Table 3-63 presents each reduction measure evaluated for Yucca Valley. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

Table 3-63. GHG Reduction Measures and Estimated 2020 Reductions for Yucca Valley

Measure Number	Measure Description	Reductions
State/County Measures		
State-1	Renewable Portfolio Standard	8,804
State-2	Title 24 (Energy Efficiency Standards)	1,815
State-3	AB 1109	2,506
State-4	Solar Water Heating	82
State-5	Industrial Boiler Efficiency	120
State-6	Pavley plus LCFS	19,490
State-7	AB 32 Transportation Reduction Strategies	1,781
State-8	LCFS: Off-Road	663
State-9	AB 32 Methane Capture	0
County-1	San Bernardino County GHG Plan Landfill Controls	8,172
Local Measures		
Building Energy		
Energy-1	Energy Efficiency for Existing Buildings	197
Energy-5	Solar Installation for New Commercial	21
Energy-7	Solar Installation for Existing Housing	336
Water-4 (BE)	*Implement SB X7-7*	*570*
Wastewater Treatment		
Water-4 (WT)	*Implement SB X7-7*	*18*
Water Conveyance		
Water-4	Implement SB X7-7	30
Total Reductions		44,605

Notes:

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the town, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance

3.22.4 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 1995 General Plan unless otherwise noted (Yucca Valley 1995). In addition to state level measures, the Town of Yucca Valley GHG reduction measures related to residential and commercial solar installations, energy efficiency in existing buildings and a Performance Standard for new development (Table 3-63). However, 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).

3.22.4.1 Building Energy

- **Policy 3:** Promote energy conservation in public buildings and vehicles, to include a program of incentives to encourage the use of innovative methods of conserving energy.
- **Program 6.A:** Ensure that new development and rehabilitation efforts, whenever possible, maximize energy efficiency through architectural and landscape design and the use of renewable resources and conservation.
- **Program 1.A:** Implement and enforce California Title 24 building standards to reduce unnecessary energy use in new or substantially remodeled construction.
- **Program 3.C:** Research and promote the use of alternative fuels and energy sources and technologies (other than solar) for public buildings, vehicles and facilities

Energy-5. Solar Installation for New Commercial

- **Program 5.D:** Initiate and encourage the use of alternative (clean) energy sources for transportation, heating and cooling. The Town shall also initiate pilot studies and/or demonstration programs in order to promote these uses.
- **Policy 2:** Support efforts to develop alternative energy technologies which have minimum adverse impacts on the environment.
- **Policy 5:** Promote the use of alternative energy sources through the informing of Town residents of available alternative energy programs and rebates.
- **Policy 5:** Promote the use of alternative energy sources through the informing of Town residents of available alternative energy programs and rebates.
- **Alternative Energy:** "Conservation is considered to be reduced demand resulting from life-style and technological changes, waste-to-energy conversion, recycling, cogeneration, and waste reduction from efficient building and equipment design standards, transportation habits and land use design.

Energy-7. Solar Installation for Existing Housing

- **Program 5.D:** Initiate and encourage the use of alternative (clean) energy sources for transportation, heating and cooling. The Town shall also initiate pilot studies and/or demonstration programs in order to promote these uses.
- **Policy 2:** Support efforts to develop alternative energy technologies which have minimum adverse impacts on the environment.
- **Policy 5:** Promote the use of alternative energy sources through the informing of Town residents of available alternative energy programs and rebates.
- **Alternative Energy:** "Conservation is considered to be reduced demand resulting from life-style and technological changes, waste-to-energy conversion, recycling, cogeneration, and waste reduction from efficient building and equipment design standards, transportation habits and land use design.

3.22.4.2 On-Road

- **Policy 4:** Pursue programs which reduce emissions by creating a land use pattern which can be efficiently served by a diversified transportation system and which minimizes vehicle miles traveled.

- **Policy 5**: Promote the safe and efficient movement of people and materials into and through the Town as a means of reducing the impact of automobiles on local air quality.
- **Policy 3:** With the approval of the local utilities and service providers and County Transportation/Flood Control Department, shall maximize use of flood control and utility easement areas to develop a multi-use trail system providing alternative transportation links to parks and open space areas.
- **Policy 6:** Promote the use of ride-sharing and mass transit as a means of reducing transportation related energy demand.
- **Policy 6:** As a means of reducing traffic associated with work-related out-mitigation, make every reasonable effort to achieve a jobs/housing balance in the community.
- **Policy 7:** Promote the use of multi-occupant modes of transportation, and the shifting of employment-related trips out of current peak traffic periods.
- **Policy 12:** High density, affordable and senior projects shall be located with convenient access to shopping, public transit, and school and park facilities.

Chapter 4
Reduction Measures

4.1 Introduction

This section contains a detailed description of all reduction measures discussed in the Reduction Plan. Measures are organized below into state, county, and local categories. For local measures, the following sectors are included: building energy, on-road transportation, off-road equipment, agriculture, land use and urban design, solid waste management, wastewater, and water conveyance. An overview of each sector, including a summary of each sector's results, its relative importance (compared to other sectors), and major opportunities for reductions, is also provided.

For each measure, the following information is provided.

Measure Description: A description of the measure.

Entity Responsible for Implementation: The entity that would be implementing the measure.

Measure Implementation Details: More information on how and when the measure would be implemented, including actions, programs and funding sources.

Level of Commitment: The assumed level of commitment for each measure.

Co-Benefits: Possible co-benefits of each measure are included.

GHG Reductions are shown in Table 4-1 for all measures for the total reductions, number of cities participating, and percent contribution to total state or local GHG reductions achieved for the region as a whole based on the reductions for the cities that selected each measure. Cities differed in which measures they chose; all cities did not select all measures. Thus, the level of participation in each measure differs from city to city. All cities benefitted from state measures. Most cities benefitted from regional measures although some cities do not benefit from the regional measures due to their location.

The full methods for the reduction measure calculations are included in Appendix B to the GHG Reduction Plan. The measures selected by each Partnership city and the reductions potential for each city are presented in Chapter 3.

4.2 State Measures

Actions undertaken by the state would contribute to GHG reductions in each Partnership city. For example, the state requires electric utility companies to increase their procurement of renewable resources by 2020. 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 city would be cleaner and less GHG intensive than if the state hadn't 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 city. This Reduction Plan includes ten

statewide initiatives that would contribute to GHG reductions in each city. 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 be designed to conserve energy and water. Similarly, energy efficiency strategies required by AB 1109 would reduce electricity consumption lighting. 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 and this continues in combination with federal efforts on the CAFE standards. CARB has also adopted the LCFS, which requires a 10% reduction in the carbon intensity of California's transportation fuels by 2020 and outlined several efficiency measures in the AB 32 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 in this chapter. Appendix B provides more description of each state measure.

4.2.1 State-1: Senate Bill 1078 (2002)/Senate Bill 107 (2006) and Senate Bill 2 (2011) Renewable Portfolio Standard

Measure Description: Obligates IOUs, ESPs, and CCAs to procure an additional 1% of retail sales per year from eligible renewable sources until 20% is reached, no later than 2010 and sets forth a longer-range target of procuring 33% of retail sales by 2020.

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.

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, 2011, and the guidelines will be periodically updated. Local governments are responsible for adoption and enforcement of the standards. The next energy efficiency update of standards is in 2014 and the CEC intends to update them approximately every 3 years in future years. Note: In some instances, implementation of the CALGreen *voluntary* measures has been identified by local cities 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: AB 1109 (Huffman) Lighting Efficiency and Toxics Reduction Act

Measure Description: Structured to reduce statewide electricity consumption in the following ways: 1) At least 50% reduction from 2007 levels for indoor residential lighting, and 2) At least 25% reduction from 2007 levels for indoor commercial and outdoor lighting, by 2018.

Entity Responsible for Implementation: The State of California is responsible for implementing this measure.

Measure Implementation Details: By 2018, reductions of 50% and 25%, compared to 2007 levels would be achieved.

Co-Benefits: Reduced energy use, reduced air pollution, increased property values, and increased quality of life.

4.2.4 State-4: AB 1470 (Huffman) Solar Water Heating

Measure Description: Creates a $25 million per year, 10-year incentive program to encourage the installation of solar water heating systems that offset natural gas use in homes and businesses throughout the state.

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: Industrial Boiler Efficiency

Measure Description: This measure evaluated by CARB would require one or more of the following: annual tuning of all boilers, the installation of an oxygen trim system, and/or a noncondensing economizer to maximize boiler efficiency. A facility could also replace an existing boiler with a new one that is equipped with these systems.

Entity Responsible for Implementation: The State of California is responsible for implementing this measure.

Measure Implementation Details: This measure would be implemented gradually as industrial facilities replace their boilers.

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 will lower GHG emissions from new light-duty autos in 2009. Additional strengthening of the Pavley standards (Pavley II or Advanced Clean Cars measure) has been proposed for vehicle model years 2017–2025. Together, the two standards are expected to increase average fuel economy to roughly 43 miles per gallon by 2020 and reduce GHG emissions from the transportation sector in California by approximately 14%.

Entity Responsible for Implementation: The State of California, EPA and NHTSA, and vehicle manufacturers are responsible for implementing the Pavley 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 cities 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: 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 would be fully implemented by 2020. Implementation in the Partnership cities 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: Assembly Bill 32 (AB 32) Transportation Reduction Strategies

Measure Description: The AB 32 Scoping Plan includes vehicle efficiency measures (in addition to Pavley and LCFS) that focus on maintenance practices. The following AB 32 reduction strategies and/or programs are recommended.

- Tire Pressure Program (assures vehicle tire pressure is maintained to manufacturer specifications).
- Low Rolling Resistance Tires (creates an energy efficiency standard for automobile tires to reduce rolling resistance).

- Low Friction Engine Oils (mandates the use of engine oils that meet certain low friction specifications).
- Cool Paints and Reflective Glazing (reduces the engine load for cooling the passenger compartment with air conditioning through the use of solar reflective paints and window glazing).
- Goods Movement Efficiency (targets system-wide efficiency improvements in goods movement to achieve GHG reductions from reduced diesel combustion).
- Heavy-Duty Vehicle GHG Emission Reduction (requires installation of best available technology and/or CARB approved technology to reduce aerodynamic drag and rolling resistance).
- Medium-and Heavy-Duty Vehicle Hybridization (adopts a regulation and/or incentive program that reduces the GHG emissions of new vehicles sold in California by replacing them with hybrids).

Entity Responsible for Implementation: The State of California is responsible for implementing this measure.

Measure Implementation Details: Implementation in the Partnership cities would occur gradually through 2020 as the statewide strategies and programs are put into effect.

Co-Benefits: Reduced energy use, reduced air pollution, public health improvements, and energy security.

4.2.9 State-9: 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 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 by 2020 as landfill operators comply.

Co-Benefits: Reduced air pollution, resource conservation, and increased quality of life.

4.3 County Measures

The San Bernardino County plans to install methane capture systems at a number of county-owned and operated landfills. Since these landfills serve a number of the Partnership cities, the cities would see emission reductions from their solid waste management sector, as fewer fugitive methane emissions from the decomposition of city-generated waste would be released into the atmosphere.

4.3.1 County-1: San Bernardino County GHG Reduction Plan Landfill Controls

Measure Description: San Bernardino County, through the adopted Reduction Plan, would install landfill gas controls on the following County-owned and operated landfills.

- 95% capture at Mid-Valley landfill
- 85% capture at Milliken and Colton landfills
- 75% capture at Barstow and Landers landfills

Since these landfills serve several of the cities of San Bernardino County, these cities would realize GHG reductions from the County's installation of landfill gas controls.

Entity Responsible for Implementation: The County of San Bernardino is responsible for implementing this measure.

Measure Implementation Details: San Bernardino County would need to upgrade and install equipment as necessary to increase and utilize the captured methane gas. The installation of equipment is a one-time event, and implementation would be complete once the equipment begins operating.

Level of Commitment: San Bernardino County would install methane capture technology and associated monitoring systems on the landfills listed above.

Co-Benefits: Reduced energy use and reduced air pollution.

4.4 Building Energy

Building energy use from residential, commercial, and industrial buildings is a large component of the regional GHG inventory, accounting for 40% of the total regional emissions in 2008 and 2020. 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 intend 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 city. 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 produce 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.

The Reduction Plan includes the following nine building energy measures. Reductions for these measures are presented in Appendix B.

4.4.1 Energy Efficiency Measures

4.4.1.1 Energy-1: Energy Efficiency Incentives and Programs to Promote Energy Efficiency for Existing Buildings

Measure Description: Promote energy efficiency in existing residential buildings 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 Grid[1].
- Promote energy efficiency in *nonresidential* buildings:
  - Incentivize schedule energy-efficiency "tune-ups" of existing buildings. Energy audit and tune-up programs are typically run by the local utility. Cities would work with utilities to take advantage of energy audit programs for municipal buildings and promote awareness of these programs for private commercial buildings.

[1] Smart Grid refers to an electrical grid that uses digital information and controls technology to improve reliability, security, and efficiency of the grid.

  - Promote individualized energy management services for large energy users. Cities 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. Savings by Design incentive requires 10% better than Title 24 energy efficiency standards in order to qualify; up to $200K 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 cities 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, 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 city governments and in part by utilities. It would also involve collaboration between cities (sub-regional implementation).

Measure Implementation Details: SANBAG is supporting potential PACE-style funding district development in San Bernardino for interested cities. To implement this measure, the city 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 2020 as residents change their energy consumption behavior and as existing buildings undergo energy-efficiency improvements. Implementation would vary by city.

Level of Commitment: The cities selecting this measure would retrofit a portion of existing homes and nonresidential buildings by 2020 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.

4.4.1.2 Energy-2: Outdoor Lighting Upgrades for Existing Development

Measure Description: Adopt outdoor lighting standards in the zoning ordinance to reduce electricity consumption above and beyond the requirements of AB 1109. This could be achieved by requiring 50% of outdoor lighting fixtures to use LED bulbs and 100% of traffic signals to use LED

bulbs by 2020 (California Air Pollution Control Officers Association 2009 and 2010; California Attorney General's Office 2010). 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 city governments are responsible for implementing this measure.

Measure Implementation Details: To implement this measure, the city governments can adopt outdoor lighting standards in their zoning ordinances. Implementation would be gradual through 2020 as an increasing number of outdoor lighting fixtures are replaced with energy-efficient fixtures.

Level of Commitment: Each city selecting this measure would require a certain percentage of all new and existing residential outdoor lighting to be CFL lights, a certain percentage of all nonresidential outdoor lighting to be halogen/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.

4.4.1.3 Energy-3: Green Building Ordinance for New Buildings

Measure Description: Adopt a green building ordinance that exceeds Title 24 standards (or any subsequent standards that replace the current Title 24 standards) by achieving at least Tier 1 voluntary standards within CALGreen[2] for all new residential and nonresidential buildings (California Air Pollution Control Officers Association 2010; California Attorney General's Office 2010). Tier 1 and 2 measures are not mandatory unless adopted by cities as part of the code. Residential voluntary measures related to energy efficiency in Tier 1 and Tier 2 include the following.

- Use of exterior window shading (A4.205.2).
- Use of innovative HVAC systems such as radiant, hydronic, ground source, or others (A4.207.1).
- Use of Energy Star® rated appliances (A4.210.1).
- Use of electric heat pumps with Heating Seasonal Performance Factor of 8.0 or higher (A4.207.6).
- Solar water heating systems (A4.211.2).

[2] This would apply to the Title 24 standards in effect in 2020. In order to implement this measure, local standards would need to be updated periodically to "stay ahead" of state standards, which are expected to be updated triennially.

- Duct leakage and location requirements (A4.207.8 and A4.207.7).

Entity Responsible for Implementation: The individual city governments are responsible for implementing this measure.

Measure Implementation Details: The city governments can each adopt a green building ordinance. This measure would be implemented when each city adopts an ordinance. Benefits from the measure would be gradual as new houses are constructed according to the ordinance. SCE has programs and incentive funding, such as rebates, for energy efficient appliances, lighting, heating, and home energy performance.

Level of Commitment: Each city selecting this measure would require new buildings to exceed Title 24 standards (or any subsequent standards that replaces the current Title 24 standards) by a certain percentage (such as 15%) in 2020 (CALGreen Tier 1).

Co-Benefits: Reduced energy use, reduced air pollution, resource conservation, increased property values, public health improvement, and increased quality of life.

4.4.2 Renewable Energy

4.4.2.1 Energy-4: Solar Installations in New Housing Developments

Measure Description: Establish a goal for solar installations on new homes to be achieved before 2020 (California Air Pollution Control Officers Association 2009, 2010). Potential goals might be:

- Aggressive—50% of new units have solar installations.
- Medium—25% of new units have solar installations.
- Low commitment—10% of new units have solar installations.

The selected goal could be achieved in part through programs such as the California Energy Commission's New Solar Homes Partnership (this program provides rebates to developers of six units or more who offer solar power in 50% of new units). Other, similar programs with solar power requirements equal to or greater than those of the California Energy Commission's New Solar Homes Partnership could also be accessed, including private funding from SunRun, SolarCity, or other solar lease Power Purchase Agreements (PPAs). Additionally, nonfinancial incentives and streamlined permitting at the local level can support this goal. The cities may also act as resources for connecting project proponents with funding opportunities. This measure could complement voluntary CALGreen measures related to solar photovoltaic systems.

Entity Responsible for Implementation: The individual city 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 city governments can work with residential developers, state funding programs, and private companies to facilitate funding for solar energy projects. Implementation of this measure would be gradual through 2020 as new housing developments are constructed and equipped with solar installations.

Level of Commitment: Each city selecting this measure would establish a percentage goal for solar installation on new single-family homes.

Co-Benefits: Reduced air pollution, waste reduction, energy diversity and security, reduced price volatility, economic development, public health improvements, and increased property values.

4.4.2.2 Energy-5: 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 2020 (California Air Pollution Control Officers Association 2009, 2010). Potential goals might be:

- Aggressive—30% of energy requirements for new development supplied by onsite solar power.
- Medium—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 cities. Primary funding would likely be through state- or utility-level programs or through private funding such as a PPA. Cities 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, the city governments can work with private companies to provide funding for solar energy projects. Implementation of this measure would be gradual through 2020 as new commercial and industrial developments are constructed and equipped with solar installations.

Level of Commitment: Each city 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.

4.4.2.3 Energy-6: Onsite 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, SolarCity, and other solar lease or PPA companies. Establish a goal that a percentage of new warehousing projects install solar to provide a minimum of 25% of the project's new onsite energy needs and that all existing warehousing install solar to provide a minimum of 25% of power needs with solar. This goal could be supported through nonfinancial incentives or streamlined permitting. Cities 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, the city governments can work with private companies and utilities to provide funding for solar energy projects. Implement of this measure would be gradual through 2020 as new warehouse spaces are constructed and equipped with solar installations and existing warehouse spaces are retrofitted.

Level of Commitment: Each city selecting this measure would incentivize a percentage of new and existing warehouses to install solar to provide a minimum of 25% 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.

4.4.2.4 Energy-7: Solar Installations for Existing Housing

Measure Description: Establish a goal for solar installations on existing single-family homes to be achieved before 2020 (California Air Pollution Control Officers Association 2009, 2010) Potential goals might be:

- Aggressive—25% of existing single-family homes install solar.
- Medium—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 cities. Primary funding would likely be through state- or utility-level programs or through private funding such as a PPA. Cities 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, the city governments can work with private companies to provide funding for solar energy projects. Implementation of this measure would be gradual through 2020 as new commercial and industrial developments are constructed and equipped with solar installations.

Level of Commitment: Each city 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.

4.4.2.5 Energy-8: Solar Installations for Existing Commercial/Industrial Buildings

Measure Description: Establish a goal for solar installations on existing commercial/industrial buildings to be achieved before 2020 (California Air Pollution Control Officers Association 2009, 2010) Potential goals might be:

- Aggressive—30% of existing buildings have solar installations.
- Medium—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, SolarCity, or other solar lease PPAs. Additionally, nonfinancial incentives and streamlined permitting at the local level can support this goal. The cities 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 city 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 city 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 2020 as solar is installed on existing buildings.

Level of Commitment: Each city 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.

4.4.2.6 Energy-9: Install Co-Generation Facilities

Measure Description: Co-generation facilities simultaneously generate electricity and useful heat. They are typically used in district heating systems. As feasible, encourage co-generation facilities to supply 15% of building energy in new commercial and industrial facilities greater than 100,000 square feet (California Air Pollution Control Officers Association 2010; California Attorney General's Office 2010). Example facilities are university campuses or large medical centers.

Entity Responsible for Implementation: The individual city governments, in coordination with co-generation facilities, are responsible for implementing this measure.

Measure Implementation Details: The city governments can coordinate with the co-generation facilities to encourage incremental increases in their contributions to building energy in commercial and industrial facilities. Implementation of this measure would be gradual through 2020 as building energy is increasingly provided by co-generation facilities.

Level of Commitment: Each city selecting this measure would incentivize and support a percentage goal (e.g. 15%) for new commercial electricity consumption to be supplied by co-generation facilities by 2020.

Co-Benefits: Reduced energy use, reduced air pollution, and energy diversity and security.

4.5 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 Partnership cities. Emissions originate from the combustion of fossil fuels (such as diesel, gasoline, compressed natural gas, etc.)

to power the vehicles. These emissions are direct emissions and accounted for approximately 46% of total regional emissions in 2008 and 2020.

The total VMT by residents and employees in the Partnership cities is expected to increase by the year 2020 under business as usual conditions as new housing units are developed and new jobs are created. The transportation represents the largest source of GHG emissions in the Partnership cities' future community GHG inventory. As a result, transportation related reduction measures need to be a part of reducing the region's overall GHG emissions in 2020.

Reduction measures in the on-road transportation sector have among the highest GHG reductions relative to other sectors. It is important to note that the measures outlined below would also contribute to significant reductions in GHG emissions beyond 2020 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 (California Air Resources Board 2008). 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 heavy congestion.

4.5.1 On Road-1: SB 375 Sustainable Communities Strategy (Regional)

4.5.1.1 Measure Overview

Measure Description: 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. While Pavley and LCFS seek to reduce fuel consumed and reduce the carbon content of fuel consumed, SB 375 seeks to reduce VMT through land use planning. SB 375 requires regional transportation plans, developed by MPOs to incorporate an SCS in their RTPs. The goal of the SCS is to reduce regional VMT through land use planning and associated transportation patterns. SB 375 also includes provisions for streamlined CEQA review for some infill projects such as transit-oriented development. The regional GHG reduction target for SCAG is 8% by 2020 and 13% by 2035, compared to 2005 GHG emissions on a per capita basis. SCAG's 2012–2035 RTP/SCS, if fully implemented would successfully achieve the targets set by CARB.

Entity Responsible for Implementation: The Partnership cities and SCAG are responsible for implementing this measure. SANBAG plays a supporting role in enabling transportation improvements, such as extension of the Metrolink line to Redlands and Bus Rapid Transit improvements in San Bernardino County.

Measure Implementation Details: Each city would need to determine which strategies would be implemented in its jurisdiction. Implementation of this measure would also require coordination between multiple entities (such as on transit improvements) and would be gradual through 2020 (and would continue beyond 2020).

Level of Commitment: This measure depends on the degree to which each city decides to implement the land use planning strategies of SCAG's 2012 RTP/SCS. The SCS is not a mandatory land use plan and thus local cities, as the land use authority, have choices of which strategies to follow in their land use planning. This measure would have different effectiveness in each city, depending on what actions are feasible and selected. Cities choosing this measure would need to implement strategies similar to those included in the SCS, such as transit oriented development, infill housing, mixed use development, and public transit expansion, for example. No city would likely be able to implement all strategies. This measure allows for flexibility in how the cities participate in the SCS. Cities may be able to implement the SCS strategies partially, but perhaps not to the full degree called for in the SCS. Some strategies contained within the SCS are presented in the following section.

Co-Benefits: Reduced energy use, reduced air pollution, public health improvements, energy security, increased quality of life, and smart growth.

4.5.1.2 Specific Local Measure Options Consistent with the SCS

The following measures are consistent with the strategies included in the SCS. They are included below because they represent individual transportation measures that the cities can implement as part of the SCS.

On-Road-1.1: Improve Transit Travel Time and Connectivity (Regional)

Measure Description: To the extent feasible, reduce transit passenger travel time through reduced headways and increased speed. In addition, improve intermodal connectivity among transit systems. These goals could be pursued in connection with, and in addition to, adoption of SANBAG's LRTP.

On-Road-1.2: Other Transit Improvements (Regional)

Measure Description: Work with local and regional transit agencies to secure the following services.

- Additional Bus Rapid Transit routes and other transit choices such as shuttles and rail, beyond what is outlined in the SANBAG LRTP.
- Convenient feeder service from multimodal transit center to downtown employment centers.
- Region-wide bus/transit passes.
- Park-and-ride lots.
- New opportunities to finance further transit service for the elderly, handicapped, and recreational purposes.
- Shuttle service to transport facilities (e.g., park-and-ride lots).
- Idling limits for transit fleets.

On-Road-1.3: Public Transit Funding (Regional)

Measure Description: Collaborate with a broad range of agencies and organizations to improve and expand funding for public transit infrastructure and operations.

On-Road-1.4: Adopt Land Use Patterns to Favor Transit-Oriented Development (Local Regional)

Measure Description: This strategy would involve changes to local general plans to further prioritize transit-oriented development along existing and planned transit facilities. This strategy could build on one of the alternatives considered in the LRTP alternative, which redistributes population and employment growth to transit corridors, and promotes transit oriented development at station areas.

On-Road-1.5: Nonmotorized Zones (Local)

Measure Description: Create urban nonmotorized zones in downtown areas where feasible. Consider establishing a goal for conversion of downtown roadway miles to transit, linear parks, or other nonmotorized zones (California Air Pollution Control Officers Association 2010) and provide for the following services.

- Monitor traffic and congestion to determine roadways that should be targeted for improvements.
- Evaluate potential efficiency gains from further signal synchronization. Synchronize traffic signals throughout the city and with adjoining cities while allowing free flow of mass transit systems. Require continuous maintenance of the synchronization system
- Allow for more-efficient bus operation, including possible signal preemption, and expand signal-timing programs where air quality benefits can be demonstrated.

On-Road-1.6: Traffic Calming (Local)

Measure Description: Provide traffic calming measures to encourage people to walk or bike instead of using a vehicle.

On-Road-1.7: Traffic Signal Synchronization (Local)

Measure Description: Improve travel speed by enhanced signal synchronization.

On-Road-1.8: Parking Policy (Local)

Measure Description: As part of the parking policy, consider designating a percentage of downtown parking spaces for ride-sharing vehicles, while reducing the available downtown parking spaces for private vehicles (California Air Pollution Control Officers Association 2009, 2010) (*Supporting General Plan policies: Trans-4)*. The following implementation strategies can be used to help achieve these goals.

- Use parking pricing to discourage private vehicle use, especially at peak times.
- Create parking benefit districts, which invest meter revenues in pedestrian infrastructure and other public amenities. Parking districts should be encouraged throughout the county, but they should be concentrated in high traffic areas, including downtowns.
- Provide convenient pathways through parking for pedestrians; provide shade trees for parking.
- Encourage larger parking spaces to accommodate vans used for ride-sharing, as well as adequate passenger loading and waiting areas.

On-Road-1.9: Trip Reduction Ordinance (Local)

Measure Description: Implement a voluntary trip reduction ordinance that promotes the preparation and implementation of a trip reduction plan (TRP)[3] for large employers (100 employees or more). Possible performance targets for the TRPs could be a reduction of the vehicle trips per employee by 15% in 5 years and 25% in 10 years (California Air Pollution Control Officers Association 2010). The TRP could also consider:

- Limiting the hours when deliveries can be made to off-peak hours in high traffic areas.
- Conducting annual employee commute surveys to help inform trip reduction goals and focus implementation strategies.

On-Road-1.10: Employer Provided Fringe Benefits (Local)

Measure Description: Encourage use of telecommuting and alternative work schedules for employees. Encourage other employer benefits to reduce VMT, including a Guaranteed Ride Home Program.[4]

On-Road-1.11: Pedestrian Bicycle Lanes (Local/Regional)

Measure Description: Create bicycle lanes directed to the location of schools and major employment districts.

On-Road-1.12: Pedestrian and Bicycle Network Improvements (Local/Regional)

Measure Description: Provide improvement to the existing pedestrian and bicycle network as follows:

- Encourage the development of bicycle stations[5], attended parking, and other attended bicycle parking support facilities at intermodal hubs.
- Establish a network of multiuse trails to facilitate safe and direct off-street bicycle and pedestrian travel. Provide bike racks along these trails at secure, lighted locations.
- Evaluate and consider free bicycles for public use and/or charge a nominal fee for their use.
- Amend or implement a development code to include standards for provision of safe pedestrian and bicyclist accommodations, including "Complete Streets" policies that foster equal access by all users, including pedestrians and bicyclists. Include standards in the design of roadways. As appropriate, require new development and redevelopment projects to address bicycle and pedestrian access internally and to other areas through easements; safe access to public transportation and construction of paths that connect with other nonmotorized routes; and safe road crossings at major intersections for school children and seniors.

[3] The TRP should include, at a minimum, performing annual employee commute surveys, marketing of commute alternatives, ride matching assistance, and transit information.

[4] A relatively low-cost method of supporting alternative mode use, guaranteed ride home programs provide an "insurance policy" against being stranded in cases of illness, family crisis, rideshare vehicle breakdown, etc.

[5] Bike stations are full-service bicycle facilities providing secure and guarded "valet" bicycle parking in addition to other possible amenities, such as showers or bicycle rentals and repairs.

- Apply for regional, state, and federal grants for bicycle and pedestrian infrastructure projects. Consider using state gas tax subventions, sales tax funds, other funding sources, and development exactions/impact fees to provide bicycle and pedestrian facilities.
- Prohibit projects that impede bicycle and walking access, e.g., large parking areas that cannot be crossed by nonmotorized vehicles, and new residential communities that block through-access on existing or potential bicycle and pedestrian routes.
- Develop and implement a bicycle safety education program to teach drivers and bike riders the laws, riding protocols, routes, safety tips, and emergency maneuvers to increase confidence, safety, and frequency of use for new and existing bike riders.

On-Road-1.13: Alternative Fuel Infrastructure (Local/Regional)

Measure Description: Promote the necessary facilities and infrastructure to encourage the use of privately owned low- or zero-emission vehicles such as electric vehicle charging facilities and conveniently locate alternative fueling stations. Convert public transit, street sweeping, and refuse fleets to alternative fuels and provide supporting infrastructure. Examine the use of smaller, more fuel-efficient taxicabs and offering incentives to taxicab owners to use gas-electric hybrid vehicles.

On-Road-1.14: School Programs and Outreach (Local)

Measure Description: Collaborate with local public schools districts to expand school bus services and routes. Encourage ridesharing programs in private schools to match parents by geographical location for student transport including the following.

- Continue to provide public education and information about options for reducing motor vehicle-related GHG emissions. Include information on trip reduction; trip linking; public transit; biking and walking; vehicle performance and efficiency (e.g., keeping tires inflated); low- or zero-emission vehicles; and car and ride sharing.

4.5.1.3 On Road-2: "Smart Bus" Technologies (Regional)

Measure Description: Collaborate with Omnitrans to implement "Smart Bus" technology, global positioning system (GPS), and electronic displays at all transit stops by 2020 to provide customers with "real-time" arrival and departure time information[6] (California Air Pollution Control Officers Association 2009).

Smart Bus Technologies include Automatic Vehicle Location (AVL) systems and real-time passenger information at bus stations. Omnitrans plans to implement these technologies system-wide on all bus routes serving San Bernardino Valley (Omnitrans service area) to enable information sharing, enhance rider services, and attract potential riders. The AVL system has already been implemented. The Bus Arrival Prediction Information System (BAPIS) would be installed in two phases. In Phase I, real-time rider information would be available via text messaging, Quick Response (QR), website, Interactive Voice Response (IVR), and mobile phone devices. Completed implementation is slated for December 2012. In Phase II, Omnitrans will install electronic signs at all major transit hubs and

[6] These systems not only allow riders to know exactly when the next vehicle will be arriving, but also enable the system operator to track, schedule, and repair vehicles in service. Providing better information to passengers about scheduled arrivals can result in dramatic increases in passengers' perceptions of the service, even if the actual service provided is the same in terms of frequency and on-time arrivals.

provide General Transit Feed Specification (GTFS) data to the general public to build apps for mobile devices like smartphones and tablet computers. Phase II completion is slated for December 2013.

GHG emissions are expected to decrease because the AVL technologies could lead to more fuel-efficient bus operations for Omnitrans and the BAPIS technologies could potentially attract more transit riders who may switch modes from automobiles. Omnitrans' Demand Response Services, OmniLink and Access, do not operate on a fixed schedule or route and are not included in this analysis.

Entity Responsible for Implementation: Omnitrans is primarily responsible for this measure. The Partnership cities and individual city governments would coordinate with Omnitrans as appropriate.

Measure Implementation Details: To implement this measure, the Partnership cities would coordinate with Omnitrans in the region to utilize "Smart Bus" and similar technology. Implementation of this measure would most likely be achieved in increments as the technology is expanded throughout the region.

Level of Commitment: Omnitrans plans to implement these technologies system-wide on all bus routes serving San Bernardino Valley. Therefore, no local action is required from the cities.

Co-Benefits: Reduced air pollution, public health improvements, and increased quality of life.

4.6 Off-Road Equipment

Off-road equipment emissions accounted for approximately 6% of the total regional emissions in 2008 and 2020. 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 cities 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 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.

4.6.1 Off-Road Equipment-1: Electric-Powered Construction Equipment

Measure Description: Establish a goal such that a percentage of construction equipment utilizes electric equipment (California Air Pollution Control Officers Association 2010). Potential goals might

be to require 5% to 25% of equipment on annual projects occurring within the cities to be electrically-powered.

Achieving the goal would require close coordination with the air district that sets air quality related requirements on construction vehicles and also provides mitigation options related to construction vehicles through Voluntary Emission Reduction Agreement (VERA) programs, which may overlap with this measure.

Entity Responsible for Implementation: Partnership cities, 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, cities 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: Cities choosing this measure have identified electrification goals ranging from 5% to 30% of construction equipment for this measure.

Co-Benefits: Reduced air pollution, public health improvements, and increased quality of life.

4.6.2 Off-Road Equipment-2: Idling Ordinance

Measure Description: Adopt an ordinance that limits idling time for heavy-duty construction equipment beyond CARB or local air district regulations and if not already required as part of CEQA mitigation. Recommended idling limit is 3 minutes (California Air Pollution Control Officers Association 2010). 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 onsite equipment. California state law currently requires all off-road equipment fleets to limit idling to no more than 5 minutes.

Entity Responsible for Implementation: The individual city governments are responsible for implementing this measure.

Measure Implementation Details: The city 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 city 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.

4.6.3 Off-Road Equipment-3: Electric Landscaping Equipment

Measure Description: Adopt an ordinance that reduces gasoline-powered landscaping equipment use and/or reduces the number and operating time of such equipment. Require 75% of the cities' landscaping equipment be electric by 2020 and 100% by 2030 (California Air Pollution Control Officers Association 2010). Cities 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 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 city governments are responsible for implementing this measure.

Measure Implementation Details: The city governments can each adopt an ordinance that would result in compliance with the measure by 2020. Implementation of this measure would be gradual through 2020 and 2030 as residents exchange equipment, and as the Cities swap old equipment for new equipment.

Level of Commitment: Each city choosing this measure would provide a percentage goal of all landscaping equipment in the cities be electric-powered by 2020.

Co-Benefits: Reduced air pollution, public health improvements, and increased quality of life.

4.7 Agriculture

Agriculture emissions accounted for approximately 3% to 4% of the total regional emissions in 2008 and 2020. 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 N_2O emissions from the application of fertilizer.

Reduction measures in the agriculture sector typically provide modest GHG reductions relative to other sectors.

Reducing the Partnership cities' GHG emissions from the agriculture sector includes methane capture and combustion at large dairies and animal operations facilities. The dairies are located in Chino and Ontario. 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.

4.7.1 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 onsite 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 Partnership cities 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 Ontario, along with the air district, 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: Ontario would have to collaborate with the relevant dairies to help establish methane recovery systems.

Co-Benefits: Reduced air pollution and public health improvements.

4.7.2 Agriculture-2: Utilize Methane Captured at Dairies

Measure Description: Implement a voluntary program to reuse biogas (methane from manure) captured at animal operations facilities in the city. This biogas could be destroyed onsite, transported for offsite use (e.g., through a gas distribution or transmission pipeline), or used to power vehicles. Using captured biogas could potentially offset natural gas use or off-road fuel use in the city (reductions may be achieved in the building energy sector and/or the off-road sector).

Entity Responsible for Implementation: Large dairies within the Partnership cities are responsible for implementing this measure.

Measure Implementation Details: Dairies would need to install methane combustion and reuse equipment at their facilities. The City of Ontario, along with the air district, 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: Ontario would have to collaborate with the relevant dairies to help establish methane reuse systems.

Co-Benefits: Reduced energy use and reduced air pollution.

4.8 Other Land Use Measures (non-Transportation)

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 4.5, *On-Road Transportation*.

Large scale tree planting creates dynamic ecosystems within cities 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.

4.8.1 Land Use-1: Tree Planting Programs

Measure Description: Establish a citywide 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 City 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 city governments are responsible for implementing this measure.

Measure Implementation Details: The city 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 city selecting this measure chose a certain number of trees to plant each year. Values range from 100 trees/year to 13,000 trees per year.

Co-Benefits: Reduced energy consumption, reduced air pollution, increased quality of life, and reduced urban heat island effect.

4.8.2 Land Use-2: Promote Rooftop Gardens

Measure Description: Establish a goal for 5% of new residences and 15% of new commercial facilities over 100,000 square feet to construct rooftop gardens. Rooftop green space insulates the building underneath, increasing 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 (California Air Pollution Control Officers Association 2010). 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 city governments are responsible for implementing this measure.

Measure Implementation Details: The city governments can set goals for new 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 city selecting this measure would require a certain percentage (e.g. 5%) of new 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, and increased quality of life.

4.9 Solid Waste Management

Total emissions from solid waste generated by the cities account for approximately 2.5% of total regional emissions for 2008 and 2020. 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: methane capture, and 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.

4.9.1 Waste-1: Increased Waste Diversion

Measure Description: Exceed the waste diversion goal (50%) recommended by Assembly Bill 939 and CALGreen by adopting citywide waste goals of at least 75% of waste diversion (California Air Pollution Control Officers Association 2010). 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 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 the CALGreen voluntary guidance of a 65% to 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 city governments along with waste service providers are responsible for implementing this measure.

Measure Implementation Details: City governments that operate their own waste services programs can develop educational programs to encourage residents to reduce waste. City 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 city selecting this measure would provide a diversion goal (e.g. 75%) of diversion of waste from landfills.

Co-Benefits: Reduced air pollution and resource conservation.

4.10 Wastewater Treatment and Discharge

Total emissions from wastewater treatment account for approximately 0.4% of the total regional emissions in 2008 and 2020. There are numerous large and small wastewater treatment plants (WWTPs) located within the boundaries of this inventory that serve the Partnership cities' 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 and portions of the unincorporated county. The City of San Bernardino also operates several WWTPs, servicing the cities of San Bernardino, Loma Linda and portions of the unincorporated county. The Cities of Big Bear Lake, Victorville and Hesperia are served by the smaller regional agencies, BBARWA and Victor Valley Wastewater Agency (VVWA). The remaining Partnership Cities (Highland, Needles, Rialto, Adelanto, Redlands, Yucaipa and Grand Terrace) 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 CH_4 and N_2O 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 city would be sent to WWTPs, which may be outside the city. Consequently, some of these emissions would not occur within the boundaries of each city generating the wastewater, but each city 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 Partnership cities' GHG emissions from the wastewater treatment sector includes methane capture and combustion at the WWTPs, improving the efficiency of equipment such as pumps, and using more recycled water. These types of retrofits are for centralized WWTP systems and do not apply to septic systems. The cost of these plant retrofits are incurred by the plant operator, which may be a city, a JPA, or a contracted plant operator. 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 Partnership city, the City'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. Increasing the use of recycled water reduces the need for electricity to supply imported water or groundwater to the cities, which reduces indirect emissions from electricity generation.

4.10.1 Wastewater-1: Methane Recovery

Measure Description: Work with the IEUA or other local wastewater treatment providers (small or large to identify funding and cooperating agencies for establishing methane recovery systems at all WWTPs that service San Bernardino Partnership cities residents by 2020, as appropriate. WWTPs in the region operated by IEUA, City of San Bernardino, VVWA, City of Redlands and Yucaipa Valley Water District already capture and flare methane at a minimum. Several also utilize waste heat on site or methane powered generators to power various facilities, offsetting approximately 30% of their power needs in the case of IEUA. Cities serviced by these providers would not benefit from this measure (unless the capture system was installed after 2008), only plants that have not yet installed methane capture. For plants that only capture and flare, additional benefits could be achieved by using the methane for electricity or heating onsite. Operators of these facilities would work with SANBAG, regional power providers, Partnership cities or other entities to identify funding for this installation. Install equipment for the combustion of digester gas at all WWTPs by 2020 (California Air Pollution Control Officers Association 2010).

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 as will IEUA's Ontario WWTP fuel cell project.

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 city 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 and reduced energy price volatility.

4.10.2 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 by 2020. 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 (California Air Pollution Control Officers Association 2009). This

measure could also include the following. WWTPs may already have energy efficiency upgrades scheduled as part of their capital improvements program.

- Assess the feasibility of using advance treatment of recycled water with microfiltration or reverse osmosis for future potable water use. Assess associated energy/GHG tradeoffs vs. 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 city selecting this measure would have to collaborate with the IEUA or other local wastewater treatment provider (if serviced by a regional entity) to upgrade pumping and treatment equipment.

Co-Benefits: Reduced energy use and reduced air pollution.

4.10.3 Wastewater-3: Recycled Water

Measure Description: Establish a goal that a certain percentage of all water used for non-potable sources (such as landscaping irrigation, dust control, or fire suppression) be recycled (and treated) wastewater. Consider requiring all new parks, schools, and other public facilities to use 100% recycled water for non-potable outdoor uses as a first step, as feasible depending on existing and planned recycled water infrastructure. Develop public education materials that support and encourage the use of recycled water. Adopt a municipal goal of 100% use of recycled water for non-potable sources (California Air Pollution Control Officers Association 2010). Implementation will likely require coordination with regional WWTPs and recycled water providers. This measure would also include development of an inventory of non-potable uses of water in the cities for potential to substitute recycled water.

Entity Responsible for Implementation: To implement this measure, the individual city governments would coordinate with regional water providers and regional WWTPs.

Measure Implementation Details: This measure would most likely be implemented in incremental steps as each city utilizes recycled water for its municipal purposes. Recycled water would also be gradually employed through 2020 as new parks and schools are constructed and as recycled water distribution systems expand.

Level of Commitment: Each city selecting this measure would have to require a certain percentage (e.g., 50%) of all water used for non-potable sources (such as landscaping irrigation, dust control, or fire suppression) to be recycled (and treated) wastewater.

Co-Benefits: Reduced energy use, reduced air pollution, and resource conservation.

4.11 Water Conveyance

Water consumption emissions accounted for approximately 2% of total regional emissions in 2008 and 2020. 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 cities 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 benefits 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.

4.11.1 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.
- 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) compared to 2008 water use.

Entity Responsible for Implementation: The individual city governments are responsible for implementing this measure.

Measure Implementation Details: The city governments can choose to include the voluntary CALGreen measures in their building codes. Implementation would be gradual through 2020 as new buildings are constructed with water-efficient fixtures.

Level of Commitment: Each city 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.

4.11.2 Water-2: Implement a Program to Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency

Measure Description: Implement a program to renovate existing residential and nonresidential buildings to achieve higher levels of water efficiency (California Air Pollution Control Officers Association 2010; California Attorney General's Office 2010). Education and outreach programs can help educate individuals on the importance of water efficiency and how to reduce water use. Rebate programs can help promote installation of water-efficient plumbing fixtures. The program could address:

- Development plans to ensure water conservation techniques are used (e.g. rain barrels, drought tolerant landscape).
- Water-efficiency upgrades as a condition of issuing permits for renovations or additions to existing buildings.
- Adopt water conservation pricing, such as tiered rate structures, to encourage efficient water use.
- Incentives for projects that demonstrate significant water conservation through use of innovative water consumption technologies.

Entity Responsible for Implementation: The individual city governments are responsible for the implementing this measure in concert with water retailers.

Measure Implementation Details: The city governments can develop educational programs to encourage water conservation among residents. The city governments can also create rebate programs to encourage residents to upgrade to more water-efficient fixtures in homes. Implementation would be gradual through 2020 as older water fixtures are replaced and as residents adopt new water consumption behaviors.

Level of Commitment: Each city selecting this measure would implement a program to renovate existing buildings to achieve higher levels of water efficiency.

Co-Benefits: Reduced energy use, reduced air pollution, resource conservation, and increased property values.

4.11.3 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.

- Further reducing the ET Adjustment factor listed in the Model Ordinance.

- 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 nonvegetated 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 installation of dual plumbing in all new development, allowing gray water to be used for landscape irrigation.

Entity Responsible for Implementation: The individual city governments are responsible for implementing this measure in concert with water retailers.

Measure Implementation Details: The individual city governments can adopt water conservation plans that surpass the requirements of the Model Landscape Ordinance. Implementation would be gradual through 2020 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 city 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.

4.11.4 Water-4: Senate Bill X7-7—The Water Conservation Act of 2009

Measure Description: SB X7-7 was enacted in November 2009 and requires urban water agencies throughout California to increase conservation to achieve a statewide goal of a 20% reduction in urban per capita use (compared to nominal 2005 levels) by December 31, 2020 (referred to as the "20X2020 goal"). Each urban water retailer in the county subject to the law has established a 2020 per-capita urban water use target to meet this goal.

Entity Responsible for Implementation: The individual urban water retailers in the county, through coordination with individual city governments, are responsible for implementing this measure.

Measure Implementation Details: The urban water retailers will implement water conservation measures according to their 2010 Urban Water Management Plans. The city governments will need to work with their urban water retailer as necessary to reduce per-capita water use by 2020. Implementation depends on the specific urban water management plans, but would be gradual through 2020 as new buildings are constructed with water-efficient fixtures and other conservation measures are put into place.

Level of Commitment: Each city selecting this measure would have to meet the requirements of their urban water retailer to reduce per-capita water use by 2020.

Co-Benefits: Reduced energy use, reduced air pollution, resource conservation, and increased property values.

4.12 GHG Performance Standard for New Development

4.12.1 PS-1: GHG Performance Standard for New Development

Measure Description: Individual cities may adopt a GHG Performance Standard for New Development (PS) 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 the PS, 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. The PS 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. SCAQMD does not have CEQA significance thresholds for new nonindustrial development at this time. One potential PS reduction goal could be 29%, based on San Joaquin Air Pollution Control District's recommended CEQA significance threshold and based on the calculations of reductions necessary at the state level to meet AB 32 at the time of the Scoping Plan (29% below forecasted 2020 levels = 1990 levels based on data available at that time). Another potential minimum goal could be 20% to 22% based on the most recent 2020 forecast data from CARB.

San Bernardino County adopted a performance standard of 31% for certain discretionary projects within the unincorporated county with emissions more than 3,000 $MTCO_2e$/year. Projects with less than 3,000 $MTCO_2e$/year are still required to meet certain specified performance measures that also result in GHG emission reductions.

A city may select a suite of other local measures that may already meet the PS-1 percent reduction goal specified by that city. In these cases, a city can still select PS-1 and use it to support those local measures, even though direct reductions from PS-1 for those cities 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 city governments are responsible for implementing this measure.

Measure Implementation Details: Implementation of the performance standard would reduce GHG emissions attributable to new discretionary development projects at least 20% to 29% by 2020 (or more if selected by a city). Measurable reductions of GHG emissions would be achieved through each city'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" which 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 City'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 City that ultimately chooses a PS approach as part of their local plan could develop its own screening tables. In addition, the cities 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 city. These measures achieve a certain portion of the PS goal, depending on the city. 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 city 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 cities 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 city 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 cities range from 16% to 34% 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
State and County Measures						
State-1	Renewable Portfolio Standard	862,909	25.1%	NA	NA	
State-2	Title 24 (Energy Efficiency Standards)	238,543	6.9%	NA	NA	
State-3	AB 1109	221,925	6.4%	NA	NA	
State-4	Solar Water Heating	4,499	0.1%	NA	NA	
State-5	Industrial Boiler Efficiency	33,610	1.0%	NA	NA	
State-6	Pavley plus LCFS	1,686,866	49.0%	NA	NA	
State-7	AB 32 Transportation Reduction Strategies	152,933	4.4%	NA	NA	
State-8	LCFS: Off-Road	78,930	2.3%	NA	NA	
State-9	AB 32 Methane Capture	10,218	0.3%	NA	NA	
County-1	San Bernardino County GHG Plan Landfill Controls	152,973	4.4%	NA	NA	
Local Measures						
Building Energy						
Energy-1	Promote Energy Efficiency for Existing Buildings	61,623	NA	5.4%	14	
Energy-2	Outdoor Lighting	13,356	NA	1.2%	11	
Energy-3	Green Building Ordinance for New Buildings	11,865	NA	1.0%	8	
Energy-4	Solar Installations in New Housing Developments	9,340	NA	0.8%	16	
Energy-5	Solar Installations for New Commercial/Industrial Development	29,579	NA	2.6%	12	
Energy-6	Onsite Solar Energy for New and Existing Warehouse Space	80,161	NA	7.0%	6	
Energy-7	Solar Installations for Existing Housing	47,299	NA	4.1%	14	

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
Energy-8	Solar Installations for Existing Commercial Buildings	22,368	NA	1.9%	13	
Energy-9	Co-Generation Facilities	485	NA	0.0%	7	
On Road Transportation						
Transportation-1	Sustainable Communities Strategy	48,155	NA	4.2%	12	
Transportation-2	Smart Bus Technologies	6,103	NA	0.5%	14	
Off Road Transportation and Equipment						
Off Road-1	Electric-Powered Construction Equipment	24,112	NA	2.1%	10	
Off Road-2	Idling Ordinance	5,354	NA	0.5%	11	
Off Road-3	Electric Landscaping Equipment	8,147	NA	0.7%	9	
Solid Waste Management						
Waste-1	Waste Diversion	6,240	NA	0.5%	9	
Water Conveyance						
Water-1	Require Adoption of the Voluntary CALGREEN water efficiency measures for New Construction	9,767	NA	0.9%	9	GHG reductions also include reductions in the building energy and wastewater sectors
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	26,071	NA	2.3%	8	GHG reductions also include reductions in the building energy and wastewater sectors
Water-3	Encourage Water-Efficient Landscaping Practices	11,176	NA	1.0%	13	
Water-4	Implement SB X7-7	496,289	NA	43.4%	21	GHG reductions also include reductions in the building energy and wastewater sectors
Wastewater Treatment and Discharge						
Wastewater-1	Methane Recovery (Regional)	1,716	NA	0.1%	5	
Wastewater-2	Equipment Upgrades (Regional)	22,645	NA	2.0%	15	GHG reductions occur in the building energy sector
Wastewater-3	Recycled Water (Overall)	4,141	NA	0.4%	8	GHG reductions include

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
						reductions in the water sector
Agriculture						
Agriculture-1	Methane Capture at Large Dairies	77,556	NA	6.8%	1	
Agriculture-2	Utilize Methane Captured at Dairies	2,383	NA	0.2%	1	
Land Use and Urban Design						
Land Use-1	Urban Tree Planting	807	NA	0.1%	10	GHG reductions occur in the building energy sector
Land Use-2	Promote Rooftop Gardens	51	NA	0.0%	4	GHG reductions occur in the building energy sector
GHG Performance Standard for New Development						
PS-1	GHG Performance Standard for New Development	121,418	NA	10.6%	18	

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 cities and achieving GHG reduction benefits will require participation of both city governments and the communities at large. Full implementation of the local CAPs, for those cities that choose to adopt one, will also benefit from communication and coordination among the Partnership cities and SANBAG to identify cost-effective means of implementation wherever possible. This section outlines the key steps that a Partnership city could follow to ensure that the measures it has identified for inclusion in this Reduction Plan can be implemented effectively and efficiently and that the city can achieves maximum GHG benefits cost effectively. This section assumes that each city takes the information in this Reduction Plan, and then adopts its own, local, city-specific CAP. This section refers to implementation of individual city CAPs.

Successful implementation of each city'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 steps above are not specific to any one Partnership city but are basic steps that any city might take or that other California communities have taken to implement a GHG reduction plan. These are suggested, not required, and are intended to guide a city in its implementation planning.

5.2 Local CAP Plan Implementation Steps

5.2.1 Administration and Staffing

It is recommended that a city should develop a CAP Implementation Team (CIT), consisting of city staff from key departments, to support implementation of the GHG reduction measures. Some cities may wish to have the CIT work primarily as part of the development review process for new projects. The CIT team may be comprised of 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 City Attorney—Responsible for providing legal advice related to the development of new policies, programs, and requirements.
- Office of the City 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 city 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 city meetings.

For smaller communities, in lieu of a team, this CIC could be responsible for communicating with the relevant offices and ensuring their input on key decisions related to projects outlined in the city's local CAP. 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 climate action organizations including SANBAG.
- Conduct public outreach to inform the community of the city'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 city 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 city.

Administration of a local CAP does not necessarily require a new FTE position, although a city may certainly opt to have a single dedicated person if numerous and disparate city departments will be involved in implementing the CAP, if the city will be applying for multiple grants to fund GHG reduction measures, or if the CAP is particularly ambitious requiring numerous new city 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. Cities should seek to fold GHG planning and long term reduction into their existing procedures, institutional organization, reporting and long-term planning; a process that will be unique to each city.

5.2.2 Financing and Budgeting

5.2.2.1 Funding Mechanisms

Implementation of the local GHG reduction measures would require the city and other public agencies, local businesses, developers/builders, and existing commercial building owners and 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 directed towards a city, but to a larger regional agency such as SANBAG, a JPA, or a waste services provider serving multiple jurisdictions. Cities 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	• Tax credits for energy efficiency can be promoted to residents. • Tax credits available in 2012 include geothermal heat pumps, small (residential) wind turbines, solar energy systems, and fuel cells. • The tax credit is for 30% of cost with no upper limit for geothermal heat pumps, wind turbines, and solar energy systems. • For fuel cells, the tax credit is for 30% of cost up to $500 per 0.5 kW of power capacity in a principal residence.
Energy Efficient Mortgages (EEM)	• 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)	• CalRecycle grant programs allow jurisdictions to assist public and private entities in management of waste streams. • Incorporated cities and counties in California are eligible for funds. • Program funds are intended to: ○ Reduce, reuse, and recycle all waste. ○ 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
- Lower-Emission School Bus Program/School Bus Retrofit and Replacement Account (Prop 1B and EPA Incentives)

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.

Safe, Accountable, Flexible, Efficient Transportation Equity Act—Legacy for Users (SAFETEA-LU).	FTA Small Starts
Surface Transportation Program Fund, Section 1108 (STP)	FTA Section 5311(f)
Congestion Mitigation and Air Quality Improvement Program, Section 1110 (CMAQ)	California's Bicycle Transportation Account (BTA)
Transportation Enhancement Activities (TEA)	Environmental Enhancement and Mitigation (EEM) Program
National Recreational Trails Program	Safe Routes to School (SR2S)
National Highway System Fund (NHS)	Office of Traffic Safety (OTS)
National Highway Safety Act, Section 402	Transportation Development Act (TDA) Article III
Transit Enhancement Activity, Section 3003	Transportation Funds for Clean Air (TFCA, formerly AB 434)
Section 3 Mass Transit Capital Grants	Flexible Congestion Relief (FCR) Program
Bridge Repair & Replacement Program (BRRP)	State Highway Operations and Protection Program (SHOPP)
Federal Transit Administration (FTA) 5309	

City-Level Funding	
Public Utility Enterprises	• Cities 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 2007–2016: $2.2 billion. • Budget for new solar hot water systems for 2010–2017: $250 million.
Energy Upgrade California	• Program is intended for home energy upgrades. • Funded by the American Recovery and Reinvestment Act, California utility ratepayers, and private contributions. • Utilities administer the program, offering homeowners the choice of one of two upgrade packages—basic or advanced. • Homeowners are connected to home energy professionals. • Rebates, incentives, and financing are available. • Homeowners can receive up to $4,000 back on an upgrade through the local utility.
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. SANBAG recently approved a contract for solar power site assessments, bringing together a number of cities 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 Strategic Growth Council (SGC) or 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	• 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	• 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	• 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	• 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	• 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. • AB 811 and the PACE program are currently on hold for residential properties due to potential violation of standard FHFA federally guaranteed (Fannie Mae/Freddie Mac) residential mortgage contracts. • The PACE program is not on hold for commercial properties. • SANBAG intends to administer a PACE program in the region. • SANBAG will structure a regional energy efficiency and water conservation improvement loan program for existing buildings (AB 181 and AB 474).

5.2.2.2 Additional Considerations

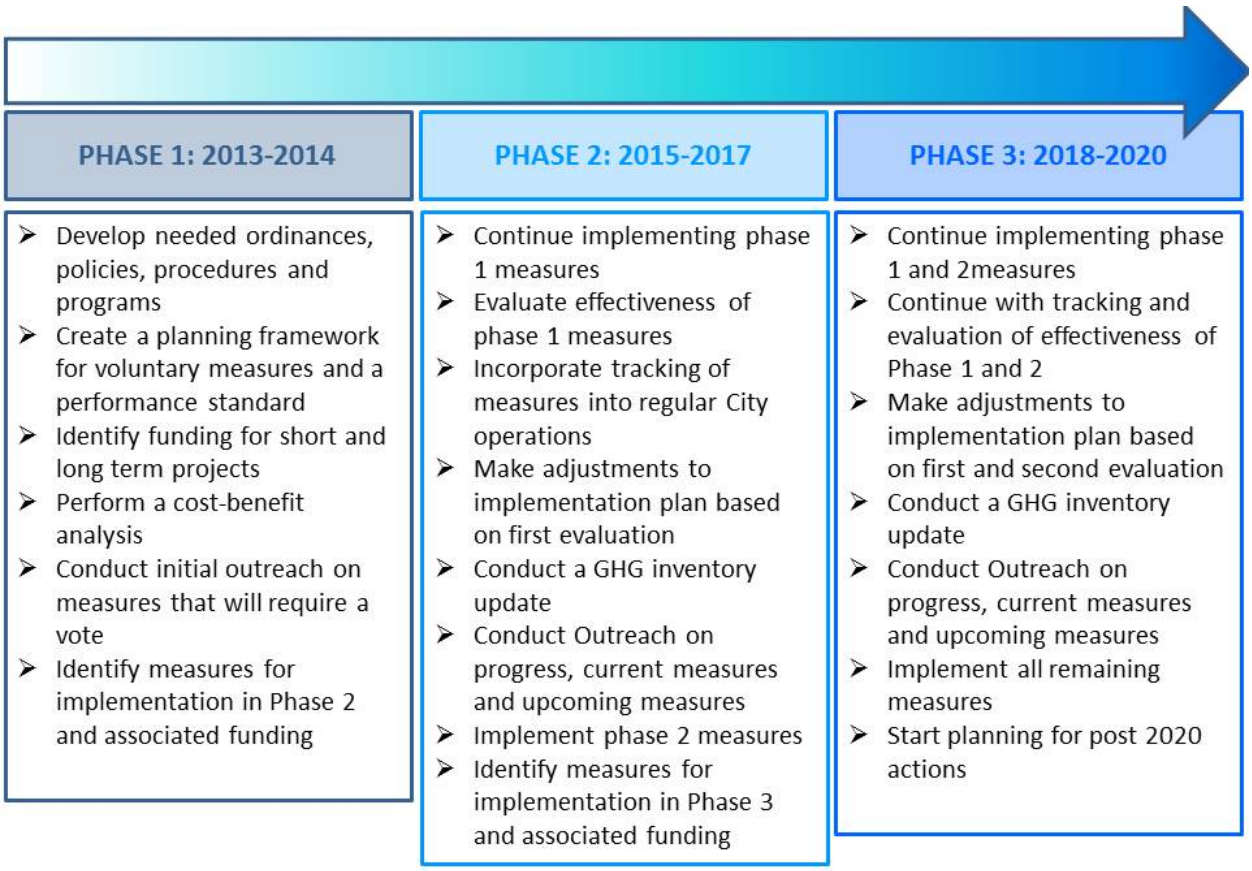
In addition to pursuing the funding options above and monitoring the availability of others, Partnership cities would need to take the following steps in order to best inform decisions related to the cost of GHG reductions measures.

- **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 city budget and CIP.** Certain capital improvements, particularly those identified in Energy and Land Use/Transportation Measures, may need to be added to the city's CIP and facility master plan programs, as well as those of the city utility enterprises and other public agencies (such as transit agencies) that have control for project implementation. For CIPs completely under the city's control, new projects would need to be assessed for consistency with a city'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 (e.g., for some cities, Energy-3 may be related to a city's already existing Green Building Ordinance adopted after 2008), while others would require new ordinances (e.g., Trans-1: Idling ordinance, if not previously adopted by a city that selected this measure). Staff would need to coordinate these efforts in conjunction with planning departments, planning commissions, and city councils.
- **Pursue outside funding sources.** A range of funding from state and federal agencies has been identified. The city would need to pursue these (and other emerging) funding sources as a part of implementation efforts.
- **Implement and direct preferred city funding sources**. While city funding sources are limited in most cities, the city, 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 necessitate staff time to promote replacement of water fixtures; the city may also want to track the number of households that participate in the program and the amount of electricity, natural gas, water and cost saving over time.
- **Identify economic indicators to consider future funding options.** Economic recovery may occur rapidly or slowly. Whatever the timeframe, the city 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 prices cost per kWh on solar installations, unemployment rates, or real wage increases, can help the city 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 city uses the Reduction Plan to develop its own city-specific CAP, it is anticipated that the city would implement its CAP in phases. Figure 5-1 shows an outline of potential key priorities for three potential implementation phases for the city's CAP. The phasing described requires as a first step that each Partnership city develop a CAP Implementation Timeline. Conceptually phasing could be broken out into Phase 1 (2013–2014), Phase 2 (2015–2017), or Phase 3 (2018–2020), as proposed below. Each conceptual phase is discussed in more detail below.

Figure 5-1. Sample Implementation Timeline for a City CAP



- **Phase 1 (2013–2014):** During Phase 1, the city would develop key ordinances, programs, policies, and procedures required to support and enforce the local mandatory GHG reduction measures. Likewise, the city would create a planning framework that would guide implementation of the voluntary measures and performance standards. Measure funding would be secured and a detailed finance plan developed. The city 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 city could begin to evaluate the effectiveness of implemented measures and adapt management procedures accordingly.
- **Phase 2 (2015–2017):** During Phase 2, the city would continue to implement measures that were begun in Phase 1. The city would evaluate the effectiveness of these measures and adapt management procedures accordingly. Likewise, the city would conduct an updated community

GHG inventory to monitor emissions trends. The city would also select and encourage implementation of Phase 2 measures.

- **Phase 3 (2018–2020):** During Phase 3, the city 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 city could also begin developing plans for post-2020 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, city council, city 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?
- Greenhouse Gas Reductions—How effective is the measure at reducing greenhouse gases?
- 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 city 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 city is also provided. Measures can be categorized based on the convention of low, medium, or high, with low-level measures requiring the least level of effort by the city and 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	• 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	• Requires staff resources beyond typical daily level. • Policy or code revisions necessary. • Internal and external coordination (e.g., with stakeholders, other cities or agencies, or general public) is necessary.
HIGH	• 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 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 cities 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.

The city would educate stakeholders, such as businesses, business groups, residents, developers, and property owners, about the GHG reduction measures that require their participation, encourage 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, city 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 city newsletters, SANBAG's newsletter, on city 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 important to ensure programs are functioning as they were originally intended. Early identification of effective strategies and potential issues would enable the city to make informed decisions on future priorities, funding, and scheduling. Moreover, monitoring provides concrete data to document the city'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 city inventory city 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 city's baseline GHG emissions in 2008. If Participating Cities were interested, a combined inventory effort could be conducted through SANBAG 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 city until funding mechanisms and resource availability were better understood.
- Track State Progress—For many cities, 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 city 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 assigned intervals) to the city 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 city may conduct a 4-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 2020.

5.2.3.3 Regional Cooperation

There are substantial opportunities to enhance the effectiveness of the CAP through regional collaboration. Partnership cities would explore the potential to leverage resources through regional cooperation. Potential opportunities and partners include the following.

- **SANBAG:** As the regional council of governments and the regional transportation agency, SANBAG is a logical hub of communication for Participating cities on the progress of their CAPs. Further, SANBAG will be the responsible implementing agency for many transportation-related measures that result in local GHG reductions. SANBAG is also administering the PACE program loans and a PPA for energy efficiency and solar energy for participating cities.

- **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 city 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 cities' waste and has committed as part of its own CAP to improve methane control for its landfills which will help reduce emissions associated with city landfilled waste. Coordination with the county to provide the necessary facilities, programs, and incentives would help ensure this goal can be achieved by 2020, as waste services are often shared across several jurisdictions, including the unincorporated portions of the county.
- **Local Water Providers:** The cities can work with the both the wholesalers and retailers of water in each city to promote reductions in indoor and outdoor water use from existing developments and achieve the goals set forth by SB X7-7.
- **Regional and Local Wastewater Agencies.** Cities can partner with IEUA or their local wastewater treatment authority in promoting reduction of emission 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 2020

In order to assess whether implementing this Reduction Plan achieves the state's long-term climate goals, one must look beyond 2020 to see whether the emissions reduction measures included for the 2020 milestone set the region on the trajectory toward future greater reductions in the post-2020 period.

To date, there is no state or federal mandate requiring reduction of GHG emissions after 2020. AB 32 contains no post-2020 reduction target nor provides CARB with the authority to mandate compliance with a post-2020 target. 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 Schwarzenegger's Executive Order S-3-05 calls for an 80% reduction below 1990 greenhouse gas emission levels by 2050. However, 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, S-03-05 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. The 2050 target in S-03-05 is equivalent to a 2050 statewide target of about 85 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) (total emissions), as compared to the 1990 level of 427 $MMTCO_2e$. However, there is currently (as of fall 2012), no state or federal plan as to how to achieve such ambitious reductions for 2050. The CARB 2008 AB 32 Scoping Plan did discuss a general scenario of potential reductions that would be needed by 2050 to meet these targets. Similar to the AB 32 Scoping Plan, this Reduction Plan shows a potential trajectory of GHG emissions reductions due to expansion of measures after 2020.

Assuming that emissions of 15% below 2008 levels (equal to 10.9 $MMTCO_2e$ for the region), excluding stationary sources) is roughly equivalent to 1990 levels, a 2050 regional goal to match the S-3-05 goals would be to achieve a level of emissions of 2.2 $MMTCO_2e$ in 2050, excluding stationary sources. Full implementation and expansion of the CARB's Scoping Plan to increase efforts beyond 2020 and expansion of the city-identified strategies studied in this Reduction Plan could put the region on a path toward achieving these required long-term reductions. Figure 5-3 depicts what an emissions trajectory might look like, assuming the region follows a linear path from the 2020 reduction target to a 2050 goal matching that in S-03-05. While the specific measures needed to meet the 2050 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 2020.

To stay on course toward the 2050 target, the region's greenhouse gas emissions need to be reduced to approximately 6.3 $MMTCO_2e$ by 2030. This translates to an average reduction of 5.25% per year between 2020 and 2030, or an additional 4.4 $MMTCO_2e$ in reductions during the period 2020 to 2030. An additional challenge comes from the fact that the population in the region (sum of participating cities considered in this analysis) will continue to grow between 2020 and 2030 (a growth from approximately 1.73 million in 2020 to 1.96 million in 2030). Taking into account population growth, per-capita emissions would need to decrease at an average rate of approximately 0.5 $MTCO_2e$ per person per year during the 2020 to 2030 period. These reductions are possible. The measures needed are logical expansions of the programs recommended in the CARB Scoping Plan at the state level and the measures included in this Reduction Plan at the local level. By building on planned state efforts during this period and ramped up efforts in the local building energy and transportation (and other) sectors on the part of the local governments, the region can be on track to reach a 2050 goal.

The state can help the cities in San Bernardino County keep on track through 2030 by extending state action in the following ways, as described in the Scoping Plan (California Air Resources Board 2008).

- Expand vehicle efficiency regulations to achieve a 40% fleet-wide passenger vehicle reduction by 2030 (approximately double the almost 20% expected in 2020).
- Increase California's use of renewable energy in electricity generation (beyond the 33% planned for 2020).
- Reduce the carbon intensity of transportation fuels by 25% (a further decrease from the 10% level set for 2020).
- Increase energy efficiency and green building efforts (so that the savings achieved in the 2020 to 2030 timeframe are approximately double those accomplished in 2020).

- Using a regional or national cap-and-trade system to further limit emissions from the 85% of greenhouse gas emissions in capped sectors (Transportation Fuels and other fuel use, Electricity, Residential/Commercial Natural Gas, and Industry).

This Reduction Plan has not assumed any benefit from a cap-and-trade system by 2020, but when implemented, such a system will result in reductions beyond those currently anticipated in the Reduction Plan for 2020, and in additional reductions for 2030. The California Cap and Trade system will particularly affect large stationary sources, which are excluded from local measures in this Reduction Plan to avoid duplication of state and federal regulatory efforts. In addition, the Cap and Trade system will also affect electricity generation and transportation fuels, which may change energy prices, which may in turn change energy use and transportation behavior beyond that assumed for the various city measures included in this Reduction Plan.

It is reasonably foreseeable that as California approaches its first milestone in 2020, focus would shift to the 2050 target. A detailed plan for how the state would meet this target is expected prior to 2020 accordingly. Partnership cities will monitor developments at the national and state levels.

Beginning in Phase 3 (2018), it is recommended that the Partnership cities and SANBAG commence planning for the post-2020 period. At this point, the Partnership cities would have implemented the first two phases of their local CAPs and would have a better understanding of the effectiveness and efficiency of different reduction strategies and approaches. The new post-2020 reduction plan should include a specific target for GHG reductions for at least 2030 and if supported by long-term planning at the state level, should also include preliminary planning for 2040 and 2050. The targets should be consistent with broader state and federal reduction targets and with the scientific understanding of the reductions needed by 2050. It is recommended that partnership cities adopt the post-2020 reduction plan by January 1, 2020, which would require cities to start a new inventory/assessment process by 2017 or 2018 at the latest.

Partnership cities can do their part to be on track through 2030 to meet the 2050 goal by implementing the following.

- Increase energy efficiency and green building efforts (for city municipal buildings as well as private buildings in the region) so that the savings achieved in the 2020 to2030 timeframe are approximately 69% those accomplished in 2020.
- Continue to implement land use and transportation measures to lower VMT and shift travel modes (assumed improvement of 8% compared to the unmitigated condition, which is within SCAG's assumed range of 8% to 12% of GHG reductions for 2035).
- Capture more methane from landfills receiving regional waste, move beyond 75% local waste diversion goal for 2020, 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 cities from that planned at the state and city level for 2020. In total, the measures described above would produce reductions to bring the region's GHG

emissions to an estimated 8.4 $MMTCO_2e$. 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 2020 goal, but can also provide an expandable framework for much greater long-term greenhouse gas emissions reductions.

Figure 5-3. Required GHG Reductions in the Region to Meet the State's 2050 Target

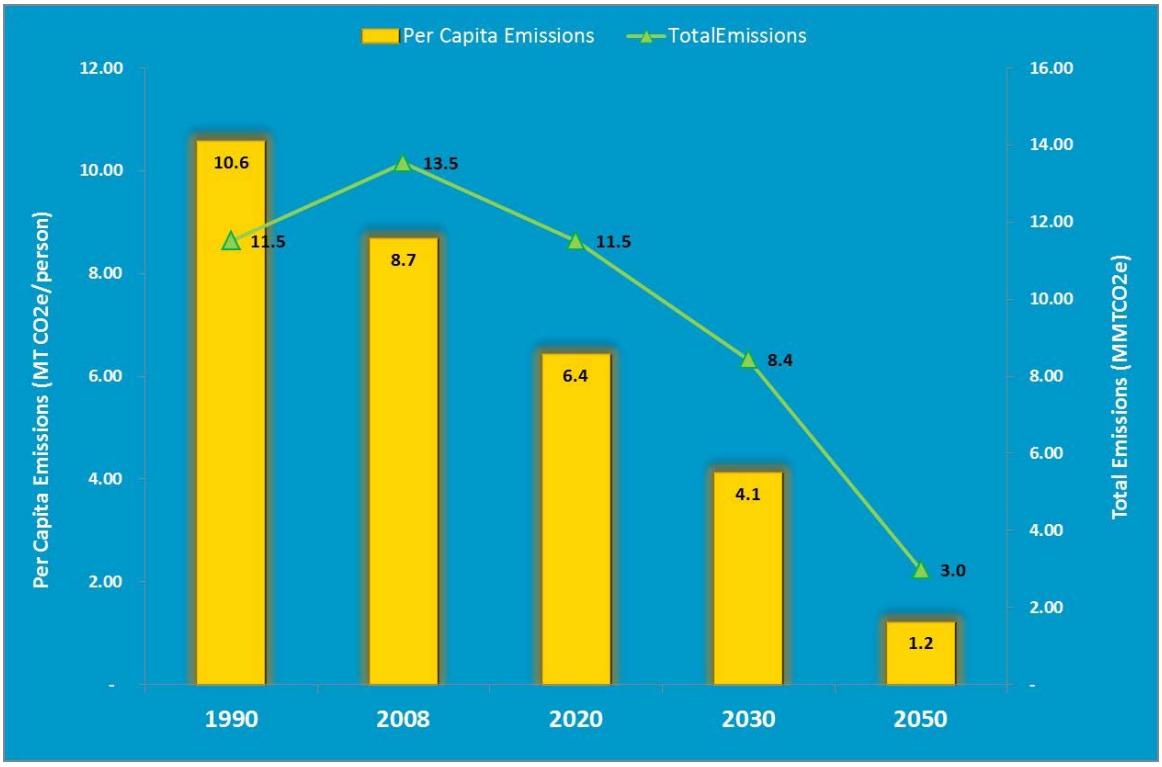


Table 5-3. Potential Regional Reduction Measures to Reach 2030 Goal

	Reductions by 2020 (This Plan)				Scenario for Reductions by 2030		
	State	Local	TOTAL	% below 2008	Total Additional Reductions 2020–2030	Effort Relative to 2008–2020	
	$MTCO_2e$	$MTCO_2e$	$MTCO_2e$	%	$MTCO_2e$	%	Notes
Building Energy (Residential, Commercial, Industrial)	1,361,486	783,954	2,145,440	39%	1,486,205	69%	CARB Scoping Plan calls for doubling of energy efficiency reductions between 2020 and 2030 (i.e., 100% effort relative to the period 2008–2020). The region would have to do 5% more in this sector to be on target. Additional GHG reductions during this period will come from a continued de-carbonization of electricity at the public utility level, more aggressive retrofitting of existing buildings and greatly increased use of small scale renewables.
On-Road Transportation	1,839,799	54,258	1,894,057	31%	1,713,327	90%	CARB Scoping Plan calls for a doubling of GHG reductions from vehicle fleet by 2030 compared to 2020 and more than doubling reduction of carbon intensity of transportation fuels (i.e., 100% effort relative to the period 2008–2020). The region would need to do about 8% more in this sector to stay on target. SCAG assumes between 8% and 12% in GHG reductions after 2020 for 2035 for VMT reduction. This analysis assumes 8% for local reductions.
Off-Road Transportation and Equipment	78,930	37,613	116,543	15%	53,671	46%	CARB Scoping Plan calls for more than double the reduction of carbon intensity of transportation fuels (i.e., equivalent level of effort to 2008–2020 period).

	Reductions by 2020 (This Plan)				Scenario for Reductions by 2030		
	State	Local	TOTAL	% below 2008	Total Additional Reductions 2020–2030	Effort Relative to 2008–2020	
	$MTCO_2e$	$MTCO_2e$	$MTCO_2e$	%	$MTCO_2e$	%	Notes
Solid Waste Management	163,191	6,240	169,430	50%	23,733	14%	Assumed cities in the County and the County continue further efforts at methane control, waste diversion, and potential waste to energy projects to result in modest further reductions in sector (7%). Once capture technology is installed, additional reductions in this sector are somewhat limited.
Agriculture	0	79,939	79,939	16%	0	0%	No assumed change.
Wastewater Treatment	0	6,017	6,017	9%	2,115	35%	Assumed additional 3% in reduction in sector due to continued installation of fugitive emission capture technology and additional water conservation.
Water Conveyance	0	58,768	58,768	24%	12,023	20%	Assumed additional 5% in reduction in sector due to continued effort to conserve water at a similar rate as 2020-2030.
GHG Performance Standard for New Development	0	121,418	121,418	NA	0	0%	No assumed change.
TOTAL			4,591,613		3,291,074		

Chapter 6
References

California Air Pollution Control Officers Association (CAPCOA). 2009. *Model Policies for Greenhouse Gases in General Plans*. Available: http://www.capcoa.org/wp-content/uploads/downloads/2010/05/CAPCOA-ModelPolicies-6-12-09-915am.pdf . Accessed: June 27, 2012.

California Air Pollution Control Officers Association (CAPCOA). 2010. *Quantifying Greenhouse Gas Mitigation Measures*. Available: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf . Accessed: May 31, 2012.

California Air Resources Board. 2008. *Climate Change Scoping Plan*. December. Available: <http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm>. Accessed: May 18, 2011.

California Air Resources Board (CARB). 2010. *Documentation of California's 2000–2008 GHG Inventory—Index*. Last revised: January 24, 2011. Available: http://www.arb.ca.gov/cc/inventory/doc/doc_index.php Accessed: January 18, 2011.

California Air Resources Board (CARB). 2011. *California Greenhouse Gas Emissions Inventory: 2000-2009*. December, 2011. Available: http://www.arb.ca.gov/cc/inventory/pubs/reports/ghg_inventory_00-09_report.pdf Accessed: May 29, 2012.

California Attorney General's Office. 2010. 2010 California Green Building Standards Code: Nation's First Mandatory Statewide Standards Code to Green Construction and Fight Climate Change. Available: http://images.emaildirect.com/clients/govpressoffice847/GreenBuildingCodeOnepager.pdf. Accessed: October 29, 2010.

California Department of Finance. 2012. Interim Population Projections for California and Its Counties 2010-2050. Available: http://www.dof.ca.gov/research/demographic/reports/projections/interim/view.php. Accessed August 27, 2012.

Carbon Dioxide Information Analysis Center. 2012. Recent Greenhouse Gas Concentrations. Last Updated February 2012. Available: http://cdiac.ornl.gov/pns/current_ghg.html Accessed June 1, 2012.

City of Adelanto. 1994. *City of Adelanto General Plan Update*. Available: http://www.ci.adelanto.ca.us/vertical/sites/%7BB5D4A1FE-8A01-4BEF-B964-5A44B9339C72%7D/uploads/%7BDEAB7F4C-C029-4FDE-A927-C895BBE67A87%7D.PDF. Accessed: January 24, 2013.

City of Big Bear Lake. 1999. *City of Big Bear Lake General Plan*. Big Bear Lake, California.

City of Chino. 2010. *City of Chino General Plan 2025 Public Review Draft*. Available: http://www.cityofchino.org/index.aspx?page=69. Accessed: January 24, 2013.

City of Chino Hills. 1994. *City of Chino Hills General Plan 1994*. Chino Hills, California.

City of Colton. 1987. *Final Preliminary General Plan for the City of Colton*. Available: http://www.ci.colton.ca.us/Plan_Dep/General%20Plan%20Part%201.pdf . Accessed: January 24, 2013.

City of Fontana. 2003. *City of Fontana General Plan*. Available: https://www.fontana.org/DocumentCenter/Home/View/2031 . Accessed: January 24, 2013.

City of Grand Terrace. 2010. *City of Grand Terrace General Plan*. Available: http://www.cityofgrandterrace.org/DocumentView.aspx?DID=709 . Accessed: January 24, 2013.

City of Hesperia. 2010. *Hesperia General Plan*. Available: http://www.cityofhesperia.us/DocumentCenter/Home/View/1615 . Accessed: January 24, 2013.

City of Highland. 2006. *City of Highland General Plan*. Available: http://www.ci.highland.ca.us/GeneralPlan/ . Accessed: January 24, 2013.

City of Loma Linda. 2009. City of Loma Linda General Plan. Available: http://www.lomalinda-ca.gov/pdfs/General%20Plan/May%2009/GP-Adopted-May09.pdf . Accessed: January 24, 2013.

City of Montclair. 1999. *City of Montclair General Plan*. Available: . Accessed: http://www.cityofmontclair.org/depts/cd/planning/general_plan.asp January 24, 2013.

City of Needles. 1986. *Needles General Plan Policy Document*. Adopted February 18, 1986. City of Needles, California.

City of Ontario. 2010. *The Ontario Plan*. Available: http://www.ontarioplan.org/ . Accessed: January 24, 2013.

City of Rancho Cucamonga. 2010. *Rancho Cucamonga General Plan*. Available: http://www.cityofrc.us/cityhall/planning/genplan.asp . Accessed: January 24, 2013.

City of Redlands. 1995. *City of Redlands 1995 General Plan*. Available: http://www.ci.redlands.ca.us/community/general_plan.htm . Accessed: January 24, 2013.

City of Rialto. 2010. *Rialto Draft General Plan*. Available: http://www.rialtoca.gov/flip/General2010/ . Accessed: January 24, 2013.

City of San Bernardino. 2005. *City of San Bernardino General Plan*. Available: http://www.ci.san-bernardino.ca.us/pdf/DevSvcs/General%20Plan%20Document.pdf . Accessed: January 24, 2013.

City of Twentynine Palms. 2005. *Twentynine Palms General Plan Update*. Available: http://www.29palmsgeneralplan.com/ . Accessed: January 24, 2013.

City of Victorville. 2008. *City of* Victorville *General Plan*. Available: http://ci.victorville.ca.us/uploadedFiles/CityDepartments/Development/GeneralPlan.pdf. Accessed: January 24, 2013.

City of Yucaipa. 2004. *City of* Yucaipa *General Plan*. Available: http://www.yucaipa.org/cityDepartments/communityDevelopment/generalPlan.php. Accessed: January 24, 2013.

Town of Yucca Valley. 1995. Town of Yucca Valley *General Plan*. Available: http://www.yucca-valley.org/departments/gen_plan.html. Accessed: January 24, 2013.

Georgetown Climate Center. 2012. *Summary of the Federal District Court's Order Enjoining California's Low Carbon Fuel Standard*. January 19, 2012. Available: http://www.georgetownclimate.org/sites/default/files/Summary_of_Court_Enjoining_CA_LCFS.pdf. Accessed: June 27, 2012.

InfraConsult. 2011. *Big Bear Modal Alternatives Analysis, Final Report.* Page 21. Available: <http://www.scag.ca.gov/corridor/pdf/bigbear/BigBear_FinalReport_12092011.pdf>. Accessed: January 16, 2013.

Intergovernmental Panel on Climate Change. 1996. *1995: Science of Climate Change. (Second Assessment Report)*. Cambridge, U.K.: Cambridge University Press.

Intergovernmental Panel on Climate Change. 2001. Atmospheric Chemistry and Greenhouse Gases. In *Climate Change 2001: Working Group I: The Scientific Basis.* Available: http://www.ipcc.ch/ipccreports/tar/wg1/pdf/TAR-04.PDF Accessed: September 22, 2009.

Intergovernmental Panel on Climate Change. 2007a. *Introduction*. In B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer, (eds.), *Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007.* Cambridge, U.K. and New York, NY, USA: Cambridge University Press. Available: http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-chapter1.pdf Accessed: August 11, 2009.

Intergovernmental Panel on Climate Change. 2007b. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.). Available: http://www.ipcc.ch/ipccreports/ar4-wg1.htm Accessed: September 22, 2009.

National Oceanic and Atmospheric Administration. 2005. *Greenhouse Gases: Frequently Asked Questions*. Available: http://lwf.ncdc.noaa.gov/oa/climate/gases.html Accessed: September 22, 2009.

San Bernardino Associated Governments. 2009. *San Bernardino County Long Range Transit Plan, Interim Draft Report*. Available: http://www.sanbag.ca.gov/commuter/LRTP/LRTP-draft2009.pdf. Accessed: June 27, 2012.

Southern California Association of Governments (SCAG). 2012. Draft 2012 Regional Transportation Plan/Sustainable Communities Strategy Growth Forecast.

U.S. Census Bureau. 2012. State & County QuickFacts. Available: <http://quickfacts.census.gov/qfd/states/06000.html>. Accessed: December 5, 2012.

U.S. Environmental Protection Agency. 2006. *High Global Warming Potential (GWP) Gases*. Available: http://www.epa.gov/highgwp/scientific.html Accessed: September 22, 2009.

U.S. Environmental Protection Agency. 2010. *eGRID2010 Version 1.1 Year 2007 GHG Annual Output Emission Rates.* Available: http://www.epa.gov/cleanenergy/documents/egridzips/eGRID2010V1_1_year07_GHGOutputrates.pdf Accessed: December 22, 2011.

U.S. Environmental Protection Agency. 2012. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2010*. EPA 430-R-12-001. April. Available: http://epa.gov/climatechange/emissions/usinventoryreport.html Accessed: June 12, 2012.