



City of Woodland Final 2035 Climate Action Plan



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Table of Contents

Chapter	Page
Chapter 1 Executive Summary	1-1
Purpose and Need.....	1-1
Relationship to 2035 General Plan	1-1
Woodland’s GHG Reduction Target and Strategies.....	1-1
Adaptability in CAP Implementation	1-5
Chapter 2 Introduction and Overview	2-1
Purpose of the Climate Action Plan	2-1
Climate Change Science.....	2-1
Climate Change and California Policies	2-2
Development of Woodland’s Climate Action Plan	2-2
Public Involvement	2-3
Relationship to the General Plan	2-4
Relationship to the California Environmental Quality Act	2-5
Chapter 3 Emissions Inventories and Targets.....	3-1
Greenhouse Gas Emissions Inventories	3-1
2005 Base Year Inventory	3-1
Emissions Forecasts Overview	3-2
2020 ABAU Emissions Forecasts	3-4
2035 Emissions Forecasts	3-4
Greenhouse Gas Reduction Targets	3-7
Chapter 4 Greenhouse Gas Reduction Strategies	4-1
Guide to Focus Areas.....	4-1
Extension of 2020 Strategies to the 2035 Planning Horizon.....	4-2
Reduction Strategy Considerations	4-3
4A. Energy.....	4A-1
4B. Transportation and Land Use	4B-1
4C. Urban Forest and Open Space.....	4C-1
4D. Water and Solid Waste.....	4D-1

Chapter	Page
4E. Public Involvement.....	4E-1
4F. Municipal Operations.....	4F-1
4G. Additional Actions.....	4G-1
4H. 2020 and 2035 Target Progress.....	4H-1
Chapter 5 Implementation and Monitoring	5-1
Monitoring Progress	5-1
Program Evaluation and Evolution	5-1
CAP Management Commitments	5-3
Project-Level Compliance with the CAP	5-4

Acknowledgements

Appendices

Appendix A – Community Suggestions

Appendix B – 2020 Climate Action Plan Technical Report (on CD at back of document)

Appendix C – 2035 Forecasts and Target Methodology

Appendix D – 2035 CAP Strategy Metrics

List of Figures

Figure ES.1 – CAP Strategy Reductions in 2035	1-2
Figure 3.1 – 2005 Base Year Emissions Sources	3-1
Figure 4H.1 – 2020 Target Progress	4H-1
Figure 4H.2 – 2035 Target Progress, General Plan: Lower Scenario (CAP Planning Scenario)	4H-3
Figure 4H.3 – 2035 Target Progress, General Plan: Higher Scenario (CAP Planning Scenario)	4H-3
Figure 4H.4 – 2035 Target Progress, Additional Actions	4H-4

List of Tables

Table ES.1 – CAP Strategy Key	1-2
Table 3.1 – 2005 Base Year Emissions	3-2
Table 3.2 – 2020 ABAU Emissions Forecasts	3-4
Table 3.3 – 2035 BAU Emissions Forecasts	3-5
Table 3.4 – 2035 ABAU Emissions Forecasts – Conservative Scenario	3-6
Table 3.5 – 2020 Reduction Target	3-7
Table 3.6 – 2035 Demographics and GHG Targets	3-8
Table 3.7 – 2035 ABAU Emissions and Target, General Plan: Lower Scenario	3-8
Table 3.8 – 2035 ABAU Emissions and Target, General Plan: Higher Scenario	3-9
Table 4H.1 – 2035 CAP Strategy Estimates	4H-2

Acronyms and Abbreviations

AB	Assembly Bill
AB 197	Assembly Bill 197, State Air Resources Board greenhouse gas regulations
ABAU	adjusted business-as-usual
AR4	4th Assessment Report of the IPCC
ARB	California Air Resources Board
BAU	business-as-usual
CAP	Climate Action Plan
CAP Technical Report	November 2012 City of Woodland Climate Action Plan Technical Report
CCA	community choice aggregation
CEQA	California Environmental Quality Act
CFLs	compact fluorescent lights
CH ₄	methane
City	City of Woodland
CNG	compressed natural gas
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
EEM	energy efficient mortgage
EV	electric vehicle
FCV	fuel cell vehicle
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
HVAC	heating, ventilation, and air conditioning
IPCC	International Panel on Climate Change
LCFS	Low Carbon Fuel Standard
LED	light emitting diode
LEM	location-efficient mortgage
LID	low-impact development
LOS	level of service
lumens	amount of light bulbs provide
MT CO ₂ e	metric tons of carbon dioxide equivalent
MT CO ₂ e/yr	metric tons of carbon dioxide equivalent per year

N ₂ O	nitrous oxide
NEV	neighborhood electric vehicle
PACE	property assessed clean energy
PFC	perfluorocarbons
PG&E	Pacific Gas and Electric Company
PHEV	plug-in hybrid electric vehicle
PV	photovoltaic
RPS	Renewables Portfolio Standard
SACOG	Sacramento Area Council of Governments
SB	Senate Bill
SB 32	Senate Bill 32, California Global Warming Solutions Act of 2006
SF ₆	sulfur hexafluoride
SP	service population
TDM	transportation demand management
TOD	transit oriented development
UCD	University of California, Davis
UFMP	Urban Forest Management Plan
ULL	urban limit line
VMT	vehicle miles traveled
ZNE	zero net energy

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Executive Summary

Purpose and Need

The City of Woodland's Draft 2035 Climate Action Plan (CAP) presents a set of community-generated strategies to guide the City of Woodland (City), its residents, and local businesses in reducing greenhouse gas (GHG) emissions consistent with State goals for addressing California's contributions to climate change.

In 2006, California enacted Assembly Bill (AB) 32, the Global Warming Solutions Act, which requires that GHGs be reduced to 1990 levels statewide by 2020. Executive Order S-3-05 established a long-term target to reduce emissions 80% below 1990 levels by 2050. More recently, Senate Bill (SB) 32 established an interim target to achieve reductions 40% below 1990 levels by 2030. Local communities are encouraged to reduce GHGs 15% from 2005 levels by 2020 and must address longer term climate change effects in General Plans and project environmental reviews. The CAP strategies presented herein provide tools for addressing GHG emissions of future development and are aimed at reducing Woodland's GHGs by 2020 and 2035 consistent with the State's own targets.

Relationship to 2035 General Plan

The Draft 2035 CAP was developed simultaneously with the City's 2035 General Plan Update, which includes specific policy direction to implement the CAP in Policy 7.F.9 and Implementation Program 7.6. The 2035 General Plan also contains many goals and policies supporting the 2035 CAP that were considered during CAP development and analysis.

Woodland's GHG Reduction Target and Strategies

This CAP is an expanded version of the City's Preliminary 2020 CAP, which was adopted by the City Council on July 15, 2014. At that time, it was acknowledged that some of the Preliminary 2020 CAP

content could be revised as a result of the City's 2035 General Plan Update process and corresponding California Environmental Quality Act (CEQA) analysis. Upon adoption, the proposed Draft 2035 CAP will replace the Preliminary CAP.

The foundation for the Preliminary 2020 CAP is the *City of Woodland Climate Action Plan Technical Report*, prepared by the Sustainable Design Academy of the University of California, Davis, under Dr. Deb Niemeier's direction. The report includes detailed GHG emissions calculations for the 2005 base year, 2020 emissions forecasts, and quantified 2020 reduction strategy estimates.

Subsequent to development of the Preliminary 2020 CAP, the City engaged AECOM to provide additional GHG emissions analysis as part of the 2035 General Plan update process. AECOM analyzed future community-wide emissions consistent with the General Plan's 2035 horizon year and the demographic and land use assumptions associated with General Plan land uses.

The CAP analysis identified a need for local GHG reductions of **60,226** metric tons of carbon dioxide equivalent per year (**MT CO₂e/yr**) by 2020 and **111,645-112,265 MT CO₂e/yr** by 2035 in order to achieve Woodland's GHG targets.¹

The CAP approach to GHG reductions was developed using input from community workshops and stakeholder meetings. The approach is organized into six focus areas:

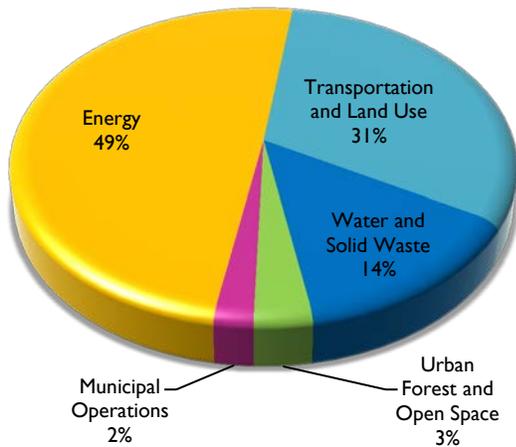
- Energy
- Transportation and Land Use
- Urban Forest and Open Space
- Water and Solid Waste
- Public Involvement
- Municipal Operations

¹ Reductions of 111,645 and 112,265 MT CO₂e/yr will be required for the General Plan: Lower and General Plan: Higher scenarios, respectively.

Most progress in reducing GHGs is expected to come from lowering energy use, using renewable energy, and reducing gas and diesel vehicle use. However, efforts in all areas are important to CAP implementation success. For example, land use planning strategies are essential to influencing lifestyles and travel modes and support transportation-related GHG reductions.

Figure ES.1 illustrates the share of GHG reductions from each focus area (Note: there are no reductions directly attributed to Public Involvement, but these strategies are critical to overall CAP implementation success).

Figure ES.1 – CAP Strategy Reductions in 2035



Analysis of 2035 target achievement considered the additional emissions reductions to be achieved by implementing the 2020 CAP strategies through 2035. The future of statewide actions and their contributions to achieving Woodland’s GHG target were also analyzed. Chapter 4G (Additional Actions) describes more efforts that can be pursued if CAP progress monitoring indicates the City is not on track to achieve its GHG targets, thus providing future flexibility in achieving the 2035 target.

Each of the six focus areas includes overarching objectives, strategies to achieve each objective, and implementation actions for each strategy. Table ES.1 defines the symbols used in the CAP objective and strategy summaries on the following pages.

Table ES.1 – CAP Strategy Key

GHG Reduction (MT CO ₂ e)	% of 2035 Reduction Target	Symbol
1–5,600	0–5%	
5,601–11,200	5–10%	
11,201–16,800	10–15%	
16,801–22,400	15–20%	
> 22,400	> 20%	

Important to overall CAP success, but not quantifiable

Energy

Much of the progress toward meeting Woodland’s GHG reduction targets can be achieved through individual actions to reduce energy demand and increase the proportion of energy obtained from renewable sources. Many factors are making it possible to achieve significant, immediate reductions in energy-related GHGs: rapidly improving technologies; availability of more energy-efficient building materials, lights, and equipment; and financing mechanisms, such as property-assessed clean energy (PACE) programs, that make improvements more affordable. The following strategies, if fully implemented, would reduce community GHG emissions by 26,000 MT CO₂e in 2020 (43% of target) and 54,750 MT CO₂e in 2035 (49% of target).

OBJECTIVE 1: Reduce Building Energy Use

E-1	Lighting Efficiency Upgrades	
E-2	Appliance/Equipment Upgrades	
E-3	Comprehensive Building Efficiency	
E-4	Improved Building Temperature Controls	
E-5	Energy Conservation Education	

OBJECTIVE 2: Increase Renewable Energy Use

E-6	Renewable Energy Generation and Procurement	
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Transportation and Land Use

The two major approaches to reducing transportation GHG emissions are reducing motor vehicle use and replacing gasoline and diesel vehicles with low- or zero-emission vehicles. Transportation and land use strategies for GHG reduction are closely linked because of the influence land use policies can have on rates and patterns of growth; distances traveled for essential services; and ease or difficulty of different modes of travel. Land use and transportation infrastructure choices that promote pedestrian, bicycle, and transit travel and situate residents near workplaces, goods and services, and recreational amenities are essential to reducing GHGs from motor vehicle use. The following strategies, if fully implemented, would reduce GHG emissions by 18,000 MT CO₂e in 2020 (30% of target) and 34,850 MT CO₂e in 2035 (31% of target).

OBJECTIVE 1: *Implement Land Use Policies to Support Reduced Motor Vehicle Use*

- T/LU-1 Complete Streets Program 
- T/LU-2 Infill Development, Redevelopment, and Repurposing 
- T/LU-3 Smart Growth in New Development 

OBJECTIVE 2: *Reduce Vehicle Miles Traveled and Equipment Idling Emissions*

- T/LU-4 Reduced Motor Vehicle Trips 
- T/LU-5 Increased Mass Transit Use, Walking, and Bicycling 
- T/LU-6 Reduced Emissions from Vehicle Idling and Other Equipment 

OBJECTIVE 3: *Replace Gas and Diesel Vehicles with Alternative-Fuel Vehicles*

- T/LU-7 Increased Use of Alternative-Fuel Vehicles 



Urban Forest and Open Space

With proper species selection, placement, and management, trees can help reduce GHG emissions by shading buildings, which reduces the need for air conditioning; shading pavement and reducing “heat island” effects; insulating buildings from cold winds; capturing and storing atmospheric carbon dioxide; and using solar energy to convert moisture to water vapor, resulting in cooler air. The following strategies, if fully implemented, would reduce GHG emissions by 2,300 MT CO₂e in 2020 (4% of target) and 3,700 MT CO₂e in 2035 (3% of target).

OBJECTIVE 1: *Increase Community Tree Canopy*

- UF-1 Urban Forest Management Plan 
- UF-2 Increased Tree Planting 
- UF-3 Maintenance of Existing Trees 
- UF-4 Public Education 

OBJECTIVE 2: *Maintain and Enhance Open Space Environmental Values*

- UF-5 Open Space Preservation 

Water and Solid Waste

Reducing water use reduces the energy used by the City to pump and treat water and wastewater, as well as the energy used to heat water in homes and businesses. Solid waste contributes to GHG emissions through decomposition at landfills. The following strategies, if fully implemented, would reduce GHG emissions by 11,900 MT CO₂e in 2020 (20% of target) and 15,850 MT CO₂e in 2035 (14% of target).

OBJECTIVE 1: Reduce Per Capita Water Demand

WW-1 Increased Water Conservation 

OBJECTIVE 2: Reduce Solid Waste-Related Emissions

WW-2 Solid Waste Reduction and Waste Processing Improvements 

Public Involvement

The success of most of the CAP strategies will depend on the combined actions of many individuals. Community engagement on the scale that is needed for success will rely, in part, on efforts driven by community members to educate and inspire others.

OBJECTIVE 1: Build Community Engagement in CAP Implementation

PI-1 Citizen-Led Outreach 

PI-2 Outreach Materials and Activities 

PI-3 Recognition of Business Sustainability Efforts 

OBJECTIVE 2: Measure CAP Implementation Progress and Adjust Actions as Needed

PI-4 Progress Checks and Recommendations 



Municipal Operations

Municipal operations that generate GHG emissions include the operation of gas and diesel vehicles and equipment and the use of electrical power to operate City buildings, sports field lighting, streetlights and signals, wells, wastewater treatment processes, and stormwater pumps. Strategies are provided to address these sources as well as City policies and procedures. The following strategies, if fully implemented, would reduce the City's GHG emissions by 2,100 MT CO₂e in 2020 (3% of target) and 2,500 MT CO₂e in 2035 (2% of target).

OBJECTIVE 1: Incorporate Sustainable Practices into All City Operations

MO-1 Internal Policies 

MO-2 Purchasing and Contracting 

OBJECTIVE 2: Reduce Emissions from Municipal Electricity Use by 80% or More

MO-3 Increased Energy Efficiency and Use of Renewable Energy 

OBJECTIVE 3: Reduce Vehicle Fleet and Employee Commute Emissions

MO-4 Increased Use of Alternative-Fuel and Fuel-Efficient Vehicles 

MO-5 Reduced Motor Vehicle Use 

Adaptability in CAP Implementation

The CAP is meant to be a guide to an evolving, rather than a static, plan of action. The specific activities needed to successfully achieve the community's GHG reduction targets may change or expand as new technologies and policies develop and also as Woodland undergoes changes over time.

An important element of the CAP is regular assessments of progress (Public Involvement Objective 2). If these assessments find that sufficient progress is not being made toward achieving the GHG-reduction targets, further actions will be selected for implementation from a menu provided in Chapter 4G (Additional Actions). In addition, Chapter 5 (Implementation and Monitoring) further describes the City's plan to monitor, evaluate, and update CAP progress.

To be effective, CAP implementation will require a high level of public engagement. A linchpin of plan implementation is the formation of one or more self-

motivated community groups that will partner with the City to develop and implement outreach efforts aimed at achieving specific goals outlined in the CAP.

The City looks forward to continued community momentum in working toward our common goal of supporting an environmentally and economically sustainable, vibrant, and healthy Woodland.



For More Information

Woodland CAP and CAP Technical Report::

- City of Woodland: www.cityofwoodland/envirowoodland

Climate change science and planning:

- U.S. EPA: www.epa.gov/climatechange/
- State of California: www.climatechange.ca.gov/
- UCD: climatechange.ucdavis.edu/

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Introduction and Overview

Purpose of the Climate Action Plan

This Climate Action Plan (CAP) presents a set of strategies formulated to guide the City, its residents, and businesses in reducing Woodland's contributions to greenhouse gas (GHG) emissions consistent with State goals. The GHG reduction targets described in the CAP were selected to help establish local emissions reductions on a long-term trajectory that is consistent with the State's own GHG emissions reduction goal for 2050 (i.e., 80% below 1990 levels).

Adoption of this plan demonstrates Woodland's commitment to helping reduce the effects of rapid climate change. While climate change is a global issue, local governments and the communities they represent are uniquely capable of identifying the most effective ways of addressing major sources of GHG emissions within their own jurisdictions. The CAP provides a community-based policy framework to address community-wide GHG emissions sources. The CAP strategies also provide many co-benefits that will contribute to a healthier community. For example, increased emphasis on transit-oriented development corresponds to more walkable communities and better air quality, thus better health and livability effects.

This plan is designed to:

- Translate high-level objectives and quantified goals into a realistic, understandable set of implementation actions;
- Demonstrate that significant reductions in GHG emissions are attainable through local actions;
- Inspire community members to work collectively to achieve these reductions;

- Dovetail with updated community General Plan policies that are required to address climate change impacts and adaptation, including those for land use, transportation, building design, and infrastructure; and
- Provide a predictable approach to mitigation strategies for the compliance of future development projects with the California Environmental Quality Act (CEQA).

Climate Change Science

GHGs are those gases that trap heat in the atmosphere, a phenomenon known as the "greenhouse effect." The natural occurrence of these gases produces a natural greenhouse effect. Scientific evidence from many studies indicates that human activities are increasingly producing atmospheric concentrations of GHGs that are much higher than the naturally occurring GHGs in the atmosphere, causing rapid atmospheric warming. The result is the phenomenon commonly referred to as climate change, which is characterized by increasing average global temperatures, changing frequencies and intensities of droughts and floods, rising sea levels, ocean warming, and ocean acidification. By the end of the 21st century, without concerted efforts to reverse current trends, global temperatures are expected to increase by 3.2 to 7.2 degrees Fahrenheit, causing sea levels to rise 7 to 23 inches.

The primary GHGs are carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Others include hydrofluorocarbons (HFCs), perfluorocarbon (PFCs), and sulfur hexafluoride (SF₆).

For more information about climate change science and climate change planning, see:

- U.S. Environmental Protection Agency: www.epa.gov/climatechange
- State of California: www.climatechange.ca.gov
- University of California, Davis: climatechange.ucdavis.edu

Climate Change and California Policies

In California, the predicted effects of rapid climate change include increased periods of water scarcity, detrimental effects on agriculture production and food supplies, more wildfires, and increased flooding of coastal and other low-lying communities.

The State of California has taken many policy steps to address climate change, including the establishment of the following targets for GHG reductions:

- **Executive Order S-3-05, 2005:** Established a statewide GHG emissions reduction target of 80% below 1990 levels by 2050.
- **Global Warming Solutions Act – Assembly Bill (AB) 32, 2006:** Requires a statewide reduction in GHG emissions to 1990 levels by 2020.
- **Global Warming Solutions Act – Senate Bill (SB) 32, 2016:** Established an interim target between the previous 2020 and 2050 targets, calling for reductions of 40% below 1990 levels by 2030.

To help meet the AB 32 goal for GHG reductions, the State encourages local communities to reduce their GHG emissions 15% from 2005 levels by 2020. This reduction is considered equivalent to achieving 1990 GHG levels. The City set its 2020 GHG reduction target to correspond to this guidance, and derived its 2035 reduction target to be consistent with the State's own 2030 and 2050 targets described above.

Since the passage of AB 32, several other major California policies have been adopted to address climate change:

- **Senate Bill 97, 2007:** Requires analysis of the impacts of projects on climate change under CEQA.

- **California Renewables Portfolio Standard (RPS) – SB 1078, 2002; SB 107, 2006; SB 2, 2011, SB 350, 2015:** Requires electricity providers to procure at least 33% of energy from renewable resources, such as solar, wind, and geothermal sources, by 2020, and 50% by 2030.
- **Pavley Vehicle Emissions Standards – AB 1493, 2002:** Requires new standards for motor vehicle GHG emissions, resulting in regulations to reduce GHG emissions from passenger vehicles by about 30% in 2016.
- **Low Carbon Fuel Standard – Executive Order S-01-07, 2007:** Requires that the carbon intensity of California's passenger vehicle fuels be reduced by at least 10% by 2020.
- **Low Emission Vehicle III (Advanced Clean Cars Program):** Provides exhaust emissions standards for new vehicle models from 2017 through 2025 for passenger cars, light-duty trucks, and medium-duty passenger vehicles.
- **Sustainable Communities and Transportation Planning – SB 375, 2008:** Requires the establishment of regional per capita GHG emission reduction targets for cars and light-duty trucks for 2020 and 2035 to be implemented through a "sustainable communities strategy" adopted in each Metropolitan Planning Area in the state, including the Sacramento Area Council of Governments. The focus of the strategy is to reduce vehicle miles traveled within the region.

Development of Woodland's Climate Action Plan

The foundation for the CAP is the November 2012 *City of Woodland Climate Action Plan Technical Report (CAP Technical Report)*, which was prepared by the Sustainable Design Academy of the University of California, Davis (UCD) under the direction of Dr. Deb Niemeier. The *CAP Technical Report* contains substantial background documentation, including detailed GHG emissions calculations (for the 2005 baseline year and 2020 target year) and descriptions of the underlying assumptions for those calculations; a comprehensive menu of potential GHG reduction measures; and extensive supporting documentation to assist in the selection of measures tailored to Woodland's unique conditions.

Community members and City staff used the documentation in the *CAP Technical Report* to compile a set of GHG reduction strategies and actions considered most appropriate for Woodland, which were described in the Preliminary 2020 CAP. This task was achieved through participation in public meetings, community workshops, and small working groups during 2012 and 2013 and discussions of the City Council Energy and Sustainability Committees from 2008 to 2014.

The Pacific Gas and Electric Company (PG&E) Green Communities Program funded the UCD team's preparation of the *CAP Technical Report*, the City's public workshops and meetings, and the preparation of the Preliminary 2020 CAP through Yolo Energy Watch, PG&E's local government partnership with Yolo County jurisdictions.

The *CAP Technical Report* and materials related to the public meetings and workshops are available for review at www.cityofwoodland.org/envirowoodland.

Revisions to the Preliminary 2020 CAP

Subsequent to development of the Preliminary 2020 CAP, the City engaged AECOM to provide additional GHG emissions analysis as part of the 2035 General Plan update process. AECOM analyzed future community-wide emissions consistent with the General Plan's 2035 horizon year and demographic and land use assumptions associated with the updated General Plan. AECOM expanded on the City's adopted Preliminary 2020 CAP to accommodate this additional analysis, while maintaining the previous efforts of City staff, elected officials, community participants, and the technical team. AECOM also modified the previously calculated 2005 base year inventory and 2020 GHG emissions forecasts to include community-wide solid waste emissions, which were previously unquantified in the Preliminary 2020 CAP. Where feasible, the underlying assumptions used to develop the 2020 emissions forecasts and reduction strategy estimates were also used to develop the additional 2035 estimates, to maintain consistency in approach throughout the document. AECOM also developed several new longer-term strategies described in Chapter 4G (Additional Actions).

AECOM prepared Chapter 3 (Emissions Inventories and Targets) as an addition to the Preliminary 2020 CAP to clearly document the City's base year and emissions forecasts, provide the rationale for selection of the 2020

and 2035 targets analyzed in the CAP, and illustrate estimated target achievement based on the reduction strategies presented throughout the CAP. Appendix C provides additional detail on how the 2035 emissions forecasts and reduction estimates were prepared.¹ AECOM amended the six focus area chapters (4A through 4F) to include the 2035 GHG reductions estimates, but did not revise the underlying reduction strategy goals or actions.² The 2020 GHG reduction estimates for strategy E-6 (Renewable Energy Generation and Procurement) were revised, however, to reflect more accurate calculation factors and current data on solar photovoltaic installations within the community. AECOM calculated total solar electricity generation potential based on factors from the National Renewable Energy Laboratory and the RPS-compliant electricity emissions factor to avoid double counting reduction estimates from the statewide programs. To maintain a similar amount of GHG reductions in 2020, AECOM also increased the goal for total PV installations in 2020 as well. Finally, AECOM prepared Chapter 5 (Implementation and Monitoring) to clearly identify CAP implementation and monitoring steps that will be critical to ensuring future GHG reduction target achievement. The remainder of the Preliminary 2020 CAP was left unchanged from its original form.

Upon adoption, the proposed Draft 2035 CAP will replace the Preliminary 2020 CAP.

Public Involvement

To be effective, CAP implementation will require a high level of public engagement. Therefore, a linchpin of plan implementation is the formation of one or more self-motivated community groups that will function as City partners in developing and implementing outreach efforts aimed at achieving specific goals set forth in this document. No GHG reduction levels have been directly attributed to this CAP element, which is described in the Public Involvement section (Chapter 4E). However, public involvement will be crucial to implementing the strategies presented in the Energy, Transportation and

¹ Appendix C also includes a methodological description of how the community-wide solid waste emissions estimates were developed for 2005, 2020, and 2035

² AECOM quantified Objective 2 and strategy W/W-2 in Chapter 4D (Water and Solid Waste) in response to the inclusion of solid waste emissions in the inventory

Land Use, Urban Forest and Open Space, and Water and Solid Waste areas.

Relationship to the General Plan

The City's 2035 General Plan reflects the community's vision for its long-term future, based on extensive public input, research, and analysis. The 2035 General Plan describes policies that would sustain and enhance the community's character, encourage local economic development and job growth, provide opportunities for housing, improve circulation and mobility, and increase the local quality of life. In particular, General Plan Policy 7.F.9 supports implementation of the City's CAP:

Policy 7.F.9: Climate Action Plan. *Implement the Climate Action Plan to achieve the city's greenhouse gas reduction targets by 2020, 2035, and 2050.*

Further, General Plan Implementation Program 7.6 outlines achievement of Policy 7.F.9:

Implementation Program 7.6: *Update the Municipal Code and develop programs to implement policies and objectives contained within the Climate Action Plan. Such actions may include:*

- *Developing a program to ensure the retrofit of existing residential units to current code, energy and water uses*
- *Facilitate possible off-set fee for new development*
- *Consider participation in a Community Choice Aggregation program*
- *Developing a list of mandatory compliance options including net zero energy for new developments*

In addition to Policy 7.F.9, numerous General Plan goals and policies align with the CAP's reduction strategies described throughout Chapter 4, and will result in GHG reductions over time. These policies are identified with an oak leaf in the 2035 General Plan text. All of these policies have been considered in the development of this 2035 CAP, and are factored into the strategies and reduction quantification to the extent possible. The following list provides a sample of the strong overlap between these two strategic documents.

Land Use, Community Design, and Historic Preservation Element

Goal 2.A Growth and Change

- 2.A.5 Complete and Well-Designed Neighborhoods
- 2.A.6 Infill Development

Goal 2.C Smart Growth, Sustainability and Regional Coordination

- 2.C.1 Compact Form
- 2.C.2 Consistency with Climate Action Plan
- 2.C.3 Alternative Transportation

Goal 2.I Mixed-Use Corridors

- 2.I.2 Increase Density
- 2.I.3 Green Streets

Goal 2.M Neighborhoods in New Specific Plan Areas

- 2.M.1 Compact Form
- 2.M.2 Mixed Uses
- 2.M.4 Pedestrian and Bike Mobility
- 2.M.6 Green Building

Transportation and Circulation Element

Goal 3.A Multi-modal Transportation System

- 3.A.4 Reduce Vehicle Miles Traveled (VMT)
- 3.A.5 Transportation Demand Management (TDM) Ordinance
- 3.A.7 Street Grid Network and Density
- 3.A.9 Road Diets

Goal 3.B Complete Streets

- 3.B.3 Complete Street Requirements
- 3.B.4 Retrofit
- 3.B.9 Green Streets

Goal 3.E Comprehensive Pedestrian System

- 3.E.4 Interconnected Network
- 3.E.5 Walkable Downtown

Goal 3.F Comprehensive Bicycle System

- 3.F.2 Bikeway Network
- 3.F.3 Bicycle Facilities
- 3.F.6 Bicycle and Transit Integration
- 3.F.8 Woodland-Davis Bikeway

Goal 3.G Effective Transit System

- 3.G.1 Transit Services
- 3.G.6 Express Bus Service
- 3.G.9 Bike and Pedestrian Connections

Public Facilities and Services Element*Goal 5.G Safe, Reliable, and Sufficient Potable Water*

- 5.G.4 Water Management Plans
- 5.G.5 Recycled Water

Goal 5.I Stormwater Management

- 5.I.4 Low Impact Development
- 5.I.8 Reuse of Stormwater

Goal 5.J Solid Waste Collection, Transfer, Recycling, and Disposal

- 5.J.6 Recycling Facilities
- 5.J.7 Promote Waste Reduction

Healthy Community Element*Goal 6.B Active Lifestyles*

- 6.B.2 Accessibility
- 6.B.3 Promote Active Transportation
- 6.B.5 Citywide Pedestrian and Bicycle Network
- 6.B.10 Improved Pedestrian Connections

Conservation and Open Space Element*Goal 7.A Protect Water Supply and Quality*

- 7.A.2 Groundwater Management
- 7.A.3 Watershed Protection
- 7.A.5 Landscape Water Conservation Standards

Goal 7.B Maintain and Protect Biological Resources

- 7.B.5 Open Space for Conservation
- 7.B.9 Tree Canopy
- 7.B.10 Urban Forest Management Plan

Goal 7.F Improve Air Quality and Reduce Greenhouse Gas Emissions

- 7.F.4 Landscaping to Improve Air Quality
- 7.F.5 Electric and Natural Gas Powered Equipment
- 7.F.7 Inventory of Greenhouse Gas Emissions
- 7.F.8 Reduce Vehicle Miles Traveled
- 7.F.9 Climate Action Plan

Housing Element*Goal 9.B Maintenance of Housing*

- 9.B.6 Energy Conservation and Efficiency

Goal 9.D Energy Conservation and Sustainable Housing Development

- 9.D.1 Site Design
- 9.D.3 CALGreen
- 9.D.4 Energy Conservation
- 9.D.5 Solar Energy
- 9.D.6 Weatherization

For further description of these and other General Plan goals and policies, visit the City's [General Plan website](#).

Relationship to the California Environmental Quality Act

Local governments may prepare a Plan for Reduction of Greenhouse Gases that is consistent with AB 32 goals. The development of such a plan can be used for CEQA review of subsequent plans and projects that are consistent with the GHG reduction strategies and targets in the plan. This approach allows jurisdictions to address GHG emissions at a community-wide level to determine the most effective and efficient methods to reduce GHG emissions, identify the reduction measures that would promote the goals of the General Plan, and employ the reduction measures that have the most co-benefits (for improving mobility and access, local economic

development, reducing household and business utility and transportation costs, improving public health, etc.).

While the CAP was developed to achieve the City's adopted reduction targets, the City could use an assessment of consistency with this plan in lieu of project-specific GHG CEQA analysis to entitle future projects. A project-specific environmental document that relies on this plan for its cumulative impacts analysis would identify specific reduction measures applicable to the project and how the project incorporates the measures. If the measures are not otherwise binding and enforceable, they must be incorporated as mitigation measures, project conditions of approval, or some other mechanism to ensure implementation.

Each of the actions described in the CAP provides details on implementing the GHG reduction strategies, including the party or parties responsible for implementation. Many of the reduction strategies and actions apply to the City itself. The descriptions of actions provided under each strategy indicate whether or not there is a requirement from development projects. For example, one of the actions under Strategy E-1 is: "Require that new construction include LED lights, solar tubes or skylights in windowless internal rooms, and consideration of room orientation to maximize the use of natural lighting." For each strategy that is related to development projects, the City will determine: (a) the project is consistent; (b) the project with conditions would be consistent ; (c) the strategy is relevant for new development, but not the subject project; or (d) the project includes one or more replacement strategies that would be equally or more effective in reducing GHG emissions and such replacement strategy or strategies are not included in the CAP or required by any other regulation, standard, design criteria, or other existing requirement. See Chapter 5 (Implementation and Monitoring) for a more detailed explanation of project compliance with the CAP.

To meet the standards of a qualified GHG reduction plan, Woodland's CAP must achieve the following criteria (which elaborate upon criteria established in State CEQA Guidelines Section 15183.5[b][1]):

- Complete a baseline emissions inventory and project future emissions
- Identify a community-wide reduction target
- Prepare a CAP to identify strategies and measures to meet the reduction target
- Monitor effectiveness of reduction measures and adapt the plan to changing conditions
- Adopt the CAP in a public process following environmental review

The CAP addresses each of these recommended plan elements as summarized below.

Chapter 3 (Emissions Inventories and Targets) presents the 2005 base year emissions inventory and forecasts for 2020 and 2035. Chapter 3 also presents the City's 2020 and 2035 GHG targets. Chapter 4 contains six sub-sections (Chapters 4A through 4F), one for each CAP focus area that describe the reduction strategies that will be implemented to achieve the GHG targets. Chapter 4G (Additional Actions) presents a menu of longer-term strategies to augment these, if needed. Chapter 4H (2020 and 2035 Target Progress) compares the estimated strategy reductions against the City's emissions forecasts and targets to demonstrate how the 2020 and 2035 targets will be achieved. Chapter 5 (Implementation and Monitoring) describes the City's process for monitoring, evaluating, and revising the CAP to ensure that the estimated strategy reductions do occur to support target achievement. Finally, this CAP is a part of the project description that is evaluated in the General Plan EIR.

Emissions Inventories and Targets

Greenhouse Gas Emissions Inventories

A greenhouse gas (GHG) inventory quantifies the amount of emissions generated within a community over a given period of time. In climate action planning, a base year is typically established for which the key GHGs are calculated and reported according to their generation source, or emissions sector. The base year inventory is then used to estimate future emissions levels for the horizon years analyzed in the CAP.

In an inventory, the amounts of each GHG are converted into the common unit of carbon dioxide equivalent (CO₂e). To make this conversion, each GHG pollutant is multiplied by its relative heat-trapping ability factor, called “global warming potential.” For example, methane (CH₄) is 28 times more potent than CO₂ in its heat-trapping ability¹; therefore, a unit of CH₄ has a CO₂e value 28 times greater than that of a unit of CO₂. The common standard for expressing GHG emissions in an inventory is metric tons of CO₂e (MT CO₂e).

2005 Base Year Inventory

The CAP strategies and analysis are based upon a 2005 base year emissions inventory, representing the starting point from which the 2020 and 2035 emissions forecasts were developed. The base year inventory reports community-wide emissions in the following six sectors:

- Transportation
- Energy

¹ International Panel on Climate Change (IPCC), 5th Assessment Report (AR5). The Preliminary 2020 CAP inventory was prepared using global warming potential (GWP) values from the IPCC 2nd Assessment Report, which was the most current at the time of inventory development. GWP values from AR5 were used in the 2035 emissions forecasts and reduction strategy quantification.

- Solid Waste
- Wastewater Reuse
- Water and Wastewater
- Municipal Operations

As shown in Figure 3.1 below, the vast majority of emissions in the community are a result of transportation and energy-related activities. These two emissions sectors comprise 94% of total community emissions. The remainder results from solid waste disposal, municipal operations, water and wastewater treatment and pumping, and wastewater reuse. The source of emissions in a community can be used to identify emissions reduction strategies. In Woodland, strategies that target transportation and energy emissions will have the greatest potential to achieve the City’s emissions reduction targets.

Figure 3.1 – 2005 Base Year Emissions Sources

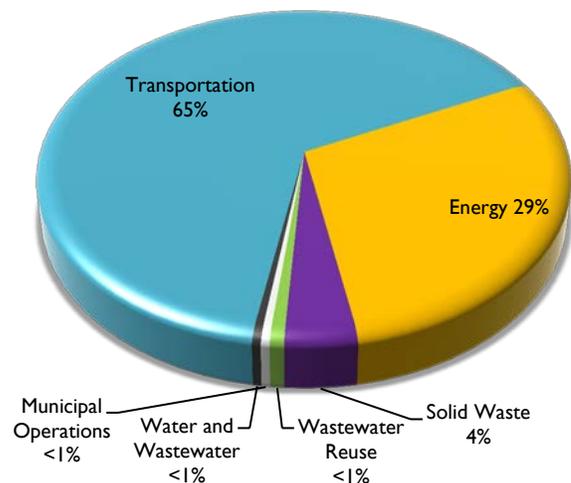


Table 3.1 shows the total emissions by source for the 2005 base year, which were used to develop the emissions forecasts presented in the following section. Transportation emissions come from vehicle use on roadways within the city boundaries. Energy emissions are a result of electricity and natural gas use in the community. Solid waste emissions are from waste disposed of and decomposing in area landfills. Wastewater reuse emissions result from agricultural applications of the wastewater from Pacific Coast Producers tomato processing and canning in which organic material in the wastewater biodegrades to create CO₂ and N₂O among the byproducts. The water and wastewater sector estimates emissions related to energy used in pumping, treating, and transporting water and wastewater, and the process emissions that occur during wastewater treatment. The inventory also estimates municipal operations emissions resulting from energy consumption and vehicle and equipment use at the local government level. A technical description of the 2005 base year inventory methodology can be found in Appendix B.

Table 3.1 – 2005 Base Year Emissions

Sector and Subsector	MT CO ₂ e/yr
Transportation	367,567
Energy	166,859
Electricity	72,010
Natural Gas	94,849
Solid Waste	22,244
Wastewater Reuse	4,377
Water and Wastewater	2,666
Electricity Use	2,270
Process Emissions	396
Municipal Operations	2,676
Energy Use	1,524
Transportation	1,152
Total	566,389

Emissions Forecasts Overview

Emissions forecasts are used to estimate how emissions could grow in the future as a community develops. In this CAP, projected population and employment growth within the community were used as proxies for

emissions growth (with the exception of 2035 transportation emissions, which were modeled based on estimated growth in vehicle miles traveled [VMT] associated with two General Plan land use scenarios). The forecasts illustrate the extent of emissions reductions that will be necessary to achieve the adopted emissions targets presented later in this chapter. Woodland’s 2005 base year inventory was used to estimate future emissions for the 2020 and 2035 horizon years.

It should be noted that these forecasts have been developed for planning purposes, and due to the complexity of each emissions sector and the sensitivity of the emissions forecasts to the location, type, and rate of development, are subject to change. Therefore, as the CAP’s horizon years approach, the City will reevaluate its emissions projections to incorporate additional data points from periodic emissions inventories and revised City growth estimates. Regular emissions inventory updates will also help to assess progress toward the reduction targets, allowing for revisions to CAP measures as necessary.

Business-as-Usual Forecasts

A baseline inventory is typically used to forecast GHG emissions under a business-as-usual (BAU) scenario, which assumes that historic trends describing energy and water consumption, travel, and other emissions-generating activities will remain the same in the future. BAU forecasts demonstrate what emissions levels are likely to be under a scenario in which no statewide or local actions (beyond those already in place in the baseline year) are taken to curtail emissions growth.

BAU emission forecasts provide insight regarding the scale of reductions necessary to achieve an emissions target before the consideration of reductions likely to result from federal and statewide actions (e.g., vehicle efficiency standards), inherent technological advancements (e.g., energy-efficient appliances, lighting technology), or new voluntary or mandatory conservation efforts (e.g., landscape irrigation restrictions). The BAU emission forecasts also do not anticipate new sources of emissions or increased consumption rates in existing sectors. Therefore, the only variable influencing BAU forecasts is projected population and employment growth within the Planning Area.

Adjusted Business-as-Usual Forecasts

The statewide policies and programs designed to achieve the State's own GHG targets are expected to provide substantial emissions reductions at the local level. This CAP assumes that emissions within the energy and transportation sectors will be reduced through the statewide efforts described in Chapter 2 (Introduction and Overview). This includes regulations addressing the use of renewable energy sources and GHG emissions from passenger cars and trucks. When the impact of these statewide actions is applied to Woodland's BAU emissions forecasts, the resulting adjusted business-as-usual (ABAU) emissions levels begin to show progress toward future reduction targets. These actions provide important reductions that are applied toward Woodland's community-wide emissions targets, reducing the total amount of emissions to be addressed locally through implementation of the CAP's strategies described throughout Chapter 4. This CAP considers locally realized emissions reductions from:

- Renewables Portfolio Standard (RPS),
- AB 1493 – Pavley I, and
- EO-S-1-07 – Low Carbon Fuel Standard (LCFS).

Including only these statewide actions toward the GHG reduction targets is a conservative approach (that would tend to underestimate emission reductions) because the State's *Climate Change Scoping Plan (2008)* describes numerous other actions that will result in statewide reductions. The actions included herein represent those (1) for which a methodology is available to calculate Woodland's likely share of reductions, and (2) that were previously analyzed in the Preliminary 2020 CAP. Other *Scoping Plan* actions will provide statewide benefits, but cannot be accurately attributed within Woodland at this time or would overlap with the local CAP reduction strategies presented herein.

The City will monitor the effectiveness of State legislation to ensure that the anticipated level of reductions is achieved locally and to ensure that all applicable statewide reductions are included in future CAP updates.

2020 CAP Forecast Approach

When considering the community's long-term emissions reduction potential, it is important to consider what role the State will play in GHG target achievement. The

Preliminary 2020 CAP was developed to consider a 2020 target and the reductions needed to achieve that target. In addition, the *Scoping Plan* outlining emissions reduction programs and policies at the statewide level provides emissions reduction estimates only through the AB 32 target year of 2020. As part of this CAP update process, the City has developed the longer-term target of 2035. It is important to attempt to understand how future statewide actions will contribute to achievement of this target.

As previously described, a CAP will sometimes evaluate a BAU emissions scenario in which no statewide actions are assumed against an ABAU scenario in which all known statewide actions are considered. This helps to illustrate the discrete role that statewide actions will play in local target achievement, and how that role may factor into future GHG emissions reductions at the local level. The remaining emissions gap between the ABAU emissions level and the local GHG target represents the share of reductions that need to be addressed through *local* action, such as CAP reduction strategies.

When Woodland's Preliminary 2020 CAP was developed, it considered a 2020 emissions target, and the distinction between BAU and ABAU emissions scenarios was not relevant. The 2020 target year aligns with the statewide actions in the *Scoping Plan*, and no evaluation of future scenarios was needed. However, now that the CAP has been revised to include a 2035 target that extends beyond the known framework of the *Scoping Plan* actions, additional analysis was necessary to understand how future statewide actions could influence local emissions.

Since the Preliminary 2020 CAP was developed only with ABAU emissions forecasts for 2020, AECOM used the CAP's technical appendices and data files to calculate a BAU emissions scenario for 2020. The *City of Woodland Climate Action Plan Technical Report* provided ABAU electricity forecasts to show how emissions would grow if the RPS is *not* implemented. AECOM prepared revisions to the transportation sector on-road emissions to show how vehicle emissions would grow if Pavley I and the LCFS were *not* implemented.

No additional calculations were needed for the following sectors and subsectors because the statewide actions included in the inventory analysis would have no influence on them:

- Energy – Natural Gas
- Solid Waste
- Wastewater Reuse
- Municipal Energy – Natural Gas
- Water and Wastewater – Process Emissions

No additional calculations were made in relation to the Municipal Transportation sector either because sufficient data was not available to determine if statewide reductions had been applied to the original 2020 emissions forecasts. Further, this sector represented only 0.2% of total emissions in 2005, and any revisions would have a negligible impact on the emissions forecast results.

AECOM’s 2020 BAU emissions forecast was then compared to the 2020 ABAU emissions forecast presented in the Preliminary 2020 CAP to calculate total reductions attributable to statewide actions. In 2020, statewide actions are estimated to provide reductions of 119,982 MT CO₂e/yr.² The methodology applied to calculate the 2020 BAU emissions levels is presented in Appendix C.

2020 ABAU Emissions Forecasts

Table 3.2 shows the 2020 emissions forecasts by sector. These forecasts represent an ABAU scenario in which the RPS, Pavley I, and LCFS statewide actions are implemented. Emissions are projected to decrease approximately 4% below 2005 levels by the year 2020. Transportation emissions are forecast to decline as a result of fuel efficiency improvements and lower carbon content in vehicle fuels. Similarly, electricity emissions are projected to decrease as PG&E increases its share of renewable energy sources in compliance with the RPS. Most of the remaining emissions sectors or subsectors are expected to experience emissions growth as population and employment growth occurs in the community during this time period. Solid waste emissions are projected to decrease from 2005 to 2020 based on the City’s waste disposal data that shows declining disposal rates since 2005.

² The Preliminary 2020 CAP refers to the emissions forecasts as “BAU” emissions, even though the calculations include statewide reductions from RPS, Pavley I, and LCFS.

Table 3.2 – 2020 ABAU Emissions Forecasts

Sector and Subsector	MT CO ₂ e/yr
Transportation	359,648
Energy	153,783
<i>Electricity</i>	44,840
<i>Natural Gas</i>	108,943
Solid Waste	18,968
Wastewater Reuse	4,559
Water and Wastewater	2,025
<i>Electricity Use</i>	1,551
<i>Process Emissions</i>	474
Municipal Operations	2,674
<i>Energy Use</i>	1,296
<i>Transportation</i>	1,378
Total	541,657

2035 Emissions Forecasts

As part of the City’s General Plan update, the City evaluated potential development through 2035, the General Plan planning horizon. The actual amount of development will depend on a variety of factors, including many outside of the City’s control.

For the CAP, a range of growth outcomes was analyzed. Land use change for residential development is the same under each scenario analyzed in the CAP. For non-residential development, potential land use change is assumed to range between 16,685,000 and 17,386,000 new square feet. Hereafter in the CAP, these two scenarios, one with a higher assumed amount of non-residential development than the other, are referred to as “General Plan: Lower” and “General Plan: Higher.”

BAU Scenario

The 2035 BAU emissions scenario reflects Woodland’s emissions forecasts if the statewide actions for RPS, Pavley I, and LCFS were not implemented. The BAU emissions forecasts shown in Table 3.3 on the following page represent a 6% and 7% increase from 2005 emissions levels for the General Plan: Lower and General Plan: Higher scenarios, respectively. Appendix C provides

more information on how the 2035 BAU emissions forecasts were developed.

Table 3.3 – 2035 BAU Emissions Forecasts

Sector and Subsector	MT CO ₂ e/yr	
	General Plan: Lower	General Plan: Higher
Transportation	314,852	317,574
Energy	249,500	250,936
<i>Electricity</i>	107,657	108,275
<i>Natural Gas</i>	141,843	142,661
Solid Waste	25,616	25,858
Wastewater Reuse	4,880	4,880
Water and Wastewater	3,803	3,803
<i>Electricity Use</i>	3,238	3,238
<i>Process Emissions</i>	565	565
Municipal Operations	3,816	3,816
<i>Energy Use</i>	2,173	2,173
<i>Transportation</i>	1,643	1,643
Total	602,467	606,867

ABAU Scenarios

This CAP analyzed the future impact of statewide actions under two different scenarios since the State’s long-term approach toward GHG reductions is currently unknown. In the *conservative scenario*, the impact of known statewide actions is applied to the 2035 BAU emissions forecasts, and assumes no further expansion of statewide actions. This scenario assumes the RPS, Pavley I, and LCFS requirements existing in 2016 will be maintained through 2035. In the *CAP planning scenario*, statewide actions are assumed to provide the same proportional share of reductions needed to achieve Woodland’s 2035 GHG target as they are estimated to provide toward the 2020 target. Each scenario is described further below.

Conservative Scenario

The California Air Resources Board (ARB) has not yet updated the quantified reduction estimates from the 2008 *Scoping Plan* to document the expected long-term emissions reduction potential of statewide actions. As previously described, the *Scoping Plan’s* calculations currently align with the AB 32 target year of 2020.

Although the State has established longer-term emissions targets through SB 32 for 2030 and Executive Order S-3-05 for 2050, the specific pathway to achieve these long-term emissions targets is not yet defined.

Under a conservative ABAU scenario, the statewide actions included in the 2020 emissions analysis would continue to be implemented at the same rate, without further enhancement to the regulatory requirements. It should be noted that while the RPS has already been expanded to require 50% renewable electricity by 2030 under Senate Bill 350 (2015), PG&E has not yet publicly defined a compliance pathway. Therefore, estimating the marginal GHG reduction benefit from this new requirement (relative to the 33% renewable electricity requirement by 2020) is not currently possible, and the conservative scenario assumes continuation of the previous 33% RPS requirement in its calculations. Table 3.4 on the following page presents the 2035 ABAU emissions forecasts under the conservative scenario.

As shown, the ABAU emissions resulting from the General Plan: Lower and General Plan: Higher scenarios are similar. Under each scenario, emissions are estimated to decrease to approximately 14% below the 2005 base year. Both land use scenarios forecast further emissions reductions below the 2020 ABAU levels in the transportation sector based on a longer implementation period for the transportation-related statewide actions. Emissions in all other sectors and subsectors are projected to increase from the 2020 ABAU forecast levels as the community’s residential and employment population increases during the 2035 time horizon. The different land use assumptions associated with the two land use scenarios result in slightly different amounts of emissions growth. See Appendix C for further discussion of how these two land use scenarios were analyzed in the CAP.

In light of recent legislation in 2016, this conservative scenario seems unlikely to occur. Senate Bill 32, California Global Warming Solutions Act of 2006 (SB 32) and Assembly Bill 197, State Air Resources Board greenhouse gas regulations (AB 197) passed the Assembly floor on August 24, 2016 and were signed by the Governor on September 8, 2016. These bills will provide ARB with a statutory basis for updating the *Scoping Plan* to address a 2030 GHG reduction target, which will likely include expansion of existing policies and

programs and/or development of new GHG-reducing strategies.

Table 3.4 – 2035 ABAU Emissions Forecasts – Conservative Scenario

Sector and Subsector	MT CO ₂ e/yr	
	General Plan: Lower	General Plan: Higher
Transportation	245,270	247,390
Energy	205,171	206,353
Electricity	63,328	63,692
Natural Gas	141,843	142,661
Solid Waste	25,616	25,858
Wastewater Reuse	4,880	4,880
Water and Wastewater	2,469	2,469
Electricity Use	1,905	1,905
Process Emissions	565	565
Municipal Operations	3,205	3,205
Energy Use	1,562	1,562
Transportation	1,643	1,643
Total	486,611	490,155

CAP Planning Scenario

As previously described, the State has established 2030 and 2050 GHG targets. In order to achieve these more aggressive targets, additional statewide programs and policies (beyond those currently described in the *Scoping Plan*) will need to be developed or existing ones further enhanced. There are existing statewide actions that will result in additional reductions, but these have not been quantified as part of the analysis in this CAP. For example, updates to the State’s building code will further reduce energy emissions from new construction and qualifying retrofits. Building code revisions occur on an approximately five-year cycle, so additional revisions between now and 2035 are likely. Further, a heavy-duty vehicle aerodynamic program is currently being implemented statewide to reduce vehicle drag and improve fuel efficiency from on-road shipping vehicles, which could further contribute reductions in Woodland due to its warehouse and logistic-oriented land uses. Similarly, as mentioned in the conservative scenario discussion, PG&E has not yet developed estimates for future electricity emissions factors beyond the 2020

horizon year, so the added GHG-reduction benefit that will result from implementing a 50% renewable electricity requirement cannot be estimated with confidence at this time. In addition to these known statewide actions, SB 32 and AB 197 will provide further authority to ARB to develop and implement new statewide actions to achieve the State’s 2030 GHG target.

One strategy for evaluating the impact of future statewide actions in the interim (i.e., prior to a quantified *Scoping Plan* update) is to consider the role that statewide actions play in achievement of Woodland’s 2020 GHG target. As described earlier in this chapter, AECOM calculated a 2020 BAU emissions scenario and determined that statewide reductions would total 119,982 MT CO₂e/yr in 2020, compared to total reductions of 180,208 MT CO₂e/yr needed to achieve the 2020 target, leaving 60,226 MT CO₂e/yr to be provided through local actions. Therefore, statewide actions are estimated to provide approximately 66.6% of total reductions needed in 2020.

While the precise impact of future statewide actions is currently unknown, it could be assumed that they will continue to provide the same level of reduction impact at the community-wide level for local CAP planning purposes. That is, if statewide actions are estimated to provide approximately 66.6% of reductions needed for local target achievement by 2020 (as is the case in Woodland), then it could be assumed that statewide actions would provide a comparable proportion of reductions needed in the 2035 target year as well.

This method of future statewide action estimation is used in this CAP when presenting the ABAU emissions scenarios, and is incorporated into the 2035 target discussion at the end of this chapter. If actual statewide actions are different from the assumptions used in the CAP, the City will review and, if necessary to achieve the City’s 2035 target, revise or add GHG reduction strategies. As described in Chapter 4G (Additional Actions) and Chapter 5 (Implementation and Monitoring), the City will monitor and evaluate the future impact of statewide actions on Woodland’s target achievement. This monitoring process will include a comprehensive CAP update following the release of a revised *Scoping Plan* that quantifies ARB’s strategy to achieve the State’s 2030 GHG target. If this future analysis demonstrates that reductions from statewide actions have been overestimated in this CAP, the City

will identify additional reduction strategy opportunities that can be used to offset a lower contribution from statewide actions.

Greenhouse Gas Reduction Targets

The City established emissions reduction targets for the 2020 and 2035 horizon years to mirror statewide emissions reduction efforts.

2020 Emissions Target

The 2020 target is set to achieve emissions **15% below 2005 levels**. The 2020 target is based on guidance to local governments provided in the *2008 Scoping Plan*. This target is intended to approximate a return to 1990 emissions levels, consistent with the statewide target adopted in Assembly Bill 32. See Appendix B for further description of the 2020 target selection process.

Based on the 2020 ABAU emissions forecasts, Woodland’s 2020 GHG target establishes a need for reductions totaling 60,226 MT CO₂e/yr, as shown in Table 3.5. The target was developed through the following steps, which are documented in detail in the *CAP Technical Report*.

Table 3.5 – 2020 Reduction Target

Calculation	Result (MT CO ₂ e)
2005 baseline: Inventory of 2005 communitywide GHG emissions.	566,389
2020 emissions target: 15% reduction from the 2005 baseline (approx. -85 MT CO ₂ e).	481,431
2020 adjusted business-as-usual (ABAU) forecast: Estimate of 2020 GHG emissions based on an “adjusted business-as-usual” (BAU) scenario in which 2005 policies and trends are assumed to continue to 2020, but the reductions mandated by the Renewables Portfolio Standard, the Pavley Vehicle Emissions Standards, and the Low Carbon Fuel Standard will be achieved.	541,657
2020 Local GHG Reductions Gap: Calculated difference between the 2020 ABAU forecast GHG level (541,657 MT CO ₂ e) and the 2020 target level (481,431 MT CO ₂ e).	60,226

As noted in the City’s Preliminary 2020 CAP, projections of population growth are a critical component of the calculations used in the forecast and 2020 emissions reduction target and, consequently, in the formulation of the CAP strategy for 2020. For the *CAP Technical Report*, estimates of future population were derived from Sacramento Area Council of Governments (SACOG) data. The SACOG data were used to ensure consistency with regional estimates, particularly of transportation emissions, and for consistency with the approach used in other community planning documents, including the General Plan.

No single category of GHG reduction measures will be sufficient to meet Woodland’s 2020 GHG reduction target of 60,226 MT CO₂e. For example, to meet this target, nearly 300 megawatts of electricity use would need to be supplied from solar power, or more than 10,000 gas-fueled vehicles would need to be replaced with electric vehicles. The plan therefore consists of a blend of strategies, which are described in greater detail throughout the focus area chapters.

2035 Emissions Target

The City’s longer-term 2035 target was developed to achieve an emissions efficiency level of **2.25 MT CO₂e/service population**. An efficiency threshold sets a target level of emissions per population or per service population. Service population [SP] = population + local jobs. Efficiency thresholds reflect a community’s ability to grow population and employment, while emissions shrink on a per unit basis; in effect, a community could be growing more efficiently from an emissions standpoint. Thus, total emissions within a community may increase while still achieving an efficiency target, as long as the service population is growing faster than emissions. For comparison to the 2020 target, the 2035 efficiency target equates to emissions reductions of approximately 53% below 2005 levels.

The State’s emissions projections, from which its emissions targets were developed, are based on estimates of future economic conditions and statewide population and employment levels. Neither AB 32 nor the *Scoping Plan* recommends strategies that would limit future population or employment growth to reduce emissions. Rather, it is the State’s goal to achieve emissions reductions while population and employment continue to increase, which means that new growth will

need to become more *efficient* from an emissions-generation standpoint.

Table 3.6 shows the population and employment projections associated with the General Plan: Lower and General Plan: Higher scenarios, as well as the corresponding 2035 emissions targets for each scenario.

Table 3.6 – 2035 Demographics and GHG Targets

2035 Metrics	General Plan: Lower	General Plan: Higher
Population	74,990	74,990
Employment	44,210	45,340
Service Population	119,200	120,330
GHG Target (MT CO ₂ e/SP/yr)	2.25	2.25
GHG Target (MT CO ₂ e/yr)	268,200	270,743

When translated into total MT CO₂e/yr, achievement of the 2035 target will result in emissions that are nearly 53% below 2005 levels. See Appendix C for further description of how the 2035 target was calculated.

General Plan: Lower Scenario

Based on the BAU emissions forecasts and ABAU CAP planning scenario described earlier, Table 3.7 shows the remaining GHG reductions to be achieved through implementation of the CAP strategies presented in Chapter 4. As shown, the difference between the BAU forecast and the 2035 target requires total reductions of 334,267 MT CO₂e/yr. Statewide actions are estimated to achieve 66.6% of the total reductions needed, as in the 2020 target analysis. The remaining reductions of 111,645 MT CO₂e/yr are to be addressed through local CAP strategies.

As described previously, it will be important for the City to monitor future state-level planning efforts related to the statewide actions considered in this CAP and others described in the *Scoping Plan*. This will help to determine with more certainty what role these actions will play in target achievement and what the remaining role for local action will be. Chapter 4G (Additional Actions) provides additional reduction strategy options that the City would pursue if statewide actions do not provide the amount of local GHG reductions shown here.

Table 3.7 – 2035 ABAU Emissions and Target, General Plan: Lower Scenario

Calculation	Result (MT CO ₂ e)
2035 business-as-usual (BAU) forecast: Estimate of 2035 GHG emissions based on a “business-as-usual” (BAU) scenario in which no statewide actions are implemented.	602,467
2035 emissions target: 2.25 MT CO ₂ e/SP/yr	268,200
Total reductions needed in 2035: BAU emissions minus 2035 target	334,267
Statewide actions contribution to total reductions needed: Based on analysis of 2020 BAU and ABAU scenarios.	66.6%
Statewide action reductions in 2035: Calculated from total reductions needed and estimated ratio of statewide actions to total reductions needed.	222,622
2035 Local GHG Reductions Gap: Calculated difference between the 2035 total reductions needed (334,267 MT CO ₂ e) and the 2035 statewide reductions (222,622 MT CO ₂ e).	111,645

General Plan: Higher Scenario

Based on the BAU emissions forecasts and ABAU CAP planning scenario described earlier, Table 3.8 (on the following page) shows the remaining GHG reductions to be achieved through implementation of the CAP strategies presented in Chapter 4. As shown, the difference between the BAU forecast and the 2035 target requires total reductions of 336,124 MT CO₂e/yr. Statewide actions are estimated to achieve 66.6% of the total reductions needed, as in the 2020 target analysis. The remaining reductions of 112,265 MT CO₂e/yr are to be addressed through local CAP strategies. As with the General Plan: Lower scenario, the City will monitor future State efforts regarding GHG reductions and evaluate their impact on Woodland’s ability to achieve the 2035 target.

Table 3.8 – 2035 ABAU Emissions and Target,
General Plan: Higher Scenario

Calculation	Result (MT CO ₂ e)
2035 business-as-usual (BAU) forecast: Estimate of 2035 GHG emissions based on a “business-as-usual” (BAU) scenario in which no statewide actions are implemented.	606,867
2035 emissions target: 2.25 MT CO ₂ e/SP/yr	270,743
Total reductions needed in 2035: BAU emissions minus 2035 target	336,124
Statewide actions contribution to total reductions needed: Based on analysis of 2020 BAU and ABAU scenarios.	66.6%
Statewide action reductions in 2035: Calculated from total reductions needed and estimated ratio of statewide actions to total reductions needed.	223,859
2035 Local GHG Reductions Gap: Calculated difference between the 2035 total reductions needed (336,124 MT CO ₂ e) and the 2035 statewide reductions (223,859 MT CO ₂ e).	112,265

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Chapter 4

Greenhouse Gas Reduction Strategies

Guide to Focus Areas

The CAP includes the following focus areas:

Energy (E)

Water and Solid Waste (W/W)

Transportation and Land Use (T/LU)

Public Involvement (PI)

Urban Forest and Open Space (UF)

Municipal Operations (MO)

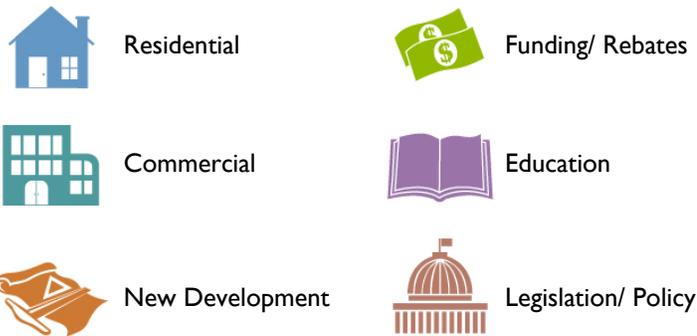
Within each focus area, a set of objectives, supporting strategies, and suggested implementation actions is provided, along with additional information as described below.

TERM	TERM DEFINITION
Objective	A high-level, overarching aim.
Strategy	A major approach to meeting an objective. For most objectives, more than one strategy will be pursued. The strategies are numbered within each focus area using a letter designation shown above.
UCD Bundle	Refers to the numbering system for categories used in the extensive menu of potential GHG-reduction measures in the <i>CAP Technical Report</i> prepared by the UCD Sustainable Design Academy. The strategies selected for this CAP are based on the measures in these “bundles.” The corresponding “bundle” numbering is included here to help interested CAP users locate corresponding background information in the <i>CAP Technical Report</i> , such as the standards of measurement used to calculate GHG reduction amounts, estimated costs and payback period, ease of implementation, and potential implementation and tracking strategies.
GHG Reduction	The estimated amount of the GHG reduction, in MT CO ₂ e, that may be gained by implementing a strategy. Calculating the emissions reductions for a strategy requires making assumptions about the extent of implementation, future opportunities and costs, and individual behavioral changes. It is difficult to assign a precise reduction amount to a strategy given the uncertainties associated with these assumptions. Therefore, the amounts are provided in round numbers.

Percentage of GHG Reduction Target The percentage of Woodland’s total GHG emission reduction targets of 60,226 MT CO₂e for 2020 and 111,645 MT CO₂e (General Plan: Lower scenario) or 112,265 MT CO₂e/yr (General Plan: Higher scenario) for 2035 estimated to be achieved if a strategy is fully implemented. (Note that the total of all percentages shown in the CAP may not add up to exactly 100% because of rounding.)

Goals The quantifiable results of implementing a strategy (e.g., number of lights replaced). These are the basis of the total GHG reduction amount and percentage of Woodland’s GHG Reduction Target associated with a strategy. (See Appendix D for a summary table of Goals related to the 2020 and 2035 GHG reduction estimates.)

Action An implementation activity that will be pursued to achieve the GHG-reduction goals of a strategy. A maximum of 10 actions has been selected as the implementation focuses for any strategy. Each action has one or more of the following focuses:



Each focus area section begins with a summary of objectives and strategies, in which the symbols shown below are used to designate the amount of the GHG-reduction contribution of each strategy. The symbols correspond to the strategies’ contributions toward the 2035 target.

GHG Reduction (MTCO ₂ e)	% of Woodland Reduction Target	Symbol
1-5,600	0–5%	
5,601-11,200	5–10%	
11,201-16,800	10–15%	
16,801-22,400	15–20%	
> 22,400	> 20%	
<i>Important to overall CAP success, but not quantifiable</i>		

Extension of 2020 Strategies to the 2035 Planning Horizon

As shown in the previous chapter, local emissions reductions will be necessary to achieve the 2020 and 2035 targets. Reductions totaling 60,226 MT CO₂e/yr are required by 2020, and reductions of 111,645 MT CO₂e/yr (General Plan: Lower scenario) or 112,265 MT CO₂e/yr (General Plan: Higher scenario) will be required by 2035 in order for the City to maintain consistency with the state’s GHG goals.

Chapters 4A through 4F present the six focus areas of the local GHG emission reduction strategies developed for the Preliminary 2020 CAP to achieve the 2020 target. For this 2035 CAP, AECOM analyzed the emission reductions that would result from extending implementation of these same local actions through 2035. The 2035 reduction potential estimates (in MT CO₂e/yr) were added throughout the focus area

sections. AECOM also expanded the 2020 CAP discussion of potential additional strategies, which is presented in Chapter 4G (Additional Actions), and added Chapter 4H (2020 and 2035 Target Progress) to summarize how implementation of the local reduction strategies would compare to the reduction targets.

Reduction Strategy Considerations

The CAP is an evolving, rather than a static, plan of action. The specific activities needed to successfully achieve the community's GHG reduction target may change as new technologies and policies develop, and as the City undergoes changes over time. Therefore, although community input into CAP development included suggestions for step-by-step implementation of some strategies and specific suggestions for on-the-ground implementation actions, this level of detail is not included in this document. Rather, such details (such as specific bicycle routes to be developed) will be addressed in the course of CAP implementation.

In addition, the broad array of options for addressing GHG reduction was narrowed down to a set of objectives and strategies that is realistic and manageable in terms of both their achievability and the number of items they contain. However, all suggestions received during CAP development in 2012–2014 are included in Appendix A.

Finally, an important element of the CAP is to assess progress prior to the target years (see Public Involvement Objective 3). If the assessments find that sufficient progress is not being made toward achieving the 2020 and/or 2035 GHG-reduction targets, a set of further actions will need to be selected for implementation. Chapter 4G (Additional Actions) provides a menu of potential choices.

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Chapter 4A

Energy

A major portion of the progress toward meeting Woodland’s GHG reduction targets can be achieved through individual actions to (1) reduce energy demand and (2) increase the proportion of energy obtained from renewable sources. Many factors make it possible to achieve significant shorter-term reductions in energy-related GHG emissions: rapidly improving technologies; strides in the manufacture of more energy-efficient building materials, lights, appliances, and equipment; and financing mechanisms providing for greater affordability.

The energy strategies, if fully implemented, could reduce GHG emissions by an estimated 26,000 MT CO₂e in 2020, and by 54,750 MT CO₂e/yr in 2035.

See the Urban Forest and Open Space section for energy-reduction strategies related to increased shade tree canopy.

See the Water and Waste section for energy-reduction strategies related to reduced water use.



Strategy Summary

OBJECTIVE 1: Reduce Building Energy Use

E-1	Lighting Efficiency Upgrades	
E-2	Appliance/Equipment Upgrades	
E-3	Comprehensive Building Efficiency	
E-4	Improved Building Temperature Controls	
E-5	Energy Conservation Education	

OBJECTIVE 2: Increase Renewable Energy Use

E-6	Renewable Energy Generation and Procurement	
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Proportion of GHG Reduction Targets	2020 – 43%
	2035 – 49%

Objective I: Reduce Building Energy Use



Strategy E-1: Lighting Efficiency Upgrades



Percentage of GHG Reduction Targets: 11% in 2020; 10% in 2035
 GHG Reduction: 6,400 MT CO₂e in 2020; 10,900–11,000 in 2035¹
 UCD Bundle 1A

Description: Installation of high-efficiency lighting. Lighting typically represents one-fourth of residential electricity use and one-third of commercial electricity use.

- Compact fluorescent lamps (CFLs) and light-emitting diode (LED) bulbs provide the same amount of light (lumens) as incandescent bulbs for as little as 25% the energy use.
- Solar tubes draw on sunlight to light rooms, using no energy.
- Switching from T-12 to T-8 fluorescent tubes and using occupancy/vacancy sensors on light switches can provide significant energy savings in commercial applications.

Goals:

- 6,000 new and existing homes switch from incandescent to LED lighting by 2020 (1,200 MT CO₂e), and 13,500 homes switch by 2035 (2,700 MT CO₂e)
- 15,000 new and existing homes use improved incandescent lighting by 2020 (1,000 MT CO₂e), and approximately 27,000 homes do by 2035 (1,800 MT CO₂e)
- Two-thirds of commercial sector improves lighting efficiency by 75% (LEDs, T-installs, occupancy/vacancy sensors, bi-level lighting) (4,200 MT CO₂e in 2020, and 6,400-6,500 MT CO₂e in 2035)²

Actions:



Support a holiday program to encourage residents to exchange traditional light strings for LED lights.



Require that new construction include LED lights, solar tubes or skylights in windowless internal rooms, and consideration of room orientation to maximize the use of natural lighting.



Encourage the creation of voluntary programs through public-private partnerships in which trained personnel perform home visits and implement a checklist of free or low-cost energy-efficiency measures, including installing energy-efficient light bulbs and adjusting thermostats on hot water heaters, for low-income residents.



Provide/promote rebates for exchange of incandescent bulbs for LED bulbs.



Use forums, information sheets, and other forms of educational outreach to promote understanding of the benefits of new lighting technologies, such as LEDs and solar tubes.



Provide information on lighting upgrades, rebates, and energy-efficiency assistance from Yolo Energy Watch and other programs as part of the business license renewal process.

Encourage community participation in international “turn-off-the-lights” days.



Support regulations and legislation that establish improved industry standards for lighting technologies.

¹ Strategy reductions total 10,900 MT CO₂e under the General Plan: Lower scenario and 11,000 MT CO₂e under the General Plan: Higher scenario

² Goal reduction totals 6,400 and 6,500 MT CO₂e in the General Plan: Lower and General Plan: Higher scenarios, respectively



Strategy E-2: Appliance/Office Equipment Upgrades



Percentage of GHG Reduction Targets: 2% in 2020; 2% in 2035
 GHG Reduction: 900 MT CO_{2e} in 2020; 1,950 in 2035
 UCD Bundle 1B

Description: Replacement of appliances and office equipment with Energy Star-rated models. Energy Star is the federal government-backed symbol for identifying energy-efficient products. For products to be given the Energy Star rating, they must contribute to significant energy savings that are verifiable through testing. If they cost more than conventional, less energy-efficient counterparts, it must be shown that consumers can recover the additional costs through utility bill savings in a reasonable period of time. Examples of items that may be replaced with Energy Star models, listed from highest to lowest in terms of typical GHG reductions, are: water heater, vending machine, copier, refrigerator, printer, dishwasher, water cooler, computer, clothes washer, and monitor.

Goals:

- One-fourth of households replace a major household appliance (e.g., water heater, refrigerator, washer, dryer, dishwasher) or computer equipment with a more energy-efficient model in 2020 (600 MT CO_{2e}); one-half of households do in 2035 (1,500 MT CO_{2e}/yr)
- Half of businesses upgrade a vending machine, refrigerator, water cooler, and/or office equipment (e.g., computers, monitors, printers, photocopiers) with more energy-efficient models (300 MT CO_{2e} in 2020, 450 MT CO_{2e} in 2035)

Actions:



Support/promote group purchasing programs for discounted energy-efficient appliance and equipment replacements.

Promote residential programs such as PG&E’s Energy Savings Assistance Program to help low-income homeowners and renters manage energy use and energy costs through free or low-cost upgrades to more energy-efficient appliances, lighting, and building features.



Conduct education and outreach to promote rebates, incentives, and other programs as they become available, and use available information on rebates used by consumers to determine where to focus education and outreach.



Provide information on equipment upgrade benefits, rebates, and energy-efficiency assistance from Yolo Energy Watch and other programs as part of the business license renewal process.





Strategy E-3: Comprehensive Building Efficiency



Percentage of GHG Reduction Targets: 11% in 2020; 12% in 2035
GHG Reduction: 6,500 MT CO₂e in 2020; 13,000 in 2035
UCD Bundle 1C

Description: Improvements of overall building performance through energy-efficient retrofits, and new construction incorporating advanced energy-efficiency features. All new buildings in California must meet the energy-efficiency standards in Title 24, Part 6 of the California Code of Regulations, including CalGreen standards for energy efficiency and water conservation. Typical elements in building energy-efficiency are:

- Building air sealing
- Duct sealing and duct replacement
- Ensuring that appropriate types of attic, wall and/or floor insulation are used
- Upgrading and/or insulating water heaters (including tankless water heaters)
- Ensuring proper functioning and efficiency of heating and air conditioning systems
- Reducing heat loss through and around windows

Goals:

- Weatherization upgrade implemented for 2,000 low-income homes in 2020 (2,000 MT CO₂e), and 4,000 low-income homes in 2035 (4,000 MT CO₂e)
- Energy-efficiency retrofits implemented for 1,000 homes in 2020 (1,200 MT CO₂e), and 2,000 homes in 2035 (2,400 MT CO₂e)
- Construction of 250 energy-efficient affordable housing units in 2020 (400 MT CO₂e), and 500 units in 2035 (800 MT CO₂e)
- Energy-efficiency retrofits and retro-commissioning implemented for 4 million square feet of commercial (approx. 20% participation) in 2020 (2,900 MT CO₂e), and 8 million square feet in 2035 (5,800 MT CO₂e)

Actions:



Promote sustainable construction and development practices contained in the CalGreen Code, such as using cool roofs, vegetation, and permeable or other special pavements where appropriate to reduce heat-island effects on and around buildings.



With other local jurisdictions, establish and promote turn-key property-assessed clean energy (PACE) programs, group purchasing discount programs, and other available financing programs that can be used by property owners for affordable residential energy efficiency retrofits.

Promote participation in Energy Upgrade California, Yolo Energy Watch, and other state, federal, and utility incentive programs for improving home and business energy efficiency.



Promote PG&E's Energy Partners Program, the state Weatherization Assistance Program, and other programs providing free or low-cost weatherization measures to low-income residents.

Promote the U.S. Department of Housing and Urban Development Energy Efficient Mortgage (EEM) program and similar programs that assist buyers in purchasing homes meeting energy-efficiency criteria.

Consider providing assistance through Community Development Block Grant funds, special taxes, or other special funds to assist low-income homeowners in installing energy-efficiency upgrades.



Encourage realtors to promote energy and water use efficiency of properties on resale and/or to adopt a voluntary rating system and provide energy-efficiency information upon property resale.

Promote and provide information on energy-efficiency upgrades for historical structures that are consistent with maintaining historical integrity.

Consider citywide application of energy conservation policies in the Spring Lake Specific Plan such as the use of energy-efficient air conditioners, light-colored roofing materials, photovoltaic energy systems, and Energy Star appliances.



Strategy E-4: Improved Building Temperature Controls




Percentage of GHG Reduction Targets: 2% in 2020; 9% in 2035
 GHG Reduction: 1,450 MT CO₂e in 2020; 9,800 in 2035
 UCD Bundle 1D

Description: Improvements to climate control in residences and businesses through measures including:

- Installing reflective roofing (cool roofs)
- Replacing heating and cooling equipment with more energy-efficient systems and models
- Optimizing building temperature controls
- Using natural factors in new buildings to maintain comfortable conditions

Goals:

- Installation of 500 cool (reflective) residential roofs in 2020 (250 MT CO₂e), and approximately 10,000 roofs in 2035 (5,000 MT CO₂e)
- Upgrades of residential heating and cooling equipment - 500 air conditioning units and 2,000 heating, ventilation, and air conditioning (HVAC) units in 2020 (500 MT CO₂e), and double participation in 2035 (1,000 MT CO₂e)
- Installation of 1 million square feet of cool (reflective) roofs on commercial properties (5% participation) in 2020 (300 MT CO₂e), and 10 million square feet of roof in 2035 (3,000 MT CO₂e)
- Upgrades of commercial heating and cooling equipment - 500 air conditioning units, HVAC fans for 1,000,000 square feet, chillers for 1,000,000 square feet in 2020 (400 MT CO₂e), and double participation in 2035 (800 MT CO₂e)

Actions:



Encourage innovative site designs and building orientations for new construction that incorporate passive and active solar designs and natural cooling techniques.

Require that natural temperature-control factors, such as cross ventilation, wind protection, and shade, be considered in site and building design for new construction.



Promote PG&E’s Energy Partners Program and other programs that provide low-income customers with free energy-efficient appliances.



With other local jurisdictions, establish and promote local turn-key PACE programs, group purchasing discount programs, and other available financing programs that can be used by property owners for affordable climate-control building and equipment upgrades.

Promote utility, state, and federal rebate and assistance programs.

Promote participation in Energy Upgrade California, Yolo Energy Watch, and other state, federal, and utility incentive programs for improving building climate controls.



Provide information on the benefits of energy-efficiency upgrades, rebates, and energy-efficiency assistance from Yolo Energy Watch and other programs as part of the business license renewal process.



Strategy E-5: Energy Conservation Education



Percentage of GHG Reduction Targets: 2% in 2020; 4% in 2035
GHG Reduction: 1,200 MT CO₂e in 2020; 4,800 in 2035
UCD Bundle 1C

Description: Educational efforts to induce permanent energy use reduction through conservation. Examples are:

- Adjusting thermostats a few degrees down in the winter and up in summer
- Keeping shades closed in summer to reduce indoor heat
- Using less hot water for showers, laundry, and washing dishes
- Turning off lights that aren't being used
- Unplugging "vampire" equipment that isn't being used (i.e., electronic equipment that consumes electricity even when not in use)
- Using low-flow showerheads and faucets to help reduce hot water use
- Using ceiling fans
- Maintaining clean air filters to ensure heating and cooling systems run efficiently

Goals:

- Achieve lasting reductions in home energy conservation in the equivalent of 500 homes through energy-conservation campaigns in 2020 (300 MT CO₂e), and 2,000 homes in 2035 (1,200 MT CO₂e)
- Achieve lasting energy conservation in 150 businesses through energy-conservation campaigns in 2020 (900 MT CO₂e) and deeper energy savings in more businesses in 2035 (3,600 MT CO₂e)

Actions:



Conduct or promote competitions and rewards for reducing household energy use.



Promote recognition programs for energy-efficient businesses.



Provide information on energy conservation, the benefits of energy-efficiency upgrades, rebates, and energy-efficiency assistance from Yolo Energy Watch and other programs as part of the business license renewal process.

Provide information to educate the public on the connection between water conservation and energy conservation.

Work with PG&E and other organizations as appropriate to establish a pilot program that provides customers with access to real-time data on energy use and uses analytical software that provides information about different energy loads, "vampire" appliances, and anomalies in energy use.



Partner with Yolo Energy Watch, PG&E, and other organizations to conduct public outreach and education campaigns to encourage energy conservation.

Objective 2: Increase Renewable Energy Use

Strategy E-6: Renewable Energy Generation and Procurement



*Percentage of GHG Reduction Targets: 16% in 2020; 13% in 2035
GHG Reduction: 9,550 MT CO₂e in 2020; 14,300 in 2035
UCD Bundle 2*

Description: Production or procurement of electricity for residential or business use through solar PV, wind, and geothermal systems. The following major renewable energy options are currently available:

- Individual solar PV installations – Rooftop PV systems and PV parking shade structures are within reach of more community members as PV technologies have improved, costs have reduced significantly, and more accessible options for up-front financing have become available.
- Community solar – A PG&E-administered program that allows businesses and individuals to buy shares in renewable energy developments and receive credit on their electric bills for the use of the renewable energy they generate. Community solar was developed through SB 43 (2013) to allow renters and property owners who are unable to install solar on their own properties to obtain renewable energy through PG&E and the other major utilities.
- Green Certificates, or Renewable Energy Certificates – These are tradable commodities that represent the environmental value of renewable energy generated by one party that may be sold to another party.
- Community Choice Aggregation (CCA) – CCA enables California cities and counties to supply electricity to the customers within their borders. A CCA is responsible for providing the energy, which it either generates or procures from other sources, but does not own the transmission and delivery systems. Because CCAs can choose the sources of their power mix, many communities look to CCA as a mechanism for increasing the amount of renewable energy they use.

Goals:

- Solar photovoltaic (PV) energy generation or green electricity purchases for residential users totaling 25.9 million kWh by 2020 (3,400 MT CO₂e), and 38.8 million kWh by 2035 (5,100 MT CO₂e)
- Solar hot water heaters for 2,000 homes in 2020 (1,400 MT CO₂e), and 3,500 homes in 2035 (2,450 MT CO₂e)
- Solar PV energy generation or green electricity purchases for businesses, institutions, and schools totaling 33.5 million kWh by 2020 (4,400 MT CO₂e), and 48.7 million kWh by 2035 (6,400 MT CO₂e)
- Wind turbines providing 500 kW of commercial electricity use in 2020 and 2035 (300 MT CO₂e)
- 100 geothermal heat pumps for heating and cooling commercial properties in 2020 and 2035 (50 MT CO₂e)

Actions:



Encourage initial residential sizing of solar installations at 3 kW or larger to accommodate EV charging and achieve net zero carbon footprint without future need to increase inverter.

Increase the percentage of homes in new development that are solar ready and/or that have solar water heaters, up to 100% by 2020.



With other local jurisdictions, establish/promote local turn-key PACE programs, group purchasing discount programs, and other available financing programs that can be used by property owners for affordable renewable energy systems.

Promote participation in Energy Upgrade California, Yolo Energy Watch, and other state, federal, and utility incentive programs for improving home and business energy efficiency, including installing solar PV or wind energy systems.



Support incentives to reduce the cost of solar hot water systems.

Balance open-space maintenance with solar opportunities by promoting the installation of solar systems on existing development or in dual-use applications, such as parking lots, building roofs, and stormwater detention basins.

Promote the expansion of community solar opportunities to enable greater access to solar power for renters, those with shaded roofs, and those who choose not to install a residential system on their home for financial or other reasons.

Support legislation and incentives that promote the development and implementation of technologies for distributed renewable energy generation—the production of renewable energy in small quantities near the point of use rather than in large amounts in a few places—that increase local access to renewable energy.

Work with other local jurisdictions to explore opportunities for establishing a countywide or regional CCA that obtains all of its power or a high proportion of its power from renewable sources.



Tools for Measuring Progress

- PG&E usage data for residential and commercial sectors
- Yolo Energy Watch program participation information
- PACE program participation
- City building permit information on solar installations, cool roofs, and energy upgrades
- Participation in PG&E, federal, and state incentive programs, where information is available
- City data on numbers of housing units constructed with energy efficiency features that exceed the requirements of the CalGreen Code

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Chapter 4B

Transportation and Land Use

The two major approaches to reducing transportation-generated GHGs involve (1) reducing motor vehicle use and (2) replacing gasoline and diesel vehicles having higher GHG emissions with vehicles that have lower or zero GHG emissions. The latter include electric vehicles (EVs), hybrid cars and trucks, smaller vehicle models, and vehicles that run on biofuels and compressed natural gas (CNG).

Essential to reducing the use of passenger vehicles locally and regionally are practices and infrastructure that promote ease and convenience of pedestrian, bicycle, and transit travel for daily trips and that situate residents in proximity to workplaces, goods and services, and recreational opportunities. Transportation and land use strategies for GHG reduction are closely linked because of the influence land use policies can have on types, rates, and patterns of growth; the distances community members need to travel for essential services; and the ease or difficulty of different modes of travel.

For this reason, transportation and land use strategies are presented together in this section.

The transportation and land use strategies, if fully implemented, could reduce GHGs by an estimated 18,000 MT CO₂e in 2020, and by 34,850 MT CO₂e in 2035.

Although land use strategies are critical to the success of transportation-related GHG-reduction objectives, to avoid double-counting of GHG-reduction benefits, quantified reductions are assigned only to the strategies under Objectives 2 and 3.

Strategy Summary

OBJECTIVE 1: *Implement Land Use Policies to Support Reduced Motor Vehicle Use*

T/LU-1 Complete Streets Program 

T/LU-2 Infill Development, Redevelopment, and Repurposing 

T/LU-3 Smart Growth in New Development 

OBJECTIVE 2: *Reduce Vehicle Miles Traveled and Equipment Idling Emissions*

T/LU-4 Reduced Motor Vehicle Trips 

T/LU-5 Increased Mass Transit Use, Walking, and Bicycling 

T/LU-6 Reduced Emissions from Vehicle Idling and Other Equipment 

OBJECTIVE 3: *Replace Gas and Diesel Vehicles with Alternative-Fuel Vehicles*

T/LU-7 Increased Use of Alternative-Fuel Vehicles 

Proportion of GHG Reduction Targets	2020 – 30%
	2035 – 31%

Objective I: Implement Land Use Policies to Support Reduced Motor Vehicle Use



Strategy T/LU-1: Complete Streets Program



*Important to overall CAP success, but not quantifiable
(see Objectives 2 and 3)
UCD Bundles 9 and 11*

Description: In 2008 California passed the Complete Streets Act of 2008 (AB 1358). The law requires cities and counties to include complete streets policies as part of their general plans so that roadways are designed to safely accommodate all users, including bicyclists, pedestrians, transit riders, children, older people, and disabled people, as well as motorists. Consistent with that directive and related policies in the 2035 General Plan, this strategy supports infrastructure designs and measures that provide for safe, convenient walking, bicycling, and transit use.

“Complete streets” is a planning term for the practice of providing for a combination of elements in roadways that enhance convenient walking, bicycling, and public transit use in addition to passenger vehicle travel. Elements considered may include, for example:

- Streets that include sidewalks
- Bike lanes or wide paved shoulders
- Comfortable and accessible public transportation stops
- Frequent and safe crossing opportunities
- Median islands
- Accessible pedestrian signals
- Curb extensions
- Narrower travel lanes

See the Urban Forest and Open Space section for actions related to reducing the heat island effect on roadways and opportunities for non-fossil fuel transportation through increased shading.

Actions:



Partner with the University of California, Davis, and Yolo County to develop bicycle commute routes between the campus and points within Woodland.

Enhance walking and biking opportunities through downtown by improving alleys for pedestrian and bicycle use.

Consider reducing parking space requirements for businesses that provide bike infrastructure improvements.

Adopt a “Complete Streets” program that provides safety and convenience for all forms of transportation, including passenger vehicle, bicycle, transit, and pedestrian travel.

Amend current “level of service” (LOS) road and transportation criteria to include consideration of pedestrian, bicycle, and bus transit travel modes by using multimodal LOS criteria.



Develop a network of bicycle lanes and paths that provide safe and convenient routes for city residents to travel to and from homes and daily destinations.

Update the City’s bicycle master plan to incorporate new concepts and funding strategies for bicycle route development, including consideration of modifying existing streets to better accommodate space for safe bicycle use (e.g., creating one-way streets), creating off-street bicycle paths, and providing connectivity with bike routes outside of Woodland.



Strategy T/LU-2: Infill Development, Redevelopment, and Repurposing



*Important to overall CAP success, but not quantifiable
(see Objectives 2 and 3)
UCD Bundle 11*

Description: Woodland’s voters established a permanent Urban Limit Line in 2006 via ballot initiative. Consistent with that directive and related policies in the 2035 General Plan, this strategy supports adoption and implementation of land use policies and zoning that promote infill development, mixed use of commercial areas, and other techniques to reduce motor vehicle travel by locating housing near services, transit stops, safe pedestrian and bicycle facilities, and other amenities.

Actions:



Recognize and implement the City’s Urban Limit Line (ULL) ordinance by reevaluating residential land use densities, housing policies, and zoning to determine the potential for increased residential densities for infill sites, undeveloped land, and land zoned for commercial uses within the permanent ULL.

Promote mixed uses in new development and redevelopment projects, including using upstairs spaces in the downtown area for retail, entertainment, office, and residential uses.



Consider identification of areas currently zoned as residential to become “neighborhubs” characterized by twin goals of defined increases in density and building height as well as location of basic services and amenities within walking distance.

Study the potential for repurposing some space from existing uses such as parks for designation as innovative neighborhood commercial permitted uses, such as cafés or locations for nearby residents to pick up goods ordered from local businesses.

Consider the use of designated portions of public areas or other City land for community gardens.



Encourage the redevelopment and adaptive reuse of vacant or underutilized lots with buildings including second stories for retail, residential, or office uses.

Encourage pedestrian and bicycle-oriented design in the allocation of space, building size and placement, site enhancement, open space design, connection to pedestrian/bikeways, and site amenities such as plazas, courtyards, and breezeways in commercial redevelopment.



Support applications for affordable housing funds from agencies that reward and incentivize good planning, such as infill housing and housing built close to jobs, transportation, and amenities.

Increase allowable residential density and building height standards.





Strategy T/LU-3: Smart Growth in New Development



*Important to overall CAP success, but not quantifiable
(see Objectives 2 and 3, and Chapter 4G Additional Action, Land Use-Based VMT Reductions)
UCD Bundle 11*

Description: Adoption and implementation of land use policies and zoning that promote new development that typically includes:

- Higher-density development
- Mixed residential and commercial uses
- Essential services within short travel distances
- Transit-oriented, walkable, and bicycle-friendly land uses
- The “smart growth” concept may include transit-oriented development (TOD), which consists of a mixed-use residential and commercial areas designed to maximize access to, and encourage the use of, public transport. TOD often centers on a transit station or stop that is within one-quarter to one-half mile from the surrounding housing.

The 2035 General Plan contains many new goals and policies relevant to this strategy, including:

- **Policy 3.A.4 Reduce Vehicle Miles Traveled (VMT):** Require new development projects to achieve a 10 percent reduction in VMT per capita or VMT per service population compared to the general plan 2035 VMT performance, or a 10 percent reduction compared to baseline conditions for similar land uses when measuring transportation impacts for subsequent projects and making General Plan consistency findings. Reducing peak period VMT in particular is desirable due to the added benefit of minimizing severe congestion and reducing emissions. Use of VMT reduction strategies such as those in Chart 6-2 below taken from Quantifying Greenhouse Gas Mitigation Measures, CAPCOA, 2010 or similar professional research documents is encouraged.

Numerous variables will influence the exact character of Woodland’s built environment in 2035 and as a result, will influence transportation emissions associated with that future environment. Analysis of land-use-based VMT

reduction potential is presented in Chapter 4G (Additional Actions)

Actions:



Support applications for affordable housing funds from agencies that reward and incentivize good planning, such as infill housing and housing built close to jobs, transportation, and amenities.

Plan for new residential developments in coordination with plans for the provision of transit services.

Emphasize mixed uses in new residential developments.

Require new commercial development to include bicycle parking, electric vehicle charging stations, and/or other incentives for non-fossil fuel transportation.

Design new neighborhoods so that daily shopping errands can generally be completed within easy walking and biking distances.



Encourage pedestrian and bicycle-oriented design in the allocation of new commercial space, building size and placement, site enhancement, open space design, connection to pedestrian/bikeways and site amenities such as plazas, courtyards, and breezeways.

Adopt policies that encourage building smaller houses.

Establish a standard for a “10-Minute Neighborhood” for new residential developments such that residents are no more than a 10-minute walk from grocery stores, parks, schools, and commercial enterprises that provide neighborhood-scale access to daily needs.



Objective 2: Reduce Vehicle Miles Traveled and Equipment Idling Emissions

Strategy T/LU-4: Reduced Motor Vehicle Trips



Percentage of GHG Reduction Targets: 2% in 2020; 1% in 2035
 GHG Reduction: 900 MT CO₂e in 2020; 1,350 in 2035
 UCD Bundles 5 and 12

Description: Shortening or elimination of total passenger and delivery vehicle trips by:

- Reducing work commute trips
- Increasing carpooling and car sharing
- Increasing opportunities for residents to shop in Woodland
- Increasing local markets for locally produced goods

Reducing vehicle trips can also improve quality of life by reducing traffic congestion, air pollution and associated health effects, and travel-related costs.

Goals:

- 5,000 residents regularly carpooling, car sharing, and telecommuting by 2020 (900 MT CO₂e), and 7,500 residents do so by 2035 (1,350 MT CO₂e)

Actions:

Work with the Yolo-Solano Air Quality Management District, neighboring jurisdictions, and other organizations to motivate local and regional employers to provide opportunities for employee telecommuting and alternative work schedules (e.g., 9/80 schedules) that reduce work commute trips.

Work with the local Chamber of Commerce and other business groups to achieve membership of 10% of businesses in the Yolo Transportation Management Association or offer a similar employer program that provides incentives to employees for reducing commute trips (e.g., participation in carpools) and guarantees employees a ride home in case of emergency.



Partner with Yolo Farm to Fork, farmers markets, and other local agencies and organizations to promote connections with local agricultural producers and the sale and consumption of locally produced foods.



Promote the Department of Housing and Urban Development Location Efficient Mortgage (LEM) program and similar programs that assist home buyers in purchasing homes that meet criteria for proximity to services and transit systems.



Establish a program to engage the community in efforts to reduce vehicle miles traveled, including setting specific goals for participation, identifying and promoting programs, and rewarding positive results.



Encourage telecommuting and live/work arrangements through policies and regulations that allow home occupations, home offices, and live/work uses, provided they are compatible with surrounding neighborhood uses and do not cause significant negative impacts.



Strategy T/LU-5: Increased Mass Transit Use, Walking, and Bicycling



Percentage of GHG Reduction Targets: 3% in 2020; 2% in 2035
 GHG Reduction: 1,500 MT CO₂e in 2020; 2,300-2,350 in 2035¹
 UCD Bundle 9

Description: Reductions in motor vehicle trips through increased incentives and opportunities for mass transit use and safe bicycle and pedestrian travel as alternatives to automobile use.

Goals:

- 3,000 more schoolchildren bicycling/walking by 2020 (200 MT CO₂e), and 4,500 more by 2035 (300 MT CO₂e/yr)
- 7,000 more employee trips per week accomplished by bicycling to work by 2020 (700 MT CO₂e), and 11,200-11,500 more trips per week by 2035 (1,100-1,150 MT CO₂e)²
- Increase in bus ridership by 1,000 regular users by 2020 (600 MT CO₂e), and by 1,500 regular users by 2035 (900 MT CO₂e)

Actions:

Provide a reduction of parking requirements to employers who effectively plan for and implement programs for alternative commute transportation.

Work with the local Chamber of Commerce and other business groups to achieve membership of 20% of businesses in the Yolo Transportation Management Association or a similar employer program that provides incentives to employees for reducing commute trips by biking or walking to work and guarantees employees a ride home in case of emergency.

Partner with the Chamber of Commerce to encourage employers to provide bike lockers, showers, and other amenities or incentives that encourage employees to cycle or walk to and from work.



Require new multi-family developments to provide secure bicycle storage options and/or bicycle-share programs.



Work with the Yolo-Solano Air Quality Management District and the Yolo County Transportation Authority to provide free or reduced cost bus transportation for students.

Support the continued viability of Community Care Car to provide vanpool service for elderly residents.



Support and promote efforts to increase bicycling through the provision of free or low-cost helmets and renovated bicycles to low-income residents, bicycle repair and safety clinics, bicycle lanes and paths, and information on safe bicycle routes.



Work with transit operators to increase mass transit use by identifying mechanisms for encouraging increased ridership, including making bicycle racks available on all buses and creating and implementing comprehensive public information campaigns.

Partner with schools and Yolo County Health Department to promote biking and walking by disseminating “Safe Routes to Schools” maps and information, and encouraging creation of a citizen’s committee to promote bicycle and pedestrian access to schools.



Create and disseminate educational materials and information for residents and visitors promoting safe and convenient pedestrian and bicycle transportation as alternatives to automobile travel, including bicycle route maps, walking tour information, and “wayfinding signs” that indicate distances between points of interest.

¹ Strategy reductions total 2,300 MT CO₂e under the General Plan: Lower scenario and 2,350 MT CO₂e under the General Plan: Higher scenario

² Goal reduction totals 1,100 and 1,150 MT CO₂e in the General Plan: Lower and General Plan; Higher scenarios, respectively



Strategy T/LU-6: Reduced Emissions from Vehicle Idling and Other Equipment



*Percentage of GHG Reduction Targets: 1% in 2020; 1% in 2035
 GHG Reduction: 600 MT CO₂e in 2020; 1,200 in 2035
 UCD Bundle 5, 6, and 8*

Description: Measures to reduce the use of small gas-powered equipment and to reduce vehicle idling, including compliance with state law restricting idling times for trucks and heavy equipment.

Goals:

- 500 gas lawnmowers replaced with electric models (unknown/minor benefit)
- Idling of heavy equipment and trucks reduced – 250 vehicles by 2020 (600 MT CO₂e), and 500 vehicles by 2035 (1,200 MT CO₂e)



Actions:



Promote Yolo-Solano Air Quality Management District rebates for reducing the use of gas-powered landscape equipment.



Identify businesses with fleet vehicles that are subject to state idling restrictions and provide information to promote compliance with these requirements.



Publicize information on idling-time regulations to promote citizen awareness and assistance in advocating for compliance.



Conduct a study and prepare an implementation plan as appropriate for installing roundabouts at intersections or using other traffic control mechanisms that maintain or improve traffic safety while reducing idling time for vehicles.

Encourage drive-through restaurants, pharmacies, and other drive-through services to post requests or requirements for vehicle engines to be shut off during extended waiting times.

**Objective 3:
Replace Gas and Diesel Vehicles with Alternative-Fuel Vehicles**



Strategy T/LU-7: Increased Use of Alternative-Fuel Vehicles



Percentage of GHG Reduction Targets: 25% in 2020; 27% in 2035
GHG Reduction: 15,000 MT CO₂e in 2020; 30,000 in 2035
UCD Bundles 7, 10, and 13

Description: Replacement of gasoline- and diesel-fueled vehicles with others that run on alternative fuels that have reduced-GHG or zero-GHG emissions:

- Flexible fuel vehicle – uses gasoline or E85, a mixture of 85% ethanol and 15% gasoline
- Hybrid or plug-in hybrid electric vehicle (PHEV) – powered with electricity and gasoline
- Electric vehicle (EV) – runs on electricity alone
- Compressed natural gas (CNG) vehicle – runs on compressed natural gas
- Fuel cell vehicle (FCV) – uses pressurized hydrogen to power a fuel cell, which then generates electricity to run the vehicle

Goals:

- 250 EVs by 2020 (1,400 MT CO₂e), and 500 by 2035 (2,800 MT CO₂e)
- 4,000 hybrid vehicles by 2020 (13,200 MT CO₂e), and 8,000 by 2035 (26,400 MT CO₂e)
- 250 CNG vehicles by 2020 (400 MT CO₂e), and 500 by 2035 (800 MT CO₂e)

Actions:



Encourage developers to include EV charging infrastructure in new residential developments.



Provide public education about alternative-fuel vehicles, highlighting options and benefits and identifying fueling/charging locations.



Provide organizations and businesses that have “fleets” of more than 12 vehicles with information about transportation fuel alternatives.

Analyze, design, and implement a “Neighborhood Electric Vehicle” (NEV) transportation plan linking streets and destinations to encourage NEV use.

Establish preferred parking for alternative fuel vehicles in downtown parking lots.



Install or support the installation of EV charging stations distributed throughout downtown and major shopping locations.

Support expansion of the West Coast Green Highway through the installation of EV fast-charging infrastructure along I-5 and other major travel routes.

Tools for Measuring Progress

- Employer data on vehicle trip reduction
- Yolo Transportation Management Association participation data
- Bus ridership data
- Data on children walking/riding bicycles
- Total mileage of bicycle lanes established
- AQMD rebates for retiring gas-powered landscaping equipment
- Car registrations and rebates for alternative-fuel vehicles

Chapter 4C

Urban Forest and Open Space

With proper species selection, placement, and management, urban trees provide many benefits. Trees help reduce GHG emissions in several ways:

- **Building shade** – Trees reduce indoor heat in summer and the need to use energy for air conditioning by shading buildings.
- **Pavement shade** – Asphalt can store and hold a large amount of heat. Shading pavement reduces the radiant energy these surfaces absorb, thereby reducing the overall “heat island” effect. This, in turn, reduces the need for vehicle and building air conditioning, prolongs pavement life, and encourages more walking and bicycle riding by making streetscapes more attractive and comfortable.
- **Insulation** – Trees serve as wind breaks, reducing the movement of outside air into interior spaces and conductive heat loss, for example, through glass window panes.
- **Transpiration** – Plant transpiration converts moisture to water vapor, cooling the air by using solar energy that would otherwise heat the air.
- **Carbon sequestration** – Trees capture and store CO₂ from the atmosphere, a process referred to as “carbon sequestration.” Different tree species provide different levels of carbon storage.

In addition to reducing energy use and GHGs, trees provide other benefits that are difficult to quantify. A 2010 study of Woodland’s urban forest resources, City of Woodland, California Urban Forest Resource Analysis and Community Canopy Study (Davey Resource Group), estimated that for every \$1.00 spent on Woodland’s public trees, the community receives \$1.50 in benefits through energy savings, air quality improvements, stormwater interception, atmospheric CO₂ reductions, and aesthetic contributions.

At the time of the study in 2010, the City maintained 13,140 trees, a large percentage of which were newly planted. The number of non-City trees was not determined. The study found that Woodland’s overall tree canopy covered 8.4% of the incorporated land area, and noted that this is far short of the optimal urban tree canopy cover of 25%.

The urban forest and open space strategies, if fully implemented, could reduce GHG emissions by an estimated 2,300 MT CO₂e in 2020, and by 3,700 MT CO₂e in 2035.

Strategy Summary

OBJECTIVE 1:

Increase Community Tree Canopy

UF-1	Urban Forest Management Plan	
UF-2	Increased Tree Planting	
UF-3	Maintenance of Existing Trees	
UF-4	Public Education	

OBJECTIVE 2: *Maintain and Enhance Open Space Environmental Values*

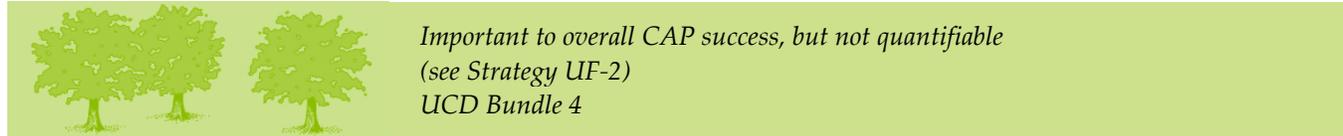
UF-5	Open Space Preservation	
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Proportion of GHG Reduction Targets	2020 – 4%
	2035 – 3%



Objective I: Increase Community Tree Canopy

Strategy UF-1: Urban Forest Management Plan



Description: Development and adoption of a policy framework and comprehensive approach to planting and managing City trees.

An urban forest management plan will establish a systematic approach to preserving and enhancing Woodland’s more than 13,000 trees. A healthy tree population needs species and age diversity and requires proactive maintenance and appropriate planning. The objectives for establishing and managing trees in an urban setting are diverse and may include:

- Improving aesthetic appeal of streetscapes
- Eliminating public safety hazards
- Preventing disease and pest infestations
- Reducing conflicts with utilities and damage to sidewalks and streets
- Enhancing recreational and educational opportunities
- Providing energy savings
- Increasing carbon sequestration and improving air quality

Priorities may vary for downtown, parking lot, median, park, open space, heritage, and residential street trees.

An urban forest management plan typically provides a comprehensive program that addresses these objectives and establishes numerical goals, planting and maintenance techniques and schedules, management responsibilities, monitoring needs, budget and personnel needs, relationship of the plan to other planning documents and ordinances, and strategies for adjusting priorities based on changing needs or resource constraints.

Plan establishment and implementation will be critical to optimizing the potential GHG reductions associated with tree planting and maintenance. However, to avoid double-counting these benefits, they are quantified only under Strategy UF-2.

Actions:

Coordinate with the Woodland Tree Foundation to develop and adopt an Urban Forest Management Plan (UFMP) aimed at expanding canopy cover from 8.4% to 25% by 2035 and with objectives that include GHG reduction, air quality improvement, energy conservation, stormwater runoff management, and non-interference with utility lines.

In the UFMP, include consideration of planting mediums, planting techniques, and soil amendments that can provide multiple benefits, such as the use of biochar as a soil amendment with potential carbon sequestration capability and planting systems that intercept and store or absorb runoff.

Identify all potential public tree planting sites along streets and in parking lots within the city limits, classify by appropriate tree size, and prioritize for planting with appropriately sized trees.

Establish tree planting goals for annual net canopy gain of 0.5%-1%, a methodology and schedule for communitywide canopy measurement, a policy for tree replacement, and a process for determining net tree gain.

Develop a sustainable funding strategy as part of the UFMP, and pursue all available funding opportunities (e.g., grants, cap-and-trade funding).





Strategy UF-2: Increased Tree Planting



Percentage of GHG Reduction Targets: 3% in 2020; 3% in 2035
 GHG Reduction: 1,700 MT CO₂e in 2020; 3,100 in 2035
 UCD Bundle 4

Description: Actions to increase tree canopy through planting new trees to increase building shade, increase carbon sequestration, and reduce heat-island effects. The City and the Woodland Tree Foundation planted an average of 300 trees per year between 2005 and 2013. Between July 2014 and June 2016, an estimated 2,400 trees were planted by the City, Woodland Tree Foundation, developers, and community members citywide.

Goals:

- Net increase of 6,000 trees planted along streets, in parking lots, and in open space areas by 2020 (1,500 MT CO₂e), and net increase of 10,500 trees by 2035 (2,625 MT CO₂e)
- Net increase of 2,500 building shade trees by 2020 (200 MT CO₂e), and net increase of 6,000 trees by 2035 (475 MT CO₂e)

Actions:



Partner with PG&E and Woodland Tree Foundation on a major shade-tree planting program for homeowners to reduce energy consumption.



Require home construction in new developments to include two shade trees per home on the east, west, or south face of the home to provide energy savings, with trees located to prevent interference with solar PV production.



Encourage homeowners to plant trees by continuing and promoting the City Tree Rebate Program for street trees and information on tree selection, siting, planting, and care.



Partner with the Woodland Tree Foundation, 4-H, and other service organizations to accomplish larger-scale tree plantings and spread educational information about the benefits of trees.

Promote the planting of larger trees with maximum GHG reduction benefits wherever feasible.

Consider planting City surplus property and/or storm water detention areas in trees with high carbon sequestration potential, as appropriate.

Modify City design standards for parking strips, medians, sidewalk tree plantings, and parking lots to provide for streetscape infrastructure, such as wider planting areas and permeable paving material that will accommodate large trees and minimize pavement and infrastructure damage caused by tree roots.



Increase the requirements for street trees to shade asphalt and parked cars in new development or redevelopment.

Investigate increasing the requirements for tree coverage in parking lots consistent with installation of solar energy shade structures in parking lots (current City standard is 40% coverage within 10 years).

Require tree planting as part of new development, expanded development, and redevelopment projects wherever feasible.



Strategy UF-3: Maintenance of Existing Trees



Percentage of GHG Reduction Targets: 1% in 2020; 1% in 2035
GHG Reduction: 600 MT CO₂e in 2020; 600 in 2035
 UCD Bundle 4

Description: Actions to implement best practices in tree care and maintenance to:

- Sustain the benefits of existing mature trees
- Expand the canopy of existing young trees
- Maintain the health of future plantings

Appropriate tree care begins with adequate staking, irrigation, training, and pest management of trees in the first years of their establishment. Maintenance throughout the life of a tree includes cyclical pruning and inspection to eliminate hazards, remove diseased or insect-infested wood, maintain stronger branch structure, and prevent obstructions of street signs and interference with utility lines.

According to the 2010 study of Woodland’s urban forest resources by Davey Resource Group, the existing urban forest annually captures and stores about 600 metric tons of CO₂.



Actions:



Make proper tree maintenance a focus of public outreach efforts for property owners, renters, and landscaping professionals to ensure awareness of City tree maintenance guidelines and best management practices for tree care.



Provide business property owners with information on tree benefits and tree maintenance through the Chamber of Commerce and other community organizations.



Prioritize maintenance of mature trees that already provide the highest energy- and GHG-reduction benefits.

Adopt and implement a policy of no net loss of City-maintained trees: Every City tree removed or lost due to disease or other cause must be replaced within one year, either on the basis of trunk diameter or based on offsetting the canopy area of any tree removed with the aggregate canopy area of the replacement tree(s), estimated at two years following planting.



Support code enforcement efforts where needed for ensuring the maintenance of trees and other landscaping in commercial developments.

Update the City of Woodland Heritage Tree Ordinance to incorporate best practices and national standards for care of Woodland’s heritage trees.



Strategy UF-4: Public Education



*Important to overall CAP success, but not quantifiable
UCD Bundle 4*

Description: Efforts to increase overall appreciation of and care for Woodland’s trees.

Public awareness of the benefits and maintenance needs of trees is essential to expanding and sustaining tree canopy. Enhancing public appreciation may embody education and outreach on:

- Environmental benefits
- Economic benefits
- Tree species identification
- Planting and care
- Appropriate species selection
- Diagnosis and treatment of pests and diseases
- Heritage trees and historical significance

Goals are to:

- Enhance community participation in public tree planting events
- Sustain support for the municipal urban forest program
- Increase the number and quality of trees on private property

Actions:



Sponsor public outreach events and efforts through schools and community service organizations to educate the public about the numerous benefits of different tree species and increase appreciation and respect for Woodland’s urban forest, e.g., walking tours of trees, Woodland tree guide, support for Woodland Tree Foundation, memorial tree plantings.

Use the UFMP to initiate a citywide tree public planting and care campaign with Woodland Tree Foundation.

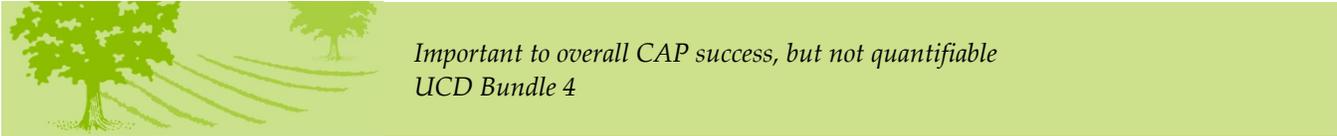
Partner with the Woodland Tree Foundation to provide public information on tree selection, planting, and care through workshops and demonstrations, web information, and printed materials.



**Objective 2:
Maintain and Enhance Open Space Environmental Values**



Strategy UF-5: Open Space Preservation



Description: Maintenance of environmental benefits and enhancement of community appreciation of open space areas to minimize the potential for development sprawl.

Managed open space areas include the East Detention Pond at County Road 102 and Farmers Central Road, the alkali grasslands preserve lands east of County Road 102, and the old City of Woodland landfill and regional park site.



Actions:



Promote public understanding and appreciation of habitat areas (e.g., alkali grassland preserve, east detention pond) through outreach materials, interpretive information, and tours.

Prevent the loss of agricultural land and other open space to development by maintaining Woodland’s Urban Limit Line.



Preserve open space from development of solar farms by focusing the installation of solar arrays on rooftops, developed land, and where solar would be compatible with an existing or intended use (e.g., stormwater detention basins).

Support legislative efforts to provide credit and incentives for agricultural land preservation.

Tools for Measuring Progress

- City data on tree removal, planting, and condition
- Woodland Tree Foundation data
- Canopy cover measurements
- Tree inventories
- Voluntary resident reporting

Chapter 4D

Water and Solid Waste

The delivery of water to community members requires energy at the municipal operations level for pumping and treatment. Water used indoors is discharged to the sanitary sewer system and then processed at the City's wastewater treatment facility. In addition, using hot water for washing dishes and clothes and showering requires the use of energy to heat the water. Therefore, reductions in water use can translate into reductions in energy consumption associated with both water delivery and wastewater treatment in municipal operations and energy use at the individual building level, with associated reductions in GHG emissions.

Solid waste contributes to GHG emissions mainly through its decomposition at landfills. The City does not control operations at landfills or composting facilities where the community's household and yard waste are processed; however, it can influence the quantity of waste-related GHG emissions through waste reduction, direction of its waste streams to processes that result in fewer fugitive GHG emissions, and support of the use of emissions-reducing technologies and practices at waste-processing facilities.

The water and waste strategies, if fully implemented, could reduce GHG emissions by an estimated 11,900 MT CO₂e in 2020, and 15,850 MT CO₂e in 2035.



Strategy Summary

OBJECTIVE 1:

Reduce Per Capita Water Demand

W/W-1 Increased Water Conservation



OBJECTIVE 2:

Reduce Solid Waste Emissions

W/W-2 Solid Waste Reduction and Waste Processing Improvements



**Proportion of
GHG Reduction Targets**

**2020 – 20%
2035 – 14%**



Objective I: Reduce Per Capita Water Demand



Strategy W/W-1: Increased Water Conservation



Percentage of GHG Reduction Targets: 0.3% in 2020; 0.3% in 2035
GHG Reduction: 200 MT CO₂e in 2020; 350 in 2035
 UCD Bundle 23

Description: Actions to promote reductions in water use through water conservation awareness and techniques and the use of water-efficient fixtures. Water conservation includes:

- Making behavioral changes to prevent water waste, such as taking shorter showers
- Improving water-use efficiency, for example by adjusting sprinklers to ensure water is going where it is needed
- Upgrading appliances to more water-efficient models
- Reducing demand by replacing landscape plants that have high water needs with drought-tolerant plants
- Making the best use of all available water, for example by capturing rainwater and using it for outdoor watering



Goals:

- 15% reduction in energy use associated with water and wastewater production, delivery, and treatment by 2020 (200 MT CO₂e); 20% energy use reduction by 2035 (350 MT CO₂e)

Actions:



Encourage the creation of voluntary programs through public-private partnerships in which trained personnel perform home visits and implement a checklist of free or low-cost energy-efficiency measures, including installing low-flow showerheads and adjusting thermostats on hot water heaters, for low-income residents.



Continue to provide rebates for low-flow fixtures and other indoor and outdoor water-saving devices and to promote rebates and incentives provided by PG&E and others.

Continue to promote water conservation through targeted leak-detection assistance, education on indoor water-conserving devices and practices, landscape water reduction guidance, web and printed materials, and workshops.

Provide information on water use patterns and comparative water use in utility bills to help water users understand consumption patterns and adjust water use.

Encourage the conversion of turf to low-water plantings in residential and commercial landscapes through workshops, tours, demonstrations, and literature.

Work with real estate agents to provide new homeowners with information on energy and water efficiency tips and assistance programs and to promote using voluntary water audits that can be used in marketing properties.

Demonstrate the use of attractive, drought-tolerant native landscaping at City-owned properties, including transitioning street plantings from grass to water-efficient ground covers or other drought-resistant plants.

Work with Yolo Energy Watch and other programs to educate the public about the connection between water use and energy use.

Objective 2: Reduce Solid Waste-Related Emissions

Strategy W/W-2: Solid Waste Reduction and Waste Processing Improvements



*Percentage of GHG Reduction Targets: 19% in 2020; 14% in 2035
GHG Reduction: 11,700 MT CO₂e in 2020; 15,500-16,000 in 2035¹
UCD Bundle 3*

Description: Methods to reduce GHG emissions associated with the decomposition of solid waste, including reducing waste, directing waste to processes that result in fewer emissions, and supporting landfill methane capture efforts.

State law requires each local jurisdiction to divert at least 50% of its waste from landfills through reuse, recycling, and composting. The State has assigned Woodland a threshold of 5.7 pounds of waste per capita per day to meet its 50% diversion requirement, and the City has achieved this target annually since 2009. Legislation passed in 2013 directed the State to achieve a 75% diversion rate for trash by 2020, with a focus on removing organics, such as food waste, from landfilled waste. The State requires local jurisdictions to facilitate commercial organics recycling and encourages expanding local waste diversion programs to all residential and commercial organic waste.

In addition to source reduction, GHG emissions can be reduced by directing waste to facilities using processes that result in fewer fugitive methane emissions compared with existing landfill operations and supporting improvements to those processes. The majority of Woodland’s solid waste is sent to the Yolo County Central Landfill for disposal. Yolo County is working toward landfill improvements that would increase fugitive methane capture from 75% to 90% by 2020.

Goals:

- 75% landfill waste diversion by 2020 with a focus on organic components of waste stream (11,700 MT CO₂e in 2020), and maintain 75% diversion through 2035 (15,500-16,000 MT CO₂e in 2035)¹

Actions:



Work with multifamily complex managers to educate tenants about recycling, significantly increase multifamily waste diversion, and reduce contamination of recyclables.

Continue to actively promote backyard composting.

Encourage consumers to consider product life cycles when purchasing goods and to select those that will not eventually contribute to landfill waste.

Encourage local retailers, manufacturers, and construction contractors to donate unused surplus materials and slightly damaged goods to charities that can reuse them, such as Habitat for Humanity ReStores.

Continue to promote a high level of recycling of construction and demolition debris.

Establish residential and commercial programs for the collection of food waste for large-scale processing as compost or into biofuels.

Support the expansion of practical “extended producer responsibility” programs, which would require manufacturers to be responsible for their products that have reached the end of their useful life or that are left unused (e.g., unused pharmaceutical products), removing responsibility from local governments.

Support policies to require reductions in packaging materials used for consumer products.

Explore opportunities to assist Yolo County in pursuing project implementation financing (e.g., federal/state grants) of pilot project opportunities to test advanced methane capture technology and/or landfill waste operational practices



¹ Goal reduction totals 15,500 and 16,000 MT CO₂e in the General Plan: Lower and General Plan: Higher Scenarios, respectively

Tools for Measuring Progress

- City water production data
- City data on metered water consumption
- Waste hauler data
- State waste disposal records
- Data on extended producer responsibility programs
- Yolo County data on landfill methane capture

Public Involvement

The CAP GHG-reduction target is an ambitious one that will take a concerted community effort to achieve. The success of most of the CAP strategies will depend on the combined actions of a great many individuals. Community engagement on the scale that is needed for success will require reliance, in part, on an effort driven by community members to educate and inspire other community members.

Although public involvement is critical to successful CAP implementation, no GHG-reduction totals are presented in connection with the strategies identified in this section because they are already accounted for in relation to strategies and actions in other CAP focus areas that are driven forward through public involvement.



Strategy Summary

OBJECTIVE 1: *Build Community Engagement in CAP Implementation*

PI-1 Citizen-Led Outreach



PI-2 Outreach Materials and Activities



PI-3 Recognition of Business Sustainability Efforts



OBJECTIVE 2: *Measure CAP Implementation Progress and Adjust Actions as Needed*

PI-4 Progress Checks and Recommendations



**Proportion of
GHG Reduction Targets**

N/A



Objective I: Build Community Engagement in CAP Implementation

Strategy PI-1: Citizen-Led Outreach



*Important to overall CAP success, but not quantifiable
UCD Bundle 1C*

Description: Establishment of a citizen-led outreach effort that will spearhead public education efforts on climate change and CAP implementation strategies.

A multidimensional outreach effort will be needed to help Woodland’s diverse population realize the benefits of implementing the CAP strategies. Outreach and education activities can be most successful when they arise from within diverse community segments and reflect the perspectives and focuses of those segments. This strategy emphasizes the development of a network of residents, community organizations, and businesses that will be committed to helping inspire others to take actions to improve overall community quality of life through CAP implementation. Participants may include:

- Business associations
- School districts
- Faith-based groups
- Youth organizations
- Civic and community service groups
- Non-profit environmental organizations

Actions:



Establish a self-motivated citizen committee/group that will lead the development and implementation of public education and outreach efforts to support the implementation of selected CAP strategies in coordination with the City, including public forums and community challenges.

Encourage integration of activities and outreach efforts of the citizen committee/group with City events and activities.

Expand City CAP outreach through social network connections of the committee/group, and encourage the use of social media for sharing ideas about community sustainability.



Provide funding support for efforts of the citizen committee/group that are directly related to achieving CAP goals.



Strategy PI-2: Outreach Materials and Activities

Description: Creation and dissemination of materials that provide an overview of climate change, GHG-reduction guidance, and CAP implementation information.

Relevant background may include information from the following, among others:

- Intergovernmental Panel on Climate Change
- National Climate Assessment
- California Climate Change Portal
- Governor’s Office of Planning and Research
- Institute for Local Government Sustainable Communities program
- City of Woodland CAP web pages

Actions:

Maintain an informational website that provides tools and resources related to climate change science and related technologies, the CAP and CAP Technical Report, and regularly updated information on CAP implementation progress.

Create a “guide to low-carbon living in Woodland” for the City website that provides information on lowering energy use and energy costs; alternative transportation opportunities for city residents, including multi-modal transportation options, transit information, and health and safety benefits; and other information about overall community sustainability.

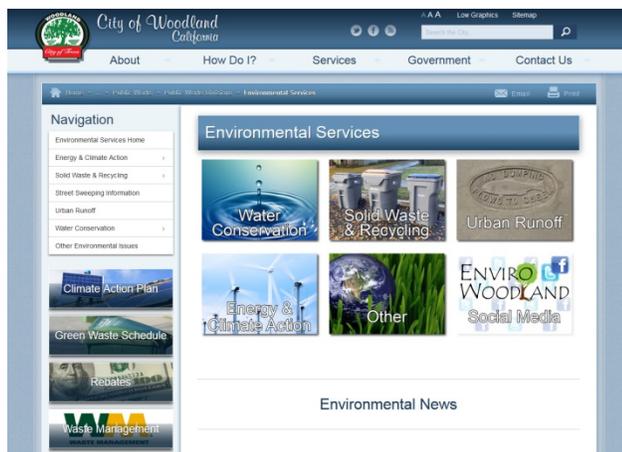
Produce a “Frequently Asked Questions” document on CAP implementation and update as needed based on ongoing input.

Provide information about the CAP at City facilities that have high community use (City Hall, Community and Senior Center, Library) and distribute to community groups and schools.

Maintain a mailing list and social media feeds that alert subscribers to updated information.

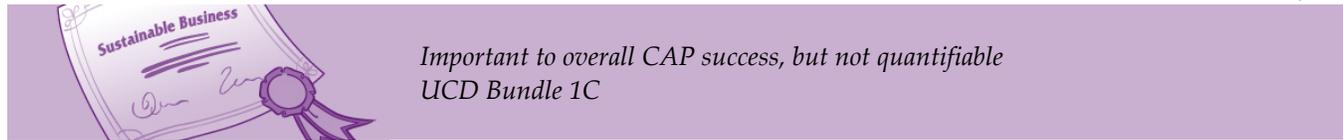
Partner with community groups to hold forums, fairs, and/or workshops focused on climate change and CAP implementation.

Provide regular updates on CAP implementation to the City Council.





Strategy PI-3: Recognition of Business Sustainability Efforts



*Important to overall CAP success, but not quantifiable
UCD Bundle 1C*

Description: Recognition of efforts by businesses to implement best sustainability practices.

Businesses can greatly influence community awareness and acceptance of climate action goals, strategies, and benefits by setting an example through their own practices. Activities helping to promote CAP implementation may take many forms, including:

- Implementing actions to reduce transportation emissions, energy use, water consumption, or waste generation
- Providing incentives, such as low-interest loans or product discounts, for others to implement conservation and GHG-reduction measures
- Investing in the development of new technologies and energy-efficiency measures
- Conducting facility tours or providing support for other educational activities that demonstrate resource conservation
- Conducting employee education
- Developing or participating in certification programs to highlight environmentally sustainable practices

Actions:



Work with the Chamber of Commerce, PG&E, service clubs, and other organizations to promote participation in the Sacramento Area Sustainable Business program or other similar “green practices” certification programs.

Consider establishing a local rewards program for sustainable practices with the Chamber of Commerce, PG&E, and other organizations.





Objective 2: Measure CAP Implementation Progress and Adjust Actions as Needed

Strategy PI-4: Progress Checks and Recommendations



Important to overall CAP success, but not quantifiable
UCD Bundle N/A

Description: Evaluation and adjustment of CAP implementation actions as needed.

Important elements of a planning process are assessing progress toward plan goals and adapting implementation actions as needed. Implementation strategies may need to be adjusted because of a lack of progress toward one or more objectives or to account for changing conditions or opportunities. Elements of an evaluation of plan progress typically include:

- Using consistent methods for monitoring plan implementation over time
- Setting benchmarks, or yardsticks, for measuring progress toward objectives
- Establishing an agreed-upon course for determining the overall success of implementation
- Identifying the schedule and approach for plan adjustments or for verification that adjustments are not needed

See Chapter 5 (Implementation and Monitoring) for further detail of the CAP progress tracking process.

Actions:



With community stakeholders, conduct a mid-point check on progress toward the 2020 CAP goals and the overall GHG-reduction target; this initial progress check should occur no later than the end of 2017 to allow sufficient time for a course correction toward the 2020 target, if necessary

Establish a GHG inventory update schedule with a 5-year maximum between updates; a 2020 inventory update should occur in 2021 (or as soon as data for calendar year 2020 is available) to benchmark progress toward the 2020 target; identify a funding source for regular inventory updates



Prepare a comprehensive CAP update following ARB’s development of an update to the *Scoping Plan* with quantified estimates of updated/new statewide measures to reevaluate the role of statewide actions toward the City’s 2035 target; revise CAP reduction strategies, as necessary, to establish a pathway toward 2035 target achievement

Establish a CAP implementation monitoring and reporting schedule with a 5-year maximum between progress tracking updates; if possible, provide annual CAP implementation progress updates as part of Community Development Department’s General Plan implementation status report to City Council

If any of the progress checks find that sufficient progress is not being made in CAP implementation to achieve the 2020 or 2035 targets, develop a set of additional actions to be implemented from the Additional Actions menu in Chapter 4G.

Tools for Measuring Progress

- Participation in CAP-related public events
- Number of CAP website visits
- Social media input and other direct citizen feedback
- Business participation in certification programs
- Results of progress checks

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Chapter 4F

Municipal Operations

Municipal operations that result in GHG emissions include using power to operate City buildings, including the 24-hour operations of the Police Station; lights at sports fields; streetlights and signals; wells; wastewater treatment processes; and stormwater pumps. Vehicles and equipment used in daily operations are sources of direct emissions. The strategies and actions in this section address these main sources as well as the establishment of City policies related to GHG reduction. Although these policies are important to the success of other actions in this CAP, to avoid double-counting of GHG-reduction benefits, no GHG reductions are directly attributed to them here.

The municipal operations strategies, if fully implemented, could reduce GHG emissions by an estimated 2,100 MT CO₂e in 2020, and by 2,500 MT CO₂e in 2035.

See the Urban Forest and Open Space section for all tree-related strategies and actions.



Strategy Summary

OBJECTIVE 1: Incorporate Sustainable Practices into All City Operations

MO-1 Internal Policies



MO-2 Purchasing and Contracting



OBJECTIVE 2: Reduce Emissions from Municipal Electricity Use by 80% or More

MO-3 Increased Energy Efficiency and Use of Renewable Energy



OBJECTIVE 3: Reduce Vehicle Fleet and Employee Commute Emissions

MO-4 Increased Use of Alternative-Fuel and Fuel-Efficient Vehicles



MO-5 Reduced Motor Vehicle Use

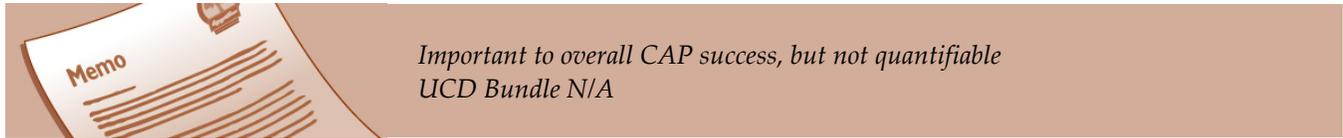


Proportion of GHG Reduction Target	2020 – 3%
	2035 – 2%

Objective I: Incorporate Sustainable Practices into All City Operations



Strategy MO-1: Internal Policies



Description: Integration of CAP implementation into City operations.

Although municipal operations constitute only a small proportion of the total community-wide GHG emissions, the City has a responsibility to lead by example and to commit to reducing GHGs in all aspects of its operations. Integrating CAP strategies into all municipal activities and policies will be important to the success of CAP implementation.

Actions:



Educate City staff in ways to promote public interest in meeting CAP goals.

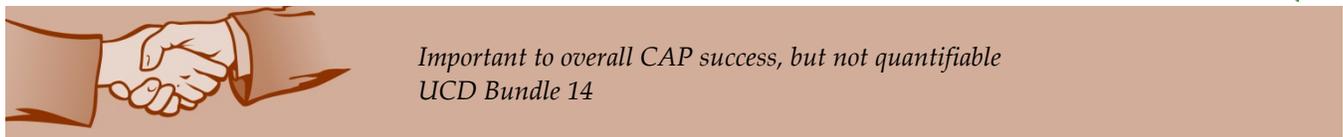
Evaluate internal policies and procedures and revise as needed to reflect best practices to ensure that appropriate GHG-reduction elements are included.



Ensure the integration of energy efficiency and GHG reduction considerations into all City projects.

Ensure that City commissions and citizens committees consider the goals of the CAP in their activities, decisions, and recommendations.

Strategy MO-2: Purchasing and Contracting



Description: Integration of CAP goals into purchasing and contracting procedures.

Many of the City's regular operation and maintenance functions, in addition to capital improvement projects, are carried out by companies under contract to the City. These functions include waste collection and disposal, custodial services, and parks maintenance. Integrating GHG-reduction measures into City operations includes ensuring that contracts with all service, consulting, and construction firms also incorporate, where feasible, measures to advance the City's CAP implementation.

Actions:



Ensure that all departments implement the City's Environmentally Preferable Purchasing Policy.

Provide a credit or other incentive for proposals or firms submitting bids that reduce overall GHG emissions through design, materials, operation, or maintenance of infrastructure.

**Objective 2:
Reduce Emissions from Municipal Electricity Use by 80% or More**



Strategy MO-3: Increased Energy Efficiency and Use of Renewable Energy



*Percentage of GHG Reduction Targets: 3% in 2020; 2% in 2035
GHG Reduction: 1,800 MT CO₂e in 2020; 2,200 in 2035
UCD Bundles 15 and 16*

Description: Implementation of energy-efficiency measures, energy-efficient technologies, and renewable energy projects.

Wastewater processing and water production are the highest energy uses in municipal operations, followed by building operations, particularly at the Community and Senior Center and the Police Station, and both facility and outdoor lighting. Methods of reducing GHGs from energy use in municipal operations may include:

- Improving water and wastewater production processes
- Improving building performance (climate controls)
- Upgrading lighting, especially streetlights
- Replacing equipment and appliances with more energy-efficient models
- Reducing energy demand through awareness and changes in behavior
- Using renewable energy

See the Urban Forest and Open Space section for energy-reduction strategies related to increased shade tree canopy.

See the Water and Waste section for energy-reduction strategies related to reduced water use.

Goals:

- 80% reduction in emissions attributable to electricity use from the 2020 projection of 2,300 MT CO₂e by 2020 (1,800 MT CO₂e), and 80% reduction from the 2035 projection of 2,775 MT CO₂e by 2035 (2,200 MT CO₂e)

Actions:



Install or procure renewable energy for all major City facilities.

Convert street lights, path (park) lights, traffic signals, and other outdoor lighting to LEDs where possible.

Conduct audits/assessments of energy efficiency of City buildings and energy use practices of staff and adjust where feasible and practical through retrofits, upgrades, or behavioral changes.

Ensure maximum efficiency of equipment and processes used in water and wastewater systems.

Reduce reliance on potable water supply by expanding the distribution and use of recycled water (treated wastewater) to industrial uses and landscaped areas.

Require development site designs that reduce stormwater runoff through the use of retention basins and low-impact design (LID) practices, including tree planting, bioswales, and permeable pavement where appropriate, to reduce the future need for increased stormwater pumping.

Optimize efficiency of irrigation systems for parks and other public landscaped areas.



**Objective 3:
Reduce Vehicle and Equipment Emissions**

Strategy MO-4: Increased Use of Alternative-Fuel and Fuel-Efficient Vehicles



Percentage of GHG Reduction Targets: 0.3% in 2020; 0.2% in 2035
GHG Reduction: 200 MT CO₂e in 2020; 200 in 2035
UCD Bundles 18 and 21



Description: Partial conversion of the City fleet to vehicles with lower GHG emissions, and adherence to vehicle idling regulations.

Alternative-fuel vehicles that have reduced GHG or zero GHG emissions include:

- Flexible fuel vehicle – uses gasoline or E85, a mixture of 85% ethanol and 15% gasoline
- Hybrid or plug-in hybrid electric vehicle (PHEV) – powered with electricity and gasoline
- Electric vehicle (EV) – runs on electricity alone
- Compressed natural gas (CNG) vehicle – runs on compressed natural gas
- Fuel cell vehicle (FCV) – uses pressurized hydrogen to power a fuel cell, which then generates electricity to run the vehicle

Goals:

- Replacement of 30 gasoline vehicles with 5 EVs and 25 hybrids, and replacement of 10 diesel vehicles with vehicles using CNG, biodiesel, or E85 by 2020 and 2035 (200 MT CO₂e)

Actions:



Educate City field crews and equipment operators about heavy equipment idling limitations in state law, and ensure that the limitations are followed.



To the extent feasible and practical, replace passenger vehicles and light-duty trucks in the City fleet with alternative-fuel vehicles or smaller, fuel-efficient vehicles as they become due for replacement.

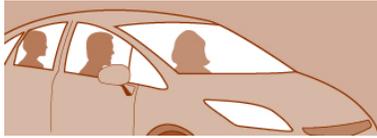
Replace utility vehicles and equipment with alternative-fuel models where feasible and practical.

Install equipment at City facilities that can be used for charging City and employee EVs.





Strategy MO-5: Reduced Motor Vehicle Use



Percentage of GHG Reduction Targets: 0.2% in 2020; 0.1% in 2035
GHG Reduction: 100 MT CO₂e in 2020; 100 in 2035
 UCD Bundle 21

Description: Measures to reduce employee commute and work trips.

Goals:

- 70 employees ride-sharing and 40 riding bicycles to work or during work, and travel to meetings is reduced by 2020 and 2035 (100 MT CO₂e)



Actions:



- Participate in the Yolo Transportation Management Association to provide incentives to employees for reducing commute trips by biking or walking to work and guarantee employees a ride home in case of emergency.
- Establish a shared bicycle program for employees to use for work-related local travel.
- Provide secure bicycle parking facilities at City facilities for staff and public use.
- Use web-conferencing for meetings where possible to reduce travel.
- Consider providing opportunities for employee telecommuting and alternative work schedules (e.g., 9/80 schedules) that reduce work commute trips.

Tools for Measuring Progress

- Purchasing records and department self-reporting
- GHG-reduction provisions in contracts with outside contractors or service providers
- Yolo Transportation Management Association program participation
- City energy use records
- Annual inventory of GHG emissions from vehicle use and other sources

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Additional Actions

2020 Additional Actions

The following is a menu of potential actions to implement if a mid-point (2017) check on the 2020 CAP implementation progress determines that insufficient progress is being made toward the GHG-reduction target. A 2017 progress review will also allow the City to align its climate planning efforts with the comprehensive Zoning Code update scheduled to follow the 2035 General Plan update. If the progress review indicates that the City is not on track to achieve the 2020 target, the City will review the existing CAP measures described throughout the focus area sections to determine which, if any, should be revised and/or adopted as mandatory requirements. Any new mandatory requirements related to aspects of the Zoning Code could then be incorporated during Code revisions and enforced in both discretionary and ministerial actions in the future to provide greater emissions reductions. Similarly, the City may review the following list of potential additional actions and choose to incorporate any or all as new CAP reduction strategies. This approach will include an analysis of the GHG reduction potential for any new strategies, and whether implementation needs to be on a voluntary or mandatory basis in order to produce sufficient GHG reductions to achieve the 2020 target.

Energy

- Implement building standards that exceed Title 24 through, such as:
 - A cap on amount of energy that particular building types and sizes can use annually
 - A cap on the amount of energy a building can use regardless of size
 - A package of prescriptive measures
 - A green rating system
- Require all new construction to include renewable power.
- Require all new construction to be carbon neutral by 2025.
- Require businesses to undergo an energy audit or demonstrate at least a 20% energy reduction over the most recent three years.
- Require point-of-sale demonstration of energy-efficiency improvements when properties are sold.

Transportation and Land Use

- Require employers with 20 employees or more to participate in Yolo Transportation Management Association to reduce employee passenger-vehicle commute trips
- Provide a bicycle-share service for residents.
- Work with Yolo County Transportation District to establish short-distance shuttle-bus routes in Woodland.

Urban Forestry and Open Space

- Accelerate the target deadline for reaching tree canopy coverage of 25% from 2035 to 2028 and increase annual tree planting goals accordingly.
- Require denser tree planting to achieve a 60% tree canopy cover in new or rehabilitated parking lots without solar installations where the cover would not interfere with safety lighting requirements.

Municipal Operations

- Purchase green certificates or GHG credits.

2035 Additional Actions

In addition to a 2017 progress review for achievement of the 2020 target, the City will also review progress toward the 2035 target. This review will occur (1) after ARB releases updated Scoping Plan calculations that demonstrate longer-term statewide reduction estimates or (2) enough in advance of 2025 so that, if necessary, the following additional actions can be developed, adopted by 2025, and implemented by 2035 to achieve the City's 2035 target – whichever comes first.

If the result of the CAP progress review finds that statewide actions (combined with the CAP strategies presented throughout the focus area sections) will not achieve the 2035 target, as assumed, the City will implement one or all of the following additional strategies or other new strategies that are demonstrated to close any remaining emissions reductions gap.

Clean Electricity Options

Implement or participate in a program to provide residents and businesses with access to clean electricity purchase options.

Range of Potential Emission Reductions: 44,500 to 66,000 MT CO₂e/yr in 2035

One of the largest remaining reduction opportunities for Woodland in 2035 will be expanded use of renewable energy sources to provide electricity. As described earlier in this CAP, the State's Renewables Portfolio Standard (RPS) will require utilities to provide 50% of their electricity from eligible renewable sources by 2030. It is possible that these requirements could be further strengthened by the 2035 horizon year. Assuming no further changes are made to the RPS requirements, remaining emissions associated with electricity use will total approximately 66,000 MT CO₂e/yr in 2035.

The City can explore opportunities to provide access to clean electricity options for its businesses and residents through future utility program offerings, participation in a regional community choice aggregation (CCA) program, or development of a municipal utility company that could establish its own clean electricity priorities.

For purposes of evaluating a reasonable reduction estimate for this program, participation in CCAs in California was considered. The Marin Clean Energy (MCE) District provides electricity to 75% of its service

population. MCE currently offers participation at 50% and 100% clean electricity. Sonoma Clean Power also offers two participation options, which currently provide 78% and 100% clean electricity. If 75% of Woodland's residents and businesses participate in a clean electricity program by 2035 that provides 100% clean electricity, then reductions from this program would total 49,500 MT CO₂e/yr in 2035. If the Zero Net Energy program described next is implemented, then total reductions from this clean electricity program would be reduced to 44,500 MT CO₂e/yr in 2035.

Zero Net Energy Building Standards

Develop, adopt, and enforce zero net energy building standards for new residential construction starting in 2025 through which total net building energy requirements can be met through on-site renewable energy systems.

Potential Emission Reductions: 8,800 MT CO₂e/yr in 2035

In the *2007 Integrated Energy Policy Report*, the California Energy Commission (CEC) adopted a goal to achieve zero net energy (ZNE) buildings in new residential construction by 2020 and non-residential construction by 2030. ZNE buildings consume only as much energy on an annual basis as can be generated with an on-site renewable energy system (e.g., solar, wind, geothermal). While the pathway to realize this goal statewide has not yet been defined, its future impact could help to address building-related natural gas consumption, which would not be affected through the previously described Clean Electricity Options. The City could consider developing such requirements for new residential construction in 2025, if (1) ZNE requirements have not already been incorporated into the State's building code, and (2) future CAP progress review indicates a need for additional emissions reductions.

New residential construction between 2025 and 2035 is estimated to generate approximately 8,800 MT CO₂e/yr from building energy consumption (i.e., electricity and natural gas), which would be reduced or offset if residential ZNE requirements were in place. The City can require all new residential construction to achieve zero net emissions through increased building efficiency (e.g., installation of high-efficiency appliances and fixtures, cool roofing materials, building insulation) and installation of on-site renewable energy generation systems to offset the remaining energy needs. If the City moves forward

with this future action, the City may exempt higher-density residential development, infill residential development, and residential development in areas well-served by transit, based on analysis demonstrating that reductions in vehicle miles traveled (VMT) associated with such development would achieve results similar to those of the ZNE requirement.

For purposes of analysis in this CAP, it is assumed that the full 8,800 MT CO₂e/yr emissions reductions from new residential buildings would be realized by 2035 if the City implements this strategy.

Carbon Offset Purchases

Develop project-level GHG emissions thresholds and carbon offset purchase requirements for projects that cannot achieve the thresholds through use of on-site mitigation strategies; establish project exemptions, including for compact, infill, and other GHG-efficient development.

Range of Potential Emission Reductions: Variable, based on City's emissions reduction gap

The purchase of third-party verified carbon offsets is a well-developed and flexible compliance pathway used in voluntary and mandatory emissions reporting programs for industries, corporations, governments, and communities. The City could develop project-level emissions thresholds and require the purchase of carbon offsets for projects that cannot feasibly achieve the threshold through use of on-site mitigation strategies. Alternatively, the City could collect an in-lieu fee from these projects, and establish a funding source to finance local energy efficiency improvement projects in the community or purchase carbon offsets on behalf of new projects.

Development of a carbon offset requirement or purchasing program will be based on future CAP progress review to determine the extent of additional reductions needed to achieve the 2035 target. Any additional offset requirements will not be applied to infill, compact development or other types of GHG-efficient development.

Land Use-Based VMT Reductions

Implement a standard or standards in new development to reduce vehicle miles traveled (VMT) by a minimum of 10 percent per service population by reducing vehicular

trip distances or increasing the mode share for transit, walking, and bicycling.

Range of Potential Emission Reductions: 7,700 to 8,000 MT CO₂e/yr in 2035.

This reduction strategy would require that a project's VMT is estimated without consideration of any of the project's design features, location, or travel demand reduction programs. The total residential population and employment of the subject project would also be estimated and the total baseline VMT per service population would be calculated. Then, VMT would be estimated again, but this time in consideration of each of the proposed VMT-reducing elements of the project. This VMT estimate would also be divided by the project's service population. The two ratios are compared, and this strategy would require at least a 10 percent reduction in VMT per service population compared to the estimate for the project without consideration of VMT-reducing features. Alternatively, this strategy can also be developed at the Specific Plan, community plan, or area plan level.

The 2035 General Plan includes a large number of policies that, when implemented by new development, will reduce travel demand. Some of these policies were designed with travel demand reduction or congestion management as the primary intent. They would, however, produce various other co-benefits, including enhancing fiscal sustainability, protecting public health, facilitating local economic development, reducing household transportation costs, providing convenient shopping and cultural opportunities, and improving the overall local quality of life.

Travel demand is related to land use mix, density of development, urban design, and other factors. Travel demand is influenced by street pattern, block size, streetscape improvements, and a variety of other community design features. Strategies to manage travel demand include improvements to transit access and frequency, walking and cycling facility improvements and extensions, parking management and pricing, increasing density, mixing land uses, promoting infill development, and otherwise directing development so that residents can more easily reach daily destinations without the use of a car.

There are also larger demographic and economic trends that are influencing, and will continue to influence, travel demand. The population is aging, fuel prices have risen

relative to incomes, vehicle ownership is not increasing as quickly as population growth, vehicle ownership in the United States is not growing as quickly as per-capita incomes, traffic congestion is increasing in many urban areas, including the Sacramento region, costs of road expansions are increasing, and many communities are increasingly recognizing the public health and environmental concerns created by transportation choices (DOF 2013, Dargay 2007, Litman 2015, SACOG 2016). Not all of these factors can be captured at this time in the General Plan's VMT estimates.

The relationships between density, mix of land uses, urban design, and the quality of the non-automobile transportation network, on one hand, and VMT, on the other, is complex. There is extensive literature showing that VMT can be reduced with density, land use mix, a connected transportation network, access to employment and regional destinations, transit-supportive development patterns, and other policy approaches.

These factors have varying levels of influence on travel demand (Ewing and Cervero 2001, Handy et al. 2012, U.S. EPA 2013, UC Davis 2011).

The future rate at which Woodland residents would commute to jobs outside the General Plan Planning Area is unknown, as is the future rate at which residents from other communities would commute to jobs in the Woodland Planning Area. This would be influenced by commute times, the price of fuel, the match between local jobs and the skills and experience of the local population, and other social and economic factors outside the City's control. General Plan policies promote a better match over time between local jobs and local residents' employment, but the degree of match in 2035 is not possible to predict at this time. The General Plan promotes mixing of uses that may allow future residents to accomplish more tasks with shorter trips or by walking or biking. The placement of higher densities in the Downtown Mixed Use and Corridor Mixed Use areas would allow a greater percentage of trips to occur on foot, by bicycle, or via transit. The implementation of General Plan policies is anticipated to reduce travel demand, but it is difficult to predict how much these policies would apply to each individual project, and the amount of cumulative VMT reduction that can be expected through implementation of the 2035 General Plan.

The California Air Pollution Control Officers Association (CAPCOA) broadly estimates that for suburban

communities in California, the maximum VMT reduction that might be expected through a combination of travel demand reducing policies is 10 percent (CAPCOA 2010). "Suburban" is a difficult term to precisely define in any context, including in relation to travel demand, and there is no single maximum amount of VMT reductions that would apply to all suburban communities in California, but this is a useful rule of thumb. Assuming new development VMT estimates for the General Plan are approximately the same as VMT estimates for existing development, a 10 percent reduction in VMT could reduce GHG emissions by approximately 7,700 to 8,000 MT CO₂e/yr in 2035.

References for Land Use-Based VMT Reductions

- California Air Pollution Control Officers Association (CAPCOA). 2010 (August). Quantifying Greenhouse Gas Mitigation Measures, A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures.
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Chapter 4H

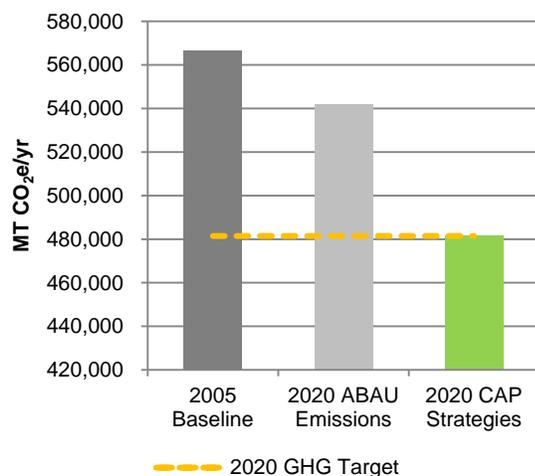
2020 and 2035 Target Progress

The CAP strategies were designed to achieve the City's GHG targets in combination with ongoing statewide action toward climate change and emissions reductions. The following sections illustrate the estimated results of the State and local actions compared to Woodland's 2020 and 2035 GHG targets.

2020 Target Progress

The City established a target to achieve emissions levels **15% below 2005 levels by 2020**. The community's 2005 baseline emissions were 566,389 MT CO₂e/yr, making the 2020 target 481,431 MT CO₂e/yr. As shown in Chapter 3 (Emissions Inventories and Targets), the community's 2020 ABAU emissions are estimated to be 541,657 MT CO₂e/yr, or 4% below 2005 levels. The CAP strategies were developed to provide additional reductions totaling 60,226 MT CO₂e/yr, which will achieve the City's 2020 target. Figure 4H.1 below illustrates how the combination of statewide actions (ABAU emissions levels) and CAP strategies are projected to achieve the 2020 GHG target.

Figure 4H.1 – 2020 Target Progress



As previously described, if a mid-point CAP review finds that emissions reductions-to-date are insufficient to achieve the 2020 target, additional CAP strategies will be considered for adoption. Chapter 5 (Implementation and Monitoring) provides further guidance on how the City will ensure future targets are achieved.

2035 Target Progress

Emissions forecasts and reduction targets were extended through 2035 for the Draft 2035 CAP. The GHG-reduction potential of the local strategies developed for the 2020 timeframe was also estimated through 2035 to illustrate the community's emissions trajectory into the future. This section presents a summary of the estimated GHG strategy reductions in 2035 for the two land use scenarios considered in the draft General Plan Update (General Plan: Lower and General Plan: Higher). It then presents the results of the 2035 target progress analysis for both scenarios. As described in Chapter 3, community-wide emissions analysis in this CAP considered the potential emissions reductions resulting from enhanced statewide action that would likely be necessary to achieve the State's longer-term GHG goals (CAP Planning Scenario). An analysis of Woodland's 2035 target achievement if additional statewide action is not taken is also presented at the end of this section (Conservative Scenario).

2035 CAP Strategies

Table 4H.1 on the following page presents a summary of the CAP strategies and their corresponding emissions reduction potential under each land use scenario. Chapter 5 describes the City's process for ensuring the estimated level of emissions reductions is achieved, including options to make certain of the CAP strategies mandatory and enforceable or pursue development of additional strategies. See Appendix D for a summary table of the quantifiable goals related to the 2035 GHG reduction estimates.

Table 4H.1 – 2035 CAP Strategy Estimates

Reduction Strategies	General Plan: Lower (MT CO ₂ e/yr)	General Plan: Higher (MT CO ₂ e/yr)
ENERGY	54,750	54,850
E-1 Lighting Efficiency Upgrades	10,900	11,000
E-2 Appliance/Equipment Upgrades	1,950	1,950
E-3 Comprehensive Building Efficiency	13,000	13,000
E-4 Improved Building Temperature Controls	9,800	9,800
E-5 Energy Conservation Education	4,800	4,800
E-6 Renewable Energy Generation and Procurement	14,300	14,300
TRANSPORTATION AND LAND USE	34,850	34,900
T/LU-4 Reduced Motor Vehicle Trips	1,350	1,350
T/LU-5 Increased Mass Transit Use, Walking, and Bicycling	2,300	2,350
T/LU-6 Reduced Vehicle Idling and Other Equipment Emissions	1,200	1,200
T/LU-7 Increased Use Of Alternative-Fuel Vehicles	30,000	30,000
URBAN FOREST AND OPEN SPACE	3,700	3,700
UF-2 Increased Tree Planting	3,100	3,100
UF-3 Maintenance of Existing Trees	600	600
WATER AND SOLID WASTE	15,850	16,350
W/W-1 Increased Water Conservation	350	350
W/W-2 Solid Waste Reduction and Waste Processing Improvements	15,500	16,000
MUNICIPAL OPERATIONS	2,500	2,500
MO-3 Increased Energy Efficiency and Renewable Energy	2,200	2,200
MO-4 Increased Use of Alternative-Fuel/Fuel-Efficient Vehicles	200	200
MO-5 Reduced Motor Vehicle Use	100	100
TOTAL	111,650	112,300

2035 GHG Targets

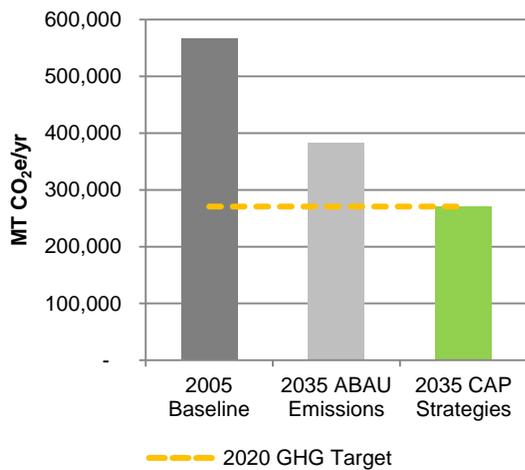
The City's 2035 GHG target is to achieve community-wide emissions efficiency of **2.25 MT CO₂e/SP/yr**. Based on the underlying population and employment assumptions for the General Plan: Lower and General Plan: Higher land use scenarios, this efficiency target is equal to emissions levels of 268,200 MT CO₂e/yr in the General Plan: Lower scenario and 270,743 MT CO₂e/yr in the General Plan: Higher scenario.

Chapter 5 (Implementation and Monitoring) describes a process through which the City will monitor progress of CAP strategy implementation as well as efficacy of statewide actions. It also outlines corrective steps the City will take if CAP monitoring indicates additional GHG reductions will be needed to achieve the target.

2035 Emissions Target Progress, General Plan: Lower Scenario

In 2035, BAU emissions are projected to reach 602,467 MT CO₂e/yr, which means total reductions of 334,267 MT CO₂e/yr will be needed to achieve the target of 268,200 MT CO₂e/yr. Based on the ABAU emissions scenario presented in Chapter 3, statewide actions are estimated to provide reductions of 222,622 MT CO₂e/yr. Further implementation of the strategies developed to meet the 2020 GHG-reduction goal (Chapters 4A-4F) can provide additional reductions of approximately 111,650 MT CO₂e/yr (as shown in Table 4.1). This will result in community-wide emissions of 268,195 MT CO₂e/yr, or 2.25 MT CO₂e/SP/yr, and **will achieve the City’s 2035 target**. Figure 4H.2 illustrates how statewide and local actions will achieve the 2035 target under the General Plan: Lower land use scenario.

Figure 4H.2 – 2035 Target Progress, General Plan: Lower Scenario (CAP Planning Scenario)

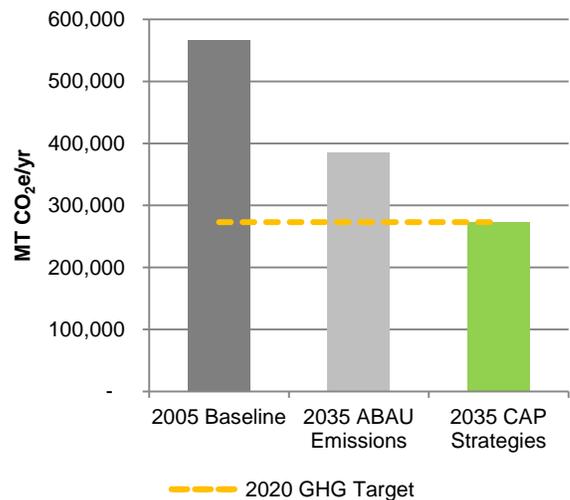


2035 Emissions Target Progress, General Plan: Higher Scenario

In 2035, BAU emissions are projected to reach 606,867 MT CO₂e/yr, which means total reductions of 336,124 MT CO₂e/yr will be needed to achieve the target of 270,743 MT CO₂e/yr. Based on the ABAU emissions scenario presented in Chapter 3, statewide actions are estimated to provide reductions of 223,859 MT CO₂e/yr. Further implementation of the CAP strategies can provide reductions of approximately 112,300 MT CO₂e/yr (as shown in Table 4.1). This will result in community-wide emissions of 270,708 MT CO₂e/yr, or

2.25 MT CO₂e/SP/yr, and **will achieve the City’s 2035 target**. Figure 4H.3 illustrates how statewide and local actions will achieve the 2035 target under the General Plan: Higher land use scenario.

Figure 4H.3 – 2035 Target Progress, General Plan: Higher Scenario (CAP Planning Scenario)



2035 Target Progress – Additional Actions

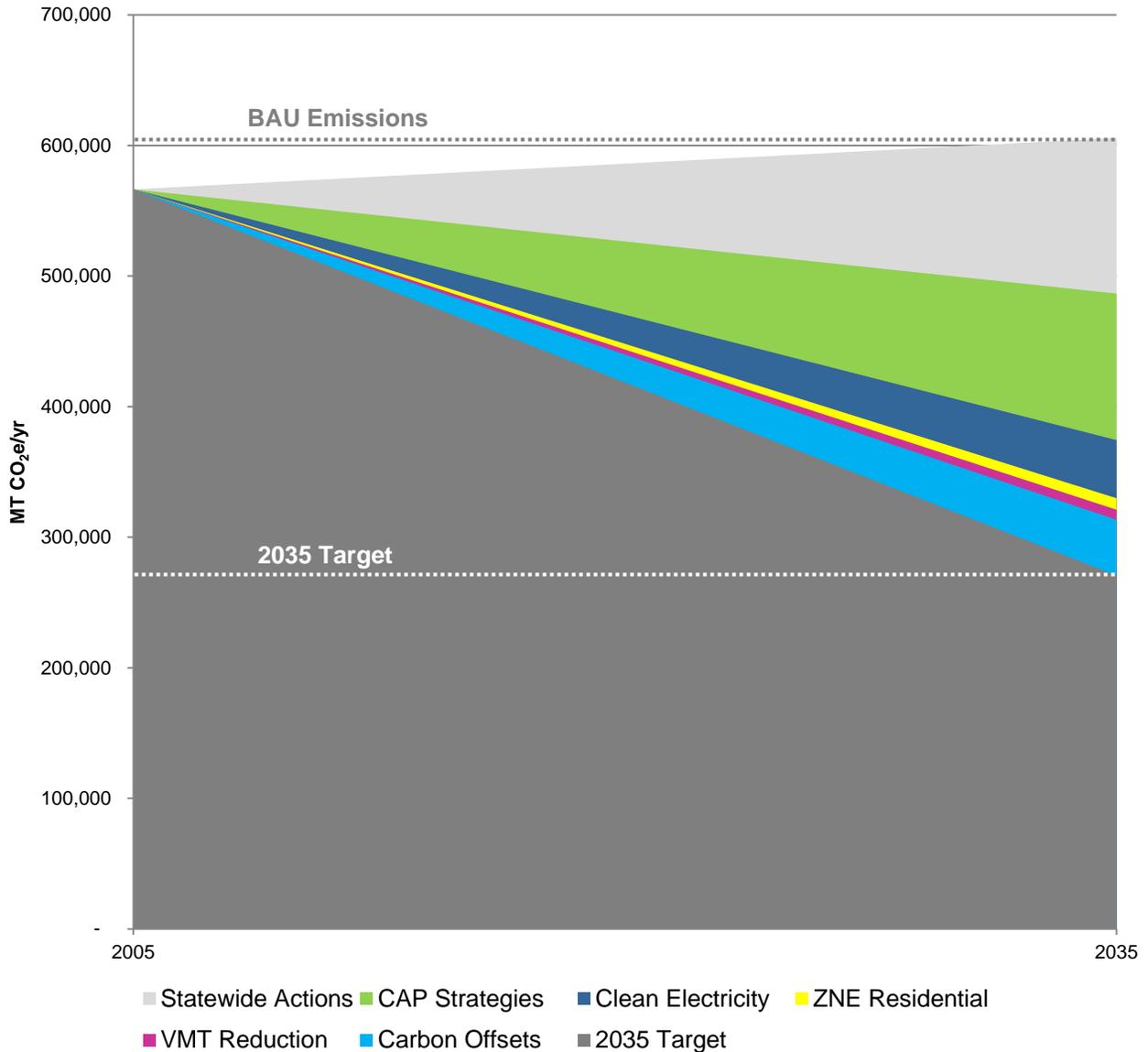
If the State does not strengthen existing or develop new GHG reduction strategies following the AB 32 target year in 2020, then the Conservative Scenario for ABAU presented in Chapter 3 may result (see Table 3.4 in Chapter 3). In this scenario, statewide actions analyzed in the CAP would continue to be implemented at their current levels, but would not be enhanced to generate substantially greater reductions. Chapter 4G (Additional Actions) outlines other reduction strategies that the City will pursue if CAP monitoring indicates that statewide actions are falling short of the reduction estimates shown in Figures 4H.2 and 4.3.

These additional actions include clean electricity options, zero net energy (ZNE) residential building requirements, a land use and circulation-based VMT reduction program, and carbon offset purchases. As discussed throughout this CAP, the City may decide to enhance implementation of certain CAP strategies to provide additional emissions reductions. Statewide actions could also result in a range of actual emissions reductions. The two statewide scenarios explored in this CAP (CAP Planning Scenario and Conservative Scenario) provide hypothetical bookends of what this range may be based

on the best available information; however, actual results may fall somewhere in the middle of these two scenarios. The carbon offset purchase program is intended to provide the City with additional flexibility in target achievement; the amount of offsets necessary will depend on the actual implementation success of statewide and local actions.

Figure 4H.4 shows a hypothetical scenario in which statewide actions do not increase beyond their current implementation goals, and the City pursues the additional actions described in Chapter 4G. The colored wedges illustrate the amount of emissions reduction from each source.

Figure 4H.4 – 2035 Target Progress, Additional Actions



Implementation and Monitoring

This chapter describes how the City will implement CAP emissions reduction measures in the following sections:

- Monitoring Progress describes how City staff will implement CAP measures and related actions, and track the performance of each measure.
- Program Evaluation and Evolution discusses the need to evaluate, update, and amend the CAP over time, so the plan remains effective and current.

Monitoring Progress

Ensuring that the CAP strategies translate from this document into on-the-ground results is critical to the success of the CAP and the City reaching its 2020 and 2035 emission reduction targets and putting the City on a trajectory to post-2035 reductions, consistent with the State's own GHG reduction goals. To facilitate this, each strategy described in the focus area sections contains implementation information that identifies the strategy's GHG reduction potential in 2020 and 2035, the implementing actions that help to achieve those reduction levels, and the quantifiable goals that can be used as performance indicators to track implementation success.

This information will enable City staff, the City Council, and the public to track strategy implementation and monitor overall CAP implementation progress. The goals are especially important, as they provide a checkpoint to evaluate whether a strategy is on target to achieving its anticipated emission reductions.

Each strategy's estimated GHG emissions reductions are based on that strategy's quantified goals, which will help City staff track progress toward the GHG reduction targets. If there is greater implementation of strategies than estimated in the goals, then additional emissions reductions should occur. Likewise, if implementation falls short of the estimates, then those strategies can be expected to achieve less than the stated reductions.

Upon adoption of the CAP, the City should identify personnel responsible for implementing each action from the focus area strategy descriptions. Key personnel in different departments will be required to facilitate assigned strategies and actions.

To assess the status of City efforts, CAP implementation meetings should take place on a regular basis. For example, these meetings may be held annually in advance of the Community Development Department's General Plan implementation status report to City Council. Results of the CAP status meetings could be incorporated into the staff reports at the time of these annual General Plan update meetings to provide transparency regarding community-wide progress and the City's own actions to reduce operational emissions. Some actions will require inter-departmental cooperation or external agency collaboration, and appropriate working partnerships will need to be established.

Program Evaluation and Evolution

Evaluation

Two types of performance evaluation are important: (a) evaluation of the City's overall ability to reduce GHG emissions, and (b) evaluation of the performance of individual CAP strategies. Community-wide emissions inventories will provide the best indication of CAP effectiveness. Conducting these inventories periodically will enable direct comparison to the 2005 base year inventory and measurement of progress toward meeting the City's reduction targets.

While GHG inventories provide information about overall emission reductions, it will also be important to understand the effectiveness of each strategy. Evaluation of the emissions reduction progress of individual strategies will improve staff and decision makers' ability to manage and implement the CAP. The City can

reinforce successful strategies and reevaluate or replace under-performing ones.

To track strategy performance, City staff will need to collect important pieces of data that are related to the goals listed in the strategy discussion of each focus area section. While some of the data may be available from existing reports or processes, improvements in data collection will likely be needed to minimize staff effort expended during CAP monitoring. It is therefore important that key staff from relevant departments establish methods of data collection in a consistent, simplified, and ideally, centralized way.

The goals were developed to be directly linked to the GHG reduction estimates. Therefore, goals should be evaluated regularly to ensure each strategy is on track to achieve its stated emissions reductions. If, during the implementation review process, a strategy is found to be falling short of its performance goals, then additional attention can be given to modifying the implementation actions. Further, if implementation review indicates that a strategy will be unable to achieve its stated reduction level, then new CAP strategies would need to be developed to make up the difference (see Chapter 4G, Additional Actions, for more information), or other existing strategies could be enhanced to increase their emissions reduction potential. CAP implementation is an iterative process for any community, since achieving emission reduction goals is dependent on future changes in technology, economic changes, regulatory changes, demographic changes, available budget, staff resources, and other factors.

A City staff member will be assigned to CAP coordination and will collaborate with staff from responsible departments to evaluate strategy performance on a regular, defined basis. The CAP coordinator will also prepare a summary report that outlines progress toward CAP strategies and actions, preferably as part of an annual monitoring and evaluation process; a comprehensive CAP evaluation should occur on no greater than a five-year cycle. The report will cover areas such as estimated GHG emissions reductions to date, progress toward the next reduction target, progress toward implementation of the actions, achievement of strategy goals, implementation challenges, and recommended next steps. As noted previously, staff may want to deliver this report in conjunction with the

State-required annual report to the City Council regarding implementation of the City's General Plan.

Plan Evolution

To remain relevant, the CAP also needs to be adapted over time. It is likely that new GHG reduction technologies and strategies will be developed, new financing mechanisms will be available, and State and federal legislation will change. It is also possible that future GHG emission inventories will indicate that the City is not on track toward achieving its adopted GHG reduction targets. If this is the case, the City can assess the implications of new scientific findings, explore new emission reduction technologies, respond to changes in State and federal climate change policy, and modify the CAP accordingly to help the City get back on track toward meeting its GHG reduction targets.

Following the 2020 CAP target year, the City should also verify the priority strategies and implementation actions that it will pursue to help achieve the 2035 reduction target. This process will begin with preparation of a 2020 emissions inventory that can be used to compare progress made since the base year 2005 inventory. The updated inventory will also be helpful in identifying priorities for new City actions. It will be important to consider the City's current emissions inventory, ongoing City actions, new State legislation, and emerging technologies to further refine the specific pathway for achieving the 2035 reduction target.

Inventory Updates

As mentioned throughout this chapter, the City's ability to track implementation success is best achieved through regular emissions inventory updates (e.g., every 5 years). These updates will allow the City to compare its actual future emissions levels to those forecasted in Chapter 3 (Emissions Inventories and Targets), and track the long-term trajectory of the City's emissions. As part of the future inventorying process, the City should also develop a procedure to share this new information with the public and City Council, report on progress made toward the next target, and compare the updated inventories to previous estimates presented in this CAP. See Strategy PI-4 for actions pertaining to future inventory updates.

There are various challenges inherent when inventorying emissions, which can make it difficult to allow for direct

comparisons from one inventory year to the next. For example, the state of the climate science industry is perpetually advancing and shifting, leading to revisions in inventory methodologies. Similarly, the emissions factors upon which inventories are developed are constantly being refined by various agencies and entities (e.g., California Air Resources Board, International Panel on Climate Change). There are also instances in the inventory process where judgment calls must be made in order to interpret and apply the best available data at the time. While the Local Government Operations Protocol, ICLEI, and other agencies or organizations have developed guidance on how local governments should prepare their inventories, inconsistencies can arise and practitioners do have nuanced approaches to applying this guidance.

In order to best position itself to produce future inventories that can be compared to past inventories with relative consistency, the City should continue to develop its institutional knowledge in the area of emissions generation sources, reduction opportunities, and emissions inventory variables. Whether through a strong leadership role in preparing its own updates (possibly using ICLEI's or other online resources) or through a partnership with other area jurisdictions, the City should remain engaged in the inventorying process so that City staff can provide a level of consistency from one update period to the next.

Evaluating Statewide Actions

As previously described, statewide actions are expected to be further strengthened after the AB 32 target year of 2020 in order for the State to achieve its longer-term GHG mandates. Achievement of Woodland's CAP is designed to achieve the City's 2035 target despite the lack of any details on how the State will change existing programs, what new programs will be added, or the timeline for revised or new programs.

The City will review the ABAU emissions estimates presented in Chapter 3 pending ARB's development of a Scoping Plan update that quantifies the impact of statewide actions beyond 2020. If, during this review, the City determines that community-wide emissions are not on a trajectory toward target achievement, one or all of the additional strategies listed in Chapter 4G (Additional Actions) will be implemented (or new strategies added that can provide similar GHG reduction benefits). The City may also determine that one or more of the

voluntary CAP strategies should become mandatory and enforceable to provide additional emissions reductions.

CAP Management Commitments

Based on these descriptions of CAP implementation, monitoring, evaluation, and evolution, the City should identify a staff member to take the lead on coordination of future CAP action. As mentioned throughout this document, a CAP is a living plan that requires regular attention and care to ensure its goals can be achieved in a timely and resource-efficient manner. The following steps summarize the future City actions described throughout this chapter that will be required to maintain an up-to-date, feasible, and effective CAP:

1. Identify City staff member to act as CAP coordinator, interfacing with representatives from departments that will be assigned responsibility roles for implementation strategies and actions
2. Establish regular emissions inventory update cycle, budget, and process, to occur no less than every five years; ensure that updates are prepared for each target year (beginning with the 2020 target); oversee future inventory updates and prepare monitoring reports that compare future levels to emissions forecasts identified in this CAP; compare future inventory levels to City's reduction targets
3. Re-evaluate 2035 ABAU emissions forecasts following ARB's revised *Scoping Plan* and long-term quantification estimates for statewide actions; implement additional actions if post-2020 statewide actions are deemed insufficient to achieve the 2035 GHG target
4. Monitor and evaluate implementation progress of CAP strategies; prepare annual CAP implementation report to be shared with City Council as part of annual General Plan implementation status report; make one or more CAP strategies mandatory (or incorporate new CAP strategies) if implementation of statewide and local actions is insufficient to maintain trajectory toward GHG targets
5. Following 2020 target year, begin process to prioritize next actions to be pursued in support of 2035 reduction target; process should consider emissions reduction levels achieved to date (based

on inventory updates), new State and federal regulations/legislation, advancements in emissions-reducing technology and/or funding programs, and City's operational priorities at that time

6. Participate in regional partnerships that share best practice strategies for community-wide and municipal operations emissions reductions and jointly pursue funding opportunities that support CAP updates, future inventory updates, or other climate change planning activities

Project-Level Compliance with the CAP

As noted in Chapter 2, pursuant to CEQA Guidelines Section 15183.5(b)(1), lead agencies may analyze and mitigate significant greenhouse gas emissions in a plan for the reduction of greenhouse gas emissions, and use that plan for CEQA review of the GHG emissions of subsequent plans and projects. This CAP provides each of the recommended "Plan Elements" from CEQA Guidelines Section 15183.5(b)(1).

Projects that are consistent with the General Plan and demonstrate consistency with the CAP may use this consistency determination in lieu of a project-specific GHG emissions analysis to address potential GHG emissions impacts. If the GHG reduction measures are not otherwise binding and enforceable, they must be incorporated as mitigation measures, project conditions of approval, or some other mechanism to ensure implementation.

Project-level GHG impacts are addressed as follows:

If a project is consistent with the General Plan and is otherwise exempt from CEQA, GHG-related impacts associated with the project are determined to be less than significant, and further CEQA analysis for this area of impact is not required.

If a project is consistent with the General Plan, is not exempt from CEQA, falls within the assumptions of the General Plan EIR, and is consistent with the CAP, GHG-related impacts associated with the project are determined to be less than significant or mitigated to a less-than-significant level, and further CEQA analysis for this area of impact is generally not required.

To be determined consistent with the CAP, a project must demonstrate that it is included in the growth projections upon which the CAP modeling is based and that it incorporates applicable strategies and measures from the CAP as binding and enforceable components of the project. Symbols used in the listings of actions in Chapters 4A-4F are intended to help identify applicable strategies and actions.

If a project is not consistent with the General Plan, is not exempt from CEQA, and either does not fall within the assumptions of the General Plan EIR or is not consistent with the CAP, GHG-related impacts associated with the project are presumed to be potentially significant, and further CEQA analysis is required. The applicant must demonstrate to the City's satisfaction how the project will achieve its fair share of the established targets, including:

- Use of alternative design components and/or operational protocols to achieve the required GHG reductions, or
- Use of real, additional, permanent, verifiable and enforceable offsets to achieve required GHG reductions. To the greatest feasible extent, offsets shall be: locally based, project relevant, and consistent with other long-term goals of the City.

The project must also be able to demonstrate that it would not substantially interfere with implementation of CAP strategies, measures, or actions.

In order to demonstrate project-level compliance with CEQA relevant to GHG emissions and climate change impacts, applications for discretionary projects must include information that addresses the following:

- Demonstrate consistency with the General Plan land use designation and applicable policies. This may be done in the form of a checklist developed by or acceptable to the City.
- Demonstrate consistency with the CAP, including consistency with the growth projections upon which the CAP modeling is based, and incorporation of applicable strategies and measures from the CAP as binding and enforceable components of the project.
- Pursuant to Section 15064.4(a)(1) of the CEQA Guidelines, estimate the level of GHG emissions that would result from implementation of the project.

Upon receipt of this information, the City will verify that it is complete and acceptable, and will track the information for purposes of CAP monitoring and reporting.

In conjunction with the requirements of the General Plan and CEQA compliance, the City will determine whether or not the project requires additional analysis or environmental review.

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Acknowledgements

The 2035 Climate Action Plan is an update and expansion of the Preliminary 2020 Climate Action Plan that was adopted by the Woodland City Council on July 15, 2014, and replaces that document.

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2035 Climate Action Plan

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Preliminary 2020 Climate Action Plan

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CITY OF WOODLAND

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