

REPORT TO CITY COUNCIL

DATE: MARCH 10, 2021

TO: HONORABLE MAYOR AND MEMBERS OF THE CITY COUNCIL

FROM: NATHAN HAMBURGER, CITY MANAGER

BY: RAMIRO ADEVA, ASSISTANT CITY MANAGER

SUBJECT: CONSIDER APPROVAL OF DRAFT CLIMATE ACTION AND ADAPTATION PLAN (CAAP) AND DIRECT STAFF TO PROCEED TO PHASE 2 OF THE CAAP PROCESS TO PREPARE THE APPROPRIATE ENVIRONMENTAL DOCUMENT IN COMPLIANCE WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

On February 24, 2021, the City Council directed staff to take the feedback received to make the appropriate changes to the draft Climate Action and Adaptation Plan (CAAP), and to return to the next general meeting of the City Council with a revised, redlined draft to consider for approval.

Since that time, staff worked with LSA Associates, Inc., to incorporate the directed changes, and a redline copy of the draft is attached.

A brief description of the changes and corresponding page numbers is noted in the table below. Refer to the attached redline draft for exact language of the revision.

	Page No(s).	Description of Change
1	Page after Cover Sheet	“Disclaimer” added to clarify that public participation is a continual process in future phases, and that the CAAP document alone is not implementable, but rather sets the vision for Phase 3 implementation.
2	4	Table ES-C revised under Measure 7.1 to include reference to telecommuting.
3	25	“Section 3.1 Community Measures” revised to add clarifying text of financial burden impact, and reference to support/incentives that exist from utility companies towards GHG reductions.
4	27	City Action for Measure 1.1 revised to add “Consider” for bullet-point #5.
5	27	City Action for Measure 1.2 revised to add reference to “Council of Governments (COG)”
6	27	City Action for Measure 1.3 revised to add “Consider” to bullet-point #2.

7	28	<p>City Actions for Measure 1.4 revised as follows:</p> <p>Bullet-point #4 includes reference to public and private loans in general, and deletes reference to PACE specifically.</p> <p>Bullet-point #6 adds “Consider” and text indicating intent to further explore a sliding scale that relates varying levels of energy efficiency upgrades with potential fee reductions.</p>
8	29	<p>City Actions for Measure 2.1 revised as follows:</p> <p>Bullet-point #3 adds “Consider” and text indicating intent to further explore a sliding scale that relates varying levels of energy efficiency upgrades with potential fee reductions.</p>
9	30	City Actions for Measure 3.1 revised. Bullet-point #5 adds “Consider”
10	30	City Actions for Measure 3.2 revised to reference “Council of Governments (COG)”
11	30	City Actions for Measure 3.3 revised. Bullet-point #2 adds “Consider”
12	30	City Actions for Measure 3.4 revised. Bullet-point #4 includes reference to public and private loans in general, and deletes reference to PACE specifically.
13	31	City Actions for Measure 4.1 revised. Bullet-point #4 now reads, “ <i>Consider mandates or incentives for developers that provide 100% electrification for new commercial development.</i> ”
14	34	City Actions for Measure 6.1 revised. Bullet-point #3 add text to “Consider a mandate...”
15	35	“Section 3.5.1 Goal 7: Decrease GHG Emissions through Reducing Vehicle Miles Travelled” revised to include text to reference telecommuting in the context of COVID.
16	36	<p>City Actions for Measure 7.1 revised as follows:</p> <p>Bullet-point #1 to reference public agencies, private companies, telecommuting.</p> <p>Bullet-point #4 to add “Consider”</p> <p>Bullet-point #5 to add to LVUSD and other local educational facilities.</p>
17	36	City Actions for Measure 7.2 revised. Bullet-point #2 includes text to promote more walkability and bike-ability on City roadways.
18	36	City Actions for Measure 7.4 revised. Bullet-point #2 includes reference to teaming up with Caltrans to conduct direct outreach regarding EV charging stations at various local locations.
19	37	City Actions for Measure 7.4 revised. Bullet-point #7 adds word “Consider”

20	37	“Section 3.6.1 Goal 8: Decrease GHG Emissions through Reducing Solid Waste Generation” includes additional language to the body of the text.
21	38	City Actions for Measure 8.1 revised as follows: Bullet-point #1 references teaming up with Waste Management and other trash waste haulers. Bullet-point #4 references organic waste collection services and SB 1383. Bullet-point #5 adds text for establishing a Citywide edible food recovery program.
22	39	Text changed to reflect “exceeding” the State RPS goal, not simply “meeting” it.
23	39	Removed all references to Renewable Natural Gas (RNG)
24	40	City Actions for Measure 9.1 revised as follows: Bullet-point #2 adds “Consider” Bullet-point #6 adds reference to solar installation
25	40	Revised heading of Measure 9.2 to correct reference to CPA as being the City’s, not SCE’s.
26	41	Table K revised under Measure 7.1 to include reference to telecommuting.
27	45	Reference to SCAGs recently approved resolution no. 21-628-1.
28	74	Adaptation Measure 4-3 revised. Bullet-point #1 adds language regarding coordination with County Emergency Services and first responders to share accurate maps and evacuation routes.
29	75	Adaptation Measure 4-4 revised. Bullet-point #4 adds reference to “Heating centers,” and “Changing of Electrical Device centers.”
30	85	Language added to reference public and private energy efficiency and clean energy loan programs, and delete specific reference to PACE program.
31	89-91	Added Cited References

Should any revisions need correcting for accuracy, or if the City Council wants additional changes to the document, staff would respectfully request those proposed changes be discussed and agreed upon during the City Council meeting, so staff can receive formal direction to incorporate any additional changes during Phase 2.

RECOMMENDATION

Staff respectfully recommends the City Council:

1. Approve the draft Climate Action and Adaptation Plan (CAAP), and
2. Direct staff to proceed to Phase 2 of the CAAP process to prepare the appropriate environmental document in compliance with the California Environmental Quality Act (CEQA).

Attachment: Redlined Draft CAAP

CITY OF AGOURA HILLS
CLIMATE ACTION AND ADAPTATION PLAN

DRAFT

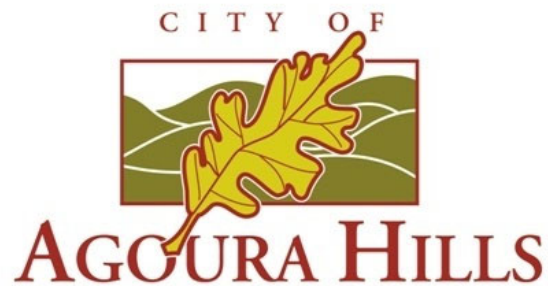
March 2021

Disclaimer

The Agoura Hills draft Climate Action and Adaptation Plan (CAAP) in its current state is a visionary document. Public participation will be continually sought in future phases of CAAP development including CEQA review and a detailed implementation strategy before adoption of the final CAAP.

CITY OF AGOURA HILLS
CLIMATE ACTION AND ADAPTATION PLAN

Prepared for:



Prepared by:

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LSA Project No. AGH1901

March 2021



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Table of Contents

EXECUTIVE SUMMARY	1
ES.1 Inventory	1
ES.2 Forecast and Target Setting	2
ES.3 Reduction Measures	3
ES.4 Adaptation.....	5
ES.5 Implementation.....	5
1.0 INTRODUCTION.....	7
1.1 Climate Change Science	7
1.2 Benefits of the CAAP	8
1.3 Regulatory Setting.....	9
1.3.1 Federal.....	9
1.3.2 State.....	9
1.4 City Setting	15
1.5 Organization of the CAAP.....	15
2.0 GHG EMISSIONS INVENTORY, FORECAST, AND TARGETS	17
2.1 GHG Emissions Inventory	17
2.1.1 2018 Greenhouse Gas Emissions Summary.....	18
2.1.2 Inventory Forecast.....	19
2.1.3 Reduction Targets.....	21
2.1.4 Community Targets	22
3.0 GHG REDUCTION MEASURES.....	25
3.1 Community Measures	25
3.2 Energy Efficiency	26
3.2.1 Residential Land Uses	26
3.2.2 Commercial Land Uses	29
3.3 Water Efficiency	32
3.3.1 Goal 5: Increase Energy Efficiency through Water Efficiency.....	32
3.4 Advanced Goals and Measures	33
3.4.1 Goal 6: Decrease Energy Demand through Reducing Urban Heat Island Effect.....	33
3.5 On-Road Transportation	35
3.5.1 Goal 7: Decrease GHG Emissions through Reducing Vehicle Miles Traveled	35
3.6 Solid Waste.....	37
3.6.1 Goal 8: Decrease GHG Emissions through Reducing Solid Waste Generation	37
3.7 Clean Energy.....	38
3.7.1 Goal 9: Decrease GHG Emissions through Increasing Clean Energy Use.....	38
3.8 Summary of Reductions	40
3.9 Comparison of Reductions to Targets.....	41
3.10 Beyond 2030 Target	43
4.0 CLIMATE VULNERABILITY AND ADAPTATION	44
4.1 Projections of Future Climate	44





4.1.1	Methodology	44
4.1.2	Temperature Projections	45
4.1.3	Precipitation Projections	50
4.1.4	Wildfire Projections	51
4.2	CLIMATE CHANGE RISK ANALYSIS.....	56
4.2.1	Drought.....	56
4.2.2	Extreme Heat	60
4.2.3	Flooding	60
4.2.4	Landslide.....	64
4.2.5	Evacuation Route Constraints.....	70
4.3	ADAPTATION AND RESILIENCY	72
4.3.1	Adaptation to the Impacts of Wildfire.....	73
4.3.2	Adaptation to the Impacts of Extreme Heat.....	74
4.3.3	Adaptation to the Impacts of Flooding.....	76
5.0	PLAN IMPLEMENTATION	78
5.1	Administration and Staffing.....	78
5.2	Financing and Budgeting	79
5.3	Timelines for Measure Implementation.....	83
5.4	Community Outreach and Education	84
5.5	Monitoring, Reporting, and Adaptive Management	86
6.0	REFERENCES	88

Figures

Figure ES-1: Community GHG Emissions Baseline Inventory by Sector for Year 2018.....	1
Figure ES-2: BAU and ABAU Emissions Forecast.....	3
Figure ES-3: Process of Implementing the Climate Action and Adaptation Plan.....	5
Figure 1: Communitywide GHG Emissions by Sector For 2018	19
Figure 2: Community BAU and ABAU Forecasts	20
Figure 3: Community Emissions Inventory, Forecasts, and Targets	24
Figure 4: State and Local Reductions Comparison with Targets for Community	42
Figure 5: Maximum Temperature.....	46
Figure 6: Minimum Temperature	48
Figure 7: Number of Extreme Heat Days per Year for Agoura Hills (Observed and Modeled Historical Data 1950–2005 and Modeled Future Projections 2006–2099)	50
Figure 8: Average Precipitation.....	52
Figure 9: Wildfire Risk	54
Figure 10: WildFire Hazard Zones	58
Figure 11: Flood Zones.....	62
Figure 12: Debris Hazard Zones	66
Figure 13: Evacuation Route Constraints.....	68
Figure 14: Agoura Hills CAAP Survey: City Residents’ Priorities for Climate Change Reduction	85





Tables

Table ES-A: Growth Indicators for 2008, 2020, 2030 and 2045	2
Table ES-B: Mass GHG Reduction Targets for Community Emissions	3
Table ES-C: Summary of Community GHG Reduction Strategies and Emission Reductions	4
Table A: Community Sectors Evaluated in the Inventory	17
Table B: 2018 Community GHG Inventory Data Inputs	18
Table C: Communitywide GHG Emissions by Sector for 2018	18
Table D: Growth Indicators for 2008, 2020, and 2035	19
Table E: Community Business As Usual (BAU) Forecast Emissions	21
Table F: Community Adjusted Business As Usual (ABAU) Forecast Emissions	21
Table G: Statewide GHG Emissions (MMT CO ₂ e)	22
Table H: GHG Reduction Targets for Community Emissions	23
Table I: State-Aligned GHG Reduction Targets for Community Emissions by Year	23
Table J: Community Measures	26
Table K: Summary of Community GHG Reduction Strategies and Emission Reductions	41
Table L: Community Emissions and Targets Comparison	42
Table M: Roadway Segments Potentially Affected by Wildfire Fire Hazards	71
Table N: Roadway Segments Potentially Affected by Flood Hazards	72
Table O: Roadway Segments Potentially Affected by Landslide Hazards	72
Table P: Potential Funding Sources to Support GHG Reduction Measures	80
Table Q: Implementation Matrix	84

Appendix

A: GHG Inventory, Forecasts, and Targets: Calculations and Reduction Measures Summary





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Executive Summary

The City of Agoura Hills (City) is committed to providing a more livable, equitable, and economically vibrant community through the reduction of greenhouse gas (GHG) emissions and enhancing the community resilience towards vulnerabilities and risks posed by climate change. The goal of City’s Climate Action and Adaptation Plan (CAAP) is to develop policies and programs to reduce reliance on fossil fuels with co-benefits of cleaning up the air, provide a cost savings to residents, and build resiliency during climate change induced, extreme heat events, wildfires and other risks. By using energy more efficiently, harnessing renewable energy to power buildings, recycling waste, and enhancing access to sustainable transportation modes, the City will keep dollars in the local economy, create jobs, and improve the community’s quality of life. This CAAP provides a comprehensive roadmap to address the challenges of climate change in the City. Through this CAAP, the City has established goals and policies that incorporate environmental responsibility into the everyday management of its community operations. The efforts toward increasing the reduction of citywide GHG emissions described in this report would occur in coordination with the City’s other planning and land use decisions. The CAAP also presents a climate change vulnerability analysis and adaptation strategies to address potential impacts of climate change. The following presents a brief summary of the steps taken to prepare this CAAP.

ES.1 Inventory

The first step in developing the CAAP was to prepare the City’s baseline GHG emissions inventory. The baseline GHG inventory was prepared for the year 2018, which represents the year for which the most recent community-wide sectors data was available. The City emitted approximately 266,890 metric tons carbon dioxide equivalent (MMT CO₂e) in 2018. The largest portion of the City’s 2018 emissions were from transportation (73 percent), followed by emissions from electricity (12.67 percent) and natural gas use in buildings (9.99 percent). Figure ES-1 shows a sector level GHG emissions inventory results for the 2018.

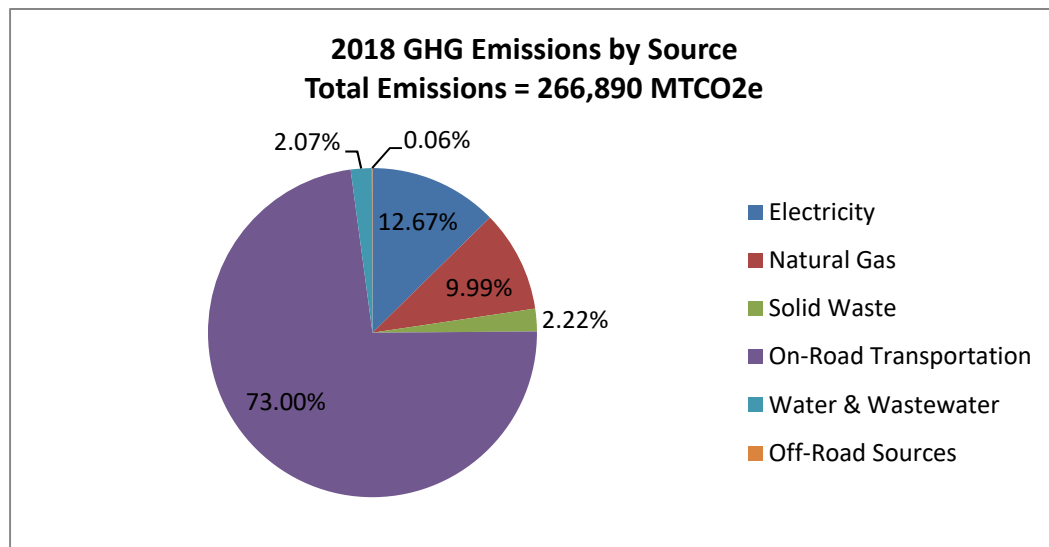


Figure ES-1: Community GHG Emissions Baseline Inventory by Sector for Year 2018





ES.2 Forecast and Target Setting

The next step after developing the baseline 2018 GHG inventory was to estimate future emissions from different sectors in the City and to establish GHG reduction targets.

The City’s future emissions were estimated using demographic indicators such as households and jobs growth. Table ES-A shows growth indicators used by sector. These growth factors were used to more accurately predict the year 2020 targets (15 percent below 2008 by 2020 per AB 32) based on the year 2008 growth indicators and emissions. This is further explained in more detail in Chapter 2 GHG Inventory, Forecast and Targets.

Table ES-A: Growth Indicators for 2008, 2020, 2030 and 2045

Sector	Demographic Indicator	2008	2020	2030	2045
Residential Energy	Households	7,300	7,500	7,700	8,178
Commercial/Industrial Energy	Jobs	11,600	12,100	12,400	13,300
N/A ¹	Population	20,300	20,400	20,900	22,400
Solid Waste, Water, Wastewater, and Off-road Sources	Service Population (Population + Jobs)	31,900	32,500	33,300	35,700

Source: 2012 Adopted Growth Forecast Southern California Association of Government (SCAG) City of Agoura Hills

¹ Not Applicable. Population data are shown for informational purposes but are not used for forecasting any sector.

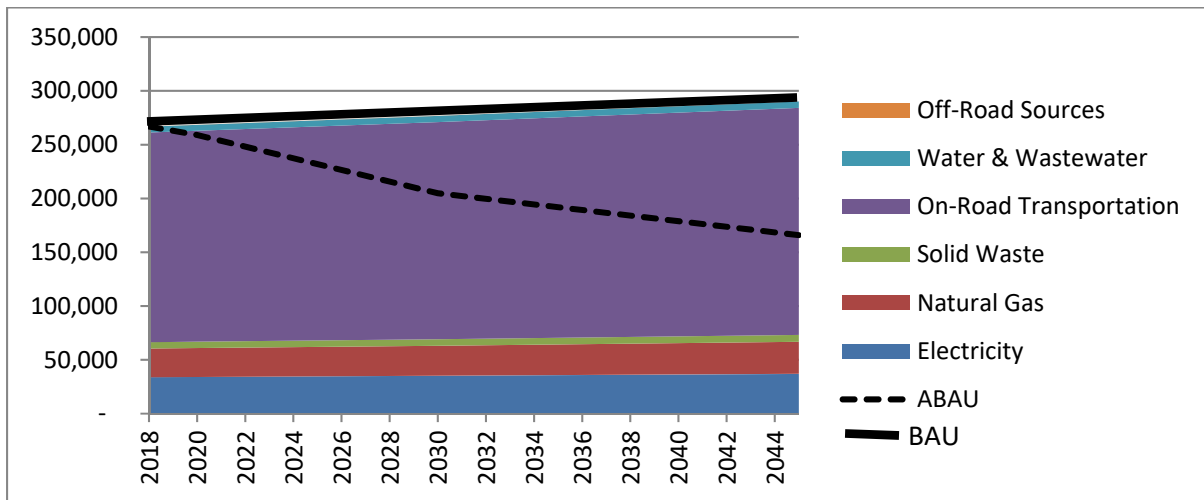
Future emissions estimates also included reductions that would occur with implementation of legislation adopted at the State level. That is, some level of emission reduction is anticipated within Agoura Hills as a result of policies implemented at the State level, including:

- Low Carbon Fuel Standards
- Assembly Bill (AB) 1493 and Advanced Clean Cars
- California Building Code Title 24
- Renewable Portfolio Standard

The resulting projected emissions are considered an “adjusted” business-as-usual (Adjusted BAU) forecast. Figure ES-2 shows historic emissions and Adjusted BAU forecasts.

Consistent with the State’s adopted AB 32 and SB 32 GHG reduction target, the City has set a goal to reduce emissions to 1990 levels by the year 2020. This target was calculated as a 15 percent decrease from 2008 levels, as recommended in the AB 32 Scoping Plan. The City has also set a 2030 reduction target, which is to reduce emissions to 49 percent below 2008 levels. These reduction targets would put the City on a path toward the State’s long-term goal to achieve Statewide carbon neutrality (zero net emissions) by 2045. See Table ES-B.





ABAU: adjusted business as usual
 BAU: business as usual
 MT CO₂e = metric tons of carbon dioxide equivalent

Figure ES-2: BAU and ABAU Emissions Forecast

Table ES-B: Mass GHG Reduction Targets for Community Emissions

Strategy	Target
2020 Target	15% below 2008 levels
2020 Emissions Goal (MT CO ₂ e)	280,742
2030 Target	49% below 2008 levels
2030 Emissions Goal (MT CO ₂ e)	168,445

Source: GHG Inventory for the City of Agoura Hills, 2020.
 MT CO₂e = metric tons of carbon dioxide equivalent

ES.3 Reduction Measures

The City has demonstrated its commitment to conserve energy and reduce emissions through a variety of programs and policies. In order to reach the reduction target, the City would implement local reduction measures described in this report. These measures encourage energy efficiency, water conservation, alternative transportation, solid waste reduction, and clean energy. Table ES-C summarizes the reductions from measures that would be implemented to meet the Community GHG reduction goals for the year 2030.





Table ES-C: Summary of Community GHG Reduction Strategies and Emission Reductions

Goals and Measures	2030 Emission Reductions (MT CO ₂ e)
Goal 1: Increase Energy Efficiency in Existing Residential Units	
1.1: Energy Efficiency Training, Education, and Recognition in the Residential Sector	Supporting Measure ¹
1.2: Increase Community Participation in Existing Energy Efficiency Programs	454
1.3: Home Energy Evaluations	Supporting Measure ¹
1.4: Residential Home Energy Renovations	734
Goal 2: Increase Energy Efficiency in New Residential Units	
2.1: Exceed Energy Efficiency Standards	445
Goal 3: Increase Energy Efficiency in Existing Commercial Units	
3.1: Energy Efficiency Training, Education, and Recognition in Commercial Sector	Supporting Measure ¹
3.2: Increase Business Participation in Existing Energy Efficiency Programs	858
3.3: Nonresidential Building Energy Audits	Supporting Measure ¹
3.4: Nonresidential Building Retrofits	7,464
Goal 4: Increase Energy Efficiency in New Commercial Units	
4.1: Exceed Energy Efficiency Standards	168
Goal 5: Increase Energy Efficiency through Water Efficiency	
5.1: Water Efficiency through Enhanced Implementation of Senate Bill X7-7	279
5.2: Exceed Water Efficiency Standards	Supporting Measure ¹
Goal 6: Decrease Energy Demand through Reducing Urban Heat Island Effect per Title 24 Requirements	
6.1: Tree Planting for Shading and Energy Saving	318
6.2: Light-Reflecting Surfaces for Energy Saving	37
Goal 7: Decrease Greenhouse Gas Emissions through Reducing Vehicle Miles Traveled	
7.1: Transportation Demand Management (TDM) including telecommuting and alternative Transportation Options	11,402
7.2: Implement Bicycle Master Plan to Expand Bike Routes around the City	184
7.3: Ridesharing and Bike-to-Work Programs within Businesses	7,526
7.4: Electrify the Fleet	22,449
Goal 8: Decrease Greenhouse Gas Emissions through Reducing Solid Waste Generation	
8.1: Reduce Waste to Landfills	1,500
Goal 9: Decrease Greenhouse Gas Emissions through Increasing Clean Energy Use	
9.1: Promote Clean Energy	3,641
9.2: Continue Participation in Clean Power Alliance Program with 100% renewable energy goal	6,537
Total Community Measures	63,996

Note: ¹ Supporting Measures are the measures that will reduce emissions but cannot be quantified. These measures enhance the quantifiable measures through education and outreach programs.
 MT CO₂e = metric tons of carbon dioxide equivalent





ES.4 Adaptation

The City recognizes that planning sustainably is more than reducing GHG emissions; it also requires being prepared for changes that would impact the community’s quality of life, its use of resources, and its economy. Preparedness, or adaptation, efforts seek to reduce vulnerability and increase the local capacity to adapt to changes. Agoura Hills may expect increased temperatures, variable precipitation, and increased extreme weather events. The City has developed adaptation strategies to reduce potential impacts and build resiliency among the communities. The adaptation strategies focus on public health and safety, electricity demand, water availability, infrastructure damage, wildfire, and social equity.

ES.5 Implementation

Finally, the CAAP in itself is not enough to meet the reduction goals without a commitment to implementation. The Implementation Chapter of the CAAP identifies the process for implementing and monitoring the identified strategies. Figure ES-3 summarizes the six-step process.



Figure ES-3: Process of Implementing the Climate Action and Adaptation Plan

Through successful implementation of this CAAP, the City will demonstrate the potential economic, social, and environmental benefits of reducing GHG emissions and providing environmental stewardship within the community.





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1.0 Introduction

The City of Agoura Hills (City) is committed to planning sustainably for the future while ensuring a livable, equitable, and economically vibrant community. Planning sustainably includes acknowledging the local role in climate change and how the City can mitigate its greenhouse gas (GHG) emissions and prepare for (i.e., adapt to) anticipated climate-related changes. By using energy more efficiently, harnessing renewable energy to power buildings, recycling waste, and enhancing access to sustainable transportation modes, Agoura Hills can keep dollars in its local economy, create new green jobs, and improve the community's health, safety, and welfare in addition to addressing climate change. The City has implemented a number of sustainability and conservation efforts and seeks to continue those efforts through local planning and partnerships. The goal of City's Climate Action and Adaptation Plan (CAAP) is to develop policies and programs to reduce reliance on fossil fuels with the co-benefits of cleaning up the air, provide a cost savings to residents, and build resiliency during climate change induced extreme heat events, wildfires, and other risks. This CAAP serves as a comprehensive roadmap to outline strategies that the City will implement to reduce potential impacts of climate change resulting from GHG emissions within City boundaries.

1.1 Climate Change Science

Climate change is a term used to describe large-scale shifts in historically observed patterns in earth's climate system. Although the climate has historically responded to natural drivers, recent climate change has been unequivocally linked to increasing concentrations of greenhouse gases (GHGs) in earth's atmosphere.

Gases that trap heat in the atmosphere are called GHGs because they transform the light of the sun into heat, similar to the glass walls of a greenhouse. Human-generated GHG emissions significantly contribute to the changes in the global climate, which have a number of physical and environmental effects. Effects associated with global climate change include sea level rise, an increase in the frequency and intensity of droughts, and increased temperature. Increased GHG emissions are largely the result of the increase in the combustion of fossil fuels.

The Intergovernmental Panel on Climate Change (IPCC 2020) assesses scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC identifies six key GHG compounds: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), perfluorocarbons (PFC), sulfur hexafluoride (SF₆), and hydrofluorocarbons (HFC). Each GHG has a different capacity to trap heat, and therefore, GHG emissions are generally reported in metric tons (MT) of carbon dioxide equivalent (CO₂e). Non-CO₂ emissions are converted to a CO₂e using each GHG's Global Warming Potential (GWP). IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of CO₂e, which compares the gas in question to that of the same mass of CO₂ (CO₂ has a GWP of 1 by definition). Common GHGs included in the CAAP are CO₂, CH₄, and N₂O, which are the GHGs that most commonly result from human activities, and are detailed below.

Carbon Dioxide is the most important anthropogenic GHG and accounts for more than 75 percent of all GHG emissions caused by humans. Its atmospheric lifetime of 50–200 years ensures that





atmospheric concentrations of CO₂ will remain elevated for decades, even after mitigation efforts to reduce GHG concentrations are implemented. The primary sources of anthropogenic CO₂ in the atmosphere include the burning of fossil fuels (including motor vehicles), gas flaring, cement production, and land use changes (e.g., deforestation, oxidation of elemental carbon). The global atmospheric CO₂ has increased from a preindustrial concentration of 280 parts per million (ppm) to 411.29 ppm in September 2020 (NOAA 2020). In California, the total CO₂ emissions in 2017 were 351 MMTCO₂e. Transportation is the single largest source of CO₂ in California (47 percent of the total CO₂ emissions are attributed to this sector). Electricity generation (in State and imports), industrial, and residential sources are other major contributors to CO₂ emissions in California (Industrial sector represents 23 percent of total CO₂ emissions, electricity generation and imports 18 percent and residential 7 percent) (CARB 2017). CO₂ can be removed from the atmosphere by photosynthetic organisms (e.g., plants and certain bacteria). Other approaches to capture and reuse CO₂ are also being explored.

Methane (CH₄), the main component of natural gas, is the second most abundant GHG and has a GWP of 25. Agriculture accounts for the majority of methane emissions in California, resulting primarily from livestock enteric fermentation and manure management. Industrial sources and landfills are also important sources of CH₄. Other sources contribute only a small fraction to CH₄ emissions including residential, transportation, electricity generation, and commercial sources (CARB 2017). Certain land uses also function as both a source and sink for CH₄. For example, the primary terrestrial source of CH₄ is wetlands, whereas undisturbed, aerobic soils act as a CH₄ sink (i.e., they remove CH₄ from the atmosphere).

Nitrous Oxide (N₂O) is a powerful GHG, with a GWP of 298. Global atmospheric N₂O concentrations have increased nearly 21 percent, from pre-industrial levels of 270 ppb to 332.9 ppb in June 2020 (NOAA 2020). In the United States, more than 70 percent of N₂O emissions are related to agricultural soil management practices, particularly fertilizer application. In California N₂O accounts for almost 3 percent of 2017 Statewide GHG emissions. The total California N₂O emissions in 2017 were 13 MMTCO₂e. Agriculture accounts for the majority of N₂O emissions (55 percent), primarily from fertilizer and manure added to soil. Commercial and residential use of nitrogen fertilizer on turf and transportation (through the combustion of fossil fuels) are also major sources of N₂O. Industrial sources of N₂O include solid waste and wastewater treatment, manufacturing, refining, and other sources (CARB 2017).

1.2 Benefits of the CAAP

This CAAP, while addressing climate change, also benefits Agoura Hills in many direct and indirect ways.

- **Local Control:** This CAAP allows the City to identify strategies to reduce resource consumption, costs, and GHG emissions in all economic sectors in a way that maintains local control over the issues and fits the character of the community. It also may position Agoura Hills for funding to implement programs tied to climate goals.
- **Energy and Resource Efficiency:** This CAAP identifies opportunities for the City to increase energy efficiency and lower GHG emissions in a manner that is most feasible in the community. Reducing energy consumption through increasing the efficiency of energy





technologies, reducing energy use, and using alternative sustainable sources of energy are effective ways to reduce GHG emissions. Energy efficiency also provides opportunities for cost-savings.

- **Improved Public Health:** Many of the GHG reduction strategies identified in this CAAP also have local public health benefits. Benefits include local air quality improvements; creating a more active community through implementing sustainable living practices; and reducing health risks, such as heat stroke, elevated by climate change impacts such as increased extreme heat days.
- **Demonstrating Consistency with State GHG Reduction Goals:** A GHG reduction plan may be used as GHG mitigation in a General Plan to demonstrate that Agoura Hills is aligned with State goals for reducing GHG emissions to a level less than cumulatively considerable.
- **Enhanced Community Resilience:** The CAAP also presents a City-level climate change risk and vulnerability assessment and identifies strategies to help the City adapt to those risks. The results of the vulnerability and risk analysis will satisfy all the State requirements on addressing climate change in General Plan Safety Elements per Senate Bill (SB 379).

1.3 Regulatory Setting

In an effort to stabilize GHG emissions and to reduce impacts associated with climate change, international agreements, as well as federal and State actions were implemented beginning as early as 1988. The government agencies discussed below work jointly, as well as individually, to address climate change and GHG emissions through legislation, regulations, planning, policy-making, education, and a variety of programs. The policies and regulations provide important policy drivers and context for the City's CAAP.

1.3.1 Federal

1.3.1.1 Clean Air Act

In 2007, through *Massachusetts v. Environmental Protection Agency* (Docket No. 05–1120), the United States Supreme Court held that the United States Environmental Protection Agency (EPA) has authority to regulate GHGs. As such, the United States Supreme Court ruled that the EPA should be required to regulate carbon dioxide and other GHGs as pollutants under Section 202(a)(1) of the Federal Clean Air Act.

1.3.2 State

1.3.2.1 California Air Resources Board Standards and Programs

The California Air Resources Board (CARB), a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and State air pollution control and climate change programs within California. In this capacity, CARB conducts research, sets State ambient air quality standards (California Ambient Air Quality Standards or CAAQS), compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products, and various types of commercial equipment.





1.3.2.2 *Executive Order S-3-05*

On June 1, 2005, California Governor Arnold Schwarzenegger announced through Executive Order S-3-05, the following GHG emissions targets:

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

Executive Order S-3-05 also laid out responsibilities among State agencies for implementation and for reporting on progress toward the targets.

1.3.2.3 *Executive Order B-30-15*

On April 29, 2015, California Governor Jerry Brown announced through Executive Order B-30-15, the following GHG emissions target:

- By 2030, California shall reduce GHG emissions to 40 percent below 1990 levels.

The emission reduction target of 40 percent below 1990 levels by 2030 is an interim-year goal to make it possible to reach the ultimate goal of reducing emissions 80 percent under 1990 levels by 2050. The order directs the California Air Resources Board to provide a plan with specific regulations to reduce statewide sources of GHG emissions. The Executive Order does not include a specific guideline for local governments.

1.3.2.4 *Senate Bill 32*

In 2016, Governor Brown signed Senate Bill (SB) 32 into law, which established a new reduction target. SB 32 codifies Executive Order B-30-15's year 2030 goal by requiring the State Board to ensure that statewide GHG emissions be reduced to 40 percent below 1990 levels by 2030. The new 2030 target places California on a trajectory toward meeting its long-term goal, which is to bring emissions down to 80 percent below 1990 levels by 2050.

1.3.2.5 *Executive Order B-55-18*

On September 12, 2018, California Governor Jerry Brown announced, through Executive Order B-55-18, the following GHG emissions target:

- By 2045, California shall achieve statewide net carbon neutrality.

The emission reduction target of net carbon neutrality is a long-term goal. The order includes specific CARB actions including setting a goal of five million zero emission vehicles and doubling the reduction of carbon fuels by 2030 and developing a forest carbon plan with specific regulations to reduce statewide sources of GHG emissions toward carbon neutrality. The Executive Order does not include a specific guideline for local governments.





1.3.2.6 *Assembly Bill 1493, Clean Car Standards*

Also known as “Pavley I,” Assembly Bill (AB) 1493 standards were the nation’s first GHG standards for automobiles. AB 1493 requires CARB to adopt vehicle standards that will lower GHG emissions from new light-duty autos to the maximum extent feasible. In January 2012, CARB adopted the Advanced Clean Cars Program to achieve additional GHG emission reductions for passenger vehicles for model years 2017–2025. The program includes low-emission vehicle regulations and zero-emission vehicle regulations. Together, the two standards are expected to increase average fuel economy to roughly 43 miles per gallon by 2020 (and more for years beyond 2020).

1.3.2.7 *Assembly Bill 32, the California Global Warming Solutions Act of 2006*

AB 32 requires CARB to reduce statewide GHG emissions to 1990 level by 2020. As part of this legislation, CARB was required to prepare a “Scoping Plan” that demonstrates how the State will achieve this goal. The Scoping Plan was adopted in 2011 and in it, local governments were described as “essential partners” in meeting the statewide goal, recommending a GHG reduction level 15 percent below 2005–2008 levels, depending on when a full emissions inventory is available, by 2020.

CARB released the 2017 Scoping Plan Update on January 20, 2017. The 2017 Scoping Plan Update provides strategies for achieving the 2030 target established by Executive Order B-30-15 and codified in Senate Bill 32 (40 percent below 1990 levels by 2030). The 2017 Scoping Plan Update recommends local plan level GHG emissions reduction goals. CARB recommends that local governments aim to achieve emissions of no more than 6 metric tons (MT) of CO₂e per capita by 2030 and no more than 2 MT CO₂e per capita by 2050.

1.3.2.8 *Assembly Bill 341 (Commercial Recycling)*

AB 341 sets a statewide goal of 75 percent recycling, composting, or source reduction of solid waste by the year 2020. As required by AB 341, the California Department of Resources Recycling and Recovery (CalRecycle) adopted the Mandatory Commercial Recycling Regulation on January 17, 2012. The regulation was approved by the Office of Administrative Law on May 7, 2012. It became effective immediately and clarifies the responsibilities in implementing mandatory commercial recycling. The Mandatory Commercial Recycling Regulation focuses on increased commercial waste diversion as a method to reduce GHG emissions. The regulation is designed to achieve a reduction in GHG emissions of 5 million MT of CO₂, which equates to roughly an additional 2 to 3 MT of currently disposed commercial solid waste being recycled by 2020 and thereafter.

1.3.2.9 *Senate Bill 97*

SB 97, enacted in 2007, amends the CEQA statute to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. The legislation directed the California Office of Planning and Research to develop draft *CEQA Guidelines* “for the mitigation of GHG emissions or the effects of GHG emissions” and directed the Resources Agency to certify and adopt the *State CEQA Guidelines*. *CEQA Guidelines* Section 15183.5, Tiering and Streamlining the Analysis of GHG Emissions, was added as part of the *CEQA Guidelines* amendments that became effective in 2010 and describes the criteria needed in a GHG reduction plan that would allow for the tiering and streamlining of CEQA analysis for development projects.





1.3.2.10 Executive Order S-1-07, Low Carbon Fuel Standard

California Executive Order S-01-07 mandates (1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020, and (2) that a low carbon fuel standard (LCFS) for transportation fuels be established in California. CARB developed the LCFS regulation pursuant to the authority under AB 32 and adopted it in 2009.

1.3.2.11 Executive Order S-13-08, The Climate Adaptation and Sea Level Rise Planning Directive

Executive Order S-13-08 provides clear direction for how the State should plan for future climate impacts. Executive Order S-13-08 calls for the implementation of four key actions to reduce the vulnerability of California to climate change:

- Initiate California's first statewide Climate Adaptation Strategy that will assess the State's expected climate change impacts, identify where California is most vulnerable, and recommend climate adaptation policies.
- Request that the National Academy of Sciences establish an expert panel to report on sea level rise impacts in California in order to inform State planning and development efforts.
- Issue interim guidance to State agencies for how to plan for sea level rise in designated coastal and floodplain areas for new and existing projects.
- Initiate studies on critical infrastructure and land-use policies vulnerable to sea level rise.

1.3.2.12 California Code of Regulations Title 24, Part 6

California Code of Regulations (CCR) Title 24, Part 6 (California's Energy Efficiency Standards for Residential and Nonresidential Buildings) (Title 24), was established in 1978 to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. Although it was not originally intended to reduce GHG emissions, electricity production by fossil fuels and natural gas use result in GHG emissions and energy-efficient buildings require less electricity and natural gas. Therefore, increased energy efficiency results in decreased GHG emissions.

The California Energy Commission adopted 2008 Standards on April 23, 2008, in response to AB 32. The Standards were adopted to provide California with an adequate, reasonably priced, and environmentally sound supply of energy; to pursue California energy policy, which states that energy efficiency is the resource of first choice for meeting California's energy needs; to meet the West Coast Governors' Global Warming Initiative commitment to include aggressive energy efficiency measures into updates of state building codes every three years; and to meet the Executive Order in the Green Building Initiative to improve the energy efficiency of nonresidential buildings through aggressive standards. The latest update of CCR Title 24, Part 6 went into effect July 1, 2014, which significantly increases the energy efficiency of new residential buildings. The 2019 Title 24 standards, which became effective on January 1, 2020, are estimated to result in new buildings that use 7 percent less energy for lighting, heating, cooling, ventilation, and water heating than the previous 2016 Standards. The 2019 updates to Title 24 are focused on moving closer to zero net energy (ZNE) homes by increasing energy efficiency and requiring solar photovoltaic (PV) systems for new homes. The 2019





Title 24 standards also encourage demand responsive technologies including battery storage and heat pump water heaters and improve the building's thermal envelope through high performance attics, walls, and windows to improve comfort and energy savings.

1.3.2.13 Senate Bill 375, Sustainable Communities Strategy

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

1.3.2.14 CALGreen Building Code

CCR Title 24, Part 11 (California's Green Building Standard Code [CALGreen]), was adopted in 2010 and went into effect January 1, 2011. CALGreen is the first statewide mandatory green building code and significantly raises the minimum environmental standards for construction of new buildings in California. The mandatory provisions in CALGreen will reduce the use of volatile organic compound-emitting materials, will strengthen water conservation, and will require construction waste recycling.

1.3.2.15 SB X7-7

SB X7-7 requires water suppliers to reduce urban per capita water consumption 20 percent from a baseline level by 2020.

1.3.2.16 Renewable Portfolio Standard

The Renewable Portfolio Standard requires energy providers to derive 33 percent of their electricity from qualified renewable sources by 2020. In 2018, the State Legislature passed and Governor Jerry Brown signed SB 100, which requires energy providers to derive 60 percent of their electricity from qualified renewable sources by 2030, and 100 percent by 2045. The Renewable Portfolio Standard is anticipated to lower emission factors (i.e., fewer GHG emissions per kilowatt-hour used) from utilities across the State, including Southern California Edison (SCE).

1.3.2.17 Senate Bill 100 California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases

SB 100 established a landmark policy requiring renewable energy and zero-carbon resources supply 100 percent of electric retail sales to end-use customers by 2045. It requires the CEC, California Public Utilities Commission (CPUC), and CARB to prepare a report.

1.3.2.18 Senate Bill 379 Land Use: General Plan: Safety Element

SB 379 requires all cities and counties to include climate adaptation and resiliency strategies in the safety elements of their general plans upon the next revision beginning January 1, 2017. The bill requires the climate adaptation update to include a set of goals, policies, and objectives for their communities based on the vulnerability assessment, as well as implementation measures, including





the conservation and implementation of natural infrastructure that may be used in adaptation projects. Specifically, the bill requires that upon the next revision of a general plan or local hazard mitigation plan, the safety element is to be updated as necessary to address climate adaptation and resiliency strategies applicable to the city or county.

1.3.2.19 Senate Bill 350 Clean Energy and Pollution Reduction Act

SB 350 requires the State to double statewide energy efficiency savings in electricity and natural gas end uses by 2030. The CEC, working with State agencies, including the CPUC, CARB, California Independent System Operator, large utilities, and electrical corporations, is the responsible entity to implement this measure.

1.3.2.20 Assembly Bill 1470 (Huffman)/Assembly Bill 797 Solar Water Heating

AB 1470 created a \$25 million per year, 10-year incentive program to encourage the installation of 200,000 solar water heating systems that offset natural gas use in homes and businesses throughout the state. AB 797 extended the operation of the program through July 31, 2020, reserving 50 percent of the total program budget for the installation of solar thermal systems in low-income residential housing or in buildings in disadvantaged communities and expanding the program to homeowners that lack access to natural gas among other things.

1.3.2.21 Assembly Bill 117 Community Choice Aggregation Law

Passed in 2002, the Community Choice Aggregation (CCA) law (AB 117) allows cities and counties, or collections of cities and counties, to combine the electricity demand of customers in their jurisdictions and procure electricity through their own generation or through the market (Faulkner K 2010). CCA allows communities to set rates for their customers and choose the form of energy generation, enabling communities to choose renewable energy sources rather than the local utility's mix of energy sources. Although a community choice aggregator (CCA, also used to denote community choice aggregation) purchases the electricity commodity, the local investor-owned utility still owns and maintains the transmission and delivery systems. When a CCA is formed, customers can opt out of the CCA if they wish to stay with their current provider.

1.3.2.22 Senate Bill 743

SB 743 required Governor's Office of Planning and Research (OPR) to provide an alternative to Level of Service (LOS) for evaluating traffic impacts of a project. In December of 2018, after years of research and public comment, OPR released guidelines on evaluating traffic impacts in CEQA. The new guidelines replace the previous LOS metric with a VMT metric for determining a significant environmental impact under CEQA as they relate to traffic.

1.3.2.23 Senate Bill SB 1383

SB 1383 is a statewide effort to reduce emissions of short-lived climate pollutants (SLCP). Specifically, the law sets the following targets: Reduce statewide disposal of organic waste by 50% by January 1, 2020 and by 75% by January 1, 2025 (based on 2014 levels) and Rescue at least 20% of currently disposed of edible food for human consumption by 2025. CalRecycle is the state agency responsible for creating the regulatory standards for SB 1383. Effective January 1, 2022: CalRecycle's regulations to meet statewide organics reduction and food recovery requirements take effect. Enforcement





provisions, including penalties for noncompliance issued by the state, also take effect. Effective January 1, 2024: Regulations may require local jurisdictions to impose penalties for noncompliance on regulated entities subject to their authority.

1.4 City Setting

Agoura Hills is in western Los Angeles County near the southern border with Ventura County. Agoura Hills covers a 7.86-square mile area and is bounded by unincorporated areas of Los Angeles County. It is in the eastern Conejo Valley and at the base of the Santa Monica Mountains. The City offers a range of community activities, which include educational and recreational events and programs. Agoura Hills is a community of more than 20,500 residents. The median age in Agoura Hills is 44 and 58 percent of the population is married. Agoura Hills' ethnicity is approximately 74.9 percent white, 11.3 percent Hispanic, 8.8 percent Asian, 2.6 percent African American, and 2.4 percent all other race. Agoura Hills has approximately 7,389 housing units comprising of single-family, and multifamily units.

1.5 Organization of the CAAP

The remainder of this CAAP Update includes five additional chapters:

- **Chapter 2.0** summarizes Agoura Hills' historic and future GHG emissions and the reduction targets established by the City.
- **Chapter 3.0** details the reduction strategies that will be implemented to meet the reduction targets identified in Chapter 2.0. Measures also include the potential energy savings and local co-benefits of the measures.
- **Chapter 4.0** discusses how Agoura Hills may be affected by climate change and how the City can adapt and become more resilient to climate change effects.
- **Chapter 5.0** includes the implementation of the measures, potential funding sources, and the outreach process conducted as part of this CAAP.
- **Chapter 6.0** comprises a list of references cited.





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2.0 GHG Emissions Inventory, Forecast, and Targets

2.1 GHG Emissions Inventory

GHG emissions inventories are the foundation of planning for future reductions. Establishing an inventory of emissions helps to identify and categorize the major sources of emissions produced over a single calendar year. A community inventory includes GHG emissions that result from the activities of City residents and businesses. The inventories identify the major sources of GHG emissions resulting from activities in sectors that are specific to community activities.

The City prepared community inventory for the year 2018. The 2018 inventory is considered the baseline year. A baseline year is established as a starting point against which other inventories may be compared and targets may be set and is generally the earliest year with a full emissions inventory. Table A provides the sectors evaluated in the GHG inventory. A detailed snapshot of City’s inventory, forecasts and targets are presented in Appendix A. GHG Inventory, Forecasts and Targets Calculations Summary.

Table A: Community Sectors Evaluated in the Inventory

Community Sectors
Residential Energy
Commercial/Industrial Energy
On-Road Transportation
Solid Waste
Water
Wastewater
Off-Road Sources

GHG emissions were calculated using most recent year (2018) of available activity data (e.g., kilowatt-hours of electricity) and followed protocols for converting activity data to emissions output using relevant emission factors. Emissions factors relate the activity to GHG emissions and may vary by year (e.g., for electricity). Unlike activity data, they often are not affected by local actions or behavior. The United States Community Protocol for Accounting and Reporting Greenhouse Gas Emissions (Community Protocol; ICLEI 2012) was the primary protocol used for developing the community inventory. Table B summarizes the activity data inputs for developing the 2018 baseline GHG inventory.





Table B: 2018 Community GHG Inventory Data Inputs

Sector	2018 Data Input	Source
Electricity (KWh)		
Residential	68,083,525	SCE
Commercial	77,209,051	
Natural Gas (Therms)		
Residential	3,674,504	SoCal Gas
Commercial	1,346,537	
Transportation		
On-Road (VMT)	460,131,787	SCAG RTP/SCS Model
Off-Road Total (MTCO ₂ e)	151	CARB OFFROAD Model
Solid Waste (tons/year)	15,693	Solid Waste Solutions Inc.
Water & Wastewater (million gallons)		
Residential	5,538	Las Virgenes Municipal Water District
Commercial	1,262	

MT CO₂e = metric tons of carbon dioxide equivalent
 KWh: Kilowatt Hours
 VMT: Vehicle miles traveled
 SCE: Southern California Edison
 SoCal Gas: Southern California Gas
 SCAG RTP/SCS: Southern California Association of Governments Regional Transportation Plan with Sustainable Community Strategy
 CARB: California Air Resources Board

2.1.1 2018 Greenhouse Gas Emissions Summary

Agoura Hills’ total emissions in 2018 were 266,891 MT CO₂e. As shown in Table C and Figure 1, the on-road transportation sector was the largest contributor to emissions in the 2018 inventory, with 73 percent of the City’s total GHG emissions. Building energy usage made up 12.67 percent followed by natural gas with 9.99 percent of total emissions. Solid waste, water, wastewater, and off-road resources comprised the rest of the emissions.

Table C: Communitywide GHG Emissions by Sector for 2018

Sector	2018 (MT CO ₂ e)	Percent of Total
On-road Transportation	194,818	73.00
Electricity	33,809	12.67
Natural Gas	26,669	9.99
Solid Waste	5,932	2.22
Water & Wastewater	5,512	2.07
Off-road Sources	151	0.05
Total	266,891	100

Source: ICLEI GHG Inventory for City of Agoura Hills, 2020.
 MT CO₂e = metric tons of carbon dioxide equivalent



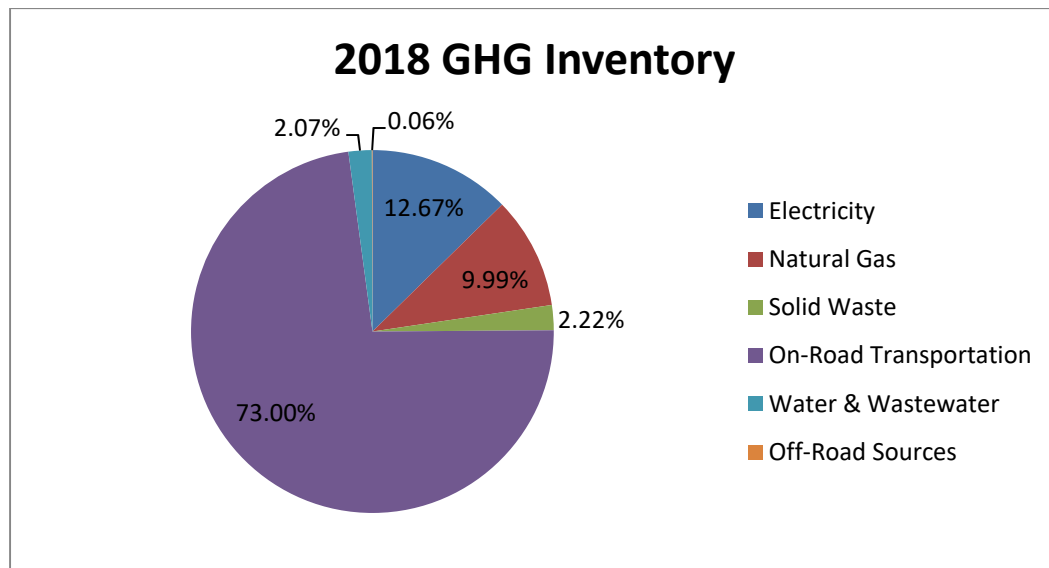


Figure 1: Communitywide GHG Emissions by Sector For 2018

2.1.2 Inventory Forecast

Forecasting future GHG emissions allows the City to understand how emissions are expected to increase or decrease in the future. Major changes in growth or land uses may affect how to best plan to reduce emissions in the future. GHG emissions are forecast using two scenarios: a Business-as-Usual (BAU) scenario and an Adjusted BAU (ABAU) scenario. The BAU scenario describes emissions based on projected growth in population and employment and does not consider policies that would reduce emissions in the future (that is, the policies and related efficiency levels in place in 2018 are assumed to remain constant through 2045). The City’s projected growth is estimated using data from the SCAG’s 2012 adopted growth forecasts for Agoura Hills, which provides the City’s demographic growth indicators for the years 2008, 2020, and 2035. The growth rates for households, population, and employment were estimated based on the available data and used to estimate the growth in households, population, and employment into the year 2045. In general, the City is expecting modest growth to 2045 as population, housing, and jobs are all expected to increase. Table D shows the growth projections used to develop the emissions forecasts.

Table D: Growth Indicators for 2008, 2020, and 2035

Sector	Demographic Indicator	2008	2020	2008–2035 CAGR ¹ Percent	2035	2020–2035 CAGR Percent
Residential Energy	Households	7,300	7,500	0.0023	7,900	0.0035
Commercial/Industrial Energy	Jobs	11,600	12,100	0.0035	12,700	0.0032
N/A ²	Population	20,300	20,400	0.0004	21,400	0.0032
Solid Waste, Water, Wastewater, and Off-road Sources	Service Population (Population + Jobs)	31,900	32,500	0.0016	34,100	0.0032

Source: SCAG, 2012 Adopted Growth Forecast

¹ CAGR = Compound annual growth rate.

² Not applicable. Population data are shown for informational purposes but are not used for forecasting any sector.





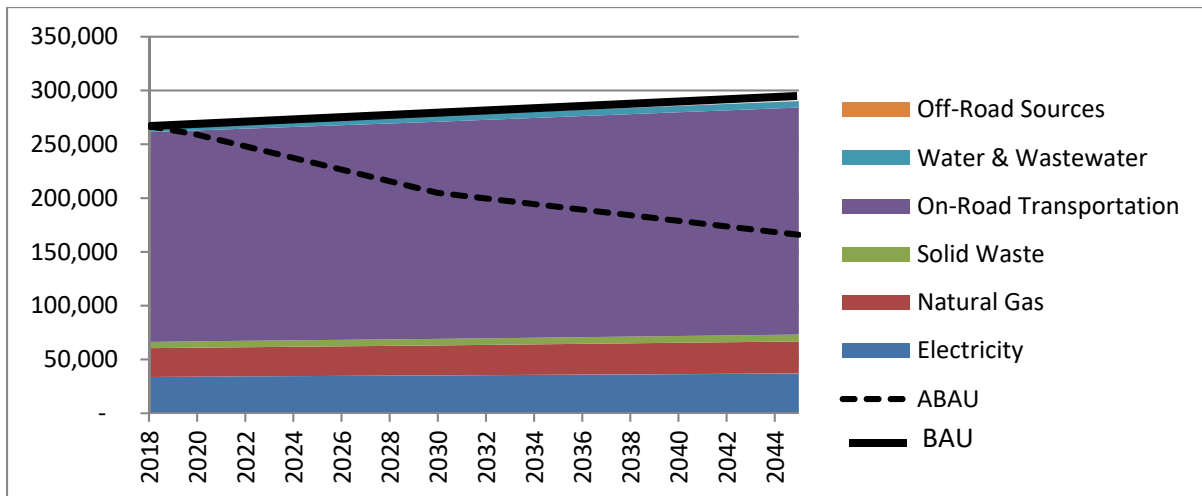
The City’s VMT data were obtained from SCAG’s activity-based RTP/SCS transportation model for the years 2016, 2020, 2030, and 2040. The VMT data for the years 2018 and 2045 were extrapolated based on available data. These VMT data were used to estimate City’s on-road traffic emissions.

The ABAU scenario describes emissions based on projected growth and considers policies that will achieve GHG reductions in the future. Policies include State-adopted or approved legislation that will affect future emissions. By evaluating the two scenarios, the City can evaluate the effect that existing policies may have on future emissions and determine which local measures would provide additional reductions.

Three future years are forecast for each scenario: 2020, 2030, and 2045. The 2020 and 2030 forecast years are consistent with the goals identified in AB 32, SB 32, and the corresponding Scoping Plan, which identifies Statewide GHG reduction targets for 2020 and 2030.

2.1.2.1 Business-as-Usual Forecasts

The City’s BAU emissions in 2020 are estimated to be 268,490 MT CO₂e. The 2030 BAU emissions are estimated to be 276,843 MT CO₂e. By 2045, emissions are estimated to increase to 290,369 MT CO₂e (Figure 2). Table E shows the BAU emissions for different sectors.



Source: GHG Inventory for the City of Agoura Hills, 2020
ABAU: adjusted business as usual
BAU: business as usual
MT CO₂e = metric tons of carbon dioxide equivalent

Figure 2: Community BAU and ABAU Forecasts





Table E: Community Business As Usual (BAU) Forecast Emissions

Sector	2018 (MT CO ₂ e)	2020 (MT CO ₂ e)	Percent Change 2018– 2020	2030 (MT CO ₂ e)	Percent Change 2018– 2030	2045 (MT CO ₂ e)	Percent Change 2018– 2045
On-road Transportation	194,818	195,972	0.6%	201,846	3.6%	210,988	8.3%
Electricity	33,809	34,007	0.6%	35,161	4.0%	36,966	9.3%
Natural Gas	26,669	26,877	0.8%	27,807	4.3%	29,764	11.6%
Solid Waste	5,932	5,950	0.3%	6,144	3.6%	6,447	8.7%
Water & Wastewater	5,512	5,529	0.3%	5,709	3.6%	5,990	8.7%
Off-road Sources	151	155	2.6%	176	16.8%	214	41.9%
Total	266,891	268,490	0.6%	276,843	3.7%	290,369	8.8%

Source: GHG Inventory for the City of Agoura Hills 2020
 MT CO₂e = metric tons carbon dioxide equivalent

2.1.2.2 Adjusted Business-as-Usual Forecasts

As described above, the ABAU scenario describes emissions based on projected growth and considers policies that will achieve GHG reductions in the future. The City’s ABAU emissions are estimated to be 259,062 MT CO₂e in 2020, 204,847 MT CO₂e in 2030, and 165,892 MT CO₂e in 2045. This change represents approximately 3 percent reduction from 2018 by 2020, 23 percent reduction by 2030, and 38 percent reduction by 2045. Table F shows the change in emissions from 2018 to 2045 under the ABAU scenario. Due to the stringent State regulations related to transportation and energy sectors, emissions are expected to decrease significantly over time.

Table F: Community Adjusted Business As Usual (ABAU) Forecast Emissions

Sector	2018 (MT CO ₂ e)	2020 (MT CO ₂ e)	Percent Change (2018–2020)	2030 (MT CO ₂ e)	Percent Change (2018–2030)	2045 (MT CO ₂ e)	Percent Change (2018–2045)
Transportation	194,818	186,645	-4.2%	145,352	-25.4%	129,933	-33.3%
Electricity	33,809	33,982	0.5%	21,790	-35.5%	—	-100%
Natural Gas	26,669	26,801	0.5%	27,534	3.2%	28,578	7.2%
Solid Waste	5,932	5,950	0.3%	6,144	3.6%	6,447	8.7%
Water & Wastewater	5,512	5,529	0.3%	3,850	-30.1%	720	-86.9%
Off-road Sources	151	155	2.6%	176	16.8%	214	41.9%
Total	266,891	259,062	-2.9%	204,847	-23.2%	165,892	-37.8%

Source GHG Inventory for the City of Agoura Hills, 2020.
 MT CO₂e = metric tons carbon dioxide equivalent

2.1.3 Reduction Targets

The State has set goals for reducing GHG emissions by 2020, 2030, and 2045 through AB 32, SB 32, SB 100, and Executive Order (EO)-B-55-18. The State has also provided guidance to local jurisdictions as





“essential partners” in achieving the State’s goals by identifying a 2020 and 2030 recommended reduction goal. That goal, stated in the AB 32 Scoping Plan, was for local governments to achieve a 15 percent reduction below 2005 to 2008 levels by 2020, which aligns with the State’s goal of not exceeding 1990 emissions levels by 2020. The State has also provided an interim target, which is 40 percent below 1990 levels by 2030. It is clear that the issue of climate change will not end in 2030, and continued reduction goals should be implemented to keep the State on a path toward statewide climate neutrality by 2045.

The City does not have a GHG inventory between 2005 and 2008. In order to set a reduction target for the City consistent with the State regulations, LSA estimated 2005 to 2008 GHG emission levels based on the City’s 2018 GHG inventory. Since the adoption of AB 32 in 2006, the State has implemented GHG strategies to reduce statewide GHG emissions, such as Renewable Portfolio Standards (RPS) and Low Carbon Fuel Standards (LCFS). These strategies have reduced statewide GHG emissions significantly in the past decade. By comparing the 2005 to 2008 Statewide GHG emission levels with the latest 2017 Statewide GHG emission levels for sectors that the City has control of, the City’s 2005 to 2008 GHG emission levels can be estimated from 2018 GHG inventory. Table G shows Statewide GHG emission levels in 2005, 2006, 2007, 2008, and 2017 for sectors that the City has control of. As shown in Table G, Statewide emissions decreased by approximately 19 percent in 2017 compared to the average emission levels from 2005 to 2008. Assuming the City benefited from all related Statewide GHG reduction strategies, the City’s 2005 to 2008 emission levels were estimated to be 19 percent below 2018 emission levels.

Table G: Statewide GHG Emissions (MMT CO₂e)

Sector	2005	2006	2007	2008	2017
On Road	170.20	169.64	169.64	159.79	155.75
Off Road	3.22	3.32	3.18	2.82	2.73
Wastewater Treatment	1.83	1.84	1.86	1.83	1.86
Residential Natural Gas	25.93	26.55	26.68	26.62	23.62
Commercial Natural Gas	10.92	11.60	11.47	11.14	11.06
Electric Power	107.85	104.53	113.93	120.14	62.39
Recycling and Waste	7.78	7.86	7.94	8.11	8.89
Total	327.73	325.34	334.70	330.45	266.30
2005–2008 Average				329.56	
Decrease in Total 2017 GHG Emissions from 2005–2008 Average				19%	

Source: Compiled by LSA (2020). California Air Resources Board (CARB). 2019. California Greenhouse Gas Inventory for 2000–2017 — by Category as Defined in the 2008 Scoping Plan. Website: https://ww3.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scoping_plan_sum_2000-17.pdf (accessed February 2020).

MMT CO₂e = Million metric tons of carbon dioxide equivalent

2.1.4 Community Targets

As described in Section 2.1.3, the goal stated in the AB 32 Scoping Plan, was for local jurisdictions to achieve a 15 percent reduction below 2005 to 2008 levels by 2020, which aligns with the State’s goal of not exceeding 1990 emissions levels by 2020. This target for Agoura Hills was calculated as a 15 percent decrease from 2005 to 2008 levels. The State has recently passed an Executive Order (EO-B-55-18), which mandates statewide climate neutrality by 2045. In the interim, the State has also





provided a target of 40 percent below 1990 levels by 2030 (SB 32). The City has identified this target as 49 percent below 2005 to 2008 emission levels or 37 percent below 2018 levels by 2030 (Table H), which aligns with the statewide goal of 40 percent below 1990 levels of emissions. This amounts to a reduction of 168,445 metric tons of CO₂ equivalent in annual emissions by 2030 compared to the BAU forecast.

Table H: GHG Reduction Targets for Community Emissions

Strategy	Target
2020 Target	15 percent below 2005 to 2008 levels/5.19 percent over 2018 levels
2020 Emissions Goal (MT CO ₂ e)	280,742
2030 Target	49 percent below 2005 to 2008 levels/36.9 percent below 2018 levels
2030 Emissions Goal (MT CO ₂ e)	168,445

MT CO₂e = Metric tons of carbon dioxide equivalent

It is clear that the issue of climate change will not end in 2030 and continued reduction goals should be implemented to keep the State on a path toward the 2045 goal. The identified 2030 target will put the City on a path toward the State’s long-term goal to achieve zero net carbon emissions by 2045.

As shown in Table I and Figure 3, in 2020, Agoura Hills would meet the State-aligned performance GHG reduction targets under the ABAU scenario. In 2030, under the ABAU scenario, Agoura Hills would need to reduce 36,402 MT CO₂e to meet the State target. The reduction targets identified for Agoura Hills will keep the City on a “continued reduction trend,” which indicates the continued downward trend in the City’s emissions post-year 2020 that could be achieved by implementing additional local GHG reduction strategies and measures to limit the BAU emissions trend. This trend also emphasizes the need to implement strategies and measures to adhere to the continued reduction trend in order to help the State achieve the climate change reduction goals and also make Agoura Hills a more sustainable and healthy City.

Table I: State-Aligned GHG Reduction Targets for Community Emissions by Year

Sector	2008 ¹	2018	2020	2030
BAU Emissions (MT CO ₂ e)	330,285	266,891	268,490	276,843
ABAU Emissions (MT CO ₂ e)	—	266,891	259,061	204,847
State-Aligned Target (Percentage change from 1990)	—	—	0	-40
State-Aligned Target (Percentage change from 2008)	—	—	-15	-49
State-Aligned Emissions Reduction Goal (MT CO ₂ e)	—	—	280,742	168,445
Reductions from ABAU needed to meet the State-Aligned Target (MT CO ₂ e)	—	—	Target Met	36,402

Source: ICLEI GHG Inventory for the City of Agoura Hills 2020

¹ Baseline (2008) emissions are calculated based on explanation provided in Section 1.1.2 above.

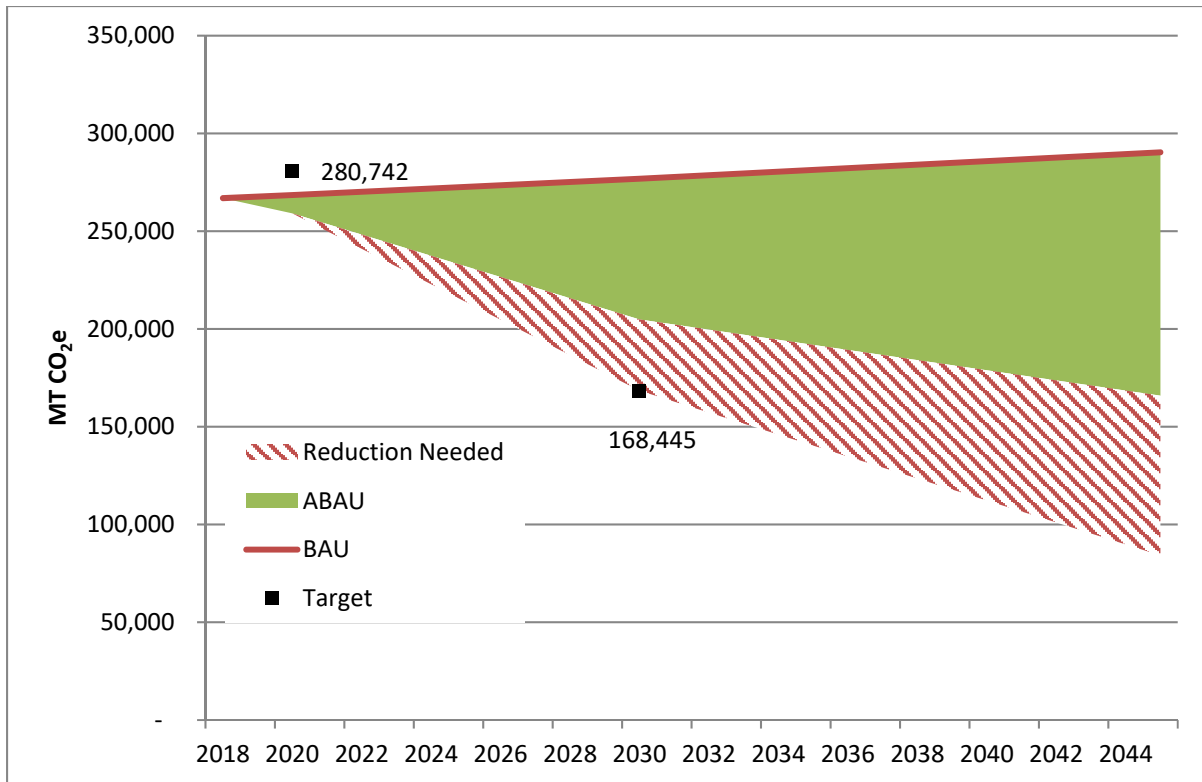
BAU = Business-as-Usual

ABAU= Adjusted BAU

GHG = greenhouse gas

MT CO₂e = metric tons of carbon dioxide equivalent





Source: GHG Inventory for the City of Agoura Hills 2020.
ABAU: adjusted business as usual
BAU: business as usual
MT CO₂e = metric tons of carbon dioxide equivalent

Figure 3: Community Emissions Inventory, Forecasts, and Targets














3.0 GHG Reduction Measures

This chapter details how the City would meet its GHG reduction targets by implementing goals, measures, and actions at the community level. The goal describes the overarching objective related to increasing energy efficiency or decreasing energy consumption, such as increasing energy efficiency in residential units, as well as reducing vehicle miles traveled and solid waste generation.

Within each goal, one or more measures are presented indicating the City’s commitment toward meeting the goal. Within each measure, one or more actions are presented that indicate the steps the City will take in achieving the measure. Each measure includes the GHG reduction potential in 2030. Actions are designed to include the steps needed to implement the measure. Actions include a performance indicator, implementation timeframe, department or agency responsible for implementation, and cost information, where applicable. In addition, this Plan will result in local benefits while reducing GHG emissions, called co-benefits. Co-benefits range from providing improved air quality and mobility to increased awareness about sustainability. Co-benefits are identified with each measure by an icon.

Local Co-Benefits					
	Increased energy efficiency/reduced demand		Water conservation		Improved public health
	Improved air quality		Increased renewable energy		Increased non-motorized transportation
	Sustainability education and awareness		Enhanced land use/ community design		Increased resiliency

3.1 Community Measures

This section summarizes the proposed communitywide reduction measures to be implemented by the City to reduce its community GHG emissions. The reduction strategies are organized by emission categories; the land uses affected, goals, measures, target year, performance metric, GHG reduction potential, actions and supporting measures, which are defined in Table J.

To help meet the designated reduction targets, the Climate Action and Adaptation Plan proposes 21 measures and numerous actions and supporting measures organized under nine goals and seven emission categories. The City will implement these programs, policies, ordinances or projects that will cause a direct and measurable reduction in GHG emissions. **Implementing these local reduction measures would entail additional expenses and the financial burden of implementation is not only felt by the City, but includes developers, and residents when they upgrade their homes. The local Utilities provide support and incentives to implement some of the measures that would assist the City and residents in meeting the GHG reductions and its associated benefits.** The following subsections





detail the GHG reduction goals under each emissions category and land uses affected. A description of each measure is followed by tables describing the goal of the measure, City actions, target year, performance metric, GHG reduction potential, and any supporting measures.

Table J: Community Measures

Emissions Category	Source of GHG emissions by category. Emissions categories include residential energy (electricity and natural gas), commercial/industrial energy (electricity and natural gas), water/wastewater, on-road transportation, solid waste, and clean energy (renewable energy sources). There are also reduction goals under a category called advanced goals and measures that include the reduction of the heat island effect and carbon sequestration. These are considered advanced because methodologies only recently came out to allow quantification.
Land Use Affected	This is broadly categorized into two components: residential land uses, including single-family and multifamily dwelling units, and commercial land uses, including retail commercial and industrial uses.
Goals	The general objective that the City will strive to achieve to address the defined emissions category and land uses affected.
Target Year	Year corresponding to the emissions reduction targets set by the City that are in line with State laws and guidelines. For this Climate Action and Adaptation Plan, a GHG reduction target has been proposed for the year 2030.
Performance Metric	Quantitative metric by which achievement of the specified goal will be measured. Each goal will have two performance metrics corresponding to target year 2030.
GHG Reduction Potential	Estimated reduction in local GHG emissions if the performance metric is met. The reduction is presented in metric tons of carbon dioxide equivalents (MT CO ₂ e).
City Actions	Programs, policies, ordinances, or projects the City will implement that will cause a direct and measureable reduction in GHG emissions.
Supporting Measures	Programs, policies, or projects the City will implement that could not be quantified, but will have an indirect effect on GHG emission reductions.

3.2 Energy Efficiency

3.2.1 Residential Land Uses

There are many ways of promoting energy efficiency in the existing residential land uses by promoting education and incentive programs offered by utilities such as SCE and SoCal gas. The City could also consider designating an existing staff or hiring a fellow through programs such as CivicSpark (a Governor’s initiative AmeriCorps program dedicated to building capacity for local governments to address emerging environmental and social equity resilience challenges such as climate change) to manage energy efficiency education and incentive programs. The following measures focus on increasing energy efficiency in existing residential buildings through behavior modification of residents and encouraging and incentivizing home energy retrofits.





3.2.1.1 Goal 1: Increase Energy Efficiency in Existing Residential Units



Goal 1: Increase Energy Efficiency in Existing Residential Units

Co-Benefits



Goal 1: Increase Energy Efficiency in Existing Residential Units		
Measure 1.1: Energy Efficiency Training, Education, and Recognition in the Residential Sector		
City Actions:		
<ul style="list-style-type: none"> Post energy efficiency information or links on websites and/or social media and provide materials at public events Set up email blasts of new information or trainings through City’s social media platform, local newspapers, etc. Promote an annual energy efficiency fair Promote an energy efficiency resource center sponsored by utilities Consider designating Designate an existing staff or a contract staff as an ‘energy advocate’ to promote and manage energy efficiency programs Update job description contract requirements for building inspectors to hold training semi-annually on energy efficiency and Updated Title 24 standards 		
Target Year	Performance Metric	GHG Reduction Potential (MTCO ₂ e)
2030	Track the programs and initiatives implemented by the City to create awareness among the residents toward energy efficiency.	Supporting Measure
Measure 1.2: Increase Community Participation in Existing Energy Efficiency Programs		
City Action:		
<ul style="list-style-type: none"> Partner with SCAG, Council of Government (COG), SCE, and SoCal Gas for outreach events to promote various energy efficiency rebate programs 		
Target Year	Performance Metric	GHG Reduction Potential (MTCO ₂ e)
2030	Reduce approximately 1,440,287 kWh and 20,291 therms of electricity and natural gas usage respectively through energy efficiency upgrades in the existing residential units.	454 MTCO ₂ e
Measure 1.3: Promote Home Energy Evaluations		
City Actions:		
<ul style="list-style-type: none"> Promote courtesy energy audits such as through Energy Upgrade California, an SCE program Consider presenting Present to the City Council for consideration of a residential Energy Conservation and Disclosure Ordinance 		



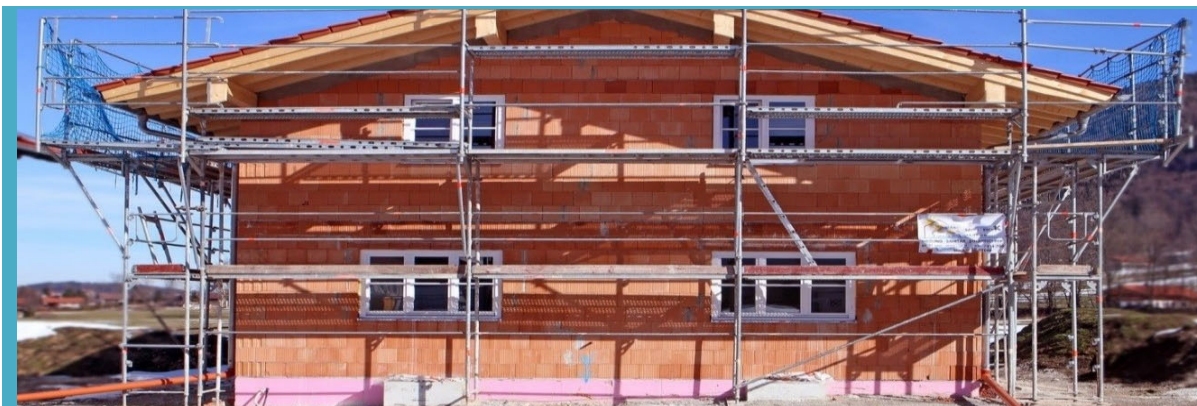


Goal 1: Increase Energy Efficiency in Existing Residential Units		
Target Year	Performance Metric	GHG Reduction Potential (MTCO ₂ e)
2030	Track the implementation of free energy audit/evaluation programs through Energy Upgrade California in the City.	Supporting Measure
Measure 1.4: Residential Home Energy Renovations		
City Actions:		
<ul style="list-style-type: none"> • Enhance enforcement of Title 24 compliance • Promote existing home energy renovation programs • Promote participation in green building programs, such as Leadership in Energy and Environmental Design (LEED) and Energy Upgrade California • Promote financing programs for home upgrades, such as Home Energy Renovation Opportunity (HERO) and public and private loans Property-Accessed-Clean-Energy (PACE) • Establish online permitting to facilitate upgrades • Consider reducing Reduce permit fees for energy efficiency upgrades that qualify for green building programs that exceeds Title 24 standards including Tier 1 and 2 CAIGreen voluntary measures or varying levels of LEED goals (i.e. LEED Silver vs. LEED Platinum) 		
Target Year	Performance Metric	GHG Reduction Potential (MTCO ₂ e)
2030	Achieve approximately 2,787,972 kWh and 12,165 therms reductions in electricity and natural gas usage, respectively, from energy efficiency upgrades in the existing residential units.	734 MTCO ₂ e

¹ kWh savings based on historical participation rates in the SDG&E energy efficiency incentives programs.
² Therms savings based on historical participation rates in the SDG&E energy efficiency incentives programs.
³ kWh savings based upon historical participation rates in the HERO energy efficiency financing program.
⁴ Therms savings based upon historical participation rates in the HERO energy efficiency financing program.

3.2.1.2 Goal 2: Increase Energy Efficiency in New Residential Units

This policy will develop City staff to become resources in implementing energy efficiency building measures beyond those required in current Title 24 standards. This policy will also ensure that as Title 24 standards are updated, City staff are well informed and can implement updates quickly and effectively.



Goal 2: Increase Energy Efficiency in New Residential Units

Co-Benefits



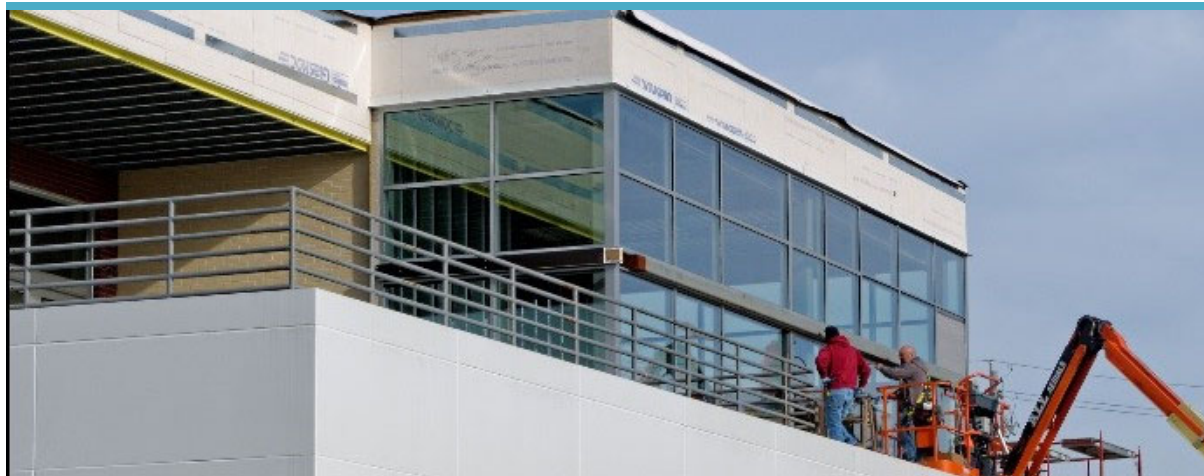


Goal 2: Increase Energy Efficiency in New Residential Units		
Measure 2.1: Exceed Energy Efficiency Standards		
City Actions:		
<ul style="list-style-type: none"> • Educate City staff and developers on future Title 24 updates and new energy efficiency opportunities for new residential development • Promote Tier 1 and Tier 2 green building ratings such as LEED, Build It Green, or Energy Star®-certified buildings • Consider reducing Reduce permit fees for new energy efficiency opportunities that qualify for green building programs including Tier 1 and 2 CalGreen voluntary measures or varying levels of LEED goals (i.e. LEED Silver vs. LEED Platinum) • Establish online permitting to facilitate new residential building energy efficiency opportunities • Require all new residential developments proposing two (2) or more dwelling units to achieve 100 percent electrification 		
Target Year	Performance Metric	GHG Reduction Potential (MTCO ₂ e)
2030	Reduce approximately 599,135 kWh and 56,666 Therms of energy associated with electricity and natural gas, respectively, in new residential units.	445 MTCO ₂ e

3.2.2 Commercial Land Uses

Commercial Energy includes electricity and natural gas consumption for businesses in the City. Opportunities to save energy from existing and future development are described below.

3.2.2.1 Goal 3: Increase Energy Efficiency in Existing Commercial Units



Goal 3: Increase Energy Efficiency in Existing Commercial Units

Co-Benefits





Goal 3: Increase Energy Efficiency in Existing Commercial Units		
Measure 3.1: Energy Efficiency Training, Education, and Recognition in Commercial Sector		
City Actions:		
<ul style="list-style-type: none"> • Post links on website and/or social media and provide materials at public events • Set up email list for email blasts of new information or training through City’s social media platform, local newspapers, etc. • Promote an annual energy efficiency fair • Promote a resource center • Consider designating Designate an existing staff or a contract staff as an ‘energy advocate’ to promote and manage energy efficiency programs • Update job description contract requirements for building inspectors to hold training semi-annually on energy efficiency and Updated Title 24 standards 		
Target Year	Performance Metric	GHG Reduction Potential (MTCO ₂ e)
2030	Track the programs and initiatives implemented by the City to create awareness among businesses toward energy efficiency	Supporting Measure
Measure 3.2: Increase Business Participation in Existing Energy Efficiency Programs		
City Action:		
<ul style="list-style-type: none"> • Partner with SCAG, Council of Government (COG), SCE, and SoCal Gas for outreach events to promote various energy efficiency rebate programs 		
Target Year	Performance Metric	GHG Reduction Potential (MTCO ₂ e)
2030	Reduce approximately 2,943,283 kWh and 28,577 therms of electricity and natural gas usage, respectively, through energy efficiency upgrades in the existing commercial units.	858 MTCO ₂ e
Measure 3.3 Non-Residential Building Energy Audits		
City Actions:		
<ul style="list-style-type: none"> • Promote courtesy energy audits such as through Energy Upgrade California, an SCE program • Consider mandating Require energy disclosure for small buildings (5,000–10,000 square feet) 		
Target Year	Performance Metric	GHG Reduction Potential (MTCO ₂ e)
2030	Track the outreach and implementation programs associated with promoting energy audits in commercial units.	Supporting Measure
Measure 3.4 Non-Residential Building Retrofits		
City Actions:		
<ul style="list-style-type: none"> • Enhance enforcement of Title 24 compliance • Promote existing non-residential building retrofit programs • Promote participation in green building programs, such as California Solar Initiative • Promote financing programs, such as public and private loans (PACE) • Promote online permitting to facilitate retrofits 		
Target Year	Performance Metric	GHG Reduction Potential (MTCO ₂ e)
2030	Reduce approximately 7,329,707 kWh and 1,072,557 therms of electricity and natural gas usage, respectively, through energy efficiency upgrades in the existing commercial units.	7,464 MTCO ₂ e

¹ kWh savings based upon historical participation rates in SDG&E energy efficiency incentives programs.
² Therm savings based upon historical participation rates in SDG&E energy efficiency incentives program.
³ Therms savings based on historical participation rates in the SDG&E energy efficiency incentives programs.





3.2.2.2 Goal 4: Increase Energy Efficiency in New Commercial Units

This policy will develop City staff to be resources in implementing energy efficiency beyond that required by current Title 24 standards. This will also ensure that as Title 24 standards are updated, City staff are well informed and can implement updates quickly and effectively.



Goal 4: Exceed Energy Efficiency in New Commercial Units

Co-Benefits



Goal 4: Increase Energy Efficiency in New Commercial Units		
Measure 4.1: Meet or Exceed Tier 2 Voluntary Measures Energy Efficiency Standards		
City Actions: Require all New Commercial Construction to be Built to California Green Building Standards Tier 2		
<ul style="list-style-type: none"> Educate City staff and developers on future Title 24 updates and additional energy efficiency opportunities for new non-residential development Promote Tier 1 and Tier 2 Green Building Ratings such as LEED, Build It Green, or Energy Star® certified buildings Establish online permitting to facilitate new energy efficiency opportunities Provide incentives to developers for all electric commercial development Consider mandates or incentives for developers that provide 100% electrification for new commercial development. 		
Target Year	Performance Metric	GHG Reduction Potential (MTCO ₂ e)
2030	Reduce approximately 504,332 kWh and 8,796 therms of electricity and natural gas usage, respectively, through energy efficiency upgrades in the new commercial units.	168 MTCO ₂ e





3.3 Water Efficiency

3.3.1 Goal 5: Increase Energy Efficiency through Water Efficiency



Goal 5: Increase Energy Efficiency through Water Efficiency

Co-Benefits



Goal 5: Increase Energy Efficiency through Water Efficiency		
Measure 5.1: Water Efficiency through continued Implementation of SB X7-7		
City Actions:		
<ul style="list-style-type: none"> • Post links on website or social media and provide materials at public events • Set up email list for email blasts of new information or trainings through City’s social media platform, local newspapers, etc. • Require low-irrigation landscaping 		
Target Year	Performance Metric	GHG Reduction Potential (MTCO ₂ e)
2030	Achieve approximately 20 percent reduction in outdoor water usage through implementing low-irrigation landscaping.	279 MTCO ₂ e
Measure 5.2: Exceed Water Efficiency Standards		
City Actions:		
<ul style="list-style-type: none"> • Team up with Las Virgenes Municipal Water District to conduct direct outreach to HOA, businesses, and other community groups • Promote the use of recycled water for commercial, industrial and multifamily residential landscaping • Promote/incentivize grey water for community uses for new development (for irrigation or construction purposes) • Promote rainwater harvesting rebates and demonstrations offered through Las Virgenes Municipal Water District 		
Target Year	Performance Metric	GHG Reduction Potential (MTCO ₂ e)
2030	Track the implementation of water efficiency improvements and saving programs described above.	Supporting Measure





3.4 Advanced Goals and Measures

3.4.1 Goal 6: Decrease Energy Demand through Reducing Urban Heat Island Effect

Trees and vegetation lower surface and air temperatures by providing shade and through evapotranspiration, making vegetation a simple and effective way to reduce urban heat islands. Shaded surfaces may be 20–45 degrees Fahrenheit ([°F] 11–25 degrees Celsius [°C]) cooler than the peak temperatures of un-shaded materials. In addition, evapotranspiration, alone or in combination with shading, can help reduce peak summer temperatures by 2–9 °F (1–5 °C). Trees and vegetation that directly shade buildings can reduce energy use by decreasing demand for air conditioning. The urban forest canopy also promotes local wildlife. The City is currently implementing oak tree ordinance with the goal of protecting and preserving oak trees. Under this program, no person, firm, corporation, government agency, or other legal entity can cut, prune, remove, relocate, or damage oak trees protected on any public or private land located within the incorporated areas of the City. Any development projects require a valid oak tree permit issued by the department of planning and community development or the planning commission pursuant to the provisions of Sections 9657 through 9657.5 of the City zoning ordinance (City of Agoura Hills Municipal Code 2020). This program could also include an expanded tree planting and monitoring program. In addition, thought could be given during implementation on not only meeting the tree canopy coverage for heat island effect benefits, but also figuring out how many trees a developer can include to increase the benefits of carbon sequestration.

Agoura Hills is home to many native plant species including California chaparral and perennial grassland. Grasses develop significant above and below ground biomass and improve carbon accumulation in the soil. Soil carbon sequestration is a crucial strategy to mitigate climate change. According to the UN’s Food and Agriculture Organization, grasslands also hold 20 percent of the world’s soil carbon stock and much of this land is losing its capacity to store carbon due to landscape alterations (Schwartz 2014). Grassland preservation and conservation is therefore essential for enhancing carbon storage in the soil. Soil improvement is another critical factor in improving the carbon sequestration. On disturbed sites, improving the interaction between plants and soil helps to move carbon into the soil. Mycorrhizal fungi increase plant's access to nutrients and water, improve soil structure and carbon storage. Biochar, humate, and other soil amendments encourage mycorrhizal fungi and thereby improve carbon sequestration potential (Moens 2020). Governor Newsom’s recent Executive Order N-82-20 mandates conserving 30 percent of California’s land and marine areas by 2030. Under this law, State agencies are directed to pursue innovative actions to maximize the full climate benefits of our natural and working land, through actions such as:

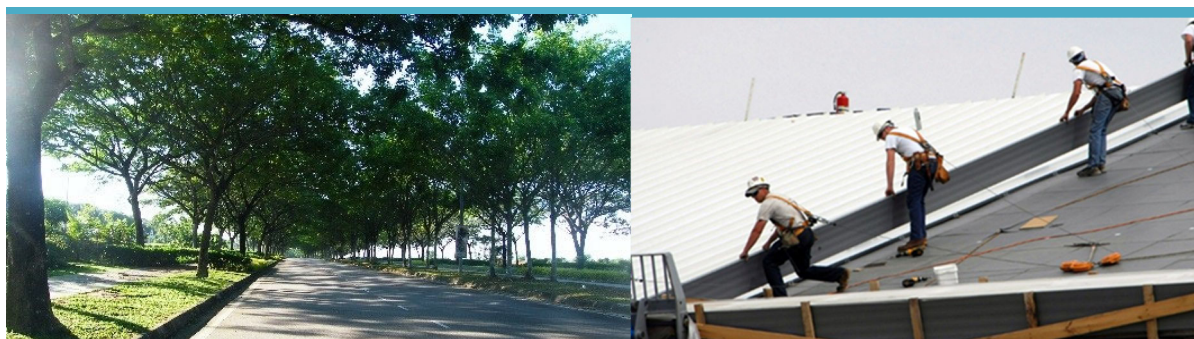
- Healthy soils management, including planting cover crops, hedgerows and compost applications;
- Wetlands restoration to protect coastal areas;
- Active forest management to reduce catastrophic risk and restore forest health; and
- Boosting green infrastructure in urban areas like trees and parks.





The City could consider developing incentive programs for developers to plant and preserve native plant species during construction that would enhance carbon accumulation in soil by preserving native vegetation.

Replacing surface areas with light-reflecting materials can decrease heat absorption and lower outside air temperature. Both roofs and pavements are ideal surfaces for taking advantage of this advanced technology. Cool roof is built from materials with high thermal emittance and high solar reflectance—or albedo—to help reflect sunlight (and the associated energy) away from a building. These properties help roofs to absorb less heat and stay up to 50–60 °F (28–33 °C) cooler than conventional materials during peak summer weather. Cool roofs may be installed on low-slope roofs (such as the flat or gently sloping roofs typically found on commercial, industrial, and office buildings) or the steep-sloped roofs used in many residences and retail buildings.



Goal 6: Decrease Energy Demand Through Reducing Urban Heat Island Effect

Co-Benefits



Goal 6: Decrease Energy Demand through Reducing Urban Heat Island Effect		
Measure 6.1: Tree Planting for Shade and Energy Efficiency		
City Action: Require Tree Planting in all Parking Lots and Streetscapes.		
<ul style="list-style-type: none"> Promote tree planting at plan check for private development (200 trees per year). Work with community to develop a tree-planting committee Consider a mandate for Require projects to preserve native grasslands and plant native plant species where possible Ensure tree planting maintenance by City staff or designee 		
Target Year	Performance Metric	GHG Reduction Potential (MTCO ₂ e)
2030	Plant approximately 200 trees every year starting 2021 in the parking lots and sidewalks mainly in the existing and new commercial developments.	318 MTCO ₂ e
Measure 6.2: Light Reflecting Surfaces for Energy Efficiency		
City Actions: Require Cool Roofs.		
<ul style="list-style-type: none"> Promote cool roofs on the residential, commercial, industrial, and office buildings where feasible Promote cool pavements in the City where feasible 		





Target Year	Performance Metric	GHG Reduction Potential (MTCO _{2e})
2030	Install enhanced cool roofs and pavements to achieve approximately 156,030 kWh energy savings.	37 MTCO _{2e}

3.5 On-Road Transportation

3.5.1 Goal 7: Decrease GHG Emissions through Reducing Vehicle Miles Traveled

On-road transportation emissions include emissions from light- and medium-duty vehicles and heavy-duty trucks associated with land use activity. Emissions originate from the combustion of fossil fuels (such as diesel, gasoline, and compressed natural gas) to power the vehicles. These are direct emissions and accounted for approximately 73 percent of total emissions in 2018. On-road transportation measures can achieve significant benefits for both individual residents and the City as a whole. Reductions in and traffic congestion would reduce smog-forming emissions, toxic air contaminants, and diesel particulate matter. **Reductions in VMT could be achieved with transportation demand management (TDM) which includes maximizing travel choices such as employee telecommuting, and promoting alternative modes of transportation such as bicycling, walking, and transit.** These strategies may also help reduce many serious health risks associated with **congestion and** vehicle exhaust. Community well-being and quality of life may also be improved as individuals spend less time commuting, waiting for the bus, and/or sitting in heavy congestion.

The impact of COVID-19 pandemic on the travel and commute patterns are important to consider. With mandatory shelter in place, employers have realized that working remotely is a possibility and it has made them re-think their TDM strategies including telecommuting, and flexible working hours. Due to increase in telecommuting during past year, there is significant decline in VMT and GHG emissions nationally. As the country slowly recovers from pandemic maintaining and preserving these environmental benefits from traffic reduction is an important consideration and more employers are expected to support telecommuting in the post-pandemic world (Streetlight Data 2021)

Electric vehicles (EVs) produce lower emissions than conventional vehicles. However, more than 95 percent of people still drive conventional gasoline or diesel vehicles. With the Statewide EV ownership goal, EV ownership would reach 13 percent by 2035. On September 23 2020, Governor Newsom announced Executive Order N-79-20 that calls for elimination of new internal combustion passenger vehicles by 2035 (CARB 2021). The 2019 Title 24 Standards further provide guidelines for developing EV charging capability for new residential and commercial developments that is a crucial step in developing a robust EV charging infrastructure to support the State EV goals.





Goal 7: Reduce GHG Emissions through Reducing VMT

Co-Benefits



Goal 7: Decrease GHG Emissions Through a Reduction in VMT		
Measure 7.1: Alternative Transportation Options		
City Actions:		
<ul style="list-style-type: none"> Work with SCAG, other relevant public agencies, private companies and the community to remove barriers to implementing transportation demand management strategies such as telecommuting and alternative modes of transportation Create a “bike to work day” or “car free zone day” and other sponsored events to promote biking and other non-motorized transportation Create additional active transportation routes from Agoura Hills Transit Center to surrounding residential areas Consider changing Change Zoning Ordinance to reevaluate parking requirement in commercial areas immediately surrounding transit areas. Work with Las Virgenes Unified School District (LVUSD) and other local educational facilities to conduct direct outreach to students, families, staff, teachers, and other community groups regarding electric vehicle charging stations on campus at the Performing Arts and Education Center (PAEC) and alternative modes of transportation other than automobiles 		
Target Year	Performance Metric	GHG Reduction Potential (MTCO ₂ e)
2030	Reduce 32,536,836 VMT by 2030.	11,402 MTCO ₂ e
Measure 7.2: Implement Bicycle Master Plan to Expand Bike Routes around the City		
City Action:		
<ul style="list-style-type: none"> Consider adopting the regional bike master plan for the City, where local bike routes could be integrated into the regional plan. Establish a City bicycle advisory committee to facilitate integrating local bike routes into regional plan and promoting more walkability and bike-ability around the city thoroughfares and road networks 		
Target Year	Performance Metric	GHG Reduction Potential (MTCO ₂ e)
2030	Reduce 524,403 VMT by 2030.	184 MTCO ₂ e
Measure 7.3: Ride-Sharing and Bike-to-Work Programs within Businesses		
City Actions:		
<ul style="list-style-type: none"> Promote ride-sharing and facilitate air district incentives for ride-sharing Provide reserved preferential parking spaces for ride-sharing, carpooling, and ultra-low or zero-emission vehicles Require businesses of a certain size to provide facilities such as bike racks and showers 		
Target Year	Performance Metric	GHG Reduction Potential (MTCO ₂ e)
2030	Reduce 21,476,695 VMT by 2030.	7,526 MTCO ₂ e
Measure 7.4: Electrify the Fleet		
City Actions:		
<ul style="list-style-type: none"> Promote electrical vehicle test drives and incentive programs at energy fairs Team up with Caltrans to conduct direct outreach to local community regarding electric vehicle charging stations at Park-n-Ride lots, and bike and scooter storage locations. Promote neighborhood electric vehicles (NEV) Apply for grants to install e-chargers at public facilities Work with community groups and businesses to install e-chargers Transition the City fleet to zero emission vehicles (ZEVs) by developing an ordinance and timetable for completion 		





<ul style="list-style-type: none"> • Consider incentivizing Incentivize the installation of EV chargers and hydrogen fueling stations in new or existing gasoline service stations • Require new multifamily residential and commercial development to install e-chargers 		
Target Year	Performance Metric	GHG Reduction Potential (MTCO ₂ e)
2030	Track the implementation of e-chargers and e-charging infrastructure across the City to be able to reduce VMT by approximately 64,060,620.	22,449 MTCO ₂ e

3.6 Solid Waste

3.6.1 Goal 8: Decrease GHG Emissions through Reducing Solid Waste Generation

According to Statewide Waste Characterization data, the commercial sector generates nearly three fourths of the solid waste in California (CalRecycle 2020). Furthermore, much of the commercial sector waste disposed in landfills is readily recyclable. Increasing the recovery of recyclable materials will directly reduce GHG emissions. In particular, recycled materials can reduce the GHG emissions from multiple phases of product production, including extraction of raw materials, preprocessing, and manufacturing. As described under the Regulatory Setting in Chapter 1, the Mandatory Commercial Recycling Measure was adopted in 2012 and is designed to achieve a reduction in GHG emissions of 5 million MT CO₂e. To achieve the measure’s objective, an additional 11 percent of solid waste will need to be recycled from the commercial sector by 2020 and beyond. The City has instituted a mandatory commercial waste recycling program in conformance with AB 939 and 341. The City has also adopted a Construction and Demolition Debris Recycling Program, under which there is a minimum construction and demolition waste diversion requirement of 65 percent. The actions identified below are necessary to help the City achieve the 2030 waste diversion goals. In addition, these goals will continue to progress the City toward helping the County of Los Angeles meet its 80 percent waste diversion by 2030 and more than 95 percent waste diversion goal by 2045 (County of LA 2014) and reduction in associated GHG emissions. The County is closely monitoring the existing waste diversion goals in light of a major paradigm shift in the waste management industry due to the urgency to combat climate change, new recycling laws, and mandates as well as the recycling crisis triggered by the China National Sword, which restricted imported recyclable materials. However, the continued implementation of Roadmap initiatives in the next few years, such as organic waste recycling and proposed revisions to the construction and demolition debris-recycling ordinance, will help the County continue to make strides toward achievement of the Roadmap goal of 80 percent diversion by 2025 (County of LA 2019).

In addition to recyclables, it is also essential to focus on diverting organic waste from all the sectors as it can represent 30 percent of the total waste stream in the City. The SB 1383 requires Californians to reduce organic waste disposal by 50% by 2020 and 75% by 2025. Additionally as a part of the disposal reduction targets the Legislature directed CalRecycle to increase edible food recovery by 20 percent by 2025 (these targets use the 2014 Waste Characterization Study measurements when 23 million tons of organic waste were disposed). Under this regulation, the City would need to follow the requirements set forth for the jurisdictions for organic waste collection that goes into effect by January 1, 2022 (CalRecycle 2021).





Goal 8: Decrease GHG Emissions through Reducing Solid Waste Generation

Co-Benefits



Goal 8. Decrease GHG Emissions through Reducing Solid Waste Generation		
Measure 8.1 Reduce Waste at Landfills		
City Actions:		
<ul style="list-style-type: none"> • Team up with Waste Management and other trash haulers to <i>promote</i> conduct direct outreach to HOAs, businesses, multi-family residential and other community groups on waste recycling and diversion in the community • Add additional recycling containers in public places where possible • For new commercial and residential construction over two (2) dwelling units mandate <i>organic waste compost</i> bins for segregating green food waste • Provide the <i>organics waste collection services</i> to all residents and businesses per the requirements and timeline prescribed in SB 1383 • Establish a <i>Citywide edible food recovery program</i> • Promote a waste reduction, recycling, and composting program 		
Target Year	Performance Metric	GHG Reduction Potential (MTCO ₂ e)
2030	Divert 70 percent total solid waste generated in the City.	1,500 MTCO ₂ e

3.7 Clean Energy

3.7.1 Goal 9: Decrease GHG Emissions through Increasing Clean Energy Use

Renewable energy sources especially those that have zero or near zero emissions such as photovoltaic (PV) solar and wind generation are clean energy. Distributed renewable energy generation such as rooftop PV solar provides locally important environmental and economic benefits because the clean energy is being generated within the City. Ability to store energy is also crucial, for enabling





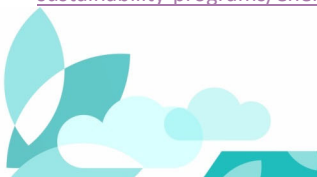
widespread adoption, stabilization and grid integration of renewable energy. Energy storage can reduce power fluctuations, enhance system flexibility, and enable the storage and dispatch of electricity generated by variable renewable energy sources. To help customers better prepared for outages and Public Safety Power Shutoffs (PSPS), there are programs such as Self Generation Incentive Program (SGIP) offered through local utilities such as SCE. Residents of communities in high fire- risk zone are eligible for the incentives to install self-generating energy storage systems (SCE 2020).

Besides distributed renewable energy generation, the City is also participating in the Clean Power Alliance (CPA), a Joint Powers Authority (JPA) that is delivering electricity comprising 36 percent renewable energy to the City since February 2019 for residential and May 2019 for non-residential customers.¹ The current State required RPS requires, all electric load serving entities to procure 30 percent renewable energy in the electricity mix by 2020 and 60 percent by 2030. The CPA has outperformed the State requirements by procuring the renewable energy beyond the goals set by the State. In November 2020, the City signed up for 100 percent renewable energy (100 percent Green Power) as the default rate product for the customers, which is up from 36 percent (Lean Power). The 100 percent Green Power will be applicable from October 2021. With an estimated average opt out rate of 10-12 percent the City is on the trajectory to ~~meet~~ **exceed** State RPS goal of 60 percent renewables by 2030.

~~SoCal Gas, the City's gas utility, plans to replace 20 percent of its traditional natural gas supply with Renewable Natural Gas (RNG) by 2030, per a plan adopted by the utility in 2019. Recently, the California Public Utility Commission (CPUC) approved the utility's request to offer a voluntary RNG tariff. The program will allow households and businesses to purchase RNG from the utilities. RNG is pipeline compatible gaseous fuel derived from biogenic or other renewable sources that has lower lifecycle CO₂e emissions than geological natural gas. The majority of the RNG is produced from capturing emissions from existing waste streams found in landfills, wastewater treatment plants and animal manure. This gas is treated and cleaned, raising it to a standard where it can be injected into existing gas pipelines. RNG can be used as a source of electricity, heat, or vehicle fuel (SoCal Gas RNG Toolkit 2020)~~

~~RNG has the potential to reduce GHG emissions significantly. Despite the success of RNG in the transportation fuels market representing more than 60 percent of natural gas used as a transportation fuel in 2016—the programs in place do not provide the price and supply certainty that is required for larger volumes of RNG to be deployed. Currently, SoCal Gas is on the path to implement its 2030 RNG goals and as the policies and structure to implement the goal are developed, the City could explore the possibilities of using RNG at it local facilities.~~

¹ Clean Power Alliance. City of Agoura Hills. Website: <https://www.agourahillscity.org/department/city-manager/sustainability-programs/energy-clean-power-alliance-utility> (accessed October 5, 2020).





Goal 9: Decrease GHG Emissions through Increasing Clean Energy Use

Co-Benefits



Goal 9 Decrease GHG Emissions through Increased Clean Energy Use		
Measure 9.1 Promote Clean Energy		
City Actions:		
<ul style="list-style-type: none"> Promote clean energy incentives in the community Consider reducing Reduce permit fees for solar permits with battery backup Encourage solar panel installation on existing residential buildings Encourage solar panel installation on existing commercial buildings and commercial parking lots Encourage energy storage systems installation with solar panels on residential and commercial developments Identify and prioritize City facilities (such as library or recreation center) by 2025 for solar installation and installing battery storage to complement PV generation 		
Target Year	Performance Metric	GHG Reduction Potential (MTCO ₂ e)
2030	Track the capacity (kWh) of solar panels installed on the residential and commercial/industrial buildings within the City and achieve approximately 15,170,639 kWh energy savings by installing solar panels.	3,641 MTCO ₂ e
Measure 9.2: Continue Participation in SCE City's Clean Power Alliance Program		
City Action:		
Target Year	Performance Metric	GHG Reduction Potential (MTCO ₂ e)
2030	Continued participation in the CPA Program with 100% renewable energy goal	6,537 MTCO ₂ e

3.8 Summary of Reductions

By implementing the Statewide and local reduction measures described above, the City would reduce its communitywide GHG emissions by 49 percent below 2008 levels of emissions in 2030. Table K summarizes the strategies and the potential GHG reductions for community and municipal operations, respectively.





Table K: Summary of Community GHG Reduction Strategies and Emission Reductions

Goals and Measures	2030 Emission Reductions (MT CO ₂ e)
Goal 1: Increase Energy Efficiency in Existing Residential Units	
1.1: Energy efficiency training, education, and recognition in the residential sector	Supporting Measure
1.2: Increase community participation in existing energy efficiency programs	454
1.3: Home energy evaluations	Supporting Measure
1.4: Residential home energy renovations	734
Goal 2: Increase Energy Efficiency in New Residential Units	
2.1: Exceed energy efficiency standards	445
Goal 3: Increase Energy Efficiency in Existing Commercial Units	
3.1: Energy efficiency training, education, and recognition in commercial sector	Supporting Measure
3.2: Increase business participation in existing energy efficiency programs	858
3.3: Non-residential building energy audits	Supporting Measure
3.4: Non-residential building retrofits	7,464
Goal 4: Increase Energy Efficiency in New Commercial Units	
4.1: Exceed energy efficiency standards	168
Goal 5: Increase energy efficiency through water efficiency	
5.1: Water efficiency through continued implementation of SBX7-7	279
5.2: Exceed water efficiency standards	Supporting Measure
Goal 6: Decrease Energy Demand through Reducing Urban Heat Island Effect	
6.1: Tree planting for shading and energy efficiency	318
6.2: Light-reflecting surfaces for energy efficiency	37
Goal 7: Decrease Greenhouse Gas Emissions through Reducing Vehicle Miles Traveled	
7.1: Transportation Demand Management (TDM) including telecommuting and alternative transportation options	11,402
7.2: Develop Bicycle Master Plan to expand bike routes around the City	184
7.3: Ride-sharing and bike-to-work programs within businesses	7,526
7.4: Electrify the fleet	22,449
Goal 8: Decrease Greenhouse Gas Emissions through Reducing Solid Waste Generation	
8.1: Reduce waste to landfills	1,500
Goal 9: Decrease Greenhouse Gas Emissions through Increasing Clean Energy Use	
9.1: Promote clean energy	3,641
9.2: Continue participation in CPA Program	6,537
Total Community Measures	63,996

BAU = Business as Usual
 CPA = Clean Power Alliance
 MT CO₂e = metric tons of carbon dioxide equivalent
 SB = Senate Bill

3.9 Comparison of Reductions to Targets

Table L and Figure 4 summarize the 2018 community emissions, the projected 2020 and, 2030, emission inventories, as well as the reduced 2020 and 2030 inventories after implementation of the reduction measures for community operations, respectively.



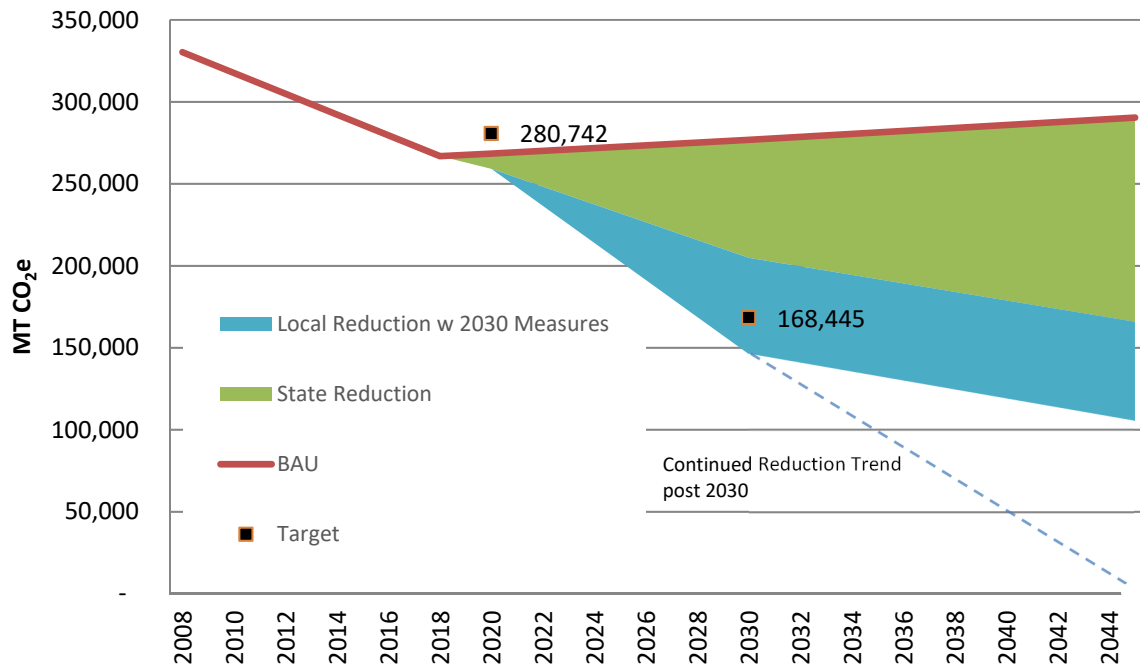


Table L: Community Emissions and Targets Comparison

	2008 MT CO ₂ e	2018 MT CO ₂ e	2020 MT CO ₂ e	2030 MT CO ₂ e
BAU Emissions	330,285	266,891	268,490	276,843
State and Federal Reductions	—	—	-9,428	-71,996
ABAU Emissions	—	266,891	259,062	204,847
Reduction Target (below 2008 baseline)	—	—	280,742 (-15%)	168,445 (-49%)
Reduction Needed	—	—	—	36,402

Local Measures Reductions	—	—	—	-63,996
Additional Reductions Needed	—	—	Target Met	Target Met

BAU = Business as Usual
 ABAU=Adjusted Business As Usual
 MT CO₂e = metric tons of carbon dioxide equivalent



Note: Supporting Measures are the measures that will reduce emissions but cannot be quantified. These measures enhance the quantifiable measures through education and outreach programs.
 MT CO₂e = metric tons of carbon dioxide equivalent

Figure 4: State and Local Reductions Comparison with Targets for Community

In 2030, implementation of Statewide and local measures together would reduce emissions from the 2030 BAU level to 140,851 MT CO₂e, which exceeds the 49 percent below 2008 levels reduction target of 168,445 MT CO₂e for 2030.





3.10 Beyond 2030 Target

The City's emission reduction targets for the year 2030 discussed in this CAAP are consistent with the goals identified in AB 32 and the corresponding Scoping Plan, which identifies Statewide GHG reduction targets for 2020 and 2030. It is important to note that 2030 is only a milestone in GHG reduction planning. To be consistent with the State regulations, the City would need to look beyond 2030 and take into consideration EO B-55-18, which calls for achieving Statewide carbon neutrality by 2045. The 2030 target will keep the City on a right trajectory to meet the State of California 2045 emission goals.

As the City proceeds with implementing the measures identified above, the reduction targets may need adjustments to reflect updates in the inventory and resultant GHG emission reductions achieved through implementation of these measures from now until 2030. In the future, when the City would be close to meeting 2030 target pursuant to this CAAP and would have a better understanding of the effectiveness and efficiency of different reduction strategies and approaches, the City would revisit the GHG reduction measures and strategies identified in the CAAP.

Furthermore, the federal, State, and local programs and policies for the GHG reductions for the near term (2020–2030) are likely to be well underway and continuing technological change in the fields of energy efficiency, alternative energy generation, vehicles, fuels, methane capture, and other areas will have taken place. The City will then be able to take the local, regional, State, and federal context into account and may consider updating the GHG reduction targets post-2030. The potential new CAAP update will include specific strategies and measures for meeting the State mandate beyond 2030. The targets will be consistent with broader State and federal reduction targets and will take into consideration the effectiveness and applicability of the reduction measures identified in this CAAP.





4.0 Climate Vulnerability and Adaptation

The City recognizes that planning sustainably is more than reducing GHG emissions; it also requires being prepared for changes that would impact the community's quality of life, use of resources, and economy. Preparedness, or adaptation, efforts seek to reduce vulnerability and increase the local capacity to adapt to changes. Therefore, this CAAP summarizes changes in average and extreme weather that may occur in the next several decades and identifies actions to build resilience to and adapt to those changes. This Climate Vulnerability and Adaptation Assessment will also help City fulfill the requirements of Senate Bill 379 and Senate Bill 1035, which requires General Plan Safety Elements to be updated to consider climate change impacts and strategies to enhance community resiliency and adaptation for climate-induced risks.

4.1 Projections of Future Climate

4.1.1 Methodology

Cal-Adapt data (Cal-Adapt 2020) were used to assess the City's future potential climate risks. Cal-Adapt is a climate adaptation planning tool that was developed by the State of California's scientific and research community and funded by the California Energy Commission (CEC). The web-based tool was a key recommendation of the 2009 California Climate Adaptation Strategy and is intended to provide information on how climate change might affect California at the local level. Climate data on Cal-Adapt includes maximum temperature, minimum temperature, precipitation, sea-level rise, wildfire, and wind.

Temperature and precipitation data were obtained from downscaled climate projections using localized constructed analogs (LOCA), which is a technique used to improve details of global climate models using historical observations. Another key aspect in climate modeling is the predicted amount of GHG emissions in the atmosphere over time that result in climate change. Representative Concentration Pathways (RCPs) are various climate-modeling scenarios with differing concentrations of GHG emissions in the upper atmosphere over time. Of the 32 LOCA downscaled global climate models available on Cal-Adapt 10 provide projections for three separate scenarios: RCP4.5, RCP8.5, and the historical modeled scenario. The RCP 4.5 scenario represents a climate stabilization scenario in the future where GHG emissions peak at 42 gigatonnes of carbon dioxide per year (Gt CO₂/yr) around the year 2040, then begin to decline in year 2080, and level off at 15 Gt CO₂/yr to the end of the century. RCP4.5 will only occur if global emissions are reduced over time in line with the reduction targets committed to by the participating countries in the 2015 Paris Agreement (UNFCCC 2015). The RCP8.5 is a conservative BAU scenario, and is the pathway with the highest GHG emissions, with a climate future where emissions continue to increase into the future, with over 100 Gt CO₂/yr by the end of the century. The spatial resolution of the data is approximately 6 kilometers (km), and projections are available as daily and annual averages. The historical modeled data are available for years 1950–2005, while the two emissions scenarios are available for years 2006–2100. For review of future maximum and minimum temperature and precipitation in Agoura Hills, the high emission RCP8.5 scenario was used with the annual average time period for 2018 (present), 2050 (mid-century), and 2100 (end of century). The maximum temperature, minimum temperature, and average precipitation projections were modeled using the CanESM2 climate model, which has been selected





by California State agencies as one of the priority models for research contributing to California's Fourth Climate Change Assessment (OPR, CEC and NRA 2020).

Wildfire projections were developed at the University of California Merced and use the downscaled LOCA global climate models together with historical climate data, population density, vegetation, and fire history. Wildfire projections are available for the four models selected by California state agencies as priority models for research contributing to California's Fourth Climate Change Assessment, which are the HadGEM2-ES, CNRM-CM5, CanESM2, and MICROC5 models. The projections are available for the RCP4.5 and RCP8.5 emissions scenarios, as well as three population growth projections: high, low, and central (BAU). For the review of future wildfire risk in Agoura Hills, projections were modeled using the CanESM2 model, under the RCP8.5 emissions and BAU population growth scenarios.

The climate projections presented below are consistent with the SCAG's Southern California Climate Adaptation Planning Guide (SoCal APG 2020), which are based on California's Fourth Climate Change Assessment. **The City also acknowledge and support SCAG's resolution (Resolution No. 21-628-1) that calls on local and regional partners to join together to improve regional resilience and reduce hazards from a changing climate (SCAG Climate Change Action Resolution, 2021).**

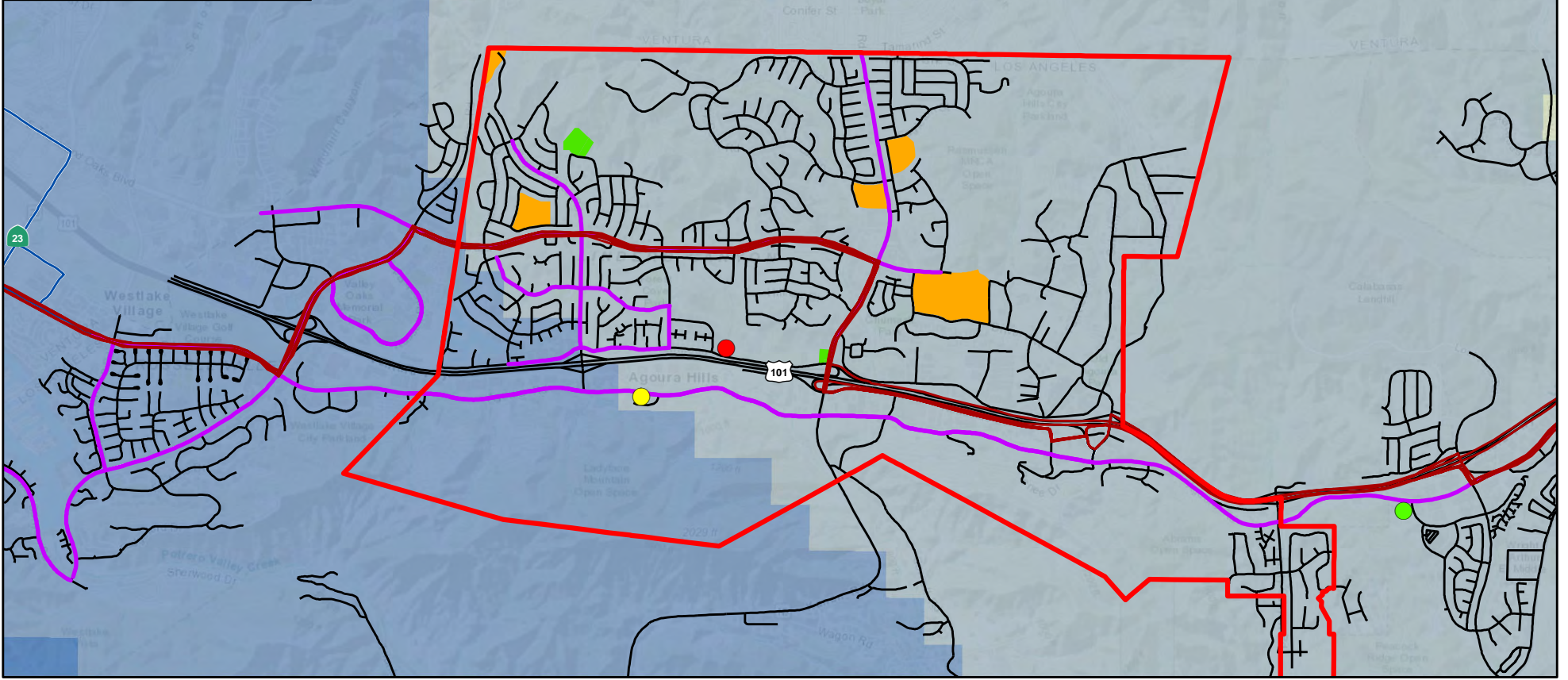
4.1.2 Temperature Projections

According to the Cal-Adapt climate projections, the average annual maximum temperature for Agoura Hills is expected to increase into the end of the century. Figure 5 shows maximum temperatures at present, mid-century, and end of century overlaying with the critical facilities, roadways, transit lines, and bikeways within Agoura Hills. The region's highest maximum temperatures are located to the northeast of Agoura Hills. Presently, the highest maximum temperature for the northeast areas is between approximately 76–78°F. This temperature range is projected to rise to approximately 78–80°F by mid-century and to 86–88°F by the end of the century. Because these values are an annual average, on any given day temperatures in those regions may well exceed the maximum projected values. The City's lowest maximum temperatures are located to the southwest, where Agoura Hills meets the Santa Monica Mountains. These areas are also projected to increase in temperature through the end of the century. Presently, the lowest maximum temperature in the region is approximately 74–76°F in the foothills of the mountains. The temperature in this area is expected to increase to 76–78°F by mid-century and to 84–86°F by the end of the century. Again, because these values are an annual average, on any given day temperatures in this region may well exceed these minimum projected values.

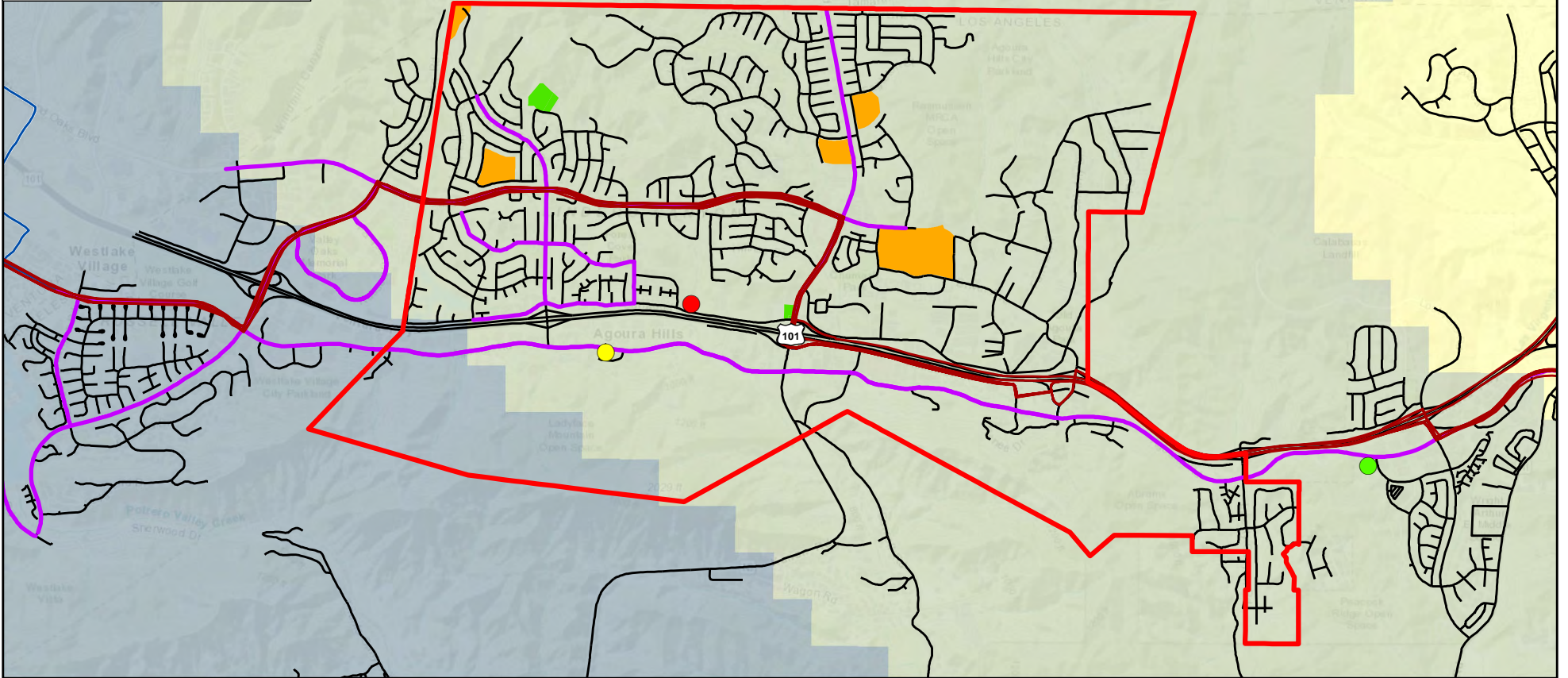
Cal-Adapt climate projections also indicate that average annual minimum temperatures are expected to increase to the end of the century within the Agoura Hills region. Figure 6 shows minimum temperatures at present, mid-century, and end of century overlaying with Agoura Hills' critical facilities, roadways, transit lines, and bikeways. The region's highest minimum temperatures are located in the northeast areas of Agoura Hills, where the minimum average annual temperature are expected to be 61–63°F by the year 2100. This is an increase of between 12°F and 14°F from present temperatures.



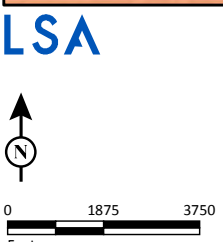
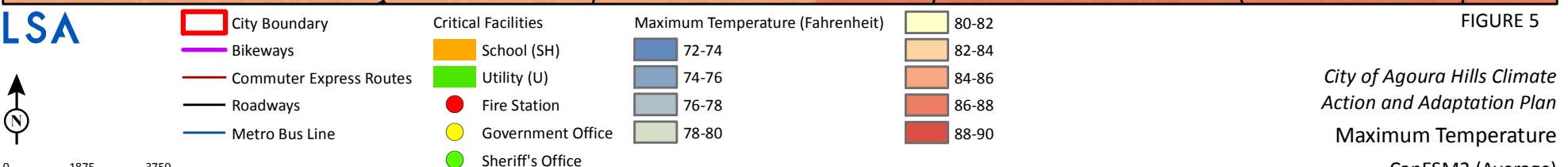
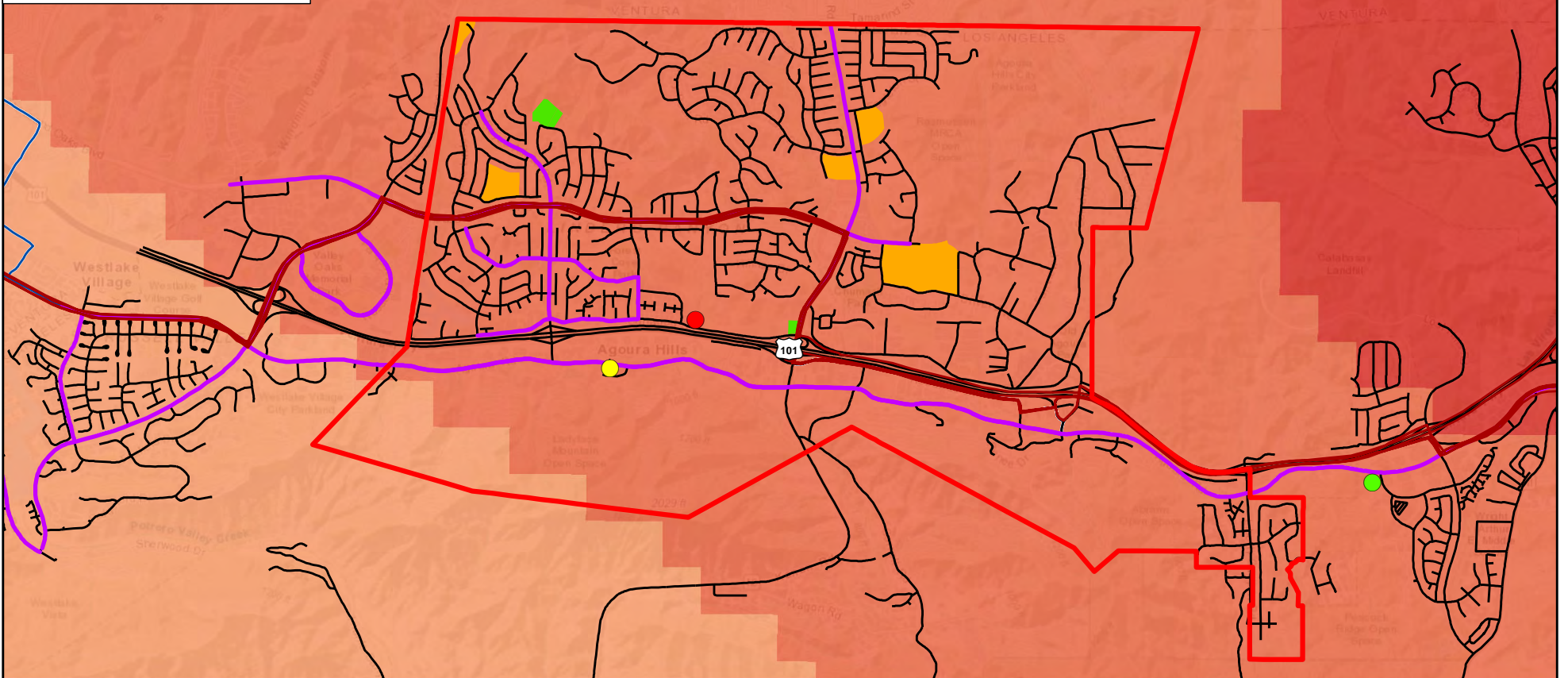
Maximum Temperature 2018



Maximum Temperature 2050



Maximum Temperature 2100



SOURCE: ESRI (2018); Los Angeles County Metropolitan Transportation Authority (2017); City of Agoura Hills (2010); CalAdapt (2018)

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FIGURE 5

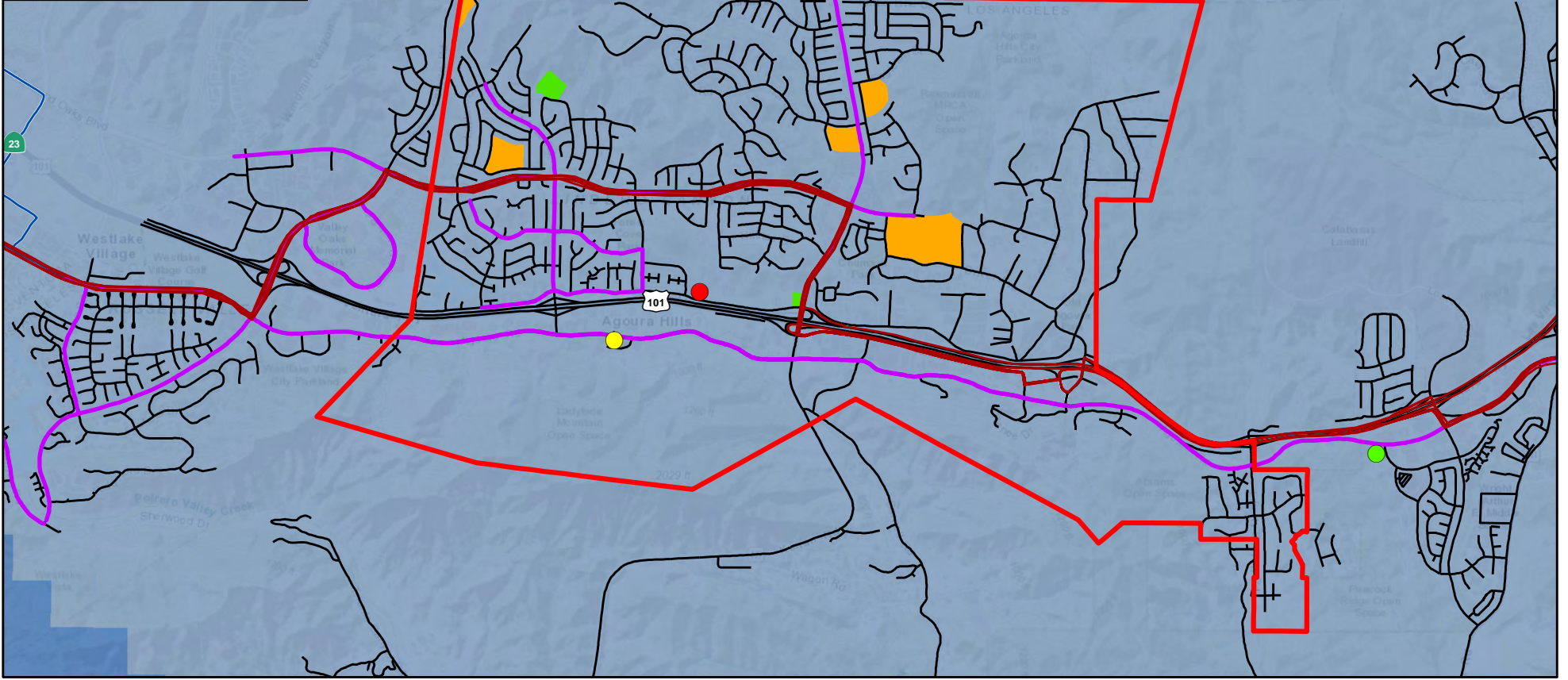
City of Agoura Hills Climate Action and Adaptation Plan
Maximum Temperature
CanESM2 (Average)
RCP 8.5 Scenario
Annual Averages



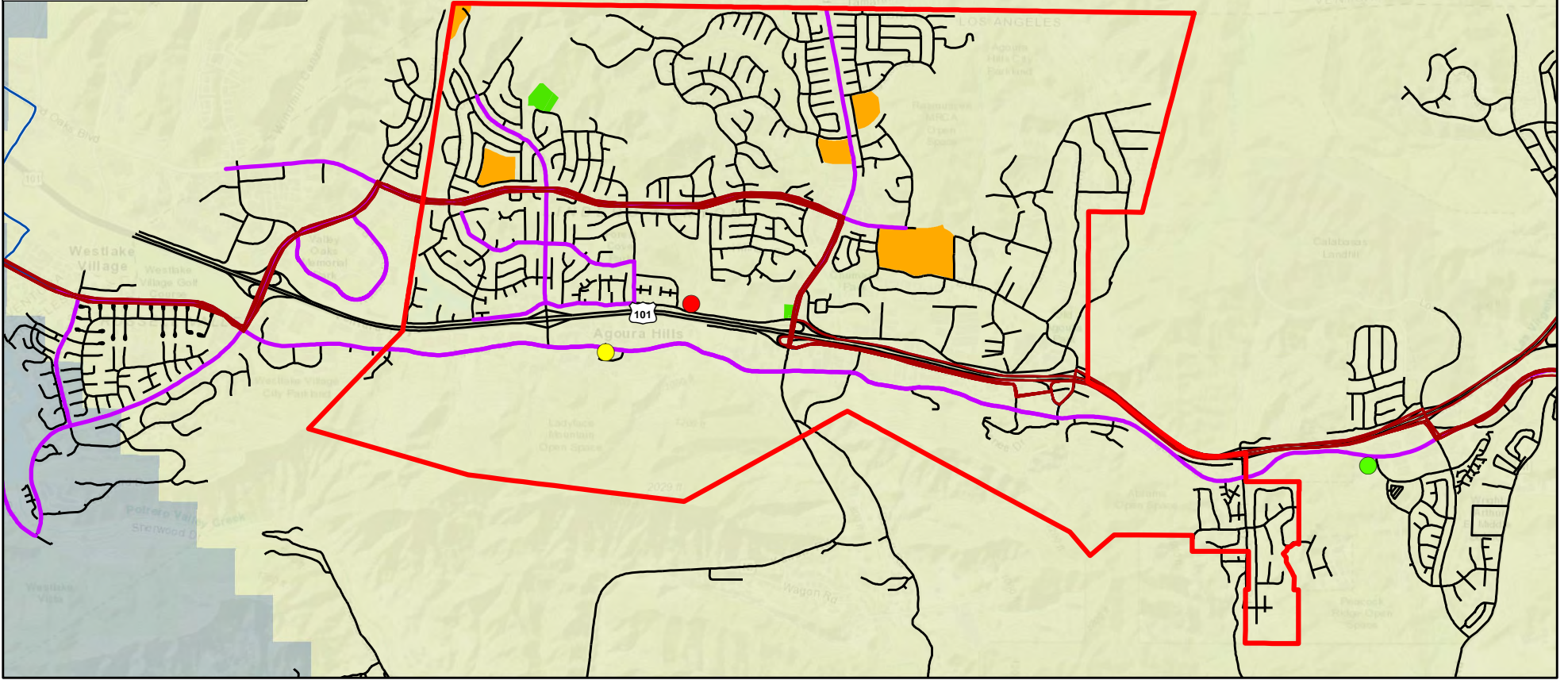
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Minimum Temperature 2018



Minimum Temperature 2050



Minimum Temperature 2100

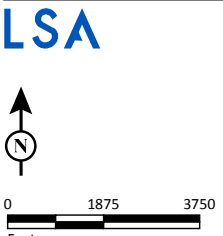
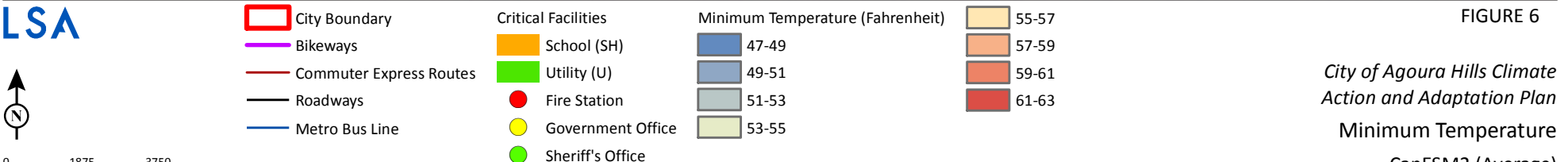
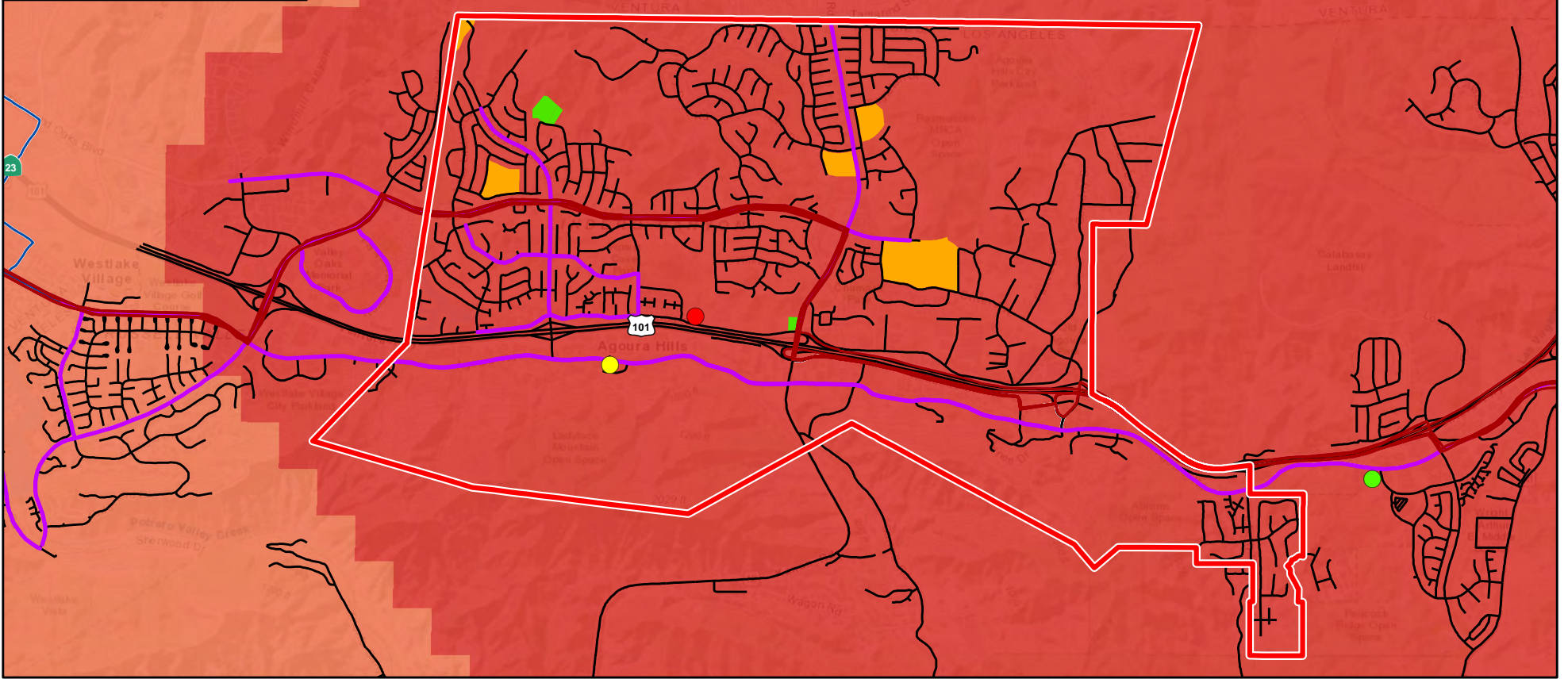


FIGURE 6

City of Agoura Hills Climate Action and Adaptation Plan
Minimum Temperature
CanESM2 (Average)
RCP 8.5 Scenario
Annual Averages

SOURCE: ESRI (2018); Los Angeles County Metropolitan Transportation Authority (2017); City of Agoura Hills (2010); CalAdapt (2018)

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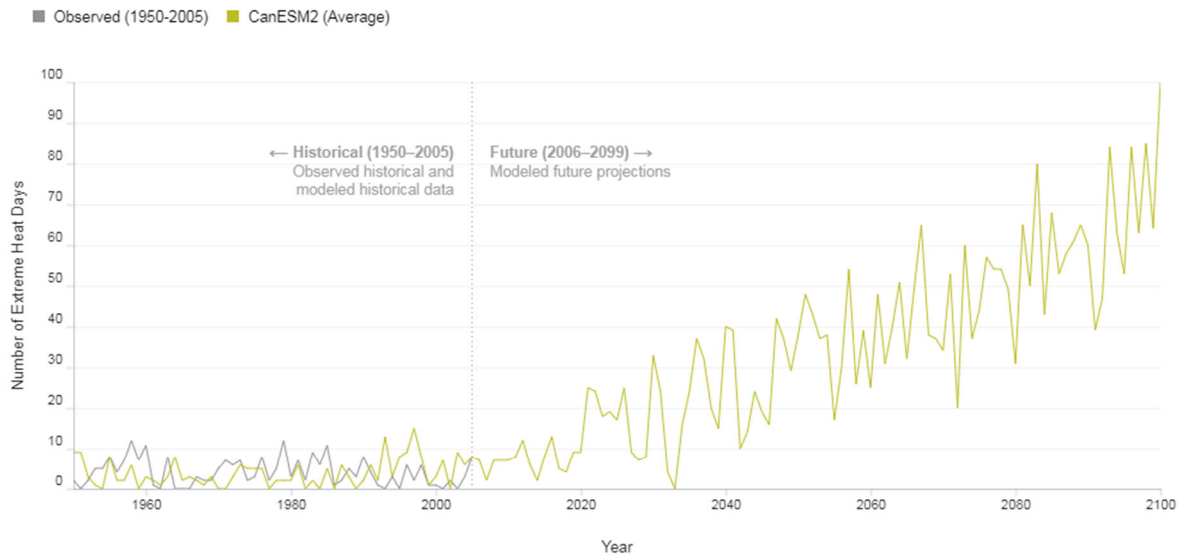




Cal-Adapt also projects an increase in the number of extreme heat days, which are the number of days that exceed the 98th percentile of historical maximum temperatures between April 1 and October 31 based on observed daily temperature data from 1961–1990. As shown in Figure 7, Agoura Hills currently experiences approximately 10 extreme heat days per year. This number is projected to increase to more than 40 extreme heat days per year by mid-century. By end-of-century, Agoura Hills is projected to experience 100 extreme heat days per year.

Number of Extreme Heat Days by Year

This chart shows number of days in a year when daily maximum temperature is above the extreme heat threshold of 95.6 °F. Data is shown for Agoura Hills under the RCP 8.5 scenario in which emissions continue to rise strongly through 2050 and plateau around 2100.



- Source: Cal-Adapt. Data: LOCA Downscaled CMIP5 Projections (Scripps Institution of Oceanography), Gridded Observed Meteorological Data (University of Colorado, Boulder).
- Four models have been selected by California’s Climate Action Team Research Working Group as [priority models for research](#) contributing to California’s Fourth Climate Change Assessment. Projected future climate from these four models can be described as producing:
 - A *warm/dry* simulation (HadGEM2-ES)
 - A *cooler/wetter* simulation (CNRM-CM5)
 - An *average* simulation (CanESM2)
 - The model simulation that is most unlike the first three for the best coverage of different possibilities (MIROC5)

Figure 7: Number of Extreme Heat Days per Year for Agoura Hills (Observed and Modeled Historical Data 1950–2005 and Modeled Future Projections 2006–2099)

4.1.3 Precipitation Projections

Figure 8 shows Cal-Adapt projections for present, mid-century, and end-of-century average annual precipitation for Agoura Hills. The City’s highest average annual precipitation is located to the south, where Agoura Hills meets the Santa Monica Mountains and is closer to the ocean. Presently, average precipitation is between 10 and 15 inches per year. According to the CanESM2 model projections, precipitation in the southern part of Agoura Hills is projected to reach 40–45 inches per year by end-of-century.





4.1.4 Wildfire Projections

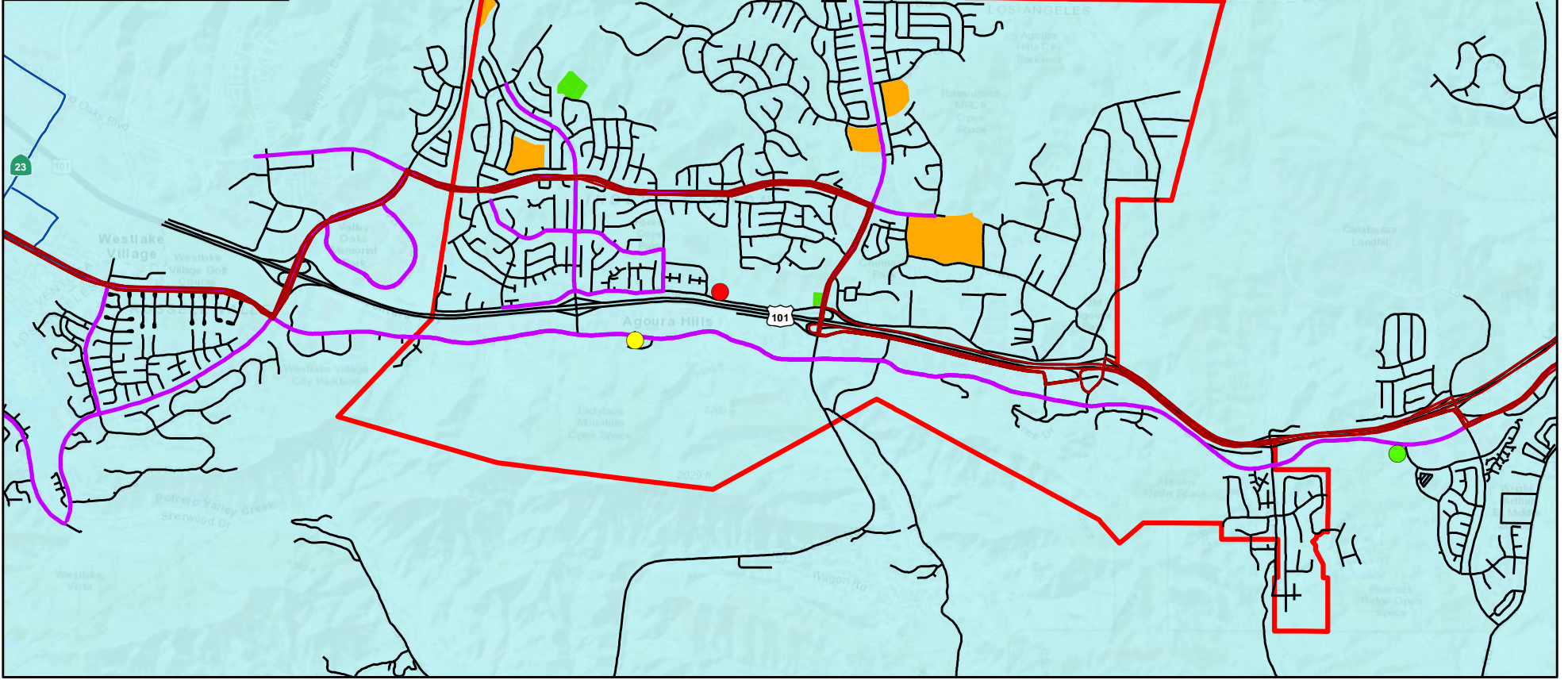
Fire regimes describe the pattern, frequency and intensity of wildfires and are determined by natural ecosystem properties (e.g. climate, productivity, terrain) and anthropogenic influences (e.g. ignitions, development patterns). Mediterranean climates, like southern California's, naturally support shrubland vegetation types that produce widespread and continuous beds of fuel. Every year the vegetation becomes dry by late summer or early fall when hot and dry Santa Ana winds can blow strongly from the north or north-east for days at a time. In the Santa Monica Mountains, when the fuels, seasonal drought, wind, and terrain combine with an ignition, a major wildfire occurs. These fires are large, wind-driven canopy fires that consume the above ground vegetation and often cause major property damage and home losses. Current forecasts for future climate in southern California predict that rainfall will become more variable, with more droughts and more floods. The City can expect the current Mediterranean-type fire regime to continue for the foreseeable future, but with a greater frequency of conditions for wildfires as the number and duration of droughts increase (NPS 2018).

Besides environmental factors such as the dry and warm Mediterranean climate with periodic episodes of Santa Ana winds and droughts, shrub dominated vegetation, and rugged terrain, the anthropogenic factors such as large wildland-urban interfaces, past fire suppression efforts, and human activity also have a huge influence on wildfires in Southern California. More than 90 percent of the wildfires in California are human related (LA Times 2020).

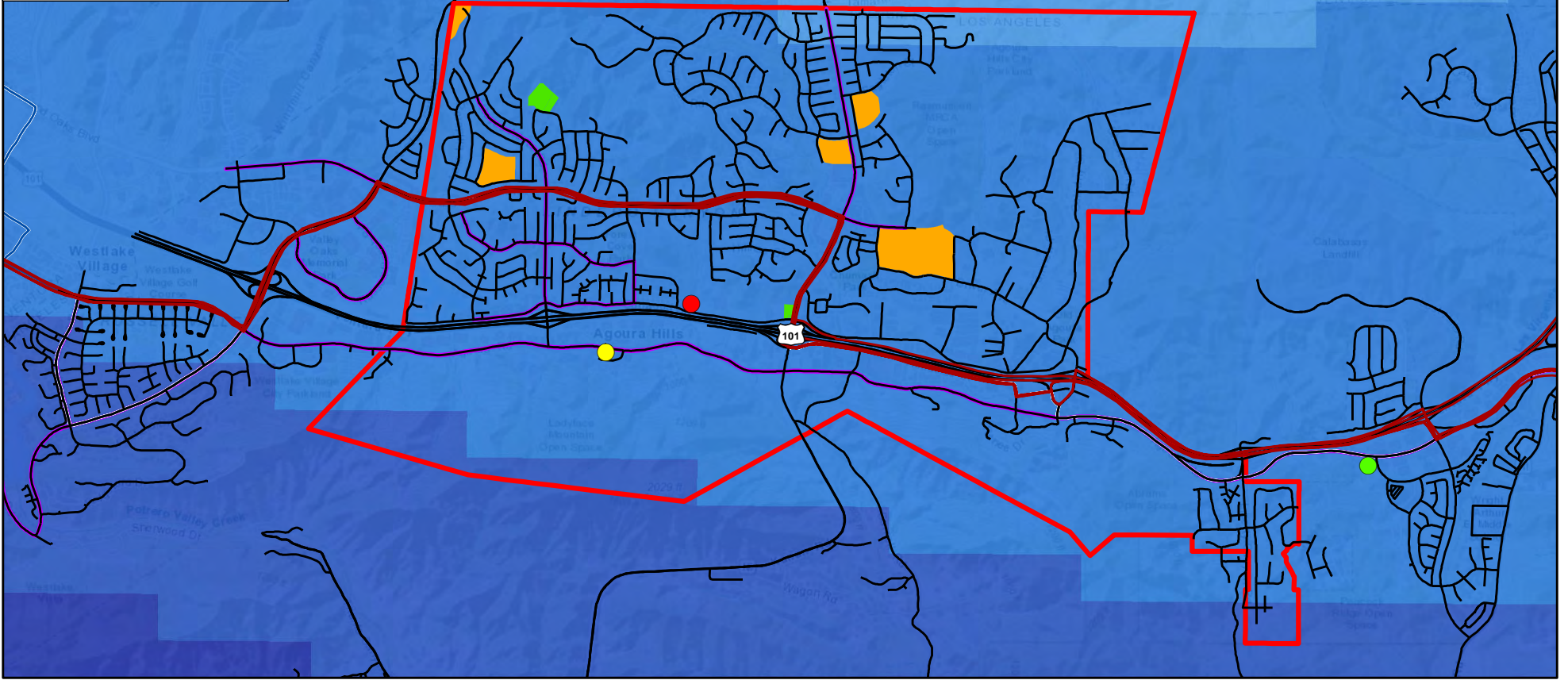
Figure 9 shows Cal-Adapt projections for present, mid-century, and end-of-century wildfire for Agoura Hills. These figures show a high incidence of wildfire southeast of Agoura Hills for the present, with an increase in high incidence along the Simi Hills to the northeast in the mid-century projection. The high incidence of wildfire decreases in the end-of-century projection with the highest potential occurring along the eastern portion of Agoura Hills.



Average Precipitation 2018



Average Precipitation 2050



Average Precipitation 2100

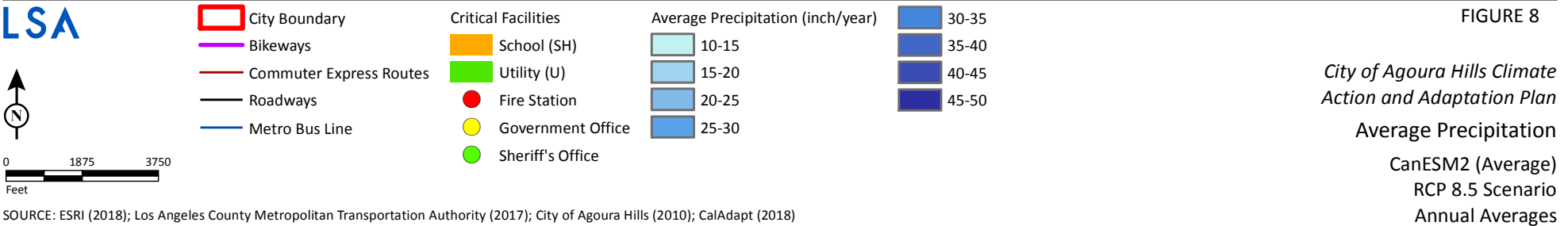
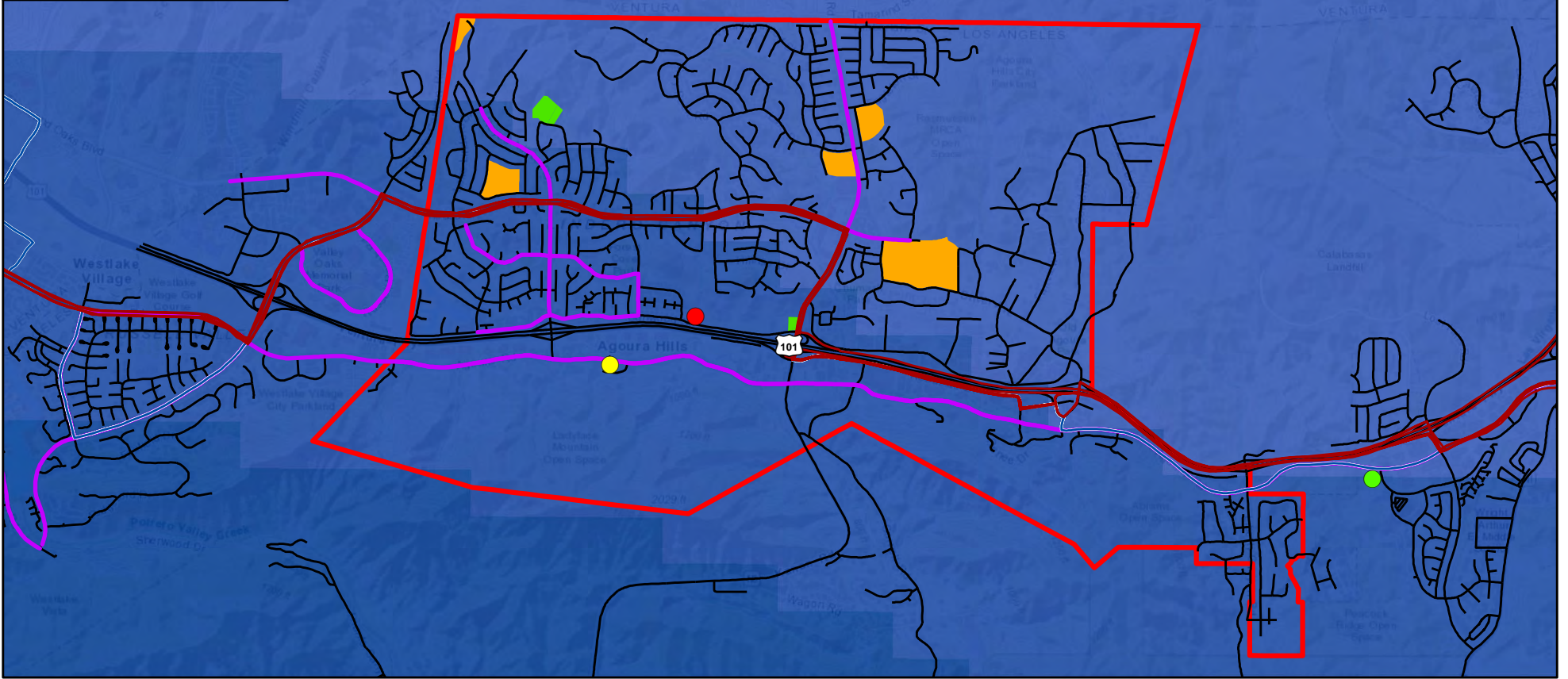


FIGURE 8

City of Agoura Hills Climate Action and Adaptation Plan
Average Precipitation
CanESM2 (Average)
RCP 8.5 Scenario
Annual Averages

SOURCE: ESRI (2018); Los Angeles County Metropolitan Transportation Authority (2017); City of Agoura Hills (2010); CalAdapt (2018)

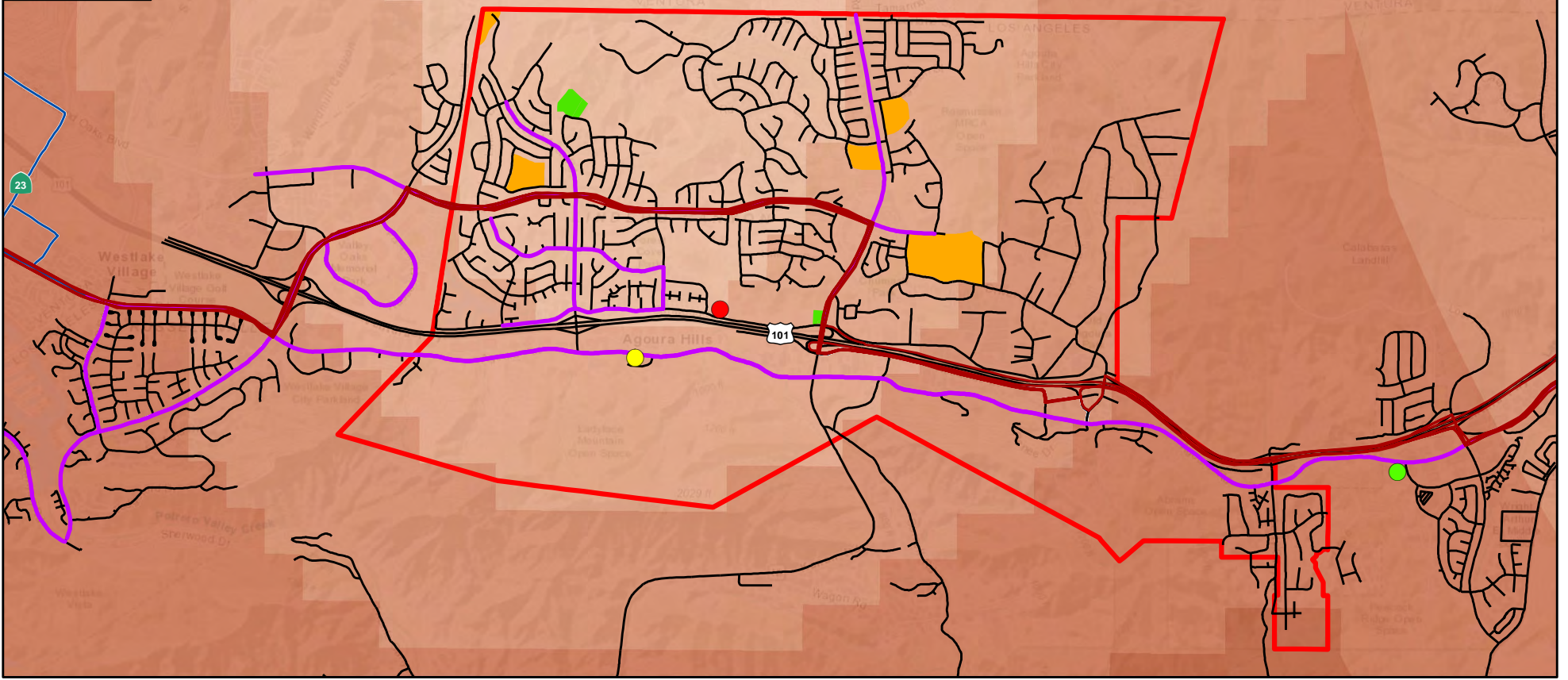
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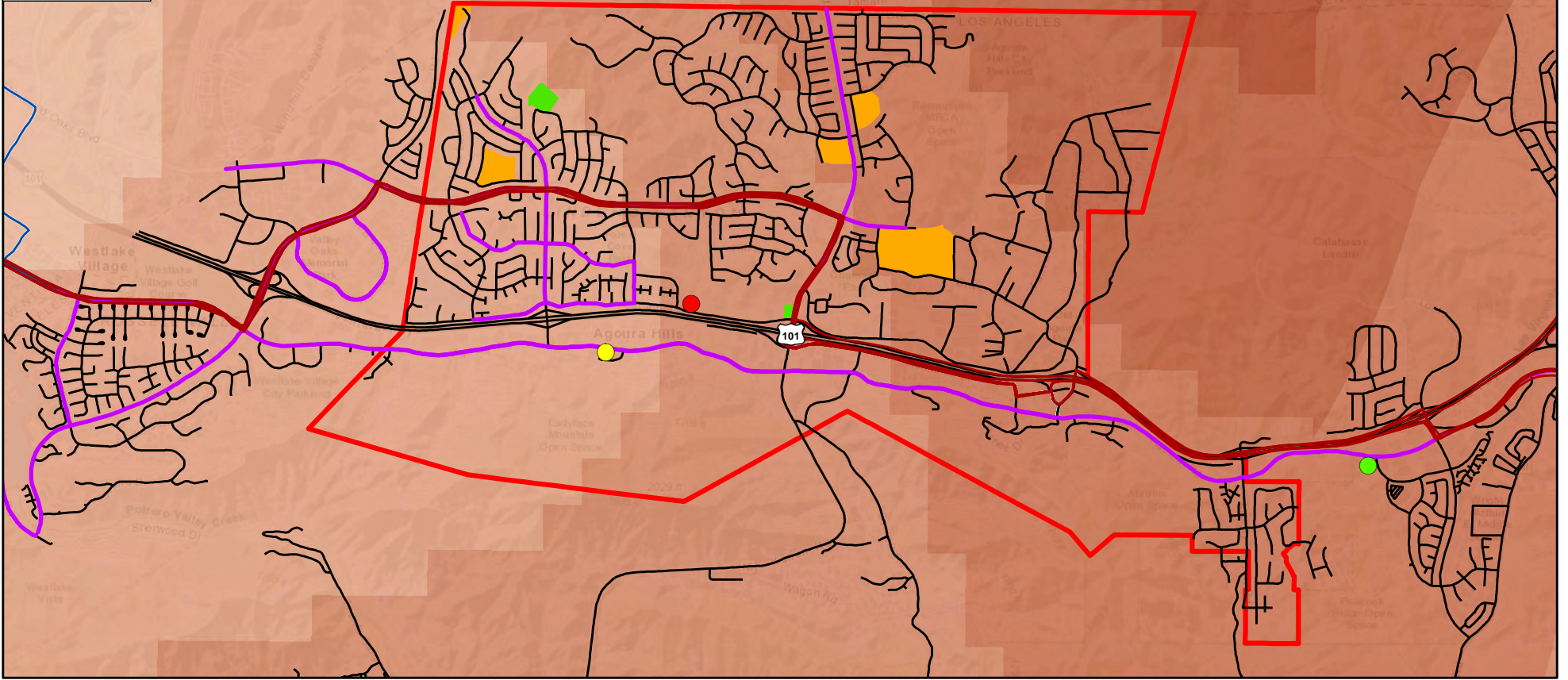
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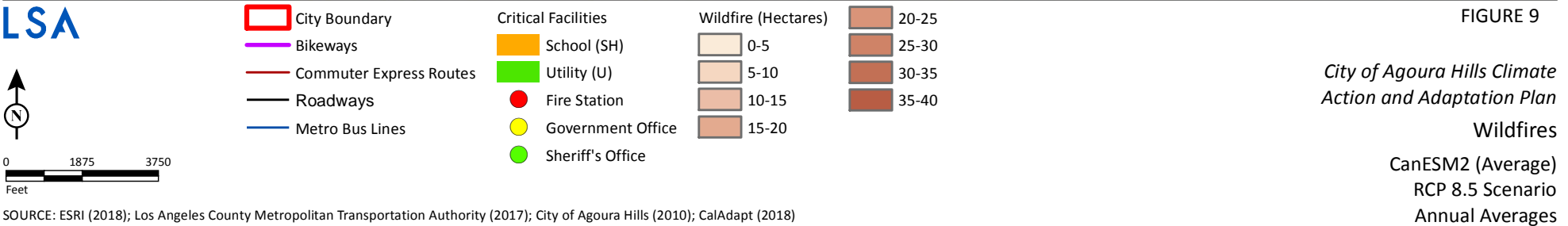
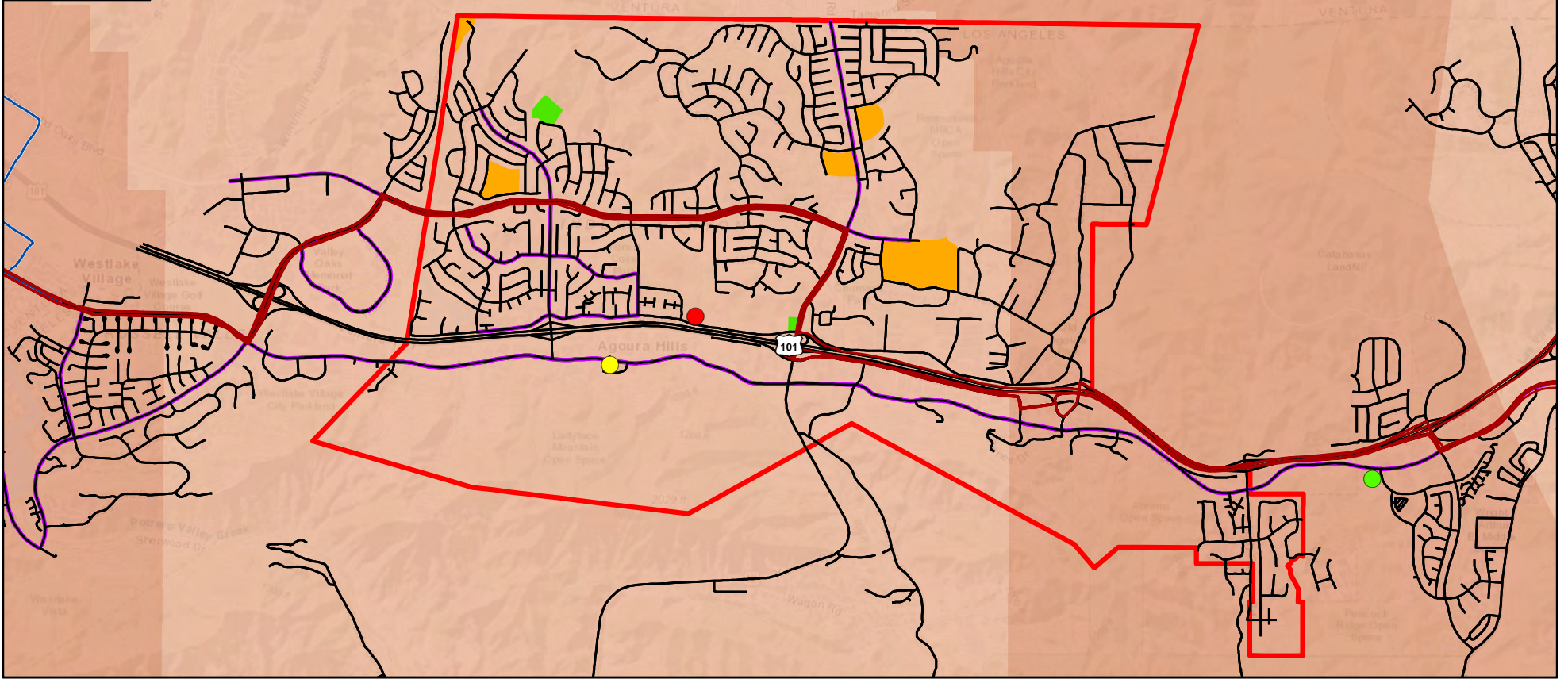
Wildfire 2018



Wildfire 2050



Wildfire 2100





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4.2 CLIMATE CHANGE RISK ANALYSIS

4.2.1 Drought

Because California is expected to experience increased annual temperatures and number of extreme heat days, there will likely be more frequent and intense wildfires and longer fire seasons. Another risk would be the fact that more resources may be needed to combat additional wildfires in the region, which would likely include the need for more water resources. Agoura Hills' water supply is provided by Las Virgenes Municipal Water District (LVMWD). Based on LVMWD's 2015 Urban Water Management Plan (UWMP), 78 percent of the water supply was from imported water in 2015, and it is expected to increase to 86 percent in 2040. The projected increase in drought conditions could threaten imported water supplies.

Figure 10 shows the very high fire severity zones (VHFSZ) located within Agoura Hills. The majority of Agoura Hills' wildfire hazard risk exists along the Santa Monica Mountains to the south of US Route 101, and the mountainous areas at northwestern and northeastern portion of the City. The majority of the City is located inside the VHFSZ, including the City's government office, three of the five schools (Agoura High School, Sumac Elementary School, and Yerba Buena Elementary School), and one of the two utility plants. The majority of the land uses located in these wildfire hazard severity zones tends to be relatively low density and open space. However, as the Agoura Hills population continues to grow and more residential and commercial structures are built, more people will be at risk. Those that reside in areas that lack access to public transit but may be transit dependent (e.g., senior adults, particularly seniors living alone, and persons who do not own a vehicle) are more vulnerable and would need assistance to evacuate. In addition, effects from wildfire could include eye and respiratory illness, worsening asthma, allergies, chronic obstructive pulmonary disease, and other cardiovascular and respiratory diseases. Those waiting to be evacuated would also be the populations most vulnerable to these effects (older adults and children).

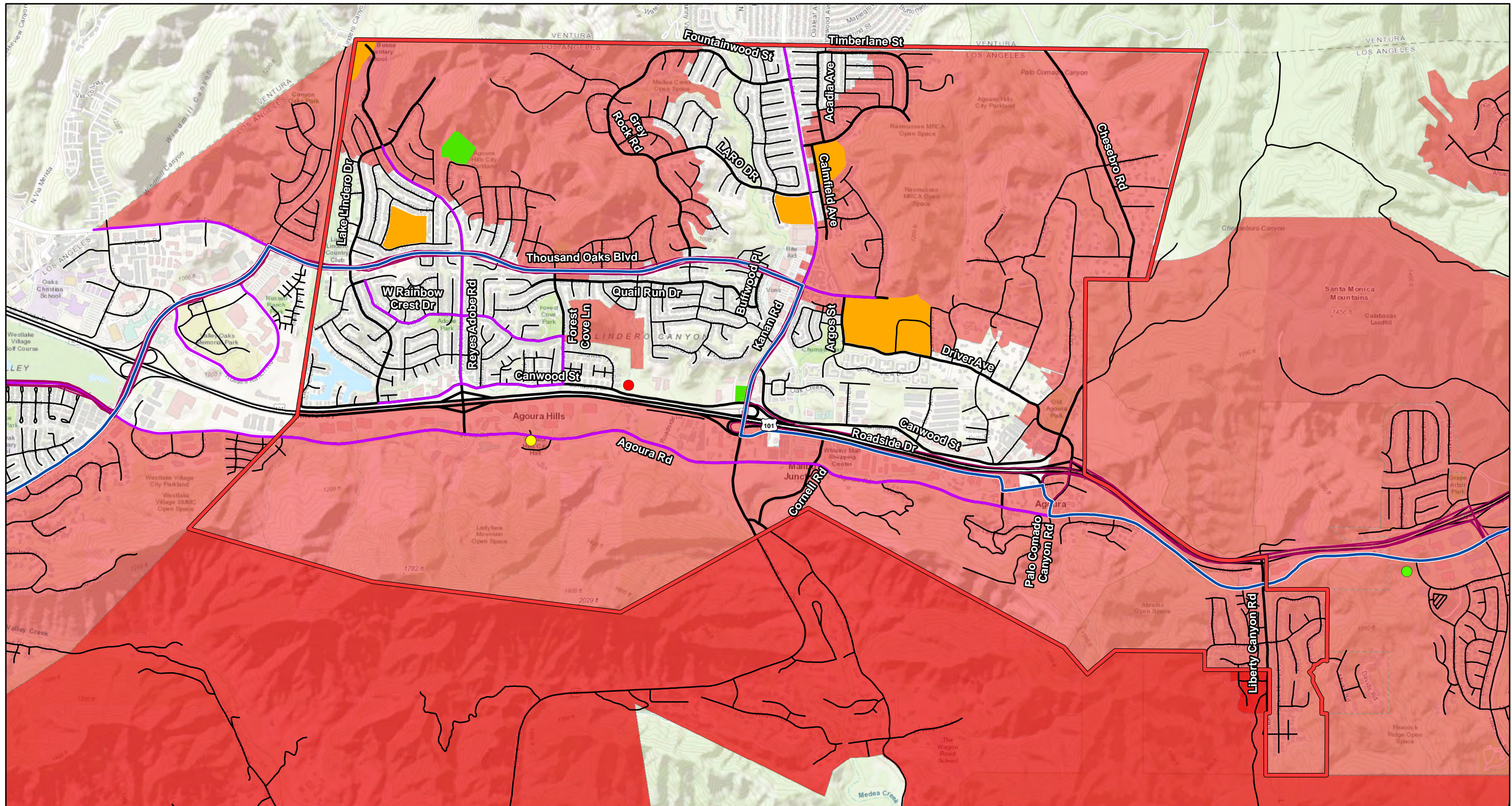
Agoura Hills' open spaces contain significant and endangered plant and animal species. Climate change threatens the ecosystems and habitats of the region's wildlife. Existing vulnerable species may not be able to survive in a changing climate that is more likely to be hotter and drier with more frequent and longer droughts. Natural vegetation that is healthy has enough moisture to impede a fire from starting. Moist soil has a similar effect of impeding a fire from starting. However, drought can reduce the moisture content within the vegetation and soil to the point that the vegetation can easily burn. Drought stricken trees and shrubs are also more vulnerable to various pests and disease such as bark beetle that can kill the trees and shrubs. Dead trees and shrubs easily catch fire. For these reasons the opens space areas become highly vulnerable to wildfires during drought conditions. Fires may pose a temporary risk in that it could increase the potential for landslides, slope failures, as well as debris flows and floods from the runoff (from rain events) since vegetation that would normally help hold together steep slopes would be gone. Such events could eliminate entire habitats. Open space lands serve as an important amenity for residents in Agoura Hills. Drought could take away these natural habitats that residents enjoy.





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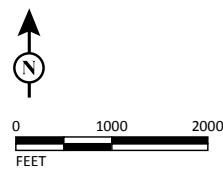




LSA

LEGEND

- | | | |
|-------------------------|-------------------|--|
| City Boundary | School (SH) | Hazard Classification (CalFire 2014)
Local Responsibility - Very High |
| Bikeways | Utility (U) | State Responsibility - Very High |
| Commuter Express Routes | Fire Station | |
| Major Roadways | Government Office | |
| Minor Roadways | Sheriff's Office | |
| Metro Bus Line | | |



SOURCE: ESRI (2016); Los Angeles County Metropolitan Transportation Authority (2017); FEMA (2017); Cal Fire (2014)

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FIGURE 10



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4.2.2 Extreme Heat

High temperatures are a chronic hazard. As average temperatures are projected to rise and the frequency, duration, and intensity of heat waves increase, the entire city is at risk for increased mortality and morbidity, as a result of heat-related illnesses, and the intensification of existing chronic health conditions. These risks disproportionately affect elderly, individuals with chronic conditions such as heart and lung disease, diabetes, and mental illnesses, infants, the socially or economically disadvantaged, and those who work outdoors. Those that reside in areas that lack access to public transit but may be transit dependent are more vulnerable in that they may not be able to escape to cool zones. Cool zones are places where residents can comfortably escape mid-day summer heat. Once people are able to escape to cool zones, additional concerns include the fact that air conditioning is energy intensive. If Agoura Hills' energy infrastructure does not keep pace with increasing demand, then brownouts or blackouts are possible, depriving people of air conditioning and exacerbating extreme heat impacts.

High temperatures can also stress the built environment, and can result in damage caused by heat to roads and rail. Thermal expansion that occurs in asphalt and concrete can cause roads to buckle. Road buckling is more common in concrete than in asphalt since it is a less flexible material. Road buckling is difficult to predict and difficult to prepare for aside from cautioning drivers to be aware of the road condition and having repair crews ready.

As described above, Agoura Hills' open spaces contain significant and endangered plant and animal species. Climate change threatens the ecosystems and habitats of the region's wildlife. Risks to natural habitats due to extreme heat would be the same as those described under drought.

4.2.3 Flooding

Severe drought in combination with projected increases in rain can lead to increased runoff when it does rain, resulting in more extreme flooding. Figure 11 shows the flood zones located within Agoura Hills. The majority of Agoura Hills is located within Zone X, which includes moderate risk areas that are protected by a levee from a 100-year flood, have a one in 500 (0.2 percent) chance of flooding in a given year, and low risk areas that are located outside the 500-year flood zone. Additionally, the majority of Agoura Hills' critical facilities and major roads are located within Zone X.

Other flood zone designations include Zone A, or areas with a 1 percent annual chance of flooding, which are located within the southwestern portion of Agoura Hills at Lake Lindero. The areas along Lindero Creek, Medea Creek, and Chesebro Creek running through Agoura Hills from north to south and located at western, middle, and eastern portion of Agoura Hills are designated as Zone AE, which is subject to inundation by the 1 percent annual chance flood event.

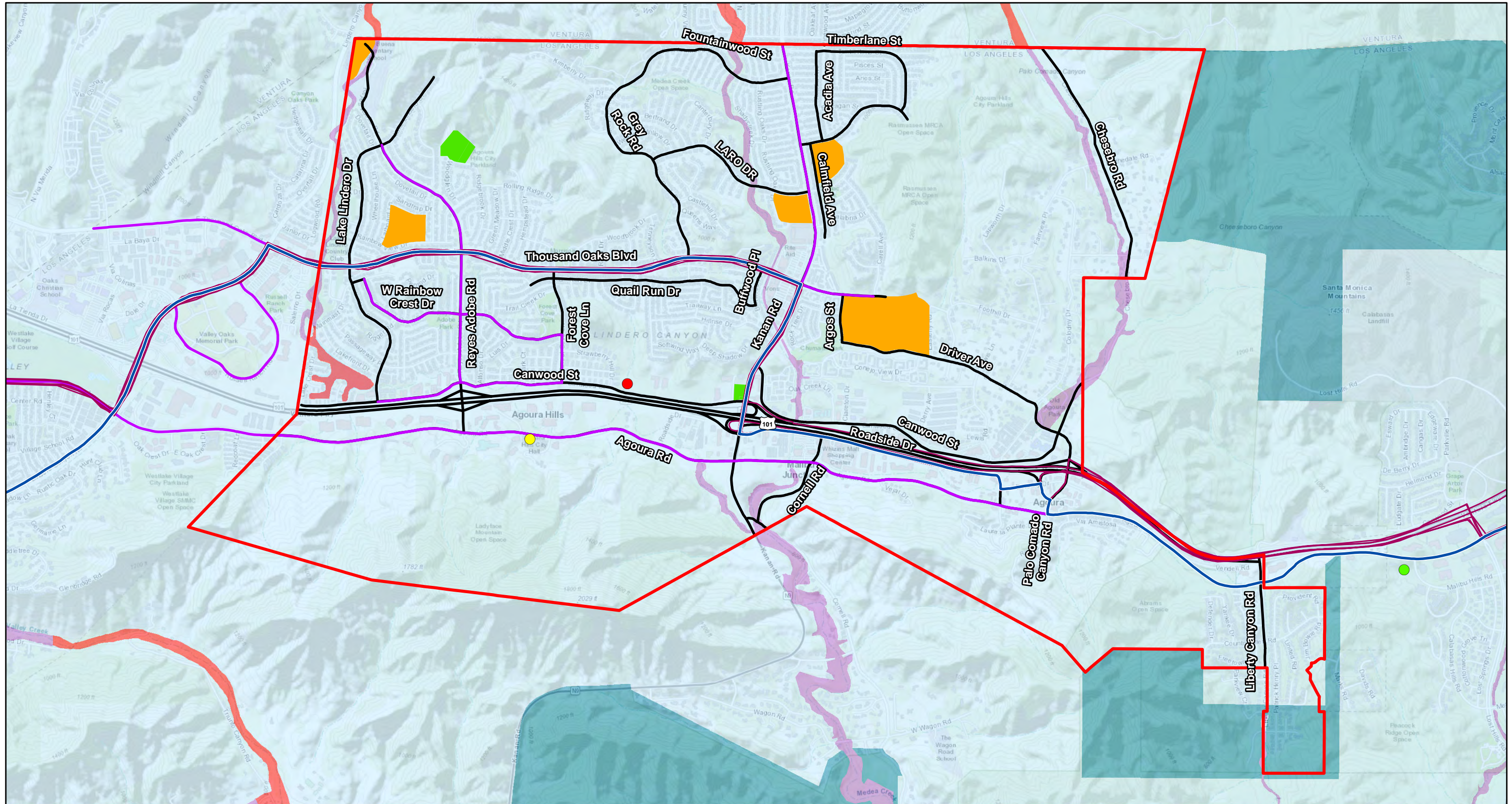
The majority of Agoura Hills is located within Zone X, which has a moderate to low potential for flooding. However, as the Agoura Hills population continues to grow and more residential and commercial structures are built, this could potentially put more people at risk if growth occurs within flood zones. As Figure 13 shows, while the majority of public transit and bicycle routes are not located within Zones A and AE, if access was prevented due to flooding, those dependent on alternative





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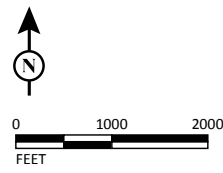




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|-------------------------|-------------------|--|
| City Boundary | School (SH) | FEMA FIRM and Flood Hazard Area
X (= areas outside 1% annual chance or 1% chance with depths less than 1 ft, drainages less than 1 sq mi, or levee protected areas) |
| Bikeways | Utility (U) | A (= 1% annual chance) |
| Commuter Express Routes | Fire Station | AE (= 1% annual chance determined by detailed methods) |
| Major Roadways | Government Office | D (= unstudied areas, hazards undetermined but possible) |
| Metro Bus Line | Sheriff's Office | |



SOURCE: ESRI (2016); Los Angeles County Metropolitan Transportation Authority (2017), FEMA (2017)

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FIGURE 11



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modes of transportation (e.g., older adults and some low-income residents) could also be disproportionately affected since these transportation options would be limited. There are residences along the shores of Lake Lindero, which is designated as Zone A. If it was to flood, it could result in a potential human and environmental health risk.

Agoura Hills has historically been affected by flood events, and climate projections predict more precipitation will be falling as rain than snow. This means that the storm water system will take in larger amounts of water for a single storm event, which increases the potential for flooding to occur. As described above, wildfires are anticipated to increase in Agoura Hills, thus further increasing the amount of water that will enter the storm water system and thereby increasing the potential for flooding.

While no critical facilities are located within flood zone designations with a higher potential to flood, Yerba Buena Elementary School located at northwestern corner of Agoura Hills is in close vicinity of Zones A and AE (higher flood potential zones) and could be potentially affected if flooding occurs.

Another risk to critical facilities and infrastructure is scouring, which is the removal of sediment such as sand and gravel from around bridge abutments or piers. Scouring is caused by swiftly moving water that can scoop out scour holes and compromise the integrity of a structure. The projected increases in rain will make city structures (e.g., roadways, bridges, electric distribution lines, pipelines, and public buildings) more vulnerable to scouring.

As described above, Agoura Hills' open spaces contain significant and endangered plant and animal species. Climate change threatens the ecosystems and habitats of the region's wildlife. Agoura Hills' open space areas encompass steeply sloped hillsides and would be the most vulnerable. Fire is an essential part of California ecosystems, which require extreme temperatures for seed germination, forest clearance, and nutrient supply. However, with future climate changes, the low intensity natural wildfires are likely to be replaced with larger fires that exceed the adaptive capacity. Wildfires are anticipated to increase in Agoura Hills and pose a temporary risk for debris flows and floods from the runoff during storms. Such events could wipe out entire habitats. Open space lands define the character and image of Agoura Hills as well as serving as an important amenity for its residents. Flooding could take away these natural habitats that residents enjoy.

4.2.4 Landslide

Figure 12 shows the landslide hazards located within Agoura Hills. Agoura Hills' landslide hazards almost mirror its wildfire hazards and are predominantly located along Santa Monica Mountains to the south of US Route 101, and the mountainous areas at northwestern and northeastern portion of the City. This is because fires, followed by heavy rain, often result in landslides when the vegetation has burned and soils are left exposed on the surface. Similarly, large areas of the City are located inside the landslide hazard area zones, including three of the five schools (Agoura High School, Sumac Elementary School, and Yerba Buena Elementary School) and one of the two utility plants. Similar to wildfire hazards, the majority of land uses located in landslide hazard areas are relatively low-density uses, but as the Agoura Hills population continues to grow and more residential and commercial structures are built, more people will be at risk.





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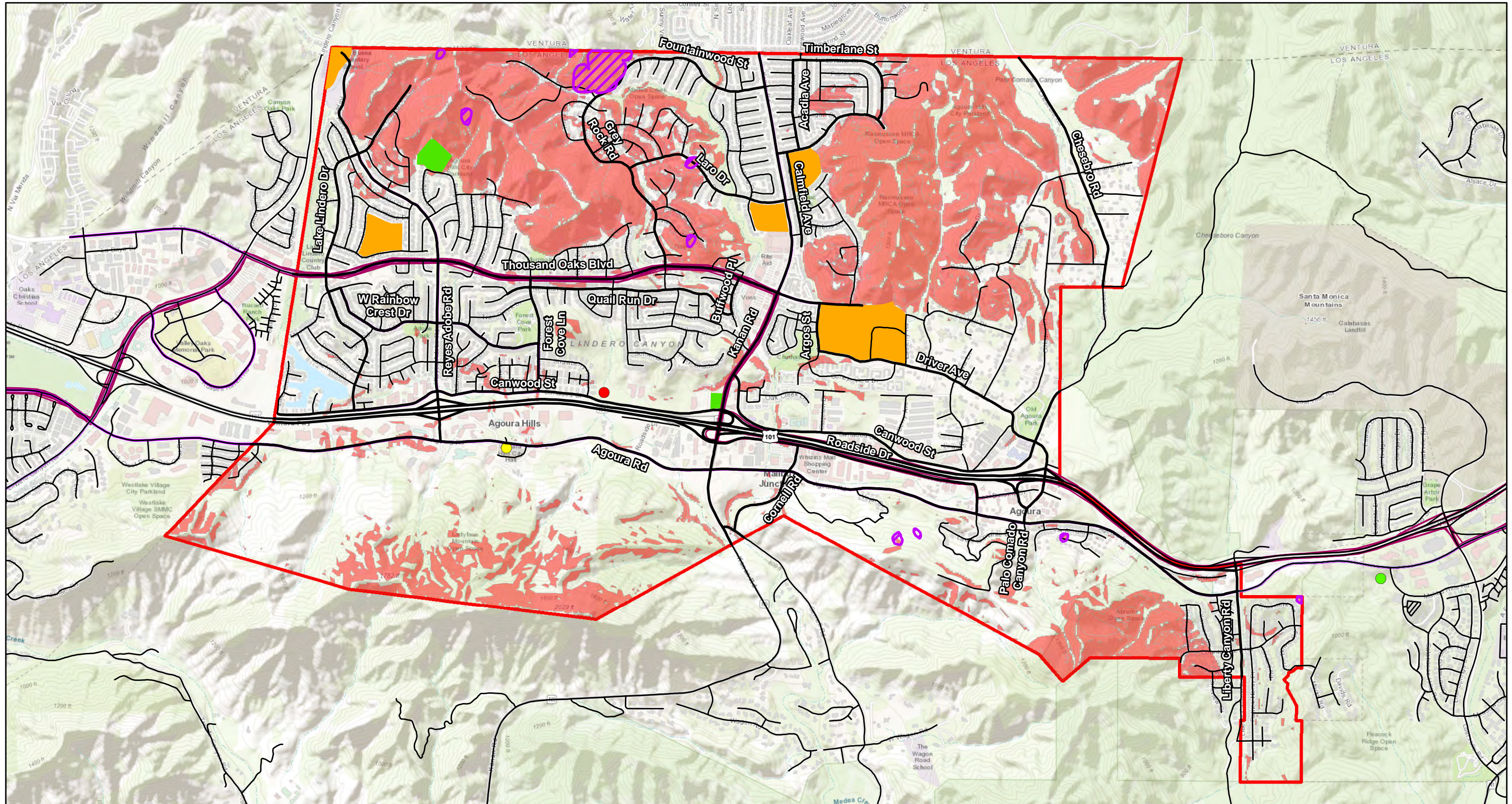


FIGURE 12

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|-------------------------|---------------------|--------------------------|
| City Boundary | Critical Facilities | Landslide Deposits |
| Major Roadways | School (SH) | Soil Slip Susceptibility |
| Minor Roadways | Utility (U) | Very High Susceptibility |
| Bikeways | Fire Station | |
| Commuter Express Routes | Government Office | |
| | Sheriff's Office | |



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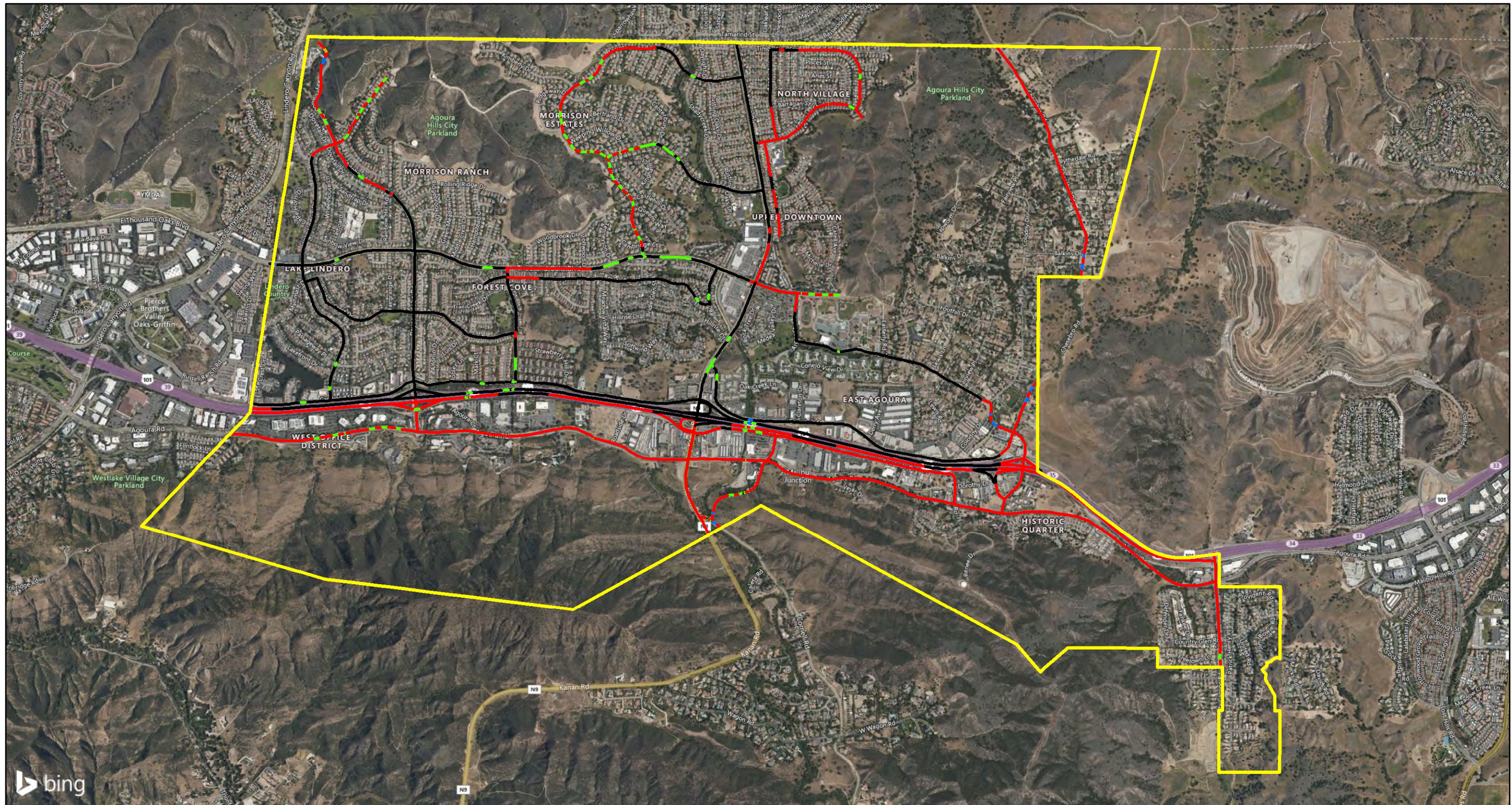
SOURCE: ESRI (2016); Los Angeles County Metropolitan Transportation Authority (2017), CGS (2016)

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- City Boundary
- No Hazard
- Fire Hazard
- Flood Hazard
- Landslide Hazard
- Fire and Landslide Hazard
- Fire and Flood Hazard
- Fire, Flood, and Landslide Hazard



0 1000 2000
FEET

FIGURE 13

City of Agoura Hills Climate
Action and Adaptation Plan
Evacuation Route Constraints

SOURCE: ESRI (2016); Los Angeles County Metropolitan Transportation Authority (2017); FEMA (2017); CGS (2016); Cal Fire (2014)

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4.2.5 Evacuation Route Constraints

The freeway and major roadways within Agoura Hills would potentially be impacted by three types of hazards (i.e., flood, wildfire, and landslide) and therefore should be considered when designating evacuation routes to be used during such hazards. The impacted roadway segments were designated by overlapping freeway and major roadway map with flood zones, very high wildfire hazard severity zones, and landslide hazard zones. The roadway segments that either completely or partially fall within the hazard zones were designated as impacted.² Potential flood hazard zones include Flood Zone A and Zone AE. Zone A represents areas with a 1 percent annual chance of flooding and a 26 percent chance of flooding over the life of a 30-year mortgage. Zone AE is subject to inundation by the 1 percent annual chance flood event where mandatory flood insurance purchase requirements and floodplain management standards apply. Flood Zone X with 0.2 percent or less annual chance or minimal flood hazard is not designated as flood hazard zones. Figure 13 (preceding figure) shows the affected roadways under these three types of hazards. Some roadway segments would potentially be affected by more than one type of hazard, which may or may not happen simultaneously. For example, Thousand Oaks Boulevard east of Kanan Road would be affected by both fire and landslide hazards. Tables M, N, and O provide lists of roadway segments that would potentially be affected under wild fire, flood, and landslide hazards, respectively.

Elevation data were not available, which may refine Figure 12 and Table N to identify which road segments would be affected by potential flood hazards. It is recommended that the City incorporate this information when it is developing flood evacuation routes.

It is important to note that not all fires in the City pose evacuations. The California Office of Emergency Management recently released standard Statewide evacuation terminology, developed in close coordination with public safety partners throughout the state and pursuant to Government Code section 8593.7(a) (9) (CalOES 2020). The effort to create a standard terminology arose from the catastrophic wildfires of 2017 and 2018, which exposed inconsistencies in the terminology that local governments used when informing their residents of the need to evacuate, shelter in place, and to return home. These wildfires demonstrated that, unfortunately, inconsistencies in terminology across jurisdictions often led to confusion among the public at the very moment that clarity and certainty are needed most. The revised California standard Statewide evacuation terminology is presented below:

- **Evacuation Order:** Immediate threat to life. This is a lawful order to leave now. The area is lawfully closed to public access.
- **Evacuation Warning:** Potential threat to life and/or property. Those who require additional time to evacuate, and those with pets and livestock should leave now.
- **Shelter in Place:** Go indoors. Shut and lock doors and windows. Prepare to self-sustain until further notice and/or contacted by emergency personnel for additional direction.

² Note: roadways can be impacted beyond defined hazard zones. Roadways identified in Figure 14 are not necessarily an exhaustive inventory of those that could be impacted.





- **Evacuation Order(s) Lifted:** The formal announcement of lifting evacuations in an area currently under evacuation.
- **Hard Closure:** Closed to all traffic except Fire and Law Enforcement.
- **Soft Closure:** Closed to all traffic except Fire, Law Enforcement and critical Incident resources (i.e. Utility, Caltrans, City/County Roads etc. or those needed to repair or restore infrastructure).
- **Resident only Closure:** Soft closure with the additional allowance of residents and local government agencies assisting with response and recovery.

Table M: Roadway Segments Potentially Affected by Wildfire Fire Hazards

Roadway Segments	Roadway Segments
Arcadia Avenue between Eagleton Street and Barragan Street	Lake Lindero Drive between Kackers Lane and Reyes Adobe Road
Agoura Road within City Boundary	Laro Drive between Grey Rock Road and Bertrand Drive
Argos Street between Thousand Oaks Boulevard and Valley Heights Drive	Lewis Road between Agoura Road and Roadside Drive
Calmfield Avenue south of Eagleton Street	Liberty Canyon Road within City Boundary
Canwood Street between Colodny Drive and Driver Avenue	Palo Comado Canyon Road between Driver Avenue and Agoura Road
Chesebro Road within City Boundary	Quail Run Drive between Forest Cove Lane and Laurel Bluff Plaze
Cornell Road within City Boundary	Reyes Adobe Road North of Rainbow Hill Road
Driver Avenue between US Route 101 Ramps and Fairview Plaza	Roadside Drive within City Boundary
Driver Avenue between Easterly Road and Argos Street	Thousand Oaks Boulevard between Middle Crest Drive and Grey Rock Road
Eagleton Street East of Kanan Road	Thousand Oaks Boulevard East of Kanan Road
Forest Cove Lane between Thousand Oaks Boulevard and Quail Run Drive	Timberlane Street between Pinewood Avenue and Eagleton Street
Fountainwood Street between Ridgeway Drive and Kerryhill Court	US Route 101 Southbound within City Boundary
Grey Rock Road between Ridgeway Drive and Thousand Oaks Boulevard	US Route 101 Northbound between City Boundary and Reyes Adobe Road
Kanan Road south of US Route 101	US Route 101 Northbound between Palo Comado Canyon Road and Liberty Canyon Road

Kanan Road between Thousand Oaks Boulevard and Laro Drive

Source: Compiled by LSA Associates, Inc. (2020).





Table N: Roadway Segments Potentially Affected by Flood Hazards

Roadway Segments	Roadway Segments
Canwood Street between Kanan Road and Clareton Drive	Driver Avenue between Colodny Drive and Chesebro Road
Chesebro Road between Driver Avenue and City Boundary	Kanan Road between Cornell Road and City Boundary
Chesebro Road between Balkins Drive and City Boundary	Reyes Adobe Road North of Lake Lindero Drive
Cornell Road between Kanan Road and City Boundary	Thousand Oaks Boulevard between Lake Lindero Drive and City Boundary

Source: Compiled by LSA Associates, Inc. (2020).

Table O: Roadway Segments Potentially Affected by Landslide Hazards

Roadway Segments	Roadway Segments
Agoura Road between Reyes Adobe Road and City Boundary	Lake Lindero Drive North of Reyes Adobe Road
Agoura Road between Ladyface Court and Kanan Road	Laro Drive between Grey Rock Road and Greenbriar Court
Buffwood Plaza between Quail Run Drive and Kiva Court	Liberty Canyon Road between Country Glen Road and City Boundary
Canwood Street between Forest Cove Lane and Robles Lane	Quail Run Drive between Buffwood Plaza and Rock Creek Road
Cornell Road between Kanan Road and Agoura Road	Reyes Adobe Road North of Lake Lindero Drive
Driver Avenue between Argos Street and Easterly Road	Roadside Drive between US Route 101 Southbound Ramps and Cornell Road
Eagleton Street between Acacia Glen Street and Barragan Street	Thousand Oaks Boulevard between Forest Cove Lane and Middle Crest Drive
Forest Cove Lane between Canwood Street and Strawberry Hill Drive	Thousand Oaks Boulevard between Buffwood Plaza and Silver Valley Avenue
Fountainwood Street between Kimberly Drive and Imbler Court	Thousand Oaks Boulevard East of Argos Street
Fountainwood Street between Germania Court and Shadycreek Drive	Timberlane Street between Quaint Street and Barragan Street
Grey Rock Road between Ridgeway Drive and Thousand Oaks Boulevard	US Route 101 East of Reyes Adobe Road
Kanan Road between US Route 101 Northbound Ramps and Hillside Drive	US Route 101 East of Kanan Road

Source: Compiled by LSA Associates, Inc. (2020).

4.3 ADAPTATION AND RESILIENCY

The City recognizes the need to prepare for the climate change risks described above that would impact the community’s health, safety, quality of life, use of resources, and economy. Preparedness and adaptation efforts seek to reduce vulnerability and increase the local community’s resiliency to these changes. Therefore, this analysis identifies actions to adapt to those changes and build resiliency into the community.





Climate adaptation and resiliency are often discussed together, but it is helpful to distinguish between them. According to the California Governor’s Office of Planning and Research (OPR) publication *Planning and Investing for a Resilient California: A Guidebook for State Agencies* (March 2018), “adaptation is an action or set of actions, and resilience describes the desired outcome” of those actions. In the same publication, OPR provides the following definitions:

Adaptation to climate change refers to adjustment in natural or human systems in response to actual or expected climate effects, which moderates harm or exploits beneficial opportunities.

Resilience is the capacity of any entity—an individual, a community, an organization, or a natural system—to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from a disruptive experience.

Using these definitions, this analysis recommends adaptation measures designed to address the climate change impacts discussed above in order to increase the City’s resiliency to the various climate change stressors (e.g., increase in the severity of droughts, extreme heat days, wildfires, flooding, and extreme weather events).

The following provides recommended adaptation measures for each of the climate change risks.

4.3.1 Adaptation to the Impacts of Wildfire

Climate change is expected to increase the impacts associated with extended droughts by increasing the frequency and intensity of wildfires. Because the City of Agoura Hills is expected to experience an increase in the number and intensity of wildfires, the following adaptation measures should be considered.

- **Adaptation Measure 4-1:** Develop a fire management plan through the following actions:
 - Map fire fuel load buffer zones within the wildland/urban interface (WUI) using the map in Figure 10 of this document to assist in the delineation of the WUI.
 - Conduct site assessments of the WUI to determine fire fuel loads, and develop prescriptive actions to reduce fuel loads and manage loads into the future.
 - Fire frequency is important factor in determining fuel load development. The rate at which combustible material is able to accumulate significantly affects the period between burns. A land management plan must be identified and implemented for the reduction of fuel loading. There are several land management best practices for fuel modification and reduction of fuel loading such as land mammal use, mechanical modification, and prescribed fire.
 - The high-risk fire danger days should be identified and communicated for the City and population information distribution.
 - Existing Statewide fire hazard mapping provides California Fire Hazard Severity Zone Maps that indicate which areas have the greatest probability and intensity of potential wildfire. The maps are divided into three zones (Moderate, High and Very High), reflecting the





estimated hazard. These codes regulate how structures are constructed and what materials need to be used to limit likelihood and ease of ignition. Locally, these maps could be used to identify areas where homes could be retrofitted for fire resiliency or new fire resistant home construction. These maps are used by the State to apply California Building Code, which requires homes be built to certain fire-safe standards

- **Adaptation Measure 4-2:** Map neighborhoods and critical facilities that could be more vulnerable to the effects of wildfire by identifying high-risk areas of the City. Begin this process by:
 - Using the map on Figure 10 to identify neighborhoods that could be more vulnerable to the effects of wildfire and critical facilities that are at high risk within the City.
 - Developing emergency preparedness plans for the high-risk areas within the City. These plans should identify facilities critical in providing adequate emergency response, including police and fire department command and control facilities. Provide secondary back-up facilities for those that are located in an area identified as areas of high wildfire risk as shown on Figure 10.
- **Adaptation Measure 4-3:** Develop an Emergency Evacuation Plan for wildfires through the following actions:
 - Use the maps developed in Adaptation Measure 4-2 and assign wildfire hazard zones within the City. **Share these maps and information on evacuation routes with other local and regional agencies including County Emergency Services and first responders to enable better coordination and response.**
 - Determine the population that would need to be evacuated within each wildfire hazard zone.
 - Use the map on Figure 14 and the list of roadways found in Table M to determine the safe evacuation routes for each of the wildfire hazard zones.
 - Use the defined evaluation routes and population needing to be evacuated for each wildfire hazard zone, and determine the evacuation route capacity and time it would take to evacuate each wildfire hazard zone.
 - Develop an emergency evacuation notification system and initiate criteria to evacuate the wildfire hazard zone areas. Emergency notification system must be unified with cooperators.(e.g., law enforcement, fire, Office of Emergency Management)

Prioritize any roadway improvements that need to be made based upon the assessment of evacuation routes to correct any deficiencies in capacity.

4.3.2 Adaptation to the Impacts of Extreme Heat

Climate change is predicted to increase the number of extreme heat days within the City from 4 days per year currently to 31 days per year by mid-century and 100 days per year by the end of the century. These predictions will significantly affect public health and safety as well as transportation infrastructure that is not designed for this level of heat.

High temperatures are a chronic hazard. Because average temperatures are projected to rise and as the frequency, duration, and intensity of heat waves increase, the entire City is at risk for increased





mortality and morbidity as a result of heat-related illnesses and the intensification of existing chronic health conditions. The following adaptation measures are needed to address public health and safety related to extreme heat:

- **Adaptation Measure 4-4:** Provide Community Cooling Centers:
 - Identify City-owned or operated public facilities (e.g., libraries, community centers, parks and recreational facilities) as potential Community Cooling Centers. Prioritize areas within the City with low-income, elderly, and young populations because these are the populations most severely impacted by extreme heat.
 - Assess the capacity and condition of the air conditioning and ventilation systems of the identified facilities to determine whether they are able to provide adequate cooling during extreme heat days.
 - Develop maintenance and repair plans for the identified cooling centers to ensure the facilities are adequately prepared for extreme heat days.
 - Communicate to the public the locations of the Community Cooling Centers, **Heating Centers, and Changing-of-Electrical-Device Centers.**

- **Adaptation Measure 4-5:** Provide public outreach, education, and engagement pertaining to the risks of extreme heat and preventative measures by implementing the following actions:
 - Communicate heat warning information and appropriate responses to the public (e.g., encourage staying indoors, provide symptom reminders).
 - Encourage citizens and non-profit organizations within the City (church groups, clubs, etc.) to check on their family, friends, and neighbors to ensure they have access to air conditioning.
 - Establish systems such as hotlines to alert public health officials about high-risk or distressed individuals.
 - Inventory where the older, non-mobile single residents live and identify means of providing assistance during extreme events, such as ride to cooling centers as needed.

The following recommended adaptation measures address the impacts of extreme heat on transportation infrastructure:

- **Adaptation Measure 4-6:** Develop an extreme heat transportation management strategy by implementing the following actions:
 - Identify older roadways and bridges within the City that are vulnerable to high heat due to structural buckling and asphalt softening.
 - Implement load restrictions for the older roads and bridges that have been identified as being vulnerable to extreme heat to reduce traffic on vulnerable transportation infrastructure during extreme heat days.





- Establish a communications system to alert the public to the load restrictions of the roadways identified above during extreme heat days.

Provide an engineering assessment of the older vulnerable roadways and bridges identified above and prioritize these roadways for reasonable improvements that can be phased based on budget limitations.

4.3.3 Adaptation to the Impacts of Flooding

Severe drought in combination with projected increases in rain can lead to increased runoff when it does rain, resulting in more extreme flooding.

As described above, the majority of Agoura Hills is located within Zone X, which has a moderate to low potential for flooding. However, as the Agoura Hills population continues to grow and more residential and commercial structures are built, more people could potentially be at risk if growth occurs within the flood zones. The following adaptation measures related to flooding are recommended:

- **Adaptation Measure 4-7:** Restrict land use development within Flood Zones A and AE by implementing the following actions:
 - Restrict new land use development within Flood Zones A and AE.
 - Identify existing land uses within Flood Zones A and AE and provide flooding mitigation, including providing sandbags prior to storm events. Assess properties for flooding vulnerabilities.
- **Adaptation Measure 4-8:** Provide public outreach, education and engagement pertaining to flooding and extreme weather events by implementing the following actions:
 - Communicate flood warning and severe weather event information and appropriate responses to the public (e.g., discourage travel in flood-prone areas and avoid flood control channels).
- **Adaptation Measure 4-9:** Develop an Emergency Evacuation Plan for flooding through the following actions:
 - Using the map on Figure 4-9 and the list of roadways found in Table N, determine the safe evacuation routes to use during flooding events.
 - Using the defined evaluation routes, determine the evacuation route capacity and time it would take to evacuate during a flood or severe weather event.
 - Develop an emergency evacuation notification system and initiate criteria to evacuate the areas of flooding.

Agoura Hills has historically been impacted by flood events, and climate projections predict that more precipitation will be falling as rain. As a result, the storm water system will take in larger amounts of water for a single storm event, which increases the potential for flooding to occur. As described above, wildfires are anticipated to increase in Agoura Hills, thus further increasing the amount of water that





will enter the storm water system and thereby increasing the potential for flooding. While no critical facilities are located within flood zone designations with a higher potential to flood, Yerba Buena Elementary School located at northwestern corner of Agoura Hills is in close vicinity of Zones A and AE (higher flood potential zones), and could be potentially impacted if flooding occurs. Therefore, the following adaptation measure is recommended:

- **Adaptation Measure 4-10:** Determine any roadway and transportation facility improvements needed within the City to address flooding by implementing the following actions:
 - Coordinate with Caltrans to determine the “as built” roadway elevations of US Route 101 to determine if there are any potential flooding issues on the freeway.
 - Using the map in Figure 11, determine the flooding potential of the Metro transit line and coordinate with LA Metro to develop a flood plan, if warranted.
 - Using the map in Figure 11, determine the flooding potential of the bicycle routes within the City and develop a flood plan to address the flooding of these facilities.





5.0 Plan Implementation

This chapter describes implementation steps for the CAAP to support achievement of the energy efficiency and GHG reduction goals for the community at large. Success in meeting the City’s energy efficiency and GHG emission reduction goals will depend on cooperation, innovation, and participation by the City, residents, businesses, and local government entities. This section outlines key steps that the City would follow for the implementation of this CAAP.

Successful implementation of the CAAP will require the following components, which are described in more detail the sections below:

- Administration and Staffing;
- Financing and Budgeting;
- Timelines for Measure Implementation;
- Community Outreach and Education; and
- Monitoring, Reporting, and Adaptive Management.

The steps above are basic steps that any city might take or that other California communities have taken to implement a GHG reduction plan. These are suggested—not required—and are intended to guide a city in its implementation planning.

5.1 Administration and Staffing

The CAAP’s success will require coordination with other regional agencies. The City will work with these agencies and will designate staff to oversee the successful implementation and the tracking of all selected GHG reduction strategies. The City will primarily be responsible for coordinating with contacts across departments to gather data, to report on progress, to track completed projects, and to ensure that scheduling and funding of upcoming projects is discussed at key City meetings. The City may identify one or more staff to act as the Plan Implementation Administrator(s) to guide monitoring, reporting, and dissemination of information to the public. Where possible, the City may use assistants from programs such as CivicSpark, an AmeriCorps program designed to build capacity for local governments to address climate change.

The Administrator could have the following responsibilities:

- Secure long-term financing for the energy efficiency and GHG reduction measures (i.e., grant applications).
- Coordinate CAAP implementation-related meetings.
- Serve as the external communication hub to local and regional climate action organizations, including SCAG.
- Conduct public outreach to inform the community of the City’s reduction planning efforts.





- Investigate methods to use existing resources and harness community support to better streamline implementation of the Plan.
- Monitor implementation of reduction measures and success of the CAAP.
- Develop a protocol for monitoring the effectiveness of emission-reduction programs.
- Establish guidelines for reporting and documenting emission-reduction progress.
- Submit annual reports to the City Council.
- Develop a protocol for using the real-time information collected through the verification process to modify and revise existing reduction programs.
- Track State and federal legislation and its applicability to the City.

In general, the goal in implementing the CAAP is not to create new administrative tasks or new staff positions necessarily, but rather to leverage existing programs and staff to the maximum extent feasible. Cities should seek to fold GHG planning and long-term reduction into their existing procedures, institutional organization, reporting, and long-term planning.

5.2 Financing and Budgeting

Implementation of the local GHG reduction measures may require investment for the capital improvements and other investments, and increased operations and maintenance costs. However, in some cases, operating costs are anticipated to decrease, resulting in offset savings. This section presents a summary of funding and financing options (Table P) available at the time of writing this document. Some funding sources are not necessarily directed toward a city, but to a larger regional agency such as SCAG, or a waste services provider serving multiple jurisdictions. The City should monitor private and public funding sources for new grant and rebate opportunities and to better understand how larger agencies are accessing funds that can be used for GHG reductions in their areas. Leveraging financing sources is one of the most important roles a local government can play in helping the community to implement many of the GHG reduction measures.

In addition to pursuing the funding options above and monitoring the availability of others, the City should take the following steps to best inform decisions related to the cost of GHG reduction measures:

- **Perform and refine cost estimates.** Cost estimates for local reduction measures should be performed to identify the cost-effectiveness of each measure to inform and to guide the implementation process. This analysis will likely be based on a variety of participation, per-unit, and other assumptions. As programs are developed, cost estimates should be refined and updated over time with more precise implementation-level data.
- **Integrate GHG reduction into existing City budget and Capital Improvements Program.** Certain capital improvements may need to be added to the City's Capital Improvements Program (CIP) and facility master plan programs, as well as those of the City utility enterprises and other public agencies that have control for project implementation. For CIPs completely under the City's control, new projects would need to be assessed for consistency with the CAAP.





Table P: Potential Funding Sources to Support GHG Reduction Measures

Funding Source	Description
State and Federal Funds	
Federal Tax Credits for Energy Efficiency	<ul style="list-style-type: none"> ■ Tax credits for energy efficiency can be promoted to residents.
Energy Efficient Mortgages (EEM)	<ul style="list-style-type: none"> ■ An EEM is a mortgage that credits a home’s energy efficiency in the mortgage itself. ■ Residents can finance energy-saving measures as part of a single mortgage. ■ To verify a home’s energy efficiency, an EEM typically requires a home energy rating of the house by a home energy rater before financing is approved. ■ EEMs are typically used to purchase a new home that is already energy efficient, such as an ENERGY STAR®-qualified home.
California Department of Resources Recycling and Recovery (CalRecycle)	<ul style="list-style-type: none"> ■ CalRecycle grant programs allow jurisdictions to assist public and private entities in management of waste streams. ■ Incorporated cities and counties in California are eligible for funds. ■ Program funds are intended to: <ul style="list-style-type: none"> ○ Reduce, reuse, and recycle all waste ○ Encourage development of recycled-content products and markets ○ Protect public health and safety and foster environmental sustainability
California Energy Commission (CEC)	<ul style="list-style-type: none"> ■ CEC has energy efficiency financing options for projects with proven energy savings. These options include 0% interest rate loans for K–12 school districts, county offices of education, State special schools, community colleges, and 1% interest rate loans for cities, counties, special districts, public colleges or universities, public care institutions/ public hospitals, University of California campuses, and California State University campuses. ■ Projects eligible for the CEC energy efficiency financing low interest loans include: <ul style="list-style-type: none"> ○ Lighting system upgrades ○ Pumps and motors ○ Streetlights and light-emitting diode (LED) traffic signals ○ Building insulation ○ Heating, ventilation and air conditioning equipment ○ Water and waste water treatment equipment
California Air Resources Board (CARB)	<ul style="list-style-type: none"> ■ CARB offers several grants, incentives, and credits programs to reduce on-road and off-road transportation emissions. Residents, businesses, and fleet operators can receive funds or incentives depending on the program. ■ The following programs can be utilized to fund local measures: <ul style="list-style-type: none"> ○ Air Quality Improvement Program (Assembly Bill 118) ○ Carl Moyer Program – Voucher Incentive Program ○ Goods Movement Emission Reduction Program (Proposition 1B Incentives) ○ Loan Incentives Program ○ Lower-Emission School Bus Program/School Bus Retrofit and Replacement Account (Proposition 1B and United States Environmental Protection Agency Incentives)
Existing Capital Improvement Program	<ul style="list-style-type: none"> ■ State and federal funds would most likely continue to local governments, builders, and homeowners in the following forms: <ul style="list-style-type: none"> ○ Grants ○ Transportation and transit funding ○ Tax credit and rebate programs





Table P: Potential Funding Sources to Support GHG Reduction Measures

Funding Source	Description
	<ul style="list-style-type: none"> ○ The Capital Improvement Program can be used for measures relating to traffic or transit.
State Funding for Infrastructure	<ul style="list-style-type: none"> ■ The State’s Infill Infrastructure Grant Program may potentially be used to help fund measures that promote infill housing development. ■ Grants can be used for gap funding for infrastructure improvements necessary for specific residential or mixed-use infill development projects.
Transportation-Related Federal and State Funding	<ul style="list-style-type: none"> ■ For funding measures related to transit, bicycle, or pedestrian improvements, the following funding sources from SCAG may be used. <ul style="list-style-type: none"> ○ Sustainability Planning Grant ○ California Active Transportation Program ■ Caltrans Transportation Planning Grant Program provides funding that would lead to programming and implementation of transportation improvement projects. <ul style="list-style-type: none"> ○ Sustainable Communities Grants ○ Strategic Partnerships Grants ○ Adaptation Planning Grants
Utility Rebates	<ul style="list-style-type: none"> ■ Department of Water and Power offers a variety of residential and commercial rebate programs: <ul style="list-style-type: none"> ○ Residential and Commercial Turf Replacement Program ○ Pool/Spa Cover Rebates ○ Rebates for Water-Efficient Devices ○ Recirculating Pump Rebate ○ Free Urinal Flush Valve Upgrades and Installation ■ Southern California Edison is one of the utilities participating in the California Solar Initiative. ■ A variety of rebates are available for existing and new homes. ■ Photovoltaics, thermal technologies, and solar hot water projects are eligible. ■ Single-family homes, commercial development, and affordable housing are eligible.
Energy Upgrade California	<ul style="list-style-type: none"> ■ The program is intended for home energy upgrades. ■ Funding comes from the American Recovery and Reinvestment Act, California utility ratepayers, and private contributions. ■ Utilities administer the program, offering homeowners the choice of one of two upgrade packages—basic or advanced. ■ Homeowners are connected to home energy professionals. ■ Rebates, incentives, and financing are available. ■ Homeowners can receive up to \$4,000 back on an upgrade through the local utility.
Private Funding	
Private Funding	<ul style="list-style-type: none"> ■ Private equity can be used to finance energy improvements, with returns realized as future cost savings. ■ Rent increases can fund retrofits in commercial buildings. ■ Net energy cost savings can fund retrofits in households. ■ Power Purchase Agreements involve a private company that purchases, installs, and maintains a renewable energy technology through a contract that typically lasts 15 years. After 15 years, the company would uninstall the technology or sign a new contract.





Table P: Potential Funding Sources to Support GHG Reduction Measures

Funding Source	Description
	<ul style="list-style-type: none"> On-Bill Financing (OBF) can be promoted to businesses for energy-efficiency retrofits. OBF funding is a no-interest loan that is paid back through monthly utility bills. Lighting, refrigeration, HVAC, and LED streetlights are all eligible projects.
Other Funding Mechanisms for Implementation	
Other Funding	<ul style="list-style-type: none"> Increased operating costs can be supported by grants from the Strategic Growth Council or the State Department of Conservation to fund sustainable community planning, natural resource conservation and development, and adoption.
Future Funding Options: Funding Mechanisms for Capital and/or Implementation Costs	
New Development Impact Fees	<ul style="list-style-type: none"> These types of fees may have some potential to provide funding, but such fees are best implemented when the real estate market and overall regional economic conditions are strong.
General Obligation Bond	<ul style="list-style-type: none"> A general obligation bond is a form of long-term borrowing and could be used to fund municipal improvements.
Assembly Bill (AB) 811 Districts Property-Assessed Clean Energy (PACE)	<ul style="list-style-type: none"> Assembly Bill (AB) 811 is intended to help municipalities accomplish the goals outlined in Assembly Bill 32. The PACE finance program is intended to finance energy and water improvements within a home or business through a land-secured loan, and funds are repaid through property assessments. Municipalities are authorized to designate areas where property owners can enter into contractual assessments to receive long-term, low-interest loans for energy and water efficiency improvements, and renewable energy installation on their property. Financing is repaid through property tax bills. AB 811 and the PACE program are currently on hold for residential properties due to potential violation of standard Federal Housing Finance Agency federally guaranteed (Fannie Mae/Freddie Mac) residential mortgage contracts. The County of Los Angeles has implemented the Home Energy Renovation Opportunity (HERO; a PACE program) in Los Angeles County to assist residents in financing residential energy efficiency and solar retrofits.

HVAC = heating, ventilation, and air conditioning
 SCAG = Southern California Association of Governments

- Adopt or update ordinances and/or codes:** Some local reduction measures may require new or revised ordinances. Staff would need to coordinate these efforts in conjunction with planning departments, planning commissions, and City councils.
- Pursue outside funding sources:** A range of funding from State and federal agencies has been identified. The City would need to pursue these (and other emerging) funding sources as a part of implementation efforts.
- Implement and direct preferred City funding sources:** While City funding sources are limited, the City, when financially able, as a part of its budget process, could appropriate funding from general sources or make changes in its fee schedules, utility rates, and other sources as needed to support funding the implementation of the GHG reduction measures.





- **Create monitoring/tracking processes:** Local reduction measures would require program development, tracking, and/or monitoring.
- **Identify economic indicators to consider future funding options:** Economic recovery may occur rapidly or slowly. Whatever the timeframe, the City would need to determine the point at which certain additional funding sources may become feasible and/or favorable. Identification and monitoring of economic indicators and trends, such as home prices, energy prices, cost per kWh on solar installations, unemployment rates, or real wage increases, can help the City decide when to further explore the potential for funding local reduction measures through different financing mechanisms.

5.3 Timelines for Measure Implementation

After taking into account the reductions in energy and water usage and the GHG emissions resulting from statewide measures, the City would need to implement the local reduction measures to reach its reduction targets.

The City has developed an implementation schedule for the local reduction measures. Prioritization was based on the following factors:

- Cost effectiveness;
- GHG reduction efficiency;
- Availability of funding;
- Level of City control;
- Ease of implementation; and
- Time to implement.

To encourage implementation of all reduction measures, City staff would develop a CAAP Update Implementation Timeline. Measure prioritization could be based on the following factors:

- **Cost/Funding:** How much does the measure cost? Is funding already in place for the measure?
- **Greenhouse Gas Reductions:** How effective is the measure at reducing greenhouse gases?
- **Other Benefits:** For example, does the measure improve water quality or conserve resources? Would it create jobs or enhance community well-being?
- **Consistency with Existing Programs:** Does the measure complement or extend existing programs?
- **Impact on the Community:** What are the advantages and disadvantages of the measure to the community as a whole?
- **Speed of Implementation:** How quickly can the measure be implemented and when would the City begin to see benefits?
- **Implementation Effort:** How difficult will it be to develop and implement the program?





A qualitative appraisal of implementation effort for the City is also provided. Measures can be categorized based on the convention of low, medium, or high, with low-level measures requiring the least level of effort by the City and being the most likely to be pursued immediately. Table Q shows sample criteria.

Table Q: Implementation Matrix

Implementation Effort Level	Sample Criteria
Low	<ul style="list-style-type: none"> ■ Requires limited staff resources to develop. ■ Existing programs in place to support implementation. ■ Required internal and external coordination is limited. ■ Required revisions to policy or code are limited.
Medium	<ul style="list-style-type: none"> ■ Requires staff resources beyond the typical daily level. ■ Policy or code revisions become necessary. ■ Internal and external coordination (e.g., with stakeholders, other cities or agencies, or general public) is necessary.
High	<ul style="list-style-type: none"> ■ Requires extensive staff time and resources. ■ Requires the development of completely new policies or programs and potential changes to the General Plan. ■ Requires a robust outreach program to alert residents and businesses of program requirements and eligibility. ■ Requires regional cooperation and securing long-term funding.

5.4 Community Outreach and Education

Agoura Hills’ citizens and businesses are integral to the success of the CAAP and to overall GHG reduction for the region. Their involvement is essential, considering that several measures depend on the voluntary commitment, creativity, and participation of the community. A CAAP survey was utilized to gather feedback from community stakeholders and residents in order to determine priorities and benefits for the City to focus on while developing the CAAP. The City disseminated the CAAP survey using various social media platforms for the community to contribute. Ninety-one percent of the survey participants were residents of Agoura Hills and the remaining nine percent were community stakeholders who provided valuable feedback. The survey asked a variety of questions including what priorities each participant would like the City to focus on while updating the CAAP. A rating scale of 1 to 5 was used. Each topic shown in Figure 14 received the rating from 1 to 5 regarding the importance of each strategy. The survey highlighted that residents prioritize the following climate change reduction strategies: enhancing resilience to wildfires (approximately 60 percent of respondents ranked it as a high priority), energy efficiency and renewable energy (more than 60 percent of respondents ranked it as a high priority), reduction of fossil fuel use (more than 50 percent of respondents ranked it as a high priority), and water conservation (more than 50 percent ranked it as a high priority).



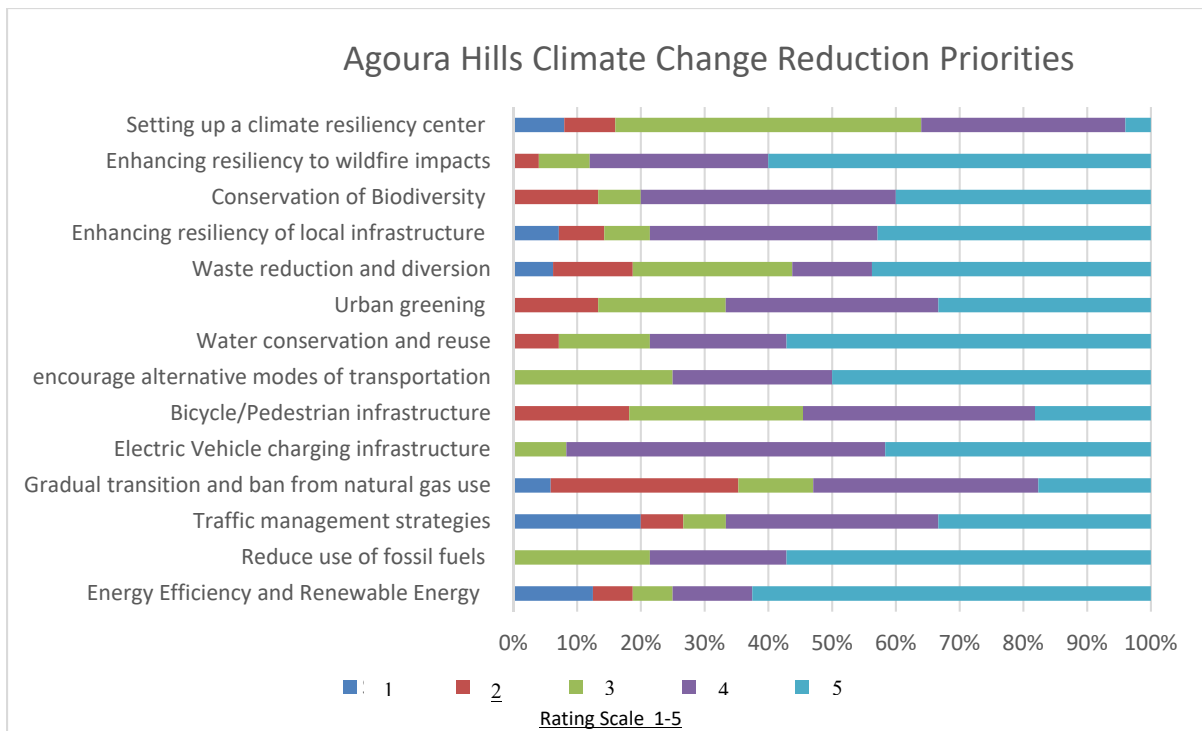


Figure 14: Agoura Hills CAAP Survey: City Residents’ Priorities for Climate Change Reduction

It is important for the City to have a plan that is consistent with the character of the community and that takes into account the community’s needs. There will be a continuous effort to ensure the CAAP will take the community’s needs into account now and in the future. Moving forward, the City would educate stakeholders, such as businesses, business groups, residents, developers, and property owners, about the GHG reduction measures that require their participation, encourage participation in these programs, and alert them to program requirements, incentives, and/or rebate availability, depending on the measure. The City staff would schedule periodic meetings to facilitate formal community involvement in CAAP implementation and adoption over time. This could include focused meetings for a specific measure or program such as **the public and private energy efficiency and clean energy loan programs PACE program** and/or agenda items at City Council or other public meetings. These meetings would be targeted to particular stakeholder groups and provide information on CAAP implementation progress as well as the implementation of a specific program or new policy. Alternatively, periodic written updates could be provided in City newsletters, SCAG’s newsletter, on the City website, or through other media communications with the public, such as press releases and public service announcements. Stakeholders would be provided an opportunity to comment on potential improvements or changes to the CAAP. The City would also sponsor periodic outreach events to directly inform and solicit the input, suggestions, and participation of the community at large.





5.5 Monitoring, Reporting, and Adaptive Management

Regular monitoring is important to ensure programs function as they were originally intended. Early identification of effective strategies and potential issues would enable the City to make informed decisions on future priorities, funding, and scheduling. Moreover, monitoring provides concrete data to document the City's progress in reducing GHG emissions. The City would be responsible for developing a protocol for monitoring the effectiveness of emission reduction programs as well as for undertaking emission inventory updates:

- **Update GHG Inventory:** The City would update inventory emissions prior to 2030 to ensure it meets its GHG reduction goals. This includes regular data collection in each of the primary inventory sectors (utility, regional VMT, waste, wastewater, and water), and comparing the inventory to the City's baseline GHG emissions in 2008. The City would consolidate information in a database or spreadsheet that could be used to evaluate the effectiveness of individual reduction measures.
- **Track State Progress:** The CAAP will rely heavily on State-level measures. The City would be responsible for tracking the State's progress on implementing State-level programs. Close monitoring of the real gains being achieved by State programs would allow the City to adjust its CAAP, if needed.
- **Track Completion of GHG Reduction Measures:** The City would keep track of measures implemented as scheduled in the CAAP, including progress reports on each measure, funding, and savings. This will allow at least a rough attribution of gains when combined with regular GHG inventory updates.
- **Regular Progress Reports:** The City may report annually (or semi-annually or at other assigned intervals) to the City Council on CAAP implementation progress. If annual reports, periodic inventories, or other information indicates that the GHG reduction measures are not as effective as originally anticipated, the CAAP may need to be adjusted, amended, or supplemented.





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6.0 References

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APPENDIX A

GHG INVENTORY, FORECASTS, AND TARGETS: CALCULATIONS AND REDUCTION MEASURES SUMMARY





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California Greenhouse Gas Inventory for 2000-2017 — by Category as Defined in the 2008 Scoping Plan

	2005	2006	2007	2008	2017
On Road	170.20	169.64	169.64	159.79	155.75
Off Road	3.22	3.32	3.18	2.82	2.73
Wastewater Treatment	1.83	1.84	1.86	1.83	1.86
Residential Natural Gas	25.93	26.55	26.68	26.62	23.62
Commercial Natural Gas	10.92	11.60	11.47	11.14	11.06
Electric Power	107.85	104.53	113.93	120.14	62.39
Recycling and Waste	7.78	7.86	7.94	8.11	8.89
Total	327.73	325.34	334.70	330.45	266.30
		2005-2008 Average		329.56	
		2017 of 2005-2008 Average		19.2%	

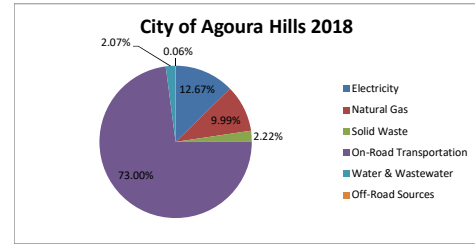
Source: https://ww3.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_sum_2000-17.pdf

2005-2008 average	2020 Target	2030 Target
329.56	280.13	112.05

City of Agoura Hills GHG Inventory

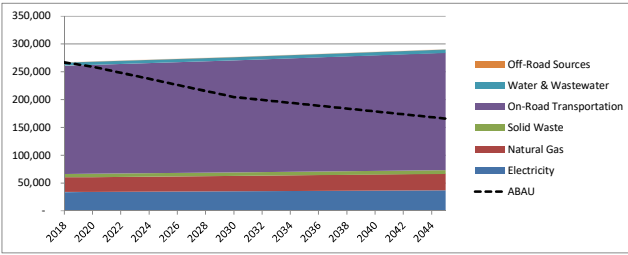
Breakdown of Emissions (BAU)

	2018	2020	2030	2045
Source	MT CO2e	MT CO2e	MT CO2e	MT CO2e
Electricity	33,809	34,007	35,161	36,966
Natural Gas	26,669	26,877	27,807	29,764
Solid Waste	5,932	5,950	6,144	6,447
On-Road Transportation	194,818	195,972	201,846	210,988
Water & Wastewater	5,512	5,529	5,709	5,990
Off-Road Sources	151	155	176	214
Total	266,890	268,490	276,843	290,368



Breakdown of Emissions (ABAU)

	2018	2020	2030	2045
Source	MT CO2e	MT CO2e	MT CO2e	MT CO2e
Electricity	33,809	33,982	21,790	-
Natural Gas	26,669	26,801	27,534	28,578
Solid Waste	5,932	5,950	6,144	6,447
On-Road Transportation	194,818	186,645	145,352	129,933
Water & Wastewater	5,512	5,529	3,850	720
Off-Road Sources	151	155	176	214
Total	266,890	259,061	204,847	165,892



ABAU

Source	2018		2020		Percent Change 2018-2020		2030		Percent Change 2018-2030		2045		Percent Change 2018-2045	
	MT CO2e	MT CO2e	MT CO2e	MT CO2e	MT CO2e	MT CO2e	MT CO2e	MT CO2e	MT CO2e	MT CO2e	MT CO2e	MT CO2e	MT CO2e	
Electricity	33,809	33,982	21,790	0.5%	21,790	-35.5%	0	-100.0%						
Natural Gas	26,669	26,801	27,534	0.5%	27,534	3.2%	28,578	7.2%						
Solid Waste	5,932	5,950	6,144	0.3%	6,144	3.6%	6,447	8.7%						
On-Road Transportation	194,818	186,645	145,352	-4.2%	145,352	-25.4%	129,933	-33.3%						
Water & Wastewater	5,512	5,529	3,850	0.3%	3,850	-30.1%	720	-86.9%						
Off-Road Sources	151	155	176	2.6%	176	16.8%	214	41.9%						
Total	266,890	259,061	204,847	-2.9%	204,847	-23.2%	165,892	-37.8%						

2030 Target	168,445
2030 GAP	36,401
Reduction Measure Potential	
Electric Vehicle Ownership (18%)	26,163
PV Solar (30% Res & Comm)	6,537
Solid Waste Diversion (80%)	3,072
Water Conservation (20%)	770
OffRoad Idle Restrictions	18
All Electric Homes (10% of new)	73
Total Reductions	36,633

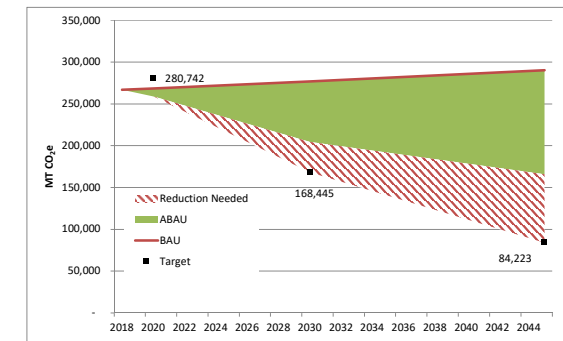
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BAU

Source	2018		2020		2030		2045	
	MT CO2e	MT CO2e	MT CO2e	MT CO2e	MT CO2e	MT CO2e	MT CO2e	
Electricity	33,809	34,007	35,161	0.6%	35,161	4.0%	36,966	9.3%
Natural Gas	26,669	26,877	27,807	0.8%	27,807	4.3%	29,764	11.6%
Solid Waste	5,932	5,950	6,144	0.3%	6,144	3.6%	6,447	8.7%
On-Road Transportation	194,818	195,972	201,846	0.6%	201,846	3.6%	210,988	8.3%
Water & Wastewater	5,512	5,529	5,709	0.3%	5,709	3.6%	5,990	8.7%
Off-Road Sources	151	155	176	2.6%	176	16.8%	214	41.9%
Total	266,890	268,490	276,843	0.6%	276,843	3.7%	290,368	8.8%

Year	2005-2008 Average	Percent below 1990 Emission Levels	Percent below 2005-2008 Emission Levels
2020	330,285	0.0%	15.0%
2021	280,742	4.0%	18.4%
2022	269,513	8.0%	21.8%
2023	258,283	12.0%	25.2%
2024	247,053	16.0%	28.6%
2025	235,824	20.0%	32.0%
2026	224,594	24.0%	35.4%
2027	213,364	28.0%	38.8%
2028	202,134	32.0%	42.2%
2029	190,905	36.0%	45.6%
2030	179,675	40.0%	49.0%
2031	168,445	44.0%	52.4%
2032	162,831	48.0%	55.8%
2033	157,216	52.0%	59.2%
2034	151,601	56.0%	62.6%
2035	145,986	60.0%	66.0%
2036	140,371	64.0%	69.4%
2037	134,756	68.0%	72.8%
2038	129,141	72.0%	76.2%
2039	123,527	76.0%	79.6%
2040	117,912	80.0%	83.0%
2041	112,297		
2042	106,682		
2043	101,067		
2044	95,452		
2045	89,838		
2046	84,223		
2047	78,608		
2048	72,993		
2049	67,378		
2050	61,763		
2051	56,148		

	2008	2018	2020	2030	2045
BAU	330,285	266,890	268,490	276,843	290,368
ABAU			259,061	204,847	165,892
Target (below 1990)			0%	-40%	-70%
Target (below baseline 2008)			-15%	-49%	-75%
Target			280,742	168,445	84,223
Reduction Needed			-	36,401	81,670
Target (below 2018)			5%	-37%	-68%



ABAU	-	(9,429)	(71,996)	(124,476)
Reduction Needed	-	-	(36,401)	(81,670)

City of Agoura Hills Community Reduction Measures

Goal	Measure	Actions	Reduction Drivers				Enhancing Measures	Emission Reduction	
			Total Reductions in 2030 (Base)		Total Reductions in 2030 (With Enhancing Measures)		Participation Rate Boost to Reduction (% of Participation)	Total Reductions 2030	Total Reductions 2030 (With Enhancing)
			kWh	Therms	kWh	Therms	CAP Proposal	MT CO2e	MT CO2e
			(or VMT)		(or VMT)				
Goal 1.	Increase Energy Efficiency in Existing Residential								
	Measure 1.1	Energy Efficiency Training, Education, and Recognition in the Residential Sector	NA	NA	NA	NA	150%	NA	NA
		Actions							
		Post energy efficiency links on website and/or social media and provide materials at public events							
		Set up email list for email blasts of new information or trainings through City's social media, local newspaper etc.							
		Promote an annual energy efficiency fair							
		Promote a energy resource center sponsored by utilities							
		<i>Consider designating Designate an existing staff or a contract staff as an 'energy advocate' to promote and manage energy efficiency programs</i>							
		Update job description contract requirements for building inspectors to hold training semi-annually on energy efficiency and Updated Title 24 standards							
	Measure 1.2	Increase Community Participation in Existing Energy Efficiency Programs	1,440,287	20,291	1,440,287	20,291	NA	454	454
		Actions							
		Partner with SCAG, Council of Government (COG) , SCE, and SoCal Gas for outreach events to promote various energy efficiency rebate programs							
	Measure 1.3	Home Energy Evaluations	NA	NA	NA	NA	100%	NA	NA
		Actions							
		Promote courtesy energy audits such as through Energy Upgrade California an SCE program							
		Consider presenting <i>Present</i> to the City Council for consideration of a residential Energy Conservation and Disclosure Ordinance							
	Measure 1.4	Residential Home Energy Renovations	2,787,972	12,165	2,787,972	12,165	105%	734	734
		Actions							
		Enhance enforcement of Title 24 compliance							
		Promote existing home energy renovation programs-SCE Programs							
		Promote participation in green building programs, such as Leadership in Energy and Environmental Design (LEED) and Energy Upgrade California							
		Promote financing programs for home upgrades, such as Home Energy Renovation Opportunity (HERO) and <i>public and private loans Property-Accessed-Clean-Energy (PACE)</i>							
		Establish online permitting to facilitate upgrades							
		Consider reducing <i>Reduce</i> permit fees for energy efficiency upgrades that qualify for green building programs that exceeds Title 24 standards including Tier 1 and 2 CalGreen voluntary measures or <i>varying levels of LEED goals (i.e. LEED Silver vs. LEED Platinum)</i>							
Goal 2.	Increase Energy Efficiency in New Residential								
	Measure 2.1	Exceed Energy Efficiency Standards	599,135	56,666	599,135	56,666	15%	445	445
		Actions							
		Educate City staff and developers on Title 24 updates and new energy efficiency opportunities for new residential development							
		Promote Tier 1 and Tier 2 green building ratings such as LEED, Build It Green, or Energy Star® certified buildings							
		<i>Consider reducing Reduce permit fees for new energy efficiency opportunities that qualify for green building programs including Tier 1 and 2 CalGreen voluntary measures or varying levels of LEED goals (i.e. LEED Silver vs. LEED Platinum)</i>							
		Establish online permitting to facilitate new energy efficiency opportunities							
		Require all new residential developments proposing two (2) or more dwelling units to achieve 100 percent electrification							
Goal 3.	Increase Energy Efficiency in Existing Commercial Units								
	Measure 3.1	Energy Efficiency Training, Education, and Recognition in Commercial Sector	NA	NA	NA	NA	145%	NA	NA
		Actions							
		Post links on website and/or social media and provide materials at public events							
		Set up email list for email blasts of new information or trainings through City's social media platform, local newspapers etc.							
		Promote an annual energy efficiency fair							
		Promote a resource center							
		<i>Consider designating Designate an existing staff or a contract staff as an 'energy advocate' to promote and manage energy efficiency programs</i>							
		Update job description contract requirements for building inspectors to hold training semi-annually on energy efficiency and Updated Title 24 standards							
	Measure 3.2	Increase Business Participation in Existing Energy Efficiency Programs	2,943,283	28,577	2,943,283	28,577	NA	858	858
		Actions							
		Partner with SCAG, Council of Government (COG) , SCE, and SoCal Gas for outreach events to promote various energy efficiency rebate programs							

	Measure 3.3	Non-Residential Building Energy Audits	NA	NA	NA	NA	100%	NA	NA
	Actions	Promote courtesy energy audits such as through Energy Upgrade California, an SCE program Consider mandating <i>Require</i> energy disclosure for small buildings (5,000–10,000 square feet)							
	Measure 3.4	Non-Residential Building Retrofits	7,329,707	1,072,557	7,329,707	1,072,557	103%	7,464	7,464
	Actions	Enhance enforcement of Title 24 compliance Promote existing non-residential building retrofit programs Promote participation in green building programs, such as California Solar Initiative Promote financing programs, such as <i>public and private loans (PACE)</i> Promote online permitting to facilitate retrofits							
Goal 4.	Increase Energy Efficiency in New Commercial Units								
	Measure 4.1	Exceed Energy Efficiency Standards	504,332	8,796	504,332	8,796	3%	168	168
	Actions	Educate City staff and developers on future Title 24 updates and additional energy efficiency opportunities for new non-residential development Promote Tier 1 and Tier 2 Green Building Ratings such as LEED, Build It Green, or Energy Star® certified buildings Establish online permitting to facilitate new energy efficiency opportunities Provide incentives to developers for all electric commercial development <i>Consider mandates or incentives for developers that provide 100% electrification for new commercial development.</i>							
Goal 5.	Increase Energy Efficiency through Water Efficiency								
	Measure 5.1	Water Efficiency through continued Implementation of SB X7-7	1,163,315	0	1,163,315	0	10%	279	279
	Actions	Post links on website or social media and provide materials at public events Set up email list for email blasts of new information or trainings Require low-irrigation landscaping							
	Measure 5.2	Exceed Water Efficiency Standards	0	0	0	0	63%	0	0
	Actions	Team up with Las Virgenes Municipal Water District to conduct direct outreach to HOA, businesses, and other community groups Promote recycled water for commercial, industrial and multi-family residential landscaping Promote/ incentivise grey water for community uses for new development (for irrigation or construction purposes) Promote rainwater harvesting rebates and demonstrations offered through Las Virgenes Municipal Water District							
Goal 6.	Decrease Energy Demand through Reducing Urban Heat Island Effect								
	Measure 6.1	Tree Planting for Shading and Energy Saving	0	0	0	0	80%	0	318
	Actions	Promote tree planting at plan check for private development (200 trees per year) Work with community to develop a tree-planting committee <i>Consider a mandate for Require</i> projects to preserve native grasslands and plant native plant species where possible Ensure tree planting maintenance by City staff or designee							
	Measure 6.2	Light-Reflecting Surfaces for Energy Saving	97,897	0	156,030	0	60%	23	37
	Actions	Promote cool roofs on the residential, commercial, industrial or office buildings where feasible Promote cool pavements in the City where feasible							
Goal 7.	Decrease GHG Emissions through Reducing Vehicle Miles Traveled								
	Measure 7.1	Alternative Transportation Options	23,836,510		32,536,836		33%	8,353	11,402
	Actions	Work with SCAG, <i>other relevant public agencies, private companies</i> and the community to remove barriers to <i>implementing transportation demand management strategies such as telecommuting</i> and alternative modes of transportation Create a “bike to work day” or “car free zone day” and other sponsored events to promote biking and other non-motorized transportation Create additional active transportation routes from Agoura Hills Transit Center to surrounding residential areas <i>Consider changing Change</i> Zoning Ordinance to reevaluate parking requirement in commercial areas immediately surrounding transit areas. <i>Work with Las Virgenes Unified School District (LVUSD) and other local educational facilities to conduct direct outreach to students, families, staff, teachers, and other community groups regarding electric vehicle charging stations on campus at the Performing Arts and Education Center (PAEC) and alternative modes of transportation other than automobiles</i>							
	Measure 7.2	Develop Bicycle Master Plan to Expand Bike Routes around the City	524,403		524,403		NA	184	184
	Action	Consider adopting the regional bike master plan for the City, where local bike routes could be integrated into the regional plan. Establish a City bicycle advisory committee to facilitate integrating local bike routes into regional plan <i>and promoting more walkability and bike-ability around the city thoroughfares and road networks</i>							
	Measure 7.3	Ride-Sharing and Bike-to-Work Programs within Businesses	21,476,695		21,476,695		NA	7,526	7,526
	Action	Promote ride-sharing and facilitate air district incentives for ride-sharing Provide reserved preferential parking spaces for ride-sharing, carpooling, and ultra-low or zero-emission vehicles Require businesses of a certain size to provide facilities such as bike racks and showers							

Measure 7.4	Electrify the Fleet	62,928,386.00	64,060,620.22	15%	22,052	22,449		
	Actions	Promote electrical vehicle test drives and incentive programs at outreach meetings						
		Team up with Caltrans to conduct direct outreach to local community regarding electric vehicle charging stations at Park-n-Ride lots, and bike and scooter storage locations.						
		Promote neighborhood electric vehicles (NEV)						
		Apply for grants to install e-chargers at public facilities						
		Work with community groups and businesses to install e-chargers						
		Transition the City fleet to zero emission vehicles (ZEVs) by developing an ordinance and timetable for completion						
	Consider incentivizing the installation of EV chargers and hydrogen fueling stations in new or existing gasoline service stations							
	Require new multifamily residential and commercial development to install e-chargers							
Goal 8.	Decrease GHG Emissions through Reducing Solid Waste Generation							
Measure 8.1	Reduce Waste to Landfills	NA	NA	NA	NA	23%	1,500	1,500
	Actions	Team up with Waste Management and other trash haulers to promote conduct direct outreach to HOAs, businesses, multi-family residential and other community groups on waste recycling and diversion in the community						
		Add additional recycling containers in public places where possible						
		For new commercial and residential construction over two DU mandate composting bins for segregating food waste						
		Provide the organics waste collection services to all residents and businesses per the requirements and timeline prescribed in SB 1383						
		Establish a Citywide edible food recovery program						
		Promote a waste reduction, recycling, and composting program						
Goal 9.	Decrease GHG Emissions through Increasing Clean Energy Use							
Measure 9.1	Promote Clean Energy	15,170,639	0	15,170,639	0	65%	3,641	3,641
	Actions	Promote clean energy incentives in the community						
		Consider reducing Reduce permit fees for solar permits with battery backup						
		Encourage solar panels installation on existing residential buildings						
		Encourage solar panels installation on existing commercial buildings and commercial parking lots						
		Encourage energy storage systems installation with solar panels on residential and commercial developments						
		Identify and prioritize City facilities (such as library or recreation center) by 2025 for solar installation and installing battery storage to complement PV generation						
Measure 9.2	Continue Participation in SCE City's Clean Power Alliance Program	0	0	0	0	0%	0	6,537
	Action	Continued participation in the CPA Program with 100% renewable energy goal						

Total: 63,996



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