

# **AGENDA**

## **PUBLIC SAFETY COMMITTEE**

**Adjourned Regular Meeting**  
**Tuesday, September 30, 2014**  
**2 P.M.**

**Laguna Woods City Hall**  
**Council Chambers**  
**24264 El Toro Road**  
**Laguna Woods, CA 92637**

**AGENDA DESCRIPTION:** The agenda descriptions are intended to give notice, to members of the public, of a general summary of items of business to be transacted or discussed. Any person wishing to address the Public Safety Committee on any matter, whether or not it appears on this agenda, may do so under the appropriate section of the agenda. Whenever possible, lengthy testimony should be presented to the Committee in writing (12 copies) and only pertinent points presented orally. Requests to speak to items on the agenda shall be heard at the appropriate point on the agenda; requests to speak about subjects not on the agenda will be heard during the Public Comment section of the meeting.

### **I. CALL TO ORDER**

### **II. ROLL CALL**

### **III. COMMITTEE BUSINESS**

#### **A. El Toro Water District's Drought Response and Water Conservation Efforts**

**RECOMMENDED ACTION:** Discuss and provide input, including input on the El Toro Water District's drought response and water conservation efforts as it relates to the City's Climate Adaptation Plan project.

#### **B. Climate Adaptation Plan**

**RECOMMENDED ACTION:** Discuss and provide input on the development of the City's Climate Adaptation Plan.

### **IV. COMMITTEE MEMBER COMMENTS**

**V. PUBLIC COMMENTS**

**VI. ADJOURN**

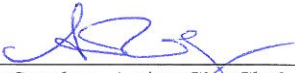
The next regular meeting of the Public Safety Committee will be at 2 p.m. on October 14, 2014, at Laguna Woods City Hall, 24264 El Toro Road, Laguna Woods, CA 92637. Meetings may be cancelled due to a lack of agenda items.

**AMERICANS WITH DISABILITIES ACT:** In compliance with Americans with Disabilities Act, if you need assistance to participate in this meeting, please contact the City Clerk at (949) 639-0500 (Voice) or, TDD (949) 639-0535 or the California Relay Service at (800) 735-2929 if you have a TDD or (800) 735-2922 if you do not have a TDD. Notification 48 hours prior to the meeting should enable the City to make reasonable arrangements to assure accessibility to the meeting.

**AGENDA:** The Public Safety Committee agenda and agenda back-up materials are available from the Office of the City Clerk, after 4:30 p.m., on the Friday prior to the Public Safety Committee meeting. The office of the City Clerk is located at Laguna Woods City Hall, 24264 El Toro Road, Laguna Woods, CA 92637. Copies of the agenda are provided at no cost. Agenda back-up materials are available at City Hall for inspection and copies are available at no charge prior to the meeting. A per page copy cost does apply after the meeting. If you wish to be added to the e-mail or regular mail list to receive a copy of the agenda, a request must be made to the City Clerk in writing. Copies of the agenda are mailed only if stamped, self-addressed envelopes are provided. The City of Laguna Woods mailing address is 24264 El Toro Road, Laguna Woods, CA 92637. Phone: (949) 639-0500, FAX (949) 639-0591.

I declare under penalty of perjury that I posted this notice of agenda at the locations designated by Resolution 02-33.

9/26/2014  
Date

  
\_\_\_\_\_  
Anna Sanchez, Acting City Clerk

**PUBLIC SAFETY COMMITTEE**  
**Meeting Recap**

**Regular Meeting**  
**Tuesday, September 9, 2014**  
**2:00 P.M.**

**Laguna Woods City Hall**  
**Council Chambers**  
**24264 El Toro Road**  
**Laguna Woods, CA 92637**

**I. CALL TO ORDER**

Chair Monin called the meeting to order at 2 p.m.

**II. ROLL CALL**

**Present:** Brauer, Chodash, Horne, Mathews, Monin, Ohrn, Rook, Verrall,  
Watkins

**Absent:** Whitehead

**III. COMMITTEE BUSINESS**

**A. Climate Adaptation Plan**

City Manager Macon provided information on the development of the Climate Adaptation Plan and solicited input on related issues.

Committee members provided the following input:

- El Toro Water District should be asked to provide the Committee with an update on water supply and drought response issues.
- The potential to streamline the City's permitting process for solar (photovoltaic) systems was favorably received.
- Interest was expressed in ensuring that the City's regulations do not require the installation of water intensive trees.

## B. Committee Meeting Schedule

The Committee voted 9-0 to schedule an adjourned regular meeting of the Public Safety Committee for September 30, 2014 at 2 p.m.

## IV. COMMITTEE MEMBER COMMENTS

Member Chodash announced that he will be attending an ASCE meeting on the subject of the Carlsbad desalination plant.

## V. PUBLIC COMMENTS

None

## VI. ADJOURN

The meeting was adjourned at 3:37 p.m.

The next adjourned regular meeting of the Public Safety Committee will be at 2 p.m. on September 30, 2014, at Laguna Woods City Hall, 24264 El Toro Road, Laguna Woods, CA 92637. Meetings may be cancelled due to a lack of agenda items.

**City of Laguna Woods  
Agenda Report**

**DATE:** September 30, 2014 Public Safety Committee Meeting  
**TO:** Honorable Chair and Committee Members  
**FROM:** Christopher Macon, City Manager  
**AGENDA ITEM:** Climate Adaptation Plan

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**Recommendation**

Discuss and provide input on the development of the City's Climate Adaptation Plan.

**Background**

In 2011, the City was awarded a grant of \$250,000 from the State of California's Disaster Recovery Initiative (DRI) for a variety of disaster planning projects. One of those projects is the development of a Climate Adaptation Plan.

**Discussion**

The Climate Adaptation Plan is being developed using guidance provided by the California Natural Resources Agency and the California Emergency Management Agency in order to form a local strategy for adapting to climate changes including, but not limited to, changes with the potential to impact wildfire risk, water supply, public health, public safety, ecosystem function, and economic continuity.

The Public Safety Committee discussed and provided input on the development of the Climate Adaptation Plan at its meetings on December 10, 2013; March 11, 2014; and, September 9, 2014. At today's meeting, the Committee is being asked to provide input on the first three chapters of the draft Climate Adaptation Plan (Attachment A), including background information, key vulnerability findings, and proposed goals, policy objectives, and implementation actions. A complete draft of the Climate Adaptation Plan will be submitted for consideration later this fall.

The City is providing numerous opportunities for public participation throughout the plan development process, including at the following public meetings:

<b>PUBLIC MEETING</b>
Public Safety Committee Tuesday, December 10, 2013 at 2 p.m.
Public Safety Committee Tuesday, March 11, 2014 at 2 p.m.
Public Safety Committee Tuesday, September 9, 2014 at 2 p.m.
Public Safety Committee Tuesday, September 30, 2014 at 2 p.m.
Public Safety Committee Fall 2014 – TBD
City Council (Public Hearing) Fall 2014 – TBD

### **Fiscal Impact**

Costs associated with the Climate Adaptation Plan project will be reimbursed by the State of California's Disaster Recovery Initiative.

### **Conclusion**

Development of a Climate Adaptation Plan will help guide the City's public safety, emergency management, and environmental efforts. The project is grant-funded.

Attachment: A – Draft Climate Adaptation Plan – Volume I/Chapters 1-3 & Bibliography

# CHAPTER 1

## INTRODUCTION

**Climate change is a global phenomenon experienced at the local level. Although Laguna Woods' Mediterranean climate is less subject to extreme weather fluctuations than climates in other parts of California, its unique demographic characteristics (including a population comprised predominantly of older adults on lower than average incomes) make it highly vulnerable to climate change impacts.**

This chapter is intended to provide context for the balance of this Climate Adaptation Plan ("Plan").

### Purpose and Scope

This Plan is intended to establish an approach for the City of Laguna Woods to prepare for a future with evolving and potentially varying climate conditions. In light of the City's well established role with respect to public safety, a particular emphasis was placed on consideration of climate change impacts with the potential to affect wildfire risk, individual wellbeing, public health, and water supply. Environmental interests, including ecosystem function, and matters of economic continuity were also considered during the development of this Plan.

This Plan is not intended to reduce greenhouse gas emissions or assign fault with respect to greenhouse gas generation. Rather, the purpose of this Plan is to help the City thrive in likely future climate conditions, which are projected using scholarly research and information provided by the State of California. Climate adaptation is a strategic planning process that considers how the climate could be different in the future and identifies what the City should do in order to respond to potential climate change impacts. "No-regret" strategies are identified, that will produce public value regardless of how (or if) the climate continues to change.

This Plan is authored by the City and, as such, is limited in scope to areas within the City's jurisdictional control, including its policy and planning framework (e.g., General Plan, Local Hazard Mitigation Plan), regulations (e.g., development and zoning codes), and physical properties (e.g., City Hall, parks, medians, public rights-of-way, and public roadways – portions of El Toro Road, Moulton Parkway, Ridge Route Drive, and Santa Maria Avenue). It is important to note that the City is one small part of a much larger, interconnected, multi-disciplinary and multi-jurisdictional effort required to successfully adapt to climate change.

## Issue Statement

Climate change, for the purpose of this Plan, is defined as the phenomenon of shifts in the global climate as a result of increased concentrations of greenhouse gases in the atmosphere. The most common greenhouse gas is carbon dioxide (CO<sub>2</sub>), but others include methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and various artificial compounds such as chlorofluorocarbons (CFCs) and hydrofluorocarbons (HFCs). Greenhouse gases reflect heat back toward Earth's surface rather than allowing it to escape into space, in much the same way as the glass walls and ceiling of a greenhouse help to keep heat in the building. As the concentrations of greenhouse gases in the atmosphere increase, more heat is trapped, triggering changes in the global climate system (IPCC 2013).

In the last 10 years, California has experienced extreme heat, wildfires, and precipitation in patterns that would not have been expected given the previous 100 years of weather (Cal OES and CNRA 2012; Western Regional Climate Center 2013). Although weather events may be caused by a number of factors, the last decade or more of weather is consistent with the following patterns that are expected as a result of climate change:

- The 10 warmest years on record have all occurred between 1998 and 2014, with the warmest decade on record being 2000 through 2009 (NASA 2014).
- California is currently suffering from one of the worst droughts in its recorded history. As of late February 2014, all of the state was considered to be at least "abnormally dry" and over 90% of California was in a state of "severe," "extreme," or "exceptional" drought. All of Orange County, including Laguna Woods, was in a state of "extreme drought" (National Drought Mitigation Center 2014).
- The number of heat waves and severity of intense storms has increased substantially in the United States, recently, as compared to the past 50-100 years (Environment America Research and Policy Center 2013).

Climate change is a global phenomenon experienced at the local level. There is consensus among the world's climate scientists that even if concentrations of greenhouse gases – whatever the cause – stopped increasing today, the effects of climate change will still be felt for the foreseeable future. If greenhouse gas concentrations continue to rise, the risks posed by the exposures is expected to increase, as well (IPCC 2013).

## Local Setting

### History

Laguna Woods, California occupies approximately three square miles of land that was once a part of South Orange County's expansive Moulton Ranch. Prior to the 1960s, dry farming and cattle grazing dominated the area, with a few scattered ranch dwellings and barns.



In 1962, Ross Cortese, a young developer whose previous projects included Rossmoor and Leisure World Seal Beach, purchased a portion of the Moulton Ranch. His goal was to create a second Leisure World community or, as he said, “to supply the basic needs of life for people aged 52 and older; create a serene atmosphere of beauty; and provide security, recreation, and religious facilities – then leave the living to the individual.” His dream materialized and on September 10, 1964 Leisure World Laguna Hills received its first residents.

The prospect of incorporation first arose in 1971 and was a lingering issue until 1996, when the potential for a reduction in County services and the possibility of a commercial airport at the nearby site of the former Marine Corps Air Station, El Toro, became very real concerns. Proponents of cityhood were successful in gaining the necessary approvals and signatures to place the issue of incorporation on the ballot on March 2, 1999.

On March 24, 1999, Laguna Woods officially became Orange County’s thirty-second city when the five-newly elected members of the City Council were sworn in by Superior Court Judge Francisco F. Firmat.

## Location and physical features

Laguna Woods occupies approximately three square miles of land in Orange County, California and is bordered by the cities of Aliso Viejo, Irvine, Laguna Beach, and Laguna Hills, as well as unincorporated and undeveloped open space owned by the County of Orange and the City of Laguna Beach. Transportation routes near Laguna Woods include the Interstate 5 Freeway (I-5) and State Routes 73 (SR-73) and 133 (SR-133). Portions of SR-73 and SR-133 are operated as toll roads by the Transportation Corridor Agencies. An area map is included as **Figure 1**.

Laguna Woods was developed in a generally flat portion of the Saddleback Valley with the San Joaquin Hills to the west and the Santa Ana Mountains to the east. As a result, the terrain largely consists of gradual and varying slopes, hills, and low-lying areas. Laguna Woods is largely built out with little natural topography remaining.

One of the most significant biological resources in Laguna Woods is Aliso Creek, which begins in the Santa Ana Mountains inside the Cleveland National Forest. The Creek traverses 19 miles to its confluence with the Pacific Ocean in Laguna Beach, transecting the southeastern portion of Laguna Woods for approximately one-half mile.

## Local government

The City of Laguna Woods is a “general law city” with a “Council-Manager” form of local government, meaning that it operates within the parameters of California municipal law with an elected City Council that is responsible for legislative and policy functions. The City Council appoints and supervises a professional City Manager charged with the “day-to-day” responsibilities of managing the City and implementing City Council laws and policy. The City Council also appoints a City Attorney to serve as the City’s legal counsel. The five members of the City Council are residents elected at large by registered voters to four-year terms. Elections are held in even numbered years with two and then three City Councilmembers elected at subsequent elections.

In addition to the City Manager, the City of Laguna Woods has nine full-time and additional part-time staff who are responsible for delivering a full range of municipal services. The City operates as a “contract city” meaning that its small in-house staff leverages the resources of a variety of contract and joint powers organizations to provide efficient and cost effective services. A number of independent special districts, school districts, and public utilities also provide vital services to Laguna Woods residents and businesses.

Figure 1: Laguna Woods Area Map

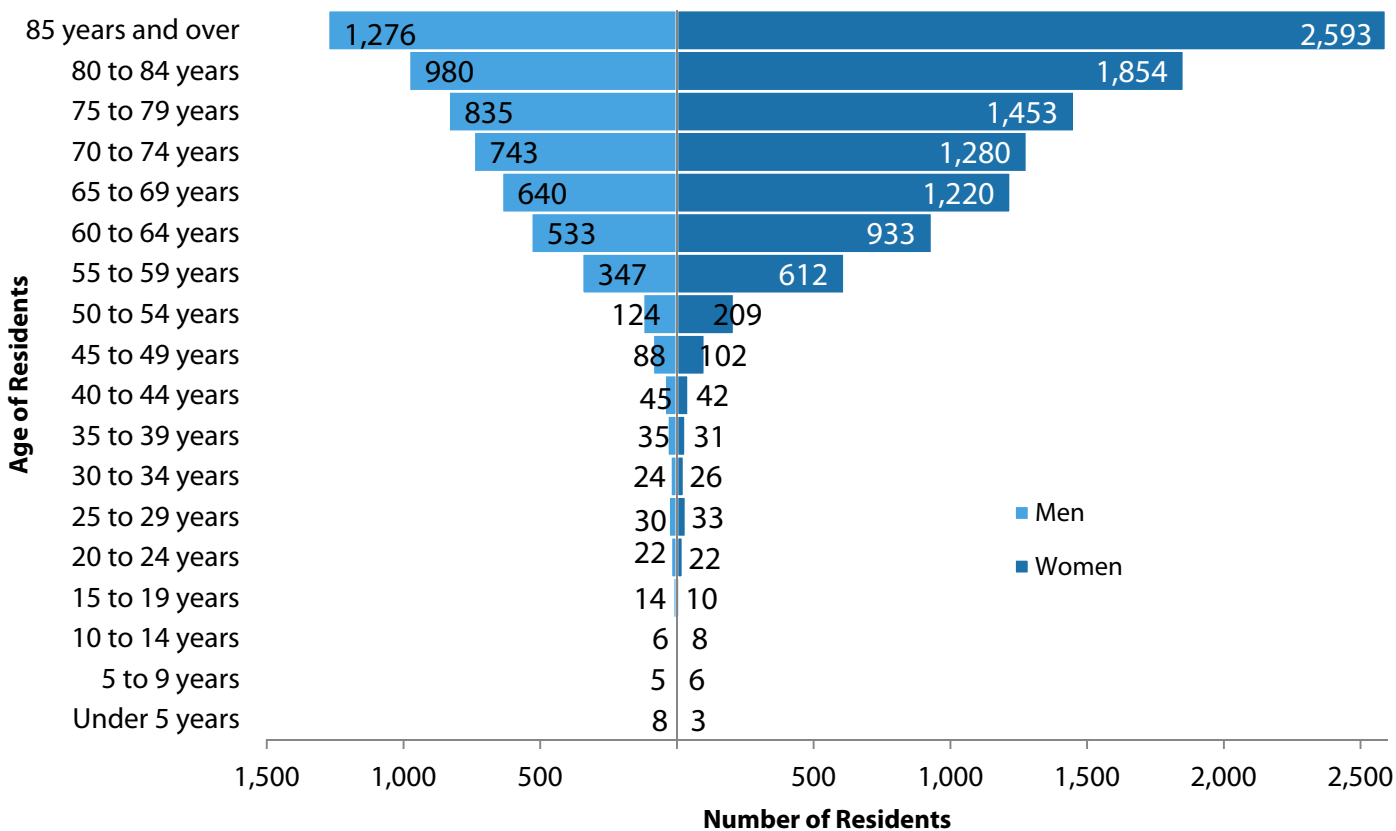
*[forthcoming]*

## Demographics

The 2010 Census reports that 80% of Laguna Woods residents are at least 65 years of age or older; more than half of residents are at least 75 years of age or older; and, roughly one-quarter of residents are at least 85 years of age or older (US Census 2010a). The median age in Laguna Woods is 77 years, more than twice that of Orange County or California (US Census 2010b) and generally consistent with the median age of 78 reported in the 2000 Census.

**Figure 2** depicts the demographic distribution of Laguna Woods residents by both age and gender.

**Figure 2: Laguna Woods Population Pyramid, 2010**

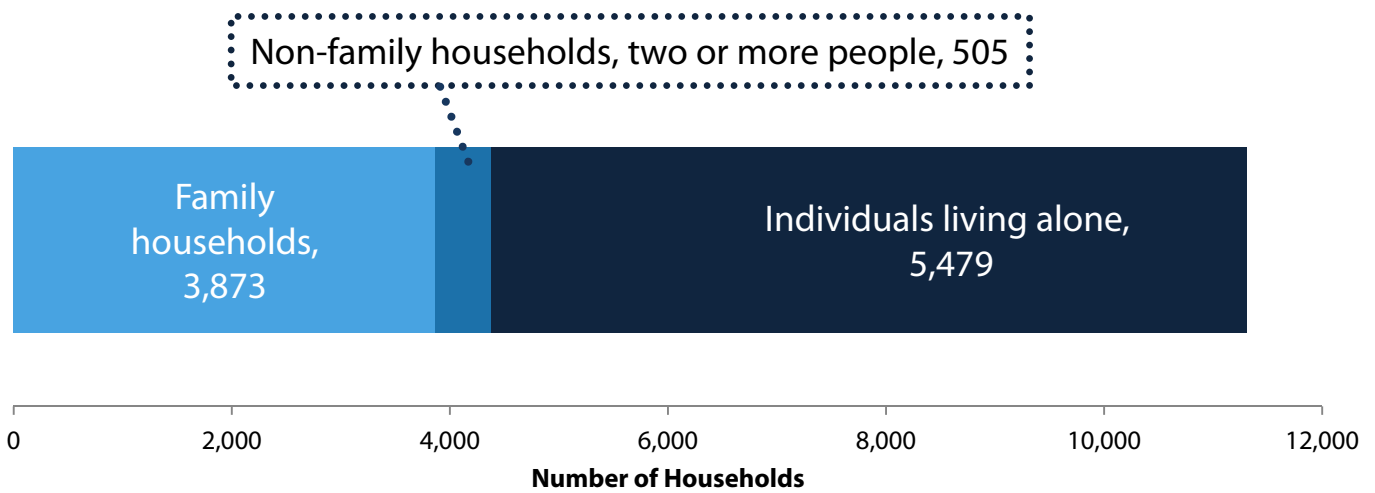


Source: US Census 2010a

The United States Census Bureau’s 2008–2012 American Community Survey reports that 19% of Laguna Woods residents speak a language other than English at home, with 9.3% speaking an Asian or Pacific Island language, 5.8% speaking an Indo-European language, and 3.6% speaking Spanish or Spanish Creole (US Census 2012).

As a community of primarily older adults, a substantial number of individuals live alone in Laguna Woods. **Figure 3** summarizes Laguna Woods’ household composition. For the purpose of reporting, the United States Census defines a household as all persons who occupy a housing unit. Family households are housing units with at least two legally related occupants and non-family households are comprised of entirely unrelated occupants. United States Census data indicates that the composition of family households, non-family households, and households with persons living alone in Laguna Woods remained generally constant between 2000 and 2010.

Figure 3: Laguna Woods Household Types, 2010



Source: US Census 2010a

The United States Census Bureau’s 2008–2012 American Community Survey estimates Laguna Woods’ median household income as \$36,818 per year. As points of comparison, the median household incomes for the State of California and Orange County over the same period of time were \$61,400 and \$75,566, respectively.

Table 1: Household Income Distribution, 2008-2012

	City of Laguna Woods		Orange County	
	Number	Percent	Number	Percent
Less than \$10,000	990	8.6%	40,527	4.1%
\$10,000 to \$14,999	735	6.4%	33,302	3.4%
\$15,000 to \$24,999	2,013	17.5%	71,092	7.2%
\$25,000 to \$34,999	1,719	14.9%	73,346	7.4%
\$35,000 to \$49,999	2,022	17.6%	108,107	10.9%
\$50,000 to \$74,999	1,720	15%	165,063	16.7%
\$75,000 to \$99,999	990	8.6%	132,919	13.4%
\$100,000 to \$149,999	748	6.5%	178,533	18%
\$150,000 to \$199,999	336	2.9%	88,066	8.9%
\$200,000 or more	226	2%	99,311	10%
Total households	11,499	100%	990,266	100%

Source: US Census 2012

Table 2: Median Household Income, 2008-2012

	Median Household Income	Laguna Woods as a Percent
City of Laguna Woods	\$36,818	100%
Orange County	\$75,566	49%
State of California	\$61,400	60%

Source: US Census 2012

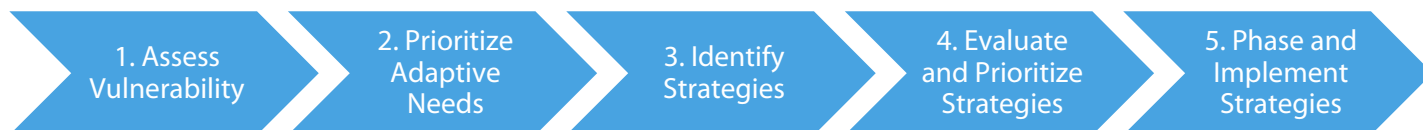
The differences in median household income between Laguna Woods residents and other residents of Orange County and California can be partially attributed to the fact that most Laguna Woods residents are either fully or partially retired with a large portion of their household income consisting of limited or highly variable “non-wage” earnings (e.g., Social Security payments, pension proceeds, retirement investment yields).

Research indicates that nearly half of all retired individuals have less than \$10,000 in total assets in their final year of life (Poterba et al. 2012). As a result, it is reasonable to conclude that individuals in their eighties and nineties may have household incomes significantly lower than Laguna Woods' median household income.

## Adaptation Planning Process

The State of California provides climate adaptation planning guidance to cities and local governments through its California Adaptation Planning Guide (Cal OES and CNRA 2013). The Adaptation Planning Guide process starts with assessing a jurisdiction’s vulnerability to climate change, continues with developing adaptation strategies that directly address that vulnerability, and finishes with an evaluation of strategy success. The process, identified in **Figure 4**, continues as the resultant climate adaptation plan is updated in the future.

Figure 4: Adaptation Planning Process



Source: Cal OES and CNRA 2012

To foster statewide consistency, the planning process used to develop this Plan was aligned with the California Adaptation Planning Guide process, beginning with an assessment of the primary climate change threats facing

Laguna Woods (*Step 1*) and identification of the structures, functions, and populations of Laguna Woods that are expected to be most vulnerable to climate change (*Step 2*). In this Plan, steps 1 and 2 are collectively referred to as the Vulnerability Assessment. A summary of the Vulnerability Assessment’s outcomes is reported in **Chapter 2** of **Volume I** and the complete Vulnerability Assessment can be found in **Volume II**.

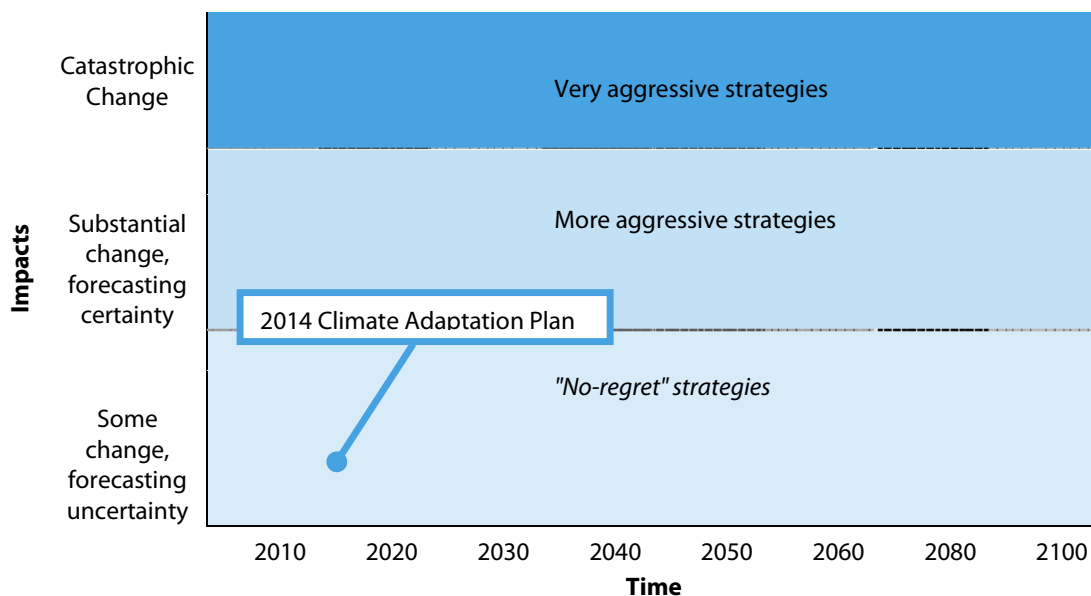
Following completion of the Vulnerability Assessment, adaptation strategies were drafted, including goals, policy objectives, and implementation actions intended to increase Laguna Woods resilience to climate change (*Step 3*). The adaptation strategies were then evaluated for effectiveness, cost, integration with the City’s existing planning framework, and ease of implementation and monitoring (*Step 4*). Information related to the adaptation strategies can be found in **Chapter 3** and **Chapter 4** of **Volume I**.

Following adoption of this Plan by the City Council, the City will begin to implement its adaptation strategies with the goal of demonstrating progress toward achieving each of the implementation actions within five years (*Step 4*). While no statutory requirement exists with respect to the update of climate adaptation plans, the City recognizes significant compatibility and potential for synergy between climate adaptation and hazard mitigation planning processes. Accordingly, the City will complete a comprehensive update of this Plan in conjunction with each comprehensive update of its Local Hazard Mitigation Plan (*Step 5*) (**Implementation Action 3.3.2**).

## “No-regret” strategies

Due to the high degree of uncertainty that exists with respect to local climate change exposures and impacts, this Plan emphasizes “no-regret” strategies that will produce public value regardless of how (or if) the climate continues to change. As science, best practices, and local knowledge improves, the City may consider pursuing more aggressive strategies. **Figure 4** illustrates the City’s “threshold approach” to climate adaptation planning.

**Figure 4: Threshold Approach to Climate Adaptation Planning**



Source: PMC 2014

## Data sources

Due to the technical nature of climate change and its impacts, this Plan's Vulnerability Assessment relies primarily on scholarly research and guidance provided by the State of California. Where there are gaps in those sources, the City uses information from regional entities, such as the Southern California Association of Governments (SCAG); national and international resources, including the federal government and the Intergovernmental Panel on Climate Change (IPCC); and, local stakeholders, particularly with respect to local implications. Data sources are discussed in greater detail in **Volume II** and are listed in the bibliographies for both volumes.

## Academic engagement

Laguna Woods is one of the first non-coastal cities in California to prepare a climate adaptation plan using the California Adaptation Planning Guide. The City provided drafts of this Plan to the California Polytechnic State University professors who were the lead authors of the California Adaptation Planning Guide for the purpose of ensuring that the Plan is academically defensible and technically complete. The drafts were well-received and modifications based on comments from the professors were incorporated throughout this Plan.

## Community engagement

Community engagement efforts throughout the development of this Plan included numerous opportunities for participation, review, and comment by the public and various other interested parties. Opportunities included six public meetings noticed in accordance with the Ralph M. Brown Act (**Table 3**) and one-on-one interviews with 17 stakeholder organizations (**Table 4**) to better understand how climate change could affect each organization's operations and planning efforts; the extent to which climate change is incorporated into existing planning efforts; and, the opportunities and barriers that exist to improving climate change resilience. Input received from community engagement is incorporated throughout this Plan and described more explicitly in **Volume II**.

**Table 3: Public Meetings Conducted**

Meeting	Date
Public Safety Committee	December 10, 2013
Public Safety Committee	March 11, 2014
Public Safety Committee	September 9, 2014
Public Safety Committee	September 30, 2014
Public Safety Committee	XX, 2014
City Council (public hearing)	XX, 2014

Table 4: Stakeholder Organizations Interviewed

Organization	
Age Well Senior Services	Orange County Vector Control District
El Toro Water District	The Regency (residential community)
Laguna Woods Village (residential community)	Saddleback Memorial Medical Center
Orange County Council of Governments	South Coast Air Quality Management District
Orange County Council on Aging	Southern California Association of Governments
Orange County Fire Authority	Southern California Edison
Orange County Health Care Agency	Southern California Water Committee
Orange County Sheriff's Department / Orange County Operational Area	Whispering Fountains (residential community)

## Relationship with Other City Plans

This Plan exists within a broader City planning framework that includes a longstanding emphasis on public safety and environmental issues. The General Plan Safety Element and the Local Hazard Mitigation Plan share significant commonality with this Plan as all seek to increase local resilience to natural hazards. The Local Hazard Mitigation Plan – which forms the foundation of the City’s long-term strategy to reduce disaster losses and break the cycle of disaster, damage, reconstruction and repeated damage – also serves as the City’s Energy Assurance Plan and is further related to this Plan through shared goals of energy conservation, efficiency, and independence.

**Chapter 4 of Volume I** includes a work plan that correlates the goals, policy objectives, and implementation actions of this Plan with the General Plan Safety Element and the Local Hazard Mitigation Plan. As those plans are updated over time, the City envisions that they will become increasingly complementary and aligned to form a comprehensive, long-term vision for progressive public safety and environmental improvement programs within Laguna Woods. Other plans, including the General Plan Conservation, Open Space, and Land Use elements, are also expected to increasingly emphasize climate adaptation issues (**Implementation Action 3.1.1**).



# CHAPTER 2

## VULNERABILITY OUTCOMES

**Climate change could substantially impact Laguna Woods. This Climate Adaptation Plan references projections based on extensive scientific study that provide a reasonable range of potential future conditions (or, “impacts”) to plan for. Each potential climate change impact could affect a variety of structures, functions, and populations (or, “sensitivities”) within Laguna Woods to varying extents. Vulnerability to climate change is based on a number of factors, including the risk of damage and the ability of each structure, function, or population to adjust to a new climate.**

This chapter presents the outcomes of the Vulnerability Assessment. **Volume II** provides a complete description of the process and outcomes of the Vulnerability Assessment, including how climate change could specifically impact Laguna Woods and the structures, functions, and populations that would be most vulnerable.

### Vulnerability Assessment Outcomes

The following outcomes are discussed in **Volume II** and are primary considerations for adaptation strategies:

- **Older adults are extremely vulnerable to climate change impacts.**

Almost one-quarter of Laguna Woods residents (approximately 3,800 residents) are 85 years of age or older (US Census Bureau 2010b) and approximately 56% are 75 years of age or older (US Census Bureau 2010a). Much of the scholarly work that was reviewed for this Plan, related to age and climate change impacts, noted that as individuals age into their eighties, they become more susceptible to those impacts and are less able to adapt on their own (Gamble et al. 2013). Representatives from Age Well Senior Services (a primary social services provider for Laguna Woods residents), the Orange County Council on Aging (a countywide agency formed pursuant to the Federal Older Americans Act), and the Orange County Health Care Agency (the County of Orange’s public health agency) confirmed that at the local level, aging in place – particularly as individuals reach their eighties – drastically increases vulnerability to climate change impacts.

Significant concerns for older adults include limited financial wealth, cognitive impairment, dependence on medications and medical apparatuses, limited access to lifelines, and likelihood of social isolation (Gamble et

al. 2013). Those factors are predictors of vulnerability to climate change exposures including extreme heat and severe weather. Persons 85 years of age and older are also more likely to suffer severe effects of wildfire-caused air quality degradation (e.g., respiratory ailments) and West Nile Virus (e.g., neurologic issues).

In addition to being increasingly vulnerable to climate change exposures, older residents are also more likely to have financial challenges or uncertainty as a result of unexpected medical costs or higher than expected living costs. With approximately 70% of households in Laguna Woods considered extremely low, very low, or low income (City of Laguna Woods 2014), such financial difficulties could be widespread. As climate change leads to potentially higher food prices, as well as higher cost of living prices due to an increased need for heating and cooling, older adults living on fixed incomes are likely to be among the least able to adapt.

- **Extreme heat is the most likely and impactful near-term climate change exposure.**

Extreme heat (heat waves) is the most likely climate change exposure facing Laguna Woods and among the climate change exposures with the highest certainty regarding future changes. Heat waves regularly impact Laguna Woods and those impacts are very likely to become more severe as time passes (Cal OES and CNRA 2012; CEC 2013). Although it appears that a generally adequate social and physical infrastructure is in place to respond to the current level of extreme heat occurrences, public and private resources could be severely strained as the number of occurrences increase. According to State projections, local heat waves are likely to occur much more frequently, from an average of three annually at present, to as many as 17 annually by 2099. Older adults, particularly those 85 years of age or older, are more likely to experience respiratory and/or cardiovascular health complications than younger individuals, and are also more likely to live alone with a fixed income and limited mobility, all of which can exacerbate the risk of extreme heat (Gamble et al. 2012).

- **The built environment provides many challenges and opportunities.**

The built environment of Laguna Woods has several significant adaptation-related features, both positive and negative, some of which can be leveraged to maximize the public value of climate adaptation efforts.

- Laguna Woods is essentially built out and approximately 90% of its housing units are 40 years old or more. Older housing units were not built in conformance with current energy efficiency standards and may be especially vulnerable to climate change exposures such as higher average temperatures and extreme heat. Many of the multi-family housing units were built without individual water meters, which complicates the effectiveness of water conservation efforts.
- The organization of Laguna Woods into distinct private residential communities serves to socially integrate neighbors, but may do so at the expense of citywide social integration. That same community structure, however, presents opportunities to efficiently provide services to vulnerable populations and helps create a centralized communication system for addressing climate adaptation issues.
- The majority of land and infrastructure within Laguna Woods is privately owned, which greatly limits the City's ability to take direct steps to increase the built environment's resilience to climate change. Therefore, the City's adaptation strategies are largely focused on creating a political and regulatory environment that supports climate adaptation and is conducive to efforts being undertaken by private parties.

- Laguna Woods has numerous public and private transportation options, including a multimodal trail system for pedestrians, golf carts, and bicyclists (maintained by the City) and private bus/van services for private community residents, which could provide lifeline resources during emergency events.
  - The El Toro Water District, which provides water and sewer services for the entirety of Laguna Woods, offers and is presently engaged in a significant expansion of its recycled water system. In addition to increasing the community's resource independence by decreasing the demand for imported water, the provision of recycled water creates opportunities to make landscaped areas more resilient to climate change exposures including higher average temperatures, extreme heat, and decreased annual precipitation.
  - Public and private commitments to preventative infrastructure maintenance can help to reduce potential damage from climate change exposures, including wildfires, extreme storms, and high winds.
- **The City and regional partners have already begun climate adaptation work and Laguna Woods is well prepared to continue and expand upon existing efforts.**

Climate change is a local, regional, national, and global issue. Due to the interconnected, multi-disciplinary and multi-jurisdictional efforts required to comprehensively adapt to climate change, an individual city has limited abilities to adapt entirely on its own. In Laguna Woods, the abundance of privately owned property creates a somewhat atypical environment in which the City's ability to effectuate change primarily relates to the incentivization and facilitation of climate adaptation work on the part of third parties.

Climate adaptation-related work occurring locally includes, but is not limited to, the following:

- City of Laguna Woods – The City is committed to comprehensive and forward-looking environmental and public safety planning efforts, as evidenced by the adoption and ongoing implementation of this Plan and the Local Hazard Mitigation Plan (which also functions as the City's Local Energy Assurance Plan). The City is also in the process of updating its General Plan Conservation Element and is expected to begin the process of updating the balance of its General Plan during the 2015-16 fiscal year. The long-term vision and strategy generated by such efforts positions the City well to maintain its services in the face of climate change and provide leadership and opportunities for third-party efforts. In addition to planning efforts, the City:
  - Opens City Hall as a public "cooling center" during extreme heat events;
  - Offers a residential energy efficiency retrofit program for lower income residents, which provides zero-match funding for improvements such as dual pane windows and heat pumps;
  - Enforces the Green Building Standards Code, a water efficient landscape ordinance (conforming to the requirements of Assembly Bill 1881), and other environmentally-oriented State-mandated codes;
  - Maintains and periodically exercises "Point of Dispensing" (POD) emergency plans, which have been successfully used in other jurisdictions to distribute emergency rations of drinking water; and
  - Provides programs intended to support mobility for older adults, including a subsidized transportation program with a particular focus on reduced rates for non-emergency medical transportation, as well as a multimodal trail network that facilitates "walkability," "bikeability," and golf cart travel.

- County of Orange (Orange County Sheriff's Department/Orange County Operational Area and Orange County Health Care Agency) – The County of Orange maintains and periodically exercises an extreme heat response plan and a warning system to inform cities and their residents about public health issues.
  - Orange County Vector Control District – The Vector Control District monitors mosquito habitat and related outbreaks of vector-borne diseases. A particular focus is on tracking the West Nile Virus (a disease spread by mosquitoes, which thrive in warmer climate conditions), and identifying areas where the Virus could spread as a result of potential climate change impacts.
  - El Toro Water District – The El Toro Water District has been active in decreasing Laguna Woods' demand for imported water by enforcing a water conservation ordinance, expanding its recycled water system, and participating in efforts to establish an ocean desalination plant in Huntington Beach. Public outreach and a tiered rate water structure have also contributed to reducing local water consumption.
  - Southern California Edison – Southern California Edison has stated that it is committed to increasing electric generation and transmission capabilities and reliability, while also assisting residents with energy efficiency and conservation. Efforts include a financial assistance program for low-income customers, which helps to make those customers less vulnerable to the detrimental impacts of energy cost fluctuations.
  - The residential communities located within Laguna Woods provide varying degrees of social resources for residents (e.g., networking clubs) and offer a variety of public safety and environmental programs (e.g., the Laguna Woods Village Disaster Preparedness Task Force and mutual board energy committees) that help to increase individual capacities to adapt to climate change. Efforts outside of the private gated community of Laguna Woods Village are considerably less developed and present an opportunity for enhancement.
- **Uncertainty still exists for local climate change exposures and impacts.**

Wildfires, decreased annual precipitation, and high winds are climate change exposures for Laguna Woods; however, long-range regional projections do not currently exist, contradict across models, or have substantial uncertainty attached to them. It is important that the City continue to prepare for the potentially detrimental impacts associated with those exposures, and that it updates this Plan as additional data becomes available.



# CHAPTER 3

## ADAPTATION STRATEGIES

The City will pursue “no-regret” strategies that produce public value – including positive health and safety outcomes – regardless of how (or if) the climate changes over time. Those strategies will also lay the framework for more aggressive strategies as scientific understanding increases over time. The City will focus on reducing vulnerability to extreme heat and other climate change exposures with a public safety nexus, and on reducing Laguna Woods’ dependence on imported water and electricity.

### Adaptation Strategies

#### Goals and Policy Objectives

The planning process described in **Chapter 1** and **Chapter 2** of **Volume I** resulted in the formulation of three goals and eight policy objectives (**Table 5**). Goals are general guidelines that explain the desired outcomes of this Plan, while policy objectives are more specific and define strategies necessary to achieve goals.

Table 5: Climate Adaptation Goals and Policy Objectives

Summary	
<b>GOAL 1</b>	<b>Increase resilience to climate change-related hazards.</b>
Policy Objective 1.1	Maintain low levels of heat-related illness and death.
Policy Objective 1.2	Reduce wildfire impacts.
<b>GOAL 2</b>	<b>Increase resource independence.</b>
Policy Objective 2.1	Maintain electricity reliability and affordability through energy conservation, efficiency, and independence.
Policy Objective 2.2	Maintain potable water reliability and affordability through water conservation, efficiency, and independence.
Policy Objective 2.3	Demonstrate sustainable resource leadership.
<b>GOAL 3</b>	<b>Sustain and advance climate adaptation efforts.</b>

Policy Objective 3.1	Institutionalize climate adaptation as a citywide priority.
Policy Objective 3.2	Develop regional, state, national, and private climate adaptation partnerships.
Policy Objective 3.3	Continually monitor and update this Climate Adaptation Plan.

## Implementation Actions

The planning process described in **Chapter 1** and **Chapter 2** of **Volume I** resulted in the 17 implementation actions described below. Implementation actions are activities, measures, and projects that help to achieve this Plan’s goals and policy objectives. Where applicable, implementation actions have specific metrics and methods for assessing progress. Each of the implementation actions include the following feasibility considerations:

- **ISSUE:** What vulnerabilities or climate change-related issue does the action address?
- **BENEFIT:** What are the positive outcomes of the action?
- **COST:** Are the costs one-time or ongoing? What are the costs of establishing and maintaining the action?
  - Low (less than \$25,000 in estimated staff and capital costs)
  - Medium-low (between \$25,000 and \$49,999 in estimated staff and capital costs)
  - Medium-high (between \$50,000 and \$99,999 in estimated staff and capital costs)
  - High (more than \$100,000 in estimated staff and capital costs)
- **COORDINATION:** What levels of coordination are required to complete the action?
  - Low (little coordination required; action can largely be completed by the City)
  - Medium (some coordination required; action can largely be completed by the City)
  - High (substantial coordination required; City is heavily dependent on others to complete the action)
- **DELIVERABLE:** How will the action be implemented?
- **SUCCESS:** How will the action produce public value?

The City will pursue implementation actions as time and funding permits with the goal of demonstrating progress toward achieving each of the implementation items within five years. The City Council retains the ability to modify or pursue implementation actions in the future at its sole and absolute discretion.

For the purpose of this chapter, references to “staff” are inclusive of staff and independent contractors.

## GOAL 1: Increase resilience to climate change-related hazards.

### Policy Objective 1.1: Maintain low levels of heat-related illness and death.

**Implementation Action 1.1.1: Amend the Emergency Operations Plan to include an Extreme Heat Annex.** The Emergency Operations Plan is the framework for the City’s response to extraordinary emergency situations. Functional annexes (or, “chapters”) are included in the Emergency Operations Plan to describe response efforts with respect to individual hazards (e.g., specific activities related to earthquakes, fires, floods).

The Extreme Heat Annex will be coordinated with the Orange County Operational Area's (OA) Extreme Heat Annex, identify potential cooling centers in Laguna Woods, promote access to regional cooling centers, and consider the needs of individuals with disabilities and access and functional needs.

- **ISSUE:** Extreme heat is Laguna Woods' most likely and impactful near-term climate change exposure.
- **BENEFIT:** Enhanced governmental response to extreme heat events.
- **COST:** *One-time:* Low (staff time to develop annex and seek City Council approval). *Ongoing:* Low (staff time to compile information for futures updates between comprehensive updates, as necessary).
- **COORDINATION:** Medium (coordination with public safety stakeholders).
- **DELIVERABLE:** An Extreme Heat Annex for inclusion in the Emergency Operations Plan.
- **SUCCESS:** Use of the annex to guide response efforts during extreme heat events.

#### **Implementation Action 1.1.2: Adopt development standards to mitigate urban heat island effects.**

The urban heat island effect is a phenomenon in which temperatures in the local climate increase due to certain aspects of the built environment that retain or emit heat to a greater extent than would ordinarily exist in lesser developed areas (e.g., large areas of asphalt and impervious surfaces). The City will consider adopting development standards intended to reduce the solar reflectance and thermal properties of new and significant redevelopment projects. The City will specifically consider the adoption of standards requiring greater use of cool roofs, pervious surfaces, high albedo pavement, and shade over asphalt areas.

- **ISSUE:** Average temperatures may increase over time and extreme heat is Laguna Woods' most likely and impactful near-term climate change exposure.
- **BENEFIT:** Reduction of factors contributing to temperature increases in the local climate.
- **COST:** *One-time:* Low (staff time to prepare development standards and seek City Council adoption). *Ongoing:* Low (staff time to ensure compliance with standards as a part of the development review process).
- **COORDINATION:** Low (review of development standards and best practices from outside organizations).
- **DELIVERABLE:** Development standards to mitigate urban heat island effects.
- **SUCCESS:** Enforcement of development standards to mitigate urban heat island effects.

#### **Policy Objective 1.2: Reduce wildfire impacts.**

##### **Implementation Action 1.2.1: Amend the Emergency Operations Plan to include a Wildfire Air Quality Annex.**

The Emergency Operations Plan is the framework for the City's response to extraordinary emergency situations. Functional annexes (or, "chapters") are included in the Emergency Operations Plan to describe response efforts with respect to individual hazards (e.g., specific activities related to earthquakes, fires, floods). The City will develop a Wildfire Air Quality Annex to address emergency communication, public information, protective measures, and other matters related to degraded air quality caused by local or regional wildfires.

- **ISSUE:** Degraded air quality is an impactful secondary effect of wildfires, which may become an increasing local threat as a result of climate change.
- **BENEFIT:** Enhanced governmental response to degraded air quality events.
- **COST:** *One-time:* Low (staff time to develop annex and seek City Council approval). *Ongoing:* Low (staff time to compile information for future updates between comprehensive updates, if necessary).
- **COORDINATION:** Medium (coordination with public safety stakeholders).
- **DELIVERABLE:** A Wildfire Air Quality Annex for inclusion in the Emergency Operations Plan.
- **SUCCESS:** Use of the annex to guide response efforts during degraded air quality events caused by local or regional wildfires.

**Implementation Action 1.2.2: Review and amend landscape and property maintenance standards to continue to mitigate the potential for wildfire propagation into developed areas.** The City will review and amend its landscape and property maintenance standards to further promote best practices related to fire safety and defensible space. The City will specifically consider the adoption of standards requiring the installation of fire resistant plantings; the placement and maintenance of plantings in a manner that provides increased clearance around structures; and, the removal of accumulated plant materials, debris, and other potential wildfire fuels. The City will also consider standards related to mitigating the secondary impacts of wildfires, including erosion and landslides caused by the destruction of slope and hillside vegetation.

- **ISSUE:** Wildfire risk may be exacerbated in Laguna Woods due to both climate change and Santa Ana Wind conditions, which have the potential to transport wildfire embers into developed areas.
- **BENEFIT:** Reduction of factors contributing to the escalation of wildfire risk.
- **COST:** *One-time:* Low (staff time to prepare development standards and seek City Council adoption). *Ongoing:* Low (staff time to ensure compliance with standards as a part of the development review process).
- **COORDINATION:** Low (review of development standards and best practices from outside organizations).
- **DELIVERABLE:** Standards to mitigate the potential for wildfire propagation into developed areas.
- **SUCCESS:** Enforcement of development standards to reduce wildfire risk.

## **GOAL 2: Increase resource independence.**

### **Policy Objective 2.1: Maintain electricity reliability and affordability through energy conservation, efficiency, and independence.**

**Implementation Action 2.1.1: Develop a protocol for monitoring electricity use.** The City will develop a protocol using information from Southern California Edison's annual community electricity reports that will allow it to monitor and more quantifiably address electricity issues. The protocol will establish a local electric



use and generation baseline and be updated every three years to include emergent conditions. In addition, the protocol will be used to assess the success of implementation actions 2.1.2 and 2.1.3.

- **ISSUE:** Strained energy systems are an impactful secondary effect of increased average temperatures and extreme heat, both of which may become increasing local threats as a result of climate change.
- **BENEFIT:** Enhanced information with respect to local electricity-related issues.
- **COST:** *One-time:* Medium-low (staff time to develop protocol, coordinate with Southern California Edison, and generate findings). *Ongoing:* Low (staff time to update every three years).
- **COORDINATION:** Medium (coordination with Southern California Edison).
- **DELIVERABLE:** A protocol for monitoring electricity-related issues.
- **SUCCESS:** Use of the protocol to assess the success of this Plan and inform future updates of this Plan.

**Implementation Action 2.1.2: Streamline development and permitting standards and programs to encourage renewable energy technologies and energy efficiency improvements.** The City will review and amend its development and permitting standards, as necessary, to alleviate regulatory impediments affecting the use or installation of renewable energy technologies and energy efficiency improvements (e.g., photovoltaic systems, weatherization). The City will also consider developing and implementing incentive programs (e.g., fee reductions/waivers, expedited processing).

- **ISSUE:** Strained energy systems are an impactful secondary effect of increased average temperatures and extreme heat, both of which may become increasing local threats as a result of climate change.
- **BENEFIT:** Improved energy reliability, affordability, and independence.
- **COST:** *One-time:* Medium-high (staff time to review/prepare standards, develop/implement programs, and seek City Council adoption; unknown costs associated with resultant deliverables). *Ongoing:* Low (staff time to ensure compliance with standards as a part of the development review process and implement/maintain programs; unknown costs associated with deliverables).
- **COORDINATION:** Low (review of development standards and best practices from outside organizations; public outreach to quantify perceived regulatory impediments, needs, and desires).
- **DELIVERABLE:** Streamlined development and permitting standards and programs to encourage renewable energy technologies and energy efficiency improvements.
- **SUCCESS:** In conjunction with other implementation actions in this Plan and other steps taken by the City, local community, and Southern California Edison, Laguna Woods' grid electricity use decreases 10% below baseline levels and one additional megawatt of renewable energy is installed by 2020 (measured using the protocol established in Implementation Action 2.1.1).

**Implementation Action 2.1.3: Join one or more Property Assessed Clean Energy (PACE) programs.** The City will join one or more PACE programs, as enabled by State law, in order to provide increased options for

residents and businesses to finance renewable energy technologies and energy efficiency improvements. See also Implementation Action 2.2.2 for associated water benefits.

- **ISSUE:** Strained energy systems are an impactful secondary effect of increased average temperatures and extreme heat, both of which may become increasing local threats as a result of climate change.
- **BENEFIT:** Improved energy reliability, affordability, and independence.
- **COST:** *One-time:* Low (staff time to identify programs to join, prepare necessary documentation, and seek City Council approval). *Ongoing:* Low (promotional only; programs are independently administered).
- **COORDINATION:** Low (coordination with program administrators).
- **DELIVERABLE:** Participation in one or more Property Assessed Clean Energy (PACE) programs.
- **SUCCESS:** In conjunction with other implementation actions in this Plan and other steps taken by the City, local community, and Southern California Edison, Laguna Woods' grid electricity use decreases 10% below baseline levels and one additional megawatt of renewable energy is installed by 2020 (measured using the protocol established in Implementation Action 2.1.1).

### **Policy Objective 2.2: Maintain potable water reliability and affordability through water conservation, efficiency, and independence.**

**Implementation Action 2.2.1: Review and amend development and permitting standards to reduce potable water consumption.** The City will review and amend its development and permitting standards, as necessary, to reduce the amount of potable water consumed across all land use patterns. An emphasis will be placed on standards that empower individuals to regulate personal water consumption (e.g., expanded individual water metering) and increase on-site stormwater capture, storage, and reuse (e.g., rain barrels). The City will specifically consider the adoption of water efficient landscape and Low Impact Development (LID) standards, as well as standards included in the Local Government Commission's Ahwahnee Water Principles.

- **ISSUE:** Strained water availability compounded by reductions in annual precipitation are two of Laguna Woods' potentially impactful climate change exposures.
- **BENEFIT:** Improved water reliability, affordability, and independence.
- **COST:** *One-time:* Medium-low (staff time to review/prepare standards and seek City Council adoption). *Ongoing:* Low (staff time to ensure compliance with standards as part of the development review process).
- **COORDINATION:** Low (review of development standards and best practices from outside organizations; coordination with the El Toro Water District).
- **DELIVERABLE:** Development and permitting standards to reduce potable water consumption.
- **SUCCESS:** In conjunction with other implementation actions in this Plan and other steps taken by the City, local community, and El Toro Water District, per-capita potable water use in Laguna Woods decreases 20% below baseline levels by 2020 (calculated pursuant to Senate Bill X7-7).

**Implementation Action 2.2.2: Join one or more Property Assessed Clean Energy (PACE) programs.** The City will join one or more PACE programs, as enabled by State law, in order to provide increased options for residents and businesses to finance water efficiency improvements. See also Implementation Action 2.1.3 for associated energy benefits.

- ISSUE: Strained water availability compounded by reductions in annual precipitation are two of Laguna Woods' potentially impactful climate change exposures.
- BENEFIT: Improved water reliability, affordability, and independence.
- COST: *One-time*: Low (staff time to identify programs to join, prepare necessary documentation, and seek City Council approval). *Ongoing*: Low (promotional only; programs are independently administered).
- COORDINATION: Low (coordination with program administrators).
- DELIVERABLE: Participation in one or more Property Assessed Clean Energy (PACE) programs.
- SUCCESS: In conjunction with other implementation actions in this Plan and other steps taken by the City, local community, and El Toro Water District, per-capita potable water use in Laguna Woods decreases 20% below baseline levels by 2020 (calculated pursuant to Senate Bill X7-7).

### **Policy Objective 2.3: Demonstrate sustainable resource leadership.**

#### **Implementation Action 2.3.1: Manage the City's urban forest and landscaping in a changing climate.**

The City will develop and implement an Urban Forestry Management and Landscape Master Plan to adapt the living elements of public property (e.g., street trees, parks, parkways, and medians) to potential climate change impacts. The Master Plan will include a street tree inventory and maintenance guide; water efficient and fire resistant plant palates; methodology for reducing energy and water consumption; and, approach to mitigating urban heat island effects. The Master Plan will specifically consider opportunities to remove turf, retrofit irrigation systems, increase shade over asphalt areas, and enhance preventative maintenance.

- ISSUE: The City's urban forest and landscaping is threatened by numerous potentially impactful climate change exposures, including increased average temperatures; extreme heat; wildfires; and, strained water availability compounded by decreased annual precipitation.
- BENEFIT: Reduction of factors contributing to temperature increases in the local climate; improved energy and water reliability, affordability, and independence; and, long-term sustainability of City property.
- COST: *One-time*: Medium-high (staff time to develop plan and seek City Council approval). *Ongoing*: Low (staff time to implement/maintain plan; unknown costs associated with resultant deliverables).
- COORDINATION: Low (review of plans, standards, and best practices from outside organizations).
- DELIVERABLE: An Urban Forestry Management and Landscape Master Plan.
- SUCCESS: Reduction of City property contributions to urban heat island effects; and

In conjunction with other implementation actions in this Plan and other steps taken by the City, local community, and Southern California Edison, Laguna Woods' grid electricity use decreases 10% below baseline levels and one additional megawatt of renewable energy is installed by 2020 (measured using the protocol established in Implementation Action 2.1.1); and

In conjunction with other implementation actions in this Plan and other steps taken by the City, local community, and El Toro Water District, per-capita potable water use in Laguna Woods decreases 20% below baseline levels by 2020 (calculated pursuant to Senate Bill X7-7).

**Implementation Action 2.3.2: Develop and implement municipal renewable energy technology and energy efficiency improvement projects.** The City will consider developing and implementing projects to expand the use of renewable energy technologies and enhance the energy efficiency of City structures and operations [e.g., photovoltaic systems, weatherization, anaerobic digestion opportunities for organic matter, energy management systems, and Low Emitting Diode (LED) conversion of street light fixtures]. Metrics will be made available to the public quantifying positive outcomes to the extent practicable.

- **ISSUE:** Strained energy systems are an impactful secondary effect of increased average temperatures and extreme heat, both of which may become increasing local threats as a result of climate change. The City's ability to provide critical emergency and non-emergency services is also threatened.
- **BENEFIT:** Improved energy reliability, affordability, and independence; heightened awareness of energy-related matters; and, long-term sustainability of public property.
- **COST:** *Ongoing:* High (staff time to develop/implement projects and seek City Council approval; unknown costs associated with deliverables).
- **COORDINATION:** Medium-low (review of projects and best practices from outside organizations; regional or larger-scale projects would likely involve multiple stakeholders and require increased coordination).
- **DELIVERABLE:** Municipal renewable energy technology and energy-efficiency projects.
- **SUCCESS:** Electricity use by City properties has fallen 10% by 2020, compared to 2010 levels; and

In conjunction with other implementation actions in this Plan and other steps taken by the City, local community, and Southern California Edison, Laguna Woods' grid electricity use decreases 10% below baseline levels and one additional megawatt of renewable energy is installed by 2020 (measured using the protocol established in Implementation Action 2.1.1).

**Implementation Action 2.3.3: Provide and facilitate public education opportunities regarding energy and water conservation, efficiency, and independence.** The City will collaborate with Southern California Edison, the El Toro Water District, and other stakeholders to ensure that a broad array of opportunities for energy and water-related education are made available to residents and businesses. The City will specifically advocate for the use of diverse media that is responsive to local demographics (e.g., print, audio/visual, and online materials available in multiple languages and optimized for older adults and individuals with access and functional needs), as well as messaging that empowers individuals to make positive change, while also

underscoring the interrelation of environmental, public safety, and economic (cost-benefit) impacts. Energy and water-related audit programs will also be emphasized to drive informed decision making.

- **ISSUE:** Strained energy systems are an impactful secondary effect of increased average temperatures and extreme heat, both of which may become increasing local threats as a result of climate change. Strained water availability compounded by reductions in annual precipitation are two of Laguna Woods' potentially impactful climate change exposures.
- **BENEFIT:** Improved energy and water reliability, affordability, and independence; heightened awareness of energy and water-related matters.
- **COST:** *Ongoing:* Low (staff time to provide/facilitate public education opportunities).
- **COORDINATION:** High (coordination with Southern California Edison, El Toro Water District, and others).
- **DELIVERABLE:** A broad array of energy and water-related public education opportunities that are widely accessible by all segments of Laguna Woods' populations.
- **SUCCESS:** Incrementally higher numbers of individuals exposed to public education; and

In conjunction with other implementation actions in this Plan and other steps taken by the City, local community, and Southern California Edison, Laguna Woods' grid electricity use decreases 10% below baseline levels and one megawatt of additional renewable energy is installed by 2020 (measured using the protocol established in Implementation Action 2.1.1); and

In conjunction with other implementation actions in this Plan and other steps taken by the City, local community, and El Toro Water District, per-capita potable water use in Laguna Woods decreases 20% below baseline levels by 2020 (calculated pursuant to Senate Bill X7-7).

### **GOAL 3: Sustain and advance climate adaptation efforts.**

#### **Policy Objective 3.1: Institutionalize climate adaptation as a citywide priority.**

##### **Implementation Action 3.1.1: Incorporate climate adaptation into long-range planning documents.**

As a part of routine updates, the City will increasingly address climate change exposures, potential climate change impacts, local vulnerabilities, and other climate adaptation-related considerations in its relevant long-range planning documents (e.g., General Plan, Local Hazard Mitigation Plan).

- **ISSUE:** The City's planning documents generally do not consider climate adaptation.
- **BENEFIT:** Comprehensive long-range strategy to increase resilience to climate change.
- **COST:** *One-time:* Low (incorporation to occur with routine plan updates; staff time to incorporate). *Ongoing:* Low (staff time to compile information for future updates between routine updates, as necessary).
- **COORDINATION:** Medium (coordination with resources beyond those that would ordinarily be required to update plans if climate adaptation issues were not considered).

- DELIVERABLE: Long-range planning documents that consider best available climate information.
- SUCCESS: Increased awareness and consideration of climate adaptation.

## **Policy Objective 3.2: Develop regional, state, national, and private climate adaptation partnerships.**

**Implementation Action 3.2.1: Participate in climate adaptation forums and events.** Climate adaptation is an emerging field in which the City is an early leader, having developed one of the State’s first non-coastal climate adaptation plans and one of the first climate adaptation plans to use the methodology outlined in the California Adaptation Planning Guide. Representatives of the City will attend climate adaptation forums and events, whenever possible, and consider submitting session proposals to share local efforts.

- ISSUE: Climate change is a global problem that necessitates collaborative and integrated adaptation efforts far beyond those that the City is able to independently effectuate.
- BENEFIT: Heightened awareness of the City’s climate adaptation efforts; development of partnerships with outside organizations and stakeholders in pursuit of similar goals; and, increased knowledge of emerging information, data sets, and tools to help guide future climate adaptation efforts.
- COST: *Ongoing*: Low (staff time to participate in forums and events; possible registration fees and travel).
- COORDINATION: Low (participation is at the City’s discretion).
- DELIVERABLE: Participation in climate adaptation forums and events.
- SUCCESS: Enhanced internal capacity to sustain and advance climate adaptation efforts.

**Implementation Action 3.2.2: Support legislation that would assist communities with efforts to adapt to a changing climate.** The City will consider supporting state and federal legislation that, if chaptered into law, would measurably benefit climate adaptation at the local level. The City will specifically consider supporting legislation related to energy and water reliability, affordability, and independence; climate-related emergency planning; and, funding for the development and implementation of climate adaptation plans.

- ISSUE: Local communities exist in an environment that is subject to state and federal laws, which could be enhanced in order to better assist with efforts to adapt to a changing climate.
- BENEFIT: Increased governmental support and resources to pursue climate adaptation efforts.
- COST: *Ongoing*: Low (staff time to identify legislation, interact with legislative offices, and coordinate with other stakeholders; staff time to monitor legislation and respond to changes in status).
- COORDINATION: Medium (coordination with the California League of Cities and other stakeholders).
- DELIVERABLE: Dialogue with legislative offices on matters related to pending or potential legislation.
- SUCCESS: Legislation chaptered into law to assist communities with efforts to adapt to a changing climate; heightened awareness of climate adaptation issues at the state and federal levels.

### Policy Objective 3.3: Continually monitor and update this Climate Adaptation Plan.

**Implementation Action 3.3.1: Conduct annual monitoring of this Climate Adaptation Plan.** The City will prepare and submit an annual monitoring report to the City Council. The annual monitoring report will highlight the status of this Plan's implementation action items; summarize activities and conditions affecting this Plan; and, evaluate the overall effectiveness of this Plan as currently implemented.

- ISSUE: Climate adaptation is an emerging field both locally and at higher levels of government that involves a multitude of changing variables and long-term goals, policy objectives, and implementation actions.
- BENEFIT: Transparency and accountability with respect to the City's climate adaptation efforts, as well as the promotion of informed decision-making and an iterative process of continual improvement.
- COST: *Ongoing*: Low (staff time to prepare reports).
- COORDINATION: Low (internal coordination to compile information).
- DELIVERABLE: Annual monitoring reports.
- SUCCESS: Use of annual monitoring reports to help guide and improve climate adaptation efforts.

**Implementation Action 3.3.2: Update this Climate Adaptation Plan concurrent with the City's Local Hazard Mitigation Plan.** The City recognizes that climate adaptation planning has significant commonality with local hazard mitigation planning efforts, including a focus on resilience to natural hazards. Accordingly, the City will update this Plan every five years, concurrent with statutorily required updates of its Local Hazard Mitigation Plan. In order to align the cycles of both plans, the first update to this Plan will occur with the next update of the Local Hazard Mitigation Plan in late-2017. In the interest of transparency and accountability, City Council adoption of any updates to this Plan will occur following duly noticed public hearings.

- ISSUE: Climate adaptation is an emerging field both locally and at higher levels of government that involves a multitude of changing variables and long-term goals, policy objectives, and implementation actions.
- BENEFIT: Continual improvements to the City's long-term approach to a changing climate; integration with other long-term planning documents resulting in increased efficiency, effectiveness, and economy.
- COST: *One-time*: Medium-high (staff time to prepare update and seek City Council approval).
- COORDINATION: High (coordination with numerous stakeholders).
- DELIVERABLE: An updated Climate Adaptation Plan for a period spanning 2018-2023.
- SUCCESS: Iterative improvement in this Plan's content and approach to climate adaptation.

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