

## Thomas Geisler

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**From:** [REDACTED]  
**Sent:** Sunday, November 20, 2022 9:44 AM  
**To:** Safety Element  
**Cc:** [REDACTED]; Brandi de Garmeaux; Melvin [REDACTED]  
**Subject:** RE: Attached please find questions (and some suggested edits) for the Safety Element from the Sustainability Committee

CORRECTION.....please refer to the list below for the questions we would ask concerning the Safety Element, not the document I sent previously.

Thanks,

Scott

1. What information and policies actually belong in a Safety Element? Is the SE only for immediate safety issues such as storms caused by climate change, or should it also include policies to prevent long-term climate change? Do we want to also focus on reducing GHG emissions as much as possible today to reduce the effects of even more severe climate change in the future?
2. Do water conservation (P-81) and GHG reduction (P-83) actually belong in the Safety element? They seem more suitable for the Sustainability Element?
3. Most policies don't seem specifically related to climate change, but rather generically apply to disaster planning and hazard mitigation. For example, P-79 "Prepare the Town for post-disaster recovery through proactive planning", and many others (P-72, P-73, P-74, P-76, P-77, P-78, P-79). Should these be in other sections such as emergency management instead?
4. Some policies in this section seem very vague compared to other sections. For example, P-72 "Prioritize the needs of vulnerable populations affected disproportionately by hazards and disasters.", among others. Should the policies point to more specific actions that the Town should take?
5. Is it appropriate that the climate description covers SMC broadly rather than PV specifically? For example, "The Coastside area experiences a marine climate...", etc.
6. P-82 calls out San Francisquito Creek, which seems to be an issue for San Mateo County safety rather than PV. Does it belong in our SE? And/or should other PV creeks/issues be included?
7. In A-84-1, why is there a desire to have an independent Climate Adaptation plan, rather than adapting the relevant Safety Element sections for wildfire, flooding, etc.?

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**From** [REDACTED] >  
**Sent:** Saturday, November 19, 2022 7:18 PM  
**To:** safetylement@portolavalley.net  
**Cc** [REDACTED] >; 'Brandi de Garmeaux' <BdeGarmeaux@portolavalley.net>; 'Melvin Gaines' <mgaines@portolavalley.net>  
**Subject:** Attached please find questions (and some suggested edits) for the Safety Element from the Sustainability Committee

## CLIMATE CHANGE ADAPTATION AND RESILIENCE

Climate is the long-term behavior of the atmosphereweather—typically represented as averages—for a given time of year. This includes average annual temperature, snowpack, or rainfall. Human

Emissions of carbon dioxide and other greenhouse gases emissions (greenhouse gases) derived mainly from burning of fossil fuels for energy generation, heating, transportation, and industry and from methane emissions from leaking gas lines and factory farming are

important drivers of global climate change, and recent detrimental changes across the climate system are increasing in intensity and damage. unprecedented. Greenhouse gases trap heat in the atmosphere, resulting in warming the planet over time. This atmospheric warming leads to other changes in the systems of the earthsystems, including changing patterns of rainfall and snow, melting of glaciers and ice, and warming of oceans.

Human-induced climate change is already resulting in many weather and climate extremes in every region across the globe. Evidence of observed changes includes heatwaves, heavy precipitation, droughts, increased wildfires, and hurricanes, and more severe and frequent storms.

Likewise, California and Portola Valley are already experiencing the effects of a changing climate. Both gradual climate change (e.g., sea level rise) and climate hazard events (e.g., extreme heat days) expose people, infrastructure, buildings and properties, and ecosystems to a wide range of stress-inducing and hazardous situations. These hazards and their impacts disproportionately affect the most vulnerable populations, including children and elderly adults, low-income populations, renters, immigrants, and BIPOC residents (as well as insect, animal and plant populations). Many of the climate change projections are compared to the a historic time period from 1961-1990. This time period is considered a target for greenhouse gas reduction and provides a community with a target threshold for greenhouse gas emissions that can be established to determine which future climate mitigation and adaptation actions will contribute to reductions in climate-change-related impacts.

## INCREASING TEMPERATURE

During the last century, average surface temperatures in California and the Bay Area rose steadily. Average minimum and maximum temperatures in San Mateo County rose faster than California. Between 1970 and 2006, the average minimum temperature rose by 1.2°F per decade and the average maximum temperature increased by 0.7°F per decade across the region.<sup>27</sup> Several of the warmest years on record, in terms of annual average temperature, have all occurred since 2000, including 2020, 2018, 2015, 2014, and 2009. In Portola Valley, average January temperatures are currently a maximum of 60°F and a minimum of 37°F. Average July

temperatures are a maximum of 88°F and a minimum of 51°F. They were x degrees in 1970.

Commented [RF1]: When? Today?

Climate change models indicate that temperatures will continue to rise in Portola Valley.

Annual average maximum temperatures are projected to increase between 3.2°F and 4.0°F by mid-century (2035-2064) and between 4.2°F and 7.1°F by end of century (2070-2099). The lower temperature bound assumes that greenhouse gas emissions peak by 2040 and then decline (medium emissions scenario); the higher temperature bound assumes that global greenhouse gas emissions continue to rise through the 21st century (high emissions scenario).<sup>28</sup>

With climate change, extreme heat events in California and Portola Valley are becoming more frequent, more intense, and longer lasting. Historically (1961-1990), Portola Valley averaged five extreme heat days. The number of extreme heat days is anticipated to increase significantly across the Bay Area region during the next century, but more so for inland areas than coastal cities. In Portola Valley, an extreme heat day is considered a day where-when the temperature exceeds 90.7°F. By mid-century (2035-2064), the town is expected to have, on average, between 10 to 12 extreme heat days per year, increasing to an average of 13 to 23 extreme heat days per year by the end of century (2070-2099).<sup>29</sup>

In addition to extreme heat days, warm nights are also a concern. Historically (from 1961-1990) Portola Valley has experienced approximately four warm nights where the temperature exceeds 55.1°F. According to Cal-Adapt, by mid-century Portola Valley is projected to experience 35-46 warm nights and 49-89 warm nights by the end of century. Increases in warm nights may exert greater strain on electrical infrastructure and older air conditioning units in homes.

Extreme heat days and heat waves can negatively impact human health. While the human body has cooling mechanisms that help auto-regulate body temperature within 1 or 2 degrees of 98.6 degrees, heat stress can cause fatigue, headaches, dizziness, nausea, and confusion. The combination of heat and high humidity is particularly lethal; it can result in heat stroke, which can lead to death, even among healthy people.<sup>30</sup>

#### CHANGING PRECIPITATION PATTERNS

Dry, mild summers and moist, cool winters characterize San Mateo County's overall climate. Temperatures are strongly influenced by large saltwater bodies on the east (San Francisco

Bay) and the west (Pacific Ocean) and by the Santa Cruz Mountains. This combination of features has resulted in a variety of microclimates throughout the cCounty with hill and ridgetop areas, valley floors and coastal areas each experiencing different temperatures and precipitation patterns.

The cCoastside area experiences a marine climate, characterized by cool, foggy summers and relatively wet winters. Fog, the result of condensation over the ocean near the coast, provides moisture and cool air for the coastal terraces. These elements are largely responsible for the emergence of the cCoastside region as an agricultural area, featuring several specialty crops.

Bayside climates are generally warm and sunny, particularly in the summer months when hot air from in the valleys moving to the east warms pulls the prevailing cool ocean breezes over the Bay Area.

The majority of annual precipitation in San Mateo County occurs from December through March. During this wet season, precipitation levels average from 3.00 to 4.5 inches per month.

One of the key influences upon precipitation is elevation. The bBayside generally receives less precipitation than the same elevation on the cCoastside, because the Santa Cruz Mountain Range acts as a rain shield causing moisture-laden air moving in from above the Coastside ocean to condense and deposit much of its moisture in the form of rain or fog as it reaches the higher, colder mountains.<sup>31</sup>

Weather in Portola Valley is usually mild during most of the year. Summers are dry and can be hot; winter temperatures rarely dip much below freezing. Based on Cal-Adapt, the average annual observed 30-year average precipitation is 32.9 inches.<sup>32</sup> Based on the historic record from 1961-1990, Portola Valley experiences average annual precipitation between 30 and 32 inches. Based on Cal-Adapt, projections are anticipated to slightly increase to 33.0 to 33.7 inches by midcentury, and 33.8 to 34.9 inches by the end of the century.

Cal-Adapt provides maximum daily precipitation projections, which based on the observed historical 30-year average, Portola can expect rain events that produce up to 2.29 inches. By mid-century, this projection is anticipated to increase by 2.47 to 2.51 inches and 2.54 to 2.76 inches by the end of the century. This increase in the maximum daily precipitation amount

**Commented [RF2]:** What?

**Commented [RF3R2]:** Sf is not warm and sunny in the summer. It's foggy because of hot dry air in the valley pulling water-laden cool ocean breezes to the east, passing over the city.

**Commented [RF4]:** Why?

may be due to more intense rainstorms resulting from climate change.<sup>33</sup>

## DROUGHT

Drought is a normal part of the climate cycle. Droughts are generally considered a slow-moving hazard, which can cause significant damage, causing losses similar to those from

hurricanes, tornadoes, and other faster-moving disasters. Droughts can significantly impact agricultural resources; affect water supplies, energy production, public health, and wildlife; and can exacerbate wildfire risks. Measuring drought typically involves the use of drought-oriented indexes like the multi-scalar Standardized Precipitation-Evapotranspiration Index (SPEI). ~~SPEI is a multi-scalar drought index that can be used to detect, monitor, and analyze droughts.~~ The tool measures drought severity according to its intensity and duration and can identify the onset and end of drought episodes. A value equaling (-1) implies the drought is at least moderate in intensity, with more negative values representing more severe droughts. The data is represented as days where this threshold of (-1) is met or surpassed and indicates ~~that there is~~ a water deficit. According to Cal Adapt, the observed historical 30-year average SPEI for Portola Valley is 0.2 months annually. This number is expected to increase to between 2.2 to 2.8 months by midcentury, and as high as 3.0 to 5.5 months by the end of the century. Longer durations of time with the SPEI below -1 can lead to drier soils and vegetation/fuels, which increases the potential for wildfires ~~hazards~~. For additional details regarding wildfire and drought relationships see the Wildfire Hazards section.

### Policies and Implementation Actions

P-72 **Prioritize** the needs of vulnerable populations affected disproportionately by hazards and disasters.

P-73 Engage vulnerable populations in identifying potential hazards and program responses and priorities.

A-73-1 Use Community Emergency Response Team (CERT) resources ([WPV-Ready.org](http://WPV-Ready.org)) to assist with

identification, outreach, and engagement of vulnerable populations.

P-74 Collaborate with local and regional agencies on hazard mitigation and emergency management projects and programs.

P-75 Ensure infrastructure can accommodate changing conditions and effects associated

**Commented [RF5]:** What do the studies indicate as the reason for more rainfall?

**Commented [RF6]:** Drought seems more of a safety hazard than flooding in PV. Why not list drought first before talking about precipitation?

**Commented [RF7]:** Previous SC May 2022 feedback: **Additions to policies and more specific implementations to consider adding or more general versions of these ideas:**

Encourage expanded use of renewable energy, solar and wind power adoptions, battery technology, and electric vehicle expansion and charging infrastructure. Encourage and expand all-electric housing construction, green building checklists, increased air sealing and insulation practices, and passive house standards to reduce the need for energy and air conditioning. Encourage water use reduction including drought tolerant and fire-resistant native plantings, expansion of greywater and rainwater, and explore greater recycling of wastewater to prepare for longer drought durations and more strict water rationing.

Expand the use of smart grid and electricity demand technologies to reduce strains on electrical infrastructure. Provide increased education to residents to reduce greenhouse gas emissions. Provide resources to residents on individual emergency preparedness and climate resiliency. Encourage on site storm water management to provide greater resilience to drought and to prepare for more violent and intense storm events.

**Commented [RF8]:** Do we need to identify who these vulnerable populations are in PV?

**Commented [RF9]:** What does this sentence mean? Are we saying we need to help VPs to identify available programs or to identify missing programs and priorities?

with climate changes.

A-75-1 Look to Best Practices to develop and maintain resilient infrastructure standards.

P-76 Require capital projects in high hazard areas to adhere to higher standards [\(for building requirements?\)](#) to reduce future potential hazard vulnerability.

A-76-1 Develop risk assessment guidance and resilience strategies.

A-76-2 As part of the capital planning and budgeting process evaluate and determine if capital projects located within high hazard areas need to adhere to risk assessment guidance and identify appropriate resilience strategies.

P-77 Strengthen emergency management capacity and coordination with the San Mateo County Department of Emergency Management and the Woodside Fire Protection District (WFPD).

A-77-1 Regularly assess emergency management needs and identify resources to prepare for current and future hazard events.

A-77-2 Incorporate the likelihood of climate change impacts into Town emergency response planning and training.

A-77-3 Incorporate locations and operations responsibility for establishing cooling centers for extreme heat events as part of the next update of the Town's Emergency Operations Plan.

A-77-4 Incorporate the projected impacts of climate change, including extreme heat, drought, flooding, wildfire, and storm events, in the Multijurisdictional Local Hazard Mitigation Plan, the Housing Element, Sustainability Element, Emergency Operations Plan, and other comprehensive planning efforts.

P-78 Continue to promote the Community Emergency Response Team (CERT) program to strengthen community cohesion and emergency preparedness through community engagement efforts.

A-78-1 Coordinate with Town sponsored advisory bodies/committees and neighboring communities to ensure effective coordination with the Safety Element.

P-79 Prepare the Town for post-disaster recovery through proactive planning.

A-79-1 Develop a post disaster recovery framework.

P-80 Require floodproofing for new development in flood hazard zones.

A-80-1 Identify areas of a parcel subject to flooding by type of flooding, including inundation, creek, and groundwater and by the potential depth of flooding.

A-80-2 Encourage increased freeboard above current 100-year base flood elevation requirements.

**Commented [RF10]:** What is freeboard?

A-80-3 Locate mechanical equipment, such as boilers, chillers, and air handlers for ventilation in appropriate locations to ensure operation during flooding.

P-81 Monitor drought conditions and enact appropriate measure to reduce water demand in coordination with local and regional water providers.

A-81-1 Continue to collaborate with Town advisory bodies/-committees, in conjunction with Town's water service provider, to identify opportunities for water conservation and efficiencies.

[A-81-2 Collaborate with SMC Environmental Health on new graywater regulations modeled on those in Arizona and New Mexico.](#)

[A-81-3 Collaborate with Westbay Sanitary District on sewer reclamation projects.](#)

[A-81-4 Continue to encourage drought-tolerant native landscapes.](#)

P-82 Continue to work with San Mateo County Flood and Sea Level Rise Resiliency District on developing and implementing adaptation options for San Francisquito Creek.

A-82-1 Restore creek ecologies and create transitional habitat zones to build resilience and ecosystem services.

A-82-2 Continue to identify opportunities to reduce down-stream flooding from town

~~Stormwater~~ ~~wastewater~~

**Commented [RF11]:** What wastewater is going into the SF Creek?

**Commented [RF12R11]:** stormwater

P-83 Identify the major sources of greenhouse gas emissions in the Town and opportunities to reduce them.

**Commented [RF13]:** We already know the major sources of GHG emissions in Town: transportation, energy, heating and airconditioning, and gas leaks (and consumerism). Why not be more specific and mention these in the SE?

A-83-1 Develop a climate action plan that identifies the most impactful measures for reducing greenhouse gas emissions in the Town.

A-83-2 Work with Town advisory bodies/ committees, utility providers, and regional

partners to identify and develop programs and incentives that support these measures.

[A-83-3 Expand electrification of homes in the Town through education, programs, and incentives.](#)

[A83-4 Expand onsite solar, wind, and renewable energy generation and battery storage.](#)

[A83-5 Expand Electric Vehicle expansion and evaluate charging infrastructure.](#)

[A83-6 Expand the use of smart grid and electricity demand technologies to reduce strains on the electrical infrastructure.](#)

P-84 Address climate change impacts and develop adaptation strategies that **focus** on fire prevention and protection, flooding and severe storms, extreme heat events, public health, and the health and adaptability of natural systems.

A-84-1 Develop a climate adaptation plan for the Town.

[A-84-2 Develop local renewable energy generation and storage for the Town to build energy resiliency.](#)

P-85 Ensure that the community can respond to future extreme heat events.

A-85-1 Explore upgrades to electrical and HVAC equipment within Town facilities to ensure greater resilience during extreme heat, wildfire smoke events, and public safety power shutoff events.

**Commented [RF14]:** IS the SE only for immediate safety problems? Do we not want to also focus on reducing GHG emissions as much as possible today to reduce the effects of even more severe climate change in the future?



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## PORTOLA VALLEY WILDFIRE PREPAREDNESS COMMITTEE

### QUESTIONS ABOUT THE PORTOLA VALLEY SAFETY ELEMENT DRAFT

#### **A-44-2 Explore the feasibility of other vegetation management strategies, including:**

- a. Elimination of use of fire-hazardous plants.**
- b. Use of non-prolific landscaping species.**
- c. Requiring project proponents in hillside areas to evaluate and upgrade as necessary fire flows and water supplies to hillside areas.**

Question: Why is the word “explore” used in this action item? We currently have a great understanding about the vegetation management strategies mentioned in items (a) and (b).

#### **P-48 Maintain and adequately fund fuel breaks and other fire defense improvements on public property and require similar measures for private property in compliance with fire safe regulations where possible.**

Question: Why is the term “where possible” added at the end of this policy? Is there something specific that the author had in mind?

#### **P-53 Educate residents and property owners on proper water shut off procedures during a hazard incident or evacuation order.**

Question: We would like to understand the history of this policy. Are there currently “proper water shut off procedures” that are recognized by the town? Does this just pertain to wildfire evacuation or all types of evacuations?

#### **P-62 Require non-combustible roofs and exterior siding in all fire hazard areas.**

Question: We would like to understand the history of this policy. Is this for new homes or also remodeling projects? What types of roofing and siding products are you trying to describe? When you refer to ‘all fire hazard areas,’ does this mean all properties?

#### **A-65-1 Assess structures along slopes to determine if setbacks should be increased to protect structures in wildfire prone areas.**

Question: This action is part of P-65, which discusses new developments in fire-prone hillside areas. When A-65-1 refers to “Assess structures,” are you referring to existing structures or the plans for new structures? If you are referring to existing structures, when and under what circumstances will these assessments occur?

#### **General questions:**

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1. How many PV homes have been upgraded or built to Chapter 7A standards via the permit process?
  2. Is there a list of chapter 7a property addresses?,
  3. In the HE, there is a chart of housing units by year built. How are remodeled homes counted in that analysis?
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