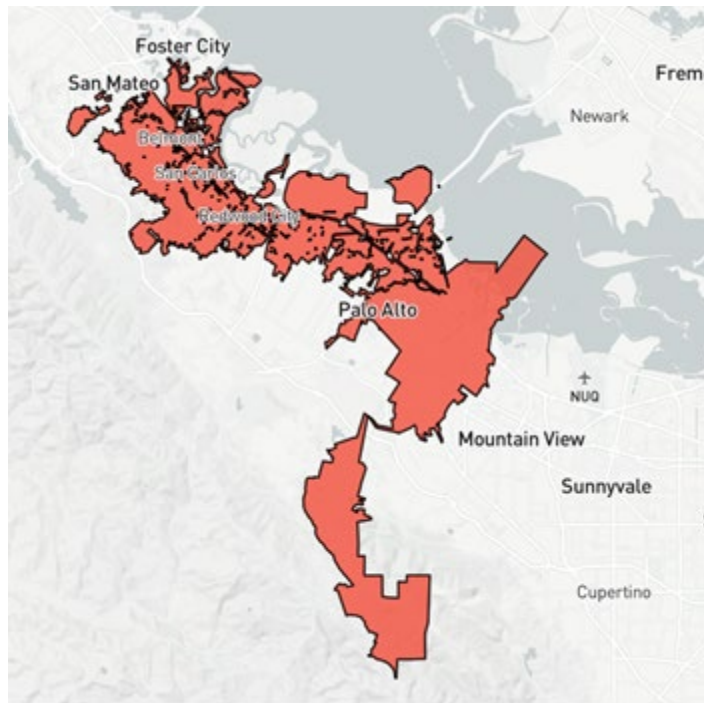


# Menlo Park SAFER Bay Project Population Impacted

The Menlo Park SAFER Bay project will provide critical, community-wide protection around PG&E's Ravenswood Substation. The population that would benefit from reliable electricity service amid flooding events and sea level rise exposure due to projected climate change (Figure 1) includes socially vulnerable neighborhoods that would be disproportionately affected by extended power disruption. Within this population area, the project will also reduce exposure to flooding given that the Menlo Park SAFER Bay Project will design and build a significant section of the larger SAFER Bay Project.

Figure 1. The Menlo Park SAFER Bay project impact area based on the electric circuit outage map. The project impact area is shaded in red.



Ravenswood Substation supplies electricity directly to approximately 296,183 people (Table 1). Because we define the project impact area as the community that would benefit from reliable electricity service amid flooding events, one hundred percent of the population within our project impact area will directly benefit from the project.

Ravenswood Substation is a 230 KV transmission-level substation that feeds five distribution-level substations, which in turn provide electricity service for the cities and communities of Menlo Park, Palo Alto, Redwood City, Belmont, East Palo Alto, San Carlos, and Atherton. PG&E assessed all distribution-level electricity circuits and accounts that would lose power during a flood event at the

Ravenswood Substation. The geographic area of the affected distribution circuits and accounts defines our project impact area (Figure 1). Within this project impact area, 79,338 individual PG&E accounts and 29,140 individual City of Palo Alto Utility accounts would lose power; the City of Palo Alto owns and operates its electric distribution system but relies on PG&E's Ravenswood substation to receive power through PG&E's transmission network (Table 1).

The geographic area defined by the circuit outage map (Figure 1) reveals that the number of households within the project impact area (source: UrbanFootprint<sup>1</sup>) is 104,602 households. Using census data for the number of residents per household, this equates to 296,183 people (Table 1). Census data is based on the 2018 U.S. Census Bureau's American Community Survey (ACS).

Table 1: Number of utility accounts, households, and total population in the project impact area

<b>PG&amp;E utility accounts</b>	79,338
<b>City of Palo Alto utility accounts</b>	29,140
<b>Number of Households</b>	104,862
<b>Total population</b>	296,183

## Direct community-wide benefits

Besides the number of households and the total population directly affected in the project impact area, we define other direct community-wide benefits within our project impact area as community-wide services that require reliable electricity. We break down employment metrics (Table 2) and categories of community lifelines (Table 3) that would be directly affected by the loss of electrical service (source: UrbanFootprint)

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<sup>1</sup> UrbanFootprint is cloud-based Urban Intelligence software that delivers insight to government, enterprise, and academic institutions in urban planning, finance, mobility, sustainability, policy making, healthcare, and disaster preparedness.

Table 2: Employment data within the project impact area

Employment type	# persons
Retail	35,920
Office	113,042
Public service	34,092
Industrial	30,168
Agricultural	149
Total employment	213,371

Table 3: Community lifelines within the project impact area that require reliable electric service

Community lifeline	Number within project impact area
Emergency Services	17
Government - Schools	98
Government - Jails and Prisons	1
Healthcare - Hospitals	10
Water and Wastewater	140
Communications*	624
Major Transportation	34
Medical Baseline **	1,632

\*Communications includes cell-phone towers owned and operated by telecommunication companies.

\*\*Medical baseline customers are defined as those who rely on life-support devices that require electricity to function, such as continuous positive airway pressure (CPAP) machines or respirators.

Climate change disproportionately impacts disadvantaged communities by exacerbating preexisting hardships. These communities' relative lack of resources means it is more difficult to collectively address climate hazards or afford individual mitigating solutions like buying a generator or installing solar panels. Reliable electricity service enables most, if not all, modern urban infrastructure and economic activity, and maintaining this service is particularly critical for communities that lack

income, savings, jobs, insurance, access to information, and other resources that make them particularly vulnerable when disaster strikes.

The Menlo Park SAFER Bay project will protect these communities from debilitating interruptions in critical electric service and transportation access. The project will increase the resilience of socially vulnerable communities living within the project impact area by bolstering the resilience of the electricity service infrastructure (Table 4).

The overall SAFER Bay program that the Menlo Park SAFER Bay Project is a critical part of, is a regional project from the border of Redwood City to Mountain View, covering more than 11 miles of Bay shoreline. This area of shoreline was identified as a regional flooding “hotspot” containing multiple assets with high consequences from flooding due to impacts to communities, habitats, and transportation networks (Adapting to Rising Tides 2020).

The Adapting to Rising Tides 2020 analysis identified residential block groups in East Palo Alto and Menlo Park’s Belle Haven neighborhood as having among the highest social vulnerability to flooding in the region, as well as moderate to high contamination burdens. The Menlo Park SAFER Bay Project is designed to directly address this local and regional vulnerability by protecting critical electrical infrastructure. The implementation of the Menlo Park SAFER Bay Project is critical to allow for future implementation of the larger SAFER Bay program. When completed, the entire SAFER Bay program will provide the additional benefit of protecting disadvantaged and vulnerable communities with full protection from flooding expected due to climate change.

## How vulnerable communities are defined

The State of California provides guidance to determine how to define vulnerable communities. The Menlo Park SAFER Bay Project follows this guidance and uses the 2018 Integrated Climate Adaptation and Resilience Program (ICARP), through activities at the California Governor’s Office of Planning and Research, to define climate vulnerable communities:

“Climate vulnerability describes the degree to which natural, built, and human systems are at risk of exposure to climate change impacts. Vulnerable communities experience heightened risk and increased sensitivity to climate change and have less capacity and fewer resources to cope with, adapt to, or recover from climate impacts. These disproportionate effects are caused by physical (built and environmental), social, political, and/ or economic factor(s), which are exacerbated by climate impacts. These factors include, but are not limited to, race, class, sexual orientation and identification, national origin, and income inequality.”<sup>2</sup>

The Menlo Park SAFER Bay Project, by protecting Ravenswood Substation, will boost the reliability of electric service to households—including those in lower income brackets. Loss of reliable electricity disproportionately impacts people in lower income brackets. These individuals often have

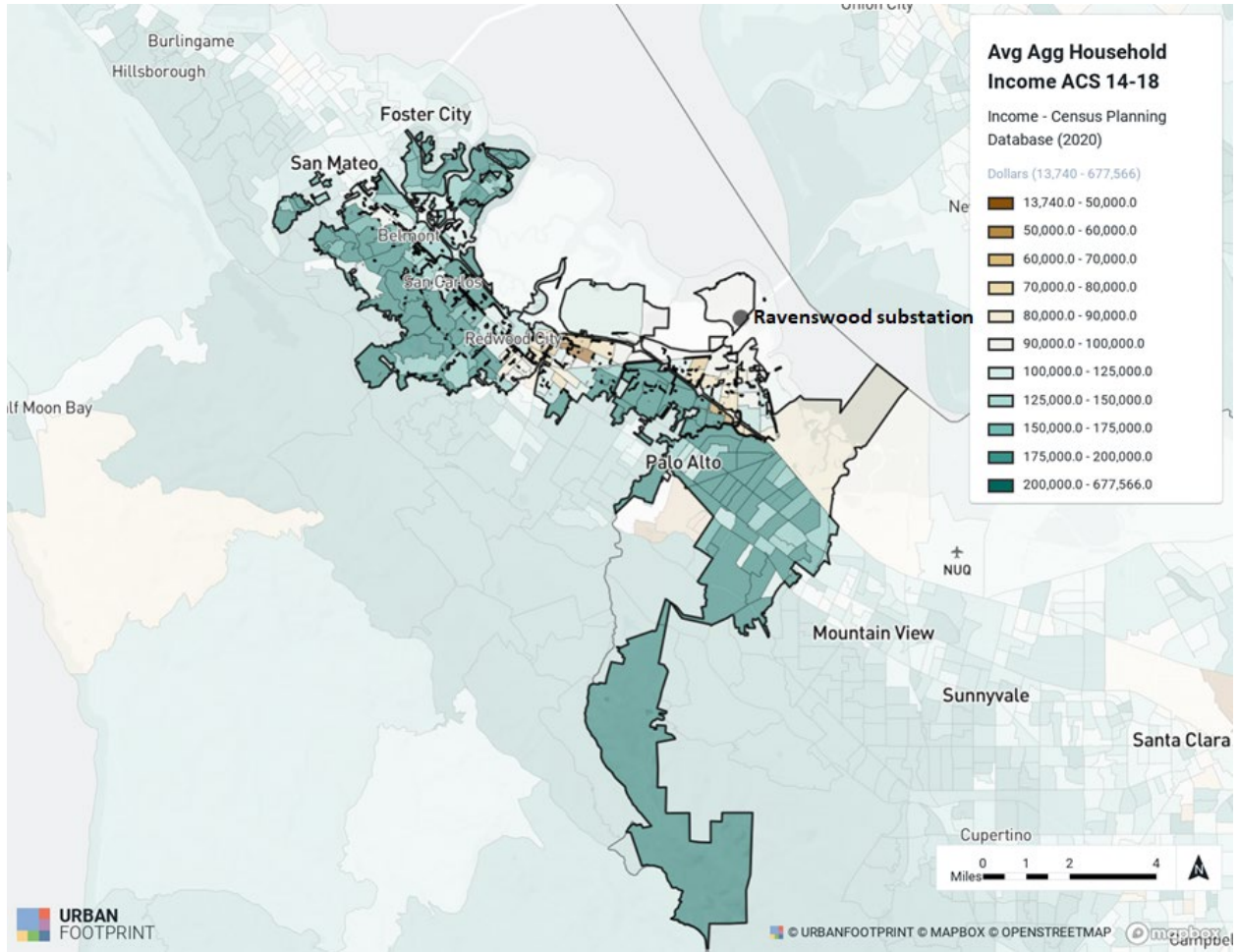
fewer resources to manage electricity interruptions such as the ability to purchase back-up generation options and the ability to replace spoiled food and medicine.

## **Vulnerable members of the community**

The most vulnerable members of the community where this project is proposed are in the City of East Palo Alto, the Belle Haven neighborhood of Menlo Park, and parts of Redwood City. East Palo Alto, for example, is situated in the heart of many wealthy Silicon Valley communities. However, East Palo Alto “has long been a pocket of persistent segregation and inequality bracketed by many of the country's most affluent communities... [and] lags drastically behind neighboring Palo Alto and Menlo Park in economic and quality-of-life metrics, including income potential, educational attainment, and business ownership.” (NBC Bay Area 2019)

The average income range for the entire project impact area is approximately \$50,000-\$500,000 (source: UrbanFootprint). Additionally, multiple communities within the project area have average household incomes that fall under the median income of California, which was reported by ACS as \$71,228 in 2018. This enormous income range highlights the wealth disparity found within the project impact area, and this inequality is geographically disparate. Low-income communities are most vulnerable to flooding and are located adjacent to the project's implementation area (Figure 2).

Figure 2: Average aggregate household income (\$) brackets in the project impact area. Median income in California in 2018 is \$71,228 (Data source: ACS).<sup>3</sup>



Additional summary information regarding vulnerable communities is provided below (Table 4).

Table 4. Descriptive metrics of disadvantaged populations and communities in the project area

<b>Population low-income*</b>	6.5% (19,338 persons)
<b>Population below the Federal poverty line</b>	9% (26,842 persons)
<b>Population qualified as Disadvantaged Vulnerable Community residents per CPUC for purposes of adaptation planning</b>	8% (23,416 persons)
<b>Population with high CalEnviroScreen score**</b>	17% (50,013 persons)
<b>Population with Healthy Places Index scores below California average***</b>	19% (57,295 person) are in areas in the bottom half of the Healthy Places Index.

\*California Assembly Bill 1550 defines low-income as census tracts or households at or below 80% of the statewide median income.

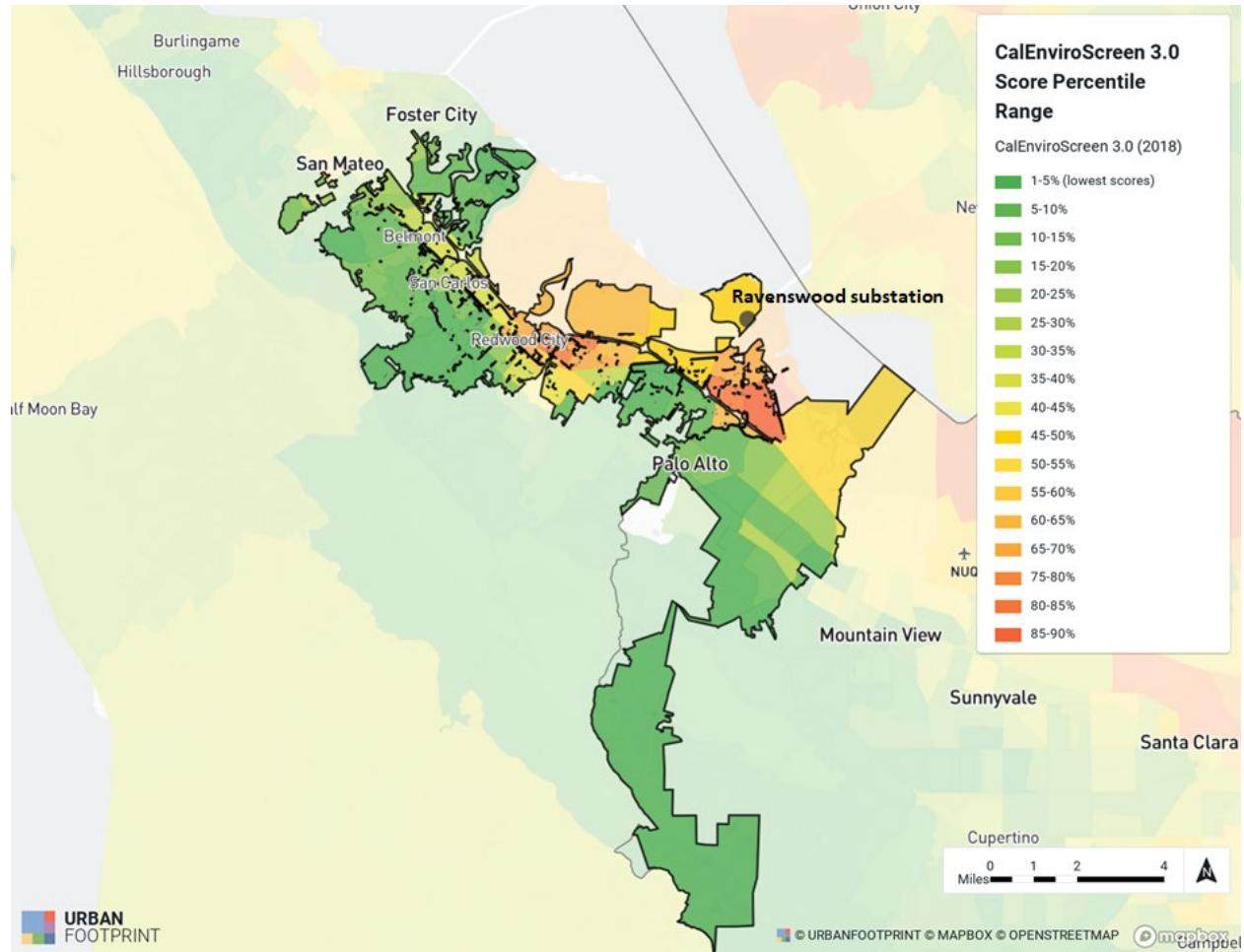
\*\*ICARP's Technical Advisory Committee suggests that relative household income, CalEnviroScreen.

\*\*\*Healthy Places Index can be used to evaluate the adaptive capacity and vulnerability of communities.

## CalEnviroScreen data details

We used CalEnviroScreen data to assess the location and pollution burden of communities within the project impact area.<sup>4</sup> Multiple communities within the project area fall within the highest CalEnviroScreen percentile ranges (higher scores = higher levels of pollution burden) (Figure 3). The estimated population living within these higher percentile ranges is 50,013 people, or 17 percent of the population within the community (Table 4). This includes the communities of East Palo Alto and Redwood City. The population in this area has some of the highest exposure rates in California to pollutants, including ozone, PM 2.5, diesel, hazardous waste, impaired water sources, and threats to groundwater.<sup>5</sup>

Figure 3: CalEnviroScreen Scores within Project impact area



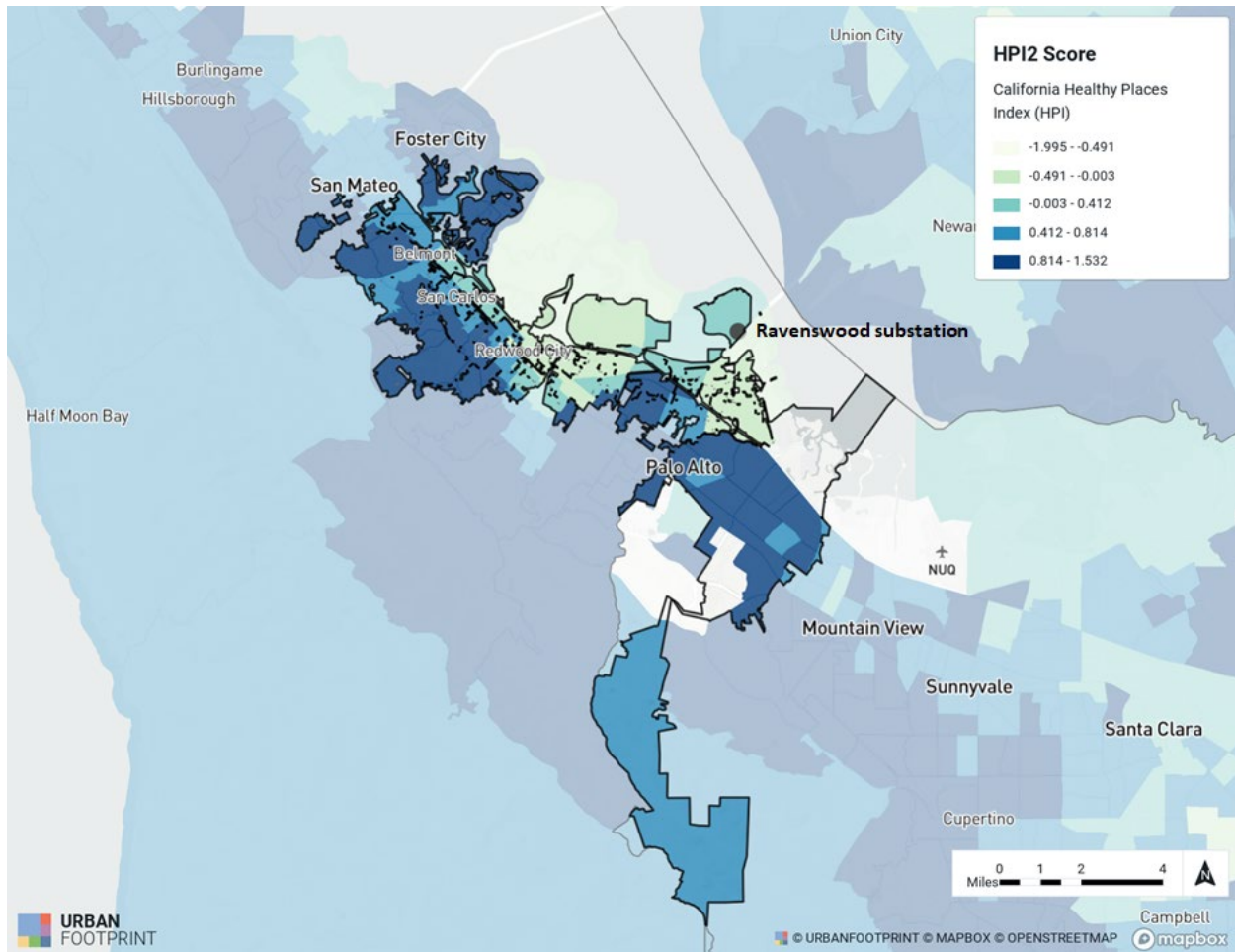
### Healthy Places Index details

The California Healthy Places Index (HPI, available at <https://healthyplacesindex.org/>) is a tool developed by the Public Health Alliance of Southern California in partnership with the Virginia Commonwealth University’s Center on Society and Health. HPI can be used to explore community conditions that predict life expectancy and incorporates data on access to healthcare, economic data, education, environmental indicators, housing and neighborhood metrics, transportation access, and social metrics. The HPI can be used to prioritize public and private investments, resources, and programs.

The communities of Redwood City and East Palo Alto, which fall within the project area, have HPI scores in the 25-50 percentile range, meaning they are less “healthy” than the average community in California (Figure 4)



Figure 4: Distribution of Healthy Places Index (HPI2) score percentiles in the Menlo Park SAFER Bay project impact area. Light green and blue represent lower (less healthy) HPI scores; darker blue represents higher (more healthy) scores.



## Impact on vulnerable members of the community

The Menlo Park SAFER Bay Project will build community resilience by designing and building sea level rise protection that will protect critical electricity infrastructure and reduce the exposure of flooding for adjacent communities.

The proposed project will design and build sea level rise and flooding protection that will run along the San Mateo County shoreline, offering direct benefits to adjacent infrastructure, households, and commercial areas by reducing exposure to flooding. This area includes the communities directly south of the proposed levee structures, including the Belle Haven neighborhood of Menlo Park.

By protecting the Ravenswood Substation and building flood protection adjacent to the communities of Menlo Park and East Palo Alto, the Menlo Park SAFER Bay Project will prevent debilitating

interruptions in electricity service and reduce local community exposure to sea level rise and associated flooding. Electricity, and the provision of energy through the power grid, is foundational to the functioning of modern society. As described in “Technical Criterion 2: Mitigating Risk to One or More Lifelines”, Ravenswood Substation provides power for 17 police/fire stations, 10 hospitals, and 140 water/wastewater facilities that provide the backbone of community safety and security services that support the population within the impact area. While it is acknowledged that these facilities are likely to have backup emergency generator systems for such scenarios, it is also likely that the generators will only provide support for the minimum number of critical systems, thus resulting in an inability to perform the full range of duties and responsibilities that would normally be expected.

California’s experience with wildfire mitigation efforts and Public Safety Power Shutoffs (PSPS) in recent years demonstrates how electricity shut offs affect communities. The wide-ranging impacts of losing electricity service have been well-documented and publicized, with safety and reliability consequences for residents, emergency services, hospitals, and other critical community lifelines. A paper assessing the future likelihood of PSPS events noted that during California’s 2019 PSPS events,

“Disproportionately adverse impacts were felt in disadvantaged communities both in rural areas and across portions of the urbanized San Francisco Bay Area, including the direct financial impact of preparing for and recovering from outages of initially unknown duration (e.g. temporary loss of wages, spoilage of stored food, and securement of backup power supplies). In addition, individuals with disabilities who rely on electricity for respiratory support systems such as breathing aids and mobility devices such as electric wheelchairs faced substantial challenges during PSPS in 2019. Collectively, costs of PSPS in 2019 were estimated at \$10 billion USD (Senate Committee Hearing, 2019)—comparable to costs of many recent large fire events.”<sup>6</sup>

California is already experiencing how climate change has increased the risk that utility assets can ignite catastrophic wildfires. Other climate change hazards, such as sea-level rise, are looming on the horizon and it is incumbent upon communities, governments, and the private sector to partner to adapt to the future physical risks of climate change. The Menlo Park SAFER Bay Project provides the opportunity to develop resilience to sea-level rise and showcase a regional, collaborative approach to preventing future electricity interruptions and bolstering community safety before a catastrophic event occurs.

## References

Adapting to Rising Tides. 2020. Adapting to Rising Tides Bay Area: Regional Sea Level Rise Vulnerability and Adaptation Study. Bay Conservation and Development Commission (BCDC) and Metropolitan Transportation Commission/Association of Bay Area Governments (MTC/ABAG), San Francisco CA.

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