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Equitably Engaging Communities Affected by Sea-Level Rise in the Planning Process



(Enterprise, 2021)

Senior Environmental Planning Practicum
Department of Environmental Science and Management
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Executive Summary

Disadvantaged communities are defined by the Cal SB 535 Health and Safety Code section 397119 (2014) as, “Areas with concentrations of people that are of low income, high unemployment, low levels of homeownership, high rent burden, sensitive populations, or low levels of educational attainment.” Disadvantaged communities are disproportionately impacted by sea-level rise (SLR) in coastal regions. Local governments in coastal regions face challenges in equitably engaging with communities, especially disadvantaged communities. In developing this document, we sought to address the social and environmental justice concerns raised by inequitable impacts of SLR on coastal communities by developing a framework of best practices for local government. Within these low-lying coastal communities, flooding and impacts will increase with frequency over the next several decades. We hope that this document will assist local governments to plan for SLR with at risk and disadvantaged communities.

We conducted a literature review of various communities ranging in size, location, and demographics to better understand strategies utilized to execute community outreach and planning for SLR. This literature review was focused on the outreach strategies of five communities: New Orleans, New York City, Boston, the state of Hawai’i, and Pacifica, CA. We utilized the community engagement strategies found through our literature review and applied them to our best practices for equitable and inclusive community outreach.

These practices include a variety of inclusive techniques that allow the planning process to be attainable throughout engagement practices. In planning community meetings, selecting accessible locations and providing a variety of meeting times allows for a larger range of people to be involved in planning processes. Providing SLR information via online forums and providing online access to community meetings for those unable to attend in-person allows for increased access to this information. Furthermore, providing this meeting information in a variety of languages and formats allows for information to be accessed by multiple demographics of a community. A zero-discrimination policy should also be applied to the planning processes to ensure equitable engagement throughout this planning process.

We discuss the application of these best practices for the communities of Humboldt Bay CA, Santa Cruz CA, and San Diego Bay CA. The location, size, and demographics of these communities demonstrate a diverse application of these practices. Through this research, we

have compiled suggested best practices to follow when engaging with disadvantaged communities about SLR preparedness.

Following our research in the SLR engagement practices of the communities of Humboldt Bay, Santa Cruz, and San Diego Bay we discovered inadequacies. This has led us to make recommendations for engagement including physical outreach methods, providing more specific place-based information, and fostering a heightened communication structure between stakeholders, local government, and citizens. Additionally, we have compiled suggested best practices to follow when engaging with disadvantaged communities about SLR preparedness. Remaining flexible and adaptive is essential for inclusivity throughout planning processes. For organizations to equitably engage with these communities, there must be a shift from consultation towards collaboration; these best practices seek to facilitate this shift.

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Mission Statement

We seek to address social and environmental justice concerns raised by inequitable impacts of sea level rise on coastal communities by developing a framework of best practices for local government planning for SLR in at risk and disadvantaged communities. Working in collaboration with our client and community members, we will develop this framework and use the Humboldt Bay Area, Santa Cruz, and San Diego as models.

1. Introduction

Sea-level rise is caused by increases in the total mass of water from the melting of land-based snow and ice, and changes in water density from an increase in oceanic temperatures and salinity. As coastal communities are being threatened by sea-level rise (SLR), local governments are challenged to engage with and support communities' responses to SLR equitably, especially disadvantaged communities. Kristina Kunkel, Sea Grant Fellow with The California State Lands Commission, has highlighted this problem and asked our project group to develop suggestions for environmentally just and equitable steps that local governments can apply in responding to SLR.

Disadvantaged communities are defined by the Cal SB 535 Health and Safety Code section 39711 (2014) as, "Areas with concentrations of people that are of low income, high unemployment, low levels of homeownership, high rent burden, sensitive populations, or low levels of educational attainment." For the purpose of this report, we have expanded the definition to include communities that have a high proportion of ethnic/cultural minorities and/or people with disabilities, and people with insecure housing status.

Several factors contribute to why disadvantaged communities are disproportionately affected by SLR. One key challenge is that planners lack ways to disseminate information to community members and there may be a lack of opportunity for the residents to interact with local government representatives during the planning process. Community members often lack an understanding of how SLR will affect their communities. Information about the effects SLR might have on individual communities is often difficult to understand or unavailable. When public meetings are held, residents may not be able to attend. Accessibility is a barrier to community members who don't have a reliable form of transportation. Some local government meetings fail to meet Americans with Disability Act (ADA) guidelines for public meeting

venues. Household composition can also limit the amount of time a person has to spend learning about or preparing for SLR. For example, a single mother with young children may not be able to afford childcare so she can attend a meeting, or a low-income household may not be able to afford to miss a shift at work.

Another important factor to highlight, that may also deter people from participating in community planning efforts, can occur when there is established discrimination against the disadvantaged community from the community at large. The location of people's homes is important to consider, as well. People living in unincorporated areas may live in developments that are affected by lack of infrastructure and other resources. Education level can affect how well a person understands the issue of SLR, and their comfort in engaging with government organizations. By understanding all these factors, among others, we can better understand the issues disadvantaged communities face and how to help them engage in the SLR planning process.

In this report, the California communities of the Humboldt Bay Area, the City of Santa Cruz, and San Diego Bay are utilized as examples to demonstrate how local governments can address these challenges and support community members' participation in planning for SLR. Developing these guidelines is especially important for communities around Humboldt Bay, where a cohesive plan for engaging with communities affected by SLR has not been officially established. As we outline below, SLR poses physical challenges for all coastal communities but may present particular hardships for disadvantaged communities.

2. Lessons from other Communities

This section highlights equitable outreach processes we found from our literature review of the Cities of New Orleans, New York, Boston, Pacifica and the State of Hawaii. These places were chosen because of their coastal location, their varied approaches to community engagement and because each place is unique in size, location, demographics. The specific outreach strategies used in these places can be found in Table 1.

2.1 New Orleans, LA

In the City of New Orleans, local government works in close coordination with non-profit organizations to provide all-encompassing and inclusive solutions for equitable outreach. Included in the communities' equitable engagement solution, The Water Collaborative Project offers workshops in different regions of the community, education on local SLR initiatives and provides support for scientific research in the area (The Water Collaborative, 2020). Community education workshops are held in collaboration with local governments to serve the community through the public education system.

The New Orleans Water Collaborative Project has developed a community resource page in coordination with the city government to allow citizens to access educational resources. Resources include educational materials about water, green infrastructure, homeowner resources for conservation, and local economic resources (The Water Collaborative, 2021). This central database allows easy access to resources by organizing materials in one location. *(See Appendix 8.1-1)*

A formal communication structure that reaches every neighborhood within New Orleans puts citizens in touch with interested organizations and allows everyone to be better involved in the planning process. A structured board system within this community ensures that needs brought up by individuals are addressed by decision-makers in the planning process. This process helps to ensure that disadvantaged communities' input counts equitably with input from other communities in New Orleans (CBNO, 2008).

Working in coordination with the non-profit group, The Ripple Effect, the City of New Orleans strives to offer educational SLR material to the local public school system (The Ripple Effect, 2020). Rather than altering the state curriculum itself, this project offers resources to train teachers on environmental injustice and SLR issues at hand. Lectures and

videos offer outreach to K-12 classrooms on subjects such as tidal inundation, loss of cultural resources and damages to community infrastructure. In summary, key ideas for best practices emerging from New Orleans included offering inclusive in-person workshops for education on SLR, establishing an educational resource online database and offering K-12 SLR Educational Resources.

2.2 New York, NY

New York City has designed a planning approach that aims to foster community engagement in planning for diverse, livable neighborhoods in New York. This program, PLACES: Planning for Livability, Affordability, Community, Economic Opportunity, and Sustainability, was established as part of Mayor Bill de Blasio's *Housing New York* plan in 2014. The approach is designed to examine and address equity issues in zoning and land use in New York neighborhoods while supporting neighborhood growth and vitality into the future (NYC Planning, 2021). The overarching goal of the PLACES approach is to listen and learn from city representatives, residents, community organizations, and elected officials; create a vision for the neighborhood from the information gathered in the prior step; generate a draft neighborhood plan with the neighborhood and elected officials building off of the last two steps; and to put the plan through a public review process where the community has the opportunity to comment and recommend zoning changes while the land use actions enter a formal review process.

The PLACES approach is designed to accommodate the needs of the specific neighborhood by listening to and learning from the community's needs. Since it is designed to be a more general process, it can be replicated, transferred, and applied to many different places. This approach also highlights the importance of coordination between agencies, elected officials, and the community. Additionally, the New York planning website, where these documents for the neighborhoods are made available to the public, is easy to navigate, transparent and available in Spanish and English.

In the New York Zoning for Coastal Flood Resiliency project, the New York Department of City Planning (DCP) is working with coastal communities to reduce risk from flooding and increase resiliency through long-term adaptive planning. To increase community resilience, New York planners are addressing zoning issues after Hurricane Sandy made it clear that the

zoning ordinances were a barrier in community flood resilience (NYC Planning, 2018b). After Hurricane Sandy, temporary zoning rules were adopted as part of emergency response that facilitated rapid rebuilding. By permanently adopting these temporary zoning rules, the Zoning for Coastal Flood Resiliency project aims to “improve homeowners’ and business owners’ ability to withstand and recover from future storms and other disaster events” (NYC Planning, 2021b). Community outreach in this project took the form of public workshops, public informational meetings, technical workshops, and stakeholder conversations. “This outreach effort included over 110 meetings with Community Boards, civic groups, business owners, technical experts, and residents, all of whom provided input and contributed to DCP’s understanding of resilient building challenges in different neighborhood contexts” (NYC Planning, 2018a). One of the main highlights from the Zoning for Resiliency project in New York was the hosting of informational meetings prior to community workshops. Since zoning can be a complicated issue that maybe not all citizens have had prior knowledge of, these meetings were vital for this project and for constructive community involvement in the workshops. In summary, some of the best practices that are highlighted in New York include hosting informative and engagement community meetings; having a well-organized and transparent documentation process; facilitating coordination between agencies, elected officials, and the community; having documentation available in Spanish and English; and creating a process that can be repeated and transferred to other locations.

2.3 Boston, MA

The City of Boston’s Climate Action Plan highlights community-level action for engagement and outreach. The community-level outreach being performed in Boston includes informational booths on streets with high foot-traffic, volunteer groups, and an initiative by the mayor known as *Greenovate Boston*. The Greenovate initiative spreads awareness about climate change and encourages community members to get involved in the City’s climate change adaptation planning process. As of 2019, this program had reached more than 2,000 community members (City of Boston, 2019). Establishing accessible community-level programs with support from local government is an effective way to engage with the community.

The planning process in Boston has involved a good deal of community engagement. In a project that engaged local artists from the community, the City's process involved "3 town hall meetings, 118 community conversations, 35 stakeholder focus groups and 50 one-on-one interviews, a creative engagement participation survey in 4 languages, and an online, crowd-sourced map of cultural assets" (City of Boston, 2019). The city also has participatory budgeting, where the city collaborated with local youths to decide how to allocate the budget designated for youth programs (Preston, 2014). These models of collaborative planning and community-level outreach and participation can be extended to different communities to create effective and inclusive planning processes.

2.4 State of Hawai'i

Sea-level rise will have particularly drastic effects on Hawai'i due to its island geography. In response, the state adopted a Climate Change Adaptation Priority Guidelines to the State Planning Act (2017). These guidelines were developed through "research, consultations with planners, and through shared learning from ongoing community and general plan updates" (Courtney, 2020). Stakeholders were engaged through webinars, in-person meetings, and workshops through 15 outreach events. To develop the Hawai'i Sea Level Rise Vulnerability and Adaptation Report (Hawai'i Climate Change Mitigation and Adaptation Commission, 2017), stakeholder outreach and engagement were utilized to inform adaptation responses and vulnerability assessments. The Hawai'i Climate Commission held quarterly meetings to educate the Committee on the science and current mitigation controls, update them, and ask for guidance moving forward. Stakeholder workshops were held to communicate the science behind SLR, preliminary hazard modeling, vulnerability assessments, and present draft recommendations. In addition, informational meetings were offered to communities to educate on the impacts of SLR and gather comments and input about preparedness and adaptation. These various outreach methods ensure that the whole community is knowledgeable about what is happening in their community and can participate in the planning process.

2.5 Pacifica, CA

The City of Pacifica is currently working on updating their *Local Coastal Plan Policies Relating to Sea-Level Rise Adaptation* (LCP) to include current sea-level rise information to better address the social, economic, and physical impacts from it. To keep stakeholders involved during this process, the City is using the methods suggested in the 2017 Stakeholder Engagement Plan (Kearns and West, 2017). In addition to stakeholder engagement, the plan also highlights the best practices for public engagement relating to SLR planning. In compliance with the Stakeholder Engagement Plan, the City held three public meetings to receive feedback on the draft of the adaptation plan (City of Pacifica, 2018).

The meetings were advertised through the local newspaper and on the city's website. The advertisement included the time, date, and place where the meeting would be held and offered alternative contact information if there were any further questions. Each meeting began with a presentation and ended with an opportunity for questions and feedback (City of Pacifica, 2018). The first public meeting held was a technical work group with federal, state, and local regulatory agencies. The second meeting was a community work group, that was composed of community stakeholders like business owners and community leaders (City of Pacifica, 2018). The last meeting was a public workshop which encouraged full participation. All of the meetings were recorded and published for community members to review if they were unable to attend the meeting during the allotted time.

The City of Pacifica highlighted the importance of community involvement and planning transparency in the 2017 Stakeholder Engagement Plan when drafting their coastal adaptation plan (City of Pacifica, 2018). The three meetings that they hosted during the reviewal process allowed different stakeholders and community members to engage with one another to determine what changes would be best for the community. Best practices for outreach from the literature review are presented in Table 1.

Table 1: Applicable Outreach Strategies from Literature Review

	Outreach Strategies
New Orleans, LA	<ul style="list-style-type: none"> - Inclusive in- person workshops offered for education on SLR - Established an educational resource online database - Offer K-12 SLR Educational Resources
New York City, NY	<ul style="list-style-type: none"> - Community informative and engagement meetings - Repeatable process - Transparency of documents and engagement processes - Well organized documentation and easy to navigate website - Coordination between agencies, elected officials, and the community - Available in English and Spanish
Boston, MA	<ul style="list-style-type: none"> - Greenovate initiative - Collaborative planning with youth - Informational booths - Offering information in a variety of languages - Models of collaborative planning and community-level outreach and participation can be extended to different communities to create effective and inclusive planning processes
State of Hawai'i	<ul style="list-style-type: none"> - Webinar stakeholder outreach/engagement - Stakeholder workshops for SLR engagement
Pacifica, CA	<ul style="list-style-type: none"> - Inclusive advertising of public planning meetings - Stakeholder and community engagement workshops

3. Best Practices for Planning in the Community Outreach Process

The types of community outreach that local government planners utilize for communities will differ depending on the community's risk level and prioritization of sea-level rise (SLR) planning. We have created a series of approaches for planners to consider on making engagement processes more inclusive. These best practices were developed in consideration of the challenges and barriers to participation that members of marginalized communities face during public involvement processes and were formulated based on engagement practices from local governments summarized in Table 1. To ensure communities are equally considered and involved during the outreach process, we recommend the following approaches:

- ⇒ Ensure that community meetings are planned in accessible locations. This includes handicap accessible, near public transportation, and other considerations that are place specific.
- ⇒ Plan community meetings at various times to make them available for people's schedules.
- ⇒ Host informational meetings for complicated topics (such as sea-level rise, zoning, etc.) prior to planning meetings.
- ⇒ Have community meetings accessible through online formats (livestream and/or recorded) for those not able to attend in person.
- ⇒ Have information easily accessible for the public prior to planning meetings so that participants can be well informed and ready to participate at meetings.
- ⇒ Offer materials in a variety of languages.
- ⇒ Offer materials in a variety of formats (online, paper, etc.).
- ⇒ Keep materials easy to understand by avoiding using excessive jargon, providing synopses for lengthy documents, etc.
- ⇒ Establish a zero-tolerance policy for any form of discrimination.

4. Proposed Community Outreach Process

4.1 Preliminary Data Collection

The first step in beginning this engagement process is to gather data about sea-level rise (SLR) and the areas it will affect the most. Locating disadvantaged communities will also provide critical information needed to begin this process. These items can both be mapped through online tools accessible to the public. In the following sections we review the processes and tools used to conduct this data collection.

4.1.1 Identify areas vulnerable to sea-level rise

Utilizing tools such as the *NOAA Sea Level Rise Viewer*, various levels of inundation and areas that will potentially be impacted by SLR can be identified. This mapping tool provides a basic estimate of coastal flooding relative to the local Mean Higher Water Datum. Due to the nature of estimating future conditions, there is also a way to assess mapping confidence for elevation data and tidal corrections.

The data, maps, and information found in the *NOAA Sea Level Rise Viewer (2021)* and other similar tools (*Appendix 8.2*) are valuable for the planning process because they give planners a general idea of areas that will be affected by SLR.

4.1.2 Identify disadvantaged communities

Tools such as the Environmental Justice Screening and Mapping tool or *EJScreen* can be utilized to help identify disadvantaged communities (2020). In the Environmental Protection Agency's *EJScreen* tool, U.S. Census data can be utilized to identify populations that fall under the definition of disadvantaged communities. This data is visually displayed in a regional map. US Census Data that are available for display via *EJScreen* include Income Level, Percent of Minorities, Renter Occupied Housing Units, Education Level, Household Age Range, and Commuting Time. *Additional resources for utilizing the EJScreen Tool can be found in Appendix 8.3*

4.1.3 Investigate existing sea-level rise information available to the community

To gain a better understanding of the effect that SLR has had on the community, we suggest that local government planners locate existing documentation on SLR. For the most recent SLR information, city planners may utilize websites that offer projections for sea level rise inundation areas. For example, the NOAA Sea Level Rise viewer offers place specific projection for areas that will be affected by sea level rise at different meters. If these resources are not up to date on the city's website or easily accessible to the public, then the city planners may choose to update the site to reflect the most recent SLR information. *For Additional resources for sea-level rise information see Appendix 9.4*

4.1.4 Identify key stakeholders

Stakeholders can include a variety of people such as Indigenous communities, the local community including identified disadvantaged residents, business owners, local government, state government, and non-governmental, non-profit organizations (NGOs). When establishing a practice of all-encompassing community involvement, it is important to invite all potentially interested parties to meetings. In the process, it is important to consider and address potential barriers to participation for disadvantaged community members. In addition, it is helpful to make extra effort to identify and contact community leaders from disadvantaged communities as key stakeholders and ask them directly for their participation. Not only will they be able to provide information about some subsets of the community, but their participation can legitimize public processes in the eyes of other community members and encourage them to participate (Van der Walt, 2020).

4.1.5 Consider current community engagement

We suggest that local government planners look at the current outreach and engagement methods being used in a community. These methods can be found in documents such as climate action plans, public participation plans, and other local government documents. Consider which methods are working well for the community, and which methods could be improved upon. Consider which members of the community participate and which ones are excluded with the current methods and how to prioritize inclusivity. Surveying or polling the public could be a helpful method in gaging how the community is currently engaged,

and what they think can be improved upon. Analyzing the effectiveness of these methods before planning for new engagement methods will create better informed decisions.

4.2 Engagement Process

There are several approaches through which community members can engage in public processes. Online, in person or methods such as surveys can be utilized in unison to ensure equitable outreach within the community. From our literature review, we developed the following approaches influenced by best practices found in New York City NY, New Orleans, Boston MA, State of Hawaii, and Pacific CA (Table 1).

4.2.1 In person

- I. I. Informational/educational meetings (NYC Planning, 2018b)
 - a. Develop an overarching purpose for each meeting.
 - b. Pick locations and time/s that are accessible to most everyone, especially disadvantaged communities.
 - i. Consider if locations are ADA compliant, close to public transportation, within the community, whether the meeting is hosted multiple times and in multiple locations.
 - ii. Consider having community members meet in or provide transportation to locations affected by SLR.
 - c. Reach out to critical community leaders or people providing help or services to the community (e.g. religious leaders, non-profits, food pantry people, school board leaders etc.) to see if they can assist in getting the overall community involved in the engagement process.
 - d. Appoint speakers, notetakers, recorders for video and/or photographers for meetings.
 - e. Publicize meeting information, preferably in a variety of formats.
 - i. Flyers, online ads, newspaper, pamphlets, radio, etc.
 - f. Record meetings and make them available on the local government's website.
 - g. Consider getting feedback from meeting participants via a satisfaction survey. (NYC Planning, 2021a)

- i. Survey content might include:
 1. Whether participants found the structure of the meeting/s to be useful
 2. Whether participants found the times and/or dates to be accessible
 3. What time and/or dates would work best for them in the future
 4. Whether the meetings were perceived as inclusive or not
 5. Whether participants felt they had obtained enough information prior to the meeting to be fully informed and engaged
 6. Was there sufficient opportunity for engagement
 7. Did participants have any questions or comments

- ii. Considerations

1. Publicize the survey to avoid responder bias. This way people who were unable to attend the meeting can still respond.
2. Have multiple survey options: in-person, online or over the phone.

- h. Adjust the meeting location, time, frequency, information etc. based on the survey results.

- i. Plan more meetings influenced by the survey results and repeat this process.

II. Public planning meetings

- a. Establish the purpose of the meeting.

- b. Ensure the meeting's accessibility.

- i. Suggest different locations that are accessible to less advantaged communities such as places close to public transportation or that are ADA accessible.

- ii. Consider times that work with different schedules and offer a variety of meeting times.

- c. Reach out to or meet with community leaders to see if they can assist in attaining more community engagement.

- i. Identify people providing help and/or services to the community

1. Examples of community leaders include but are not limited to religious leaders, non-profits, food pantry planners, and school board leaders.

- d. Publicize the meeting information.
 - i. Flyers, online ads, newspaper, pamphlets, paper mailers, and radio are examples of possible ways to reach the greater community.
 - ii. City's website, social media, community center, food pantry, local organizations, places of worship, community gathering points, door-to-door, etc. are some examples of locations to put/bring flyers etc.
- e. Appoint a facilitator and note taker for the meeting. These can be hired from an outside organization or from internal staff.
 - i. A facilitator will guide the meeting so that items that need to be discussed will be addressed.
 - ii. A note taker will ensure all the information is transcribed during the meeting for all to see and so it can later be transferred onto a website or other format for people who are not able to attend the meeting.
- f. Record meeting and make available on the county/local government website.
 - i. These recordings are valuable for people who were not able to attend the meeting or people who want to review parts of the meeting that interested them.
- g. Get feedback from participants via survey. (NYC Planning, 2021a)
 - i. Refer to section 4.2.2-II: Survey.
 - ii. This will ensure that people who could not make the meeting can respond and avoid bias.
 - iii. Change meeting location/time/frequency etc. based on survey results.
 - iv. Adapt after each meeting if needed - until 80% positive feedback.
- h. Follow-up (for future meetings, documents, other projects where community involvement is desired etc.)
 - i. Establish a group of community-based volunteers that have tasks (email, phone calls, fliers etc.) for following up with community members.
 - ii. Allow public review period.
 - 1. Once information from the community meeting has been synthesized into a planning document, put it out for public review before finalizing.

4.2.2 Online

I. Zoom Meetings (Belive, 2021; Salt Lake City Civic Engagement Team, 2020)

The proper use of digital meeting tools, like Zoom, allow the presenters to engage with a wider audience and increase involvement during the meetings. Prior to suggesting an online meeting via Zoom, the host could consider if this platform is accessible to all the participants. When Zoom is deemed appropriate, we suggest the following guidelines:

- a. Application:
 - i. Zoom can be used for shorter informative meetings that require short interactive one on one or for a large audience.
 - ii. This software can be accessed through:
 1. Laptop/computer (PC/Mac) – recommended
 2. Tablet (Apple iOS, Android)
 3. Smartphone (Apple iOS, Android)
- b. Prior to hosting a meeting, it is suggested that the host ensure that the following roles are filled.
 - i. Facilitator
 - ii. Technical lead
 - iii. Note-taker
 - iv. Subject matter expert
 - v. An additional contact for technology problems
- c. Etiquette:
 - i. Establish ground rules prior to the presentation.
 1. Clearly define and communicate roles and engagement approaches.
 2. Keep in mind people may not feel comfortable about turning their camera on.
 3. Inform people to keep themselves muted during the presentation
 4. Respect for one another's talking points is very important.
Encourage people to use the chat respectfully and remind them that they are in a safe place.
 - ii. Introduce the software to the audience.

1. Demonstrate the different interactive tools that can be used on zoom.
 - a. Poll, raise hands, camera on and off, mute and unmute
- iii. Connectivity issues:
 1. Zoom offers a phone number for participants who are not able to connect via computer.
 2. Ensure that members are able to navigate back to the meeting if connection is lost.
- d. Equity and accessibility:
 - i. If a participant is struggling with connection, offer to let them call into the Zoom meeting. This doesn't use cellular data and allows the participant to stay involved with the meeting information.
 - ii. Propose an alternative communication method such as a phone call, email, or mailing address.
 - iii. Record the online meeting for participants to review.
 1. It is suggested that these meetings be offered with alternative translations.
 2. Offer a phone number for a translator for people to contact if their language is not provided in the translations.
 - iv. Create a safe place for marginalized voices.
 1. Recognize the privileges of people in the organizing group.
 2. Understand the level of trust with the organizing group
 - a. Mistrust toward researchers (Murry, 2011)
 - i. Fear of breach in confidentiality
 - ii. Previous history of exploitative relations with researchers
 3. Understand the level of comfort engaging online (with prevalence of anonymous/bigoted comments) by contacting them prior to the online meeting via email, phone etc.
 4. Take the time to invest in relationship-building.

- a. The best way to end exclusion and isolation is to work on being an ally. That means educating yourself on the privileges your own group enjoys to better understand the perspectives of members of marginalized communities. (Young African Leaders Initiative, n.d.)

- v. Alternative online meeting platforms.

- 1. The Local Government Commission has compiled different suggestions for online engagement and meetings. *For more information on these alternative platforms refer to Appendix 8.3*

II. II. Survey (Mann, 2018)

- a. Identify which topic/issue the survey will gather information about.
 - i. Keep all questions related to this objective.
- b. Know which audience will be targeted for the survey.
- c. If appropriate, use incentives to gather more participants.
- d. Let participants know what the information gathered from the survey will be used for.
- e. Create questions that are unbiased and easy for participants to understand.
- f. Keep a clear and consistent format throughout the survey.
- g. Conduct a pilot survey before opening it to the public.

III. III. Website/Social Media (New Orleans Communications Department, 2021)

- a. Utilizing a website or social media account is one way to keep the community up to date on current events and information. This would need to be updated regularly with information about upcoming meeting times, transcribed information provided during prior meetings, and links to relevant documents.
- b. Contact information for community leaders or experts may also be presented with various ways to reach a person, such as phone, email, mailing address, or online meeting link. An input section may include some questions regarding previous meetings, accessibility of meetings or information, and a write-in portion for supplemental comments.

IV. IV. Database (The Water Collaborative, 2021)

- a. A collection of SLR educational community resources can be collated in a publicly accessible domain. *(See applicable example from New Orleans in Appendix 8.3)*
 - i. Homeowners Resources
 - ii. Federal/ State Education Resources
 - 1. SLR databases such as NOAA SLR Viewer
 - 2. EPA & NOAA definitions & SLR Terminology
 - iii. Local educational resources
 - 1. Meeting information
 - 2. Local Workshops
 - 3. Local SLR Projects/ Research
 - 4. Educational resources for K-12 Teachers
 - a. Videos/lessons on SLR
 - iv. Local Environmental Non-Profit resources
 - 1. Research/ projects being conducted through local NPOs
 - 2. Outreach/ events hosted by NPOs
 - 3. Educational events hosted by NPOs
 - v. Local Businesses resources
- b. These resources could be utilized in coordination with a locally distributed paper bulletin or newsletter to ensure accessibility for community members that are at a technological disadvantage.

5. Best Practices Applied to Case Study Areas

In the following sections, we have applied the engagement practices to Humboldt Bay, the City of Santa Cruz, and the City of San Diego. These three areas in California were chosen because they provide examples of different community sizes and approaches to keeping residents engaged. Humboldt Bay was chosen because it provides an example of smaller communities (population less than 30,000) in a remote location in far Northern California with communities located in a designated tidal inundation zone. The City of Santa Cruz was selected because it is a suburban city on the Central Coast with a medium sized population of 65,000. San Diego provides an example of an urban area with a large diverse population of 1.41 million in Southern California. The best practices that we suggested for each place were derived from the information from our literature review.

5.1 Humboldt Bay, California

To demonstrate how the best practices can be applied to a rural community, we used Humboldt Bay. Humboldt County is experiencing the fastest relative rate of sea-level rise (SLR) in California due to tectonic subsidence (Aldaron, 2018b). As sea levels rise, inundation of infrastructure including residential and commercial buildings, PG&E lines, high speed internet cables, roads and highways, and water and sewer lines will occur around Humboldt Bay. Many challenges are present in planning for SLR around Humboldt Bay since the land that is predicted to be inundated by SLR is owned and managed by many different jurisdictions. As Humboldt Bay is a unique area that is experiencing relatively rapid SLR and requires coordination between landowners, it has the potential to provide lessons to other coastal communities in how to effectively plan for SLR.

5.1.1 Preliminary Data Collection

In the first step, we used the NOAA SLR Viewer to show current mean higher high water (Figure 1) and three different scenarios of inundation in Humboldt Bay. These scenarios are a one foot (Figure 2), three foot (Figure 3), and six-foot increase of SLR (Figure 4). We also used EPA EJScreen to display areas that meet our definition of disadvantaged communities. For all the following figures in this section, north is the top of the image.

5.1.1.1 Identify areas vulnerable to sea-level rise

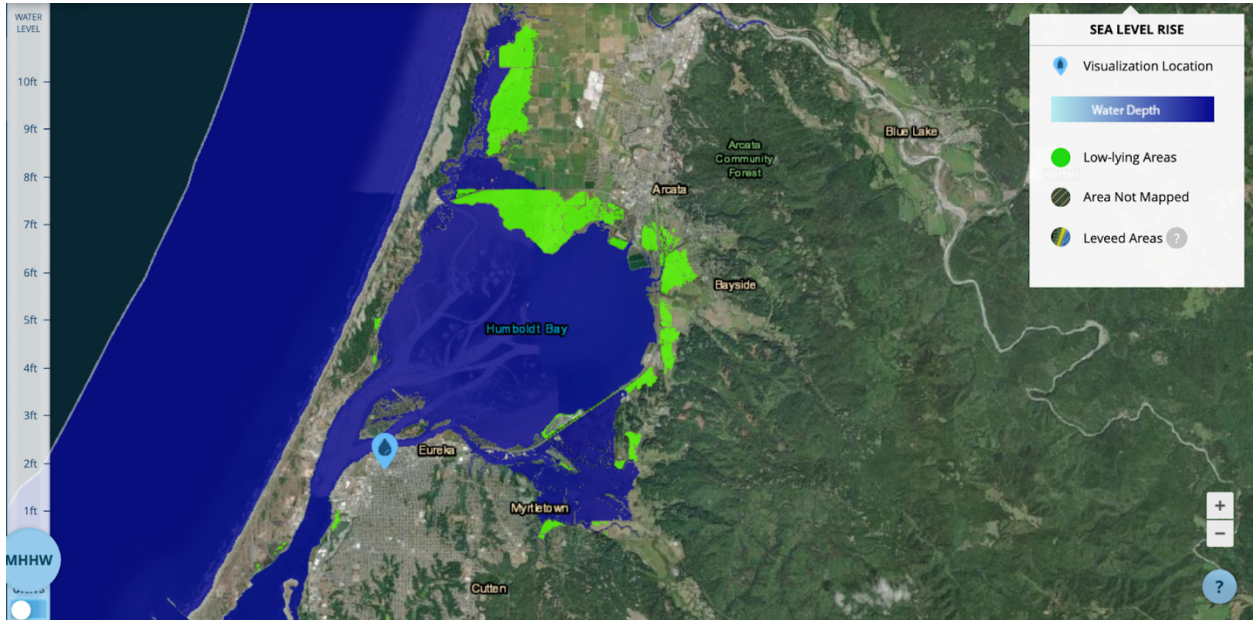


Figure 1: Current Mean Higher High Water (MHHW) around Humboldt Bay, California (NOAA SLR Viewer).

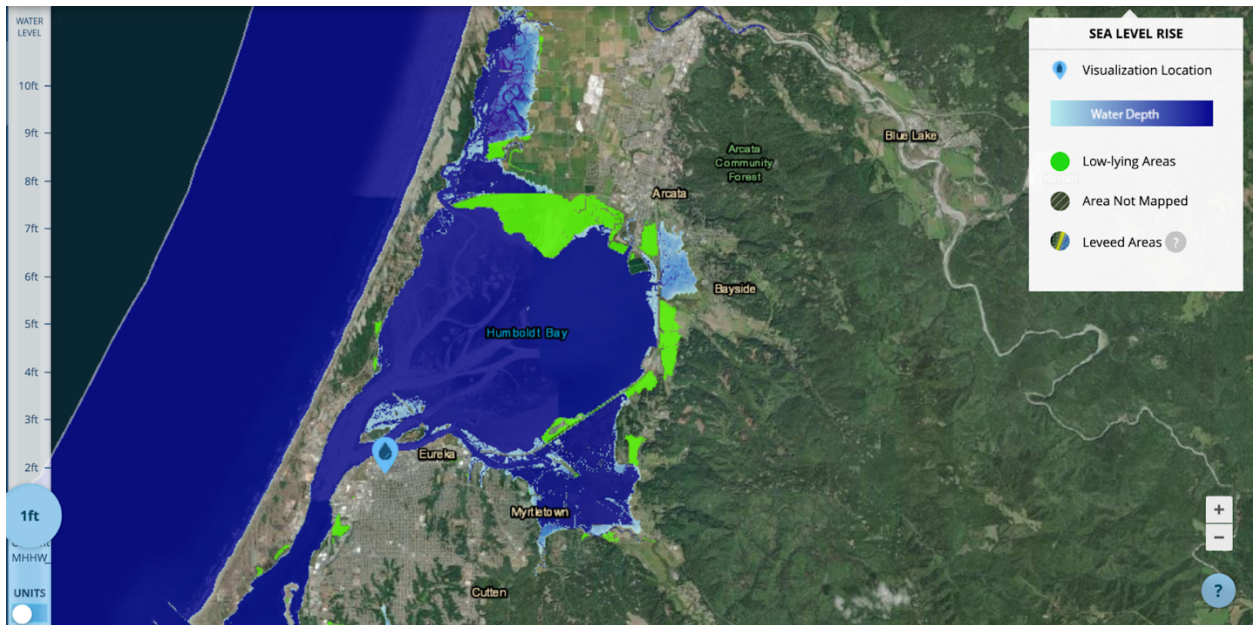


Figure 2: Prediction of one foot of SLR around Humboldt Bay, California (NOAA SLR Viewer).

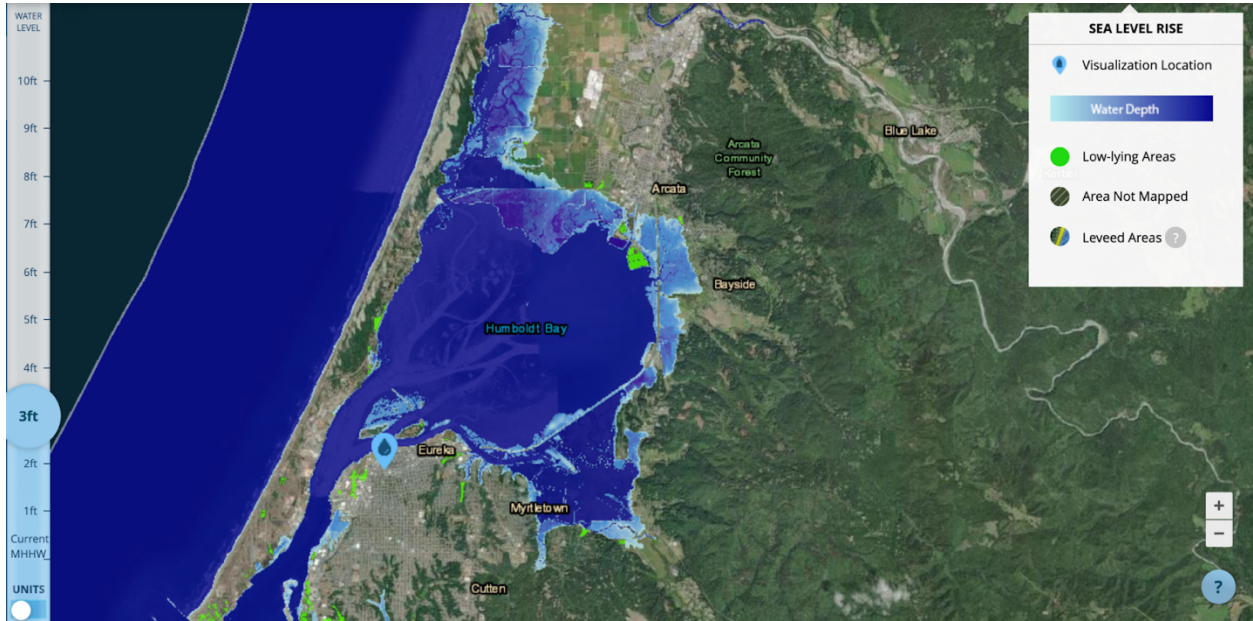


Figure 3: Prediction of three feet of SLR on Humboldt Bay, California (NOAA SLR Viewer).

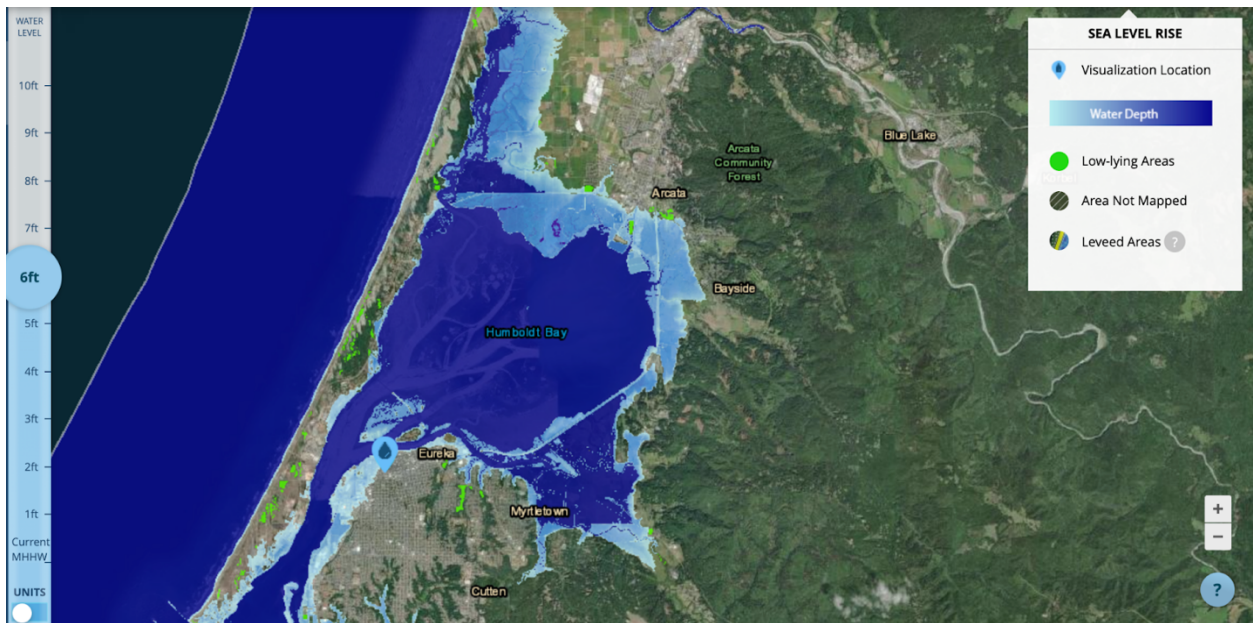


Figure 4: Prediction of six feet of SLR around Humboldt Bay, California (NOAA SLR Viewer).

As Figure 1 shows, Humboldt Bay currently has many low-lying areas that are vulnerable to King Tides, storm surges and SLR. As shown in Figure 2, with one foot of SLR, communities between Arcata and Bayside, the north western part of Humboldt Bay, part of Myrtle town and a majority of the island west of Eureka will be inundated. Additionally, with one foot of SLR a portion of the Eureka Arcata State Hwy 101 safety corridor, which

is the main road between Eureka and Arcata, will be inundated. As shown in Figure 3, with three feet of SLR the safety corridor is completely inundated, disrupting the main mode of transportation between Eureka and Arcata, and affecting utility lines that run beneath and to the East of the highway. As Figure 4 shows, with six feet of SLR, a large portion of Arcata, Bayside, Myrtle town, and the southern end of Eureka will be inundated. These figures show that the communities surrounding Humboldt Bay will begin to experience the impacts of SLR with just one foot of SLR.

5.1.1.2 Identify disadvantaged communities

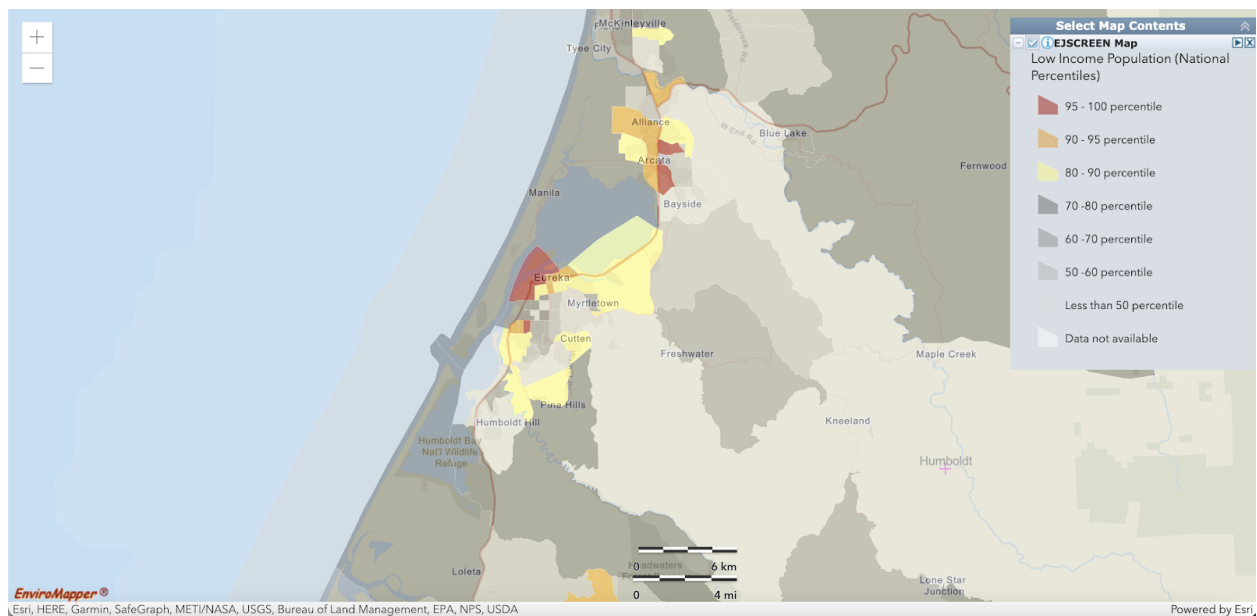


Figure 5: Low-income percentiles around Humboldt Bay, California (EPA EJScreen).

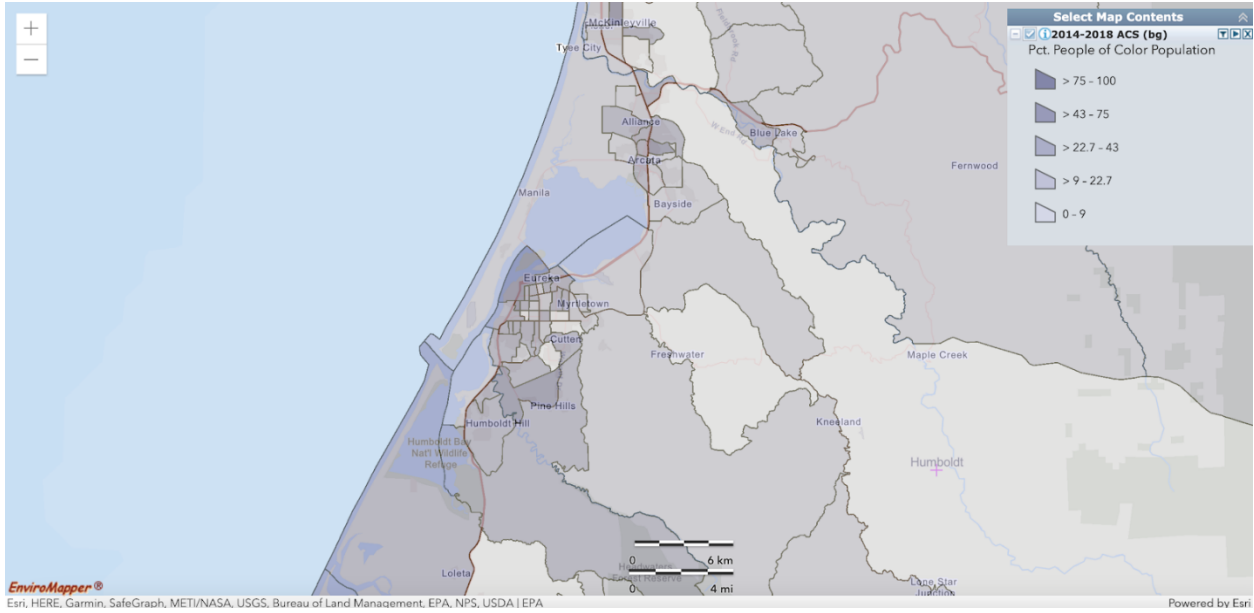


Figure 6: Percent people of color around Humboldt Bay, California (EPA EJScreen).

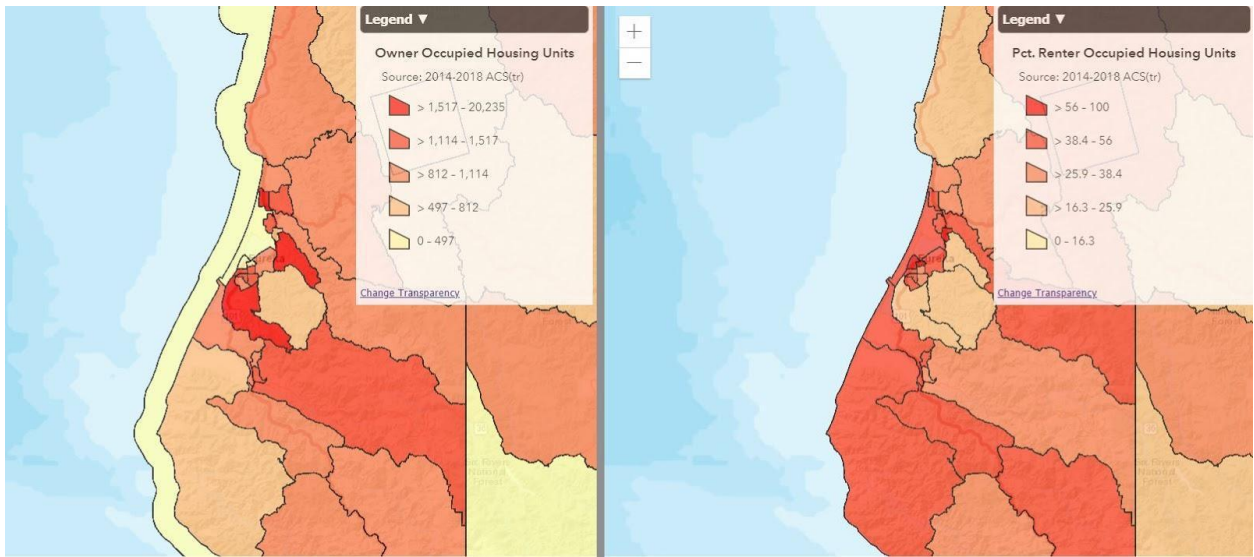


Figure 7: Renter occupied housing units around Humboldt Bay, California (EPA EJScreen).

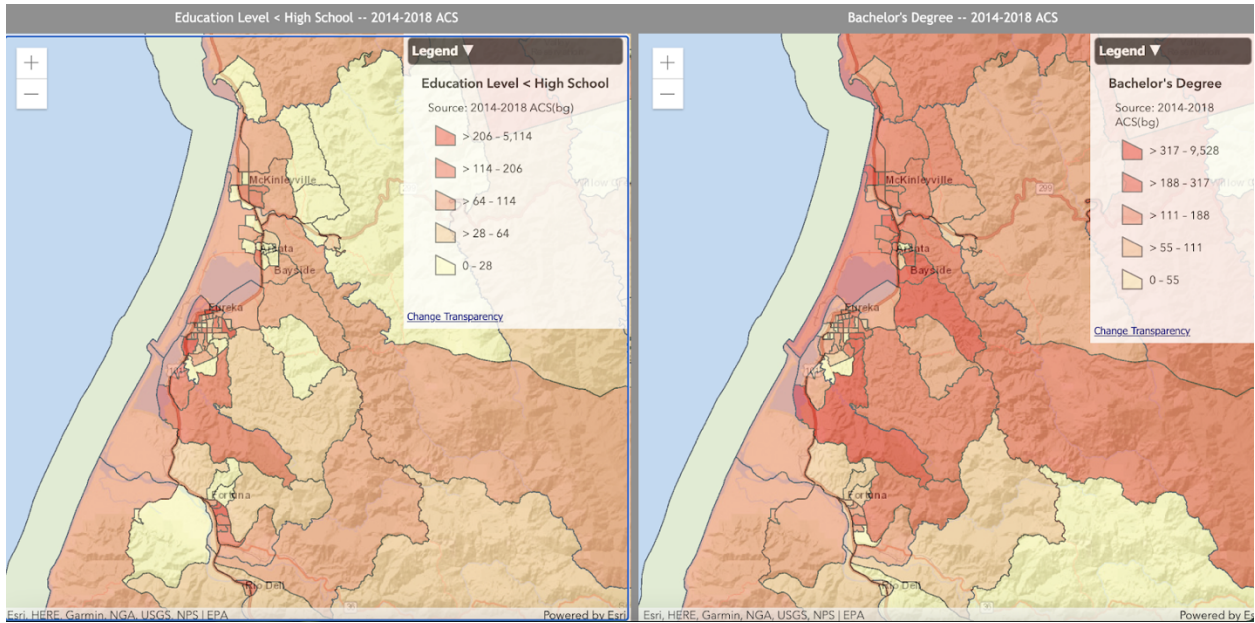


Figure 8: Comparison of population around Humboldt Bay, California with less than a high school degree (left) and with a bachelor’s degree (right) (EPA EJScreen).

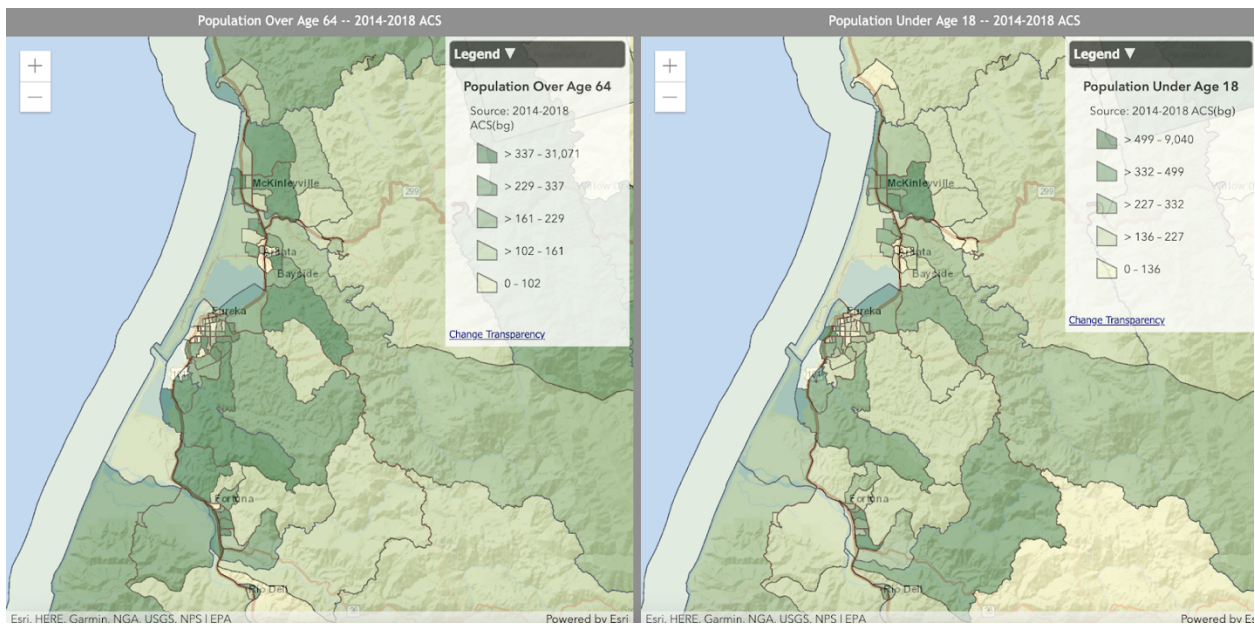


Figure 9: Comparison of population around Humboldt Bay, California of ages over 64 (left) and of population under the age of 18 (right) (EPA EJScreen).

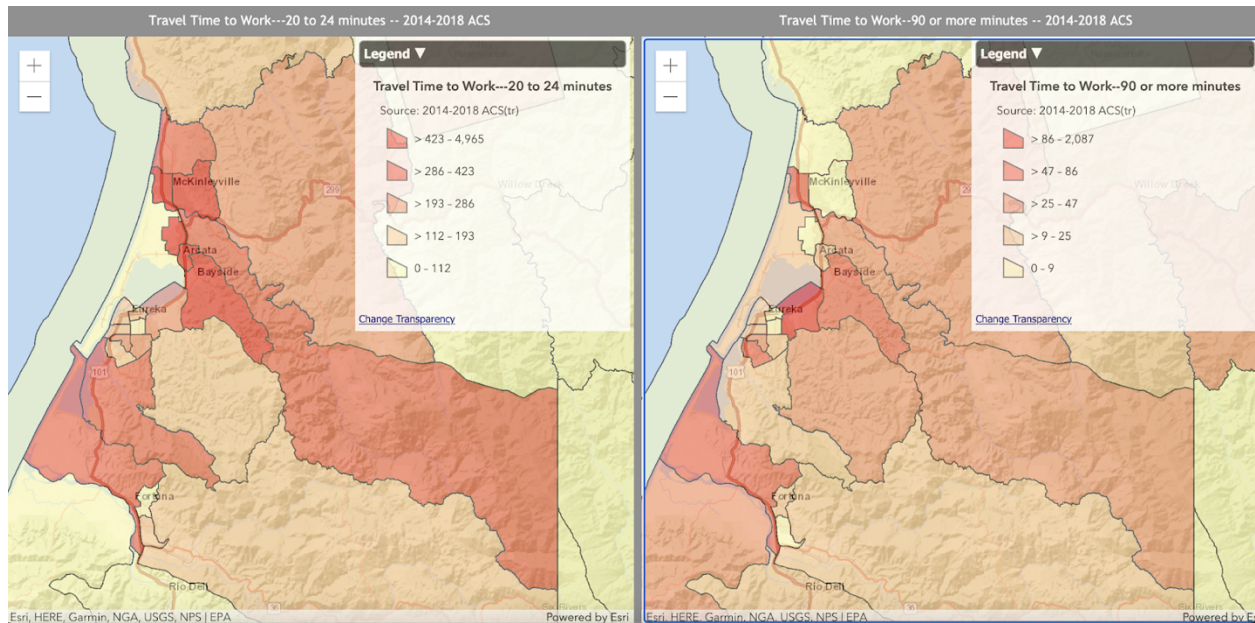


Figure 10: Comparison of population around Humboldt Bay, California with a travel time to work of 20-24 minutes (left) and a travel time to work of 90 minutes or more (right) (EPA EJScreen).

These maps display the concentrations of populations in the Humboldt Bay Region that meet our definition of a disadvantaged community. Figure 5 shows the concentrations of low-income populations. These populations are concentrated near western Eureka and southern Arcata. With these areas being next to the Bay, engagement processes may choose to prioritize outreach in these areas, as they are very vulnerable with the combination of being disadvantaged and at risk of inundation from SLR. In Figure 6, the percent of people of color in the region is displayed. It is apparent that there are higher concentrations of POC throughout the coastal region in the Eureka area. In Figure 7, owner occupied units and renter occupied housing units in the Humboldt Bay Area are displayed. There are higher concentrations of renter occupied housing units in comparison to owner occupied housing units surrounding the bay in both the Arcata and Eureka areas. As shown in Figure 8, education level varies in the region. Within more rural areas in the region, there is a lower concentration of high school graduates. As shown in Figure 9, age dispersion between the population above 64 and below 18 is relatively equal. In Figure 10, more individuals endure a travel time of 20-24 mins times to work than 90+ minutes to

work. Although travel time didn't prove to be relevant in the Humboldt Bay region, this parameter may be a barrier for other communities and should be considered.

5.1.2 Identify key stakeholders

Within Humboldt County, stakeholders for planning for SLR include current residents, private landowners, government agencies, tribal governments, and environmental non-profits within the region. Identifying and including these stakeholders assures equity within the planning process.

- I. I. Indigenous communities
 - a. Wiyot Tribe
- II. II. The local community including identified disadvantaged communities
 - a. Business owners
 - b. Waterfront restaurants
 - c. Retail in old town Eureka
 - d. Waterfront housing
- III. III. Local government
 - a. City of Eureka
 - b. City of Arcata
 - c. County of Humboldt
 - d. Community Services District
 - e. Harbor District
 - f. Humboldt Bay Municipal Water District
- IV. IV. State government agencies
 - a. Caltrans
 - b. CA Coastal Commission
 - c. State Lands Commission
 - d. PG&E
 - e. California State Coastal Conservancy
 - f. California Department of Fish and Wildlife
- V. V. Federal Agencies
 - a. US Fish and Wildlife Service (Humboldt Bay National Wildlife Refuge)

- b. Bureau of Land Management (BLM)
 - c. US Coast Guard
- VI. VI. Non-profits /NGOs/other organizations doing SLR work
- a. Humboldt Bay Keeper
 - b. HSU Sea Level Rise Initiative
 - c. Environmental Protection Information Center (EPIC)

5.1.3 Investigate existing SLR information in the community

In the Humboldt Bay Area, there are SLR vulnerability and risk assessments, and adaptation plans for the City of Eureka (Laird, 2016; City of Eureka, 2016; Bayview Consulting, 2016), City of Arcata (Anderson, 2018a) and King Salmon and Fields Landing (Laird & Shikany, 2018b). Additionally, there is a vulnerability assessment (Laird, 2018b), conceptual groundwater models (Willis, 2014), sea-level rise assessment (Anderson, 2018b), diked shoreline SLR adaptation feasibility study (Laird, 2018a) and hydrodynamic modeling and inundation vulnerability mapping (Northern Hydrology & Engineering, 2015) for the entire Humboldt Bay region. All these reports are very detailed and have exceptionally useful information that may be utilized by SLR planners. However, while there is a significant amount of existing SLR information available on the Humboldt County website, it can be difficult to navigate since it is not currently accessible in one organized location. To date, the most beneficial and widely applicable document is the Humboldt County Humboldt Bay Area Plan Sea Level Rise Vulnerability Assessment (Laird, 2018b) because it contains the most information about SLR vulnerability around the entire Humboldt Bay region.

5.1.4 Assess existing processes of community engagement

Currently, there have not been many opportunities for community engagement in SLR adaptation planning. The main effort for more in-depth community engagement was conducted by Kristina Kunkel in 2019 for her master's thesis at Humboldt State University. Through this research, Kristina Kunkel conducted interviews with King Salmon stakeholders and held public workshops to understand the community's perceptions of and

vulnerability to flooding and sea-level rise and determine their preferred methods of adaptation (Kunkel, 2019).

Besides this effort, there have been planning workshops that were open to the public such as the Fairhaven & Finn Town Communities at Risk Strategic Sea Level Rise Adaptation Planning Workshop (Laird & Shikany, 2018a) and the Humboldt Bay Harbor, Recreation, and Conservation District Adaptation Planning Working Group meetings (Humboldt Bay Harbor District, 2020).

The workshop in Fairhaven and Finn Town was not an engagement process for community members but rather an informational presentation on the strategic plan, SLR policy and planning process, tsunami safety planning and more. The audience included various stakeholders and was open to the public (Laird & Shikany, 2018a). The Humboldt Bay Harbor, Recreation, and Conservation District held Adaptation Planning Working Group meetings from 2013 to 2015 (Humboldt Bay Harbor District, 2020), but this was a collaboration effort among local agencies rather than a community engagement effort. The public was informed of the community and environmental risks of SLR around Humboldt Bay (Humboldt Bay Harbor District, 2020), but they have not been involved in an engagement process regarding planning for resilience to these risks.

5.1.5 Determination of Best Engagement Process

For Humboldt Bay, the engagement process could be improved with the use of more workshops that are both online and in-person. These workshops would focus on educating community members about SLR. Having more workshops and informational sessions could work to bridge the disconnect between the best available science and the public's general knowledge. Through this engagement, the public would have a better understanding of SLR, as well as being more engaged with their community and local planning processes.

Currently, the information about SLR in Humboldt Bay is difficult to navigate which may discourage the public from exploring these resources. The use of a database could combat this issue by presenting the information in a clear and easily navigable manner. A database would compile all the available information into a list or table that would make it easier for users to find relevant documents. The use of a database would not only make it easier for

the public to engage with this information, but it would also assist planners and other researchers.

As the Humboldt Bay Area is composed of many different jurisdictions, landowners, and land uses, a meeting with all stakeholders would be a beneficial step toward achieving community wide cooperation in planning for SLR. Facilitation of this meeting would allow an all-encompassing planning process to occur throughout the region. Engagement with a variety of stakeholders would bring cohesion and collaboration to this process, making it more effective and inclusive. Regional coordination must occur to provide a space for the meeting that is accessible to all stakeholders.

5.2. Santa Cruz, California

The city of Santa Cruz was selected to show how these best practices can be applied to moderately populated urban and suburban areas. The city has vulnerable populations located in the SLR tidal inundation zone, but the City's outreach and education efforts do not account for them. Currently, there is information about SLR located on the city's website, but the site has not been recently updated. The City of Santa Cruz excels in some ways but fails to engage with the entirety of the marginalized communities at risk of damages from SLR.

5.2.1 Preliminary Data Collection

In the first step, we use the NOAA SLR Viewer to show current mean higher high water and three different scenarios of inundation in the City of Santa Cruz. These scenarios are a one foot, three feet, and six feet increase of SLR. We also used EPA EJScreen to display areas that meet our definition of disadvantaged communities.

5.2.1.1 Identify areas vulnerable to sea-level rise

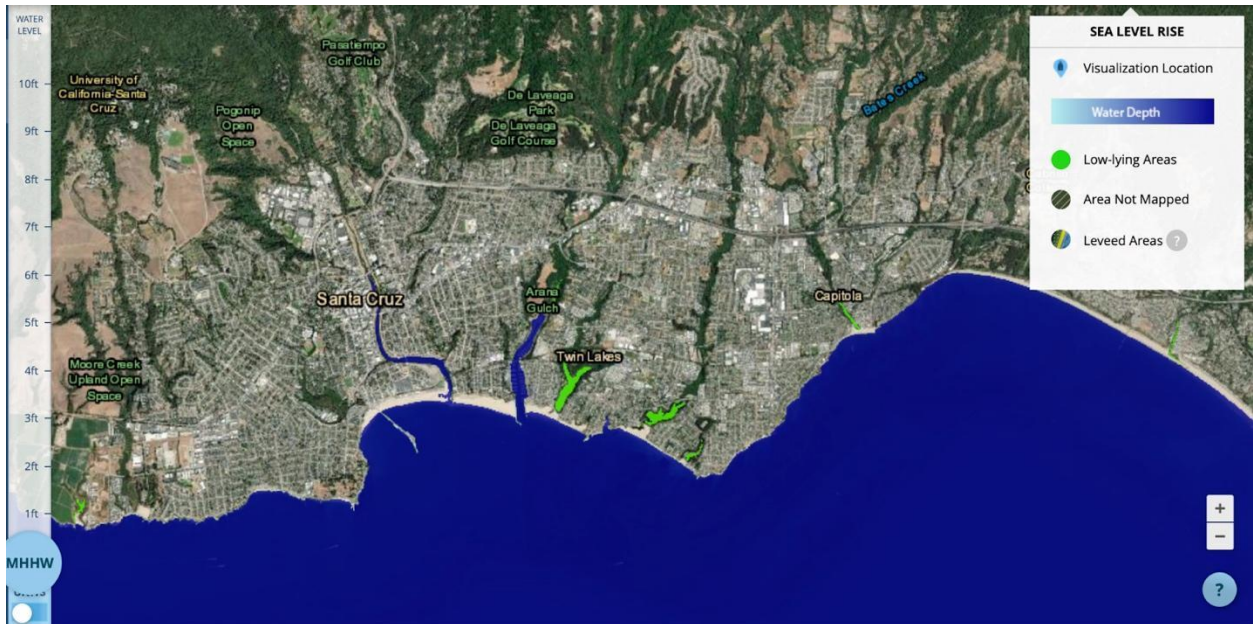


Figure 11: Mean Higher High Water (MHHW) in Santa Cruz, California (NOAA SLR Viewer).

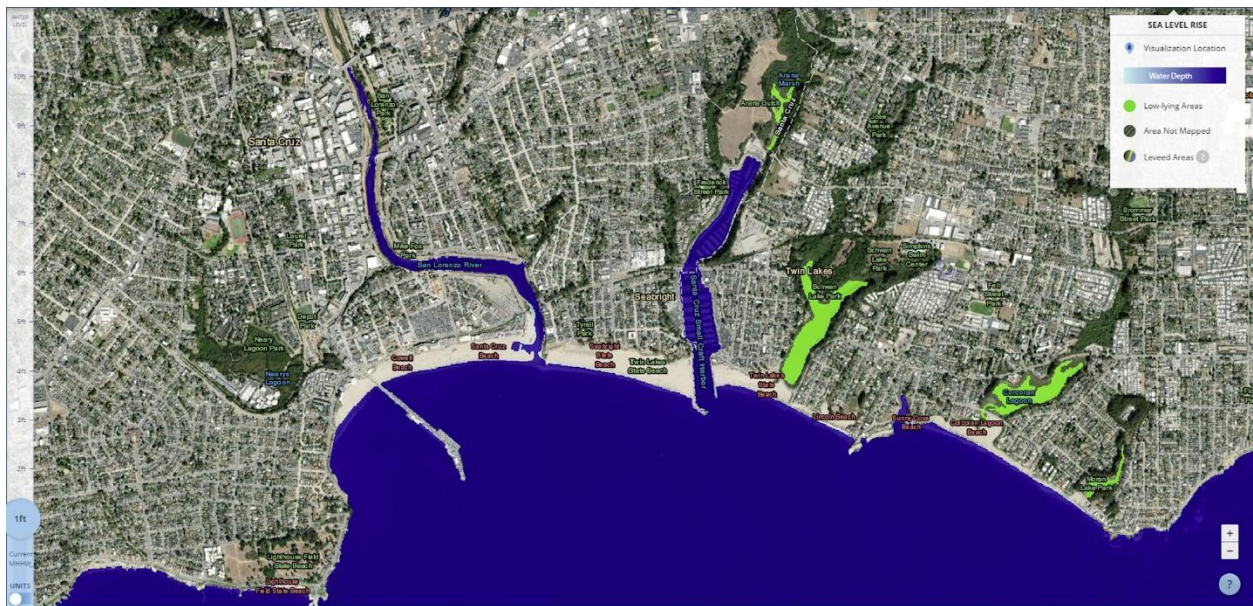


Figure 12: Prediction of one foot of SLR in Santa Cruz, California (NOAA SLR Viewer).



Figure 13: Prediction of three feet of SLR in Santa Cruz, California (NOAA SLR Viewer).



Figure 14: Prediction of six feet of SLR in Santa Cruz, California (NOAA SLR Viewer).

The mean higher high water in Santa Cruz illustrated in Figure 11 shows that low lying areas are found in Twin Lakes, Capitola, Corcoran Lagoon, and Moran Lake Park. As Figure 12 shows, one foot of sea-level rise will result in increased water depths in the San Lorenzo River and Santa Cruz Small Craft Harbor as well as expanding low-lying areas

into the Arana Gulch. Predictions of three feet of sea-level rise demonstrated in Figure 13 reveal impacts on additional low-lying areas in Neary Lagoon Park and along the San Lorenzo River. Finally, six feet of sea-level rise in Figure 14 reveals that the Corcoran Lagoon will be inundated and along with low-lying areas beyond the Lagoon, the San Lorenzo River, Neary Lagoon Park, and into Schwan Lake Park.

5.2.1.2 Identify disadvantaged communities

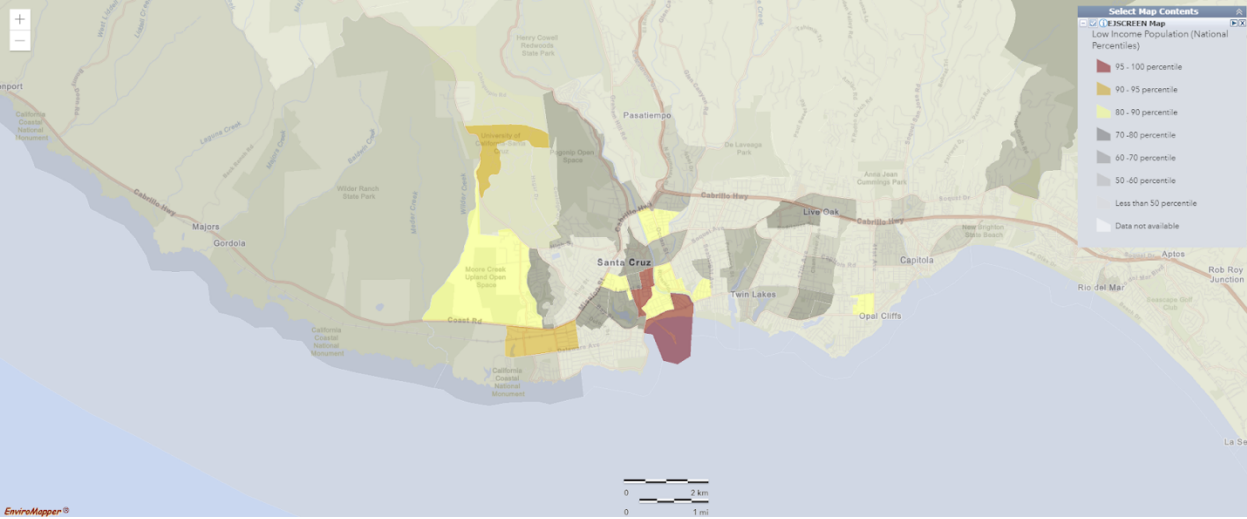


Figure 15: Low-income percentiles in Santa Cruz, California (EPA EJScreen).

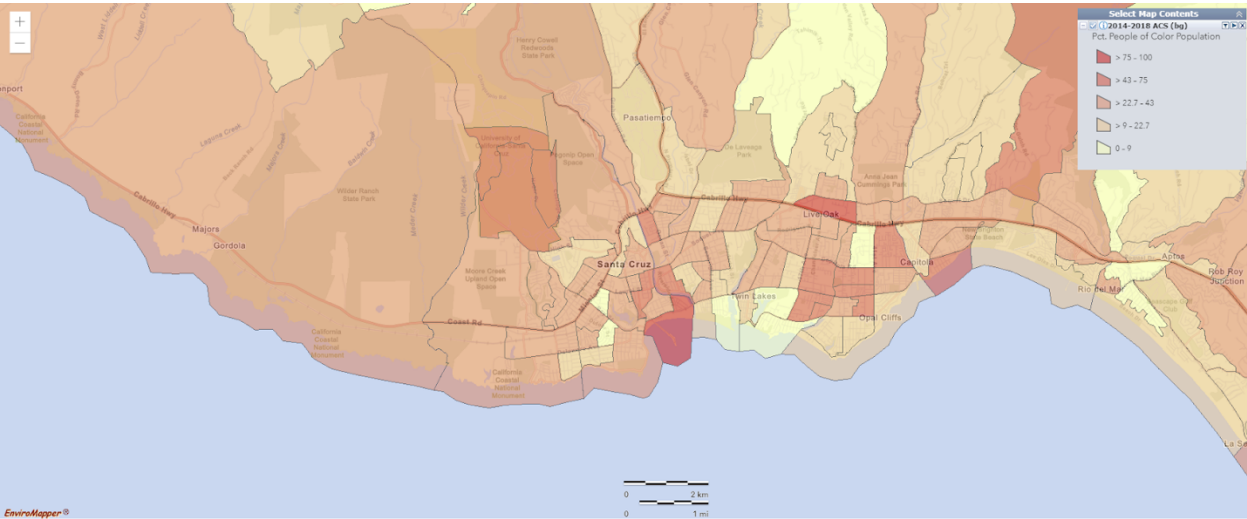


Figure 16: Percent people of color in Santa Cruz, California (EPA EJScreen).

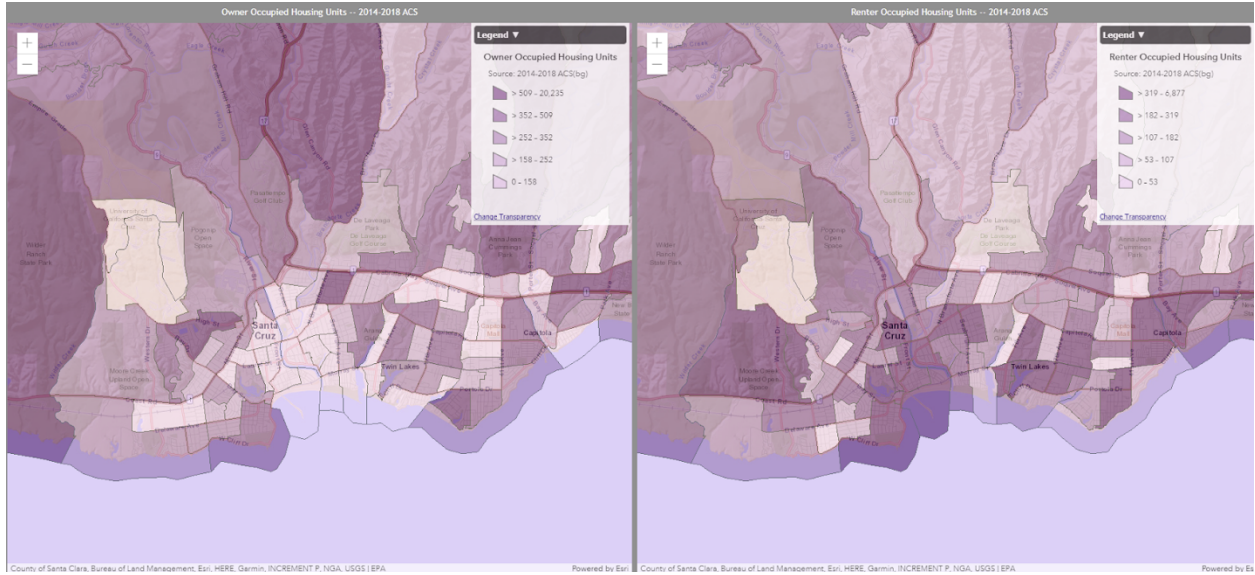


Figure 17: Comparison of renter housing units and owner-occupied housing units in Santa Cruz (EPA EJScreen)

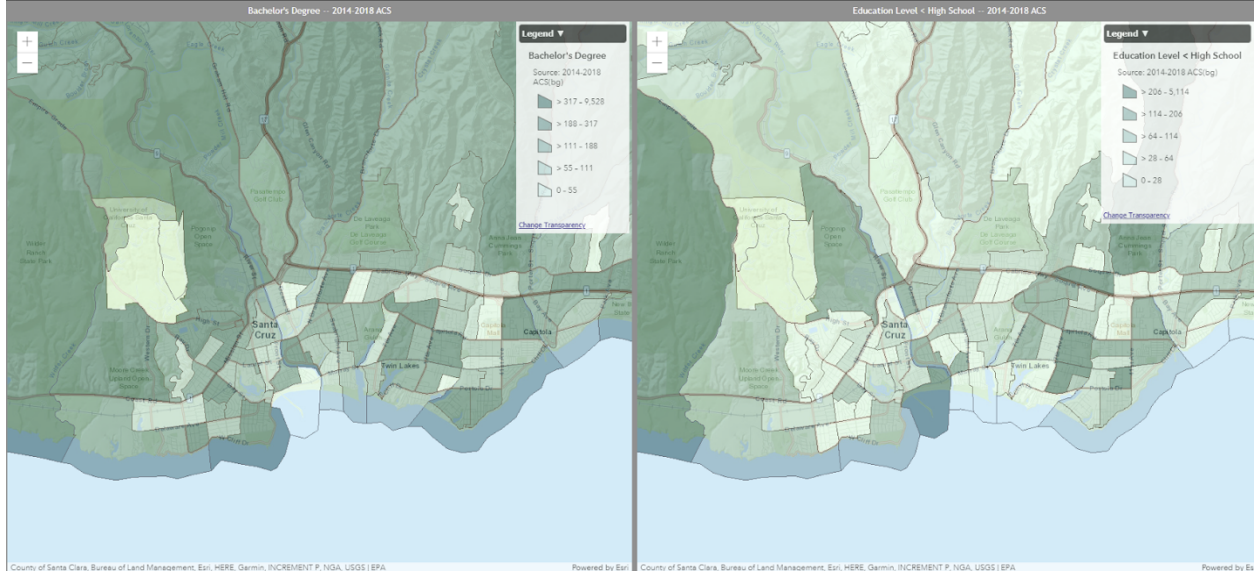


Figure 18: Comparison of population in Santa Cruz, California with less than a high school degree (right) and with a bachelor's degree (left) (EPA EJScreen).

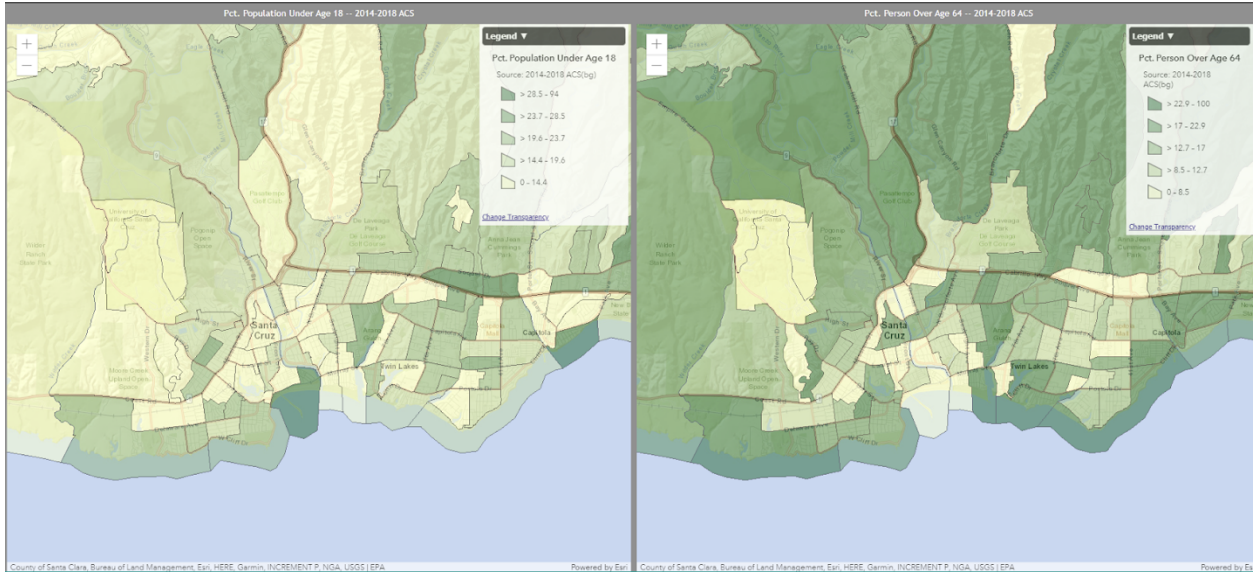


Figure 19: Comparison of population in Santa Cruz, California of ages over 64 (left) and of population under the age of 18 (right) (EPA EJScreen).

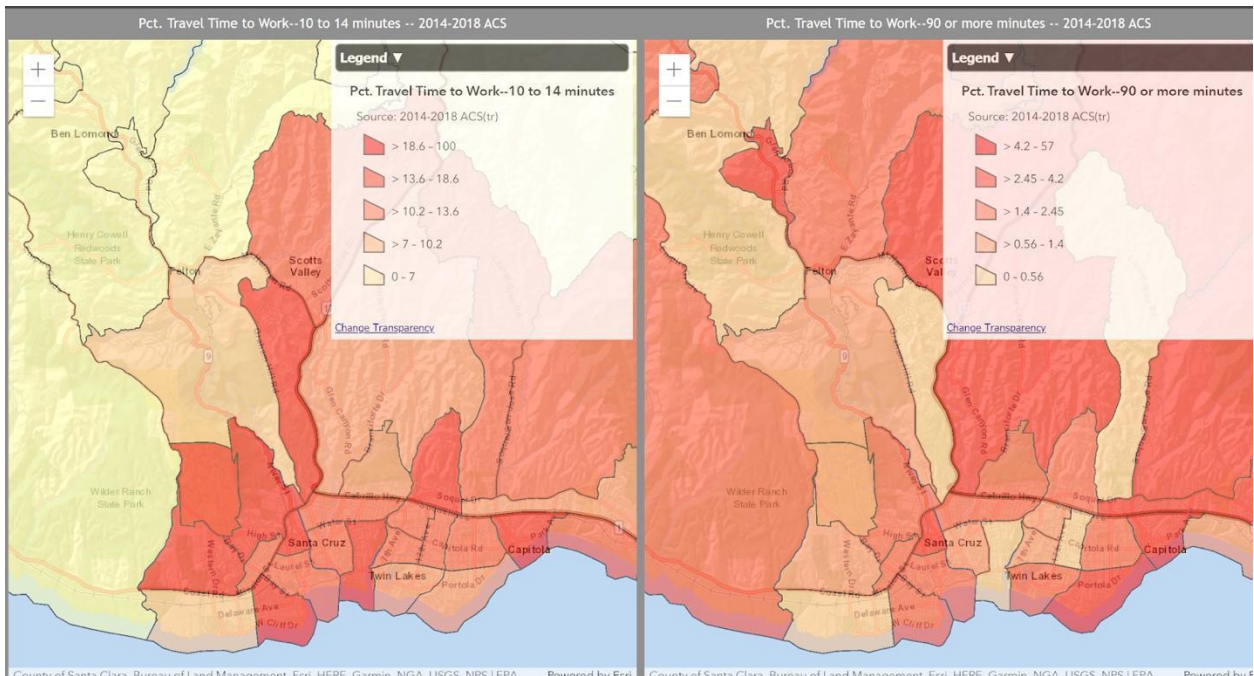


Figure 20: Comparison of travel time to work 20-24 minutes and <90 minutes in Santa Cruz (EPA EJScreen)

Utilizing *EJScreen*, we created maps to reflect our definition of disadvantaged communities in Santa Cruz. Low-income populations are primarily found along the coast, with a large concentration found along Cowell Beach and lower concentrations found at

Moore Creek Upland Open Space and University of California Santa Cruz (Figure 15). Percent of people of color is represented in Figure 16, where there appears to be even distribution throughout the region. However, there are some areas where 0-9% of the population does not have people of color including around Twin Lakes, Aptos, and further into the mountains. Figure 17 shows that renter and housing occupied housing units are dispersed throughout Santa Cruz though there appears to be more renters found in downtown Santa Cruz and around the coast. There are high levels of education attainment in Santa Cruz yet around the coast there seems to be some areas where people have less than a high school degree (Figure 18). Downtown Santa Cruz has a younger population than residents that live along the coast and further inland, as seen in Figure 19. In Figure 20, 20-24 minute and <90-minute commutes are compared. There seems to be no correlation between location and the amount of time it takes to travel to work. While travel time to work may not be relevant in this community, this parameter may be a barrier for other communities and should be considered.

5.2.2 Identify key stakeholders

Within the City of Santa Cruz, stakeholders within planning for SLR involve residents, private landowners, government agencies, tribal governments, and environmental non-profits within the region. Identifying these stakeholders assures equity within the planning process.

- I. I. The local community including identified disadvantaged communities:
 - a. Second Harvest Food Bank of Santa Cruz and San Benito Counties.
 - b. Salvation Army
 - c. Virtual Recreation
 - i. A resource on the online website that POC, Senior Citizens, and youth can get engaged with local events.
- II. II. Local government
 - a. Planning Commission for the City of Santa Cruz
 - b. City manager and staff
 - c. Fire Department
 - d. Water resource management

- e. Department of Habitat Conservation Planning
 - f. Resource Conservation District of Santa Cruz County
 - g. Soquel Creek Water District
 - h. Davenport Sanitary District
 - i. Santa Cruz Port District
- III. III. Business:
- a. Waterfront restaurants
 - b. Beachfront vendors
- IV. IV. Indigenous Communities:
- a. Awaswas Costanoan
 - b. Yokuts
 - c. Sierra Miwok
- V. V. State Agencies:
- a. Transportation and Public Works Commission
 - b. Parks and Recreation Commission
 - c. Department of Water Resources
 - d. State Water Resources Control Board
 - e. Central Coast Regional Water Quality Control
 - f. Department of Fish and Wildlife
 - g. Coastal Conservancy
 - h. California Coastal Commission
 - i. Department of Forestry and Fire Protection (CalFire)
- VI. VI. Non-profits /NGOs/other organizations doing SLR work
- a. Resilient Coast Santa Cruz initiative
 - b. Commission for the Prevention of Violence Against Women
 - c. Regional Water Management Foundation
 - d. Save Our Shoes
 - e. Community Environmental Council
 - f. Coastal Commons Land Trust
 - g. Land Trust of Santa Cruz County

5.2.3 Assess existing sea-level rise information

Santa Cruz Climate Action Network facilitates a website which provides a variety of resources about sea-level rise (SLR) around the world that affects rising water levels in Santa Cruz (Santa Cruz Climate Action Network, n.d.) This includes articles about shrinking glaciers in Greenland, impacts of storm surges, links to reports on SLR and more. The “Climate Adaptation Plan 2017-2022” gives insight into community infrastructure that will be impacted by SLR including 2,100 structures, Central Fire Station, Police Station, City Hall, Lifeguard and Marine Safety Headquarters, and County Government Center, and 40 schools and day care centers (City of Santa Cruz, 2017).

5.2.4 Consider current community engagement

The City of Santa Cruz addresses the negative effects that climate change has on their infrastructure, health and safety, and economic vitality. To combat this issue, the City is working on encouraging community involvement and public-private partnership to respond to the potential climate impacts (Climate Adaptation Plan, 2011). This type of outreach includes hosting climate resilience events, offering surveys, and publishing their progress to their City’s website. In addition, they offer a supplemental webpage to provide information to city planners to better identify vulnerable communities. They categorize vulnerable communities based on income level, age, language limitations, disabilities, and crime incidence (Climate Adaptation Plan, 2011).

The updated 2030 General Plan offers minimal information about SLR in Santa Cruz. Under the Natural Resources and Conservation section of their general plan, they are working to address the impacts of future sea level rise by completing the city's vulnerability study and the climate change risk assessment. (Santa Cruz 2030 General Plan, 2017). The Climate Action Program for Santa Cruz is working to establish links between programs and provide strategic incentives to increase the success of the city services necessary to meet their climate action goals.

The Santa Cruz Climate action program offers a program called the “Resilient Coast Santa Cruz”. This program was created by the City of Santa Cruz to create a coastal management program that will ensure SLR projects are carried out. Right now, the Resilient Coast Santa

Cruz has completed a conditional assessment of the coastline uses, infrastructure, and policies to find deficiencies and conditions that do not align with the community preference and the regulatory standards. Now they are working to complete an analysis of the infrastructure and policy adoption options, which include cost/ benefit analysis of the different options (City of Santa Cruz, 2020). This website is updated regarding the progress of their project and offers contact information for community members to respond to their project.

The “Integrated Regional Water Management Plan,” (IRWM) written by the Regional Water Management Group (2014), addresses how they identified stakeholders and engaged them in the process. This included their website, meetings, workshops, email, and written correspondence. The public meetings were hosted in diverse locations to ensure they were ADA accessible and in close proximity to public transportation. In addition, different times were offered to allow options that would fit into people’s schedules. The community was given access to information about IRWM efforts including implementation and planning projects, meetings, and workshops.

5.2.5 Determination of Best Engagement Practices

In designing the best practices for public outreach for the City of Santa Cruz, there needs to be more emphasis on community involvement. Currently, the City of Santa Cruz works on informing their community about events through their website, but their additional platforms for engagement are limited. The format of the website is also difficult to navigate for those who have difficulty with technology. Although the website offers an email for people to contact in case they have questions or concerns, there is no alternative contact information. This can be a hindrance to community members who lack the technology or the education to get involved. The website does not appear to be maintained on a regular basis, since they still advertise for events that have passed.

At this point, the City of Santa Cruz provides limited information about SLR and the information that the City does provide is not easily accessible to the public. For the communities that are adversely affected by SLR, there is no place specific information about SLR rates in their surrounding areas or specific guidelines to actively engage with them around SLR planning. The Santa Cruz Climate Action Plan (2017-2022) includes

basic information about infrastructure that will be affected by SLR, but it is minimal and does not really touch on the extent that it would affect disadvantaged communities. Although the City lacks accessible information about sea-level rise on the city website and inclusive outreach processes, the Santa Cruz Integrated Regional Water Management (IRWM) Plan offered an exemplary community engagement model. The Regional Water Management Group (RWMG) first investigated who key stakeholders were and invited more stakeholders by keeping track of workshop meetings/sign-ins, recommendations from current stakeholders, and sign-ups through their website. They worked on making the methods of the planning process accessible to the community through in-person and digital workshops. The RWMG ensured that in-person meetings were accessible to people who rely on public transportation by choosing locations that were located close to public transportation stops. In addition, they utilized locations that were ADA accessible. The City of Santa Cruz might improve their engagement practices with disadvantaged communities in two ways. First, there is no formal schedule for meetings with community members and planners. The lack of consistency makes it difficult for community members to stay up to date on changing regulations or pertinent information about SLR. The information that is provided is only offered in two languages, Spanish and English. The most popular languages spoken at home in the City of Santa Cruz are Spanish, Chinese, Mandarin, and other European languages (California Census, 2020). To encourage participation of all community members, the City of Santa Cruz can offer their meeting information in multiple languages or offer a connection to a translator. The changing calendar needs to be updated regularly. This gives the community members ample time to prepare for an event or meeting and allows them to plan accordingly. Event updates may not be restricted to the City's website. Information about upcoming events could be listed at places like community centers, schools and universities, homes for seniors, food kitchens and homeless shelters, and other public facilities utilized by the community. A second recommendation would be diversifying information platforms to make them accessible to different demographics. This alternative could include in-person workshops hosted at a local community center or engaging with the community in a preferred meeting place. Prior to hosting meetings, communication between planners and the affected community might include designing a survey, placing phone calls, or posting meeting

information in an accessible location. Meetings could be recorded so that community members who are unable to meet at that time could view meetings after the fact. Community members could participate in meetings that regard their safety during sea-level rise events. By revising the way meetings are conducted, it could increase equitable accessibility. The City of Santa Cruz does not currently have accessible information about SLR, and the communities affected by SLR. Community education is a large component of building a resilient community and therefore may be at the forefront of SLR initiatives. This may be remedied by making information readily available to residents and by investing in more research that includes place specific effects of SLR. Moreover, offering this information in multiple languages would increase accessibility to disadvantaged communities who may be linguistically isolated. Addressing SLR by providing accessible scientific information would enable the community members to be *resilient*, or able to adapt to change which is essential in the face of a climate crisis like SLR.

5.3 San Diego Bay, California

San Diego Bay was selected to show how these best practices can be applied to an area with a higher population density. As sea-level rise (SLR) threatens public infrastructure, transportation corridors, communication lines, and one of the biggest shipping ports on the West Coast, disadvantaged communities are put at a higher risk. SLR will damage public infrastructure and public transportation systems that community members are reliant on. The loss of jobs and property damage also threatens community members, and these effects will be felt disproportionately by disadvantaged communities.

5.3.1 Preliminary Data Collection

In the first step, we use the NOAA SLR Viewer to show current mean higher high water and three different scenarios of inundation in San Diego Bay. These scenarios are a one foot, three foot, and six-foot increase of SLR. We also used EPA EJScreen to display areas that meet our definition of disadvantaged communities.

5.3.1.1 Identify areas vulnerable to sea-level rise



Figure 21: Mean Higher High Water (MHHW) around San Diego Bay, California (NOAA SLR Viewer)

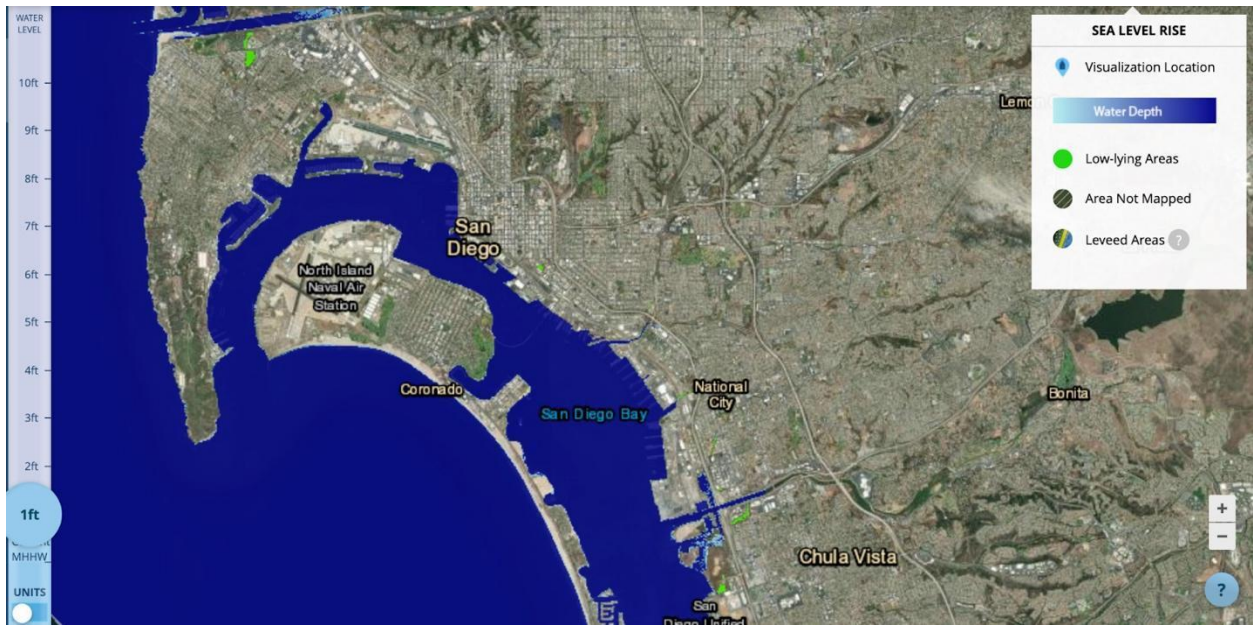


Figure 22: Prediction of one foot of SLR around San Diego Bay, California (NOAA SLR Viewer).

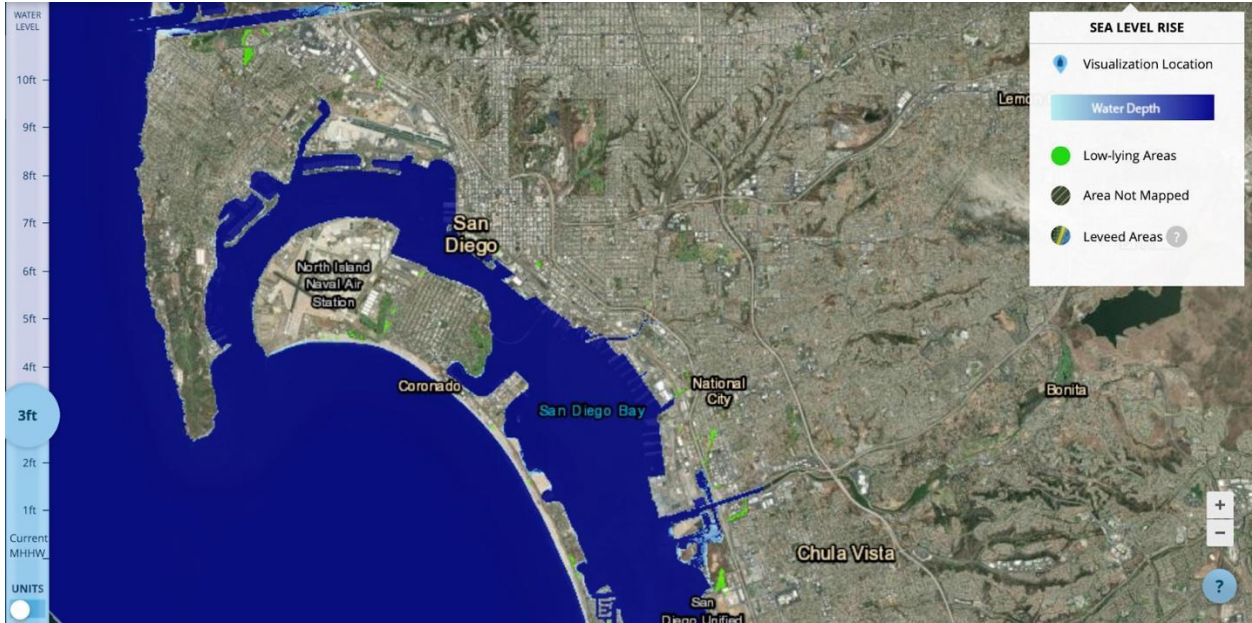


Figure 23: Prediction of three feet of SLR around San Diego Bay, California (NOAA SLR Viewer).



Figure 24: Prediction of six feet of SLR around San Diego Bay, California (NOAA SLR Viewer).

These figures show the different scenarios of SLR around San Diego Bay. Figure 21 shows the current conditions around San Diego Bay by displaying the sea level at the mean higher high-water conditions. The green shows the low-lying areas that will be easily affected by

SLR. As shown in Figure 22, the vulnerable low-lying areas increase with a one-foot increase of sea-level. The area near Chula Vista experiences some inundation at this level. At the three feet rise in sea-level in Figure 23, more of the area around Chula Vista is inundated and there are more low-lying areas at risk. The river in the north of the map also experiences flooding. Figure 24 shows six feet increase in sea-level will have major impacts on the areas around San Diego Bay. The flooding occurs in multiple locations and more low-lying areas are at risk. Access to the North Island Naval Air Station is also threatened by this increase.

5.3.1.2 Identify disadvantaged communities

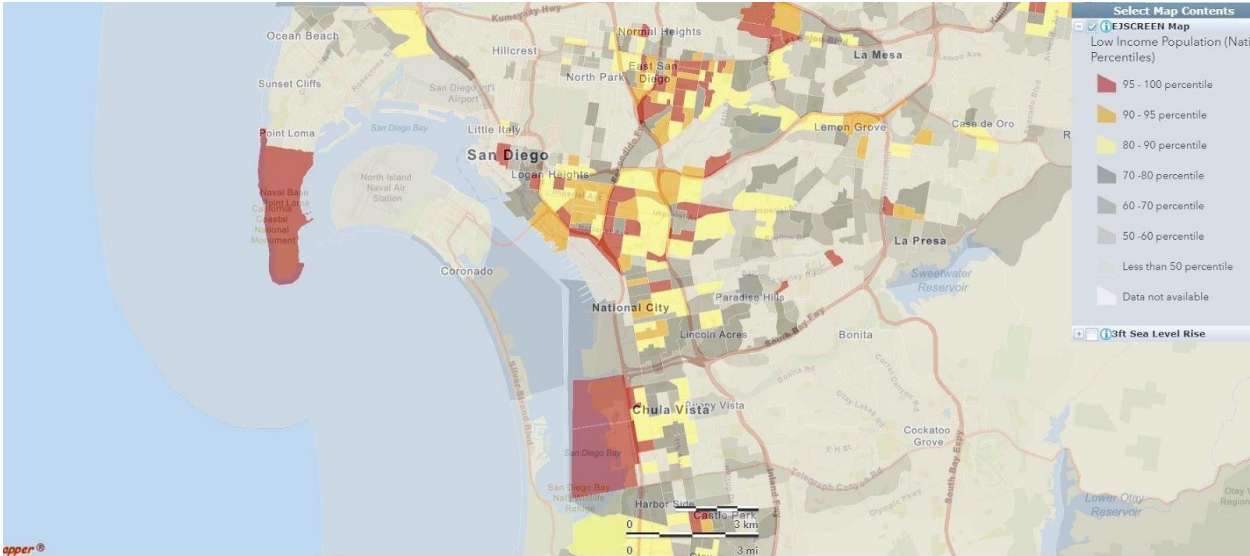


Figure 25: Low-income percentiles around San Diego Bay, California (EPA EJScreen)

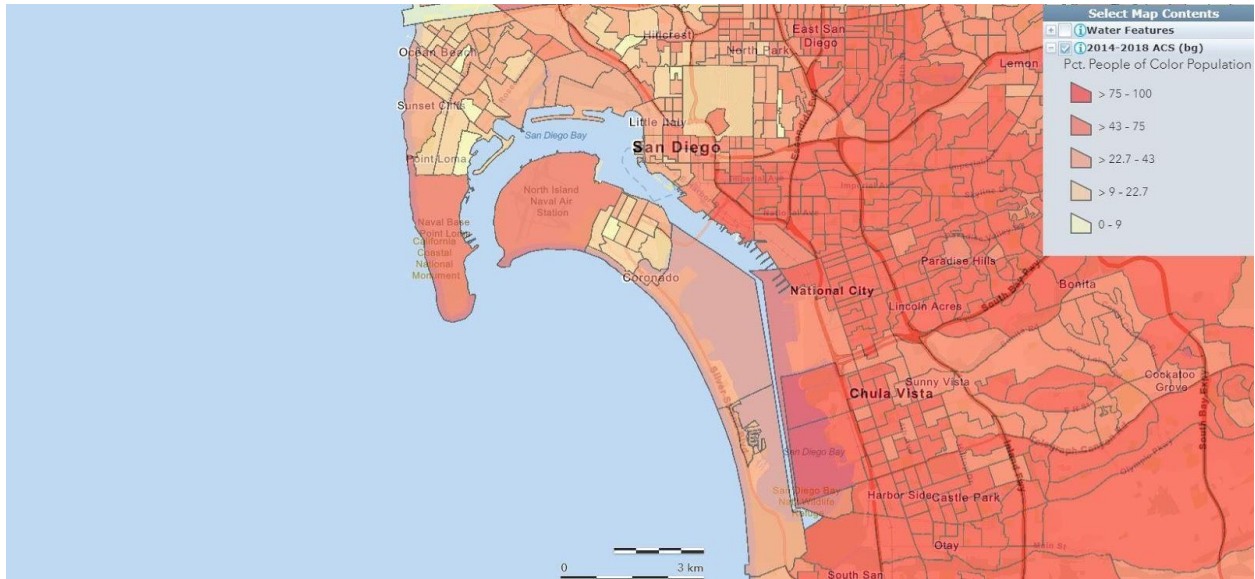


Figure 26: Percent people of color population around San Diego Bay, California (EPA EJScreen)

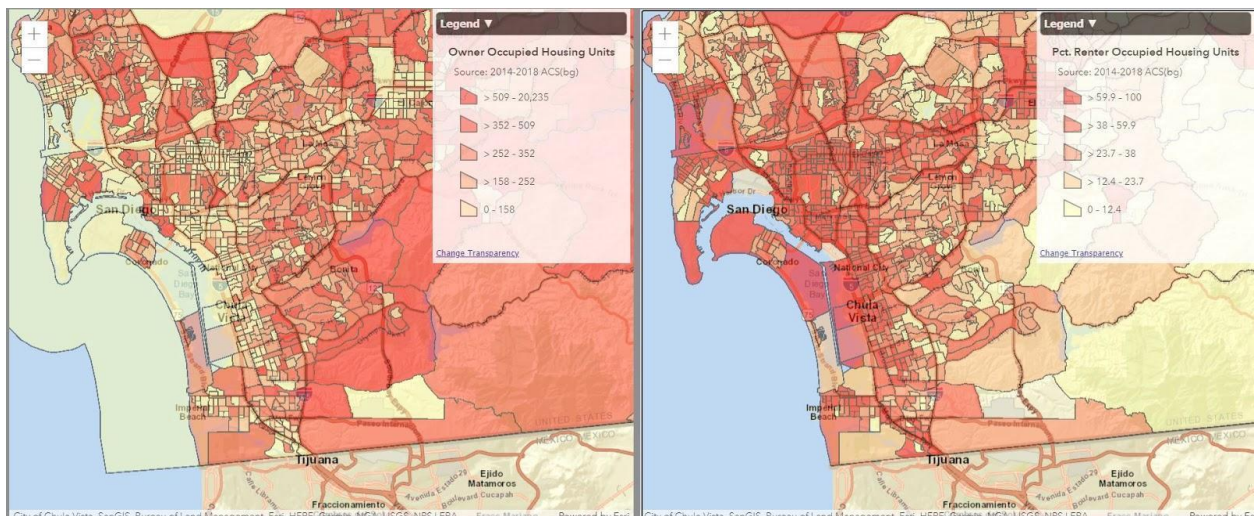


Figure 27: Owner Occupied housing units v. Renter occupied housing units around San Diego Bay, California (EPA EJScreen)

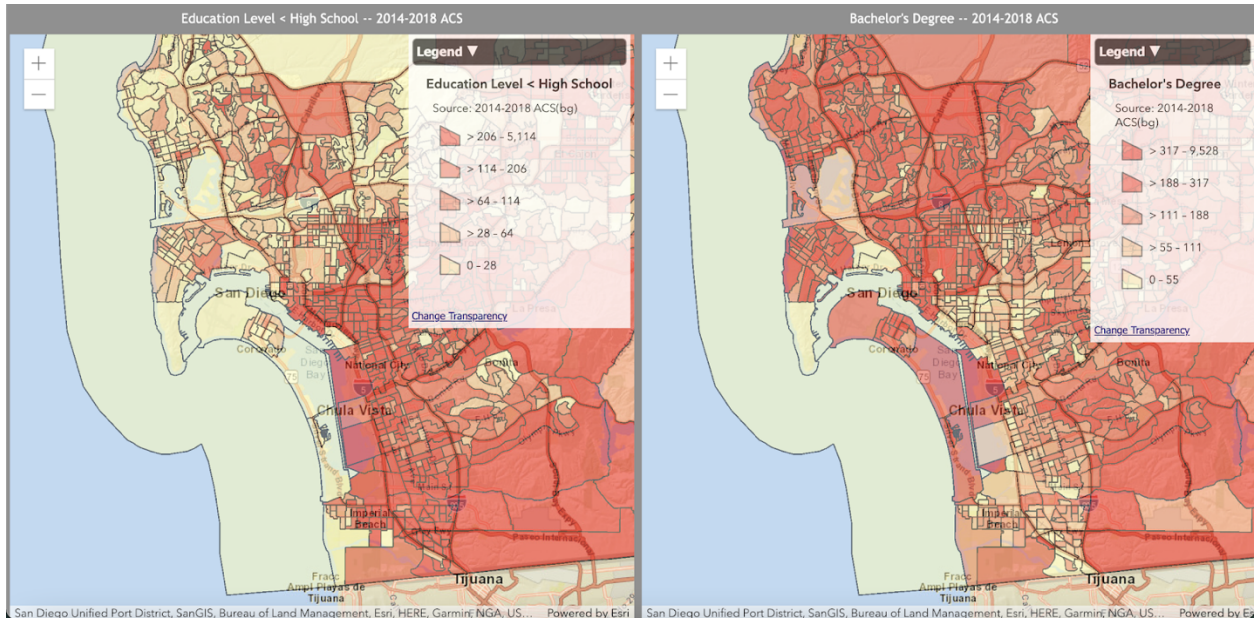


Figure 28: Comparison of population around San Diego Bay, California with less than a high school degree (left) and with a bachelor's degree (right) (EPA EJScreen).

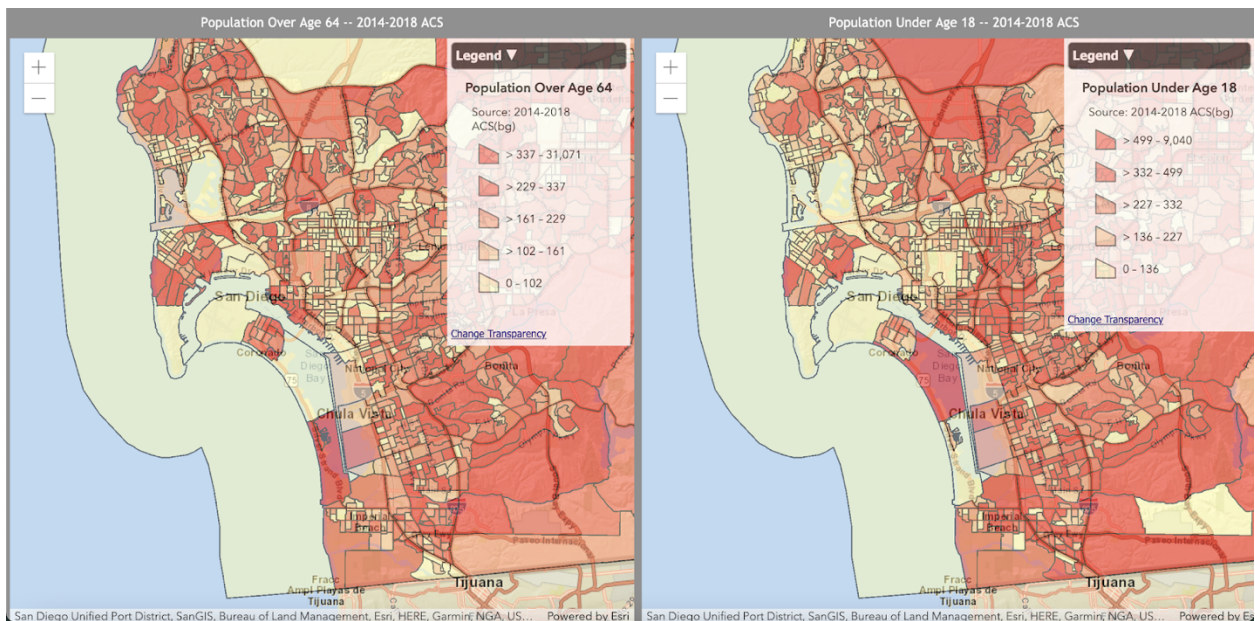


Figure 29: Comparison of population around San Diego Bay, California of ages over 64 (left) and of population under the age of 18 (right) (EPA EJScreen).

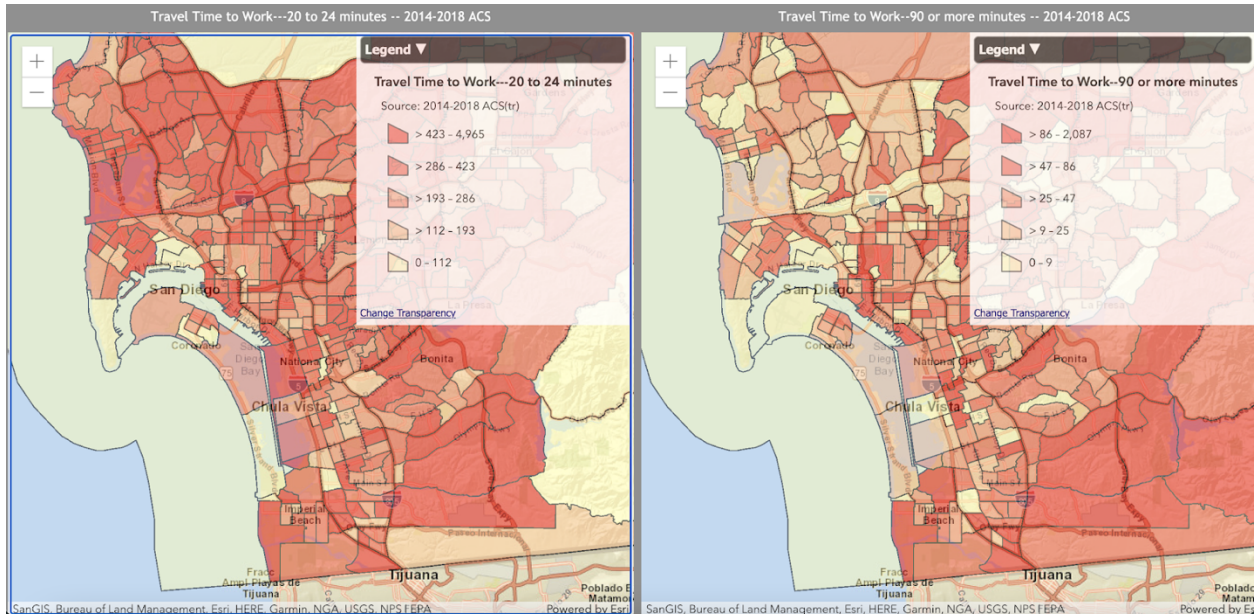


Figure 30: Comparison of population around San Diego Bay, California with a travel time to work of 20-24 minutes (left) and a travel time to work of 90 minutes or more (right) (EPA EJScreen).

These maps display the concentrations of populations that meet our definition of a disadvantaged community. Figure 25 shows the concentrations of low-income populations. These populations are concentrated near Chula Vista and Point Loma. Engagement processes will want to prioritize outreach in these areas, as they are very vulnerable due to the combination of being disadvantaged and at risk of inundation from SLR. In Figure 26, the percent of people of color in the San Diego Bay area is displayed. It is apparent that there are high concentrations of POC throughout the coast region surrounding the Bay. Within the southern portion of the Bay, a majority of the population (above the 75th percentile) includes POC. In Figure 27, owner occupied units and renter occupied housing units in the San Diego Bay Area are displayed. It is apparent that there is a higher concentration of renter occupied housing units in comparison to owner occupied housing units surrounding the Bay. As shown in Figure 28, there is a wide variety in education level throughout the area. The population located on the Western side of the Bay tend to have higher levels of education. On the Eastern side of the Bay, the education level is more varied. In the Chula Vista area, there is a large population with less than a Highschool

degree. As shown in Figure 29, age dispersion between the population above 64 and below 18 is relatively equal. In Figure 30, more individuals in the San Diego Bay area endure a travel time of 20-24 mins times to work than 90+ minutes to work.

5.3.2 Identify Key Stakeholders in San Diego

Within the San Diego Bay Area, stakeholders within planning for SLR involve residents, private landowners, government agencies, tribal governments, and environmental non-profits within the region. Identifying these stakeholders assures equity within the planning process.

- I. I. Any private landowners or businesses that will be affected by sea-level rise (SLR)
 - a. Waterfront business
 - b. Waterfront housing
 - c. Port of San Diego (Maritime)
 - d. Others
- II. II. Government Agencies
 - a. City of San Diego
 - b. San Diego County
 - c. California Coastal Commission
 - d. Environmental Protection Agency
 - e. Harbor District
 - f. US Navy
 - g. Others
- III. III. Any tribal governments
 - a. Kumeyaay/Diegueño,
 - b. Payoomkawichum (Quechnajuichom/Luiseño and Acjachemen/Juaneño)
 - c. Kuupiaxchem/Cupeño
 - d. Cahuilla tribes
- IV. IV. Any non-profit organizations that will be affected by SLR or do work involving SLR
 - a. Voice of San Diego
 - b. San Diego Coast Keeper
 - c. Alliance San Diego
 - d. Others

5.3.3 Investigate existing sea-level rise information in the community

Publicly available information in the San Diego Bay Region includes planning documents and other educational tools to assist in educating the public on existing threats to the community in the face of Sea-level rise.

Currently, the publicly available information about sea-level rise (SLR) in San Diego is extensive. The City of San Diego has a SLR Vulnerability Assessment document, a Climate Action Plan, and has contributed funding to numerous scientific research papers. The SLR Vulnerability assessment analyzes impacts to community infrastructure and local economic resources. Much of the research funded by the local government has contributed to mapping sections of the region that will face the greatest impacts of SLR in the near future. The City has also provided access to online tools such as the *Surging Seas Risk Zone Map*, where users can see different SLR scenarios in an interactive map.

5.3.4 Consider current community engagement

Currently, the outreach methods in San Diego's Climate Action Plan (City of San Diego, 2015) outlines internal and external stakeholder engagement. Stakeholders are engaged through formal group meetings and community events. San Diego County held visioning meetings after meetings with stakeholders. Workshops were held to inform the public about decisions made in the meetings and then hosted a scoping meeting which allowed for public comment. The Climate Action Plan also features a website to centralize information, an email list to notify stakeholders of updates, electronic newsletters, and a social media account. The City's Climate Action Plan also features regional engagement as an outreach method. Conferences were held to bring together regional partners and to share information and best practices. The Climate Action Plan outreach methods include internal and external stakeholder engagement, engagement with regional partners, and gathering input from the public.

The City also focuses on publicizing public meetings through non-electronic sources. In the document titled "Ideas for Publicizing Community Planning Meetings" by the city of San Diego's Community Planning Group (City of San Diego, 2003), flyers and press

releases are utilized. Volunteers hand out flyers' door-to-door, flyers are distributed through local organizations, as well as through places of worship and local news sources.

5.3.5 Determine Best Engagement Process

San Diego has put an emphasis on publicizing public meeting events. This has included advertising in local newspapers, posting flyers in public squares, submitting press releases to places of worship, distributing flyers to local clubs and organizations, submitting press releases to key community leaders, and establishing a regime of volunteers to offer information door to door on these community events. A variety of media sources were utilized in distributing this information including multilingual publications, LGBTQ+ publications and specialty publications (City of San Diego, 2003). These methods would help to bring more awareness to meetings in disadvantaged communities who may not have the resources or skills to access this information electronically (San Diego Foundation, 2020).

For a city as large as San Diego with a population of 1.41 million (US Census Bureau, 2020), the best approach would be one that is specialized for different districts within the city. Areas such as Chula Vista and Mission Bay are of particular concern regarding SLR, engaging with these cities and districts within the San Diego metropolitan area at a community-level approach through informational meetings, workshops, and planning meetings is critical for effective outreach. Follow through after engagement could be prioritized to ensure the communities that their input is valuable and being used. The current methods of publishing meetings in San Diego seem effective for raising awareness of engagement opportunities. The City can continue to publicize these opportunities through electronic and non-electronic sources and look for additional innovative ways to reach the public.

The overall outreach approach can occur in two stages: at a very localized level and then at a large-scale level. Engagement within neighborhoods could be practiced to gain local knowledge and information. After researching at a localized level, the collected information could be analyzed at a larger scale with an eye to identifying which issues are prevalent across different neighborhoods and choosing to focus on those issues.

6. Conclusions

Our research has revealed inadequacies in current practices for engaging with communities around sea-level rise (SLR). This has led us to seek out and make recommendations about best practices for community engagement including the need to: enhance technical and physical outreach methods to overcome access challenges that members of disadvantaged communities face when they seek to participate in public processes; to provide more place specific SLR information and engagement processes; and to foster more communication between stakeholders, local governments, and communities.

By investigating community engagement practices in Humboldt Bay, the City of Santa Cruz, and San Diego Bay, we were able to identify unique approaches to community engagement that offer guidance for other coastal communities vulnerable to SLR.

Around Humboldt Bay, community engagement processes could be improved. Since Humboldt Bay does not currently have a final adaptation strategy for SLR, community engagement could still play a key role in the planning process. Since there are many different jurisdictions on the land surrounding Humboldt Bay, regional coordination between jurisdictions and community residents needs to occur to develop an adaptation strategy that will benefit the entire community and ensure its resilience into the future.

The City of Santa Cruz is addressing the threat of climate change by improving the city's infrastructure and boosting their economic vitality. The City currently lacks a reliable form of community engagement. The city provides their residents with information through their website, which is not updated frequently or accessible to disadvantaged communities. Community engagement could be improved by establishing more equitable means of access to information about SLR planning and developing meeting strategies that are all inclusive.

In the San Diego Bay Area, processes established for engaging members of the community through development of innovative outreach techniques have offered positive solutions to engaging some communities. However, many sectors of the community are still left in the dark on SLR issues. Engagement opportunities for community members may be made more accessible for those that lack access to technology. With a highly urbanized region as large as San Diego, the established planning districts offer outreach through a variety of inclusive media sources including multilingual publications, LGBTQ+ publications and specialty publications. But planners will want to continue to employ alternative sources of media for

outreach strategies. A focus on student education on SLR issues in schools in the region could also be established within the local governments outreach strategy.

Through this research, we have compiled suggested best practices to follow when engaging with disadvantaged communities about SLR preparedness. These guidelines have been crafted by analyzing the current engagement methods and identifying gaps. We also looked towards exemplary community engagement programs located across the country for inspiration. These guidelines can be applied beyond equitable engagement for SLR to other community issues as well. These best practices aim to make community engagement accessible, inclusive, and effective. Our suggested best practices aim to equip organizations with clear objectives to engage with community members more equitably.

These approaches do not pretend to be definitive; as new technologies advance and voices from members of disadvantaged communities are heard, these ideas will evolve. Remaining flexible and adaptive is essential in this process. Overall, equity, environmental and social justice need to be kept at the forefront of the conversation. For organizations to equitably engage with these communities there must be a shift from consultation towards collaboration.

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8. Appendices

8.1 Alternative tools for sea-level rise inundation mapping

- I. [NOAA Sea Level Rise and Coastal Flooding Impacts Viewer](#)
- II. [California States Lands Commission Sea-Level Rise Viewer](#)
- III. [Climate Central Surging Seas Risk Zone Map](#)
- IV. [NEPAssist](#)
- V. [Adapting to Rising Tides Bay Shoreline Flood Explorer](#)

8.2 Alternative tools for identifying disadvantaged communities

- I. [EPA EJScreen](#)
- II. [CalEnviroScreen](#)
- III. [State of California Department of Water Resources DAC Mapping Tool](#)
- IV. [Statistical Atlas](#)

8.3 Additional Resources

- I. [The Water Collaborative Database](#)
- II. [Additional Online Meeting Resources](#)