Community Wildfire &

Capacity- Building Webinar Series

Project

Prepared for California Air Resources Board (CARB Contract Number 22RD018)

Authors

Dr. Suellen Hopfer, University of California, Irvine

Rosa Inguanzo, Lead Organizer, Communities for a New California Education Fund, Merced

Anna Lisa Vargas, Lead Organizer, Communities for a New California Education Fund, Eastern Coachella Valley

Mayte Ruiz Garcia, Organizer, Communities for a New California Education Fund, Eastern Coachella Valley

April 2024

Table of Contents

Disclaimer

The statements in this document are those of the authors and/or presenters,

and not necessarily those of the California Air Resources Board. The

mention of commercial products, their source, or their use reported herein

is not to be construed as actual or implied endorsement of such products.

Introduction: San Joaquin Valley (SJV) and Merced Region, Wildfires, and Poor Air Quality

The 2023 wildfire webinar series was a collaborative effort between the Communities for a New California Education Fund (CNC EF) from their Merced and Coachella offices and the University of California, Irvine (UCI). This educational series targeted the Merced County region in the San Joaquin Valley (SJV), with the aim of identifying informational needs of farm worker and other communities impacted by poor air quality and wildfire smoke. Equally important goals by the team included employing a community grounded and participatory action research (PAR) approach when engaging with community residents to strengthen trust between community residents and CNC EF. Through PAR approaches, a community driven approach to wildfire and climate change response will be prioritized. The project team included Rosa Inguanzo, lead organizer from CNC EF Merced, Anna Lisa Vargas, lead organizer for the Eastern Coachella Valley (ECV), Mayte Ruiz Garcia, organizer from ECV, and Suellen Hopfer, public health professor and health communication expert with University of California, Irvine (UCI).

Participants in the SJV wildfire webinar series were recruited from Merced and Stanislaus County regions including the city of Merced and neighboring communities such as El Nido, La Planada, Atwater, Winton, Delhi, Los Baños, Dos Palos, Gustine, as well as Modesto in Stanislaus County. These communities, particularly those in Merced and Stanislaus counties, have faced ongoing challenges with poor air quality, exacerbated by wildfires among other factors[1-4]. In addition to air quality issues,

families in Merced have contended with poor water quality due to agricultural practices involving pesticides and arsenic, which was compounded by flooding in 2023[4]. A flooding event in January 2023 devastated Planada, a town east of Merced, highlighting the region's vulnerability to environmental hazards and post-flooding wildfire vulnerability[5].

In California, the risk of wildfires has increased by 25%[6] in recent years, affecting communities in SJV in central California with more frequent and intense wildfires and resulting persistent smoke, which has significant health impacts[3,7]. Particularly vulnerable are the low-income communities and communities of color in the SJV who are most affected yet possess the fewest resources and knowledge to effectively combat dangers to their homes, quality of life, livelihoods, and health due to smoke and wildfires[8-10]. The largest demographic in the SJV comprises agricultural farmworkers, who are significantly adversely affected by smoke and fire[11].

Agricultural farming is a major economic driver in Merced County, accounting for over half of its main revenue sources, with extensive dairy farms, almond orchards, and various fruit and nut orchards[12,13]. Thus, the SJV is especially prone to accumulating air pollution from wildfires in nearby fire-prone regions. Merced, with a high number of outdoor farmworkers, sees these individuals facing considerable health risks due to their exposure to air pollution from wildfire smoke. Additionally, in both Merced and Stanislaus counties, a significant portion of the population consists of monolingual Spanish speakers, who struggle to access resources in Spanish, making it challenging for them to find the support and information they need for

wildfire and other prevention services to protect their families and communities.

An Environmental Justice Framework Informed the Wildfire Webinar Series

The webinar series was structured around an environmental justice (EJ) framework[14-18], which was used to spotlight and tackle the concerns of community members from the SJV. This framework prioritizes the issues faced by marginalized groups, such as farm workers who reside in the impacted region[4,17]. It focuses on recognizing and documenting vulnerabilities at the community level, which could exacerbate wildfire risks beyond individual factors[17]. Furthermore, the EJ framework emphasizes the significance of community health and integrates environmental justice with public health, climate initiatives, and disaster planning[19].

The EJ framework also guided the research team's approach in organizing the webinar series[19] and informed the type of questions asked of participants. The UCI-CNC EF team, Lúcete, structured the first webinar as a listening session to enlist community concerns and questions to set priorities directly from the community. This method ensures that the perspectives and needs of predominantly marginalized groups, including communities of color, low-income families, and farmworker communities, are acknowledged and addressed[14-18]. These communities have historically had their concerns neglected[4,14].

By concentrating on community-level vulnerabilities and factors as identified by residents within the affected areas, the EJ framework elevates the importance of a deep understanding of wildfire and health issues. Additionally, the framework can lead to efforts that aim to build trust and foster relationships between the community

and local government officials. Within the EJ framework, the health of the communities is a priority, integrating health considerations into policy discussions[20]. This perspective acknowledges that climate change-related events, such as increasing wildfire and smoke, disproportionately affect low-income neighborhoods and communities of color. The EJ framework effectively links environmental justice considerations with public health, climate action, and disaster planning[17].

Additionally, a wildfire vulnerability framework informed the structure and planning of the wildfire webinars[9]. Key vulnerabilities highlighted by this framework include consideration of housing, the need for accessible information in languages other than English, poverty and financial challenges within unincorporated communities[21], and the impact of other extreme weather events like flooding, extreme heat and sustained drought in the SJV[1-3,10]. Additional concerns may involve local government services and infrastructure considerations that may be lacking such as waste management and code enforcement services, agricultural practices, and a general lack of community engagement[4,14]. By employing both the EJ and a wildfire community vulnerability framework[9], the initiative aimed to capture both community and individual concerns related to wildfire and smoke exposure.

Webinar Series Planning, Outreach, and Overview

Before each webinar, the team conducted weekly meetings to strategize and plan for the event. The team focused on making the webinars accessible to the community, which included providing live translation services in Spanish and English and choosing suitable times for the events. These were typically scheduled for early

evening on weekdays, with a duration of 75 to 90 minutes. Feedback from participants following the initial webinar informed adjustments in the structure, duration and focus of the subsequent two webinars. Additionally, the webinars were not only tailored to be held in the early evenings and available in Spanish, but they were also strategically planned to follow a community steering committee meeting that attracted significant attendance from community members.

Webinar #1: Listening Session, Enlisting Community Resident Concerns

The inaugural webinar took place at the end of spring (May) 2023. It was uniquely designed as a listening session to gather input from families in the SJV. This virtual format enabled participation from across the SJV, with a focus on outreach in Merced and Stanislaus counties. The series was introduced through a dynamic presentation using Canva slides, featuring visual stills and maps to effectively communicate with attendees. To foster a welcoming environment, the session began with music, inviting participants to share where they live. We used a map/place-based padlet to have participants pin their location (see Figure 1).

The webinar featured a guest speaker from Eastern Coachella Valley (ECV), who shared a personal narrative about her family's journey from Mexico to ECV and being farmworkers. This story aimed to build trust and engage the audience by highlighting common experiences.
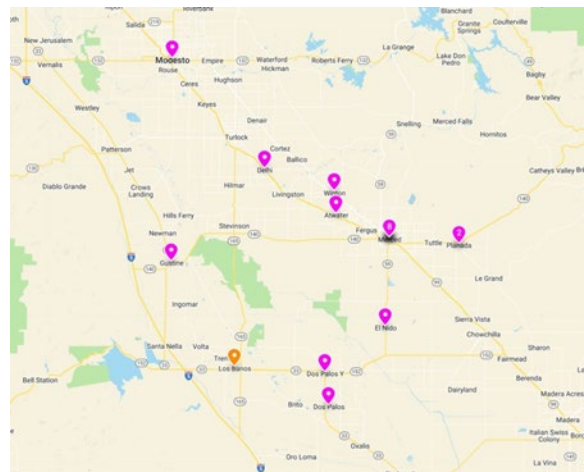

Figure 1: Participant Locations in SJV

Following this, attendees participated in a map-based padlet activity, marking their locations in Merced or Stanislaus counties with photos that represented either community strengths or concerns, such as agricultural aspects or environmental issues (photos not shown here, photos of almond orchards, affordable housing, air pollution, water pollution).

Participants were asked to complete an eight-item survey via the Zoom chat at the end of the webinar. Three questions asked about top community concerns framed in different ways: Q1: *What issue do you care most about and would move you to action?*; Q2: *If you could prioritize one of your community concerns, which would it be?*; Q3: *For fall 2023 webinar planning about wildfire and smoke impacting the community, which topics do you prefer to have covered?* Four questions asked about preferences for webinar format: length, format, topics, guest speaker, and topics to prioritize for subsequent fall 2023 webinars. This survey sought to identify general community concerns and specific worries or questions related to wildfire impacts. The survey, analyzed during the summer of 2023, revealed key community concerns to be water and air quality, affordable housing, and emergency preparedness, including for fires for SJV residents.

Additional findings from the survey highlighted the community concern about fire response and post-fire recovery. Concerns about the health effects of wildfires, protective measures for undocumented individuals, wildfire preparation, actions during a fire, post-fire resources, energy impacts, and evacuation procedures were also voiced. This feedback informed the planning of subsequent webinars.

Following feedback from the first webinar, webinars two and three featured local guest speakers. These speakers were notable community leaders and climate scientists from Merced, who presented in Spanish to cater to the audience's primary language. In webinar two, J. Pablo Ortiz-Partida from the Union of Concerned Scientists and the Socioenvironmental & Education Network (SEEN) gave a talk. Webinar three featured Angel S. Fernandez-Bou, another prominent figure from the San Joaquin Valley, who is a senior climate scientist with the Union of Concerned Scientists and SEEN. Both speakers, being Latino engineers and residents of the area, significantly contributed to establishing trust and connecting with the audience through their presentations.

To encourage participation, attendees were compensated by CNC EF with a modest stipend ($30) and requested to fill out a short online survey at the webinar's conclusion. This survey, shared via the Zoom chat, aimed to pinpoint the essential services and resources concerning wildfire and smoke that the community found worrisome. The survey for the second webinar sought suggestions for improvement, with one participant expressing a preference for in-person webinars.

Participant feedback was positive with examples: "great" , "have more answers for water quality and tips", "everything was well done", "I think it is good and nothing to improve", "more details", "at its best, very understandable", "Es muy bien presentado, Y con graficos esta mucho mejor" (with use of graphics it's much better), "Creo que son excellentes", "Todo estuvo bien", "Estuvo perfecto", "tener mas presentatores" (have more presentations), "mas tiempo para preguntas" (more time

for questions). When asked what themes participants would like to see addressed in subsequent webinars, participants reported "air quality", "racism and discrimination", "drug abuse and homelessness or the unhoused community" , "climate change" "seguir con los mismos a profundidad por favor" (more of the same and in more depth please), "continuar este tema" (continue this theme), "temas sobre como prepararnos para una inundacion" (how we can prepare for wildfire), "mas sobre los contaminantes que estan en el aire" (more about air pollution).

Webinars 2 & 3: Climate Change as Amplifier in the SJV for Wildfire & Smoke

Webinars two and three covered the critical issue of how climate change acts as a significant catalyst for wildfires, air, and water pollution, and intensifying extreme weather events impacting the SJV region. Webinars two and three were organized into two segments: initially, they offered historical perspectives on the effects of climate change in the SJV, followed by discussions focused on practical solutions in the latter half. The historical review included insights into the record-breaking temperatures of 2020 and 2022 in the SJV, the role of wildfires in deteriorating air quality, the evolution of the agricultural sector under the impact of climate change, and the rising frequency of wildfires and impacts on water quality in some cases.

The webinars proposed both immediate and future-oriented strategies for SJV families. Immediate solutions highlighted the use of apps to monitor local air quality (https://fire.airnow.gov) and the introduction of the Spanish version of California Smoke Spotter application (https://ww2.arb.ca.gov/news/carb-releases-spanish-version-california-smoke-spotter-app), alongside recommendations for installing air

and water filters at home. Although for this webinar series (which did not have a research orientation) we did not have participants' rank priorities, understanding health impacts and having greater access to health screening was expressed. Discussing long-term strategies, the webinars underscored supporting policies aimed at enhancing Californians' health, advocating for sustainable agriculture, and transitioning towards cleaner energy sources. Additionally, integrating educational programs on wildfires and climate change across all educational levels (grades K-12 and adults) was suggested as part of the long-term solutions.

While the first webinar gathered community concerns and priorities, the subsequent ones focused on addressing the interrelated challenges of wildfire, smoke, water, and air quality as exacerbated by climate change.

Outreach and Recruitment Efforts

A variety of recruitment methods were used for the wildfire webinar series. These included door-to-door canvassing, advertising on CNC EF's social media channels, aligning the webinar schedule with the monthly community steering committee meetings that occur monthly in the early evening and are well-attended, and promoting the webinars at other CNC EF in-person outreach events (see Figures 2 and 3). At these events, CNC EF staff regularly engage with community residents on various issues, including voter registration, COVID-19 vaccination, and assistance with

Figure 2: Webinar Series Flyer in English

Figure 3: Webinar Series Flyer in Spanish

obtaining an Individual Tax Identification Number (ITIN).

These recruitment strategies are crucial and leverage networks that are trusted within the community. Farm worker communities in particular have faced racist environmental policies and often harbor mistrust towards outside groups, including some state and local government agencies[14,17,22]. In the past, local governments have sometimes overlooked health and infrastructure concerns in low- income and marginalized communities, including farm workers and those in unincorporated areas[21].

Advertising events through trusted sources within the community and using languages and channels familiar to the target audience aid in improving recruitment efforts. Additionally, continuous engagement and interaction with the community, both in-person and online, help build trust and encourage ongoing participation.

Webinar Structure and Results on Recruitment

While webinar one was structured to be a listening session, webinars two and three focused on history of the SJV development and climate change. Webinar one had mostly women participants while webinars two and three appeared (from zoom video coverage and CNC EF staff knowing participants personally in some cases) to have equal participation of men and women. Webinar one had 26-30 participants, while webinar two had ~50 participants (~48 completed survey), webinar three had ~40 (~39 completed survey). The post pandemic period is particularly challenging to recruit community residents[23] to attend workshops whether in-person or virtual. Additionally, the burden on community participants to attend workshops whether in-

person or virtual is great given that farm workers and those who work multiple jobs may in many cases work seven days a week. Finally, recruitment challenges are encountered in these SJV communities that experience extreme weather on a regular basis – whether it is extreme heat beginning in late spring, frequent wildfires and smoke, or the severe, devastating flooding in spring 2023.

Although participants for webinar one were predominantly monolingual Spanish speakers and women, in webinars two and three monolingual Spanish speakers made up ~54% of attendees and included an estimated two-third women and one-third men (based on visual inspection from zoom screenshots from webinars). Participants from webinar one posted where they were from in the SJV (city of Merced, La Planada, Los Banos, El Nido, Dos Palos, Los Baños, Gustine, Atwater, Winton, and Delhi from Merced County, and city of Modesto in Stanislaus County). In general, participants in the webinars have interacted on multiple occasions with CNC EF staff on a range of issues from COVID-19 vaccination, ITIN assistance, air filter workshops, tree planting, and voter registration.

The project team engaged community stakeholders in a number of ways. First and foremost, CNC EF staff have a relationship with the Merced and Eastern Coachella community members from prior interactions, community events hosted and organized by CNC EF (e.g., voting registration campaigns, door-to-door canvassing, COVID-19 vaccination, tree planting, affordable housing assistance, ITIN assistance) and monthly community steering committee meetings. As a result of these repeat and positive prior interactions between CNC EF staff and community

members for services, community members return to participate in advertised events. Secondly, the webinars were structured to share information using multi-modal (visual and map-based) information, enlist community member ideas (bi-directional), use popular education methods (starting with participants' lived experience) including use of theatre to enact community experiences and rehearse interactions with local stakeholders (for example how to interact with local government agencies to communicate about concerns), and use personal stories to share information. Third, incentives were offered for participation (financial, food cards, other services). Fourth, delivering educational sessions in Spanish or live stream bilingual translation made the webinars accessible to an audience whose literacy and language varies. Fifth, having local community leaders speak and share information with participants about personal experiences, environmental issues, wildfire impacts, and air and water quality concerns occurring locally in the community resonates with and are positively received by participants.

Identification of Community Concerns

During the webinars, community members expressed a wide range of concerns about wildfires and their smoke impacts, both through their questions and survey responses. These concerns encompassed a desire for more information on the health effects of wildfires, guidance on finding shelter during evacuations – especially for undocumented individuals seeking safe spaces – and preparing for wildfire in the event of severe smoke conditions. Additionally, there were queries about whom to contact during a wildfire, the essentials of emergency preparedness, and the

availability of post-fire resources, including financial and mental health support. Concerns also touched on the impact of wildfires on energy, as well as the importance of being knowledgeable about evacuation routes, including alternatives, to ensure readiness for evacuation scenarios.

The webinars and survey results raised several general (non-wildfire yet important) concerns among communities in the Merced and Stanislaus regions of the SJV. These ranged from seeking recovery assistance after a catastrophic weather event e.g., flooding (which occurred in spring 2023 in Eastern Merced County), to addressing persistent and critical issues such as severe water quality problems in homes, the continuous struggle for affordable housing, and a general lack of emergency preparedness. Notably, water quality concerns were emphasized by residents in the town of Planada, east of Merced following the January 2023 flooding, but other Merced County residents mentioned water contamination problems leading to tap water appearing milky white or black, and arsenic in water. Air quality concerns, worsened by agricultural dust, air pollution, and pesticide use, were also paramount to participants' concerns. Additionally, the webinars and surveys uncovered participants' questions about infrastructure (having paved roads), with road conditions essential for safe wildfire evacuations. The communities' challenges extend to trash collection services, with many residents finding it difficult to afford those services and consequently facing trash accumulation in the community, which could be triggers for fire. Fears of burglary during evacuations, heightened by local crime, and deportation fears among undocumented residents were also voiced in the

survey. Other topics of concern included unhoused people, ongoing COVID-19 variants and the threat of becoming ill, the need for post-pandemic resilience, and the importance of meaningful interactions with local government officials and politicians. Concerns over substance use and addiction were also identified as potential barriers to community participation and effective evacuation response. The goals of this webinar series, which were to implement three webinars and was not research oriented, had as its first task to identify and discover the range of topics, questions, and concerns. Therefore, within the scope of the webinar series we focused on trust building with the community and raising environmental literacy to have community residents express concerns rather than rank them. Having said this, for the Merced County region, air and water quality were equally top concerns and, when pressed for prioritizing one concern at this time, residents expressed water quality concerns as their top priority. A list of community resident concerns that were identified are listed in Table 1. These hold true for both SJV and Eastern Coachella Valley (ECV) community residents.

Table 1: SJV Community Concerns

SJV Community Concerns
Water quality and contamination (Merced County)
Air quality: Understanding sources of air pollution (e.g., agricultural sources, fugitive dust, pesticide drift, smoke, illegal burning of trash, diesel exhaust)
Accessing affordable housing: Unstable housing contributing to challenged wildfire response and need proper air filtration during smoke events
Disaster/Emergency preparedness training (in Spanish) (e.g., CERT) offered in smaller towns
Health impacts: Identify sources; respiratory, dermatological, ENT, eyes, migraines, mental health access when need to stay indoors over longer periods of time, mental health for post-emergency response

SJV Community Concerns cont.
Finding shelter in the event of evacuation: Including for undocumented residents who are fearful of being separated from family members by deportation
Who to contact during a fire: Need to know fire chief and other officials, greater interaction between local govt and communities, more initiatives by local governments
Post fire resources: (e.g., energy, financial, mental health, food)
Knowledge of evacuation routes: Including alternative routes; being familiar with alternative routes, avoiding muddy unpaved routes where vehicles can get stuck
Improve infrastructure: Need more paved roads for less dust and more safety
Knowledge of where and how to report air quality/smoke/fire issues formally
Having local smoke alerts
Illegal trash dumping and burning: Need widespread **w**aste management and code enforcement
Combining wind and extreme heat alerts with fire alerts: (desire for local smoke alerts)
Unhoused community posing challenges to responding to wildfire: Don't receive information, alerts, or evacuation help; trash accumulation and outdoor cooking are fire risks
Crime fears during evacuation: People hesitate to evacuate because of fear of burglary

Identification of Community Research or Service Requests

For wildfire messaging research, based on an analysis of community concerns that were expressed and prior wildfire communication literature, four communication principles are suggested to enhance understanding and effectiveness of communications regarding wildfire risk mitigation. More research is needed to rank community concerns and implement and systematically test strategies for alleviating emissions burdens experienced by community residents.

The first principle emphasizes the importance of acknowledging and integrating into messaging the cumulative impacts of structural level determinants of wildfire risk. These include community or neighborhood level factors such as the unhoused, the level of local government interaction with the community (or lack

thereof), accumulating trash, other extreme weather events impacting communities, fear of burglary when evacuating due to crime, and interpersonal expectancies in addition to individual behaviors for mitigating adverse wildfire outcomes on health. Messaging campaigns should address broader community factors that contribute to wildfire risk, alongside promoting behavior change at the individual level. For instance, initiatives could involve greater engagement and civic orientation by local government officials to interact with community members, exchanging information and awareness about wildfire risk and in languages and channels more accessible to these farm worker communities. They might also address issues such as lack of trash services in low socioeconomic communities and how trash accumulation contributes to wildfire, the importance of extreme heat mitigation, adapting messaging to farm worker culture, and consider the increasing co-occurrence of extreme environmental conditions that compound risks, such as poor air quality from dust, agriculture, extreme heat, and prolonged drought, and agricultural practices.

The second principle focuses on integrating into wildfire messaging and research methodology the approach of messaging from a behavior adaptation model (BAM)[24]. This model acknowledges that certain communities may not be in a position to remove themselves from risk if they live and work in a risk environment. Messaging must, therefore, address how individuals can adapt to minimize exposure given their occupational or family/home environment. Examples include continuing to work in smoke-filled fields to pick fruit or living near areas with toxic dust or considerable air pollution from a range of sources. This calls for more rigorous evidence through

wildfire communication research, utilizing randomized study designs to test messaging strategies in these communities and generate evidence for strategies moving forward.

The third principle advocates for prioritizing research efforts that are voiced and decided upon by the impacted communities, guided by community-grounded principles and a co-liberate framework[19]. A community-driven and community-grounded approach is exemplified by the CNC EF and UCI staff's participation in a year-long training program, Community-Academic Partnerships to Advance Equity Focused Climate Action (CAPECA) and in their approach to structuring the webinars' focus. CNC EF staff have initiated a community-driven community capacity strengthening program by organizing and enlisting community residents to participate as community researchers in a 10-week workshop. These community residents will participate weekly (2x/week) from February through June 2024 to enlist and document community priorities *by* community members living in SJV and Eastern Coachella Valley (ECV). Living and experiencing the impacts of wildfire and other extreme events as well as other community level issues where they live inform their priorities and approaches. Although these efforts are outside the scope of this project, they serve as an example of the "community capacity building" that is referred to in the webinar series and the third principle for wildfire communication research. The community participatory action research and community capacity building is ongoing.

A fourth community research request involves the development of a bi-lingual

map that could document and visualize wildfire and smoke impacts, health impacts, and be used as a community communication tool. Such a map and place-based tool has been effectively used for community co- involvement and capacity building for other domains such as cancer control and emergency response. Such a tool can also be employed to communicate with policy makers, to prioritize funding allocations, and to generate hypotheses and research questions related to community burden and impact of wildfire and smoke impacts and how best to proceed with local government response and resources[25,26]. Such a bi-lingual visualization tool could facilitate communication of wildfire risks and resource allocation as well as co-planning and awareness by community stakeholders and local government. Efforts to rebuild communities post Hurricane Katrina is one example[26] and engaging communities in cancer control is another[25]. A UC Merced faculty researcher in mechanical engineering, Dr. Jeanette Cobian-Iniguez, models wildfire behavior and has developed one type of bilingual wildfire map. Extensions of this type of research are needed and may be beneficial to engaging community residents in a community-driven process for wildfire preparation and mitigation.

Participatory Action Research (PAR) and Community Capacity Building Research Efforts Ongoing

Community-based participatory action research (CBPAR) is ongoing in the Merced region in the SJV and in the ECV and is led by CNC EF staff. Community-driven engagement and solutions are critical for truly transformative community preparedness to protect against wildfires. Within each region, weekly (2x/week)

community participatory research meetings are held between February-June 2024.

For the Merced region, community residents and CNC EF held their first meeting on

February 8th, 2024 (virtually) and community residents have decided to prioritize

water quality concerns. Community residents will meet twice a week over four months

to document their water quality experiences. Although these residents are also

concerned about air quality, affordable housing, and emergency preparedness

including wildfire and health impacts from wildfire and poor air quality, currently they

have prioritized water quality concerns in Merced.

Figure 4: Flyer for Workshop in ECV

For the Eastern Coachella Valley (ECV) region, community residents and CNC EF held their first community research meeting February 6th, 2024 (virtually). Subsequent meetings will be in person. These community residents agreed to participate weekly from February through June 2024 to document air quality concerns, generate research

questions, and collect data. Participants in ECV have decided to prioritize air quality

concerns for research purposes. For both these projects, stipends are needed to

sustain these community driven research efforts and capacity building to support

residents in these efforts.

Local government initiated sustained educational efforts with community

residents is needed. Communication research aims to identify best practices and

strategies to enhance community resident awareness and understanding, including

for wildfire events. This research focuses on several key areas: accessible knowledge

of local resources, preparedness for different wildfire scenarios, and awareness of fire risks during high wind events. It also covers the preparedness of families, particularly those with members who have disabilities or need to have medication for evacuation. Other considerations include guidance on actions during evacuations, how to prepare families and schools for short-term protection, and strategies for integrating long-term solutions. These solutions involve civic engagement and policy changes related to clean air, affordable housing, and waste management services.

Materials developed for this project included Canva slides and an infographic flyer handout (attached as addendum). Information included short term solutions for protecting your family with cleaner air in your home during smoke events and resources to contact in the event of a wildfire. A short Spanish YouTube video is pending. Future educational efforts could include development of bilingual map-based communication tools.

Conclusion

The wildfire webinar series highlighted several critical takeaways, emphasizing the importance of a community-driven and process-oriented approach to foster trust within the communities of the SJV and Merced County region. This approach is vital for capturing community voices, concerns, and priorities regarding wildfire risk, smoke impacts, and climate change related extreme weather events. Engaging community members is crucial for identifying key concerns and allocating resources effectively, thereby building legitimacy and trust that can lead to transformative changes and strengthen community resilience.

Encouraging local governments to maintain and expand educational interactions, and creating avenues for residents to express questions, complaints, and seek training will be critical. For example, offering emergency preparedness like Community Emergency Response Team (CERT) training in Spanish is important. Facilitating community residents to feel confident in engaging with local council members and addressing structural/community level issues are additional steps toward increasing community agency. Initiatives by local governments to enhance interaction and education with communities in accessible ways, such as providing information in Spanish, are expected to bolster wildfire mitigation and prevention efforts.

Making information accessible on websites in multiple languages, utilizing map-mediated communication and infographics are some communication strategies that may improve engagement with affected communities. Organizing regular town hall meetings could open more direct lines of communication between government officials and community residents. Financial incentives and making interactions more accessible (e.g., virtual meetings, information in Spanish and Punjabi) could boost participation. Providing comprehensive information on the health impacts of poor air quality, along with short and long-term prevention efforts, and hosting emergency preparedness workshops in accessible formats are essential for raising community awareness, environmental literacy, and understanding of community-, family-, and individual-level prevention and wildfire mitigation actions.

Lessons learned underscore the necessity of ongoing efforts and interactions

with community residents, including marginalized community residents, concerning the impacts of air pollution, including wildfire smoke exposure. Adopting popular education methods that are more accessible to community members (beginning conversations with community resident lived experiences) may offer a more effective way to reach people e.g., farm worker communities. These methods could include community theatre, which allows for the rehearsal of effective interactions with local government. Photo-voice mapping is another technique that facilitates discussions of place-based impacts and lived experiences, serving the purpose of prompting discussions and documenting community impacts. Maintaining ongoing communication will continue to be important. This can be achieved through engaging with community members through in-person and online channels, employing accessible popular education methods, and having a process and community grounded approach to enlist and document community concerns and having community residents impacted participate in prioritizing concerns and addressing solutions.

References

1.   Sheikh S. *Annual report to the community 2021-2022 30th anniversary edition*. 2021.
https://ww2.valleyair.org/media/bavfc1ec/annualreport.pdf

2.   Modaresi Rad A, Abatzoglou JT, Kreitler JR, et al. Human and infrastructure exposure to large wildfires in the United States. *Nature Sustainability*. 2023;6:1343-1351.

3.   Abatzoglou JT, Williams AP. Impact of anthropogenic climate change on wildfire across western US forests. *Proceedings of the National Academy of Sciences*. 2016;113:11770 - 11775.

4.   Fernandez-Bou AS, Ortiz-Partida JP, Classen-Rodríguez LM, et al. 3 Challenges, 3 Errors, and 3 Solutions to Integrate Frontline Communities in Climate Change Policy and Research: Lessons From California. 2021:717554.

5.   Mannvi S. They're sacrificing us: A California town feels ignored months after flood. *The Guardian*. May 8, 2023. https://www.theguardian.com/us-news/2023/may/08/flood-ravaged-residents- ignored-planada-california

6.   Brown PT, Hanley H, Mahesh A, et al. Climate warming increases extreme daily wildfire growth risk in California. *Nature*. 2023;doi:doi.org/10.1038/s41586-023-06444-3

7.   Sadegh M. Human exposure to wildfires has more than doubled in two decades - who is at risk might surprise you. The Conversation. July 3, 2023. Accessed January 11, 2024. https://theconversation.com/human-exposure-to-wildfires-has-more-than-doubled-in-two-decades- who-is-at-risk-might-surprise-you-207903

8.   Sadegh M, Abatzoglue J. Wildfire risk is soaring for low-income, elderly and other vulnerable populations in California, Washington and Oregon. The Conversation Updated January 11, 2023. Accessed September 20, 2023. https://theconversation.com/wildfire-risk-is-soaring-for-low-income- elderly-and-other-vulnerable-populations-in-california-washington-and-oregon-213455

9.   Davies IP, Haugo RD, Robertson JC, Levin PS. The unequal vulnerability of communities of color to wildfire. *PLOS ONE*. 2018;13(11):e0205825. doi:https://doi.org/10.1371/journal.pone.0205825

10.   Masri S, Jin Y, Wu J. Compound Risk of Air Pollution and Heat Days and the Influence of Wildfire by SES across California, 2018–2020: Implications for Environmental Justice in the Context of Climate Change. *Climate*. 2022

11.   Marlier ME, Brenner KI, Liu JC, et al. Exposure of agricultural workers in California to wildfire smoke under past and future climate conditions. *Environmental Research Letters*. 2022;17

12.   Merced County sees stark rise in ag commodities value for 2022.

13.   *California County Agricultural Commissioner's Reports Crop Year 2021-2022*. Agriculture CDoFa; 2023. December 18.

14.   Zuñiga ME, Méndez M. The Emergence of Environmental Justice in General Plans: Lessons from California's Senate Bill 1000. *Urban Affairs Review*.

2023

15.   Mendez M. The reflective practitioner in the context of racial and environmental justice. *Planning Theory & Practice*. 2022:1-34.

16.   Mendez M. Behind the Bougainvillea Curtain: Wildfires and inequality. *Issues in science and technology*. 2022;38(2)

17.   Mendez M. *Climate change from the streets: How conflict and collaboration strengthen the environmental justice movement*. Yale University Press; 2020.

18.   Schlossberg D. *Defining environmental justice: Theories, movements, and nature*. Oxford University; 2007.

19.   Saxon L, Shell A, Chaterji T, Zimbardo Z. *Coliberate: Community driven climate resiliency planning*. 2022.

20.   Ebi KL. Health in the new scenarios for climate change research. *International Journal of environmental research and public health*. 2014;11:30-46. doi:10.3390/ijerph110100030

21.   Pannu C. Drinking water quality and exclusion: A case study from California's Central Valley. *California Literary Review*. 2012;100:223.

22.   Pulido L, Pena D. Environmentalism and positionality: The early pesticide campaign of the United Farm Worker's organizing comittee, 1965-71. . *Race, Gender, & Class*. 1998:33-50.

23.   Seguin-Fowler RA, Demment MM, Folta SC, et al. Recruiting experiences of NIH-funded principal investigators for community-based health behavior interventions during the COVID-19 pandemic. *Contemporary Clinical Trials*. 2023;

24.   Parrott R, Monohan J, Ainsworth S. Communicating to farmers about skin cancer: the behavior adaptation model. *Human Communication Research*. 1998;24(3):386.

25.   Parrott R, Volkman JE, Lengerich EJ, Ghetian CB, Chadwick AE, Hopfer S. Using geographic information systems to promote community involvement in comprehensive cancer control. *Health Communication*. 2010;25:276-285.

26.   Hopfer S, MacEachren AM. Leveraging the potential of geospatial annotations for group decisions: a communication theory perspective. *International journal of geographic information systems*. 2007;8(21):921-934.