

# TURNING UP THE HEAT

**Climate change, California worker health, and ensuring good jobs in a climate-safe economy**





# Executive Summary

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This report explores how climate change and transition impact the health of California workers and the communities where they live. Drawing from a review of existing literature and conversations with Californian workers across industries, we found that unmitigated climate hazards and unplanned transition exacerbate health risks, but addressing climate by ushering in good jobs and strengthening the public sector workforce offer health opportunities.

In California, climate change is changing everything. Climate crises are accelerating and devastating human health, life, and well-being — with Black, Indigenous, Latinx, and other workers and communities of color feeling the greatest impacts. At the same time, climate policies and investments are bringing a massive economic shift that will impact all Californians with new industries, more jobs, and opportunities for healthier working conditions.

This is a critical moment of decision for California's future and health. Workers and communities are at risk of being left behind as jobs and industries change, downsize, or shut down entirely. But all this change also presents an opportunity for the state to advance economic, climate, and health justice by ensuring an equitable, worker-centered transition, growing the labor movement, improving pay and labor standards, supporting workers and communities in transition, and shoring up the public sector to protect Californians' health while mitigating climate impacts.

We discuss our findings in four main sections:

**I. Climate hazards and disasters are devastating for workers' physical, mental, and financial health.** Climate hazards and disasters — wildfires, smoke, drought, flooding, and air pollution, including methane leaks from oil wells and fossil fuel pollutants — are associated with a host of mental and physical concerns, ranging from respiratory distress and PTSD to injury, chronic disease, and even risk of death. Extreme heat kills the most workers by far, but wildfires, air pollution, drought, and floods are dangerous and deadly as well. Climate also threatens workers' finances, causing many to put their health on the line to avoid income loss and its health ramifications, while still facing medical expenses and reduced work hours. Any and every Californian worker may be affected, but low income workers of color face the greatest harm both at work and home. This exacerbates existing health inequities.

**II. Ensuring good jobs in the low carbon economy protects worker health.** Public health has long known that workplace conditions shape worker health and well-being. Liveable pay, health-supportive benefits, control and predictability, absence of excessive demands like long hours and heavy workload, workplace hazard prevention, and equitable hiring and promotion practices are key components of good, healthy jobs. Unionization builds worker power to shape these healthy conditions, and the very act of power building is healthy in-and-of itself. Large-scale climate investments designated through both state and federal law mean that billions of dollars will create over a million jobs in California. This change presents an opportunity to grow the labor movement and ensure that all jobs are good jobs that protect worker health and safety, while maintaining a positive environmental impact.

**III. Transition without supports for impacted workers and communities harms health.** Climate is forcing workers and communities into transition through hazard- and

policy-driven industry changes, downsizes, and closure. There is ample historic and contemporary evidence that transition is destructive for worker and community health when it fails to support those affected. Job loss, unemployment, and workplace unpredictability are associated with health harms including depression, heart disease, sleep quality, and even mortality. In fossil fuel-dependent communities, the harms ripple through the public writ large. Industry closures shatter local budgets, leading to public sector job loss and funding crises for health-giving public services, and abandoned wells leak harmful chemicals without proper remediation. Instead, a thoughtfully planned and executed transition led by workers offers an opportunity to uplift health for all workers and communities.

**IV. A strong public sector workforce is required to protect public health from climate change.** California's public sector workforce plays an essential role in mitigation and adaptation. The many services they are responsible for hold the promise of ensuring public health. To be able to play this essential role, the public sector workforce must be fully funded and fully staffed with good jobs, without outsourcing to private corporations. Otherwise, limited funding means limited resources and limited staff, which means limited capacity to protect Californian's health.

The evidence is clear that climate change and transition present both health risks and health opportunities. Actualizing these opportunities is not an inevitability. Without action, we will perpetuate the same inequitable power dynamics and systems that lie at the root of climate crises and health inequities. Although transition is inevitable, health, racial, and economic justice are not. To advance a worker-led transition to a healthy, just, and climate-safe economy, we must:

- Strengthen California's climate hazard protections and enforcement mechanisms to ensure the safety and well-being of workers across industries
- Promote fair labor practices, support local economies, and advance workforce development goals in emerging industries while ensuring accountability and transparency in the use of taxpayer funds
- Address the challenges faced by displaced workers in declining industries, improve health and safety standards in refinery operations, support workforce transition to good jobs in new technologies and sectors, and mitigate the economic impacts of declining oil and gas revenues on local communities
- Strengthen the public sector workforce to protect public health from climate change

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## **About Human Impact Partners (HIP):**

HIP transforms the field of public health to center equity and build collective power with social justice movements.

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# Introduction and background

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This report explores how climate change and transition impact the health of California workers and the communities where they live. Our findings reveal both risks and opportunities: the devastating health consequences of unmitigated climate chaos and a transition that fails to support those on the frontlines of change, and the promising health opportunities of addressing climate by creating good jobs, building worker power, uplifting health for those in transition, and strengthening the public sector workforce to protect the public's health.

**Climate change is changing everything.** Fossil fuel-based industries in California continue to pollute the air and water of workers and communities across the state, with devastating impacts on human health and well-being. Workers, vulnerable populations, and low-income, BIPOC communities feel the worst effects. Recognizing the catastrophic nature of climate change and the window of opportunity to stop emissions, California has committed to achieve carbon neutrality by 2045. Federal-level climate investments mean billions of dollars are coming to California to invest in climate, energy, and environmental projects — all of which will support the state in meeting its climate goals. These investments bring the promise of a large-scale economic shift that will impact all Californians. At the same time, this change is forcing many frontline workers and communities into transition, causing jobs to shift and industries to downsize or shut down completely.

These changes are occurring against a backdrop of parallel crises of pollution, poverty, and racism and a long history of wealth extraction and exploitation of people of color and the working class. **From 1950 to 2018, the greenhouse gas emissions and the share of income held by the top 1% have increased in tandem.**<sup>1</sup> Billionaires extract capital from fossil fuel corporations and the country's richest 10% are responsible for 40% of all emissions, while low-income workers and communities of color bear the brunt of hazards and pollution burden.<sup>1,2</sup> California simultaneously has more billionaires than any other state, a 13.2% poverty rate, costs of living that far exceed minimum wage, and some of the greatest income inequality nationwide.<sup>3-6</sup> California's workers and communities of color are disproportionately represented in the lowest income levels, exposed to hazards at work, and live in communities with the highest pollution burden, per analyses of CalEnviroScreen.<sup>6-11</sup> At the same time, low-income, BIPOC communities also have the least access to resources to stay healthy, such as health insurance, sick leave, and healthy housing.

Indeed, climate crises and health inequities share a similar root cause: inequitable social, political, and economic power and systems of oppression. Decades of inequitable policy has concentrated income, wealth, and power in just a few hands.<sup>1</sup> Racism and inequality permeate the social systems and institutions that allocate resources, shape opportunity, and ultimately determine who can be healthy and thrive. **This is exacerbated by an under-regulated oil and gas industry that has profited for decades and spends millions to lobby the politicians who decide whether to regulate pollution and offer workers protections, all while failing to pay the cost of negative externalities that harm worker and community health.** Meanwhile, our underfunded public sector is left with the additional costs of healthcare, shoring up our infrastructure for resilience, and cleanup from climate disasters — which are felt most intensely in poorer and rural communities. At the same time, powerful new companies aim to enter the low carbon market, often with public subsidies, while undercutting high quality jobs, making few or no commitments to local and diverse hiring, and maintaining hostility toward organized workers fighting for their rights and livelihoods.

In this moment, it is critical that California seizes the opportunity to grow the labor movement, improve pay and working conditions, support workers and communities in transition, and shore up the public sector to protect Californians' health — which will advance health and well-being for workers, communities, and the planet.

**This report describes how climate hazards devastate workers' physical, mental, and financial health.** We then show how addressing climate presents an opportunity to ensure that all jobs are good jobs that support all aspects of worker health. Next, we describe how failing to support workers and communities in transition has harmful health impacts and argue that a thoughtfully planned and executed transition can uplift health for all. Finally, we demonstrate how a fully funded and staffed public health workforce will protect the health of California workers and communities from climate change.

Our findings are informed by a review of existing research, as well as 11 in-depth interviews and two focus groups with 16 total participants, all of whom are or have been employed in California. The participants represent a combination of currently employed workers, retirees, and union representatives from the following occupations: childcare, education, city services for older adults and people with disabilities, custodial services, airport operations, food packing, transportation, sheet metal, telecommunications, and oil and gas. Six participants work in Northern California, six in Southern California, two in the Central Valley, and two along the Central Coast.

Participants were recruited via convenience sampling methods. Recruitment, interviews, and focus groups took place during the summer and fall of 2023. During these semi-structured conversations, we invited participants to share their thoughts and experiences on climate change, transition, and labor's role in them. Quotes and paraphrased statements appear throughout the report, followed by the name, pseudonym, or identifier chosen by participants. Any identifying information, such as employer or location, has been removed from quotes and statements.

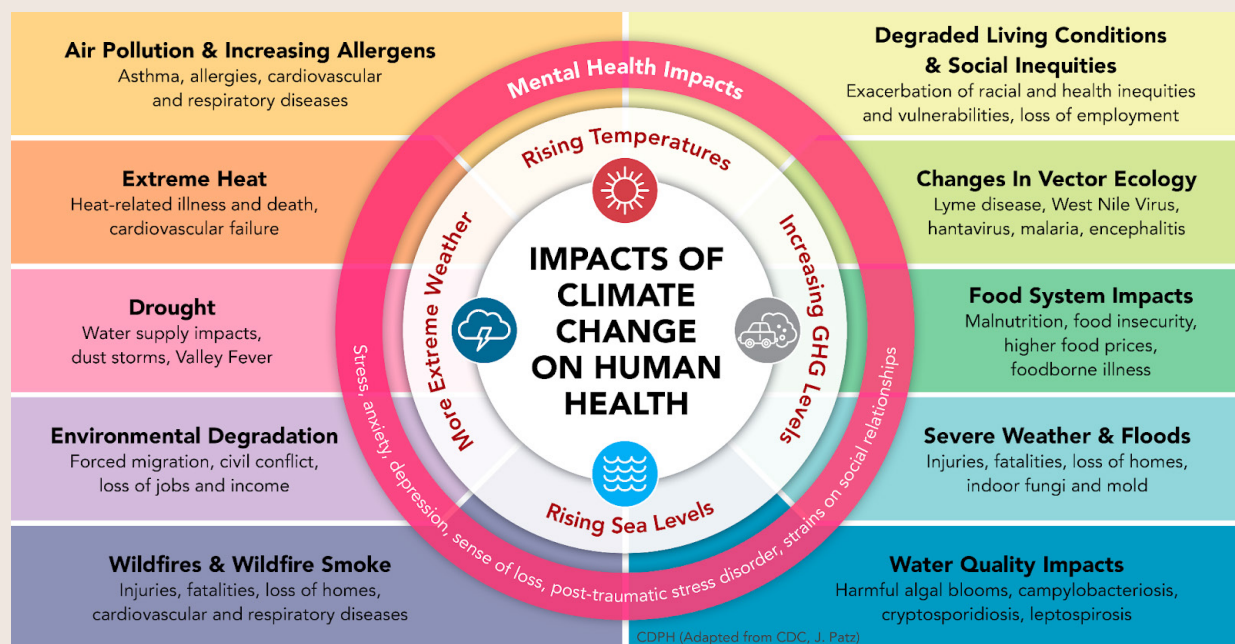


*California workers fighting for protections in the face of climate change at the state Capitol in Sacramento, California, May, 2024 (Photo by Brooke Anderson)*



# I. Climate hazards and disasters are devastating for workers' physical, mental, and financial health

Climate hazards and disasters are pummeling California. Average temperatures have risen by three degrees since 1896, with the majority of change happening in the last 50 years.<sup>12</sup> This is impacting every natural, social, and built environment system that human health, life, and well-being depends on. Thousands of lives are being lost, communities are being destroyed, and workers' livelihoods are increasingly vulnerable. The following image provides an overview of the many hazards that climate change creates.<sup>13</sup> As described, these impacts occur in a context that is already stacked against working people.



Source: California Department of Public Health, adapted from CDC, J. Patz

Through our review of public health literature, we found that climate hazards and disasters devastate workers' physical, mental, and financial health, with the greatest harms concentrated upon low-income, BIPOC workers and communities. We also found that while outdoor workers face the greatest exposure, indoor workers experience more climate hazards than is often recognized.

The stories we heard directly from workers illustrate these findings. Despite the diversity of work conditions and geographies, **every single person we spoke to had a shared experience: that climate hazards and disasters impacted them at work.** Note that the examples of industries featured in this analysis are illustrative but not comprehensive; in reality, anyone and everyone can be impacted by climate hazards and disasters at work.

# Climate hazards and disasters harm workers' physical health

Common climate events experienced at work include extreme heat, wildfires, smoke, drought, flooding, and air pollutants, which includes methane leaks from oil wells and fossil fuel pollutants. We provide more details on each of these hazards and name some of the industries exposed below. This discussion is based on current hazards. Future climate projections depend on our current action to address climate change, which will shape projected hazards and their impacts within the next few decades.

## Extreme heat

**In the US, extreme heat kills more people annually than hurricanes, floods, and tornadoes combined.**<sup>14</sup> Heat-related illnesses can occur when a person is exposed to high temperatures and their body cannot cool down, with symptoms including fainting, dizziness, headache, nausea, weakness, excessive sweating, skin irritation, seizure, irregular heart rhythms, muscle cramps, and irritability.<sup>15,16</sup> Heat stroke, the most serious heat-related illness, can be fatal without emergency care.<sup>15</sup> The stress caused by heat can also increase the risk of death from cardiovascular or respiratory diseases, which are more common than heat stroke yet are not classified as “heat-related” in official mortality counts.<sup>17</sup> Higher temperatures also increase the risk of workplace injury, including falls, vehicular injury, and machine-related injury.<sup>18</sup>

Official records do not convey the true scale of heat’s devastating effect on workers across industries. Because heat increases risk of death from other causes, heat-related deaths are commonly misclassified, and health care providers are not always required to report them.<sup>19</sup> As an example, **Cal/OSHA only reports two farmworker heat-related deaths from 2018 to 2022, but the real death toll may be 40 times higher.**<sup>20</sup> An *Inside Climate News* analysis found 83 farmworker deaths at work during the same time period, on days when temperatures exceeded 80 degrees.<sup>20</sup> The majority of these deaths are recorded as cardiovascular, respiratory, accidents, unknown, unspecified, or natural — many of which are indeed conditions linked to heat.<sup>20</sup>



*LA City street services worker carries an umbrella to ward off the sun as crews lay new pavement in July, 2023 in Woodland Hills, California. (Photo by Brian van der Brug / Los Angeles Times via Getty Images)*

Outdoor workers, who are disproportionately Black and Latinx, are disproportionately exposed to extreme heat.<sup>11,21,22</sup> **Agricultural workers are 35 times more at risk for heat-related death and construction workers are 13 times more at risk, compared to workers across all industries.**<sup>22</sup> In our interviews and focus groups, we heard about the harmful effects of heat from people who work in outdoor custodial services, utilities, telecommunications, oil and gas, and airport operations — which still only represents a small subset of all outdoor industries exposed across California.

That said, indoor extreme heat is gaining recognition as the hazard that it is. **A RAND Corporation analysis found that between 2010 and 2017, 35% of heat-related worker deaths occurred indoors**, although the exact numbers are likely undercounted.<sup>23</sup> Extreme heat is especially prevalent for those working in facilities where air conditioning is unavailable or inadequate, and where work activities generate heat.<sup>11</sup> Examples include, but are not limited to, manufacturing, warehousing, trucking, shipping/logistics, and some airport or food chain operations. This came up in our focus group with food packing workers:

**“Desde que yo entro desde las 7:30 a trabajar hasta las 4:30, 5:00 o 6:00 la hora que yo salga estoy, sude, sude, sude, sude. Y es un dolor de cabeza, una desesperación tan horrible que una vez la verdad, quise salir corriendo. ... a veces cuando tengo mucho calor, yo salgo con dolor de cabeza y con un estrés horrible, porque bueno, es, es demasiado, el calor es demasiado. Se siente el estrés en la espalda y en el cuello.”**

—  
**Translation: “From the time I arrive at work at 7:30 until the time I leave at 4:30, 5:00, or 6:00 I sweat, sweat, and sweat. And it’s the headache, I feel so horribly desperate that I once even felt like running out of there. ... Sometimes when it’s really hot, I leave work with a headache and horrible stress, because it’s too much, the heat is too much. I feel the stress in my back and neck.”**

—Querida, food packing worker

This is similar to experiences a *Los Angeles Times* investigation documented at a Rite Aid warehouse in the Inland Empire, where indoor temperatures regularly reach 90 degrees and stay there for hours.<sup>24</sup> One day, it was 88 degrees indoors by 5:30 AM, and another day, a worker collapsed and had to be taken to the hospital.<sup>24</sup> Three Rite Aid workers have filed Cal/OSHA complaints since 2015, and none resulted in a penalty.<sup>24</sup> Similarly, workers recorded temperatures as high as 96 degrees inside cargo planes and tractor trailers at a San Bernardino Amazon Air Freight Fulfillment Center, and 90 degrees inside the warehouse.<sup>25</sup> Cal/OSHA has been working on an indoor heat standard since 2016, with an initial 2019 deadline. As of the time of writing, the timeline for making the rule official remains uncertain after continual blocks and delays.<sup>26</sup>

Heat is also a concern in indoor environments that may not be traditionally thought of as “hot.” Many factors create occupational heat risk, including environmental conditions like humidity and air movement, presence of heat sources, level of physical activity, use of clothing or protective gear that retain heat, and individual risk factors.<sup>27</sup>



**“You’ve got personal protective equipment on, fire retardant clothing, coveralls. You can’t take them off. So when it gets really, really hot and you don’t have access to a rest period, you don’t have access to water out where you’re at on the job site, it is a hazard.”**

—Dave, refinery worker

**Coupled with physical labor, heat-related illnesses may occur at temperatures lower than 65 degrees.**<sup>27</sup> During our interviews, we heard about the harms of physical exertion during heat from Eusebio, a custodian whose story is featured later in this section.

Additionally, many workers’ buildings lack air conditioning. This is particularly a problem at schools in California, of which only 15% statewide meet industry standards for annual facilities spending, including upkeep and renewal.<sup>28</sup> Even schools with HVAC (heating, ventilation, and air conditioning) units do not always stay cool due to improperly selected equipment, lack of commissioning, incorrect settings, and maintenance issues.<sup>29</sup> According to a 2020 study of 104 California schools with new HVAC systems, **22% of schools experienced temperatures in excess of 78 degrees for more than 20% of the school day.**<sup>29</sup> This has a negative impact on the health and well being of students, as heat is associated with lower learning outcomes and hindered academic performance.<sup>18,30</sup> Schools in low income communities of color are less likely to have AC.<sup>31</sup>

**“We don’t have much of a ventilation system. ... I have 30 students in my class and the classroom’s probably about 30×30 feet, so we basically all have one square foot. And it gets very, very hot in there. ... We come back from lunch around 12:30. After that, the inside temperature of the classroom is in the upper 80s. ... We’re not doing any sort of serious learning or teaching.”**

—Deborah, public school teacher



Photo by Leopoldo Peña

## Hilda's Story:

### Extreme indoor heat with little reprieve

Hilda works in quality control at a food packing facility. Each day, starting at 5 am, she begins ensuring that work areas are clean, food safety standards are met, and rooms are appropriate temperatures. Hilda enjoys looking out for her colleagues and being able to tell the company, “That room is cold, that room is hot, help take care of them.” But conditions at the work site mean cooling is not always possible.

Hilda shared that in the kitchen department, where pastas and sauces are cooked, the temperatures are sometimes as high as 120 degrees, and there is not enough ventilation to cool it down. Hilda also shared that there is no place to cool off besides food processing rooms, which can be as

cold as 40 degrees. After a brief, near-freezing break, Hilda always has to go back to the extreme heat, since she has to be there consistently for her work.

Hilda also experiences extreme heat at home. She has an air conditioner — but her bills are as high as \$400 during hot seasons, adding financial strain to her already-existing health strain from extreme heat at work.

Hilda believes that workers can come together to make positive change on issues related to climate. She shared, “With the help of [organizing], we can move forward something good for us as workers, for our children, and for the community, because they are the ones who will still be here.”

## Wildfires and smoke

**Over 250 Californians have died from wildfires since 1992, 225 of which were in the last 16 years.**<sup>32</sup> This does not account for the millions of Californians exposed to unhealthy levels of wildfire smoke – including over 12 million in 2020 alone.<sup>33,34</sup> Wildfire smoke contains microscopic particles that can penetrate deep in the lungs and cause irritation like burning eyes, runny noses, headaches, and scratchy throats; respiratory symptoms like difficulty breathing, wheezing, coughing, and asthma attacks; and heart symptoms like fast heartbeat or chest pain.<sup>35,36</sup> People with asthma, diabetes, chronic obstructive pulmonary disease (COPD), heart disease, children, pregnant people, and older people experience exacerbated risk when exposed to wildfire smoke.<sup>35,36</sup> Heat and smoke exacerbate each other: from 2006 to 2019, **California hospitalizations for cardiorespiratory issues increased by 7% on days where extreme heat and hazardous smoke coincided** – especially in low-income, non-White, population-dense ZIP codes and areas where people lack health care.<sup>37,38</sup>



*Wildfire smoke billows over Gundlach Bundschu winery on October 9, 2017 in Sonoma, California.  
(Photo by Justin Sullivan/Getty Images)*

Outdoor workers are disproportionately exposed to wildfires and smoke, including but not limited to people working in agriculture, construction, utilities, airports, telecommunications, or transportation.

**“[On an outdoor site visit], I didn’t realize it was smoke until I was wheezing, actually, while I was walking around the work site. I thought it was fog, and then I could smell it.”**

**—Caitlin, gas operations worker**



Indoor workers are also affected when ventilation is inadequate. For instance, a study that examined four skilled nursing facilities during wildfire season found that all experienced indoor air quality levels ranging from moderate to very unhealthy.<sup>39,40</sup> The authors point to poor ventilation as a factor.<sup>39</sup> A similar issue has been documented in California schools. Although the state does not keep records of school ventilation systems, an independent 2020 analysis found that only 15% of classrooms with new HVAC systems met the state's ventilation standards despite the new equipment, due to inadequate oversight on system installation and commissioning.<sup>29,41</sup> Indoor smoke impacts workers, children, and patients alike, many of whom experience risk factors by virtue of age or other characteristics.

Defying known safety procedures, some employers require workers to enter evacuation zones, increasing exposure to flames and dense smoke. In Sonoma and Napa Counties, for instance, agricultural businesses can require farmworkers to enter fire evacuation zones for harvesting.<sup>42</sup> Similarly, household domestic workers, who are not covered by Cal/OSHA, are often asked to pack homes in evacuation zones.<sup>43</sup> Consequently, domestic workers — including house cleaners and home healthcare workers — may be the last to leave hazardous wildfire areas, only able to protect themselves after helping their clients. In one story featured in reporting by The 19th, a Ventura County home healthcare worker named Maria Alvarez couldn't evacuate her client who was confined to a bed with a breathing machine during a wildfire.<sup>44</sup> When the power failed, Maria manually kept her client's airway open and lungs pumping for two whole days and nights.<sup>44</sup>



*Photo by Brooke Anderson*

## Eusebio's Story:

### Physical exertion and harmful workloads in heat and smoke

Eusebio has worked as a custodian for nearly five years, and reports that the amount of work, and how fast the employer wants it done, is really tough. Some buildings on his work site lack elevators, and existing elevators are always breaking down, meaning Eusebio often walks up to three miles a day at work. He shared:

“You have people who are pretty much headed toward retirement climbing up and down stairs in the heat. Carrying equipment, bending and stooping repeatedly, and using chemicals that we don't even know if it's safe for us. ... There are times when [my employers] say, ‘You know what? Don't worry about it. It's too hot.’ But that all goes out the window when the you-know-what hits the fan and they got clientele coming in. They want us to run in that heat.” Although he carries a water bottle, he cannot always safely drink from it when he needs to due to the feces and urine he is in contact with through his job, since his hands may be contaminated.

Prior to his custodial position, Eusebio worked in parking and transportation

at the same location. During those years, he and his colleagues were required to work outside regardless of wildfire smoke — on top of the already harmful levels of exhaust and fumes in garages. The garages had no fans, and the employer did not provide proper personal protective equipment like masks.

Eusebio has never been offered the opportunity to stay home to stay safe when there are climate hazards like smoke or heat. From these cumulative experiences, he has experienced headaches, profuse sweat, and a consistent cough.

Eusebio wants employers to listen to the workers, monitor workloads, and ensure proper PPE is always available. He strongly believes that employers must be accountable, and that Cal/ OSHA must step in. Eusebio believes labor must be at the table to make this happen. “I am super proud of labor but we have to have a seat at the table... We have to consistently be there.”

## Air pollutants, toxins, and allergens

Fossil fuel combustion — meaning coal, diesel fuel, gasoline, oil, and natural gas — is the main source of air pollution globally.<sup>45</sup> **In 2018, one in five deaths worldwide were attributable to fine particle pollution from fossil fuels, amounting to 8.7 million deaths — nearly 34,000 of which were in California.**<sup>46-48</sup> Burning fossil fuels releases a cocktail of chemicals that hurt human health, affecting the lungs, heart, liver, kidney, brain, and more.<sup>49</sup> Symptoms include heart attacks, respiratory problems, lung cancer, strokes, asthma, Alzheimer’s disease, poor birth outcomes, and premature death.<sup>49,50</sup>

People who live or work near fossil fuel burning operations are at increased risk. Proximity to fossil fuel extraction sites is associated with respiratory disease, cardiovascular disease, liver damage, compromised immune systems, poor birth outcomes, and developmental defects.<sup>49</sup> This includes, but is not limited to, workers in airports, construction, mining, heavy equipment operation, bridge and tunnel operations, railroads, oil and gas, loading docks, truck driving, material handling, agriculture, long-shoring, and vehicle garage maintenance.<sup>51</sup> This also includes low-wage workers and their families who live in industrial areas or close to major freeways. For refinery workers and the communities nearby, wells that leak methane and other harmful gases present another issue. **In 2023, Kern County inspectors found 27 leaky wells near Arvin-Lamont — some of which are within 1,000 to 3,200 feet of schools or homes.**<sup>52</sup>

In our interviews with people who work in proximity to combustion activities, we heard firsthand accounts of the health harms of fossil fuels. Nicole, a transportation worker, described exposure to the “everyday toxicity of buses,” and how, coupled with wildfire smoke, breathing is getting worse for a lot of colleagues. Dave, who works in oil and gas, shared that he has been exposed to many chemicals over the course of his career, including fossil fuels. He said that before the creation of Cal/OSHA, they would wash their tools in benzene, which is found in crude oil. Jovan, an airport worker, pointed out that though jetway bridges contain signs warning passengers about cancer-causing chemicals, workers like herself and Maria, another airport worker we spoke to, are exposed to those chemicals regularly, and without the provision of any personal protective equipment (PPE) from the employer. Jovan’s story is featured at length later in this section.

Beyond fossil fuel pollutants, temperature and rainfall changes caused by climate change shift the distribution of vectors (e.g. mosquitos), pathogens (e.g. viruses or bacteria), and allergens.<sup>53,54</sup> Allergy seasons become longer and more severe due to climate change, exacerbating asthma and respiratory distress.<sup>16</sup> This primarily affects outdoor workers, though allergens can and do also make their way indoors.<sup>16</sup> From allergens to smoke and pollution, many of the people we spoke to had no doubt that climate and work conditions are aggravating their airways.

**“I started to get asthma. I feel like I’m losing air. I don’t know what is going on. My doctor gave me an inhaler. I feel like the air coming in is like clogging in my chest. I feel burning on my eyes, a dryness.”**

—Maria, airport worker

**“I have a consistent cough now. I think this consistent cough has probably been with me for 2-3 years where I can have a sip of water, or I can eat something, it doesn’t matter — it just triggers the cough.”**

—Eusebio, custodian



## Drought, heavy rain, and flooding

California's climate typically has highly varied precipitation, with multi-year dry periods followed by multi-year wet periods.<sup>55</sup> Climate change exacerbates the drought-rainfall cycle on both ends.<sup>56</sup> Even when rain increases, drought severity and longevity can still increase due to rising temperatures.<sup>55,56</sup>

Drought dries the air and ground, causing fungal diseases like Valley Fever to spread more rapidly.<sup>11</sup> **Researchers have observed an increase in Valley Fever across California, which can be attributed to successive dry years followed by a wet winter.**<sup>57,58</sup> Valley Fever fungus lives in soil and spreads its spores through the air, a process which is aided by hot, dry conditions. Wind, construction, farming, and other movement kicks up the spores, which humans then inhale, leading to fever, cough, and fatigue.<sup>57</sup> Outdoor workers are especially vulnerable.<sup>57</sup> Stan, a telecommunications worker we interviewed, noted that members in his union have been exposed to the disease.

At the same time, rain intensity is increasing, bringing with it increased risk of floods caused by large storms.<sup>59</sup> Flood water is dangerous and can contain downed power lines, hazardous or human waste, debris, wild animals, and carcinogenic compounds.<sup>60</sup> The associated health risks include drowning, injury, hypothermia, animal bites, infected wounds, gastrointestinal illnesses, and tetanus.<sup>60,61</sup> Floods can also damage property, causing stress and financial strain.

Both indoor and outdoor workers are affected. For instance, Paco, a custodian, recounted an instance when he had to sandbag a flood on his worksite. Querida, a food packing worker, spoke about a time she got stuck in flooding on her way to work and had one of her car's headlights blown out. Similarly, Deborah, a public school teacher whose home has flooded on multiple occasions, has been forced to take time off work to deal with the damage to her property, and buy all new appliances.

**"It's [hard] to think about coming to work and having to teach well. I'm thinking about all of the things I have to do at home just to make it liveable. Make it non-toxic."**

—Deborah, public school teacher

## Climate hazards and disasters threaten workers' finances, which affects health

Climate hazards and disasters also affect workers' health by way of financial security. As will be described in Section II, public health evidence is exceedingly clear that income, pay, and job loss are closely associated with health outcomes. In short, financial impacts are physical impacts. When employers fail to guarantee income and pay during hazardous climate conditions, both staying home from work and going in pose health risks for workers.

In many cases, workers put their health and wellbeing on the line to avoid income loss. Inadequate paid sick leave policies exacerbate this issue. Research from Human Impact Partners and North Bay Jobs with Justice in 2022 found that the majority of Sonoma County farmworkers surveyed always go to work no matter the climate conditions, despite not wanting to.<sup>62</sup> Respondents cited financial pressure, employer pressure, and fear of job loss as the main reasons for going to work despite hazardous conditions.<sup>62</sup> We heard this in our interviews as well.

**“It never deterred them from making us work out in these conditions. ... Of course I don’t wanna be laid off. But I also don’t want to damage my health. Which one would be worse? Not having money? Or coming to work, having money, but shortening my life span?”**

—Eusebio, custodial worker

In other cases, climate crises force workers to stay home and lose those days’ worth of pay. For instance, the same 2022 survey of Sonoma County farmworkers found that nearly a quarter of respondents had been forced to stay home due to sickness from heat and smoke.<sup>62</sup> A 2021 analysis by researchers with the Union of Concerned Scientists found that **US outdoor workers are at risk of losing \$55.4 billion in earnings by mid-century (2036-2065) due to extreme heat alone.**<sup>21</sup> Our literature review findings suggest that this number would be even higher if the calculation considered indoor workers and other climate-related hazards in addition to heat.

**“I’ve missed out on work because of weather related to flooding. ... It definitely doesn’t feel good to not know when you’re going to work again, when you’re going to get paid again, and just having to worry about that.”**

—Participant, sheet metal worker

Climate crises also force industry closure and job loss — not just lost hours — particularly in agriculture, fishing, construction, logistics/goods movement, and more.

Finally, workers face income loss from the material and medical costs of climate hazards and disasters, including from medical bills, damaged property, and insurance rates. **People injured at work face earnings penalties of 8% on average, or 30% for permanent disability.**<sup>18</sup> And for heat alone, the welfare costs associated with workplace injuries in California may be \$525 to \$875 million annually.<sup>18</sup> **Additionally, the health care costs of fossil fuel-generated air pollution exceed \$820 billion annually.**<sup>63</sup>



Photo by Brooke Anderson

## Allison's Story:

### Left stranded providing childcare in climate crises

Allison, who described herself as deeply grounded in community, has been a home-based family child care provider for 13 years. Allison shared that she absolutely loves her work, but has been forced to make difficult decisions due to climate crises. For example, when AQIs are high or power outages cause extreme indoor heat, childcare providers are not given any direction from the state. Allison described how this puts childcare workers in a difficult position:

“The reason why childcare providers are stuck in having to decide ‘Do I stay open or do I close?’ is that we run our own business. We can close if we want to. But if everyone else is able to open, you run the risk of losing clientele to other childcare providers who stay open. ... So they have to choose between, ‘Do we get paid and suffer? ... Or go without pay?’ For Allison, safety always comes first. On top of the financial impact of prioritizing safety, she faces skyrocketing insurance rates from wildfires, and skyrocketing power bills from heat.

Allison also described how climate hazards are scary for children, who sense their provider's fear. She often must put her own emotions aside to show up for the children. “You always have to be ‘on’ ... There's no ‘I'm overwhelmed. I'm going to tell my boss I need to go take a 15 minute break and go sit in my car and cry because I feel overwhelmed.’ There's none of that for childcare providers.”

Allison wants acknowledgement for how childcare providers are impacted. She would love to see more support and direction, so that childcare workers like her can make the healthiest decisions for themselves and the children — without risking their business. She also said a disaster fund would help providers seek safety without taking a financial hit. Allison believes that when childcare providers have a voice, a seat at the table, and an audience that listens, it “is absolutely powerful and it really changes the whole world of childcare.”



## Climate hazards and disasters impact workers' mental health

Climate change-related events, including heat, rain, drought, wildfire, and floods, are associated with negative mental health symptoms and an increase in psychiatric hospitalizations, suicide rates, and mortality among people with mental illnesses.<sup>64</sup> These effects can be direct (e.g. exposure to an event that harms or kills people) or indirect (e.g. witnessing or hearing about the event); short-term (e.g. immediate during the event), or long-term (e.g. displacement, water scarcity, reduction in food).<sup>64,65</sup> People at the epicenter are the most impacted.<sup>66</sup> This includes the many workers who are on the frontlines weathering hazards, entering evacuation zones, or playing a role in disaster response. **Up to 50% of people exposed to disasters experience immediate mental health effects, and up to 20% may have post-traumatic symptoms up to a year following an event.**<sup>67</sup>

For example, Yolanda, a family child care provider we spoke to who works from her home, shared that she once had to evacuate her home in the middle of the night due to a wildfire in dangerously close proximity. Yolanda and her family were able to make it to safety and their home survived, but the evacuation order continued for two days, meaning she had to close daycare services during that time. She recalled of the ordeal, “It was traumatic. Very traumatic.”

Nearly all the workers we interviewed spoke about the psychological challenges of working through climate crises. Most Bay Area-based participants mentioned the psychological distress they experienced in the Fall of 2020, when the sky turned orange from wildfire smoke.



*Mid-day skies over Oakland, California darkened by a historic wildfire season in November, 2020  
(Photo by Lili Farhang)*

**“I feel like all the disasters — whether it be flooding or wildfire smoke — is just kind of that reminder of what kind of world we live in. And that weighs on your mind too. That we’re not in a good place.”**

—Participant, sheet metal worker

Financial worries are also associated with psychological distress, especially among lower income households.<sup>68</sup> Stan’s story illustrates how hazard- and financial-related stress coalesce as managers try to twist the blame of accidents — which are exacerbated by extreme heat — onto the worker:

**“When you’re always under the stress that if you get into an accident, it could be your fault and you could get time off and lose wages, get penalized for an accident that the company might say was avoidable, that creates a layer of stress.”**

—Stan, telecommunications worker

## Climate hazards and disasters exacerbate existing health inequities

Climate is a health equity issue. Questions of who has access to cooling and PPE, who has more than the minimal number of state-mandated sick days, who has employer-provided health insurance, who can weather the financial impacts of climate change, who gets reprieve from hazards upon going home, and who is covered by Cal/OSHA are all answered along lines of systemic and intersectional privilege.

The industries most heavily impacted by climate events disproportionately employ people from vulnerable groups, and pay workers low wages.<sup>10,11</sup> A 2022 report from the California Legislative Analyst’s Office found that **Latinx workers represent 60% of workers in the most climate hazard-impacted outdoor industries, despite being 38% of the state’s population.**<sup>11</sup> Impacted industries typically pay wages far below California’s median of \$23.50 an hour.<sup>11</sup> This exacerbates already-existing inequities, further entrenching racial and economic injustice.

Additionally, many workers in these industries live in areas that are known as “environmental justice,” or EJ, communities. EJ communities are areas surrounded by pollutants, lacking clean water or safe infrastructure, that are often excluded from public investments.<sup>69</sup> As J. Mijin Cha et al. (2020) argue, wealthier individuals and communities emit far more greenhouse gasses and thus contribute disproportionately to climate change, yet it is marginalized communities who suffer the most adverse consequences.<sup>8</sup> **Nearly half (42%) of fossil fuel facilities are located in communities with the highest pollution burden statewide.**<sup>8</sup> Among the most impacted

communities, farmworkers in particular are impacted by poor living conditions in general, including no air conditioning, vermin infestations, poor water, inadequate infrastructure, and crowded homes.<sup>70-72</sup>

For workers, living in an EJ community means double exposure — both at work, and at home. Double exposure was a common theme in many of our interviews and focus groups. Workers we spoke with shared about returning to a hot home from a hot workplace, flooding at home affecting wellness at work, and experiencing poor air quality everywhere. For instance, Jovan and Maria both also live under a jet landing path. They shared how the black dust generated by jets nearby affects their houses, their plants, their cars, and their family's health — all on top of the health impacts of the jet fumes they breathe daily at work.

Inequitable access to disaster-related resources, information, and relief is another dimension of climate injustice and corresponding health inequities. A 2019 state audit report found that the most vulnerable communities are overlooked during disaster planning.<sup>73</sup> As a consequence, low-income, rural, BIPOC, immigrant, and older workers and communities are less prepared and less able to recover in the wake of climate disasters.<sup>73</sup> For instance, an analysis of disaster response during the 2017 Thomas Fire in Ventura and Santa Barbara Counties found that — among other issues — emergency warnings were only in English, leaving Spanish, Indigenous, and other non-English language-speakers without access to essential information.<sup>73</sup> During the Thomas Fire, the Mixteco Indigena Community Organizing Project (MICOP) reached an additional 10,000 people by disseminating written, audio, and video safety announcements through varied means, such as WhatsApp — an effort especially important for reaching Indigenous communities.<sup>73</sup>

Furthermore, undocumented workers are excluded from disaster relief including Disaster Unemployment Assistance Program and FEMA assistance.<sup>73</sup> Some immigrants also make “a reasonable assessment of unacceptable risk” that any information on assistance intake forms may be shared with ICE and therefore do not seek services, according to a Bay Area Regional Health Inequities Initiative analysis of fire recovery processes in the North Bay Area.<sup>74(p6)</sup> Consequently, workers on the frontlines of climate hazards and disasters can be barred from services that could mitigate the health harms they face.





*Photo by Leopoldo Peña*

## Jovan's Story:

### Double jet fuel exposure at home and work

In her 15+ years working at the airport, Jovan has performed a number of different duties, including screening cargo, checking workers' IDs, taking passengers who need wheelchairs through security to the gate, and more. It was after six months of working inside a jet fuel fume-filled warehouse that Jovan was diagnosed with chronic obstructive pulmonary disease, or COPD. The warehouse is right across from the runway, causing a blast of smoke as each plane lifts off. "It's a huge warehouse just filled with fumes," Jovan said.

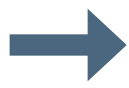
Jovan shared, "I got this cold that I could never get rid of. The cough — it would just never [go away]. I got a respiratory infection the first time. My doctor treated it and it just never went away. He was like, 'Maybe it was bronchitis.' It just never went away. He just kept giving me medicine. He finally told me it's COPD. That's usually people that smoke, but I don't smoke."

Occupational conditions like air pollution and chemical fumes are known to increase the risk of developing COPD.<sup>193</sup>

On top of the health stress, Jovan described the financial impact of paying for medicine and doctor's visits, all while taking unpaid time from work when she is not well enough to go in. Jovan's sick days are not sufficient for the time she needs.

Jovan does not get a reprieve from jet fuel at home. Instead, the flight path is right over her house, and planes dump fuel on her community. This affects both Jovan and her family, including her son who has asthma.

Jovan would love to see environmentally friendly fuel that won't affect workers and their families, as well as a better healthcare package — especially for airport workers who, as Jovan put it, "get a double dose of pollution every day." Jovan believes labor can lead on these important issues. As she said, "Labor is the people. It's the people that live the issues. So if we all come together and speak up, then we can probably get something changed."



## Recommendations: Policies to protect worker health and safety

By implementing these recommendations, California can strengthen its climate hazard protections and enforcement mechanisms, ensuring the safety and well-being of workers across industries.

**1. Finalize Heat Illness Prevention rules:** Cal/OSHA should expedite the finalization of rulemaking for Heat Illness Prevention in Indoor Places of Employment, given the delay at the federal level in establishing a national guideline. Timely implementation of these rules is crucial for safeguarding workers from the increasing risks of heat-related illnesses.

**2. Address chronic understaffing at Cal/OSHA:**

**a. Policy and programs to increase enforcement staff:** Implement policies and programs aimed at addressing chronic understaffing in Cal/OSHA's enforcement division. This could involve modifying minimum education requirements, establishing apprenticeship or workforce development programs to broaden the applicant pool, or creating worker outreach and education models that support community navigators in educating, monitoring, and reporting on worker safety.

**b. Hire interpreters and bilingual enforcement staff:** Prioritize the hiring of interpreters to ensure language access for workers across industries. Simultaneously, focus on recruiting bilingual enforcement staff to effectively communicate with diverse workforces, thereby enhancing compliance and enforcement efforts.

**c. Integrated data tracking and reporting infrastructure:** Develop and implement an integrated data tracking and reporting infrastructure for extreme heat events, preferably deployed at the worksite level. This system should automatically notify Cal/OSHA and workers' rights organizations about high heat events, enabling swift intervention and preventive measures to protect workers' health and safety.

**3. Strengthen policy on workers' right to refuse unsafe work:**

**a. Enforcement of existing laws:** Enhance enforcement mechanisms to ensure workers can exercise their right to refuse unsafe work conditions, as mandated by labor laws. Address the backlog in the Labor Commissioner's Retaliation Complaint Investigation Unit to expedite resolution of complaints related to unsafe working conditions and employer retaliation.

**b. Implement complementary strategies:** Implement policies and programs that complement workers' ability to refuse unsafe work. This includes measures to address understaffing within the Division of Labor Standards Enforcement (DLSE) to enhance its capacity for enforcement and protection of workers' rights.

**4. Rights and financial support for workers during disaster:**

**a. Pass Safety Net for All legislation:** Advocate for the passage of Safety Net for All legislation to extend unemployment benefits to undocumented workers during disasters. Ensuring financial support for all workers, regardless of immigration status, is essential for promoting economic resilience and equity during times of crisis.

**b. Establish disaster insurance programs and hazard pay:** Implement disaster insurance programs to provide financial support for workers who experience temporary underemployment due to disasters. Additionally, introduce hazard pay policies to compensate workers who perform duties in unhealthy or unsafe conditions during emergencies. These measures recognize the increased risks and hardships faced by workers during disasters and ensure fair compensation for their efforts.

## **5. Strengthen workers' rights in evacuation zones and disaster situations:**

**a. Accessible mass disaster communication systems:** Develop and implement language-accessible mass disaster communication systems to ensure all workers receive timely and accurate information during emergencies. Collaborate with employers to incorporate these systems into their emergency plans to effectively reach diverse workforce populations.

**b. Employer-implemented emergency plans:** Encourage employers to establish comprehensive emergency plans that prioritize the safety and well-being of their workers during disasters. These plans should include provisions for evacuation procedures, access to necessary resources, and protocols for communication and support.

**c. Cell phone access and right to return home:** Advocate for policies that guarantee workers' access to cell phones during disasters, enabling them to stay informed and connected with loved ones. Additionally, reinforce workers' rights to return home during disasters without facing retaliation from employers. Protecting workers' ability to prioritize personal safety and reunification with family members is crucial for their overall well-being and resilience during emergencies.

**6. Bargaining:** Bargaining is a powerful tool for union workers to protect themselves from climate hazards caused by extreme weather events. Union contracts can provide more detailed information on employee training, evacuation protocols, and disaster response due to extreme weather events. Some contracts may offer pay for workers during emergencies.



## II. Ensuring good jobs in the low carbon economy protects worker health

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Recent landmark federal legislation will allocate trillions of dollars toward combating climate change and building a climate-resilient future. Notably, the 2022 Inflation Reduction Act (IRA) is expected to create more than 9 million jobs nationwide in the next decade.<sup>75</sup> **In California specifically, researchers at the Political Economy Research Institute estimate that investments to meet the state's climate goals could create 1 million jobs through 2030.**<sup>76</sup> This estimate considers jobs that are indirectly created through the supply chain, and jobs that are induced when people spend money on consumer goods and services. Together with direct job creation, the expanded jobs will equal about 5% of California's entire workforce.<sup>76</sup>

Emergent industries in California include electric vehicles and charging infrastructure, offshore wind, and solar, as well as work in agriculture and natural lands, forest mitigation, broadband, and public infrastructure ranging from transit to water. The workforce needed to bring this future into reality includes planning, construction, operation, maintenance, manufacturing, and assemblage. Public sector workforces and service provision — such as in the healthcare industry — will also need to increase to meet the demands of climate impacts and adaptation.



*Turlock Irrigation District wind turbines, Turlock, California (Photo by American Public Power Association / Unsplash)*

This expansion and change presents an opportunity to grow the labor movement and center working people, sustainability, and health equity. This means ensuring that all new and emerging

jobs are good jobs with strong labor standards that protect worker health and safety, while maintaining a positive environmental impact.

In this section, we discuss the key characteristics of “good jobs,” and draw on public health literature to examine how each characteristic advances health equity. We also show how building worker power to fight for good jobs benefits both worker and community health.

Organized workers have a long history of building power to improve structural conditions. Our most important labor protections — including the 40 hour workweek, overtime, minimum wage, child labor laws, health and safety enforcement, and the very right to unionization and collective bargaining via the National Labor Relations Act — are all due to the power of collective worker action and organizing.<sup>77</sup> Workers across the country are already organizing for good jobs and healthy conditions in the face of climate change, from airport workers fighting for jet fuel regulation, to EV battery manufacturing workers fighting for unionization in new companies, to the Safety Nets for All campaign fighting to ensure undocumented workers are covered by unemployment insurance. Workers are leading the way toward just and equitable transition in response to climate change via collective organizing.

## Job conditions shape worker health and well-being

Public health has long known that workplace conditions have a direct impact on worker health and well-being. The conditions that we are exposed to at work impact our ability to provide for our basic needs, steer clear of hazards, advocate for the policies we need to thrive, and ultimately experience health. Here, we identify some of the characteristics that define a “good” job from a public health perspective.

### Equitable, liveable pay

**In the US, the richest 1% has nearly 15 more years of life expectancy than the lowest income 1%.**<sup>78</sup> The relationship between health and financial security is a gradient, wherein individual health improves along each step of the socioeconomic ladder.<sup>79</sup> Income is associated with multiple health outcomes, including anxiety and depression; chronic diseases such as diabetes, kidney disease, liver disease, heart disease, hypertension, and stroke; and life expectancy, which represents mortality due to any reason.<sup>80–85</sup>

There are multiple reasons for these outcomes. The first is medical: lower-income Americans are less likely to have health insurance, have less access to medical care, and are more likely to skip care visits because of costs.<sup>86</sup> Additionally, access to higher income creates access to food, housing, childcare, and other basic needs that are necessary for both mental and physical health.<sup>79,87–89</sup> Finally, financial strain creates a wear and tear on the body known as allostatic load, or chronic stress, which is associated with worse mental and physical health.<sup>86,90,91</sup>

Race and gender intersect with socioeconomic status to further exacerbate inequities. White men hold higher paying jobs than Black and Latinx people of any gender, and Black populations experience worse health outcomes at every level of pay, compared to White populations of the same income level.<sup>80,92</sup>

**Increasing minimum wages by 10% can give workers nearly a half-year (0.44) of additional life expectancy.**<sup>93</sup>

## Health-supporting benefits

Workers without paid sick leave are more likely to skip medical visits for themselves and their families, while access to paid sick leave is associated with increased likelihood of visiting a doctor, undergoing health screenings, and getting vaccinated.<sup>94</sup> Among the lowest 10% of earners, only 38% of workers have paid sick days, compared to 96% of workers in higher-paid positions like management, business, or finance.<sup>94</sup> **For the average worker without paid sick days, even a single unpaid half day due to illness results in lost wages equivalent to the household's monthly fruit and vegetable budget.**<sup>95</sup>

Similarly, individuals and families with health insurance are more likely to seek needed medical care, including prevention and screenings. As of 2020, only 13% of California companies with many low-wage jobs offer health benefits, compared to 64% of companies with few low-wage jobs.\*<sup>96</sup> **People without health insurance have a 40% higher risk of mortality compared to those with insurance.**<sup>97</sup>

Another key health-supporting job benefit is paid family leave, which can be used for caring for a newborn child or a family member experiencing health issues. Research shows that paid family leave is associated with positive child health outcomes, including increased breastfeeding rates, and decreased psychological distress among parents.<sup>98–101</sup>

## Control and predictability

Low-control work environments offer workers little say in how they accomplish tasks or when they will work, subject workers to surveillance or over-supervision, and create stress.<sup>102</sup> **Over a third of US workers have less influence than they would like to have over work conditions like schedules and how they do their jobs.**<sup>102,103</sup> Workers in low-control environments experience poorer health, such as higher rates of depression, anxiety, insomnia, exhaustion, headaches, stomach problems, high blood pressure, and coronary heart disease.<sup>104–107</sup>

Lack of predictability is closely linked with stress and poor health, as unpredictable scheduling creates unpredictable pay, increasing risk of economic hardship, inability to meet basic needs, poor sleep, and mental health concerns.<sup>108</sup> Latinx workers and workers with lower levels of formal education are disproportionately represented in jobs with short scheduling notice.<sup>109</sup> Outside of scheduling, pay volatility — meaning tips, commissions, piece-rate, or performance-based pay — is shown to also impact physical health, sleep quality, sleep quantity, and mental health.<sup>110</sup>

Increased worker control and sense of predictability are associated with better health outcomes: after Seattle passed a fair workweek ordinance that increased transparency, predictability, and control over hours worked, hourly employees experienced improved sleep quality, economic security, and subjective well being.<sup>111</sup> Some Californian cities have similar ordinances with provisions including 14-day advance notice of schedule, but they are not commonplace, nor are all sectors covered.<sup>112</sup> For example, Los Angeles' ordinance only covers retail businesses with over 300 workers.<sup>113</sup>

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\* "Companies with many low-wage jobs" is defined as firms where at least 35% of workers earn \$25,000 or less per year; "companies with few low-wage jobs" are firms where less than 35% of workers earn \$25,000 or less per year.<sup>96</sup>



## Absence of excessive demands

The intensifying demands of the modern workplace — including increased pace due to productivity trackers, long hours, last-minute scheduling, and heightened expectations of 24-7 availability — take a toll on workers' physical and mental health, and have increased over the last 50 years.<sup>114</sup> Excessive demands and heavy work have been linked to physical and mental ailments including coronary artery disease, stroke, some cancers, and overall distress.<sup>114</sup> **One study finds that high job demands increase the risk of being diagnosed with an illness by 35%, and that long work hours increase mortality by almost 20%.**<sup>115</sup>

## Workplace hazard prevention

Workplace health and safety policies are essential to protect workers, minimize or eliminate safety and health risks, and ensure healthy workplace conditions. Beyond climate hazards, other types of workplace risks include safety, biological, chemical, and ergonomic hazards.<sup>116</sup> **In 2022, the most recent year with available data, 504 Californian workers died from occupational injury or exposure, and another 419,300 experienced nonfatal injury or illness.**<sup>117,118</sup> The actual numbers may be significantly higher due to heat-related misclassification and underreporting, as described in Section I.

In 2022, the causes of fatal workplace injuries in California were transportation incidents (133 deaths), exposure to harmful substances or environments (132 deaths), violence by persons or animals (97 deaths), falls and slips (79 deaths), contact with objects and equipment (55 deaths), and fires and explosions (8 deaths).<sup>118</sup> Among nonfatal workplace illnesses in 2022, respiratory conditions had far and away the highest incidence rate, at 103.6 per 10,000 workers.<sup>119</sup> All employers in new and growing industries, as well as existing ones, have a responsibility to mitigate risks for workers from every harmful source.

## Equitable hiring and promotion practices

Discriminatory hiring and promotion practices disproportionately expose workers marginalized by race, ethnicity, and gender to health-harming conditions. White men are consistently overrepresented in the highest-paying occupations in the US; men of color and women of any race are consistently overrepresented among the lowest-paying ones.<sup>120</sup> In turn, these low-paying jobs are more likely to expose workers to many of the aforementioned work harms.<sup>121</sup> Additionally, unemployment rates among Black and Latinx people are consistently higher than the unemployment rates of White people.<sup>122</sup> The health harms of unemployment will be described in Section III.

Racist practices embedded in hiring, pay, and opportunities for promotion contribute to persistent wage and employment gaps, and to the disproportionate exposure to unhealthy work conditions they create.<sup>123</sup> A 2004 study found that the resumes of applicants with names that employers perceived as White received more interview callbacks than those employers perceived as Black.<sup>124</sup> And though this study was published decades ago, a 2017 meta-analysis of similar “field experiments” revealed that anti-Black hiring discrimination has changed little over 25 years.<sup>125</sup> Drawing from 28 studies representing over 55,842 applications, researchers found that **White applications received 36% more callbacks than Black applicants, and 24% more callbacks than Latinx applicants.**<sup>125</sup>

All jobs should be good jobs with pay, benefits, and conditions that support workers' health. Ensuring that workers from historically marginalized groups have access to good jobs, and to opportunities for advancement within them, will promote health equity.



Photo by Ian Whitaker

## Stan's Story:

### Work conditions, health, and the imperative for strong labor standards

Stan worked for a telecommunications company for over 20 years. He sees broadband as essential health and climate infrastructure that all Californians should have, but spoke at length about the harms of corporate practice that result in inequitable access. When asked how his career was, he said the employer was horrible, and it was a good thing to have a good union.

For instance, when there were accidents, including falls or dog bites, supervisors would ask pointed questions to try and blame the technician. This included things like, "What was your mental attitude like that day? What were you thinking of? Were you hungover? Worried about bills? Had a fight with your wife?" For workers, blame means penalization, time off, and lost wages, creating stress.

"I would always take it back to the corporate culture and the fact that the bottom line always plays significantly in supervisors' calculation as to whether you need to go forward and get that job done. You'd like to take your time, you'd

like to analyze all the characteristics of the job, make sure it's safe. But you're always going to have that pressure," Stan said.

Stan advocates for all climate infrastructure investments to include labor language that protects workers with good working conditions, family-supporting wages and healthcare, and labor neutrality agreements — all while involving communities in the projects through local hire and union or apprentice training programs. Stan sees this as creating a distributive system for the resources that economic development brings into community, while benefiting the environment, too.

"With a good administration that's willing to do the infrastructure investments but include labor language with those investments, that would bring not just labor into it, but the community into it in a relationship with labor. The product will be better, be a better investment, be more long lasting, be better quality, but the community would benefit. ... Those communities could be thriving."



## Unions build worker power to shape workplace conditions



*Union organizers rallying in support of museum workers in 2022 (Photo via United Domestic Workers / California Labor for Climate Jobs)*

Unions build worker power to shape the workplace conditions that affect health. In California, where the majority of union members are workers of color and half identify as women, unions are a powerful tool to advance health equity.<sup>126</sup> Compared to non-union workers in similar industries and with similar demographics, union workers in California:

- Earn 12.9% higher pay, increasing Californian's earnings by \$18.5 billion annually<sup>127</sup>
- Are 37.2% more likely to have a employer-sponsored health insurance<sup>127</sup>
- Are 51.5% more likely to have a retirement plan<sup>127</sup>
- Are 37.1% less likely to live in a low-income family<sup>127</sup>

Beyond this, research shows that unions increase workers' access to paid sick days and improve job security, predictability, and workplace health and safety — and not just in California.<sup>128–130</sup>

Union membership is associated with better self-rated health regardless of demographics and labor market characteristics — which is in large part due to income-related benefits.<sup>131</sup> **The health benefits of union membership offset approximately five years of aging.**<sup>131</sup> Some of the people we spoke to, including Stan, pointed to the role their union plays in ensuring that their jobs are good jobs where health, safety, and income are protected.

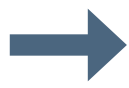


**“No matter what occupation you’re in, we’re all together. There’s strength in numbers. We are not necessarily in the same boat, but we’re all in the same ocean. ... We have a voice, and we can be listened to and we can be heard.”**

—Allison, family child care provider

Additionally, the very act of unionizing supports health. Public health research links community power and the act of power building to positive health outcomes, including preventing disease, reducing the severity of disease, and benefiting mental health.<sup>132</sup> Building power enables workers to influence decision-making, set agendas, and shift public discourse — thereby increasing their agency over the decisions that impact their lives.<sup>133</sup>

Non-union workers benefit from unionization, including in other industries. Union jobs set wage and other standards across industries regardless of unionization, which boosts pay in occupations that typically pay low and mid-range wages.<sup>134</sup> On the national level, unionization and working under collective agreements are associated with reduced income inequality and a lower percentage of low wage work overall.<sup>130</sup> Additionally, union density — meaning the percentage of workers within a specific geographic region who are union members — and collective agreement coverage are associated with lower infant mortality rates.<sup>130</sup> Union density is also associated with a reduction in low birthweight rates.<sup>130</sup>



## Recommendations: Policies to ensure all jobs are good, healthy jobs

By incorporating these recommendations into public investment policies, California can promote fair labor practices, support local economies, and advance workforce development goals in emerging industries while ensuring accountability and transparency in the use of taxpayer funds.

### 1. Labor Standards for Public Investments in New Industries:

**a. Adopt legislation that models the inclusion of workforce standards into grant or incentive programs:** In the EV Battery Manufacturing sector, a 2024 bill provides a strong model where a competitive grant program prioritizes bids that incorporate prevailing and/or living wage standards, environmental safety plans, workforce and training plans, labor peace agreements, and provisions for safe and healthy work conditions (SB322 (Becker)).

**b. Community Benefits Agreements (CBAs):** Require the use of Community Benefits Agreements (CBAs) to ensure that public investments in new industries benefit local communities, including provisions for targeted and local hire, as well as clawback provisions to hold companies accountable for meeting agreed-upon commitments.

**c. Job and training plan reporting:** Mandate regular reporting on job creation and training outcomes to monitor the effectiveness of public investments in generating employment opportunities and supporting workforce development initiatives.

**d. Payment suspension and corrective action:** Establish mechanisms for payment suspension and corrective action in cases of non-compliance with labor standards or failure to meet performance benchmarks outlined in job and training plans. This can include pre-determined liquidated damages in contracts to incentivize compliance with labor standards and ensure accountability for breaches of contract.

**2. Accountability to workers and communities via labor seats on program design and review committees:** Ensure labor is represented on program design and review committees overseeing public investments in new industries, allowing labor organizations to provide input and oversight throughout the decision-making process.

**3. Procurement legislation:** Enact procurement legislation granting permissive authority for best value procurement methods, allowing government agencies to consider factors beyond cost, such as labor standards and community benefits, when awarding contracts.

**4. Utilize USEP/USJP:** Utilize the United States Employment Plan (USEP) or United States Jobs Plan (USJP) framework to incorporate labor standards into public investment projects, ensuring that taxpayer dollars support job creation and economic development with strong labor protections.

**5. Statutory authority of LWDA:** Strengthen the statutory authority of the California Labor and Workforce Development Agency (LWDA) to develop and enforce labor standards for public investments, empowering the agency to oversee compliance and enforcement efforts.

# III. Transition without supports for impacted workers and communities harms health

Climate change is forcing our economy and many communities into transition. Many jobs will shift, downsize, or shutter entirely due to changing policy and climate conditions — and some already are. In this section, drawing from public health literature and case studies of past and present economic changes, we show how supporting workers and communities in transition is a health imperative, as not planning for transition has harmful health effects.

## **Transition is not inherently harmful; past policy gaps and shortcomings have made it so.**

There is ample evidence that unplanned transition brings unemployment, instability, financial distress, loss of benefits, potential for worse working conditions, and community tax base changes that affect public services and the public sector. And transition is not limited to climate change — industries have risen and fallen for decades, and for myriad reasons, though the transition away from fossil fuels is of unprecedented scale.<sup>135</sup> Researchers have long documented the experiences of impacted workers and communities, including through the Just Transition Listening Project.<sup>135</sup> Drawing from over 100 “listening sessions” with workers who have or will experience transition, the project finds that existing transition policies are “fragmented and inadequate,” and past transitions have left workers and communities behind with little support.<sup>135(p3)</sup>

This is not to say climate transition should — or can — be avoided. **There is no doubt that climate crises, driven by our dependence on fossil fuels, is an urgent public health crisis for workers and communities — including those who work on or live near fossil fuel production and combustion, and those who face job loss from unmitigated hazards.** At the same time, simply ceasing fossil fuel production and use without taking care of those who will be displaced creates significant health risks for workers and communities. Advancing California’s climate commitments necessitates supporting workers whose jobs are threatened from the level of climate harm already done. Otherwise, the climate transition will leave people behind and harm health, as past transitions have.

A worker-led, thoughtfully planned and executed transition will uplift health for all and address climate crisis. This means supporting workers experiencing change and displacement, ensuring good jobs, and investing in communities where ripple effects are expected. Workers and communities in transition are best positioned to lead on the issues that affect them.

**“I think it’s really important for workers to be able to speak for the work that they do and their ideas for how it will continue.”**

—Caitlin, gas operations worker



# Climate change is forcing transition

## Transition driven by climate hazards

Climate hazards interrupt and alter work practices, causing instability, unpredictability, and job loss. Changing practices may require either smaller or larger workforces, meaning that workers may lose hours, lose their job, shift to new work, or have to relocate and retrain.<sup>11</sup> Examples of industries facing hazard-driven transition include agriculture, where drought decreases production and available work; fishing, where changing sea temperatures reduce local fish supply; and construction, logistics/goods movement, recreation, and tourism, where hazards force operations closed for periods of time.<sup>11,136</sup> **For instance, California's drought eliminated 12,000 agriculture jobs in 2022, which does not include the many workers who lost hours but remained employed.**<sup>137,138</sup>

Other industries like healthcare, childcare, and education face transition from shifting workplace needs, which creates instability and unpredictability. In healthcare, including nursing and home-based care, increased patient volume creates staffing issues and increased stress for providers, some of whom may themselves be displaced due to disasters.<sup>139,140</sup> In education and childcare, workers manage increased physical and emotional needs of children, who are more vulnerable to climate hazards.<sup>141</sup> Despite this, schools are not staffed with enough nurses, social workers, and psychologists to meet students' needs.<sup>142</sup> This ultimately puts stress on teachers and providers. We heard about this from Deborah, who described having to stop teaching to offer emotional support to children impacted by flooding.

**“Once one child starts crying, all of them find something to cry about. ... You have to get in there and adjust ... It's keeping their morale up, keeping our morale up, and making sure that we're prepared for a little bit of everything.”**

—Yolanda, family child care provider

**“I feel like all the disasters — whether it be flooding or wildfire smoke — is just kind of that reminder of what kind of world we live in. And that weighs on your mind too. That we're not in a good place.”**

—Allison, family child care provider

## Transition off oil and gas

Job loss due to reduced fossil fuel use is here, and it will continue. In 2020, a massive decrease in transportation led to an oil crash and over 100,000 industry layoffs nationwide.<sup>143</sup> This included the Marathon refinery closure in Martinez, which impacted 700 full time staff and up to 2,500 contractors.<sup>144</sup> California's climate policies will continue to move the economy away from fossil fuels. Notably, SB 32 requires a 40% reduction in greenhouse gas emissions by 2030.<sup>145</sup>

Multiple economic researchers have estimated expected fossil fuel job loss in California. Although the exact numbers vary depending on methodological choice, there is consensus that tens of thousands of California workers will be affected. Specific estimates are:

- **57,600 fossil fuel jobs will be lost;** 32,000 to 37,000 people will require reemployment after taking retirees into account - Political Economy Research Institute<sup>146</sup>
- **59,178 fossil fuel jobs will be lost;** all 59,178 will require reemployment - Gender Equity Policy Institute<sup>147</sup>

Kern, Contra Costa, and LA Counties are expected to be most affected, as 12.1%, 11.5%, and 25.8% of all fossil fuel employment is concentrated in each county, respectively.<sup>76</sup>

Fossil fuel-dependent workers do not only work at refineries or on oil fields. In industries like transportation, utilities, and manufacturing, many workers' depth of knowledge and expertise is based on fossil fuel-driven systems. These jobs must transition to new engines and practices.

**“We have engineers. We have estimators. We have mappers. We have field engineers. We have technicians. We have people who are really experts in the gas system and wouldn't know the next thing about electric. So what happens to them?”**

—Caitlin, gas operations worker

**“If fossil fuels are no longer necessary, then there are some people who have been mechanics for 20 to 30 years [who] will be forced to retire or they would have to learn a new skill set. ... A whole host of people would be lost.”**

—Nicole, transportation worker



View of the Kern River Oil Field Bakersfield, California, August, 2020 (Photo by Jamie Sarfeh)

## Without support, transition poses risks to worker health

Many — but not all — oil and gas jobs require skills that match well to existing jobs, or to jobs that will be generated through clean energy investments.<sup>76,135,147</sup> However, this does not mean that all workers will seamlessly transition into new employment. And even skill match does not guarantee matched pay, matched benefits, or hiring.<sup>76,147</sup> Some workers may also require relocation for new jobs.<sup>147,148</sup>

**“The majority of people are high school grads, college grads. It’s the only thing that they’ve ever done in their adult life. The skills, at least for operators, are so specific to that refinery that they’re not easily transferable to anywhere else.”**

—Dave, refinery worker

A 2023 study surveyed and interviewed a subset of workers laid off from the Marathon Martinez refinery.<sup>149</sup> **About a year and a half after layoff, nearly a quarter (22.5%) of respondents were still seeking employment. Many (77.5%) were reemployed, but had difficulty finding jobs that matched their skills and prior pay.**<sup>149</sup> Reemployed workers experienced an average 24% or \$12 reduction in hourly pay and worse working conditions, including hazards, heavy workloads, poor safety practices, lower unionization rates, and few opportunities for advancement.<sup>149</sup> As described in Section II, these work conditions are bad for worker health. Finally, 33% of respondents said they are falling behind financially a year after the layoff, compared to only 3% before the layoff.<sup>149</sup>



A 2022 survey of 176 oil extraction workers in LA County suggests that despite these risks, many fossil fuel workers want to transition into green energy jobs with retraining support, but without requiring a complete upheaval and relocation.<sup>150</sup> Over half of respondents want to transition into green energy jobs (64%), three quarters desire on-site reemployment training (76%), few would relocate out of Los Angeles (19%) or California (10%), and very few would take early retirement (<5%).<sup>150</sup>

While these studies focus on fossil fuel-dependent workers, less research has focused on reemployment prospects and post-layoff experiences of workers facing transition from climate hazards. However, we know that job loss is already here with more to be expected.

Job loss and unemployment are associated with unmet healthcare needs and depression, anxiety, low self esteem, and psychosomatic symptoms.<sup>151</sup> Compared to job loss for other reasons, involuntary job loss is associated with poorer overall self-rated health and more depressive symptoms.<sup>152</sup> One study finds not only an association, but that unemployment directly causes mental distress.<sup>151,153</sup> Adverse health outcomes increase the longer one is unemployed.<sup>154</sup>

**Unemployment is associated with a 73% increase in mortality risk – equivalent to the effect of aging 10 years.**<sup>155</sup> Mortality risk is higher for people in their early- or middle-careers compared to late-career, and for men.<sup>156</sup>

**“It’s extremely stressful because these are people that I’ve worked with for like 13 years. ... To think of them being forced into retirement because they’re no longer necessary ... It is stressful.”**

—Nicole, transportation worker

Even when employment is maintained, income drops harm mental and physical health. In fact, income drops are more harmful for mental health than gains are beneficial.<sup>157</sup> **Two or more income drops of 25% or more are associated with double the risk of cardiovascular disease and all-cause mortality.**<sup>158</sup>

Finally, as noted, many workers face transition by way of unpredictable and changing practices. As described in Section II, a lack of control and predictability harms worker health.

**“The worst thing for workers is to have no agency, and have no ability to be heard and have a voice, and just find themselves at the mercy of larger forces. I think policies need to be focused on the public and the workers in terms of consideration of what happens.”**

—Caitlin, gas operations worker



*Photo by Leopoldo Peña*

## **Dave's Story :**

### **Protecting refinery workers' health and safety during transition**

Dave has worked in the oil and gas industry for decades, including positions both at a refinery and in the union that represents refinery workers. Dave sees the changes that are coming, "And yet," he says, "we're not planning very well for what happens to the workers."

Fossil fuel jobs are among the highest paying industrial jobs in the world. Dave said that for workers, the thought of losing a job that pays \$200,000 a year is so horrifying that people just cannot wrap their heads around it.

Dave stressed the importance of proactive planning so that the transition can be just, without leaving anyone behind, and so workers know what's going to happen to them. He is trying to do what he can to get his membership prepared for that change.

Dave also advocates for what he knows workers and communities need in the transition: guaranteed healthcare, free education and retraining, severance pay, and pensions so older workers can retire early.

Dave is also concerned about safety as refineries shut down. "It's no longer going to become a priority for the employers to invest in the safety of the refinery," Dave said. "They're not going to invest their money in what we would say is the human, correct, moral thing to do. ... I think it would behoove the state, and the communities where these facilities are located at, to have some sort of good oversight program for refineries while we're transitioning away from fossil fuels."



## Without support, transition poses risks to community health

Industry closure can shatter local tax bases, disrupting health-promoting public services. This is especially a concern in Kern County, which is the state's largest petroleum producer. **The revenue generated from oil and gas accounts for 14% of Kern County's economic activity and tax base, and a quarter of all property tax revenue.**<sup>76,159</sup> As of 2020, \$100 million of oil tax revenue funds Kern County schools, and \$80 million funds the county itself.<sup>160</sup> Consequently, health-giving services like health and sanitation, infrastructure, parks, and libraries, rely on fossil fuel-generated tax revenue — as do the public sector jobs that keep those services going. Renewable energy does not generate as much revenue. In 2020, Kern's solar farms generated less than 1% of the property tax that fossil fuels did.<sup>161</sup>



*Pumpjacks operating at the Kern River Oil Field, in Bakersfield, California, January, 2015 (AP Photo/Jae C. Hong, File)*

Although further research is needed to assess exactly how Kern County public services will be impacted by tax loss, past budget shortfalls foreshadow what may be first to go. Kern County has experienced economic disruptions due to fossil fuel conditions since 2015.<sup>76</sup> **In 2016, after losing \$77 million in property tax revenue due to falling oil and gas prices, the County Supervisors approved a budget with \$545 million in spending cuts and 1,700 fewer public positions.**<sup>162</sup> Most departments took a 5% funding cut, and the Department of Human Services was among the hardest hit.<sup>162,163</sup> Similarly, in 2022, an oil and gas-driven deficit led to cuts in general government, health and sanitation (including medical services), education (including libraries), and public assistance (including job assistance and veteran services).<sup>164,165</sup>



We can also learn from the experiences of steel- and coal-reliant communities. Communities reliant on their tax revenue closed schools, faced rural hospital funding crises, and cut back essential services like solid waste programs.<sup>166,167</sup>

With each cut, public sector workers lose jobs and the community loses health-benefiting services. For instance, higher public school expenditures reduce health risk behaviors.<sup>168</sup> Libraries mitigate health disparities through community programs for healthcare access, addiction, stress, food, early childhood care, disaster relief, employment, and social inclusion and support.<sup>169</sup> Health and sanitation departments keep communities hazard-free and offer critical medical care. Public assistance helps people gain employment and supports veterans with mental and physical health needs. These are just a few examples based on past cuts; Section IV further elaborates on the importance of a well-funded and fully staffed public sector in protecting the public's health.



*Smoke pours from a fire at the Chevron Richmond Refinery, seen behind Alcatraz Island in San Francisco, California, Aug. 6, 2012. (AP Photo/Eric Risberg, File)*

Additionally, job and funding losses ripple through communities. Attempts to link industry decline to county budgets will “almost certainly” underestimate the effects, According to researchers at Columbia and Brookings, attempts to link industry decline to county budgets will “almost certainly” underestimate the effects.<sup>167(p6)</sup> For instance, as one analysis points out, the decline of coal impacts healthcare funding, causing hospital staff to lose well-paying jobs, in turn affecting the retail and restaurants that medical staff frequent.<sup>166</sup>

**“A refinery operator might buy a haircut, buy groceries, and by the time it all ripples through there’s a bunch of service sector jobs tied to each manufacturing sector job. And then with the tax base declining in those communities, what happens to the libraries and schools?”**

—Dave, refinery worker

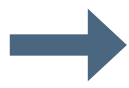
Early findings from new research also suggest a connection between industry closures and the opioid epidemic. One study suggests that a cascade of despair and barriers to treatment moved Appalachian communities from the decline of coal to the opioid epidemic.<sup>170</sup> Another found that automotive plant closures are associated with an increase in opioid mortality among adults.<sup>171</sup> **Five years after a plant closure, local opioid deaths had increased by 8.6 per 100,000 – an 85% higher rate than expected if the plant hadn’t closed.**<sup>171</sup> This foreshadows what an unplanned climate transition may look like.

## Health risks of fossil fuel shutdowns without oversight

Although closing refineries mitigates the harm associated with proximity to fossil fuel combustion, shutdowns without proper oversight present health risks of their own. Oil and gas corporations have been known to skirt safety in pursuit of reduced costs, creating health risks for both workers and neighboring communities. For instance, corporate cost-cutting moves were a factor in both the 2005 BP Texas City refinery explosion and the 2019 Philadelphia Energy Solutions refinery explosion.<sup>172,173</sup> After a 2012 fire at the Chevron Refinery in Richmond, California, Senators Nancy Skinner and Lori Hancock introduced legislation that empowered Cal/OSHA to ensure that unsafe conditions are addressed promptly through increased staffing capacity for health and safety inspections.<sup>174</sup> Even so, the Cal/OSHA vacancy rate remains at 37% as of January 2024, impacting their ability to enforce safety.<sup>175</sup>

As refineries transition to alternative fuel production in aims of maintaining profits in the face of oil and gas decline, it is essential that worker health and safety protocols are maintained and updated. Another outcome of worker and environmental justice advocate organizing efforts following the 2012 Chevron Refinery fire was an updated and more stringent safety management process. However, these safety processes only covered petroleum refineries, a loophole that renewable diesel production refineries — which still pose health risks — are exploiting. In fall of 2023, a worker at the newly converted renewable diesel Marathon Martinez refinery suffered burns on over 80% of his body. A 2024 bill moving in the CA legislature looks to close this loophole and ensure that any refinery worksite, whether they produce traditional petroleum-based products or newly available renewable diesel, must adhere to the highest worker safety standards.

Further, idle and abandoned wells leak harmful gasses when not properly sealed. **In California, home to 35,000 idle wells, 66% of active and idle wells leak methane.**<sup>176,177</sup> Living near idle and orphan wells increases risk of exposure to hazards such as explosions, contaminated groundwater, and poor air quality, mainly due to the release of benzene, toluene and other chemicals that impact human health. A 2020 *Los Angeles Times* and Center for Public Integrity investigation found that oil companies have not dedicated enough money to ensuring drilling sites are properly cleaned and safe.<sup>177</sup> To mitigate these risks, it is essential to grow the oil well remediation workforce.



## Recommendations: Policies to ensure health and safety for workers and communities in transition

By implementing these recommendations, policymakers can address the challenges faced by displaced workers in declining industries, improve health and safety standards in refinery operations, support workforce transition to good jobs in new technologies and sectors, and mitigate the economic impacts of declining oil and gas revenues on local communities. These measures promote equitable economic development and ensure the well-being of workers and communities affected by industry transitions.

### 1. Comprehensive Safety Nets for Displaced Workers:

**a.** Fully fund comprehensive safety nets for displaced workers, including wage replacement, healthcare coverage, re-training programs, retirement glide paths, and pension security. These safety nets are essential to support workers transitioning out of declining industries and into new sectors of the economy. Though there is currently much-needed state support for pilot projects for such programs, the oil and gas industry should ultimately fully fund worker and community transition costs.

**b. Displaced Oil and Gas Worker Fund (DOGWF):** Recognize the importance of the nation's first DOGWF program. This program requires both additional funding and an expanded scope that would allow for direct payments to workers beyond re-training services.

### 2. Refinery Health and Safety:

**a. Inclusion of new technologies in PSM regulations:** Update Project Safety Management (PSM) regulations to include new technologies such as renewable diesel without loopholes, ensuring that safety standards apply uniformly across all fuel types.

**b. Fully Staffed Cal/OSHA in refinery division:** Ensure that Cal/OSHA's refinery division is fully staffed to enforce health and safety regulations effectively. Explore innovative approaches such as creating pathways for displaced oil and gas workers to become OSHA safety engineers or implementing co-enforcement models to enhance workforce capacity and regulatory compliance.

### 3. Oil Well Remediation and Funding:

**a. Expand remediation funding:** Expand funding for oil well remediation efforts through public funding mechanisms such as the state's Oil and Gas Well Capping and Well Capping Workforce Pilot initiatives of 2022, prioritizing hire for displaced oil and gas workers and implementing hiring and training plans to support workforce development in the remediation sector.

**b. Set standards of oil well remediation programs:** Set high-road labor standards with state-funded pilot programs to ensure oil well remediation jobs are safe, include incumbent workers who have experience on the job, provide training and targeted hiring to make oil well remediation work accessible to local communities, and provide family sustaining careers.

**c. Hold oil and gas companies accountable for clean up:** Ensure oil and gas companies pay for cleaning up drilling operations and restoring damaged ecosystems by requiring bonding amounts to fully cover clean up costs and eliminating potential for delays so companies clean up idle and orphan wells as soon as possible.

#### **4. Long term economic development for oil and gas dependent municipalities:**

##### **a. Protect local and state services from declining oil and gas tax revenue:**

Provide financial support to stabilize public budgets and the services they fund in oil-dependent municipalities and protect them from declining oil and gas tax revenue. Establish pathways whereby private funding from the oil and gas industry is responsible for sustaining public budgets for critical services (and the public sector jobs that provide them) in these communities.

##### **b. Community economic development & industrial policy and planning:**

California has committed to reducing its greenhouse gas emissions to 40% below 1990 levels by 2030. While the state has established programs such as California Jobs First for local economic planning\*, there is no assurance that the projects initiated by this program will help the state achieve its climate goals or other commitments. Planning long-term, successful, and climate-resilient economic diversification must be a collaboration between a state-facilitated industrial policy plan that sets the broad parameters for how to achieve statewide climate, labor, and equity goals, together with local community-led participatory processes to decide what elements and strategies of the statewide plan (alongside other local needs) are appropriate and desirable in various localities.

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\* Attempts at long term economic development in California have yet to establish a foundation for a statewide comprehensive just transition plan to a climate-safe economy. In 2021, the Governor's Office of Planning and Research began a statewide process to direct federal American Rescue Plan Act funding to communities for economic recovery from the COVID-19 pandemic with an explicit goal to transition the state to a carbon-neutral economy. Now sourced from the State General Fund, the California Jobs First program is distributing \$600 million to 13 regions across the state. Each region has a "high-road transition collaborative" responsible for bringing together diverse partners to develop economic strategies to accelerate California's transition to a carbon-neutral economy while creating good-paying jobs.



# IV. A strong public sector workforce is required to protect public health from climate change

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From mitigation to adaptation, California's public sector workforce is responsible for protecting the public's health from climate change. To fulfill this essential role, the industries responsible for healthy and climate-safe public services must be fully shored up with funding and good jobs. The public sector provides essential services such as transportation, water, waste, education, energy, disaster response, climate adaptation planning, as well as public health itself. These public services and infrastructure are simultaneously at risk from climate disasters and critical for climate adaptation. Drawing from public health evidence, we show how a fully-funded and fully-staffed public sector workforce, without outsourcing, will meet workers' and communities' health needs during climate change and transition.



*BART train, Bay Area, California, November, 2023 (Photo by Emma Claym1x / Unsplash)*

## Workers provide critical healthy- and climate-safe services

Public sector workers are responsible for providing the many resources and services that keep Californians healthy in the face of climate change. This includes, but is not limited to: protecting our public water infrastructure from drought and flooding; community resilience centers that provide heat, cooling, shelter, and resources during climate emergencies; and public health services that support worker and community health and safety.<sup>178,179</sup>

Workers also protect Californians from climate disasters. For instance, nurses provide care to those most harmed by disasters, including the elderly, pregnant, and pediatric populations who are most vulnerable.<sup>139,140</sup> Similarly, there are numerous reports of homecare workers and domestic workers rushing to care for people and homes, putting their own health at risk in the process.<sup>43,180</sup> During our interviews, workers shared their own stories of participating in disaster response by connecting vulnerable populations to cooling and warming centers, sandbagging flood risk areas, ensuring gas lines were intact, and performing telecommunications repairs in burn areas. In doing so, they are exposed to both climate hazards and disaster-specific risks, like acute injury or PTSD.<sup>181</sup> And yet, workers are often not properly trained, recognized, or compensated for their disaster response roles.

Additionally, public sector workers play an outsized role in reducing greenhouse gas emissions. The public sector will hold virtually all management and maintenance related to infrastructure projects, even if the construction itself is performed by private companies.<sup>76</sup> This includes, but is not limited to: updating the power grid, improving roads, expanding public transit, improving airport energy efficiency, building climate-resilient schools, building climate-safe decommodified housing, retrofitting buildings, expanding parks and recreation, and fixing dams and levees.<sup>76</sup> Of the 1 million jobs expected to be created in California through investments to reach our climate goals, 9.6% are estimated to be in the public sector, or about 96,000 jobs.<sup>76</sup>

## Workforce needs to be equipped to protect California's health

### Funding for healthy and climate-safe public services

**Few (27%) local California governments are planning for climate adaptation, and most (93%) report insufficient funding as a major barrier.**<sup>182,183</sup> Public investment in the things that keep workers and communities healthy is necessary to fulfill health and human rights. The many healthy- and climate-safe services named above hold the promise of improving social determinants of health — conditions in the areas we live, work, and play that impact our health outcomes. Social determinants have a greater impact on health than genetics or healthcare.<sup>184,185</sup>

Examples of the connection between adaptive or mitigative services and public health include:

- **Water systems**, which are at risk of decline and overwhelm from rising temperatures, drought, and flooding. Short term water conservation during drought lowers both water quantity and quality. Public health research finds that water quality unequivocally reduces mortality.<sup>186</sup> Nearly one million Californians face increased risk of liver problems, kidney problems, and cancer due to unsafe drinking water

from failing systems.<sup>187</sup> A 2022 audit found that the State Water Board has not prioritized water systems funding applications, meaning money is not reaching the communities most harmed.<sup>187</sup>

- **Public transportation**, which is threatened by fire, sea level rise, and extreme heat. Public transit reduces air pollution and vehicle crashes, which are a leading cause of injury-related death for many age groups. Public transit also facilitates access to healthy services like health care, and promotes physical activity.<sup>188</sup> Shoring up public transit infrastructure with upgrades, technological innovations, and increased services will advance climate resiliency, increase access, and reduce inequities.
- **Building energy efficiency**, which reduces carbon emissions, improves air quality and ventilation.<sup>189</sup> Researchers estimate building energy efficiency improvements can prevent up to 3,600 deaths per year in the US.<sup>189</sup>

Without adequate funding, building, maintaining, and improving these services is not possible, meaning the public's health suffers.

**“Funding was critical, right? Because funding was what kept services going.”**

—Maria, former city worker

Research illustrates the direct link between public health and investment in some public goods and services. For instance, **investing in building infrastructure has been shown to increase urban life expectancy by 1.05 years**\*.<sup>190</sup> The US has lower life expectancy than any other high income country, despite spending more on healthcare, because of limited social spending.<sup>191</sup> **Investing in social services — which includes health, natural resource regulation, and parks — increases rural life expectancy by 0.36 years.**<sup>190</sup> People with lower incomes especially benefit from social spending, and are more likely to have a higher life expectancy if living in affluent cities with more government expenditure.<sup>78</sup>

The public sector workers we spoke to emphasized the need for funding in order to address climate — something they certainly want and are eager to do. Deborah, for instance, rubbed her fingers together to indicate “money” when asked what schools need to become climate resilient:

**“We don’t have a whole lot at our school. We have peeling paint, and 20-year-old disgusting carpet. Like, really? You’re going to find the money to make the air conditioning happen?”**

—Deborah, public school teacher

\* These improvements in life expectancy are seen with a one standard deviation increase in investment.





## Nicole's Story:

### Sustained funding for a just and equitable transition in transportation

Nicole has worked in a local transportation department for over a decade. In her career, Nicole has seen how exposure to what she calls the “everyday toxicity” of buses and wildfire smoke impacts her colleagues. “Breathing in general is getting worse for a lot of my coworkers,” she says. “I know that we need clean air for us to survive. We need more parks, less concrete. We need more green spaces.”

At the same time, the scale and cost of transition feels daunting. Building greener transportation costs a ton of money. Nicole said that this in turn costs the city money, the residents money, and the workers money — all while mechanics and others whose depth of knowledge is fossil fuel-based are at risk of losing work from changing technologies. Nicole spoke passionately about the need for sustained funding to support a just and equitable transition.

“Our revenues have not returned to pre-pandemic status. ... What we need is sustained funding for transitioning

all fleets to green, making sure that those who will be most impacted [are protected] — and not just impacted like, ‘I might have to drive my car less and take the bus more.’ No, impacted in that, ‘I will no longer have a job.’ A funding source needs to be found for that so that no one loses their job, and no family is in jeopardy.”

Nicole wants transit to be viewed as part of the solution. She expressed a vision of partnership between workers, legislators, and community-based organizations to keep climate at the forefront, while ensuring that those who would be most negatively impacted are taken care of.

As Nicole said, “If labor is not at the forefront, then we’re really letting everyone down. ... It takes labor to continuously push the envelope, and push the conversation, and make sure that [climate] is on legislators’ minds, that it is on elected leaders’ minds, that it is on the president’s mind. Because if not, we’re not going to make any changes.”



## Fully staffed with good jobs

In addition to funding, public sector departments must be fully staffed. **Ninety percent of local California governments say they do not have enough staff resources to analyze information relevant to climate adaptation.**<sup>182</sup>

The current state of Cal/OSHA demonstrates how limited staff means limited capacity to protect Californians' health. As referenced throughout this report, Cal/OSHA is the main public service available to protect worker health, including from climate hazards, harmful workplace conditions, and hasty refinery shutdowns. And yet, because of vast understaffing, they are unable to properly respond to the mounting crises workers face.

**“The Cal/OSHA inspectors that we have are trying to do a good job. There’s just not enough of them.”**

—Dave, refinery worker

Including and beyond Cal/OSHA, it is also necessary that all expanded public sector jobs are good jobs, and that public sector workers facing transition move into them. This will help support public sector workers' health, so they can best support the health of Californians writ large.

## No outsourcing

Privatization drives a wedge in the public sector's ability to protect the public's health. **To meet California's needs, public services must be public.**

In the past, economic crises and transition have invited the privatization of public services and resources, which threatens service availability and job quality. For instance, there is a common pattern of public agencies contracting their duties to private bidders who offer low costs at the expense of low wages and poor benefits for the people doing public works.<sup>192</sup> Private companies are also not guaranteed to invest in infrastructure projects that are not profitable to them, which tend to be small, rural, and repair projects.<sup>192</sup> An example is broadband, which supports public health by reducing vehicle miles traveled, curbing greenhouse gas emissions, and enabling access to telehealth. However broadband is owned by private companies who do not ensure equitable access:<sup>193</sup>

**“There should be no corner in California — rich, poor, isolated, mountain, desert — that has not got a high speed internet connection ... Who[ever] can afford it, is gonna get it. The more money you have, the higher speed access you’re gonna have. That’s gotta end.”**

—Stan, telecommunications worker

By undermining workers' access to good jobs and communities' access to healthy — and climate-safe services, privatization perpetuates health inequity.



## Recommendations: Policies to strengthen the public sector workforce and protect public health

**1. Workforce development programs for emergency disaster responders:** Allocate resources to fund and establish workforce development programs tailored to emergency disaster responders that focus on equipping workers with the necessary skills, knowledge, and certifications to effectively respond to disasters and mitigate their impact on communities. For example, initiatives like the UDW (United Domestic Workers) In-Home Care Disaster Response program, which trains workers to provide essential care and support during emergencies. These types of programs provide potential pathways to higher wages to incentivize participation, and better recognize the valuable contributions of disaster responders.

### **2. Establish workforce standards for climate adaptation funding:**

**a. Legislation and budget advocacy:** Advocate for legislation and budget allocations that mandate workforce standards for any relevant grant, incentive, or loan programs aimed at climate adaptation. These standards should ensure the expansion or protection of current public sector jobs, funding for workforce development and training, improved working conditions, and benefits for public sector workers in climate-related industries.

**b. Protections against contracting out:** Implement contracting out protections to safeguard public sector jobs and prevent the outsourcing of essential services to private contractors.

**c. Workforce training requirements:** Mandate workforce training requirements for public funding and procurement initiatives, offering incentives and setting standards to ensure that workers receive adequate training and support to perform their roles effectively in climate adaptation efforts.

**d. Misclassification protections:** Implement measures to prevent worker misclassification and ensure that all workers receive fair wages, benefits, and protections in climate-related industries.

### **3. Procurement Strategies and Inflation Reduction Act (IRA) direct pay options:**

**a. Utilize procurement strategies:** Implement procurement strategies that prioritize investments in clean energy infrastructure and climate adaptation projects, fostering job creation and economic development while reducing carbon emissions and enhancing resilience.

**b. Inflation Reduction Act (IRA) direct pay options:** Advocate for the adoption of the Inflation Reduction Act (IRA) direct pay options for state and local governments, public utilities, and other public entities to claim tax credits for clean energy infrastructure. This option allows public entities to own their own clean energy projects, leveraging tax credits to decrease energy usage and monthly energy costs for municipalities, buildings, and facilities.

**c. Leverage savings for worker benefits:** Encourage public entities to leverage savings from clean energy projects for worker benefits, such as increasing teacher salaries and improving workforce benefits in schools and other public institutions.

# Conclusion

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The evidence is clear: climate change and transition are here, and they are impacting worker health with increasing urgency. **But while transition is inevitable, health, racial, and economic justice are not.** Without climate hazard protections, strong labor standards, and support through climate transition, workers experience mental, physical, and financial health consequences. Resulting harms ripple through communities, creating a cascade of funding and job loss for the services that keep communities healthy. At the same time, transition opens an opportunity to advance health equity by ensuring that all jobs take care of all aspects of worker health, and that the public sector workforce is equipped to protect the public's health.

Actualizing these opportunities is not an inevitability. Without action, we will perpetuate the same inequitable power dynamics and systems that lie at the root of climate crises and health inequities, where billionaires and under-regulated, powerful companies — old and new — extract wealth from the life and labor of communities of color and working people.

By implementing the policy recommendations put forth in this report, California can advance a worker-led transition to a healthy, just, and climate-safe economy.



*California workers fighting for a worker-led transition to a just and climate-safe economy, May, 2024, Sacramento, California (Photo by Brooke Anderson)*



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