

WILDFIRE POLICY AND LATINE AGRICULTURAL WORKERS
IN OREGON

by

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The record level increase in intensity and length of the fire season in the Pacific Northwest has affected the life of every single person in Oregon. Air pollution caused by smoke, millions of dollars' worth of property loss, business closures, and many other effects of peak fire season have become anticipated events during the hottest months of summer. A community at the forefront of wildfire exposure is Latine agricultural workers. Not only does their busiest season of work coincide with the peak wildfire season, but the risk of exposure to smoke and warm weather conditions are also unavoidable as outdoor workers. Cuts in disaster aid from the federal government and ICE raids in rural workplaces have also left a large margin of Latine workers vulnerable to disparate health risks caused by wildfire smoke. This makes policy intended to protect workers from health risks like wildfire smoke exposure essential to safeguarding equitable outcomes. Understanding how current policy may ultimately be failing to address the social and economic inequalities that impact fair outcomes in the enforcement of wildfire smoke exposure policy. Using archival research of wildfire policy and an environmental justice lens of analysis indicate that while state wildfire policy is oriented around distributive justice, it also fails to address how fears over immigration status, Spanish or English language proficiency, and power hierarchies in the workplace can impact fair outcomes.

This thesis will explore how understanding where current wildfire policy succeeds and fails can aid in imagining what a more just policy could include as the state of Oregon continues to plan a justice future for both workers and the environment they work in.

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Introduction

Evidence of how severe fire season in the Pacific Northwest has become over the last decade received national media attention in 2020. Hundreds of news outlets sensationalized the historic fires that swept Oregon and the record level of destruction that affected 20 counties, spanned 1 million acres, and caused over 600 million dollars in damage across the state (Oregon Department of Emergency Management, 2023). The town of Detroit burnt to the ground when three separate fires merged to create the Santiam Fire. Even townships safely outside the immediate burn zones experienced smoke exposure so intense that visibility was less than a mile. Coverage of damage across the Willamette Valley region circulated online for the entirety of the unusually long fire season, which started in July and did not end until November of that year.

Media coverage of the fires emphasized the severity of wildfire smoke with photographs of skies so thick with smoke that the sun was partially obscured or not visible at all. The images made the reality of smoke exposure risk more tangible than ever for Oregon officials and the public. While the 2020 fire season motivated significant policy action, it also reflected a broader decade-long trend of longer and more severe wildfire seasons in the western United States.

Research and government agencies alike confirm this trend. Large fires have become more frequent, spreading farther, and burning more intensely. Wildfires now burn an average of 119,864 acres in the state (Oregon Department of Forestry [ODF], 2023). Projections indicate that this pattern will continue, with smoke exposure risks rising as air quality deteriorates during prolonged fire events (Oregon Department of Environmental Quality, 2023). Communities in Oregon now face heightened fire conditions from mid-June through early October.

A community whose perspective was markedly absent from reporting were agricultural workers who labored outdoors as farmworkers through stifling heat conditions and smoke

exposure. Nearly 98% of these workers identify as Hispanic despite representing a fraction of Oregon's overall population in a majority white state (Stephen, 2012). These workers experience vulnerabilities associated with immigration concerns, limited representation in the workplace, and language barriers that are compounded by disproportionate exposure to wildfire smoke in the workplace. In this thesis I examine wildfire policy and work to answer whether Oregon ensures environmental justice for Latine laborers given that they are disproportionately exposed to air pollution caused by wildfire smoke. Following this question I also ask how policy can be reimagined to safeguard the health of these workers.

Methods

I use the READ method to conduct archival research to answer whether Oregon wildfire policy ensures environmental justice for Latine agricultural workers given that they are disproportionately exposed to air pollution caused by wildfire smoke. Ultimately, I analyze over 3 key wildfire policy documents, 5 relevant government reports, 3 news articles, and testimony collected from the comment sections of proposed policy dockets to conduct an examination of both policy and the outcomes of their enforcement. The READ method is a systematic approach to document analysis that stands for 1) ready your materials, 2) extract data, 3) analyze data, and 4) distill your findings (Daglish et al, 2021). This approach to document analysis advances both an empirical and theoretical understanding of policy documents through the utilization of rigorous analysis to detect discourses in policy content.

Step 1: Ready your materials

This step sets the parameters of the nature of the documents being analyzed and establishes an approximate number of documents intended for use in answering the research question (Daglish et al, 2021). Parameters include a criterion around the topic of a particular policy issue, dates of inclusion that identify whether the issue is being examined from a specific point in time or over a long period of time, and a list of places to search for documents. The work from this step is preliminary to the bulk of the research and defines the parameters of the project by identifying the types of documents needed to answer the research question.

The criteria for document inclusion were that documents must be relevant to agricultural workers or relevant procedures about smoke exposure in the workplace. The frame of inclusion for policy documents is 2020 to July 2025 to keep analysis as relevant to current conditions of

workers as possible. I pulled documents from Oregon's state agency websites and policy docket comment sections.

Step 2: Extract data

Close reading of documents collected in the first step identify themes relevant to the research question. Each document was coded using a set of categories designed to capture the technical content of the policy as well as its implications for environmental justice. These categories included:

- Labor laws and workplace protections: to assess whether policies explicitly safeguard agricultural workers from smoke exposure
- Agriculture and farmworker: to determine whether the needs of outdoor laborers are acknowledged in policy language
- Procedural and distributive justice: to evaluate whether decision-making processes include marginalized voices and whether PPE resources are equitably allocated
- Smoke exposure and wildfire trends: to track how policies address the health risks of prolonged smoke events
- Weather prediction: to identify documents that contain fire weather data, report on smoke trends, and fire condition information used for planning decisions
- Enforcement: to determine how policies are enforced and whether they impact fair outcomes
- Vulnerabilities: to determine whether vulnerable communities are identified in policy
- Communication: to identify documents that are relevant to the accessibility of information and whether there are Spanish translations

- Decision-making: to evaluate the equitability of decision-making processes and how marginalized voices are included

These categories were chosen because they reflect key dimensions of environmental justice. The codes highlight recognition of vulnerable populations, equitable distribution of protections, and fair participation in decision-making processes. I assigned documents as many tags as were applicable, and none were limited to only one category of information.

Step 3: Analyze data, is the process of annotating the policy documents using the lens of environmental justice. Annotations included descriptions of why each tag was assigned, observations about language used in policy, who introduced the policy and when, and who the policy affected. Then, the annotations were used to write memos that contain brief descriptions and a full analysis of key documents.

Step 4: Distill your findings, I began to distill findings after enough documents were gathered to sufficiently answer the central research question. Data was distilled by drawing conclusions and stating findings from the analysis done in the memos. This section culminated all observations made throughout analysis and synthesis.

Literature Review

Wildfire in Oregon

Longer and more intense fire seasons in Oregon have resulted in significant property damage and public health risks. For example, Pheonix, Oregon was destroyed in the 2020 fires and resulted in the loss of 600 homes and 100 businesses (Paul M. Murphy, 2020). This devastation disrupted infrastructure, made travel on the highway unsafe, and grounded residents in the area (Gillian Flaccus & Andrew Selsky, 2020). Large-scale fires, which burn farther and faster, are expected to continue creating challenges for recovery and resiliency strategies. In response to the widespread damage, Oregon passed Senate Bill 762 to mitigate the effects of fire and fund the development of community fire resiliency.

Another consequence of large fire trends is dangerous air quality levels caused by smoke. These air quality levels can cause businesses to close while agricultural workers' livelihood relies on their ability to work through peak summer months. Recent reports indicate an increase in days per year with air quality levels that pose severe health risks for sensitive groups such as pregnant women, children under the age of 18, the elderly, and those with lung and heart issues (Oregon Department of Environmental Quality, 2023). Prolonged low air quality can also impact the health of outdoor workers who cannot avoid exposure and may lack access to medical attention.

Workers in the orchards and fields are especially vulnerable to dangerous air quality levels throughout summer harvest season because by the very nature of their jobs, they are some of the first workers exposed to air pollution caused by wildfires. Agricultural jobs also rarely include healthcare, which limits their access to treatment for smoke-related illnesses and other long-term risks associated with labor intensive outdoor jobs. Workers who are especially

vulnerable to adverse effects caused by exposure such as pregnant people, children under the age of 18, and those with lung or heart issues have limited access to medical advice on how to best mitigate against effects of smoke exposure. Education about mitigating the effects of smoke fall on employers and OSHA regulations rather than health professionals.

Agricultural workers are routinely underserved because of intersecting marginalities that routinely limit how they are represented in policy and equitable treatment in the agricultural workforce. Latine farmworkers and forestry workers are in labor intensive industries whose physical workplaces separate them from settings where policy is developed. Alongside the physical distance of many rural agricultural jobs is the fact that these jobs are also associated with hazardous workplaces. Forestry workers are three times more likely to be injured and at increased risk of death on the job in comparison to the other types of workers (Edward Vawter, 2021). Many workers injured on the job are further burdened with a lack of medical attention and wage theft when workers' compensation is denied (Davis et al., 2023). Workers face the incentive of continuing to work in hazardous conditions to avoid losing their livelihoods or face more exploitation from their employers.

Immigration concerns, language barriers, and limited workplace representation all compound these workers' vulnerabilities. Research highlights that these "multiple marginalities" are intersecting disadvantages that make Latine workers particularly susceptible to health risks during wildfire events (Davis et al., 2023) The "multiple marginalities" introduced by research also highlights similar intersecting vulnerabilities for other types of agricultural workers in Oregon like farmworkers on temporary VISAs and a lack of Spanish translation of official smoke alerts. Environmental justice dimensions like intersectionality and indispensability are key to analyzing these gaps in policy.

Critical Environmental Justice

Critical Environmental Justice is a structured lens through which to analyze the multiple and intersecting systems of oppression experienced by Latine agricultural workers during wildfire season. Critical Environmental Justice (CEJ) framework represents the cumulation and evolution of environmental justice scholarship over the last 50 years. It was developed as a response and further development of a first wave of ‘Environmental Justice’ that was defined primarily by class and race struggles within environmental issues (Pellow, 2017). Early research on environmental injustices using this framework focused on the experiences of poor Black and Brown neighborhoods (Pellow, 2017). Warren County, North Carolina is a popularly cited example as one of the places of the environmental justice movement because of the protests that arose in the 1970’s when the state decided to dump thousands of pounds of toxic soil into the rural, poor, and mainly Black community (Jenny Labalme, 2022). The critical analysis of how race and class create environmental inequalities laid the foundation for the intersectional analysis broached later by Pellow.

CEJ innovates the conventional environmental justice framework in several ways; often, referred to as the “pillars” of CEJ. Intersectionality is one of the core pillars of the environmental justice framework that identifies systems of oppression as multiple and often overlapping (Pellow, 2017). Vulnerabilities such as citizenship status, labor, and environmental hazard contribute to Latine workers susceptible to disparate health outcomes caused by wildfire smoke exposure. An intersectional lens recognizes how multiple marginalities faced by workers can compound and create those disparate impacts.

The state’s role in systematically reproducing or reinforcing these social inequities is another key pillar that highlights the limitations associated with the state’s role in overseeing

justice. In particular, the state of Oregon's historical role in enforcing exclusionary policy that prevented safe workplaces and housing for non-white immigrants generates questions about how the state can properly administer justice through policy. State attempts to include Latine workers' voices in decision-making indicate the recognition of the critical role government takes in shaping equitable wildfire policy outcomes which is consistent with the 'indispensability' pillar. 'Indispensability' refers to the recognition of how vital marginalized communities are despite how they are underserved by policy and the state (Pellow, 2017). Attention to the shared benefits and burdens of policy outcomes is a key dimension of environmental justice analysis. Intersectionality and indispensability are both lens that highlight injustices in current policy that disproportionately impact Latine agricultural workers in both process and outcome.

Critical Environmental identifies processes and outcomes of justice as procedural and distributive. Procedural justice references the fair treatment of people of all social identities and communities in relation to the administration of laws that may create unequal outcomes for different groups of people (Pellow, 2017). The practical application of procedural justice can take multiple forms, but one broad example is community participation in decision making. Including the voices of those who will be impacted by environmental decisions ensures a substantial amount of influence over regulatory outcomes. This could mean including affected communities in hazardous waste citing or including indigenous community's input on environmental regulations.

Distributive justice addresses fairer outcomes by ensuring that the disbursement of environmental benefits and burdens are distributed across all communities regardless of identity (Pellow, 2017). The focus of this idea is that environmental risks like water and air pollution, exposure to waste, and siting of landfills are not disproportionately experienced by one

community over any other. In addition, the benefits of clean air, unpolluted green spaces, and access to protective equipment are also equitably dispersed with consideration towards the intersection of multiple oppressions that may prevent access. Some communities have faced a disproportionate amount of environmental risk and are treated as expendable in decision making with Latine agricultural workers being the present example in the state of Oregon.

Environmental Justice in Wildfire Policy

The extent to which states adopt environmentally-just wildfire policy varies, and little research to date evaluates whether Oregon's policy framework for wildfires satisfies the criteria introduced above specifically for Latine outdoor laborers. However, evidence regarding California's wildfire policies is instructive given its similarities to Oregon in fire occurrence, location in the Pacific Northwest, and majority Hispanic and Latino identifying agricultural workforce. Research indicates that the presence of multiple marginalities experienced by workers before disaster impacted justice outcomes for workers in California in a way that Oregon workers may experience as well (Méndez et al., 2020). The disparities presented by some research such as of racial discrimination, economic hardships, and anxiety over immigration status are all vulnerabilities that intersect to compound the inequitable outcomes of Latine workers. These contexts are also exacerbated by instability caused during wildfire including loss of home and livelihood. Examining the marginalities that prevent policy from fair administration of justice in California can also be used to examine where policy gaps fail to provide environmental justice in Oregon.

The use of incarcerated people for firefighting in Oregon also provides some intuition regarding whether the state's wildfire policies ensure environmental justice for Latine outdoor laborers. This practice treats certain community members as dispensable and forces the burden of

exposure to fire onto a specific underprivileged few. Oregon's use of incarcerated people to fight wildfire arises from an insidious historical precedent based on the use of slavery as punishment for crime before Oregon became a state. The territory elected to end slavery in 1843, however a compromise drawn up by a bipartisan provisional government elected to uphold slavery as punishment for a crime (Nokes, 2024). Incarcerated firefighters can receive small amounts of income for their labor now, but the creation and intention behind labor in prisons was to function as a type of legal slavery. This makes firefighting in Oregon a remnant of the United States historical enslavement of specific groups of people. A pattern of exclusion, especially at the intersection of labor and wildfire policy, is established by the state. Some communities are made expendable by state policy that neglects to address the equitable treatment of all workers who experience disparate smoke exposure.

The History of Race, Labor, and Citizenship in Oregon Territories

The history of race, citizenship, and labor in Oregon also provides some intuition about whether its policy framework for wildfires ensures environmental justice for groups underserved or targeted by exclusionary policy. Oregon became a state in 1859 when it joined the Union and adopted non-Black laws that designated the territory as a white-only state, also known as a 'sundown state' (Oregon Remembrance Project, 2023). By the 1930's there remained few African Americans in the fallout of policy proposals that banned the settlement of Black people in Oregon after slavery was outlawed (Greg Nokes, 2024). Although these multiple attempts to ban Black emigration into the state failed, it still conveyed how the state routinely attempted to keep Oregon an all-white state. Many other groups of non-white settlers were forced into urban areas by 1905 because of housing policies and a culture of discrimination that prohibited non-white people from renting or buying property in rural counties. By 2002 the last of racist

language in state policy prohibiting Black homeownership was officially removed (Greg Nokes, 2024). Other groups of non-white people were also subjected to substandard living areas because of sundown towns and housing policies. The attitudes of white settlers in Oregon towards non-white emigrants and the state's multiple attempts to enforce policy that forcibly removed them establish the role of the state in reproducing racism and hostility towards non-white workers.

Oregon's status as a 'sundown state' has significantly racialized its history of labor and immigration. Some of the earliest settlers and laborers during the Westward Expansion were Chinese, Japanese, or Mexican migrants working on the railroad and in the orchards. Many of these immigrants had arrived in the Pacific Northwest looking for industrial jobs throughout the 1800's. However, the increase of distinctly non-white settlers created many reactionary state and federal regulations that eliminated their ability to own land, run businesses, live in certain areas, or marry European whites (Eisenberg, 2014). These regulations started as a direct attempt to prevent the naturalization of Chinese immigrants who were the largest non-white group recorded by the census from the mid-1800's. By the mid-1900's, most Chinese merchants had been forced to close their shops.

Oregon began to classify some work as 'white work' by the 1890's while other jobs with worse working conditions were relegated to non-white workers and women. White workers in the canning and damming industries unionized for better wages while Chinese workers were excluded from virtually all unions along the West Coast. The wage gap between races was only intensified by the division and exclusion of non-white workers from better pay. The Dalles is another pioneer settlement that once boasted a strong Chinese merchant population in the early

1800's that was forcibly removed from their shops by the mid-1900's because of laws that targeted their national origins.

Non-white discrimination in housing entrenched workers to less than desirable living areas and created industry cultures that favored whites. Orchards in Hood River, Oregon have evidence of the substandard housing standards that Mexican migrants were forced to endure during the summer season. Many non-white people forced out of rural counties and into urban areas by threat of death or otherwise threatened to leave the state altogether.

Pineros y Campesinos Unidos del Noroeste

The racialization of labor in the state made way for the first Hispanic-led union for farmworkers and tree planters in the Pacific Northwest to begin bargaining for equitable treatment in the workplace. Pineros y Campesinos Unidos del Noroeste (PCUN) is a farmworkers union created in 1985 to collectively bargain and advocate for Latine families that have been unfairly underrepresented at the bargaining table (Pineros y Campesinos Unidos del Noroeste, 2022; Stephen, 2012). They proposed a “guest” worker program for all workers during the Reagan Administration to combat the revival of policies that target working class migrants. By 1985, PCUN was created and began its mission to represent farmworkers and tree planters.

PCUN advocated for laws that allowed undocumented agricultural workers to be able to apply for residency and aided workers in that process throughout the 1980s. PCUN still works on immigration reform policy, preventing overexposure of pesticides to workers, fair wages, and paid rest breaks. Their legislative lobbying and policy advocacy has created a contentious relationship with Oregon governors. Alongside coalition building with UFW, social justice groups, and a network of other unions, PCUN created political pressure that pushed Oregon

lawmakers to a statewide raise of the minimum wage. The union's history illustrates how farmworkers organized to address systemic inequities and inform current gaps in wildfire policy as it pertains to agricultural workers.

During the 2020 wildfires, an unprecedented number of Latine workers faced compound impacts from the spread of Covid-19 and the unemployment caused by the closure of workplaces during the pandemic. Many members of the Latine community were left out of federal stimulus programs and unemployment insurance. PCUN teamed up with other advocacy groups to disperse nearly 30 million dollars in relief for workers excluded from federal aid. The advocacy done by this group demonstrates the ongoing need for wildfire protections that address interesting vulnerabilities.

Results Section

OSHA's Permanent Rules for Protection from wildfire smoke

Oregon OSHA released an updated fact sheet in 2024 about the adoption of permanent rules OAR 437-002-1081 and OAR 437-004-9791 as a response to the rise in wildfire events in the U.S. These rules apply specifically for employers whose employees have or will be exposed to hazardous levels of wildfire smoke. These rules are a bottom line for employer responsibilities and requirements towards their employees when the Air Quality Index values indicate exposure that impacts worker health (Department of Consumer and Business Services, 2024). The fact sheet highlights the role of the employer in monitoring the AQI, offering fire safety training when appropriate and in accessible language formats, and distributing approved air filtration masks.

OAR 437-004-9791 Protection from Wildfire Smoke

OAR 437-004-9791 applies only to agricultural employers with some exceptions such as those who work in enclosed spaces with mechanical air ventilation, employees working at home, and employers who have predetermined suspended operations to limit employee exposure to smoke (Department of Consumer and Business Services, 2024). The creation of a policy in response to this health issue arose in 2020 during a record breaking level of large fire occurrence across the Pacific Northwest region amid the COVID-19 pandemic. This rule is intended for outdoor agricultural employees whose work outdoors has made their exposure to hazardous levels of wildfire smoke unavoidable. Agricultural workers are faced with fire weather every year and with varying degrees of protection from the state and their employers depending on factors such as workplace conditions, immigration status, and English language proficiency.

The policy itself is distinctly distributive in its approach to worker safety outcomes. Mitigating the effects of smoke exposure with the distribution of PPE, Spanish translations of smoke exposure training and smoke alerts, participation in the decision-making processes being built into the policy itself are all attempts at attending to the fair distribution of resources and outcomes of fire season. The first step of the rule is triggered when the AQI reaches 101-276 to mitigate the effects of smoke exposure (Department of Consumer and Business Services, 2024). These levels indicate a level of concern for sensitive groups which include an array of people including children (under the age of 18), those with lung or heart disease, those with diabetes, and older adults.

Even mild exposure of smoke to those without underlying illness can cause adverse health effects such as coughing, inflammation of the eyes and lungs, and a runny nose. More serious effects of smoke exposure cause reduced lung function, trouble breathing, and heart attacks. The rule requires that an online education course about smoke exposure be given after the AQI reaches the 101-276 threshold, and that proof of completion is documented by the employer. At that AQI level, all people, regardless of their health, experience adverse health outcomes in comparison to a person who is not exposed to wildfire smoke. In addition to filtering facepieces, the smoke exposure module required by OSHA highlights the symptoms of wildfire smoke exposure, potential health effects of wildfire smoke exposure, employee's rights, how to access air quality data, and the importance of using the filtering facepiece.

Key Requirements

Oregon OSHA's key requirements are triggered when the AQI reaches levels of ambient air pollution that causes health concerns. Standard key requirements when AQI values are 101-276 are the following:

1. Assess and monitor air quality at each work location where employees are exposed
2. Provide and document employee training
3. Implement two-way communication system
4. Implement engineering and administrative controls
5. Provide National Institute for Occupational Safety and Health-approved filtering facepiece respirators for **voluntary** use

At AQI values 251-848 employers provide NIOSH-approved filtering facepiece respirators for mandatory use after the steps one through four are followed (Department of Consumer and Business Services, 2024). When AQI values are 849 and above then steps one through four are followed and NIOSH-approved respirators for mandatory use are implemented by a Respiratory Protection Program in accordance with OAR 437-004-1041 which requires employers to implement work-site specific procedures.

Decision Making Processes

Decision-making was a defining theme throughout the process of introducing the bill and when designing an employee feedback section. However, the employer still plays a key role in designing and implementing safety procedures outlined in the rule. While the online fire safety training required by OAR 437-004-9791 does offer Spanish translations the rule states that the employer is responsible for making any adjustments necessary for language accessibility. Two-way communication is a requirement of the rule as a way for employees and employers to establish feedback about safety procedure and completion of smoke exposure training, however the burden of highlighting weaknesses or concerns hinges on the employee contacting employers and are easily hindered.

While the policy is designed to increase participation of agricultural employees in feedback and safety decisions, two-way communication between an employer and employees occurs under a complicated power dynamic. Factors such as immigration status, English language capability, and union intervention all impact the equity in two-way feedback between employer and worker. Some Latine agricultural employees rely on their employer for a temporary VISA that allows them to work in the United States. Engaging in feedback can be disrupted by the power disparity between employer and immigrant employees. Language barriers or fear over immigration status are both particularly relevant complications as agricultural workers in Oregon, as over almost 98% of agricultural workers are reported as Hispanic with a variety of temporary work VISA options available (Economic Research Service, 2025; Stephen, 2012). ICE has also begun aggressive raiding campaigns in rural areas throughout the state that destabilize workplace culture with fear and distrust in employers.

Union representatives can intervene on behalf of the worker in select cases, although the duration of the seasonal work is often shorter than the time it takes for the issue to be resolved further enforcing the power disparities caused by power dynamics between employer and Latine migrant workers. Two-feedback as a requirement operates only under the assumption that the worker has complete agency when that is the case almost none of the time because of the reasons discussed above. Ultimately, the employer is the deciding factor in the outcome of their worker's health outcomes despite the limited effort of unions and OSHA to enforce regulations.

When adopting these rules, the state of Oregon held listening sessions and had an open comment period that garnered a response from the public and professionals alike. Many recommendations were made to the draft particularly in addressing the health outcomes of the workers and appropriate linguistic and cultural adaptations to maximize understandability to

smoke exposure education which the final draft of the policy attempts to address. Many comments challenged the draft to create stronger protections against the disparate health outcomes faced by the uniquely vulnerable agricultural workers, although that recommendation was decidedly ignored in all versions of the policy and failed to mitigate harm already experienced because of smoke exposure (Allergy & Asthma Network et al., 2025). The long-term impact of years of previous exposure are overlooked by current policy.

On a surface level, the policy accomplishes some active participation in decision-making and an intent to address the equity of outcomes for workers. However, examining the complexities of the power dynamic between an employer and a worker and the reliance on the employer in the provision of appropriate PPE make the follow through on the policy emphasize the procedure more than the outcome. Workers are provided with a limited window to advocate for themselves in safety and education with an even shorter window to bring grievance against their workplace if they are even able to. The practical application of the policy falls short when thrown up against the inequalities causing disparities in the first place.

OSHA Policy Gaps

The gaps in the policy fail to reach true outcomes of equality that attend to the disparate outcomes faced by agricultural workers. Equitable wildfire policy for agricultural workers would mitigate effects caused by the guaranteed exposure to smoke that makes the policy even applicable. Oregon asked esteemed health professionals for comment on the policy, and many criticized the state's assumption that farmworkers had access to healthcare that could meaningfully prepare them for smoke exposure and the effects that follow. In addition, many commented on the cultural literacy of the smoke exposure education course (Allergy & Asthma Network et al., 2025). The required smoke exposure training module was critiqued for its

substandard translations when considering the variety of literacy levels and language comprehension of workers.

The state did not choose to move forward with the recommendations to make healthcare more accessible to farmworkers to further mitigate the harm of exposure. True equity towards the disparate health impacts of wildfire smoke towards agricultural workers would be to acknowledge the health risks associated with the levels of ambient air pollution that trigger the rule in the first place and to create feasible medical care for those affected. State attention to the development in community resiliency during fire could address the vulnerabilities caused by lack of medical access.

Senate Bill 762

Senate Bill 762 was passed in 2021 by Governor Kate Brown after several years of development. The bill had bipartisan support and promised to invest nearly \$220 million across multiple government agencies to improve the fire readiness of Oregon. Creating fire-adapted communities, developing safe and effective response, and increasing the resiliency of Oregon's landscape were all identified as three key goals in the document (Senate Bill 762, 2021). The allocation of tasks and responsibilities associated with their completion were tasked out to a variety of government agencies. The document's scope spans across a vast list of topic areas, but the focus lies on the development of community resiliency towards fire.

Impact of the Bill

The bill includes a variety of service areas. Several sections include a direct focus on socially and economically vulnerable communities including those with limited proficiency in English and persons of lower income. The Department of Environmental Equality was

specifically tasked with the development and implementation of programming that supports local communities with detecting, preparing for, and communicating or mitigating the public health impact of wildfire smoke.

Changes to the previous Air Quality Index were made after this bill to account for the task of communicating data related to ambient air conditions caused by wildfire smoke. While the safety measures for each level of smoke exposure stayed the same, the bill influenced changes to the AQI that reflected new health science discoveries about fine particulates and smoke exposure and how that information is communicated to the public. The changes were made with the intention of more accurately reflecting the severity of health outcomes during smoke exposure.

Many policy goals related to smoke exposure and fire resiliency were set to task by a variety of local and statewide agencies. The money awarded in the bill was awarded to agencies mainly to aid the development of policy more so than to see follow through on the outcomes, however many of the agencies themselves are directly responsible for the safety of the people who smoke exposure policy is intended to protect. Civil penalties of up to \$10,000 are cited as repercussion for failure to comply with policy created under the bill although Oregon OSHA and the Oregon Bureau of Labor handle most workplace disputes of hazardous worksites themselves and ultimately decide how those situations are handled.

Pacific Northwest Annual Operating Plan

The Pacific Northwest Operating Plan is an agreement between the Pacific Northwest Wildfire Coordinating Group (PNWCG) which is composed of state, local, and federal land management agencies charged with the protection of life, property and resources in the Pacific

Northwest. The AOP provides specific procedural and policy information for the delivery of wildfire weather information for the fire management community in the Pacific Northwest. The goal of this interagency collaboration is to coordinate and deliver effective services to the fire management community (*2024 Pacific Northwest Fire Weather Annual Operating Plan, 2024*). Their work to analyze and interpret fire weather forecasts and hazardous weather events is an effort from agencies across Washington, Oregon, and Idaho.

Interagency Coordination

The PNWCG agreement utilizes meteorological instruments and expertise from:

- Bureau of Land Management
- Bureau of Indian Affairs
- Fish and Wildlife Service
- Fish and Wildlife Service
- National Parks Service
- Other private qualified weather analysts

During peak fire season, meteorologists and fire weather analysts meet daily and analyze weather data and fire conditions. These meetings and their findings are the basis for Fire Warnings and Red Flag Alerts that notify specific regions of the hazard levels for fire. The introduction of this annual plan includes an emphasis on accuracy, efficiency, and preventing the overlap of duties between agencies through collaboration. Many of the groups involved in fire weather services are experiencing limited federal funding in comparison to previous years, adding an extra layer of complexity to the allocation of resources and collaboration between agencies (*2011 Northwest Area Fire Weather Annual Operating Plan, 2011; 2019 Northwest Area Fire Weather Annual Operating Plan, 2019*). The rising intensity of the fire season in

Oregon over the last decade also created an added pressure for coordinating agencies to provide essential weather advisories with a limited budget and further forcing the role of community planners, which can include employers, to make safety decisions with limited access to information. This disfunction between government agencies providing vital fire weather information and employers making safety decisions further serves to alienate workers from making informed decisions about their own health and safety when being forced to contend with smoke exposure.

Fire Weather Warning Systems

There are multiple fire warning systems in place intended for different uses depending on local roles such as community planners, fire management, or general public use. A Fire Weather Watch is issued when conditions meet the criteria outlined by the PNWCG and are normally given within two or three days of an expected fire weather event to aid in fire weather responses and coordinating resource allocation in the event of fire or smoke hazards(2024 *Pacific Northwest Fire Weather Annual Operating Plan*, 2024). Red Flag warnings are issues when there is an impending or occurring Fire Weather Watch.

The Red Flag warning system is one used routinely in the U.S. and is a tool used by the public to determine and plan accordingly for fire weather. This warning system indicates the presence of high risk of fire conditions, strong winds, low humidity, and warm temperatures. These alerts and fire weather analysis are information used by agricultural employers when making safety procedures for fire season, when designing procedures, and when to begin enacting OSHA regulations making accessibility to them paramount for decision-making.

Fire Planning Tools

The fire advisories and weather information collected and released by the PNWCG are available on some government social media pages (Facebook and Twitter). Agricultural employers use these fire condition updates to make decisions about safety and smoke exposure. The training required by the state for employees is supposed to provide some education on understanding the severity and health risks associated with wildfire events and smoke exposure. Agricultural employees essentially rely on their employer to interpret and act on the weather advisories. Any feedback or questions they have for their employers regarding safety procedure is derived from the information released by groups coordinating under the PNWAOP.

Impact of Coordination

While the annual operating plan is mainly intended for planners and official use, much of the weather data that the interagency coordination produces is used on a local level by agricultural employers when making safety decisions. The red flag warnings and fire conditions are posted on social media apps (i.e., Facebook and Twitter) as a free and user-friendly way to make information accessible for the public although the understandability of the information for those of varying literacy or language skills remains a hurdle for agriculture workers looking for fire weather updates. Spanish translations of alerts are often automatically translated by apps or online translation applications and are not always accurate reflections of the English translations.

There is the possibility of agricultural workers also utilizing fire weather information alongside their employers to make informed decisions for themselves about the safety and effect of working through smoke and fire exposure. OSHA requires that employers provide mandatory smoke exposure training when the Air Quality Index levels are between 101-276.

The training offered is intended to aid worker literacy in interpreting air quality data and how to access it although there are limited resources for the layperson in interpreting the data released and results in employers being responsible for parsing data needed in decision making.

Reimagining Policy for the Future

Oregon policy ultimately fails to provide environmental justice given that Latine agricultural workers are disproportionately exposed to smoke because of the limited ability of current policy to provide fair outcomes. Some policies succeed in recognizing marginalized communities are especially vulnerable during wildfires and attempts to address this with policy language, however fair outcomes are still limited because the policy fails to mitigate the effects caused by marginalities. Poor Spanish-language translations, limited education on workers' rights, unrealistic two-way feedback systems, and slashed emergency management and weather service funding all grievously impact the environmental justice outcomes of vulnerable community members burdened with disparate smoke exposure.

Policy can bridge these gaps and expand on what protections are currently available. Procedural justice can be developed through safe and fair reporting processes that meaningfully address the disparity between migrant workers with limited representation and power in the workplace and their employers. Further, proper funding and allocation of weather and emergency services can create stronger tools to be used by employers and workers alike when making safety planning decisions during the fire season that would motivate equitable accessibility of vital decision-making information. Stronger distributive justice enables workers with the power to make informed decisions without relying on their employer. Greater accessibility in language translations of smoke exposure training modules to make the material understandable to everyone regardless of language or literacy levels also expands the distribution of education on how to properly mitigate the effects of smoke exposure.

Reimagining future policy to push outside the confines of current policy constraints by looking at where new policy can be created. Addressing the deficit in mitigating smoke exposure

by providing healthcare access to migrant workers given that they are disproportionately exposed, a fact clearly recognized by OSHA policy. Healthcare access for Latine workers would greatly improve their ability to mitigate the harms of smoke exposure, give them the education they need to engage in two-feedback about safety decisions in the workplace, and improve long-term health outcomes. Reimagining policy to align with a CEJ framework by addressing vulnerabilities, challenging systemic inequities enabled by state policy, and recognizing the indispensability of Latine agricultural workers offer improvements for more just policy in the future.

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