

**Just Transition in Los Angeles:
Ensuring Equity During Decarbonization**



Marcus Blumenfeld, Spruce Bohlen, Brenda Jackson, Leslie Serrano, Evie Wasson
Occidental College Senior Comprehensive Project
Department of Urban and Environmental Policy
Professor Mijin Cha
Spring, 2021

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Abstract

Preventing the worst-case climate change scenario requires a global effort. City governments have adopted climate targets to quickly and substantially reduce carbon emissions. In Los Angeles, Mayor Eric Garcetti's Green New Deal aims to shift the local economy away from fossil fuels to carbon neutrality by 2045. Without targeted interventions, rapid decarbonization will result in negative economic consequences for workers and communities dependent upon fossil fuel extraction and use. 'Just Transition' offers a strategy to mitigate the economic consequences of climate policy to ensure that the transition to a low carbon future results in fair and just outcomes for workers and communities. Just transition planning in Los Angeles remains in early development; as a result the term's meaning, process, and strategies are undefined. This report presents the results of a quantitative and qualitative study that aims to define just transition in Los Angeles and provide a strategic path forward. A synthesis of interviews with relevant stakeholders, case studies, and existing quantitative and qualitative research provides a series of findings including: (a) just transition offers a transformative vision for Los Angeles but is undefined in practice, (b) a more inclusive planning process is needed, (c) adequate worker support requires the creation of high road jobs and better economic safety nets, (d) ensuring community resilience requires seeding new industries in affected communities and promoting community-led land-revitalization, (e) stronger and more cohesive government support and funding is necessary for successful outcomes. These findings are integrated with a series of proposed strategies that can better include the most impacted groups in the process, provide economic and employment support for workers impacted by decarbonization, create a plan for community-led land revitalization, and formulate cohesive and robust government leadership and funding strategies.

Acknowledgements

We want to thank all of the participants and supporters who made this report possible. Thanks to Professor Cha for her academic guidance on the topic and feedback throughout the research process. Thanks to the City of Los Angeles Office of the Mayor—Irene Burga, Angela Kim, and Victoria Simon—for research framing and support in bi-weekly meetings. Thanks to Madeline Wander for your quantitative help and for sharing your mapping expertise. We especially want to thank all of our interviewees for sharing their knowledge and experiences that made this report possible. Finally, thank you to our families and friends who supported us throughout our time at Occidental and to the whole team for continued persistence and patience.

Introduction

Climate change, driven by the burning of fossil fuels, threatens the planet and society in unprecedented ways. The increasing frequency and intensity of climate disasters like forest fires, heat waves, floods, and droughts send the message that climate inaction is no longer an option. According to the most recent Intergovernmental Panel on Climate Change report, significant reductions in greenhouse gas (GHG) emissions are necessary to limit global warming below 1.5 °C. An increase in global mean temperature increase beyond this threshold predicts irreversible planetary harm (Sixth Assessment Report, IPCC, n.d). Without rapid, far-reaching changes to energy and governance worldwide, the globe may surpass the 1.5 °C limit in as little as a decade.

City governments have adopted climate targets to meet the urgent climate challenges facing the planet. Despite varying degrees of federal climate leadership, the City of Los Angeles has remained committed to major international climate accords, including the Paris Climate Agreement and the U.N. Sustainable Development Goals (Garcetti, 2019). In 2019, Mayor Eric Garcetti adopted the Los Angeles Green New Deal, which provides an ambitious governance strategy to tackle climate challenges and meet the justice benchmarks iterated in the U.N. Sustainable Development Goals (SDGs). The GND charts the path for Los Angeles to rapidly reduce emissions by moving from a fossil-fuel-based economy to a zero-emission or ‘carbon-neutral’ economy by 2045.

While decarbonization is crucial to prevent the worst climate change scenario, it will pose significant economic and social challenges (Cha et al., 2019). The deeply-rooted nature of fossil fuels in the economy means that positive outcomes from emission reduction will be coupled with negative economic impacts. Among those hardest hit will be the workers and communities dependent on fossil fuel operations' employment and economic benefits. In Los Angeles County,

there are over 31,000 workers in the fossil fuel sector whose employment will be potentially at risk due to decarbonization (Sedgwick et al., 2019).

‘Just transition’ has re-emerged as a framework for decarbonization. It aims to mitigate the economic costs of the energy transition to ensure that the path to a low-carbon future results in fair and just outcomes for affected workers and communities (Heffron & McCauley, 2018). Just transition’s current relevance stems from a history of unjust transition and the need for bold and fair climate action (Just Transition Initiative, 2020). With few exceptions, past economic and industrial transitions in the U.S. resulted in unjust outcomes due to government and employer neglect of affected groups (Cha et al., 2019). Today’s unprecedented challenges, including the cumulative impacts of the Covid-19 pandemic, climate change, growing inequality, and technological innovation position just transition as an increasingly important concept in climate discourse. As evidenced by the term’s inclusion in President Joe Biden’s campaign, just transition is widely recognized as a necessary condition for building public support for large-scale and just climate action (Just Transition Initiative, 2020). In its Green New Deal, Los Angeles has set the goal for a fair and just transition for its communities and workers while seeking to correct past social and environmental harm (Garcetti, 2019).

The Los Angeles just transition is in early planning stages. As such, the principle-meaning, process, and practice of said transition remains largely undefined in the regional context. Previous case studies have demonstrated the complexity and contested nature of just transition. What is considered ‘just,’ in both process and outcome, varies according to different place-based contexts and stakeholder’s perspectives.

This project aims to define the meaning and stakes of just transition in Los Angeles to provide the City of Los Angeles with a set of strategies to advance a strategic vision for

transition. The primary goal of our research answers the question: *what strategies can the City of Los Angeles implement to ensure a successful and equitable just transition for workers and communities?* To answer this question, a mixed-method qualitative and quantitative approach is utilized through an analysis of existing economic and employment data, and the synthesis of 24 interviews with relevant stakeholders. These stakeholders included seven fossil fuel workers, two environmental justice advocates, 12 labor stakeholders (including labor organizers and workforce development officials), and three government officials.

Through interviews, case studies, and the synthesis of existing quantitative and qualitative research, the paper provides a series of findings. These include: (a) just transition offers a transformative vision for Los Angeles but is undefined in practice; (b) a more inclusive planning process for affected groups is needed; (c) adequate worker support requires the creation of high quality jobs and better economic safety nets; (d) community resilience requires seeding new industries in affected communities and promoting community-led land-revitalization; (e) stronger and more cohesive government support and funding is necessary for successful outcomes. These findings are integrated with a series of proposed strategies to better include the most impacted groups in the just transition process, provide economic and employment support for workers impacted by decarbonization, create a plan for community-led land revitalization, and formulate cohesive and robust government leadership and funding strategies.

The paper is divided into four main parts. First, the paper provides the political and historical context that led to just transition's prominence as a governance framework today. Next, a review of relevant literature provides a conceptual understanding pertaining to the Sustainable Development Goals, the Green New Deal, and just transition; An especially detailed review is provided regarding the different and contested ways that just transition is defined and

understood. Third, the report focuses on just transition in Los Angeles through a presentation of quantitative economic, employment, and industry statistics. The final section discusses and analyzes qualitative findings from the culmination of interviews. The paper concludes with a set of principles and actionable policy recommendations for a successful and equitable just transition in Los Angeles.

Background Information

Just transition—the topic of this research project—fits into the larger context of urgent climate change and the City of Los Angeles's policy directives to address climate challenges. In the first attempt to integrate justice and climate goals, Los Angeles announced that it would align its local policies with the United Nations 2030 Agenda and its Sustainable Development Goals (SDGs) (Garcetti, 2019). The Sustainable Development Goals are international initiatives for global cooperation to address economic, social, and environmental issues (Brito, 2012). In 2015, all of the member nations of the United Nations unanimously adopted the 2030 Agenda for Sustainable Development and its 17 SDGs (Ortiz et al., 2020). While initially intended for national governments, the global influence of cities positioned the SDG framework as an essential framework for sub-national, municipal policies. Cities profoundly influence the trajectory of human development and climate change, responsible for 70 percent of global energy consumption and 70 percent of global carbon emissions. Thus, cities must commit to the global SDG agenda to create widespread change. Moreover, city leaders can act faster than national governments and make an effective change by engaging with multiple local stakeholders (Ortiz et al., 2020).

Los Angeles revised the global SDG targets and indicators to meet the local context (Garcetti, 2019). Through localization, the global goals became more applicable to Los Angeles and provided a more effective way to measure the city's progress towards meeting and accomplishing its climate goals. Notably, Los Angeles outlined the phase-out of the fossil fuel industry and promoted the use of "green career pathways" to achieve Goal 8: Decent Work and Economic Growth and Goal 13: Take Urgent Action to Combat Climate Change (Garcetti, 2019, pp 87-88).

In 2019, Mayor Garcetti enacted the Green New Deal as a policy directive to help the city meet multiple Sustainable Development Goals. The Los Angeles GND recognizes a "need to think bigger" to help lead Los Angeles to carbon neutrality by 2050 (Garcetti, 2019). The directive aims to drastically impact fossil fuel industries, including reducing oil production to 2013 levels by 2025 (Garcetti, 2019).

While the Los Angeles GND is relatively new, the concept of a green new deal has existed for decades (Galvin & Healy, 2020). The framework draws inspiration from the success of President Franklin Roosevelt's New Deal, a set of programs and policies enacted during the Great Depression that promoted the recovery and development of the economy (Barbier, 2010)(Galvin & Healy, 2020). In the 1990s, the need for climate policies modeled after the New Deal emerged as academics advocated for using similar economic policies to advance sustainable development (Barbier, 2010). However, it was not until the 2008 recession that the proposal for a global green new deal received widespread recognition.

In recent years, the green new deal frame has gained recognition across the United States after Representative Alexandria Ocasio-Cortez and Senator Ed Markey introduced a resolution to Congress in 2019 (Galvin & Healy, 2020). The resolution proposed a ten-year plan to address the threat of climate change, offer sustainable economic development, and protect vulnerable communities' rights and well-being (Monast, 2020). To address the urgent nature of climate change, the GND calls for the decarbonization of the entire economy through profound changes to the way the economy is powered, transportation, production of goods, and consumption of natural resources (Monast, 2020). Yet, decarbonization will drastically impact workers and communities reliant on fossil fuels. Thus, the GND proposes mitigation strategies such as economic development and employment programs so affected populations do not suffer. It is

important to note that while visionary, the resolution was also vague and did not offer a blueprint for accomplishing its goals.

While the Green New Deal Resolution failed in Congress, Los Angeles announced a local GND alongside other states and municipal governments. Like Ocasio-Cortez and Markey's resolution, the Los Angeles GND advances carbon neutrality by phasing out of the fossil fuel industry by 2050 and prioritizing the protection of vulnerable communities (Garcetti, 2019). Los Angeles' climate targets center equity while recognizing that jobs based in fossil fuel industries will disappear, with some communities suffering disproportionate economic blows as a result (Garcetti, 2019). To directly address this tension, the Los Angeles' GND advocates for a fair and just transition to a green economy for all through various pathways. These include creating 300,000 green jobs by 2035, 400,000 green jobs by 2045, retraining programs, and other employment programs to help affected workers find employment elsewhere (Garcetti, 2019).

The need for a 'just transition' arises from the recognition that while there is a net social gain to mitigating greenhouse gas emissions, the deeply embedded nature of fossil fuels in society means that rapid changes will lead to severe job and economic losses. Particularly affected will be those regions, communities, and sectors with a history of fossil fuel dependence (UNFCCC, 2016). 'Just transition' is a principle, process, and practice that offers a framework to achieve the necessary changes to avoid planet destruction while protecting the interests and livelihoods of communities and workers (Just Transition Initiative, 2020).

The just transition concept emerged in the 1970's U.S. labor movement. Tony Mazzocchi, the Oil, Chemical, and Atomic Workers Union (OCAW) leader, realized that disarmament from the Cold War would negatively impact atomic workers. He argued for unions and governments to engage in peacetime planning to support these workers (Labor Network for Sustainability, 2016).

A decade later, Mazzocchi became concerned that new environmental regulations would impact jobs in the energy and chemical sectors, resulting in unjust outcomes for workers already burdened by toxic occupations. He called for a "superfund" for workers. He argued that "those who work with toxic materials daily to provide the world with the energy it needs, deserve a helping hand to make a new start in life" (Labor Network for Sustainability, 2016, Part I).

OCAW broadly envisioned a strategy similar to the current Green New Deal proposals in the USA: robust green industrial policy for the USA, substantial employment and environmental rights, as well as universal health care and the formation of an independent labor party (Stavis & Felli, 2020, p. 2). Mazzocchi's approach was a first attempt to create a multi-stakeholder strategy between organized labor and environmental justice groups. He also sought to counter the "jobs versus environment" mindset cemented by union and employee-sponsored studies that cited significant job losses due to increased regulation (Just Transition Initiative, 2020).

From these foundations, the basic principle of just transition was formed in the name of equity and justice—that no worker should have to bear a disproportionate burden for environmental protection (Labor Network for Sustainability, 2016). Mazzocchi's superfund for workers was eventually re-articulated as 'just transition' and coupled with the formation of the Just Transition Alliance in 1997. By the turn of the century, a host of North American labor organizations endorsed the idea.

In the last decade, the just transition frame has proliferated on a global scale, utilized by a range of groups, including labor affiliated organizations, environmental organizations, environmental justice groups, indigenous groups, organizing networks, businesses, and philanthropists (Morena et al., 2019) (Labor Network for Sustainability, 2017). This widespread

adoption came after the inclusion of the just transition concept in prominent international climate agreements, including the Paris Agreement in 2015 (Just Transition Initiative, 2020).

As just transition has proliferated, it is being re-defined and understood in a variety of different, and even contested, ideological frames. In the next section, this report seeks to develop the many iterations and debates surrounding just transition, the Green New Deal, and Sustainable Development goals while accommodating multiple points of view. The expanding relevance and meaning of just transition underscore the importance of this project. Now more than ever, it is necessary to develop a holistic and comprehensive place-based framework in Los Angeles that can facilitate cross-disciplinary engagement between stakeholders and create shared goals for equitable climate action.

Literature Review

This literature review examines relevant academic literature on the topics relevant to this report including the Sustainable Development Goals, the Green New Deal, and just transition. Scholars posit critiques regarding the effectiveness and realistic implementation of the SDG's and GND. The next section traces the conceptual and ideological emergence of the just transition concept, and develops the contested ideological approaches and tensions attached to the term. The last section provides scholar's strategic frameworks for successful just transitions on the ground.

The Sustainable Development Goals

For the past five years, the world leaders have recognized the Sustainable Development Goals as comprehensive, far-reaching, people-centered and universal, and have also described them as the “transformative agenda” (Swain, 2018). Many have commended the SDGs as an international effort to address various social, economic and environmental challenges afflicting all countries such as poverty, inequity and climate change.

On the other hand, scholars critique the SDG's due to major challenges relating to monitoring, measuring and implementation. Swain (2018) stipulates that while the SDG's manage to develop a framework for building a more sustainable future, the agenda provides little guidance on how to actually accomplish these goals. The non-binding nature of the SDG's leaves each country to develop their own national, regional and local plans, without guidance regarding the allocation of necessary funding (Swain, 2018). This lack of requirements makes the SDG's more aspirational rather than a binding set of goals.

Easterly (2015) similarly insinuates that the entire SDG's blueprint is more of a publicity stunt than a plan for actual environmental change. They pin the framework as closer to a utopian

fantasy of “what we should do,” instead of what we need to do (Easterly, 2015 p. 323). Easterly additionally criticizes the agenda’s lack of prioritization in its call for 17 goals and asserts that in making everything a top priority, nothing is (2015). This lack of prioritization is due to the multitude and diversity of problems around the world. Not every country, city or locality will be focused on the same goals and therefore it is up to each area to develop their own priorities in accordance with their progress towards each goal (Easterly, 2015).

While the previous arguments critique the SDG’s international effectiveness, scholars point out that the framework is increasingly being utilized for sustainable development at the local level” (Zinkernagel et al., 2018, 13). The City of Los Angeles, for example, has adopted the SDG’s at the city level, and in doing so addressed many of the various critiques of the plan (Garcetti, 2019). Local adoption of the SDG’s demonstrates a strength of providing a path forward in creating equitable progress in which no groups are left behind to face the brunt of remaining and persisting issues.

The Green New Deal

The GND takes on climate challenges that are intertwined with people, justice, and the environment through the lens of climate policy, economic development, and environmental justice.

Scholars are split in their review of the GND. On the one hand, political groups resist the framework’s bold aims and have called it ‘far-fetched’ and an ‘unworkable’ idea (Chohan, 2019, p. 1). On the other side, Monast (2020) argues that the bold or ‘far-fetched’ goals in the GND make the policy expansive and necessary. Specifically, Monast contends that the GND’s joining of justice and economic considerations is critical to the United States’ transition from fossil fuels to carbon neutrality (Monast, 2020, p.3). A fellow scholar Shi (2020) agrees with Monast and

states that the GND is a result of environmental justice movements' demands for sustainability politics to unite the climate crisis in conjunction with environmental justice (Shi, 2020, p. 1).

While the GND is often talked about on a global or national scale, it also lends itself as a framework for urban centers as they are recognized for their potential to strategically address climate change (Broto, 2017, p. 4). Similarly, Shi states momentum is growing with city-based GND policies across the United States, but critiques the GND for its “vagueness on climate adaptation and its implications for urban spatial politics” (Shi, 2020, p. 2).

Alternatively, Hodson and Marvin argue that the vague and broad nature of the GND allows cities to adopt the framework to address local challenges in a manner that is best suited to their city (Hodson and Marvin, 2014, p. 3). Alex Brown, the Vice Mayor of Chico, California speaks on the unique position cities and counties are situated in to implement the GND because of their ability to apply it locally and address the issues specific to their city surrounding justice, job creation, and climate change (Eberlein, 2019). While the GND has issues with structured implementation, it provides a starting point for cities to address climate change, economic development, and transitions for workers and affected communities.

Just Transition

Just transition is historically rooted and presently proliferating in the global climate debate. This section of the literature review traces the emergence of just transition and its trajectory among different groups to the present-day. It then discusses the variety of just transition definitions amongst scholars and activists in the field. We end with a brief discussion of tensions or drawbacks of just transition identified in academia.

a. One concept—different adoptions and definitions of just transition

Research has shown that decarbonizing the economy will pose economic challenges for fossil-fuel workers and communities. ‘Just transition’ has offered a framework to address the social and economic consequences of climate policies to ensure that environmental transitions occur with limited harm to workers and community members (Sovacool et al., 2019).

Since 2001, international unions have utilized the just transition framework to advocate for employment and social considerations in the international climate change debate (Stavis & Felli, 2020). As a result, just transition has been incorporated into multiple United Nations (UN) Agreements, including the 2009 Copenhagen Summit and the preamble to the 2015 Paris Agreement (Just Transition Initiative, 2020, p. 3). Through these incorporations at the international scale, just transition has become a ubiquitous term in global climate politics. It’s proliferation has solidified the connection between the environment and employment in the global climate debate while integrating social, economic, and environmental development at large.

Since 2013, governments, businesses, and environmentalists have adopted just transition terminology (Stavis & Felli, 2020). In the context of city governance and climate policy, just transition is increasingly recognized as a necessary condition for building public support for large-scale, safe, and just climate action (Rosemberg, 2019). Moreover, just transition offers a frame to counter the "jobs versus environment" claim which argues that environmental policies do not account for worker and community needs. Research has shown that workers in carbon-intensive industries tend to support environmental policies if said policies do not negatively impact their immediate employment and economic interests. Just transitions that promote social fairness and inclusion to mitigate the social costs of energy transition offer a potential bridge between the workforce and climate action (Vachon & Brecher, 2016).

Through task forces, commissions, funds, or policies, various government entities including the European Union, Canada, South Africa, Australia, New York State, Colorado, and California have incorporated just transition into climate governance (Morena et al., 2020). In the philanthropy and business sectors, just transition has become a popular term, reflected in the 2018 World Bank report, which described its practices from the lens of just transition (Stavis & Felli, 2018). Other initiatives include the Rockefeller Family funded Just Transition Fund which launched in 2015 to support U.S. Appalachian coal-dependent workers (Just Transition Initiative, 2020). Finally, non-governmental environmental organizations like the Sierra Club and Greenpeace which focus on national and international environmental and climate change issues have developed advocacy surrounding just transition to engage groups in carbon-intensive sectors who may oppose environmental goals (Balsiger et al., 2008) (Morena et al., 2020).

At the grassroots level, community-based organizations and movements also utilize the just transition concept and define it in their own terms. In particular, climate, environmental, and labor justice groups have called for transition frameworks to ensure that the energy transition is "just and fair, maximizing economic opportunities for economic prosperity, social justice, and social protection for all" (International Labor Organization, 2016). Rooted in the justice principles forged by the environmental justice movement, these groups have broadened the frame of just transition to fulfill a deeper egalitarian and ecological vision to address cultural, gender, and racial injustices (Morena et al., 2020). Many ongoing noteworthy examples of frontline groups doing just transition work include the Climate Justice Alliance and its "Our Power: Communities for a Just Transition" campaign, as well as the Labor Network for Sustainability (Climate Justice Alliance, 2017).

b. How deep and how just? Narrow versus broad just transitions

The global proliferation of just transition has imbued the term with multiple and even contested meanings. On the one hand, it is difficult to assign meaning to "justice" and "transitions." Both terms carry ambiguity in their definitions, and there is variance in the scope and type of transitions (Just Transition Initiative, 2020). Stakeholders at different local, regional, and national scales approach the concept of just transition uniquely, and these different perspectives add to various understandings of the term (Just Transition Initiative, 2020). The Just Transition Alliance- a coalition of environmental justice and labor organizations- defines just transition as a “principle, a process, and a practice” offering a specific and strategic meaning for each tenet of just transition. This tri-part definition captures just how many possibilities can be attached to the entire just transition concept:

“The principle of just transition is that a healthy economy and a clean environment can and should co-exist. The process for achieving this vision should be a fair one that should not cost workers or community residents their health, environment, jobs, or economic assets...the practice of just transition means that the people who are most affected by pollution – the frontline workers and the frontline communities – should be in the leadership of crafting policy solutions (Just Transition Alliance, 2020).

As the just transition is defined by a multitude of diverse stakeholders, scholars have become interested in understanding the contested definitions of just transition to unveil how understandings diverge in terms of breadth and ideals. To this end, various analytical approaches have attempted to frame the differences in just transitions in terms of scale, scope, inclusivity, and intention (Stavis & Felli, 2020) (Just Transition Initiative, 2020).

Some scholars have utilized **scale**, to refer to the transition's spatial and temporal aspects (Stavis & Felli, 2020). Just transition initiatives range from local to global and occur in different time contexts. The term, **scope**, has been utilized to address the extent to which “who or what” is considered affected by transitions as well as steps to address these needs (Just Transition Initiative, 2020, p. 9). For example, a just transition model might extend only to workers directly

affected by declining industries, or extend retraining services and economic compensation to the communities where these fossil fuel facilities are embedded (Mertins-Kirkwood and Deshpande, 2019). **Inclusivity** has been used one step further to describe the frequency of affected group's inclusion throughout the transition process. Finally, transition efforts differ in their ideological aim or **intention**. Scholars have noted the intention of just transition projects ranging from reformist to transformative perspectives (Just Transition Initiative, 2020). Whereas reform is the desire to achieve change within the existing political and economic systems, transformation is the desire to overhaul these systems that are incompatible with social equity and environmental longevity (Just Transition Initiative, 2020). All of the above categories—scale, scope, inclusivity, and intention—help to frame the different breadth or inclusiveness of just transitions.

From the labor perspective, just transitions have generally been narrow in scale and scope to focus on the immediate needs of workers in economic sectors, regions, and communities where with a dependence on fossil fuel resources and limited economic diversification opportunities (UNFCCC, 2016). From this perspective, just transition offers a frame to fight for job protection in the moment resulting from economic and environmental shifts. However, while some union advocates tend to focus on a narrower aperture of just transition issues such as worker pay and collective bargaining, others like "Social Unionists" may adopt a broader engagement with social justice concerns (Stavis, 2019).

Grassroots justice groups and academic justice scholars have defined transition with a broader scope and intention. These groups aim for systems change through a more holistic just transition framework that focuses on the social dimensions of energy transitions and decarbonization strategies (Sovacool and Dworkin, 2015). Specifically, justice advocates have argued that a more holistic just transition is achieved by integrating the goals of promoting,

distributive, procedural, and restorative justice (Healy and Barry, 2017). These justice principles are rooted in the environmental justice movement, which arose in the 1970s to protest environmental racism—the fact that low-income communities of color are disproportionately impacted by pollution, industrial practices, and disinvestment (Farrell and Strano, 2017). Climate, Energy, and Environmental Justice (CEE) advocates argue that when just transition frameworks promote all three forms of justice, they can uncover where injustice occurs and be more deeply rooted in fairness and equity (McCauley et al., 2018) (Healy and Barry, 2017)(McCauley and Heffron, 2016).

In terms of scope, advocacy groups and justice scholars contend that broadening energy transitions can expand what frameworks can address. Farrell (2017) points out that environmental justice activists take a broad view of social problems and solutions to address the interconnected issues low-income communities of color face on a day-to-day basis. These range from “exposure to pollution, lack of access to health-care, low wages, and inadequate schooling” (Farrell, 2017, p. 60). Similarly, scholars Pollin and Callaci (2019) argue that broadening the social dimensions of just transition programs opens space to attend to important issues such as the ethnic and gender disparities in the fossil fuel industry (Pollin & Callaci, 2019). The current fossil fuel industry is primarily white-male dominated with women making up 18.3 percent of oil and gas extraction and Black workers only 3.5 percent on the national level (Pollin & Callaci, 2019).

Taking an extremely wide scope to just transition, Stevis and Fellis (2020) argue that a “planetary just transition” must address the *entire* energy sector, including coal, natural gas, fossil fuel, and renewables, and the *total* environment—“the life concerns of both humans as well as the ecosystems affected” (Stevis & Felli, 2020, p. 4). The authors also contend that just transition

should extend beyond solely environmental transition because "wars, migration, slavery, patriarchy, colonization, uneven development, automation, longer lives, and capital-intensive production, have also caused profound transitions" (Stavis & Felli, 2020, p. 4).

Beyond differences in perspective regarding who and what is affected by transition, frameworks differ in their degree of inclusion and meaningful participation of these groups through procedural justice. In the transition context, procedural justice can range from mere inclusion in the decision-making process to structural, participatory processes that alter power relationships and give marginalized groups ownership in the decisions that affect their lives (Just Transition Initiative, 2020). Environmental Justice advocates argue that unjust distributional burdens like pollution hot spots in low income communities of color result from structural power imbalances in these communities. For these groups, in order to enact real change and create agency for affected groups, inclusion must extend beyond descriptive inclusion to meaningful participation that actually builds power and agency (McCauley & Heffron, 2018; Farrell 2017).

The scale, scope, and inclusivity of transitions affect the intention of these frameworks between reforming and transforming existing systems. Whereas a reformist transition seeks to mitigate harms by providing aid to workers and communities affected by the energy transition, the ideal of transformational transitions is to build profoundly different human-environment relations and economic development (Just Transition Initiative, 2020). As already noted, labor advocacy groups tend to support reformative goals in order to protect workers' immediate needs in rapidly changing contexts in the existing social and economic structure. In contrast, grassroots groups have tended to fight for the simultaneous goals of immediate relief in the existing system while simultaneously seeking to build a more equitable, sustainable, and just society altogether (Just Transition Initiative, 2020). Justice scholars note that the deep-entrenchment of our society

in the fossil fuel economy means that a just transition to a new energy system has the potential to catalyze a different social, political, and economic order (Barry et al, 2015; Mitchell, 2013; Healy and Barry, 2017).

In sum, as the idea of just transition proliferates, it is differently defined in terms of scale, scope, inclusion, and intention. These various approaches to just transition inform how groups such as the Just Transition Alliance define the term's principle, process, and practice. These variations bring to the fore attention to the ways in which multiple and even contested goals may lead to tensions in the just transition process. A brief summary of potential tensions in transition are highlighted in the next and final section.

c. Tensions in just transition

Scholars take issue with the variance in just transition definitions. While they acknowledge that the concept has brought social and equity concerns into the international climate debate, this mainstreaming has also "complicated the task of identifying what transition stands for, who is behind it, what are underlying politics, and who is for it (Morena et al., 2020, p. 4). Put differently, the popularity of just transition, rather than leading to an alignment of views, has turned it into a contested concept (Morena et al., 2020). Morena et al. (2020) further warn that the growing adoption of just transition among corporate and political interests runs the risk of "appropriation" and de-historicization from the long history of frontline communities and labor groups that have mobilized behind the concept in day-to-day-struggles (Morena et al., 2020, p. 4). The use of the term by business-interests and policymakers may be "uprooting the concept" and emptying of its transformative, emancipatory and subversive potential (Morena et al., 2020, p. 5).

Tazio Muller (2018) argues that just transition is unhelpful and even counterproductive unless it can be rapid in the climate change context. He argues that the just transition process postpones the necessary actions required to keep temperatures below 1.5°C and mitigate the worst impacts of climate change (Muller, 2018). Therefore, societies will inevitably have to choose between protecting fossil fuel workers or protecting the climate.

David Ciptet and Jill Lindsey Harrison (2019) focus on potential areas of conflict, tensions, and tradeoffs within just transition activism and planning (Ciptet & Harrison, 2020). By discussing the "sustainability-inclusivity" tension, they take up Muller's critique and point out that radical and timely action necessary to address climate change is in tension with inclusive processes aimed at maximizing procedural justice (Ciptet & Harrison, 2020, p. 446). The authors conclude that just transition efforts should prioritize democratically and procedurally just processes that result in both inclusion and mobilization for timely action. Given the contested nature of transition, attending to these potential tensions will be critical to enact an efficient and just process for multiple stakeholders.

d. Frameworks for just transition

The previous literature presented the contested conceptual, and aspirational underpinnings of the just transition concept. This section of the literature review presents frameworks for just transition that scholars have argued are necessary to actualize just transition in the real world context. Just transition frameworks provide blueprints for policy creation that advance equity and sustainability.

In the report *A Roadmap to an Equitable Low-Carbon Future: Four Pillars For a Just Transition* Cha et al. (2019) presents four key guiding principles that are based on data analysis collected through interviews, case studies, and original data. The four key principles are (a)

strong government support, (b) dedicated funding streams, (c) strong, diverse coalitions, and (d) economic diversification (Cha et al., 2019). The first principle “strong government support” acknowledges that governments play a crucial role in the implementation of consistent short-term and long-term just transition policies (Cha et al., 2019, p. 8). Both short and long term policies are necessary as short term policies provide immediate support for workers and communities while long term policies can help restructure local economies.

The second principle, “dedicated funding streams,” recognizes that enacting short and long term transition policies and programs will require substantial and consistent funding (Cha et al., 2019, p. 9). Cha et al. (2019) explain that one of the reasons why previous just transition policies, such as the federal Trade Adjustment Act, had limited success is because of insufficient funding. There must be specifically targeted funding to support programs that will aid workers and communities to ensure that they are successful and not limited in scope.

The third principle “strong, diverse coalitions” acknowledges that the just transition process must include different stakeholders such as environmental justice communities and workers (p. 11). According to Cha et al. (2019), coalitions that have a diverse membership are more likely to address various issues and not exacerbate inequality. The fourth principle “economic diversification” recognizes that there is a need to ensure that communities are not financially reliant on one industry as that makes them vulnerable to economic decline in the form of lost employment and tax-bases (p. 12). To maintain a healthy local economy it is necessary to invest in new industries and ensure that the jobs created in these new industries are high quality jobs and promote economic growth.

Other just transition scholars, Atteridge and Strambo (2020) provide seven similar yet distinct principles for a just transition. The seven principles are (a) actively encourage

decarbonization, (b) avoid the creation of carbon lock-in and more “losers” in these sectors, (c) support affected regions, (d) support workers, their families and the wider community affected by closures or downscaling (e) clean up environmental damage and ensure that related costs are not transferred from the private to the public sector, (f) address existing economic and social inequalities, and (g) ensure an inclusive and transparent planning process (Atteridge and Strambo, 2020).

Their first principle “actively encourage decarbonization” calls for a decrease in fossil fuel emissions in accordance with international climate goals (Atteridge and Strambo, 2020, p. 7). Additionally, the first principle also calls for investing in clean energy to decrease greenhouse gas emissions (Atteridge and Strambo, 2020). The second principle “avoid the creation of carbon lock in...” acknowledges that future investments must not be given to industries that rely on the fossil fuel industry (Atteridge and Strambo, 2020, p. 7). The third principle “support affected regions” calls for the creation and maintenance of economic stability among communities affected by the closures of fossil fuel facilities by providing funding and technical assistance for economic diversification.

In their third principle Atteridge and Strambo (2020) also advocate for the prioritization of disadvantaged communities especially as they may have less financial capacity to fund their own revitalization efforts. The fourth principle “support workers, families and the wider community” states that just transition programs must provide assistance to workers so they can maintain their livelihoods (Atteridge and Strambo, 2020, p. 7). The principle also acknowledges that policies cannot exacerbate or create vulnerabilities among affected communities.

The fifth principle “clean up environmental damage” advocates for the strengthening regulatory requirements for plant closure (Atteridge and Strambo, 2020, p. 7). One requirement

Atteridge and Strambo (2020) propose is that plants contribute to the remediation process. The sixth principle “address existing economic social inequalities” addresses the prioritization of equity and equality during the just transition process (Atteridge and Strambo, 2020, p. 7). The principle supports investing in marginalized communities and including communities who have been left out of the fossil fuel industry such as women. The seventh principle “ensure an inclusive and transparent planning process” encourages local engagement and the creation of a social dialogue that allows for communities to have input about what to prioritize (Atteridge and Strambo, 2020, p. 7).

Current literature on just transition frameworks offers insights for the City of Los Angeles regarding potential ways to structure and implement just transition planning. Both Cha et al. (2019) and Atteridge and Strambo’s (2020) frameworks acknowledge that successful just transitions require strong worker and community support, collaborative efforts and economic diversification in affected regions.

Methodology

This research project aims to understand just transition in Los Angeles and provide a strategic path forward by answering the following question: *what strategies can the City of Los Angeles implement to ensure a successful and equitable just transition for workers and communities*. The need for this research arises through the recognition that just transition plans remain in early development in Los Angeles. As a result, many questions remain about what this just transition means in principle and practice for frontline workers and communities. Moreover, previous just transitions have differed in process and outcome according to their place-based contexts. The best methods for achieving a successful and equitable transition in the Los Angeles context remains unclear. This grounding informs the ultimate goal of our research project—to deliver a set of actionable policy recommendations for the City of Los Angeles that can advance an equitable just transition for affected groups.

In addition to our primary research question, we sought to answer a variety of sub-questions: (a) how will we define just transition in the Los Angeles context?; (b) how will the energy transition in the Los Angeles region impact employment?; (c) who will be most impacted by just transition and what are the concerns of these groups?; (d) what are challenges and opportunities for a just transition in the Los Angeles region? To answer these questions, we used a mixed-method, quantitative, and qualitative research methods.

Qualitative approach

Our group conducted semi-structured interviews with a range of identified stakeholders. Semi-structured questions allowed for flexibility in the question design and approach necessary to cultivate meaningful engagement with interviewees in order to understand the multiple definitions, challenges, opportunities, and strategies relevant to just transition in the Los Angeles

region. Those interviewed included government officials, labor officials, labor organizers, environmental justice advocates, and workers. In total, our group identified 24 interview participants through a snowball sampling process. We located participants through a variety of methods, including relevant literature and publications, our connection with the Office of Sustainability, and our working relationship with Professor J. M. Cha who specializes in just transition research. All of the interviewees were over 18 years old and voluntary participants. Informed consent forms were used to explain the purpose of the study, and we provided contact information for any follow-ups or concerns. With granted permission by the interviewees, almost all of the conversations were recorded and later transcribed. Thematic analysis of interviews was conducted retroactively using transcriptions and interview notes.

While tailored to each group, our research questions generally followed an inquiry of a.) perspectives on what a just transition means, b.) challenges and opportunities for just transition in Los Angeles, c.) the future of fossil fuel industries in Los Angeles, and d.) the past and potential influence of government and other policy strategies with regard to relevant industries. A list of all research questions is provided in Appendix A.

Quantitative approach

The goal of our quantitative research was to create an accurate background of the fossil fuel industry in Los Angeles. The first step was to analyze available economic indicators. Through a variety of data sources, we developed an estimate of the economic impacts of a transition. Most of the data used came from the Bureau of Labor Statistics, reports from the Los Angeles County Economic Development Corporation (LAEDC), the U.S Energy Information Administration, and the UC Institute of Transportation Studies. To create an accurate depiction of the fossil fuel landscape we sifted through these reports to find relevant statistics, examined

the data sets in their sources, and created tables from desired statistics in Excel. We used the definition of the fossil fuel supply chain created by the UC Institute of Transportation Studies, and used the NAICS industry code to sort through the Bureau of Labor Statistics, Quarterly Census of Employment and Wages, (QCEW) data set. After finding all desired industries we created a pivot table, which is an Excel function that allowed us to further analyze the labor statistics. We used this method to create tables for power plants. We focused on understanding the size of the total fossil fuel workforce, the age demographics, and the total direct and indirect economic contribution made by the fossil fuel industry in Los Angeles County. By doing so we hoped to gain a better understanding of the industry, the fossil fuel supply chain, and the number of people who will be affected by the transition.

The next step was to answer the question of which disadvantaged communities in Los Angeles County are in the most urgent need of the decarbonization of a fossil-fuel facility within their census tract. To answer this question we used the program ArcMap. The first step was to use a cleaned-up version of CalEnviroScreen 3.0 data that was prepared for Cha et. al's (2019) report. For an in-depth look into the GIS map-making process please refer to Appendix B.

Challenges and limitations

Throughout the course of the study, there were many challenges in the data collection process. Due to the Covid-19 pandemic and the high community infection rates in Los Angeles, interview outreach to workers at job sites and to community members in their homes was not an accessible possibility. Instead, we recruited all of our interviewees via email or text message; this made it difficult to connect with unresponsive interviewees. Another missing perspective in our paper was that of the Indigenous community; As a result, the indigenous perspective on just transition was not adequately considered throughout our research process. Finally, as our study

relied on snowball sampling, reaching out to people who our interviewees suggested led to the exclusion of participants who may otherwise have voluntarily participated. For instance, as the workers we interviewed were all refinery workers, we were unable to get in touch with other fossil fuel workers, such as oil well workers.

Another important limitation is that complete economic analysis and modeling were not conducted. By not including economic modeling, a full understanding of the economic and employment impacts of a just transition and phasing out of the fossil fuel industry could not be found. Additionally, difficulty disaggregating Los Angeles County data from Los Angeles City data resulted in limited access to fossil fuel employment data.

Quantitative Findings - The Los Angeles Just Transition Context

Background on employment economics for the fossil fuel industry in Los Angeles

The energy transition in Los Angeles is part of a larger energy transition away from fossil fuel dependency within the United States. On a national scale, lowering costs in wind, solar, and battery storage; the closing of many coal facilities; and other global factors are leading to the decline of fossil fuel industries (Henry et al., 2020). In the California energy sector, similar meta-factors are changing the energy landscape and facilitating employment shifts (Farrell & Stano, 2017).

It is imperative that Los Angeles use a just transition pathway to ensure that the shift to a low-carbon economy will not exacerbate existing inequity. To ensure that this transition is just and equitable, it is vital to have a deep understanding of the existing workforce, employment characteristics, and communities which are vulnerable to transition impacts. In the following section, we delve into an analysis of existing labor and economic data in the fossil fuel and green energy sectors of Los Angeles to paint a picture of the scale and scope of the local transition that is already underway.

Background on fossil fuels in Los Angeles

In this section we aimed to gain a more concrete understanding of employment within the Los Angeles fossil fuel industry. It was important to us that we include a variety of estimates that portrayed different aspects of the industry as well as developing our own process of mapping employment statistics in order to create an overview that is as comprehensive as possible. We were not able to find any one set of employment data that provided a complete picture so we present an array of data to fill in the gaps that exist in the existing estimates. In our own attempt to understand the industry, we split the industry into two categories, the fossil fuel supply chain

and power generation. The fossil fuel supply chain accounts for an array of industries involved in the extraction, production, transportation and marketing of fossil fuels. This model conveniently breaks the industry down into each of the necessary elements of the fossil fuel machine and provides a complete picture of the process and movement of fossil fuels. The City of Los Angeles plans to reach 100 percent renewable energy by 2045, with shorter term goals of 55 percent renewable by 2025 and 80 percent by 2036, (Steinbrecher, 2019). These goals to reduce carbon emissions will require a rapid phase-out of the fossil fuel sector in Los Angeles County. This section provides an overview of employment impacts to understand which sectors and workers will need help to be transitioned or reskilled, even though in the short-term data shows this sector continues to grow.

Table 1, (below), relays employment statistics in the ‘supply chain’ grouping of the fossil fuel industry in Los Angeles County. We sourced the data from the U.S Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW). This table lists all of the industries involved in California's fossil fuel supply chain, according to the University of California Institute of Transportation Studies’ report, *Carbon Neutrality 1: Driving California’s Transportation Emissions to Zero*, October 2020. Examining the fossil fuel supply chain as a whole provides an in-depth and comprehensive picture of job distribution, wages and growth in different industries.

Table 1

2019 Employment Estimates: Los Angeles County Fossil Fuel Supply Chain

North American Industry Classification System ID and Description	Establishments	Annual Employment	Average Annual Wage	Annual Average Change In Employment	Annual Average Change In Establishments
NAICS 211120 Crude petroleum extraction	1	-	\$ -	0	0
NAICS 211130 Natural gas extraction	4	24	\$116,612.00	-3	0
NAICS 213111 Drilling oil and gas wells	16	107	\$145,995.00	5	-1
NAICS 213112 Support activities for oil and gas operations	37	1,145.00	\$85,081.00	8	-1
NAICS 237120 Oil and gas pipeline construction	37	2,278.00	\$102,941.00	170	-2
NAICS 23829 Other building equipment contractors	171	2,112.00	\$90,291.00	97	11
NAICS 324110 Petroleum refineries	28	4,631.00	\$164,530.00	7	0
NAICS 324191 Petroleum lubricating oil and grease mfg.	13	-	\$ -	0	1
NAICS 324199 All other petroleum and coal products mfg.	1	-	\$ -	0	0
NAICS 333132 Oil and gas field machinery and equipment	7	-	\$ -	0	0
NAICS 333914 Measuring, dispensing, and other pumping equipment manufacturing	19	467	\$103,648.00	-4	0
NAICS 424710 Petroleum bulk stations and terminals	27	567	\$96,360.00	-33	-3
NAICS 424720 Other petroleum merchant wholesalers	69	1,105.00	\$97,955.00	4	-4
NAICS 4471 Gasoline stations	1,532.0	12,274.00	\$30,672.00	48	17
NAICS 454310 Fuel dealers	17	282	\$72,298.00	-24	-2
NAICS 486110 Pipeline	6	-	\$ -	0	1

transportation of crude oil					
NAICS 486210 Pipeline transportation of natural gas	9	-	\$ -	0	0
NAICS 486910 Refined petroleum product pipeline transport.	19	-	\$ -	0	0
Grand Total	2013	24,992.00	\$100,465.72	275	17

(U.S. Bureau of Labor Statistics, 2020),(Brown et al., 2020)

These data show that nearly 25,000 people in Los Angeles County are employed by the fossil fuel supply chain. These estimates trend on the lower side because of underreporting to the US Bureau of Labor Statistics, and the total employment from the industry is reported at closer to 31,000. This table reports the average wage of oil and gas workers at \$100,465 annually. This closely aligns with other industry estimates for average fossil fuel salaries in Los Angeles County which are around \$95,000 (Williams, 2020). While the City of Los Angeles has begun to decarbonize, it is apparent that the fossil fuel supply chain has not yet begun to fall off, instead it has grown over the past year with 17 new projects or facilities and 275 new employees.

Table 2, (below), shows employment statistics in the fossil fuel generation sectors.

Clearly this data is incomplete, as it demonstrates that there are zero people employed in the fossil fuel electric power generation sector.

Table 2.

2019 Employment Estimates: Los Angeles Power Generation Plants

North American Industry Classification System ID and Description	Establishments	Annual Employment	Average Annual Wage	Annual Average Change In Establishments	Annual Average Change In Employment
NAICS 221112 Fossil fuel electric power generation	109	0	\$ -	3	0
NAICS 221117 Biomass electric power generation	6	0	\$ -	1	0
NAICS 221115 Wind	1	0	\$ -	0	0

electric power generation					
NAICS 221114 Solar electric power generation	12	147	\$204,955.00	1	46
NAICS 221111 Hydroelectric power generation	103	5540	\$147,057.00	1	466
Grand Total	231	5687	\$58,668.67	6	512

(U.S. Bureau of Labor Statistics, 2020), (Brown et al., 2020)

Nevertheless, the data provides an overview of the current count of facilities, as well as the growth in the renewable energy generation sector, with more than 512 jobs created in both hydroelectric and solar electric power generation in 2019. There is little data from the Bureau of Labor Statistics that pertains to the fossil fuel electric power generation facilities, but what is apparent is that this sector of the industry is still growing alongside the rest of the fossil fuel supply chain. The average annual wage for solar electric power generation is also likely skewed as there is no NAICS code for solar installers which make up most of the jobs in that industry, and those jobs do not currently pay an average wage of \$205,000 a year. While it is difficult to get specific data on employment by sector, the Los Angeles Economic Development Corporation, (LAEDC), found that the oil and gas industry in Los Angeles County employs an estimated 31,077 workers, the breakdown of which is shown below, in *Table 3*. This data helps to paint a more complete picture of the employment landscape of the oil and gas industry in Los Angeles County.

Table 3.
Direct Activity of Oil and Gas Industry
Los Angeles County 2017

Industry Group	Employment	Labor Income (\$ millions)
Upstream	2,860	243.8
Mid-stream	4,384	417.1

Downstream	5,116	713.8
Market	18,718	959.6
Total Direct Activity	31,077	2,334.3

(Sedgwick et al., 2019)

Industry groups within oil and gas

Throughout the 2019 *Oil and Gas in California* report by the Los Angeles County Economic Development Corporation, the thirteen industry codes used in the oil and gas definitions were grouped into the categories upstream, midstream, downstream, and market. Upstream refers to the production of oil and gas. Jobs within this sector include land agents, geoscience professionals, safety managers, pipeline engineers and petroleum engineers, (Energy Job Shop, 2018). Downstream operations describes the refining of crude oil and the processing and purification of natural gas to prepare it for the market. Midstream refers to the process between upstream and downstream including the transportation, storage, and wholesale of crude oil and gas, (Energy Job Shop, 2018). Since there is a vast range of jobs within the oil and gas industry, it is hard to gain an accurate assessment of what types of workers and jobs will be affected by the phase out of hydrocarbons. In fact, the Standard Occupational Classification System found that oil and gas workers could fall into one of 810 detailed occupations with each requiring different skill sets. The 2019 *Oil and Gas in California* report found that “under 40 percent of workers in the industry are employed in sales occupations, another 15 percent in office and administrative, business and financial, and management occupations combined, and another 40 percent (combined) work in occupations in construction and extraction, production, installation and maintenance, and transportation and material moving,” (Oilfield Job Shop, 2020, p.19). Our research and data adds more depth and information to the City of Los Angeles on what jobs and workers makeup the industry as it shifts away from fossil fuels.

Demographics of workers in the fossil fuel industry

As the City of Los Angeles strives to reach zero carbon emissions by 2045, it is important to analyze the demographics of the workforce that will be impacted. Firstly, looking at the age demographics for workers in the fossil fuel industry (Table 4), helps determine the age of the fossil fuel workforce in Los Angeles. As the industry declines in Los Angeles County, fewer and fewer young workers will join the workforce. This has the potential of making a transition away from fossil fuels less impactful. The more workers in the oil sector that are nearing retirement, the less expensive and disruptive the process of compensating and transitioning those workers will be. (Pollin and Callaci, 2018). The data shows that fewer younger people are joining the fossil fuel sectors and that the workforce on the whole is getting older, however, this does not necessarily mean that those older employees are ready for retirement.

Table 4.

Workforce in the southern California oil and gas industry 2017¹

	2013	2015	2017
<22 Years	3%	4%	0.3%
22-24 Years	26%	27%	22%
35-54 Years	46%	44%	51%
55+ Years	24%	25%	26%

(Sedgwick et al., 2019)

Table 4, above, depicts the age of workers in California's oil and gas industry as it has changed from 2013 to 2017. The change is clear, the average age of the workforce in this industry is increasing as the number of workers under the age of 22 has dropped from four percent to 0.3 percent over a two year period and workers aged 22-34 has decreased from 27 percent of the workforce to 22 percent. On the older side of the workforce, workers aged 35-54

¹ Note *Table 4* shows estimates for the Southern California Subregion and not Los Angeles county.

have gone from making up 44 percent of the workforce to 51 percent from 2015 to 2017, and workers who are 55 years and older have also increased over the same period of time. This indicates that the majority of the workforce may be nearing the age of retirement before the year 2045. However, currently the majority of workers are of prime working age and need to be accounted for in the transition away from fossil fuels.

Table 5
Educational attainment for southern California 2017

Highest Level of Education	Percent of Workforce
Bachelor's Degree	33.2%
Some College or Associate's	32.5%
High School	19.6%
Less than high school	12.1%
Not available	2.6%

(Sedgwick et al., 2019)

In order to avoid social and economic dislocation, it is essential that workers who are displaced from fossil fuel jobs are either retrained for the new renewable energy jobs, or given adequate support to be retrained and find new employment with comparable wages and benefits. *Table 5* (above) demonstrates this challenge by illustrating the diverse spectrum of educational attainment for fossil fuel workers in the Southern California region. Over 64 percent of workers do not have a four year college education. This can make it difficult for these individuals to find employment with similar benefits and wages without getting additional education or training as

the competitiveness of the job market may have changed since they were last hired. The fossil fuel industry currently offers stable employment opportunities with high wages and benefits to individuals with lower levels of education attainment (LAEDC, 2019). Moreover, the fossil fuel industry provides employees with upward career mobility opportunities. This highlights that many workers are earning above average wages in comparison to their level of educational attainment and have further increased their wages through taking advantage of advancement opportunities in this industry. These higher wages make it difficult for them to find a job of equal or better pay and benefits that aligns with their skills and level of education, making the burden of compensation harder for new employers in green industries to properly match. This is one of the critical barriers to achieving a just transition for oil and gas workers in Los Angeles.

Data on the economic impact of fossil fuel phaseout in Los Angeles

When considering the economic impact of decarbonizing Los Angeles County, through the framework of a just transition, workers wages are not the only aspect of the economy that must be accounted for. The fossil fuel industry in Los Angeles has a sizable economic contribution to the local economy and state of California. *Table 6*, (below), shows the total economic and fiscal contributions from the oil and gas industry within Los Angeles County from the 2017 fiscal year. Most notably, this exhibit reveals that in Los Angeles County the total employment contribution from the oil and gas industry is closer to 77,550 workers accounting for a total of \$5,325,800,000— a number that translates to \$15 billion in added RDP (Regional Domestic Product) for the Southern California Region and \$8 billion in RDP for Los Angeles County (Williams, 2020). The industry also pays almost \$4 billion in state and local taxes annually. This indicates that the economic impact of suddenly erasing this industry in Los Angeles County could have a significant negative impact on the local and state economy.

Table 6.

**Backward linkages: Oil and gas industry
total economic and fiscal contribution
Los Angeles County 2017**

Economic Contribution	Employment	Labor Income (\$ millions)	Value Added (\$ millions)	Output (\$ millions)
Direct	31,077	2,334.3	10,254.4	38,884.6
Indirect	27,250	1,942.6	3,042.9	4,872.6
Induced	19,220	1,048.9	1,886.5	2,980.6

Total Contribution	77,550	5,325.8	15,183.8	46,737.8
Percent of County Total	1.2%	1.2%	2.0%	3.9%
Percent of Total CA Contribution	21.2%	20.4%	25.6%	30.7%

Fiscal Contribution	State and Local (\$ millions)
Sales and excise taxes	2,718.4
Property taxes	623.2
Personal income taxes	159.2
Corporate profits taxes	101.1
Social insurance taxes	25.2
DOGGR Assets	10.5
Other taxes	148.4
Fees, fines, and permits	129.8
Total Tax Revenues*	3915.7

(Sedgwick et al., 2019)

a. Direct, indirect and induced employment

Direct employment represents workers who work directly in the oil and gas industry. Indirect workers are those who support the oil and gas industry and work and rely on it to keep their business running. Induced employment refers to jobs that are created as a result of direct and indirect workers who then spend money in the community (Sedgwick Laferriere et al., 2019). This framing helps to show the broad impacts of the transition beyond direct employment issues.

Data findings and discrepancies

Throughout our data collection most reports and databases we looked through remained fairly consistent with each other and our findings. However, the *Contributions of the Oil and Gas Industry to Los Angeles County* Report, was the only one we discovered that had statistically significant differences in employment statistics. For example they estimated 37,000 Oil and Gas industry workers compared to our estimates of 31,000 (Williams, 2020). The root of these discrepancies is that to develop their estimates for the *Contributions of the Oil and Gas Industry to Los Angeles County* Report, they used the modeling software IMPLAN which creates algorithmic estimates based on numerous assumptions that are made by the program that we believe inflated their numbers.

Spatial analysis of disadvantaged communities and fossil fuel facilities in Los Angeles

A just transition is particularly important in the Los Angeles region because of a legacy of racist and discriminatory policies that have led to disadvantaged communities, specifically low income communities of color, to face disproportionate harms of social, economic, and environmental inequality (Our County, 2018). Inequality is concentrated in disparate pockets across the country such that where a person lives largely predicts their quality of life, and health outcomes (Our County, 2018). Moreover, the “climate gap” refers to the disproportionate and

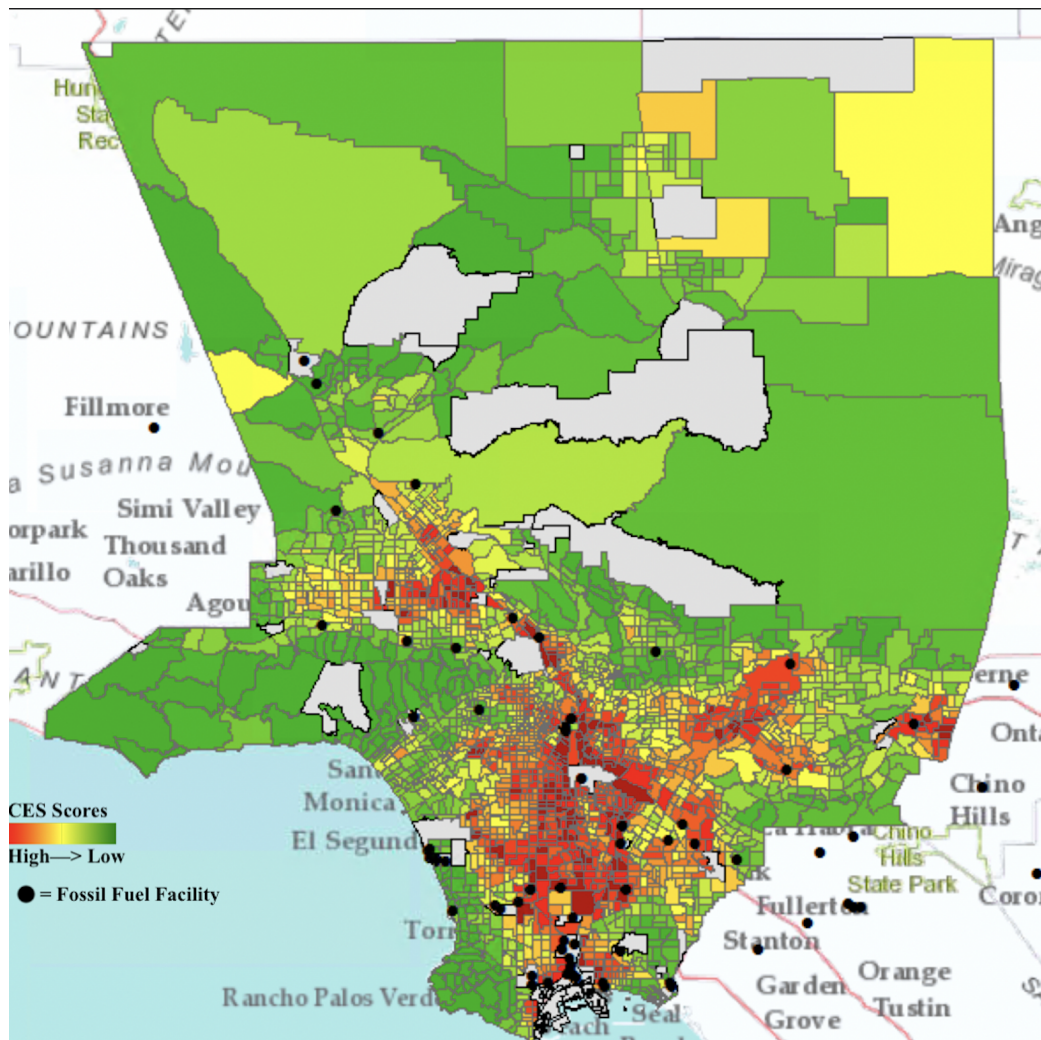
unequal impact that climate change will have on low income communities of color as a result of historic disinvestment and limited economic resources and opportunities (Pastor et al., 2011).

In this section we created a comprehensive spatial analysis specific to just transition in the Los Angeles region. This spatial analysis of facilities provides a visual to ensure that in the policy making process the benefits and burdens of decarbonization do not exacerbate inequality. We mapped facilities in the oil and gas industry relative to the county's most vulnerable communities as defined by CalEnviroScreen 3.0.² If the City of Los Angeles addresses equity in this way, it can ensure that benefits that come with transition, such as zero-emissions technology, can be targeted in frontline communities who have borne a disproportionate impact from fossil fuel industries (Cha et al., 2019). This approach can also ensure that mitigation strategies to ameliorate the economic harms of lost jobs and reduced tax revenues from closed facilities are prioritized in fossil fuel dependent economies. Only through such targeted considerations can the Los Angeles transition truly be just.

Figure 1, below, depicts environmental justice communities in Los Angeles County and represents fossil fuel facilities as black circles. The map scales the census tracts from low CES scores (green) to high scores (red).

Figure 1: Map of EJ census tracts and fossil fuel facilities

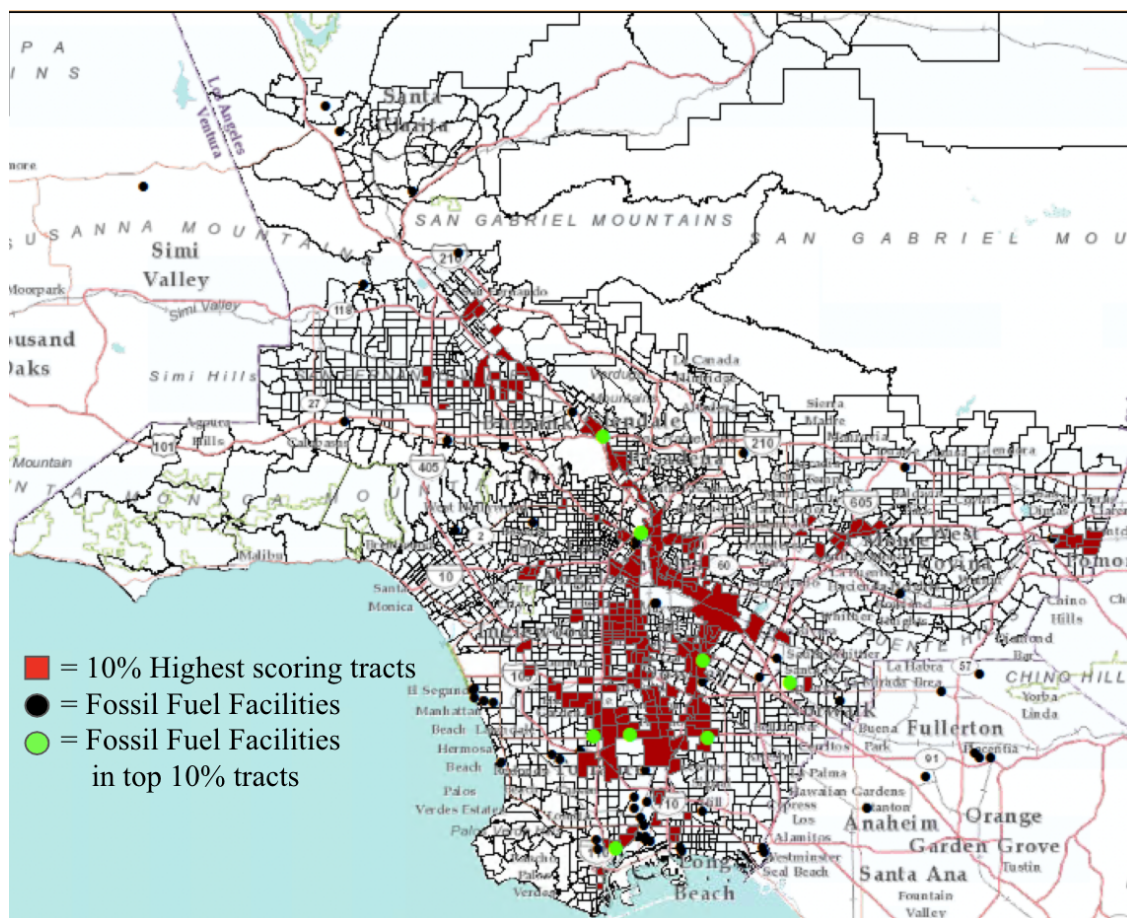
² A draft of 4.0 is currently out for public comment.



The California Office of Environmental Health and Hazard Assessment (OEHHA), classifies a disadvantaged community as a census tract that falls within the 25th percentile of high scores in CalEnviroScreen 3.0. However, the majority of the county falls into this classification it is very difficult to pinpoint which census tracts are at the most risk. To solve this problem we decided to focus on the top 10 percent of most vulnerable census tracts and find facilities from the Fossil_Fuel_All_1_23_2019_v1 file that were within those tracts.

Figure 2, depicts the top 10 percent of the most vulnerable census tracts with a red fill and all fossil fuel facilities as black circles and fossil fuel facilities that fall within the top 10 percent of census tracts as green circles. This results in nine facilities that are within these census tracts.³

Figure 2: Ten percent most vulnerable EJ census tracts containing fossil fuel facilities



While only nine facilities fall within these communities the data visualization illustrates the density of facilities in close proximity to these communities. If the city and county want to actualize a just transition through the frameworks of the SDG's and the GND, it will be

³ These nine facilities are listed as follows in no particular order. (a) The South Gate Lunday-Thagard Company's petroleum refinery. (b) The Long Beach Edgington Oil Company's petroleum refinery. (c) The Fellows Plains Exploration and Production Company - SJV Basin Facility for crude petroleum and natural gas extraction. (d) The Fellows Seneca San Joaquin Production Facilities for crude petroleum and natural gas extraction. (e) The Carson Cogeneration Company natural gas power plant. (f) The Glendale Grayson natural gas power plant. (g) The Wilmington Harbor natural gas power plant. (h) The Norwalk Wheelabrator Norwalk Energy natural gas power plant. (i) The Gardena natural gas power plant run by AT&T Services Inc.

important to create a phase out that prioritizes these communities and the proximate facilities that are causing the most harm. These are the communities that have been wronged in the past and they are the ones most likely to be left behind in the coming transition. These communities will need to be revitalized and invested in to create jobs and economic diversification within these areas. This requires the city and the county to develop a planned retreat away from the oil and gas industry. The term ‘planned retreat’ usually refers to coastal areas that will create a timeline to re-establish their coastlines in anticipation of sea level rise to avoid the flooding of homes and businesses along waterfronts. The same idea can be applied to the transition away from fossil fuels. We know that it is happening and therefore it is vital to plan for the inevitable. The danger for disadvantaged communities as the transition towards renewable energies commences is that primarily middle and upper class households will have the means to retrofit their residence to be powered fully by electricity. This will result in lower income households being stuck with oil and gas and therefore will be paying more and more for their utilities as the oil and gas industries fixed costs will need to be compensated by fewer customers. It is important lower income communities are not forced to pay the price of the economic impacts of this phase out in an equitable transition.

Impact of COVID-19 on the fossil fuel industry and green jobs

This report is incomplete without a recognition that COVID-19 has impacted most people, institutions, and has negatively impacted the global economy. With a drastic slowing down of economic activity it is unsurprising that this has reached the oil industry. The demand for oil decreased worldwide by an average of 2.5 million barrels per day soon after the pandemic began (The Energy Transition And COVID-19, 2020). On March 23rd, the steepest one-day price crash seen in almost 30 years, occurred and crude oil prices dropped by 24%, from

\$34/barrel to \$25.70 (Nicola et al., 2020). This price drop and reduction of demand was due to the social and economic standstill COVID-19 brought, with social distancing, stay at home orders, and travel restrictions among some of the reasons for decrease in global oil consumption and demand.

With this decrease in demand for oil, production of oil slowed and then came the job losses in the oil, natural gas, and chemicals industries. Between February and August of 2020 these industries faced the fastest rate of job loss yet, and there were over 107,000 layoffs nationwide (Dickson, 2020). This trend is not unique to the oil industry as most industries, such as clean energy, also faced job losses and cuts. The United States has lost over half a million clean energy jobs between March and July of 2020 and the largest share has been in the state of California, having lost 90,000 clean energy jobs since the pandemic began and (Roth, 2020).

The decline in demand for oil due to Covid-19, is not set to be long term although, rather according to the International Energy Agency in March of 2021 “global oil demand is set to increase every year between now and 2026”(International Energy Agency, 2021). This new swing back must be accounted for and we have yet to see how jobs will change once again due to it. The pandemic is changing rapidly and the economic impacts it causes will too, and although the impacts of COVID-19 have disrupted previous ambitious plans established by cities and states it may present opportunities for new sectors of exploration and growth.

Qualitative Findings and Analysis

To answer the question—*What strategies can the City of Los Angeles implement to ensure a successful and equitable just transition for workers and communities?*—this research team conducted 24 interviews with relevant stakeholders between December 2020 and February 2021. As just transition remains widely undefined across sectors and stakeholders, we sought to gain the perspectives of a diverse range of stakeholders. The groups interviewed included three government officials, 12 labor stakeholders (including labor organizers, workforce development officials, and labor representatives who work in unions or large scale NGOs on labor and workforce issues), 3 environmental justice advocates, and 7 fossil fuel workers in sectors including utility operators and safety attendants. Given the contentious nature of just transition and the uncertainty surrounding the breadth of distribution with this report, we decided to keep our interviewees anonymous.

The first section—“how is just transition being defined in Los Angeles?”—captures the various ways in which participants in this study defined and understood just transition in the Los Angeles region. The second section of our data and analysis—“challenges and strategies to advance just transition in the Los Angeles region”—delves into barriers and solutions that must be addressed and considered to advance a just transition in the Los Angeles region. Through thematic analysis our team organized findings into four primary just transition challenges and responding solutions, pathways, and strategies to address these challenges. These four sections include: (a) just transition planning is excluding the most impacted groups; (b) workers in carbon intensive industries face economic, and employment challenges due to decarbonization; (c) the energy transition will harm surrounding communities due to a loss of economic activity, local employment, and land revitalization costs (d) there is a lack of dedicated funding and cohesive

government leadership to ensure successful just transition projects. In the final section, potential industries are offered which provide potential employment opportunities for workers affected by the transition that includes renewable energy sectors, oil well remediation and large infrastructure projects, namely transportation.

Interviewees did not always propose these strategies or solutions directly in response to one another. Instead, ideas, programs, and policies were often introduced independently that we have paired and analyzed below for ease of reading and understanding.

Table 7:

Map of Findings

<p><u>How is just transition being defined in Los Angeles?:</u></p> <ul style="list-style-type: none"> ● In principle, just transition offers a transformative path to a more equitable society ● In process, stakeholders utilized an inclusive scope to identify who and what will be affected and should be included in transition ● In practice, just transition remains a largely undefined concept
<p><u>Challenge:</u> Just transition planning is excluding the most impacted groups</p> <p><u>Strategies:</u></p> <ul style="list-style-type: none"> ● Prioritize Inclusive Planning and Partnerships ● Create a Concrete Transition Plan for Workers
<p><u>Challenge:</u> Workers in carbon intensive industries face economic, and employment challenges due to decarbonization</p> <p><u>Strategies:</u></p> <ul style="list-style-type: none"> ● Create and Maintain high road jobs in every sector ● Implement comprehensive worker relief
<p><u>Challenge:</u> The energy transition will harm surrounding communities due to a loss of economic activity, local employment, and land revitalization costs</p> <p><u>Strategies:</u></p> <ul style="list-style-type: none"> ● Economic diversification ● Community-led land re-development/ remediation
<p><u>Challenge:</u> There is a lack of dedicated funding and cohesive government leadership to ensure successful just transition projects.</p> <p><u>Strategies:</u></p> <ul style="list-style-type: none"> ● Create cohesion between all levels of government ● Lobby state and federal governments

<ul style="list-style-type: none"> ● Refinance closed plants
<u>Potential Industries for transition</u> <ul style="list-style-type: none"> ● Renewable energy ● Oil well remediation ● Infrastructure and transit

1. How is Just Transition Being Defined in Los Angeles?

The contested nature of just transition requires the development of a place-based understanding of how the term is defined in Los Angeles. Therefore, we asked our interviewees to explain what just transition means to them. Guided by the existing literature, we analyzed our findings to articulate the principle or ideological aim of just transition and the process/practice of just transition. We analyzed our interviewee’s insights with these questions in mind: in principle, *what is the intention of just transition’s vision?* In process, *who is included and what should be addressed in transition?* In practice, *how is just transition working on the ground?*

An analysis of our interviews demonstrated that, in principle, stakeholders generally agree that just transition offers a transformative path to a more equitable economy and society. In defining the process of just transition, stakeholders utilized a broad scope to identify who will be affected and thus who should be included in just transition planning; Their scope included both incumbent workers in declining industries and environmental justice communities affected by fossil fuel operations. In practice, many interviewees (particularly workers and labor stakeholders) noted that a lack of successful and equitable examples of transition in Los Angeles might be turning the just transition term into an undefined or even empty “signifier.”

a. In principle, just transition offers a transformative path to a more equitable society

As discussed in the literature review, the intention of just transitions ranges from a more reformist ideal (to mitigate the losses associated with ending fossil fuels) to a transformative goal

of fundamentally altering existing systems altogether. Almost all of our interviewees advocated that just transition should incorporate both ideals. On the one hand, virtually every interviewee in some way posited that transition in the short term should provide immediate relief to workers and communities impacted by fossil fuel industries. In the long term, transition offers the possibility to forge a transformational path to a fundamentally different economy and society. One environmental justice advocate declared that the only way to have an equitable transition is by forging a plan that provides jobs and safety nets for impacted workers and the communities impacted by fossil fuel operation. These communities, they pointed out, may have never benefited from the good jobs provided by the fossil fuel industry but have borne the burden of health detriments from living near the facilities.

In the long run, there was agreement among almost half of the interviewees that transition has the potential to forge a path towards a new economy that works in radically different and more equitable ways than it has in the past. As one labor organizer put it:

“just transition is the opportunity to think very differently about the economy and the society that we want to live in. And it is one that should be paying attention to those who are going to be displaced and severely affected by the dislocation. And it's a chance to address... chronic unemployment of low-income people of color communities.”

A workforce development official shared a similar sentiment, emphasizing that just transition can forge a different economic order that prioritizes working families:

“I think the most encompassing way to think of a just transition is... an economy that doesn't prioritize companies or businesses but prioritizes working for families...because it's exactly the opposite of how our economy is currently organized.”

Finally, an environmental justice advocate defined just transition as “transforming” our society from one with an extractive economy to one that is regenerative with a better quality of life.

“I see it [just transition] as transforming our society from being dependent on fossil fuels and the carbon economy to focusing more on creating a more regenerative economy, one that is not necessarily extracting, but is generating and one that

doesn't treat people ... as disposable or as a replaceable, but that is more just, more sustainable in terms of...quality of life.”

While our interviewees defined the principle substance of just transition through a variety of nuanced perspectives, there was a shared insight that just transition comes with the possibility to unravel old systems and create a more equitable society and economy.

b. Stakeholders utilized an inclusive scope to identify who and what will be affected and should be included in the process of transition

In defining who will be affected and should be included in the process of just transition, our interviewees used a relatively broad scope. Many interviewees advocated to extend just transition beyond solely addressing incumbent workers in declining sectors, to also account for environmental justice communities that have borne the environmentally harmful practices of the fossil fuel industry. One labor official advocated for the inclusion of workers and frontline communities in just transition:

“...when we're talking about just transition... it has to be equitable, and not just for the workers, but the communities at large, especially, because the vast majority of these workers also live in communities that have been exposed to environmental violence for many years. So I think taking that into consideration, making sure that it's not just about the jobs, obviously, primarily about the jobs and the technology, but also talking about environmental racism and whatnot, taking that into account.”

Similarly, all seven of the fossil fuel workers interviewed for this report underscored how the shutdown of fossil fuel plants would impact their families and the broader communities and local businesses that depend on these facilities' tax base and economic activity. One worker stated that the primary message they wanted to convey to the city is that the closing of fossil fuel operations will have a broad effect. They wanted the City to know “that a lot of people in the community... rely on these businesses to be open.”

Several interviewees also expanded the scope of transition beyond a sole focus on fossil fuels to address other harmful practices. One environmental justice advocate stated that there are

all kinds of negative externalities in environmental justice communities and that transition should expand to address “a lot of other operations that are impactful and dangerous, and negatively affecting people.” Another workforce development official contended that thinking about transition only as a shift from fossil fuels to clean energy is “limited.” Just transition should instead be thought of with a broader aim of trying to diversify local economies and ensuring that all jobs in a variety of sectors are high quality jobs.

All interviewee groups including government and labor officials, organizers, workers, and environmental justice advocates defined just transition as addressing more than solely incumbent workers’ needs. These interviewees also emphasized the importance of including these groups in a procedurally just manner—a point we will develop further later on.

c. In practice, just transition remains a largely undefined concept

When it came to defining just transition in practice, several interviewees pointed out that just transition remains undefined due to a lack of successful and equitable examples in Los Angeles. As a result, the term is acting as an “empty signifier” or an undefined promise without proof of truly just or equitable outcomes.

One labor organizer posited that just transition is talked about in broad strokes (as a shift from dirty energy to clean energy), while the local level policy tradeoffs and details surrounding job creation are left uncertain and undefined. This labor official elaborated:

“...the way just transition is talked about in the guise of policymakers, it’s often sort of a great word that no one ever fully defines or realizes the actual on-the-ground implications of.”

A different labor stakeholder similarly described that there hasn’t been a “solid proof of concept,” or any good examples of a just transition to demonstrate that these projects can actually create equity for workers and communities. They pointed out that the recent Community Benefits Agreement (CBA) with the electric bus manufacturing company Proterra is considered a

win for environmental and labor advocates because it creates a pipeline into sustainable and good jobs. Yet, glossed over is that this transition is not equitable in terms of employment: refinery workers are expected to experience a drastic pay cut of 30-40% from their previous jobs. This disconnect emphasizes the need to have a clear definition of just transition and equity that everyone understands. Otherwise, assumptions that these transitions will lead to some kind of sacrifice for workers may be causing skepticism for affected groups. This interviewee is quoted below describing this situation with climate policy in general, including the Green New Deal.

“I think when people hear things like Green New Deal...there is some concern about people’s ability to take care of their families and the impact that it’s going to have on your financial bottom line.”

Another labor organizer spoke about this dilemma, suggesting that many people naturally feel like just transition is a way to phase out high-paying, family-sustaining jobs. Finally, a labor official described that the vague use of just transition is turning it into an “empty phrase.”

“...it’s a phrase that people toss out, but without the resources behind it to get individuals trained into new sectors of employment. It’s just an empty phrase.”

In summary, limited examples of a just transition so far in Los Angeles may be leading the term to increasingly be understood as a vague and untested concept. In light of this, several interviewees pointed out the necessity for impacted groups to be the ones defining just transition. As one labor stakeholder said, “I would not seek to have the government define what just transition is for a community.” For a just transition to be a trusted concept, future researchers must further seek to understand how workers and communities on the frontline of the energy sector define just transition and actualize these goals.

Challenges and Strategies to Advance Just Transition in Los Angeles

1. Just Transition Planning is Excluding the Most Impacted Groups

a. Workers feel a lack of transparency in just transition planning

When asked to share challenges regarding a just transition in Los Angeles, many interviewees expressed concern that workers and frontline communities—the groups most impacted by transition—are not adequately included in the just transition vision and planning process. Fossil fuel workers emphasized a sense of exclusion from just transition conversations and most did not have a strong conceptual understanding of the term. For instance, one refinery operator states that just transition planning feels as if “it’s kind of behind walls” and that if “you are not involved in the union you are unaware.” As a result, many workers and communities feel like there has been a lack of concrete plans that consider their needs and concerns and expressed feeling out of the loop.

Many stakeholders underscored just transition planning should be worker-centered and worker-led. This was articulated as ensuring that incumbent workers—workers who are currently working in the fossil fuel industry— have a central role in defining the meaning, process, and policy creation of just transition. According to this perspective, labor, defined broadly as workers, unions, and their employers, should have a seat at the table throughout the transition process. As one labor official put it:

“For us, frankly, that worker voice is important in that equation, which includes their right to bargain.... the other aspect of that is having a voice in that transition, either individually or through their union and their community.”

For workers, one consequence of their lack of active inclusion is a sense of uncertainty regarding a specific plan or timeline for the closing of fossil fuel plants. For instance, a refinery worker expressed that the “hardest part is being uncertain about how much time we have left...

we don't know if it's 10 years 15, 20, years and that's what is scary for most of us.” Additionally the exclusion is also causing workers to feel like they are “being caught in the middle.” Without a concrete and inclusionary plan to rely upon for certainty, many workers expressed the feeling that just transition plans do not consider all of the potential negative impacts on workers and communities.

Another consequence of the limited inclusion of workers is uncertainty about what kind of jobs and industries they will transition into. Some workers were unsure of where they would fit into the green economy and green jobs. Even so, half of the interviewed refinery workers believed that they would have to transition into traditional green industries such as solar or wind energy and electric vehicle manufacturing. Meanwhile, other interviewees and labor stakeholders recognized that re-employment is not limited to renewable industries. For example, an Los Angeles County government official recognized that “we don't need fossil fuel workers to go as a direct transfer into the renewable energy sector.” This disconnect between workers' understanding of future employment prospects, labor officials and government stakeholders discussions of future industry and employment opportunities highlights the need to include workers in the just transition planning process. Moreover, many interviewees recognized there is no unanimous consensus on what green jobs mean and revealed the confusion workers have around obtaining “green jobs”. There is a need to make clear that there are multiple jobs and industries that are considered green that are looking for workers. In fact, one labor organizer mentioned that 1/12 of jobs in Los Angeles County are considered “green jobs” or green-related jobs and that there is more demand for workers than there is supply.

b. Concerns of limited inclusion of frontline groups

Several interviewees were also concerned regarding the inclusion of frontline groups—particularly women and Black, Indigenous, people of color (BIPOC), in the just transition process. An interview specifically stressed the importance of giving frontline and BIPOC communities a voice and presence in the government's planning process....“do you have any Black or Latino people on your team that even gives you a consciousness about me? Bring in people of color. If we don't ever get in the room, then we can never compete.” In other words without considering and including marginalized groups in just transition planning to a carbon free economy, they are likely to be left behind. A private sector interviewee touched on how this is already seen in the cleantech industry where women and people of color are underrepresented. Furthermore, the lack of this representation in the growing green jobs sector is underscored in the recently published *Los Angeles Cleantech Incubator Green Jobs Report* which demonstrates that only 37 percent of green jobs are held by women even though women hold 50 percent of all jobs in Los Angeles County; people of color hold 65 percent of green jobs despite comprising 75 percent of the County's working-age population (LACI, 2021). This underrepresentation of women in green industries is something many interviewees emphasized that the city should address in just transition planning. When it comes to BIPOC, one labor interviewee brought up the digital divide in Black and brown communities as a critical barrier in their access to the green economy. They noted that if the city is moving towards a more equitable, greener economy, part of the effort must address these communities' access to it. Ultimately, a workforce development interviewee summarized that as we transition to a greener economy we need to ensure that women and individuals from underserved Black, Indigenous and people of color (BIPOC) communities have a shot at upward mobilization and are meaningfully participating in the planning process.

A final challenge is the absence of community voices at the planning table after these sites get shut down. When it comes to land-planning, most interviewees underscored the need for just transition efforts to include more frontline community members voices who have been disproportionately impacted by the operations of the plants, without benefitting. Furthermore, an Los Angeles County government official also mentioned the importance and challenge of bringing Indigenous voices to the table. She explained that Indigenous groups may prefer that the land the plants were located on be given back to the original inhabitants. Yet, she also acknowledged that there is no vetted process to return land and that the land would be polluted and not safe for other uses, if extensive cleanup efforts are not done. This interviewee followed that many critical questions remain around how to involve Indigenous communities in the Los Angeles region.

Strategies to Include Impacted Groups in the Just Transition Process

a. Prioritize inclusive, multi-stakeholder planning and partnerships

Various interviewees offered strategies to ensure that just transition meaningfully includes the most impacted groups including workers, communities, and BIPOC in transition planning and policy creation. The key to achieving inclusive planning, a community organizer explained, is simple: “it’s the stakeholder engagement— by pulling labor unions, industry workers, community members, and community advocates together and having really hard conversations.”

To engage stakeholders, interviewees pointed out that community organizations and unions can act as facilitators or intermediaries. These entities can provide resources and support as well as organize and empower workers, frontline communities, and BIPOC to ensure these

groups are considered and included in a meaningful way in the planning process. A labor organizer pointed out that centering a worker-led approach to just transition “can not solely rely on working people to have all the answers.” They advised the city to rely on community based organizations (CBO) to facilitate collaboration.

An environmental justice advocate also brought up that CBO’s can help to build trust surrounding the just transition concept. They pointed out that affected groups will have different understanding of just transition. Thus, in order to include impacted groups in a meaningful way they need to have access and understanding of just transition knowledge. This will require sharing information with communities about just transition and facilitating a space to create a shared knowledge base so communities "operate from the same level of understanding” In this work, the interviewee pointed to the need for trust and relationship building work with communities in just transition planning whether through workshops or meetings.

“So there's like a real focus on building trust, and building relationships that I think is kind of a core piece of the plan. We need to do more relationships and trust building. And so that's going to come from workshops and different meetings that aren't necessarily even about a substantive outcome.”

Previous academic research has noted that Community-based organizations (CBO’s) can aid the meaningful involvement of affected and marginalized communities in the transition planning process. Farrell (2012), argues for creating meaningful participation mechanisms for people and communities affected by just transition through well-tested environmental justice tactics. These methods for cultivating meaningful participation include organizing affected community residents into bodies with decision-makers, providing training to support engagement, and creating opportunities for communities to take part in planning exercises (Farrell, 2012, p. 58). Through a study of different campaigns, Farrell offers additional steps to ensure that inclusion is meaningful and authentic. These include providing resources, technical

assistance, and translation for communities to participate in decision-making and providing opportunities for early engagement and planning local meetings within communities at convenient non-work hours (Farrell, 2012, p. 60). Scholars have noted that meaningful and authentic procedural justice offers decision-makers the possibility to restore trust with communities affected by transition by centering these groups practices and visions. As the city moves forward with just transition, these findings suggest the City of Los Angeles develop coalitional partnerships and dedicated funding for CBO's or other intermediaries such as unions to mobilize a just process.

Another identified strategy to bring affected groups into the transition planning process is through diverse government panels and advisory committees. One labor interviewee brought up how Colorado's just transition efforts demonstrate how governmental offices can prioritize inclusive planning in just transition work. In 2019, Colorado created a first-of-its-kind Just Transition Office (JTO) and advisory committee with a diverse range of stakeholders aimed at developing statewide plans and envisioning policy objectives. This Just Transition Advisory Committee consists of government officials, coal workers, affected community members, members from disproportionately impacted communities such as Indigenous groups, coal industry leaders, and workforce development professionals (Blumenthal, 2019). The interviewee highlighted how Colorado's JTO Advisory Committee advances inclusive and transparent planning by creating opportunities for many different stakeholders outside of the government to engage and participate. This exemplifies a working governance model that incorporates workers and affected communities. Ultimately, it also showcases a pathway and strategy for the City of Los Angeles to include affected voices in the just transition planning process.

Diablo Canyon is another case study that serves as an example of how a municipality such as the City of Los Angeles can prioritize inclusive planning through partnerships. The nuclear power plant in San Luis Obispo County, California faced closure in 2016. Over 600 workers worked at the plant and the looming closure elevated concerns about supporting the impacted workers and local community. A diverse coalition was formed to create a just transition plan for the workers and local community that included employers, unions, and community organizations. The coalition's collaboration and planning led to the plant staying open for another eight years, giving workers plenty of lead time, as well as retainment and redevelopment provisions followed by a 25 percent annual bonuses and severance allowance. The transition's success can be attributed to effective cooperation, proactive planning, and inclusive dialogue amongst various impacted stakeholders (Burrow and Smith, 2017). Diablo Canyon demonstrates how inclusive processes can lead to more successful and equitable outcomes. All of which the City of Los Angeles can look to and learn from in future just transition planning.

Inclusive, multi-stakeholder planning takes time and may be in conflict with bold policy action in time sensitive contexts (Ciplet and Harrison, 2020). As cities forge ambitious and rapid plans to meet emission-reduction goals, specific attention must confront the possible ways that the process of inclusion may be in tension with rapid climate goals. Our interviews were in agreement with Ciplet and Harrison (2020) that inclusive and representative processes lead to more effective, ambitious, and durable policy outcomes in the long term by promoting accountability and mobilisation, ensuring inclusive goals, and recognizing diverse value-systems (Cha et al. 2019). Therefore, as the City of Los Angeles moves forward with just transition planning, it must ensure equity through inclusive processes while remaining vigilant to the inherent limits inclusivity can hold on bold action.

b. Create a concrete plan that accounts for jobs and workers

Given workers feeling that there is limited transparency surrounding a plan for transition, several interviewees argued that the City of Los Angeles should collaborate with workers' and address their concerns in a transparent, accessible, and actionable plan with a timeline and job opportunities. Almost all interviewed workers relayed the desire for more transparent and tangible transition timelines and pathways from the government that will provide pathways to other jobs before plants close, rather than as a retroactive gesture. Additionally, a government official mentioned the need for a place-based and actionable plan as opposed to a big "pie in the sky conversation." These findings reveal the necessity for the city to collaborate with workers and provide transparency throughout the creation of an actionable re-employment plan.

One labor organizer provided a possible starting place for the city to demonstrate transparency and inclusion when it comes to addressing worker needs. They proposed the city start by creating a plan for oil drilling workers in LA. Because there are only 250, mostly non-union, oil drilling workers in the city, the interviewee argued that Los Angeles' plans for transitioning oil drilling workers could serve as a pilot project for how the city phases out other larger fossil fuel industries like refineries. Moreover, the interviewee argued that extensive existing policy and economic analysis on oil drilling, established public awareness and coalition building amongst a wide range of stakeholders, poises the oil drilling industry as "low hanging fruit" ready to be transitioned. To get there, the City of Los Angeles just needs to muster the political will to create and implement a tangible just transition plan. They recommend the city to acquire funding for pilot programs and scaffold successful initiatives while collaborating with affected workers and communities. Ultimately, they argued this will lead to more revenue and replicated programs dedicated to just transition initiatives.

“All the city has to do is shut down these oil drilling operations over the next five to 10 years and create a plan for those 250 workers. But there's a way to address that, right?”

“You create a just transition plan, identify revenue sources, create a pilot program, expand the pilot program, and generate more revenue as the success of a pilot program allows it to get replicated.”

While oil drilling offers a starting place for transparent and inclusive transition action the entire just transition process—from envisioning plans, developing policy, and implementing changes, there needs to be more meaningful inclusion, and collaboration in order to ensure that these processes are transparent and actionable and result in procedural justice for impacted communities and workers.

2. Workers in Carbon Intensive Industries Will Face Economic and Employment Challenges Due to Decarbonization

a. Fossil fuel workers will lose jobs with high wages and benefits

Labor stakeholders and the workers interviewed for this report expressed concern that a transition away from fossil fuels will be accompanied by limited job alternatives with comparable wages and benefits for incumbent workers. One workforce development official underscored that good, high paying jobs such as those in the fossil fuel sector are a rare exception rather than the standard in the present-day labor economy. In this participant’s own words:

“...the biggest challenge is the existence of high-quality jobs for folks to transition into in any industry. Pretty much every sector, every industry has, you know, job quality has been eroded over the last several decades...”

Across employment types, unionization-rates have declined, while outsourcing and independent contracting has increased, leading to deteriorating job quality and worker protections.

In comparison to many jobs, the fossil fuel industry provides workers with high wages, benefits, and pensions that are uncommon, especially for blue collar workers. The high wages and benefits of the fossil fuel industry draws in many workers, and it is common for workers to

switch into the industry. According to a refinery operator, the entry level wage for his position is \$30. Meanwhile, the top pay for the same position is \$55. Additionally, stagnant wages are uncommon for fossil fuel workers, as the potential for wage increase, bonuses and promotion occur as employees spend more time at the plant. Moreover, these wage increases and bonuses are notable because many workers have limited educational attainment. A former refinery worker states that “I'm not a very educated man. It's not too many jobs that pay a salary like this.” There are workers whose highest level of education is a high school diploma. Many labor officials, community organizers and workers recognized that today it is uncommon for people with only a high school education to earn the high wages found in the fossil fuel industry.

Many workers expressed concern that losing their good jobs and benefits would impact the livelihood of their families. A utility worker described how his company offers 401k, dental, vision and health insurance that cover all of his kids and wife and that without the help of his employer his “family wouldn't have that.” This fear was echoed among other workers who feared for the well-being of their parents, partners and/or children. Additionally, many refinery workers made it clear that without their refinery job they would not be able to afford their current lifestyle.

“If I lose my job, we're not gonna be able to pay for our house... It's a salary that provides a good life for my kids... the day that I lose my job it not just means losing my job, it means losing my livelihood and my kids livelihood, so this wouldn't have a big effect just on me.”

Thus, one challenge that arises from transitioning workers from the fossil fuel industry to greener alternatives is maintaining wages and benefits that will support the workers and their families.

b. Meeting the needs of a diverse workforce

Comprehensive transition support is also challenged by the diversity in workers needs and backgrounds. As already mentioned, workers vary in educational attainment, and skills. For

example, among the seven workers interviewed, two of them had bachelor's degrees. Those who had bachelor's degrees were less concerned for their future careers as they felt that their college education and past professional experience offered some security. Meanwhile, other workers who only had a high school education explained that they were concerned regarding their ability to compete in the job market once they lost their jobs. For instance, one refinery worker stated that "companies now require more than a high school diploma... so now you're asking people with high school diplomas to go up against people that have bachelor's [degrees]."

Worker's needs will also vary according to their age during transition. A couple of interviewees also mentioned that age is an important factor to consider during transition as workers in different stages of their life will need different support. For example, someone who is a few years from retirement will not need the same assistance as someone who is in their early 20s.

c. Fossil fuel workers are often independently contracted and not unionized

A final challenge when considering just transition for fossil fuel workers is that many employed by the fossil fuel industry are independent contractors and do not receive benefits. A former refinery contractor recognized that while he did not receive benefits, the pay attracted him and others to the industry. It is important to note that the closure of fossil fuel facilities will also take away high paying jobs for independent contractors. Additionally, as independent contractors are not represented by a union they may feel that no one is advocating for them during the just transition. Independent contractors must not be forgotten during the just transition process.

In sum, energy transitions will have specific impacts on incumbent workers in the fossil fuel sectors who have come to rely on their employment for stability. In a labor-economy where

there are relatively few existing job alternatives that would offer comparable pay and health benefits or pensions for non-college educated blue collar workers, just transition poses challenges for workers. In the following section we introduce strategies posed by interviewees which can support workers who will face challenges due to decarbonization.

Strategies to Support Workers in Carbon-Intensive Industries who Face Challenges Due to Decarbonization

a. Create and maintain high road jobs in every sector

To address the employment challenges posed by labor stakeholders and the workers interviewed for this report, several labor stakeholders advocated for what was coined as a “jobs-first perspective.” Just transition planning should focus on the creation and maintenance of high-quality, good-paying jobs in every industry and sector. One of these interviewees described:

Where are the jobs? What jobs are we talking about? if we're just saying transition, without a place, only referencing the thing that they need to transition from and not talking about what they need to transition to, it's really not a complete or a just transition at all.

In essence, without the creation of quality jobs, as the interviewee suggests, transition is incomplete.

Interviewees pointed to the “high road jobs” model as one strategy for implementing a jobs-first transition strategy. “High road jobs” is a term outlined in the recently published report “Putting California on the High Road: A Jobs and Climate Action Plan for 2030” (Zabin et al. 2020). The report defines high road jobs as:

“good, family-supporting jobs that pay a living wage; offers a stable schedule; provides benefits such as health care, retirement, paid sick days, and paid family leave; offers wage increases as skills are acquired; and complies with all workplace laws” (Zabin et. al., 2020, p. 5).

Interviewees echoed this definition. One labor official extended that high road jobs are quality jobs that provide opportunities, knowledge and accessibility to workplace rights, as well as the ability to bargain and be represented in their work. A different labor organizer emphasized that high road, good quality jobs with benefits determine whether a family thrives or struggles to get by.

The high road model was mentioned by several interviewees because it offers a strong framework to optimize climate policy outcomes while at the same time creating and maintaining high-quality jobs. The model prioritizes specific demand-side and supply-side policy interventions to ensure climate policy does not lead to a replacement of high quality jobs with low quality, low wage jobs (Zabin et al., 2020, p. 4). Supply-side refers to workers and the institutions that train them, while demand-side refers to jobs and the firms or institutions that offer them (Zabin et al., 2020). Traditional workforce development models have tended to focus *only* on supply-side mechanisms like education programs, apprenticeships, and workforce development programs; Zabin et al. (2020) argues that relying on supply-side strategies assumes that training programs aimed at preparing workers for new “green jobs” or clean energy sectors would be enough to address worker needs of the climate transition (p. 9). In reality, research shows that simply funding supply-side workforce training does not necessarily help workers reach employment. This approach neglects job creation and does not guarantee job placement (Zabin et al., 2020, p. 9).

To actually connect vulnerable workers to jobs, labor programs need to include supply-side *and* demand-side interventions, a point that aligns with interviewee’s “jobs first” priority. Demand-side interventions include policies like living wages, skill certification requirements, enforcement of all labor and employment laws, and collective bargaining that can

create high road jobs. Demand-side policies can also include hiring requirements to increase hiring of qualified workers from disadvantaged communities and creating protections to ensure that labor standards do not create barriers for these historically excluded groups.

Building the “high road” includes creating high road jobs and building a bridge to these jobs for marginalized groups that have been denied access to the labor market. This approach seeks to fill the gap of traditional models that target training at disadvantaged workers but fail to address the shortage of good jobs that is an ongoing challenge for marginalized workers. One labor interviewee summarised this dilemma clearly:

“It's not difficult to invest in workforce programs to retrain fossil fuel workers. The real question is: are these programs going to invest in removing some of the barriers that make it difficult for people of color, women, or others to get into these kinds of jobs?”

The High Road model effectively improves outcomes for workers in low-wage jobs by simultaneously building skills, responding to employer needs, and improving job quality. A focus on both job creation and access creates a legitimate path for workers of color concentrated at the bottom of the labor market. This structure has the potential to break historical patterns of discrimination and racism that have concentrated people of color and women in low-wage and health-adverse jobs (Zabin et al., 2020).

Without specifically mentioning the High Road framework, interviewees provided three additional inter-related, but distinct demand-side strategies which can be incorporated into climate measures through policy, regulatory action, or program design.

b. Workforce development

Many interviewees suggested that Los Angeles invest in workforce development programs that provide pathways to good jobs for incumbent workers who will lose their jobs as a result of decarbonization.

The California Workforce Development Board's "High Road Training Partnership" (HRTP) which is modeled from the high road model, was specifically mentioned several times as a possible workforce training model. The HRTP is still in an experimental phase. It is a \$10M dollar pilot project that has been designed to build skills for California's "High Road" employers (California Workforce Development Board, n.d.). Employers in the HRTP model become competitive in the market by increasing the quality of their product and services through investment in "human capital." They provide high wages, good benefits, and fair labor practices for their workers to attract skilled workers who in turn will perform high-quality work.

By partnering with employers, the HRTP explicitly responds to actual labor market demand by connecting participants to high-quality training programs. Interviewees pointed out that the HRTP ensures that both incumbent workers and entry-level workers can access good jobs. Such training programs can avoid current workforce models that rely on a "train and pray" model—preparing a workforce and praying they reach jobs.

According to our interviewees, the HRTP is also useful because of the partnerships it has baked into its structure. By bringing industry-employers, unions, workers, and communities to the table in partnership, The HRTP creates a "shockproof" ecosystem that can handle large economic shifts. One labor official pointed out that "in just transition, you need to bring entities together that don't have the same amount of power." Partnerships that bring unions and workers together on the local and regional levels help to fortify worker power and move a broader agenda around equity and justice. With its focus on said partnerships, the HRTP model is a valuable tool to elevate the voices and needs of multiple stakeholders throughout the transition.

However, interviewees cautioned that the HRTP is only one tool in the arc of creating better outcomes for everyone. They warned, "we don't want to create these jobs that are so great

and yet so few that we're ignoring all the...low road jobs." In addition to the H RTP, city and state governments should conduct research and analysis to understand the conditions that incentivize low-road jobs and propose policy changes to address these conditions.

Apart from the H RTP model, interviewees mentioned that more traditional workforce development programs can provide minority workers and workers in underinvested communities with the tools to overcome barriers to jobs in green industries. One interviewee, who works at a small business aimed at increasing access to green technology in under-represented groups, pointed out that Black and Brown communities in Los Angeles generally have less exposure to green infrastructure and technology. The lack of exposure makes it more difficult for them to find a place in the green economy. This interviewee pointed out that workforce training programs in the public and private sector have the potential to aid workers in identifying job qualifications such as training and education requirements.

Programs like these bridge the information gap around the green economy and help minority workers and workers in underinvested communities gain the knowledge and skills necessary to qualify for these jobs. A different workforce development interviewee argued that a central aim of the government in just transition work should be to fund programs that promote access for diverse groups to enter and succeed in the green economy. They described the Los Angeles Cleantech Incubator's "Founders Program," a small business and startup acceleration program that helps increase minorities' access to the green economy as "a prime example of a good government-funded program."

Previous case studies underscore the importance of workforce retraining programs as workers seek re-employment in unfamiliar industries. The 2016 Hazelwood Coal power plant case study in Australia provides an example of effective re-training processes for displaced

workers and community members. The rapid closure of the plant in under five months called for transition efforts to assist everyone who would be affected (Snell 2018). The government in Victoria, Australia recognized that only individuals employed by Hazelwood would have access to re-employment resources provided by the company. It took action and created accessible resources and services for the wider community. These initiatives included retraining efforts with one-on-one training, financial advising, and re-employment assistance for fossil fuel workers, supply chain workers, contractors, and their families (Snell, 2018). The Hazelwood case is significant because it demonstrates that just transition resources and workforce re-training services must not be limited to those who are directly employed by closing facilities. This case study emphasizes the importance of building a high-road employment and re-training infrastructure that can support the diverse needs of constituents affected by rapid transition.

c. Support worker unionization

Several interviewees identified another demand-side intervention that can strengthen worker support and high road jobs: enforcing labor laws to support workers who wish to unionize, as well as strengthening penalizing employers who commit poor labor practices. As many of our interviewees pointed out, the key reason that fossil fuel jobs are good, high-paying jobs is because of decades of hard-fought union organizing. One labor organizer noted that fossil fuel jobs were not always ‘good jobs,’ but rather, “became good jobs, because workers organized and made them good jobs.”

Fostering union representation and protection can empower workers through just transition in the existing labor system where there is an extreme power imbalance between workers and employers. Moreover, as pointed out by a labor organizer, building worker power through unionization can allow workers to grow a new consciousness to imagine what a better

system can look like in terms of employer responsibility and job opportunity. By creating labor laws that show a preference for fair labor practices, the government can enforce and prioritize union partnerships and in doing so, maintain high quality jobs and raise the overall standard for fair labor practices.

d. tie public investments to high road job creation

Another demand-side strategy identified by interviewees is for Los Angeles to create incentives that link public investment dollars (particularly those made in green infrastructure and technology to meet climate goals) to high road job creation requirements for workers affected by transition. The advocacy and organizing group Jobs to Move America advocates this idea under a simple premise. Billions of dollars are spent on public infrastructure in California each year to keep the state running; as agencies decide where to spend this money, they can set the conditions for how public dollars are spent. One of our labor interviewees further illustrated this concept:

“ One of the primary functions of government is it basically chooses the playing field, it chooses the merits in which things will be negotiated and the release of public resources and dollars and investments into sectors and industries.”

In other words, when the government spends public dollars in different sectors through procurement or bidding on different contracts, it can set requirements that are linked to these investments. This idea is significant in the frame of just transition. As the government invests in green infrastructure and technology to meet climate targets, it can set standards to create high road jobs and prioritize targeted hire in historically disadvantaged and excluded communities. By linking public benefits to investments, government agencies can promote economic equity and promote justice in the transition to the green economy.

Specific demand-side strategies that can link public investments to public benefits include Project labor agreements (PLAs) and community benefits agreements (CBAs). PLAs are pre-hire collective bargaining agreements unique to the construction industry that set wage and

benefit standards (Zabin et al., 2020). CBAs are legally enforceable agreements negotiated between community groups and a developer or employer. They require specified local benefits (in some cases related to job quality and hiring goals) to maximize the economic development benefits of public assets and/or investments.

Several interviewees specifically gave the example of the Community Benefits Agreement (CBA) signed with the electric bus manufacturing company Proterra in December of 2020 as a successful model for how high road standards can be incentivized through government infrastructure procurement in the just transition context. In Los Angeles County, United Steelworkers Local 675, worked with Jobs to Move America to organize Proterra to negotiate a Community Benefits Agreement. The agreement legally committed the employer to hiring 50% of their workforce from marginalized communities, and opened the way to manufacturing jobs for displaced refinery workers. In effect, the CBA created pathways to high-paying, unionized jobs for communities facing significant barriers to employment, including people of color, veterans, and formerly incarcerated individuals. Through the case of Proterra, interviewees summarized that creating community benefit standards is important because it compels employers to adopt good practices to compete for the investment of local, regional, and statewide governments. Without this encouragement, employers might avoid the adoption of costly “high road” practices and opt for the low road.

It is important to note that while community benefits agreements have many advantages, there are some disadvantages as well. The benefits of these agreements are typically only felt in communities where development is occurring, instead of offering a solution to address the more

structural needs of marginalized communities as a whole. Raffol (2012) recognizes that there are other ways of promoting equitable urban development:

“city governments could reallocate public funds directly to economic development and social programs in low-income communities and promote, through official policy, the retention and creation of good jobs, living wages, investment in neighborhood infrastructure and schools, as well as basic social supports” (Raffol, 2012, p. 37).

In other words, Raffol acknowledges that cities could support communities directly instead of relying on private actors. Yet, as there is a preference for free markets and competition for public expenditure, community benefit agreements can continue to provide a useful tool for Los Angeles.

Still, mechanisms that promise high road standards will carry political benefits in the transition process. For unions and workers who have been resistant to just transition because the term signals job and benefit loss, these models can offer hope that investments in green energy will lead to high-quality jobs and other benefits for workers.

As one labor official put it:

“...It's not just good policy, it's good politics, quite honestly, if you want to get organized labor, and particularly the building trades on your side, and supportive of “clean energy” then you should be making those the highest quality jobs...And then you kind of build a real constituency that sees it as something that they want to fight for.”

When state agencies and local governments make explicit what public benefits, especially worker benefits, will come from the transition to a green economy, Labor will be less resistant to these changes because they will know in legal terms that their workers will be protected.

e. Implement comprehensive worker relief and protections

In addition to training workers and securing high road employment, interviewees discussed the need for a more holistic transition assistance program to support workers

throughout the shifts in the energy economy. Several interviewees pointed out the constant and inevitable nature of labor transition as evidenced by the rapid layoffs and unemployment spikes during the Covid-19 pandemic. This recent global employment crisis unveiled the inability of the labor system to respond to rapid economic changes. Interviewees offered insights about possible strategies to better support workers in a just transition context.

f. Needs-based and strength-based re-employment strategies

Strength-based re-employment strategies take into account the knowledge, skills, and abilities of workers in one particular sector and look for applicability in other industries or regions. Several labor officials highlighted that the workforce re-training and apprenticeship system must find ways to treat displaced workers with dignity and respect according to their specific strengths and needs. In the just transition context, this will look like investing in sectors that match the skills or abilities of existing workers to jobs that fit them (such as matching workers in the building trades to infrastructure update projects).

On the other hand, strength-based re-employment strategies must address the strengths of workers whose jobs are phasing out, like steelworkers in refineries who may not have direct transferable skills. In these cases, strategists must seek opportunities for supporting economic development, or training and education programs that align for workers existing skills. One of our labor interviewees, who worked on statewide re-employment during Covid-19, gave the example of bakers who were laid off during the pandemic; the bakers were transferred to work in aerospace jobs because they already knew key skills related to batch processing and properties of heat.

Currently, there is no streamlined mechanism for former fossil fuel workers to identify new employment based on their skills. Instead, the onus to find new employment falls on the

worker. A former refinery worker emphasized the challenge of identifying where he could work based on his existing skills as he entered into a re-training program:

“The only problem is because this is a new industry...it was kind of figuring out where I can go. I'm not a data-type guy. I'm not really good at computers...So that part of it is something that may be challenging to guys coming out of the fossil fuel industry because they're nuts and bolts and hammers, and, working with their hands, for the most part, most of the time.”

This worker emphasized how important it is for former fossil fuel workers to be able to apply the skills that they've acquired over these years in clean industries. Institutionalizing a more cohesive and systematic strength-based approach to re-employment and re-training can ensure that workers can find jobs that suit their interests and experience. The ability to do so under quickly changing economic conditions is vital for a just transition.

g. Comprehensive safety nets to support workers across the continuum of life

The current social safety nets available to support workers when they become unemployed are insufficient. Thus, another strategy proposed by two interviewees was the idea of implementing a safety net relief structure that would provide tiered support for workers on a continuum—or according to their specific situational needs. Across the board, our interviewees highlighted that workers live multi-issue lives and are at different stages in their careers. Therefore, workers will need different levels of support and relief if they lose their jobs.

A worker in their 20s that loses their job, for instance, will have different needs than a worker who is middle-aged or nearing retirement. The former may need retraining or education support, while the latter may require retirement pensions and other aid. Putting together a support infrastructure that offers different services depending on a worker's needs will be necessary to ensure that their dignities and livelihoods are upheld through the ongoing challenges of a transition to a new economy.

Interviewees discussed what should be included in a comprehensive safety net for workers: income assistance, paid retraining, health insurance, pension benefits, and severance packages. A workforce development interviewee suggested the creation of a ‘superfund’ similar to the one envisioned by Mazzocchi in the 1970s. In it, funds would be dedicated to supporting workers who are transitioning out of whatever specific plant or industry is closing down.

Another labor organizer stressed that workers are diverse and may require different support for a variety of needs. They emphasized the need to formulate worker support:

“We need to reframe what support looks like to workers...Lots of times, people self-select themselves out of a training opportunity or a job opportunity, because it doesn't pay and their utility bill is past due, or they have a childcare issue. Spelling out upfront that all these resources are available is definitely one way to do that.”

Worker support must address a wider range of barriers to employment. Supportive services must extend beyond solely funding, education, and training, to other wraparound services such as childcare. One labor organizer emphasized that trauma-informed care is a practice that may be particularly important for workers coming out of incarceration or emancipated from the foster care system. Said workers may require additional care to be successful in workforce development and training in order to eventually reach employment.

Historically, displaced industrial workers have been able to access only limited transition assistance through a program called the Trade Assistance Act or (TAA), which was implemented during the deindustrialization and globalization of trade industries. Through this program, workers have received wage and health insurance, and retraining and reallocation support if they can trace their unemployment to trade or globalization (Snell, 2018) (Pollin and Callaci, 2018). One labor interviewee mentioned that the TAA offers a possible starting place for a policy framework that addresses worker needs on a continuum. However, various scholars have pointed

out the shortfalls of the program, including failure to provide sustained support for every worker, restrictive qualifications, and insufficient funding (Snell, 2018) (Pollin and Callaci, 2018). Only workers above the age of 50 qualify for wage insurance and this insurance only covers 50 percent of the difference of previous wages (Snell, 2018).

Moreover, research has shown that many TAA recipients have only been able to secure successful re-employment in low-wage industries that do not provide comparable wages and benefits to previous employment (Pollin and Callaci, 2018). Clearly, a stronger system is necessary to provide adequate support for a broad range of workers in various industries, and at different places in their lives. For the TAA or similar programs to be effective in the just transition context, they must be expanded to include unemployment from the climate-related policy, as well as enhanced program funding, eligibility, and benefits.

3. Energy Transition Will Negatively Affect Surrounding Communities Due to a Loss of Economic Activity, Local Employment, and Land Revitalization Costs

a. *Economic dependency on fossil fuel facilities*

Almost all interviewees mentioned that the closure of fossil fuel facilities will negatively impact surrounding communities. For example, one worker stated that the closure of their refinery could cause a negative “domino effect” in their community triggered by an exodus of economic activity. Two workers mentioned potentially moving out of California if they lose their jobs to search for fossil fuel jobs elsewhere. Oil and gas facilities bolster the local economy through the direct and indirect employment. Many interviewees highlighted the fact that businesses surrounding refineries rely on the economic activity provided by the refinery workers many of whom live within a 5-10 minute radius.

The economic impact of closing fossil fuel facilities will be worse in communities with low economic diversification. An organizer discussed how communities that are economically reliant on fossil fuels will decline alongside fossil fuel plant closures. They went on to say that if communities, “are solely dependent upon oil and gas, we should start thinking proactively about how we plan ahead, how we create a systemic support system.” Another labor organizer echoed this point and stressed the importance of making “sure that we can phase out fossil fuel production and extraction and make sure to support the communities that are dependent on those revenues.” Diversifying the economies of fossil fuel dependent communities must occur at the pace required for a successful transition.

b. Polluted and abandoned land

_____ In addition to creating economic hardship, closing fossil fuel facilities poses land-use challenges. As facilities shut down after decades of polluting in environmental justice communities, Los Angeles will ultimately have to grapple with acres of abandoned and toxic land. Many low income communities and low income communities of color in Los Angeles suffer from the health impacts of living near polluting fossil fuel facilities. This is true even after facilities close; the Exide battery plant in Vernon left behind lead-poisoned soil and abandoned and orphaned oil and gas wells continue to emit toxins if left undealt with.

Currently, there is no land redevelopment policy that sets standards and regulations for land use after fossil fuels sites inevitably close. One interviewee pointed out that if the land is permitted to be handed off to large developers, they will likely come in and erect large shopping centers or apartment highrises. The motivation of these developers will be to reap profits not to better the community. The resulting developments, if left to the market devices, will only gentrify the neighborhoods and create displacement.

Another challenge posed by the closing of plants is ensuring that companies do not abandon the clean-up effort and leave taxpayers to pay for it. For instance, one environmental justice advocate mentioned that there must be precautionary measures put in place to guarantee that fossil fuel companies aid in the clean-up process, as some may avoid it by declaring bankruptcy. They stated that the problem is multi-layered. Lacking enforcement for companies to clean up their idle or abandoned wells puts the cost of clean up efforts in question. If a company declares bankruptcy, that burden will fall on taxpayers. The interviewee states:

“If you're an industry who is not incentivized to take responsibility for the remediation of your polluting industry and instead can leave your infrastructure for decades, you're causing significant methane emissions, a driving force of greenhouse gas, causing significant volatile organic compound and other toxic emissions that we know cause asthma and cancer and preterm births”

This concern has been played out in reality. One labor official mentioned that protections against companies declaring bankruptcies were not accounted for in Colorado's just transition plan away from coal and stressed that it must be accounted for in future transitions across the country. Specifically in Los Angeles, there have also been examples of companies declaring bankruptcies around land remediation. In 2020 Exide Technologies in Vernon declared bankruptcy and left lead-infected land that the local community and taxpayer dollars have to pay for. Although millions of dollars have been allocated towards cleaning the polluted land, environmental justice advocates argue this is still not enough as hundreds of families still live with lead polluted soil in their backyard several years later. An environmental justice stakeholder says of Exide that it is “the exact example of what's going to happen to the oil and gas industry... it's the model. It's not an accident. It's the playbook.” With this, our interviews revealed policies in Los Angeles must be in place to prevent companies from neglecting their responsibilities and leaving communities with dirty, polluted land.

Strategies to Create Just Outcomes for Affected Communities:

a. Economic diversification

Interviewees across a variety of sectors introduced methods for ensuring equity and resilience for communities in the just transition process. Many highlighted the importance of building economic growth and economic diversification in the neighborhoods surrounding fossil fuel facilities. According to one labor interviewee, a local economy that has multiple forms of economic growth can be resilient to changes brought about during economic transitions. When talking about just transition from the community perspective, one labor official elaborated about the importance of economic diversification:

“...If you are economically diverse and...have a broad base of industry, your community is going to be significantly more resilient; your tax base is going to be stable or improving, your schools are going to be well funded, your roads and infrastructure would be well maintained...”.

Ensuring that surrounding communities do not have a mono-reliance on fossil fuels before transitioning is one way to pre-emptively protect communities. The same interviewee underscored that a critical step in just transition will be for local governments to begin analyzing the full scope of the economic impact from transition:

“...evaluating that economic impact is really fundamentally important. And planning for how we actually compensate for it, how do we absorb that loss as a community”

This interviewee continued by insisting that evaluating the economic impact on the local community must go beyond the direct losses associated with losing a fossil fuel facility industry (jobs and direct revenues). Rather, a deeper analysis and understanding needs to start taking place that looks at the ‘indirect losses’ in the supply chain. The interviewee gave the example of the phaseout of coal in Colorado and the train industry that was an indirect loss as a result of the phaseout. Whereas trains previously transported coal from the coal mines to the power plants, the phaseout of coal took a hit on the train industry. Ultimately, this analysis of losses must measure ‘induced effects’ that will occur from transition.

Induced effects in the community occur as a result of decreased revenue and business in the local economy. Some of these include decreased revenue and business in the local economy, and affect local shops, schools, and other public services. Previous case studies, such as the Huntley Coal plant in Tonawanda, New York, exemplify how diverse coalitions can lead to inclusive economic diversification programs. The Huntley Coal plant was a power plant that shut down in 2015 because it was no longer economically competitive against natural gas (Cha et al, 2019). The closure led to significant loss of tax revenue and employment opportunities. In response, the Huntley Alliance, a diverse coalition that included labor, unions, environmental groups, and more, was formed (Cha et al, 2019). The Huntley alliance released their “Growing the Town’s Economic Future” which outlines plans to diversify the local economy by providing sustainable manufacturing and trade jobs in the area, building workforce and career pipelines for younger workers, and redeveloping the town’s waterfront district to attract tourists and new residents (Cha et al, 2019). Its focus on investing in other industries to fill the void left by the power plant shut down was crucial in keeping economic stimulation within the town. All of their efforts serve as a model for not only community-driven organizing but also for the inclusive planning of workforce transition programs.

Another example of economic diversification in a just transition plan is Black Mesa. The closing of the Black Mesa coal mine on Hopi and Navajo reservations and the Mohave Generating Station (MGS) in Laughlin, Nevada exemplify case studies where successful economic diversification efforts mitigated economic losses (Cha et al., 2019). The MGS and the associated coal mining accounted for a significant amount of revenue for both the Hopi and Navajo tribes, about one third for the Hopi and 10-13% of the Navajo Nation’s general fund. (Cha et al., 2019). A just transition coalition was created to work on preventing the economic harm resulting from the closures. Specifically, there was a focus on diversifying the economy through the promotion of local traditional industries and practices such as

wool production and farming (Cha et al., 2019). The coalition's work included allocating funding to support projects based in renewable energy that would benefit Hopi and Navajo communities. This funding came from the sale of sulfur dioxide SO₂ allowances that generated a revolving fund of \$4.5 million annually (Cha et al., 2019). The focus on growing the renewable energy industry, with a focus on solar in this community that was once highly reliant on the fossil fuel industry, was a successful way of utilizing economic diversification as a tool in a just transition. However, it is critical to note that economic diversification in this case was possible from a dedicated funded stream provided by sulfur dioxide allowances. Efforts to successfully diversify the economy and promote economic growth in Los Angeles will require significant funding sources dedicated to this purpose.

The aforementioned case studies had economic diversification projects that were catered to the communities needs based on their specific economic profiles. But as Los Angeles County already has highly diversified economies it is in a vastly different position compared to areas that are more economically dependent on the fossil fuel industry. For example, some counties such as Kern County, have large communities built off of the jobs and tax revenue the industry provides. Notably, one in seven workers in Kern are either employed or tied to the fossil fuel industry (Canon, 2021). These statistics do not hold true in Los Angeles. The city has many industries to fall back on once fossil fuel sites are closed. Los Angeles County has the nation's largest manufacturing base, the nation's largest international trade industry, it boasts a strong tourism sector and educational services sector (Los Angeles at a glance, nd). Los Angeles has a high variety of blue, white collar jobs and now more recently green collar jobs. As many of the other industries mentioned, such as the trade industry, are heavily reliant on fossil fuels, green collar jobs become a more important part of the Los Angeles economy as they provide avenues of economic diversification while also being in line with climate goals.

b. Community-led land redevelopment and revitalization

Several environmental advocates pointed to another important way to promote equity for communities: community-led land reclamation and revitalization projects addressing abandoned land left behind by oil and gas companies. This strategy fits into a common priority identified by many interviewees that local leadership is “fundamental in order for a transition to be successful.” Community-driven projects that reflect the needs and wants of their communities will allow for changes driven from within communities so that they have agency over planning. One community organizer highlighted this opportunity, explaining that Los Angeles has:

“50 acres of contaminated land, under-utilized in the community. The community wants affordable housing, the community wants cultural centers, the community wants co-ops, they want open space, they want parks.”

Through community revitalization projects, the land that is left behind as a vestige of the fossil fuel industry can be re-used to benefit the communities harmed most by the negative impacts of that industry. This process can also create local jobs through clean-up, and infrastructure projects which can offer mechanisms to diversify the economy.

One environmental justice advocate mentioned the Clean Up Green Up (CUGU) campaign in Los Angeles as a potential program aligned with community-led land revitalization transition efforts. Clean Up Green Up is a grassroots effort started in 2006 that joins community groups from three heavily polluted areas in LA: Boyle Heights, Pacoima, and Wilmington (Los Angeles: Clean Up Green Up, 2018). These groups formed the Los Angeles Collaborative for Environmental Health and Justice and developed the CUGU initiative to promote goals that positively transform their communities. They sought to minimize environmental racism, help businesses “clean up and green up their neighborhoods” while retaining and creating more jobs in the area (Los Angeles: Clean

Up Green Up, 2018). As a result of this collaboratives' organizing efforts, Mayor Eric Garcetti signed the 2016 CUGU ordinance into law (Los Angeles: Clean Up Green Up, 2018).

Community engagement was a crucial part of the Clean Up Green Up work by the Los Angeles Collaborative for Environmental Health and Justice. This engagement shaped community-visioned policy. It included meaningful collaboration that incorporated community voices through community based research, and a multitude of community meetings and workshops that allowed residents of these areas to envision what a cleaner and healthier neighborhood looked like to them. The scale of the engagement was vast, and more than 200 community members provided testimonies at public hearings in June 2015 (Los Angeles: Clean Up Green Up, 2018).

The CUGU campaign also included collaboration with local businesses in promoting the *Guide to Green* business resource directory and LADWP incentives for these local businesses to clean up their production. Many businesses that signed up qualified for full energy audits that allowed them to explore ways to reduce the amount of energy consumed, without affecting the energy output.

Although CUGU did not relate specifically to land revitalization in the just transition context, it stands as a powerful example of community led efforts to essentially reshape land-use in communities and move away from high levels of pollution to more sustainable, and healthier alternatives. As Los Angeles envisions land-revitalization strategies in the just transition context, it should consider ways of aligning these efforts with existing CUGU projects, or at minimum take lessons from them. Its community-based visionary process targets toxic sites and envisions a greener, cleaner community.

4. There is a Lack of Dedicated Funding and Cohesive Government Leadership to Ensure Successful Just Transition Projects

The final challenge a number of interviewees addressed is the lack of funding and leadership for just transition efforts which will undoubtedly compromise the success of the city's efforts.

a. No dedicated funding stream

Labor representatives, community organizers and government officials all recognized that plans for a just transition are not viable if a sustainable source of funding is not identified and acquired by the City of Los Angeles. An interviewee that represents the environmental justice voice stated, "first and foremost, we need revenue because without revenue, we can have a lot of models, but we won't have any programs." In other words, the city can not start scaffolding just transition programs and initiatives until funding is secured. This challenge of theory versus practice can only be prevented if a sustainable source of funding is found for this project. Additionally, it is currently unclear who will pay for just transition programs and remediation—the city, county, state, country, or the fossil fuel industry? Organizers pointed to the challenges of lobbying to the past federal administration for funding but are more hopeful that the Biden administration will advocate more fervently for climate regulations and funding.

b. Lack of cohesive government leadership and planning

Another challenge many interviews identified is the lack of cohesive planning and leadership between agencies at the Los Angeles City level as well as between the local, state, and federal government. For example, a labor representative shared a sentiment that just transition cannot be a silo-ed project in certain areas of government and that there needs to be more collaboration and cohesion across all levels and departments in Los Angeles. In addition to lack

of political cohesion, environmental justice voices believe: “The main challenge in creating a just transition is lack of political leadership and vision on the part of the decision makers and elected officials.” Community organization interviewees explained that there is a need for more political leaders who support and understand just transition and lobby for its funding.

Transition Strategies to Create Funding and build Cohesive Governance

a. Create cohesion between all levels of government

Our interviews pointed to Colorado as an example of interagency collaboration in just transition efforts. In Colorado, just transition efforts are informed and administered by the Office of Just Transition and Just Transition Advisory Committee. Members of the Just Transition Advisory Committee (JTAC) represent workers, communities as well as government officials from the Colorado Senate, House of Representatives, Department of Local Affairs, Department of Labor and Employment, Energy Office and office of Economic Development and International Trade. The diverse membership of the JTAC is important as it ensures that the Just Transition Action Plan promotes collaboration between different governmental agencies and communities. We recommend that Los Angeles create similar interagency initiatives to promote collaboration in the planning of just transition efforts there can also be more cohesion in efforts.

Additionally, our interviewees were not alone in asserting the need for more collaborative and intra-agency work. The *Putting California on a High Road* Report relays that interagency collaboration ensures policies are implemented consistently across jurisdictions and agencies. The report points to a solution of using an intermediary organization to streamline cross department collaboration. It notes that while some government agencies will have limited experience with working on just transition initiatives, an intermediary could provide guidance on

implementing transition strategies such as the use of “community workforce agreements and inclusive procurement” (Zabin et al., 2020, p. 27). The current example they point to is the state’s use of the California Workforce Development Board (CWDB) “to advise other state agencies seeking to make high-road labor and workforce interventions through climate policies and programs” (Zabin et. al, 2020, p. 545). Indeed, Los Angeles City can establish and implement intermediary offices or task forces to increase cohesive governmental collaboration on just transition efforts.

b. Lobby state and federal governments

Multiple interviewees underscored the opportunity and necessity of securing funding from various levels of government above the city. One interviewee who is doing just transition work in Colorado discussed that part of the funding for just transition must be provided by the federal government to ensure that programs across states are well funded: “a federal response is more appropriate and the federal government has considerably more money.” As an example, he pointed to the work of transitioning coal communities in Colorado that received funding through the Obama administration’s Power Plus Initiative to fund economic development, and believes the government could once again provide funding to transitioning communities. A few interviewees discussed that the new Biden administration could provide funding and resources for just transition. In accordance, the LACI Green Jobs report highlights that the Biden-Harris Administration brings more opportunities to foster green jobs and economic recovery with over \$400 billion earmarked in their Clean Energy Revolution and Environmental Justice Plan (LACI, 2021). Moving forwards, labor organizers suggest that Los Angeles lobby and work with the Biden administration to secure funding and partnerships for a greener, more equitable economy.

Additionally, interviewees recognized that Los Angeles could receive funding from the state government. Indeed, there are multiple examples where state governments have provided funding to just transition efforts. The Huntley Alliance organized and lobbied successfully for funding for their transition plan, getting \$30 million (later increased to \$47 million in 2017) in funding from the state legislature (Cha et al., 2019). Another example of the state government providing aid to just transition efforts is in the case of Diablo Canyon. The coalition spearheading the Diablo Canyon transition efforts created a \$350 million Joint Proposal plan to invest in greener energy, and to protect and support affected workers and communities. When the California Public Utilities Commission only approved \$222.6 million of the necessary funding, the coalition went to the state legislature (Cha et al., 2019). The state legislature would later pass SB 1090, a legislation that would require the CPUC to fully fund the Joint Proposal (Cha et al., 2019). Thus, the Huntley Coal plant and Diablo Canyon cases provide examples of how Los Angeles City and the Los Angeles County task force could lobby the California government and receive funding for multiple just transition efforts such as reemployment services and remediation.

c. Refinance plants

One interview encouraged the city to secure just transition funding through the securitization or refinancing of fossil fuel plants. They referenced the state of Colorado's Senate Bill 19-236 which allows electric utility companies to refinance their power plants with different interest rates. This process generates money that could provide a funding stream for just transition initiatives such as a severance package for workers at a shut down plant. While it has not yet been utilized in Colorado, the interviewee stressed that it is a useful tool and something the state will look into using for Just Transition initiatives in the future. However, they did mention that plant refinancing has been utilized in New Mexico.

In 2019 New Mexico passed the Energy Transition Act. The policy “[authorized] the use of securitized, or ratepayer-backed, bonds” as a way to help the state transition from a coal reliant economy to a greener economy (Lehr and O’Byle, 2020, p. 14). The securitized bonds reduce the cost of closing coal plants and provides money that can be redirected to efforts that remediate the environment grid or provide transition support for communities and workers (Lehr and O’Byle, 2020, p. 3). In 2020, New Mexico approved the use of securitization bonds to retire the San Juan Generation Station. A portion of the funding created through the reinvestment of the plant will be allocated to a community assistance fund and worker assistance fund (Lehr and O’Byle, 2020, p. 17). These funds will help fund economic diversification projects and worker assistance resources and services such as certified apprenticeship programs and grants (Lehr and O’Byle, 2020, p. 17.) It is clear that securitization or the refinancing of fossil fuel facilities is a potential funding source for just transition efforts in Los Angeles.

5. Potential Industries for Just Transition in the Los Angeles Region

As Los Angeles transitions away from fossil fuel dependency, questions arise regarding potential industries that can offer re-employment for displaced workers. The answer will not be one-size-fits-all due to the variety of educational backgrounds and skills of the workers in the fossil fuel industry. Interviewees identified multiple potential sectors to prioritize in job creation: renewable energy, oil well remediation, and public transit and related infrastructure. We examined these sectors in more detail below.

a. Renewable Energy Sectors

The most frequent sector offered by interviewees as a potential job creator for displaced fossil fuel workers was renewable energy. One environmental justice organizer pointed out that “there are some decent examples of fossil fuel extraction workers going and doing a fair amount

of offshore wind...” and that they are able to “use the same geology and engineering experiences for retraining.” Renewable sectors such as solar are also growing in response to the Los Angeles plan to phase-out fossil fuel dependency and prioritize a shift to energy sectors that produce clean and renewable energy. When asked about the future of the workforce, one worker responded:

“right now, there's a lot of installing of things, installing of charging stations, and that's big, we're talking about and not only just with charging, but solar panels, solar systems, things like that, you know, we're kind of going into LED lights now.”

Many stakeholders view the renewable energy sector as a large part of the solution for transitioning workers and there is strong evidence supporting this claim. According to the Bureau of Labor Statistics, solar photovoltaic installation is the third fastest growing occupation in the US. It has a projected increase in employment from 2019 to 2029 of 51 percent, while the average growth rate for all occupations is 4 percent. (*Solar Photovoltaic Installers*, n.d.) Notably, solar energy is also a tool used by Los Angeles to meet its climate goals in the city’s Green New Deal, with milestones that include installing 15 MW of solar at the Port, and the installation of 3 MW of solar at City facilities by 2025 (Garcetti, 2019). Although this industry is growing, it is important to note that maintenance for solar installation requires fewer hours of labor than fossil fuel power generation because it requires less maintenance.

There is also a significant concern that renewable energy jobs such as solar panel installation, charging station installation, and green technology manufacturing do not come close to matching the wages and benefits received by the majority of Los Angeles fossil fuel workers. If this sector is to play a significant role in the transition, it will be necessary to make these new high quality, high paying jobs in order for them to be comparable for transitioning workers.

b. Oil well Remediation

Another sector frequently mentioned in interviews was oil well remediation. An environmental justice organizer interviewee stressed the importance of addressing of oil well remediation in Los Angeles:

“we have thousands and thousands of wells that are not cleaned up and closed. All of those wells need fossil fuel workers with their existing fossil fuel industry brilliance [to] ... close and clean up those wells. That is a transition for those people.”

These orphaned wells are currently a hazard to surrounding communities as they are off-gassing methane and toxic emissions. The same organizer said that, across the county, these sites are “currently emitting climate change pollution [and] health pollution.” These idle and orphaned wells could potentially create hundreds to even thousands of jobs that could take decades for transitioned workers to plug and clean. Another benefit of oil well remediation is that the majority of wells are still owned by the companies that operated them, and as one interviewee pointed out, “oil and gas operators are responsible to pay for those costs.” There is currently no existing policy that enforces this properly and as a result we are left with the dozens of orphaned and abandoned wells that harm the surrounding communities today.

In September of 2020, the Los Angeles County Board of Supervisors unanimously voted to enact a *Just Transition Task Force* that would focus on the plugging and remediation of idle and orphaned oil wells. According to CalGEM data, there are 1,046 active wells, 637 idle wells, and 2,731 abandoned wells across the unincorporated areas of Los Angeles County (Embrey, 2020). The remediation of these wells is a two step process, the first step being the plugging and the clean up; and the second step is the remediation of the land. This second step is critical because it is important that this land is used to properly benefit the community as well as create community jobs in the process. It is important that the remediation is not left solely to market forces, as having private developers take control of the situation does not guarantee community

benefit. This point is exemplified with the history of the Grove shopping center remediation. In 2001, private developers built the center on top of a cluster of 42 plugged wells. While the Grove has turned out to be a great business investment, the development caused nearby housing prices to skyrocket and pushed many people out of their homes over time (Chen & Pinto, 2020).

Developments such as these do not do enough to benefit the communities around them and can cause gentrification and displacement in lower income areas. The oil sites need to be remediated in a way that repays the communities that they have been hurting for decades. To protect this land from the profit motivations of private developers, it is vital to have a dedicated plan for funding all phases of well remediation, ideally by holding the operators accountable and having them clean-up and remediate the land themselves.

The table below illustrates that the cost of plugging wells in California far exceeds the available bonds. This problem is exacerbated in Los Angeles as the report shows that plugging costs in urban areas such as Los Angeles is approximately three times more expensive than the national average (Boomhower et al., 2018). This means that existing gaps between the cost of plugging the wells and available funds is likely to be even greater in Los Angeles.

Table 8: Plugging Costs vs. Available Bonds, California 2018

Category	# Of Wells	Plugging Cost (M)	Available Bonds (M)	Potential Net Liability (M)
Likely Orphan Wells	2,565	\$308	\$10	\$298
Wells at High Risk of Becoming Orphan Wells	2,975	\$246	\$16	\$230
Other Idle and Marginal Wells	69,425	\$5,287	\$53	\$5,234
Higher-Producing Wells	31,772	\$3,385	\$27	\$3,358
Total	106,687	\$9,226	\$107	\$9,120

(Boomhower et al., 2018)

It is also worth noting that several interviewees noted that plugging oil wells was generally not considered to be a good job as it requires close proximity to toxic chemicals. Many workers we interviewed mentioned the undesirable working conditions of oil well remediation. In addition, many oil well remediation jobs are non-union private contractors. It will be important to ensure that future remediation workers receive fair wages and benefits so that this sector can provide a transition pathway for fossil fuel workers. Focusing on oil well remediation could be a potential way for Los Angeles to pilot a just transition employment program. For example, many oil well workers have experience with this kind of work that is transferable to this work. However, they constitute a small fraction of the total oil and gas workforce in Los Angeles. It is unclear whether or not this sector will be capable of transitioning a significant portion, let alone a majority, of the current fossil fuel workforce.

c. Infrastructure and Transportation

Interviewee's focused on infrastructure and transportation as potential industries for transition given the need for these types of investments in California and Los Angeles. One labor organizer spoke of the gravity of Los Angeles' transportation situation: "public transit right now is sort of in an existential crisis." Transit expansion, including the manufacturing of electric buses and improvements of the Los Angeles Metro, will lead to many job opportunities for transitioning workers. However, multiple interviewees stated that funding for projects need to come from the federal or state government, and one labor organizer in particular said that they saw opportunity for this investment from the Biden administration:

“especially from this new presidential administration around how equity can be a bigger consideration for how some kind of federal stimulus or some kind of public transit bailout you could be designed, especially as we're dealing with, like the fallout of the COVID pandemic.”

President Biden's recently announced Build Back Better infrastructure plan, could play a pivotal role in Los Angeles' transition to a carbon neutral future. The plan proposes a renewed investment in the future of skilled labor jobs to fix highways, rebuild bridges, upgrade ports, airports and transit systems, deliver clean drinking water, create a renewed electric grid, and high-speed broadband to all Americans. Part of this multi trillion dollar plan also includes the creation of a network for charging electric vehicles and rebuilding transit systems (Biden, 2021).

Although stakeholders mentioned the need for more funding in transit, Los Angeles has begun to revive public transit at the city and county level through the passage of Measure M in 2016. As a result, transportation and logistics is one of Los Angeles's highest growth sector industries (High Growth Business Sectors, n.d.). Highway and project expansion projects in the Los Angeles area will be funded using the \$860 million annually generated by Measure M, and with these new projects will come new demand for workers. It is estimated that through these projects 778,000 new jobs will be generated (Drummond, 2018).

Jobs in the transportation sector include but are not limited to: public transit workers, truck drivers, school bus drivers, special needs transportation, and postal service workers. The average salary among transportation services employees are typically between \$30,000 and \$60,000 (Brown et al. 2020). Existing workforce development programs for transportation include the Workforce Initiative Now-Los Angeles (WIN-LA) which was developed by Metro towards promoting career pathways in the transportation industry. Importantly, most of these positions in this sector are not reliant on a college education which makes it a more accessible job route for those who have not attended a higher education institution.

City and county government officials brought up that a government-funded infrastructure project in Los Angeles can create an environment that is attractive to new industry. One county official stated:

“One of the things that people are looking at is: can Los Angeles become the new Detroit... like can we become a hub for clean vehicles? That'd be a fantastic industry to bring here and a good opportunity for a lot of younger workers.”

The influx of new industries such as electric vehicle manufacturing and innovation would create many permanent jobs for dislocated fossil fuel workers to transition into. In a discussion about the meaning of just transition, one labor organizer said they believe:

“if you want to create a regional just transition plan that addresses the port's, the refineries, the natural gas power plants, oil drilling, the freeways, the combustion, the traffic, the vehicles and goods movement, that obviously is a significant undertaking. So it includes all that, transitioning all those jobs, to clean jobs, equitable union clean jobs and stuff like that, that's the work.”

The breadth of potential industries that our interviewees offered underscored that there is no shortage of potential sectors for fossil fuel workers in Los Angeles to transition into— from the logistics industry and oil well remediation to biomedical manufacturing and infrastructure projects. However, it becomes clear that it is not just fossil fuels workers that will be affected, it is the whole supply chain of the fossil fuel industry as well, which could potentially impact upwards of 150,000 jobs across the state. Because of this, these sectors are only a part of the solution. The rest lies in creating a worker and community centered transition that focuses on matching worker skills, to high paying, high road jobs in all sectors and increasing access to these jobs for disadvantaged workers. One of the interviewees critiqued transitions history of having an over-emphasized focus on sector solutions:

“part of why just transition hasn't worked in the past is because people try to [say that] coding is a new thing, let's get people into coding or, you know there's going to be a takeoff of solar. Instead, we want to start with where the jobs are at, and where they're good jobs, and then figure out the pathways up and into those jobs”

The emphasis must be put on creating good jobs with pathways for mobility. It is crucial to find jobs for transitioning workers in industries that are stable and ensure that new jobs are high paying and high quality.

Table 8:

Summary of Key Findings:
<ul style="list-style-type: none"> → Just Transition understandings varied but converged to provide a general definition of the principle, process, and practice of just transition in Los Angeles. In principle, just transition was offered as a transformative path to a more equitable economy and society. In process, just transition includes a broad scope of who and what will be affected and included in just transition planning. In practice, many interviewees (particularly workers and labor stakeholders) noted that a lack of equitable examples of transition might be emptying the just transition concept into an undefined or empty concept. → Just transition vision and planning in Los Angeles has failed to meaningfully include frontline workers, communities, and BIPOC—the groups most impacted by transition. These groups felt like there have been a lack of concrete plans that consider their needs. Interviews relayed the importance of prioritizing inclusive, multi-stakeholder planning and partnerships and creating a concrete and transparent plan that accounts for jobs and workers in the Los Angeles region. → Existing transition plans and labor policies are inadequate to address the needs of impacted workers and communities in the present-day labor landscape characterized by limited investment in human capital and worker protection. Future transition policies must invest in high road job creation in every sector and create comprehensive worker relief through a series of short term and long term safety net policies. → Transition will have a place-based effect for small businesses and communities with an economic dependence on the fossil fuels economy; transition plans must therefore prioritize community resiliency through economic diversification and land-remediation that is inclusive in planning and rooted in the needs of disproportionately impacted communities → There is a lack of funding and cohesion in transition planning at the local and regional levels in California. Cohesion among agencies and programs in the city and state can streamline funding and align multiple efforts into a more comprehensive and strategic transition plan.

→ Not all fossil fuel workers will be re-employed in renewable energy jobs. Transition efforts should move away from “industry solutions” in green sectors and prioritize creative and adaptive solutions in many different industries as well as bolstering job quality across sectors; In Los Angeles, however, oil well remediation was posed as a useful pilot for transition.

Principles for a Just Transition

From the key findings above, we created a set of principles for a just transition. These principles highlight a summary of our findings and provide guiding tenets which we believe can ensure a successful and equitable just transition that centers the needs of workers and communities. These key principles for a successful and equitable just transition are:

- (a) Frontline groups—including workers, and communities threatened or burdened by the fossil fuel economy—must be meaningfully included as leaders in the just transition planning process and given agency in the visioning and implementation of plans that impact their futures.
- (b) Employment strategies cannot rely on incremental or retroactive support. While transition protections need to start with immediate protections for workers and communities affected by climate policies, long-term economic justice must be created for all through interventions that create high quality, high road jobs in every employment sector and provide opportunities for groups that have been excluded from access to economic security and fair labor protections in the past.
- (c) Just transition must have a plan for land to ensure that the cost of phasing out fossil fuels is not borne by frontline workers and communities who are already affected by environmental and economic injustice.

→ (d) Just transition should take a wide scope to address the interconnected challenges in the Los Angeles region. Interagency cohesion and collaboration with local, state, and federal actors is necessary to ensure the implementation of interconnected policies that work in tandem towards justice for all.

Policy Recommendations

Guided by our principles for just transition, this final section includes specific and actionable policy recommendations that we recommend the City of Los Angeles prioritize to advance a successful and equitable just transition. These recommendations are informed primarily through the insights of our diverse stakeholders who are closest to the complex challenges and opportunities as they evolve in Los Angeles. We split the following recommendations into sections based on our four principles for just transition above.

Prioritize the inclusion of frontline groups in just transition process and planning

- ◆ Launch a just transition education campaign that is accessible to workers and communities both in language and platform. We recommend a website format that informs and provides updates for ongoing just transition developments that include transparent information on plant closures, safety net resources, reemployment programs, etc.
- ◆ Build upon a just transition education campaign by developing a dedicated outreach program, aimed at engaging and including affected stakeholders. Provide outreach funding and resources to unions and community organizations to help execute the campaign.
- ◆ Create a just transition taskforce similar to the one utilized in the State of Colorado that includes representatives from all affected groups including workers, community members, and BIPOC populations.

- ◆ Provide opportunities for BIPOC and women to enter the green economy through targeted workforce development programs to generate greater racial, gender, and economic justice.

Ensure immediate and long-term economic immediate and long-term economic support through high road job creation and holistic safety nets

a. Immediate support

- ◆ Create a rapid response effort to address job displacement and mass layoff situations in the region including rapid and recurring aid to workers, communities, and local businesses affected by transition.
- ◆ Strengthen worker re-employment processes by implementing a skill-based workforce development or re-training program that gives priority to displaced fossil fuel workers and members of affected communities.
- ◆ Develop a dedicated and comprehensive employment adjustment act that protects displaced workers through guaranteed and sustained safety nets tailored to meet the needs of a diverse workforce; These safety nets should include guaranteed comparable employment, wage replacement, health insurance, childcare, trauma-informed mental health services, and pension and retirement support.

b. Long term support

- ◆ Enforce labor laws to support workers who wish to form unions and bargain collectively with their employers.
- ◆ Incentivize public bidding processes that prioritize high road job creation and include the targeted hiring of displaced workers and underserved communities who have been historically excluded from the workforce.

- ◆ Ensure that investments into green technology and public infrastructure including electric vehicle manufacturing reach disadvantaged communities to dismantle the digital divide.
- ◆ Provide a dedicated grant program for workers who wish to return to education to earn a degree or certification to stay competitive in the workforce.

Create a community-developed, equitable plan for land use

- ◆ Develop a pilot program for just transition centered around phasing out the oil drilling industry and utilize it as a model for future just transitions in the Los Angeles area.
- ◆ Require a procedurally just, community-centered visioning project prior to any re-development to center the needs and desires of affected communities and Indigenous groups.
- ◆ Center Indigenous perspectives on land use and ensure free and prior informed consent (Appendix C) when dealing with land use projects that may affect tribal lands and resources.
- ◆ Promote economic diversification by seeding new sustainable industry growth in underserved communities and historically fossil-fuel dependent communities; ensure that marginalized groups that have been excluded from the benefits of the fossil fuel industry have access to these economic opportunities and are protected against any displacement from new investments.
- ◆ Enact enforceable legislation that holds fossil fuel companies accountable for all past and future clean up costs associated with their projects in the county; this

legislation should include specific guidelines for cleanup that promote community-led participatory revitalization.

Develop political will through interagency cohesion across governmental departments on just transition projects

- ◆ Partner with the California state government and join Colorado in efforts to lobby the federal government for funding for just transition efforts.
- ◆ Identify and develop dedicated funding streams for just transition programs in Los Angeles that provide sustained resources for projects in the long term.
- ◆ Advocate for the creation of legislation around the use of securitization similar to Colorado's SB19-236 and New Mexico's Energy Transition Act to help finance just transition efforts in the phase out of fossil fuel facilities.
- ◆ Create a dedicated office of just transition within the Department of the Environment that is dedicated to creating cohesion across all city and task force efforts to forward interconnected economic, environmental, and socially just outcomes.
- ◆ Lobby the state and federal government to create a public works project that will create jobs for transitioning workers and simultaneously address some of the county's infrastructure and transportation issues.

Conclusion

This project aimed to define the meaning and scope of just transition in Los Angeles. Its ultimate goal was to advance a strategic vision for a successful and equitable just transition for workers and communities. Through interviews, relevant case studies, and existing quantitative and qualitative research, this report attempted to develop a comprehensive picture of the current stakes and understandings of just transition in Los Angeles. The research led to the following findings: (a) though just transition is seen as a transformative vision for Los Angeles, it remains undefined in practice; (b) more inclusivity in the planning process for affected groups is necessary; (c) legitimate worker aid requires the creation of high quality jobs and substantial economic safety nets; (d) fostering community resilience must be supported by the creation of new industries in affected communities, as well as promoting community-led land-revitalization; (e) stronger and more cohesive government aid is necessary for successful and just results.

This research project is a first attempt to assess a wide range of perspectives surrounding just transition in Los Angeles. While this report added depth to the present just transition context, it also uncovered many challenges and remaining questions regarding the meaning and strategies for a just transition in a dynamic and contested environment. Previous case studies demonstrate that enacting a successful just transition will depend upon building common visions, strategies, and guiding principles. Going forward, questions remain including: (a) what is a shared definition of just transition that can accomplish immediate considerations and a long-term strategic vision? (b) how can we build cohesion and alliance at the local, statewide, and nationwide level? To create a more holistic understanding, we advocate that future research address these questions and build upon this project to address a wider breadth of perspectives as well as a more detailed economic analysis.

A significant limitation of this project is the missing perspective of the Gabrieleño (also known as Kizh, Gabrielino, Tongva), Chumash, and Fernandeseños native populations that are Indigenous to Los Angeles County. The City of Los Angeles holds the second largest number of Native Americans in the United States, totaling around 54,236 people (Native American Indian Commission). All future research projects should more directly include the experiences and perspectives of these indigenous groups to prioritize a deeper understanding into the ways the City of Los Angeles can address their needs and visions in transition efforts. We encourage future research and just transition strategies to utilize the right of Free, Prior, Informed Consent (FPIC) in collaboration with indigenous tribes, found in Appendix C. Future research must also comprehensively address the needs of frontline environmental justice communities who have borne the negative impacts of the fossil fuel economy.

Finally, future quantitative research must develop more comprehensive economic modeling and analysis regarding the specific locations of fossil fuel plants and drilling activity that will be impacted by transition, the timeline for this process, and the likely economic impact of this phaseout. This modeling is imperative so that communities and workers can be proactively included in these conversations and access transparent information.

Throughout our research process, the Covid-19 pandemic has exacerbated already unequal and unjust economic and racial disparities, and has shifted the way we live and work in our communities. This moment offers an inflection point. History has shown that rebuilding from difficult periods provides the opportunity to envision a better world. As we move on from the pandemic's fundamental impact in virtually every aspect of society, just transition offers a path to a better economy, society, and future. As was made clear by our interviewees, what is most needed now is legislative action that addresses short term relief and long term solutions to the

energy transition. At the close of this project, we urge Los Angeles to integrate the strategies offered in this report and to take action to develop a more sustainable and equitable society for all Angelenos.

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Appendices

Appendix A: Interview Questions

Questions for Oil and Gas Workers:

1. Where do you work?
2. What is your role at work? What are your responsibilities and skills needed within that role?
3. How long have you been in this position?
4. Do you have plans to retire in the coming years? If so, roughly how soon?
5. Do you live in the community where you work? If not, where do you live?
 - i. Do you know other workers who live in the same general area as you? If so, what part of the greater Los Angeles area?
6. Do you think your place of work will be shut down in the future?
7. What does being an oil and gas industry worker mean to you?
8. What would happen to the community and local economy if your facility were to close?
9. How did you come to work at your facility? Were you recruited?
10. What are the benefits you receive from your job, like healthcare, childcare services, retirement benefits, or stipends for higher education or training programs? Are these benefits important to you?
11. Are you content with the pay at your current job?
12. This research focuses on what a just transition can look like for workers in Los Angeles's oil and gas industries. Just Transition efforts seek to secure workers' rights and livelihoods, particularly in the fossil fuel industry, when economies shift to sustainable production. What would a Just Transition look like to you?

13. What are challenges you foresee with a Just Transition in the Los Angeles region?
14. What are opportunities you foresee with a Just Transition in the Los Angeles region?
15. If the plant where you work closes, what kind of support would you like? What do you need to transition from this job, like level of pay, childcare services, paid retraining or education programs, etc.? What concerns would you have?
16. Is there anyone else they recommend speaking with or any programs you should be aware of with regards to just transition?

Questions for Union Leaders:

1. What kind of workers and industry do you represent?
2. What type of work do you do at your union?
3. How are workers typically recruited for their roles in your field of work? Is there a typical career path for the workers that are a part of your union?
4. Of the following, which are most important to your workers? a) pay b) health benefits c) career growth opportunities d) job security e) safety. Why are they most important?
5. What would happen to the community and local economy if the facilities your workers are at closed? Is the possibility of a transition to more sustainable industries an active conversation among union staff and workers?
6. This research focuses on what a just transition can look like for workers in Los Angeles's oil and gas industries. Just Transition efforts seek to secure workers' rights and livelihoods, particularly in the fossil fuel industry, when economies shift to sustainable production. What does a Just Transition look like for the member of your union?
7. What are challenges you foresee with a Just Transition for natural gas, oil, and refinery workers?

8. What are opportunities you foresee with a Just Transition in the Los Angeles region? Are there any industries that you recognize as opportunities for workers to more easily transition to?
9. If your union members were laid off, what kind of support would they need? What do they need to transition from this job?
10. How do you see the union being involved in the just transition process for natural gas, oil, and refinery workers?
11. Is there anyone else they recommend speaking with or any programs you should be aware of with regards to just transition?

Questions for Just Transition Community Organizing Leaders:

1. What type of work does your organization do?
2. What groups of people do you represent?
3. Why is a just transition important for Los Angeles?
4. What must a just transition in Los Angeles include?
5. What are challenges you foresee with a Just Transition in Los Angeles?
6. What are opportunities you foresee with a Just Transition in the Los Angeles region?
7. How can a Just Transition include stakeholders in the process?
8. Is there anyone else they recommend speaking with or any programs you should be aware of with regards to just transition?

Questions for Los Angeles Government Officials:

1. What is your position and what type of work do you? Which policies/ programs is your agency currently involved in or launching around just transition?
2. Why is a Just Transition important for Los Angeles?

3. What must a Just Transition in Los Angeles include?
4. What does a Just Transition look like for fossil fuel workers in Los Angeles?
5. What are challenges you foresee with a Just Transition in Los Angeles?
6. What are opportunities you foresee with a Just Transition in Los Angeles?
7. What role do unions, fossil fuel workers, and community organizations play in the city's process of implementing a Just Transition?
8. Is there anyone else they recommend speaking with or any programs you should be aware of with regards to just transition?

Questions for Academic Researchers:

1. What is your position and what type of work do you? What research have you done surrounding just transition?
2. Why is a Just Transition important?
3. What must a Just Transition include?
4. What does a Just Transition look like for fossil fuel workers in Los Angeles?
5. What are challenges you foresee with a Just Transition in Los Angeles?
6. What are opportunities you foresee with a Just Transition in Los Angeles?
7. What role do unions, fossil fuel workers, and community organizations play in the city's process of implementing a Just Transition?
8. Is there anyone else they recommend speaking with or any programs you should be aware of with regards to just transition?

Appendix B: GIS Methodology

These data had been previously geocoded and was ready to be used in mapping software. To prepare this data set for our purposes we uploaded it to SPSS to select only Los Angeles County census tracts. We then had to re-rank the CES 3.0 scores so that they were equally distributed in the county as the average score was much higher than the average score in California. After re-ranking the scores we uploaded the data set to ArcMaps where we joined it to a Los Angeles County census tract shapefile. We then scaled the scores from green for a lower score to red for a higher score. We then uploaded a shapefile containing all fossil fuel facilities of interest with the variable name, (Fossil_Fuel_All_1_23_2019_v1), including gas and coal power plants that are currently in operation, and produce more than 1 megawatt of energy on an annual basis sourced from the California Department of Energy. This list was added to a list of California greenhouse gas facilities sourced from the California Air Resources Board, but excluding energy plants as they were already accounted for. From the California Air Resources Board greenhouse gas facilities the, Fossil_Fuel_All_1_23_2019_v1, included Crude Petroleum and Natural Gas Extraction, Industrial Gas Manufacturing, Natural Gas Distribution, Natural Gas Liquid Extraction, Petroleum Bulk Stations and Terminals, Petroleum Refineries, Pipeline Transportation of Crude Oil, and Pipeline Transportation of Natural Gas.

After deciding that we wanted to answer our question by defining the most disadvantaged communities as the top 10 percent of scores we went to ArcMaps where we first ran an analysis to determine which tracts were in the top 10 percent of scores. We then ran a spatial analysis to determine which facilities were located in these top ten percent of tracts resulting in nine facilities. The goal of a large portion of our qualitative research will be to further research these facilities through a process of interviews. This information about communities and workers can

inform the City of Los Angeles from an equity standpoint—presenting an understanding of which populations will be most affected by the closing of the oil and gas industries, and thus, which communities and workers will need specific attention and care through the economic transition to renewable alternatives.

Appendix C: Free, Prior, Informed Consent

One potential avenue for collaborating with indigenous tribes that we encourage researchers to take is to look in the future is Free, Prior, Informed Consent (FPIC). The Indigenous Environment Network describes free, prior and informed consent as:

“providing Indigenous Peoples with adequate and accessible information and whereby consensus and consent is determined in accordance with Indigenous Peoples’ customary laws and practices and free from any external manipulation or coercion. This includes participation in setting the terms and conditions addressing the economic, societal, cultural, spiritual and environmental and climate impacts and reserving the right to say no (Indigenous Environmental Network, 2019, p. 4).”

This right can be applied to any situation, but as the City of Los Angeles moves forward with just transition planning it provides a framework to ensure equitable planning procedures with local indigenous tribes. Currently Los Angeles County is home to three Native American Indian tribes recognized by the State of California that predate the establishment of California Missions: the Ventureño Band of Mission Indians, Gabrieleño Band of Mission Indians, and Fernandeño Band of Mission Indians. Cha et. al attest to this policy in their just transition listening project report and recommend governments to “subject all energy and infrastructure projects to Free, Prior, and Informed Consent when they involve Indigenous lands (Cha et al., 2021, p. 5).” As the City of Los Angeles plans for just transition and subsequent land remediation of plant closures, the use of FPIC with indigenous groups in the planning process offers an inclusive step forward.