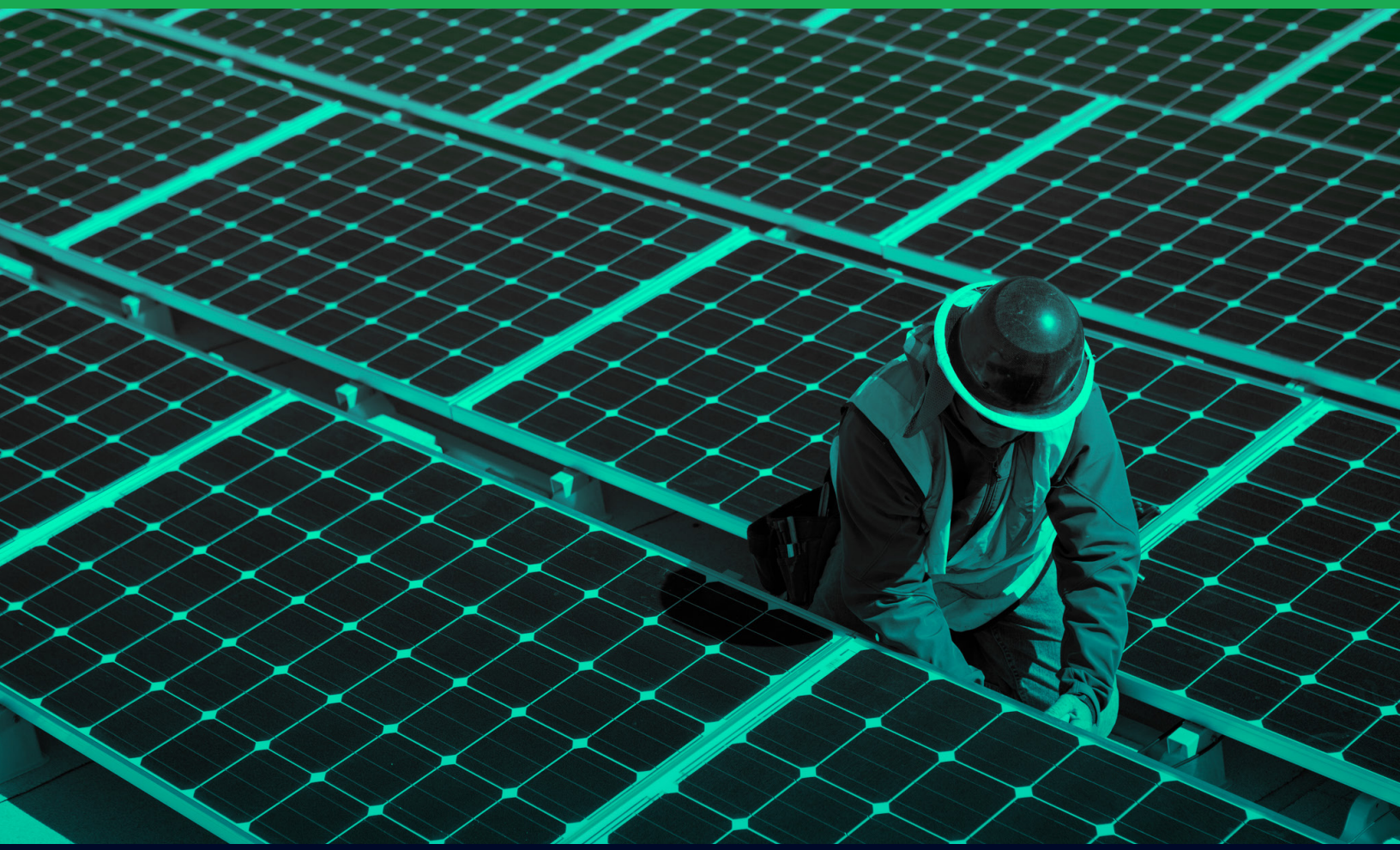

August 2024

Power and People

Working Conditions in the Texas Clean Energy Transition

ILR Climate Jobs Institute

TEXAS CLIMATE JOBS PROJECT

ORGANIZED POWER IN NUMBERS

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Authors

Texas Climate Jobs Project
Texas Climate Jobs Project is a coalition of labor unions across the state working to ensure the voices of working people are at the center of Texas's transition toward a clean energy economy. Through innovative research and policy development; popular education; workforce development; community engagement; advocacy; and strategic coalition building and partnerships, Texas Climate Jobs Project is engaging in collective action to protect the climate and create good local jobs.

Cornell University School of Industrial and Labor Relations, Climate Jobs Institute
The Climate Jobs Institute (CJI) at Cornell University's ILR School is guiding New York's and the nation's transition to a strong, equitable, and resilient clean energy economy by pursuing four aims: to tackle the climate crisis; to create high-quality jobs; confront race and gender inequality; and to build a diverse, inclusive workforce. Through cutting-edge policy studies, deep relationships with on-the-ground partners, and innovative training and education programs, CJI provides information that policymakers, the labor and environmental movements, industry leaders, and others need to navigate this historic transition to a zero-carbon economy.

Organized Power in Numbers
Organized Power in Numbers is a multiracial and multigenerational movement dedicated and committed to creating an economy and society that respects all working people, their families and their communities. Organized Power in Numbers works at the intersection of worker power and modern digital and data-driven organizing to help movements reach millions of people, invite them into movement, and level up campaigns that win for workers, their families, and their communities.

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Disclaimer: This study was done to the best of abilities and current available knowledge. Authors take full responsibility for this study and are open to continued conversations about how to improve and extend this study to better understand working conditions in the clean energy industry. The findings presented in this report are a first-cut, based on limited data which supports the preliminary conclusions. This report should be followed by additional studies examining working conditions across the clean energy industry.

Acknowledgments

Thank you to the labor organizations, research institutions, nonprofits and funders who came together to design and create this groundbreaking investigative study, which is the first ever survey to examine working conditions for solar and wind construction and clean energy manufacturing workers in Texas.

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Executive Summary

Texas has emerged as a national leader in wind production and solar energy installation, with renewable energy accounting for 86% of the state's planned energy generation through 2030. This growth is in part due to unprecedented funding provided by historic federal climate investments such as the Inflation Reduction Act (IRA) and the Infrastructure Investment and Jobs Act (IIJA).

As a result of these investments, new construction and supply chain jobs will continue to be created at unprecedented levels as the Texas clean energy transition accelerates. This study shows that many workers across sectors in Texas face dangerous and even deadly working conditions; lack access to benefits like health insurance, workers' compensation, and retirement plans such as a pension or 401(k); and have experienced pervasive income, wealth, race, and gender inequality. This field study examines the conditions of 1,224 individuals working in utility-scale solar, wind and clean energy manufacturing, to evaluate the wages, benefits, and working conditions at the heart of the country's clean energy transition in Texas.

Summary of Methodology

Researchers for this report utilized a range of methods to successfully survey 1,224 individuals working in Texas clean energy industries. Although the exact size of the clean energy workforce in the United States is currently being investigated, this study included over an estimated 20% of Texas Solar Installers, 3% of Texas Onshore Wind Workers, and 1% of Texas Electrical Assemblers in clean energy manufacturing. First, publicly and commercially available datasets were used to conduct phone banking and digital outreach to survey verified clean energy workers. Second, researchers and field outreach staff physically visited more than two dozen solar, wind, and manufacturing sites in regions across Texas to interview individuals working on these projects. Third, researchers conducted in-depth interviews with workers at select sites, using this qualitative data to triangulate and further clarify quantitative data.

Summary of Key Findings

Findings Across Sectors

- One in four respondents across all sectors reported that they saw or experienced a work-related injury.
- About one in fifteen, or 6.4%, of solar and wind workers reported witnessing a fatality on the job site.
- 43% of respondents across all sectors reported experiencing a heat-related illness. Surveyed workers who had access to breaks or water were less likely to report that they had experienced a heat-related illness.
- Racial inequality in pay or access to benefits was prevalent in all sectors.
- Less than 0.7% of solar and wind workers surveyed identified as apprentices, despite recent federal rules requiring developers to utilize higher numbers of registered apprentices when pursuing certain tax credits.

Solar Construction Worker Trends

- Black solar workers reported making $8,500 a year less when compared to wage data reported by surveyed workers of other races.
- Solar workers that submitted surveys in Spanish reported being paid $5,900 less than workers that submitted surveys in English.
- Female workers reported being paid $2,700 less a year than male workers.
- The median hourly pay reported by non-union college-educated solar workers was consistently less than both the union electrician and laborer wage rate, and was less than the wage rate for first-year union laborer apprentices in the majority of the state.
- Nearly half (47%) of solar workers surveyed reported experiencing a heat-related illness, and 21% reported they did not receive rest breaks.
- Workers that submitted surveys in English were 20% more likely to report that they received breaks.
- 70% of respondents reported that they did not receive workers' compensation insurance coverage, 71% reported that they did not have retirement benefits, 47% reported that they did not receive health insurance, and 6% reported that they did not receive overtime pay.
- White workers were 83% more likely to report that they received retirement benefits and were 43% more likely to report that they received health insurance than Black and Hispanic workers.

Onshore Wind Construction Worker Trends

- Non-management wind workers were paid a median of $25 an hour, three dollars per hour lower than BLS reports for wind turbine technicians.
- A majority of workers (60%) experienced a heat-related illness while working on a Texas onshore wind project.
- Nearly half (45%) of wind construction workers reported not having health insurance coverage.
- White workers were more than twice as likely to report receiving workers' compensation insurance coverage compared to Black and Hispanic survey respondents.

Clean Energy Manufacturing Worker Trends

- Respondents that submitted surveys in Spanish reported making $4,700 a year less when compared to wage data reported by workers that submitted surveys in English.
- Black workers reported making $2,800 less when compared to the wages reported by workers of other races.
- Nearly one-in-six (13%) respondents reported that their employer had failed to pay them, or refused to pay them, for hours they had worked.
- Two-in-five manufacturing workers surveyed (40%) reported that they did not have access to any benefits including life insurance, retirement contributions, paid sick leave, or workers' compensation insurance coverage.
- Respondents that submitted surveys in Spanish were 81% less likely to report having access to paid sick leave.
- Respondents that submitted surveys in Spanish were 80% more likely to report being injured on the job than workers that submitted surveys in English.

Summary of Recommendations

Policymakers at the federal, state, and local levels have an opportunity, and obligation, to ensure the creation of safe, high-quality construction and manufacturing jobs in these rapidly-growing Texas industries. This report's recommendations include:

- Prioritizing and requiring binding and enforceable community workforce agreements and card check neutrality agreements to give workers a voice in the state's clean energy transition, including a just transition to high-quality jobs for existing oil and gas workers;
- Strengthening existing tax credit rules to require prior notice for bonus tax credits as well as registered apprenticeship utilization;
- Expediting a federal heat safety standard;
- Requiring employers to provide workers' compensation insurance coverage;
- Repealing HB 2127 to stop state interference in local lawmaking, which results in fewer workplace protectionsThe Texas Renewable Energy Ecosystem

Texas Energy Jobs & Climate Change

Climate Change and Texas Energy Production

Working Texans are continually navigating the destructive impacts of climate change. These challenges can take the form of extreme weather, rising temperatures, and an unstable electricity grid. The burning of fossil fuels and subsequent release of carbon emissions contributes to this crisis. According to the United Nations Intergovernmental Panel on Climate Change (IPCC), global warming must remain below 1.5 degrees celsius above pre-industrial levels to avoid the worst impacts of climate change.[1] Warming in excess of this, even by half a degree, results in up to 190 million deaths by 2100 globally.[2] To stay under 1.5 degrees celsius, governments worldwide will need to cut nearly half of CO2 emissions by 2030 and reach net-zero by 2050.[3]

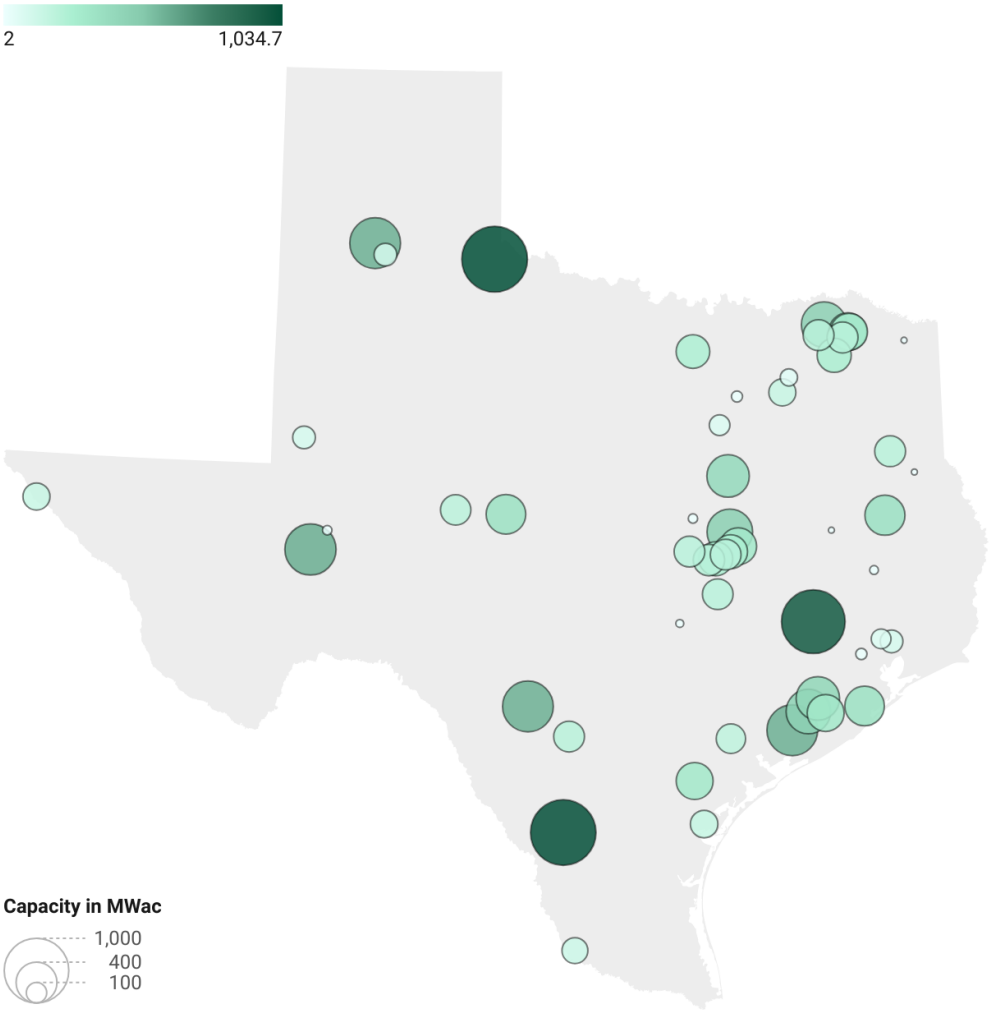
Texas plays a critical role in cutting CO2 emissions. The state is a historic energy leader in the United States and produced 42% of the nation's oil and 30% of its natural gas in October of 2023.[4,5,6] In 2019, energy use and production in Texas - driven largely from fossil fuel combustion and oil & gas production - contributed over 85% of the state's gross carbon dioxide equivalent (CO2e) emissions.[7] In order to reduce these emissions, Texas must rapidly scale its generation of clean power – including solar and wind, in addition to other key decarbonization strategies such as utilizing electrification and green hydrogen for energy-intensive sectors such as manufacturing.

Texas is swiftly becoming a leader in renewable energy generation. For example, Texas currently produces more wind energy than any other state. In fact, the state provided more than one quarter of the United States' total wind energy in 2022.[8] These same patterns of emerging dominance arise when looking at Texas' solar industry: in 2023, Texas installed 11.7 gigawatts (GW) of solar power, nearly enough energy to power 1.4 million homes for an entire year.[9],[10] This substantial uptick in solar energy generation in Texas meant that in 2023, the state actually superseded solar installed in California, the historic leader of solar installation in the United States, by 5.3 GW.[11,12] Most of this growth was through utility-scale solar projects, which have thousands of solar panels on each site.[13] In total, Texas now has 41.6 GW of wind capacity and 32 GW of solar, making it the nation's top producer of wind energy and second-largest producer of solar, only behind California.[14,15,16]

Solar and Wind Energy Projection

Map of Utility-Scale Solar Projects Under Construction

Megawatts of utility-scale solar power currently under construction in Texas as of June 2024.

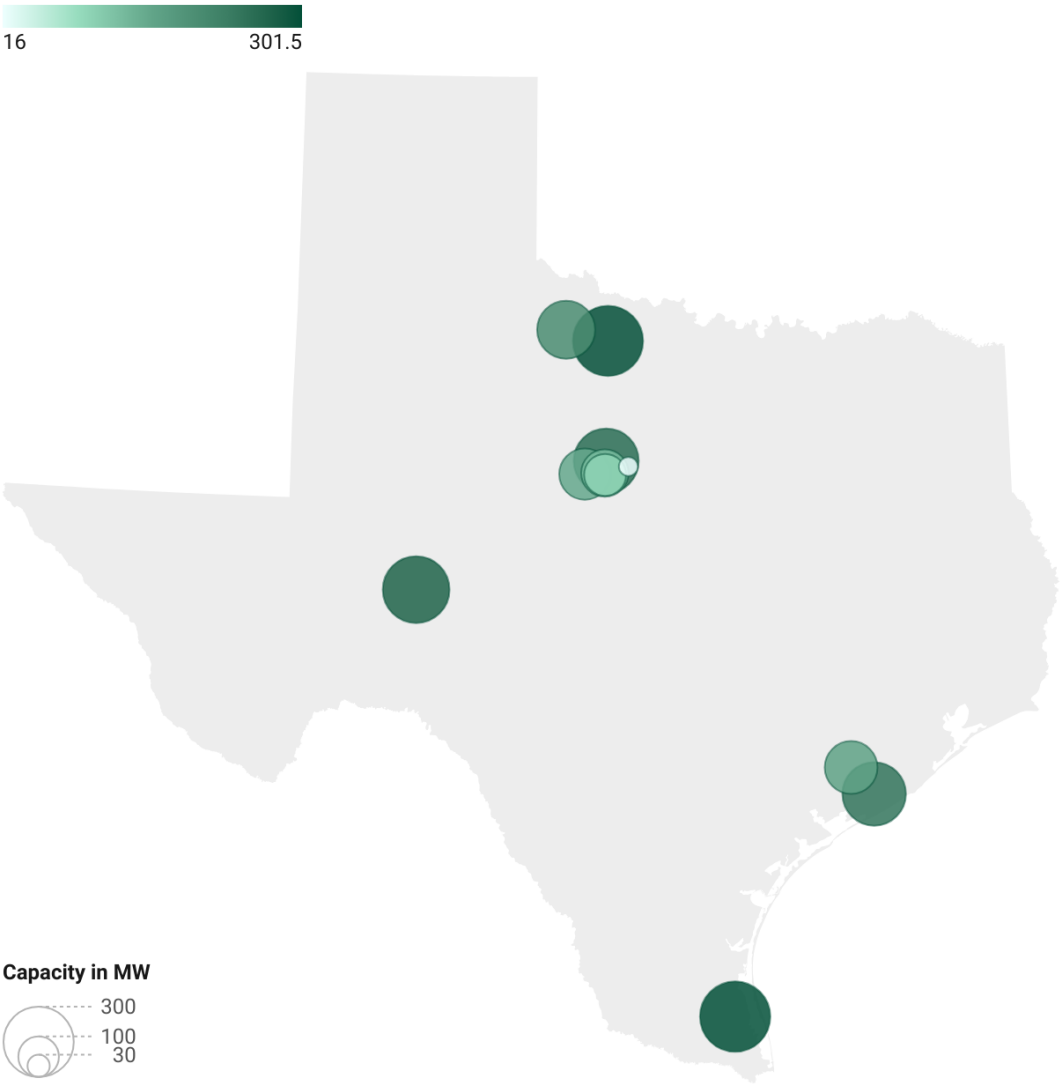


134 MW of direct-current solar power in the dataset was converted to 100 MW of alternating-current power using an inverter loading ratio of 1.34 sourced from https://atb.nrel.gov/electricity/2023/utility-scale_pv (NREL, 2023).

Map: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: S&P Capital IQ Pro Office Screener: Industry & Asset Data (S&P Global Market Intelligence, 2024). • Created with Datawrapper

Map of Utility-Scale Wind Projects Under Construction

Megawatts of wind power currently under construction in Texas as of June 2024.

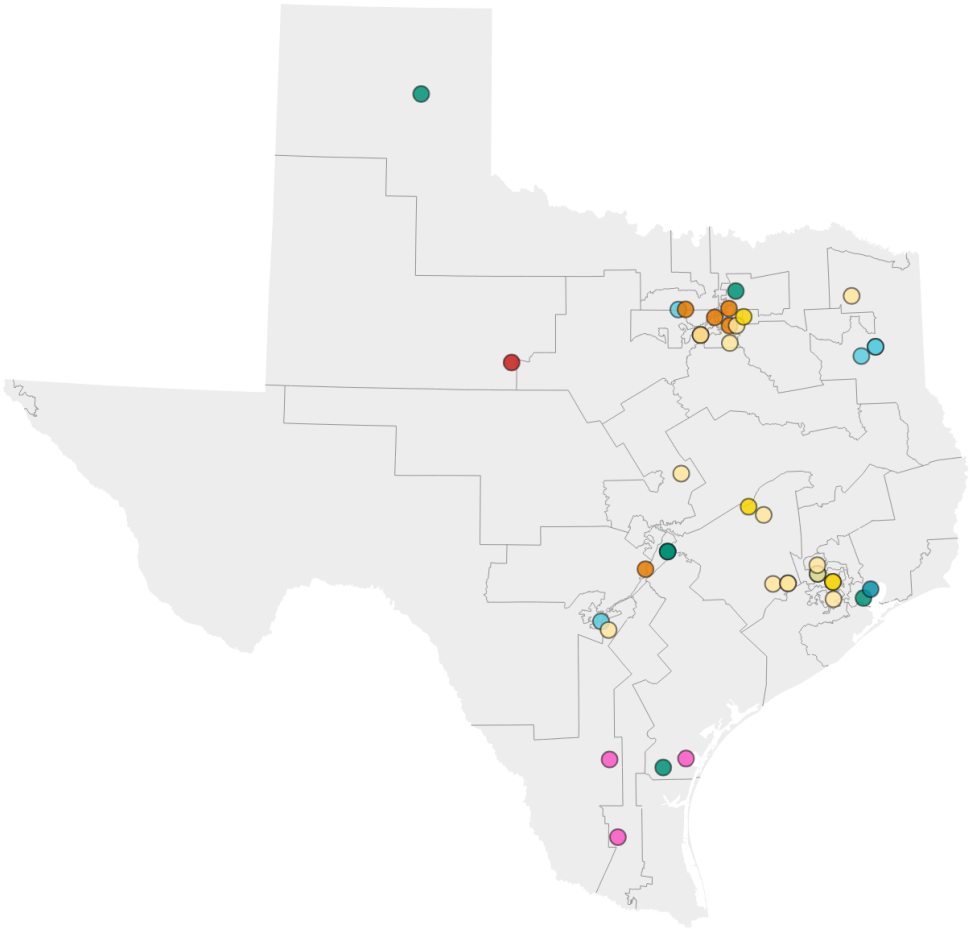


Map: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: S&P Capital IQ Pro Office Screener: Industry & Asset Data (S&P Global Market Intelligence, 2024). • Created with Datawrapper

Clean Energy Manufacturing Investment Announcements

Since August 2022

Batteries Electric Vehicles Heat Pumps & Clean HVAC Hydrogen: Electrolyzers & Fuel Cells
Land-Based Wind Nuclear Offshore Wind Solar



Includes only manufacturing facility investment announcements as of the signing of the Inflation Reduction Act in August 2022.

Map: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: United States Department of Energy. (Updated July 25, 2024). *Building America's Clean Energy Future Dataset.* Data not guaranteed to be error free. Methodology and Data available at https://www.energy.gov/invest • Created with Datawrapper

While Texas has made significant strides to generate clean energy and reduce carbon emissions, the Lone Star state must still do considerably more to meet its clean energy needs. To achieve net emission reductions that align with IPCC targets, Texas could rely on wind and solar power for nearly 90% of its electricity demand in 2050. This is assuming electricity sector emissions are net-zero by 2035 and that higher energy demands are incurred as a result of decarbonizing other sectors in the state with electrification and green hydrogen by 2050. Under this scenario, Texas will need a total of 321 GW of solar power and 215 GW wind power by 2050.[17],[18],[19] [20] This will require a 900% increase in the state's solar capacity, equivalent to installing 289 GWDC of new photovoltaic solar panels.[21] Similarly, Texas will need to increase its wind capacity by 417%, equivalent to installing 173GW of new wind energy.[22],[23] Even in a moderate energy demand scenario with no changes to emission reduction policies in the electricity sector, clean energy growth will still be significant in Texas, with projected increases of 630% to solar capacity and 250% to wind capacity by 2050.[24] The remaining 10% of

Texas' 2050 electricity needs will need to be met by other generation sources such as nuclear power, hydropower, and fossil fuel power paired with carbon capture & storage, and other clean power technologies.[25]

While this growth is significant, Texas's historical renewable growth rate shows that reaching these targets is feasible: the state increased its solar capacity by nearly 19,000% since 2013, installing 31 GWDC of solar in the past decade.[26] Additionally, wind power in Texas has increased by 137% in the past decade, representing the buildout of 29 GW of wind power.[27]

Energy Jobs in Texas

Clean energy industries in Texas are growing at a rapid rate, in part due to unprecedented funding provided by historic federal climate investments such as the Inflation Reduction Act (IRA) and the Infrastructure Investment and Jobs Act (IIJA). As a result of this legislation, the federal government estimates that more than $66.5 billion under the IRA alone will flow into Texas by 2030. These investments have spurred the growth of clean energy jobs in construction, installation, and manufacturing in Texas. Across the state, 692 new wind, solar, and clean energy manufacturing projects are breaking ground, creating thousands of jobs.[28] Between 2020 and 2023, the number of solar installers in Texas increased by 1,200%, and wind turbine technician jobs grew by 150%. This is compared to a 12% increase in construction and installation jobs in Texas across industries during the same period.[29]

The growth of the solar and wind industry will also support the burgeoning green hydrogen industry, which will itself create tens of thousands of jobs. Green hydrogen production relies on energy from clean energy sources like solar and wind, and is an excellent fuel source to decarbonize energy-intensive industries that are difficult to electrify, such as iron and steel refineries, planes, and long-haul trucks.[30]

Both the IRA and IIJA include provisions for clean hydrogen production tax credits and $8 billion dollars for the Regional Clean Hydrogen Hub Program to advance the deployment of clean hydrogen in the domestic energy industry.[31] The HyVelocity Hub, located in Texas and Louisiana, is slated to receive more than $1.2 billion from the program and create 45,000 jobs in hydrogen production across construction, operations, and maintenance.[32] This project proposal includes green hydrogen projects that will utilize energy from solar and wind to produce hydrogen fuel.[33] It also includes blue hydrogen projects, which is sourced from natural gas and utilizes carbon capture technology.[34] As the hydrogen industry grows, it is critical to ensure that renewable industry growth and federal investments in these projects include enforcement of existing labor standards, the creation of safe and family-supporting jobs for working people, and assurance of a just transition for union members working in the oil and gas industry.

Wages and Working Conditions in Texas

Many challenges exist for Texas workers across sectors, including low-pay, inequity, lack of benefits, and dangerous and deadly working conditions. In 2022, the median household wage in Texas was $73,035.[35] However, there are significant differences when comparing this data based on race. Where the median White, non-Hispanic Texan household earned $88,575 annually, the median Hispanic Texan earned $59,959, only two thirds of White individuals.[36] The Black-White income gap for Texas is even larger where the median Black Texan only earned $55,459, or 62% of what the median White individual in Texas took home in 2022.[37]

Median Household Income (in $USD) by Race and Ethnicity in Texas, 2022 Census

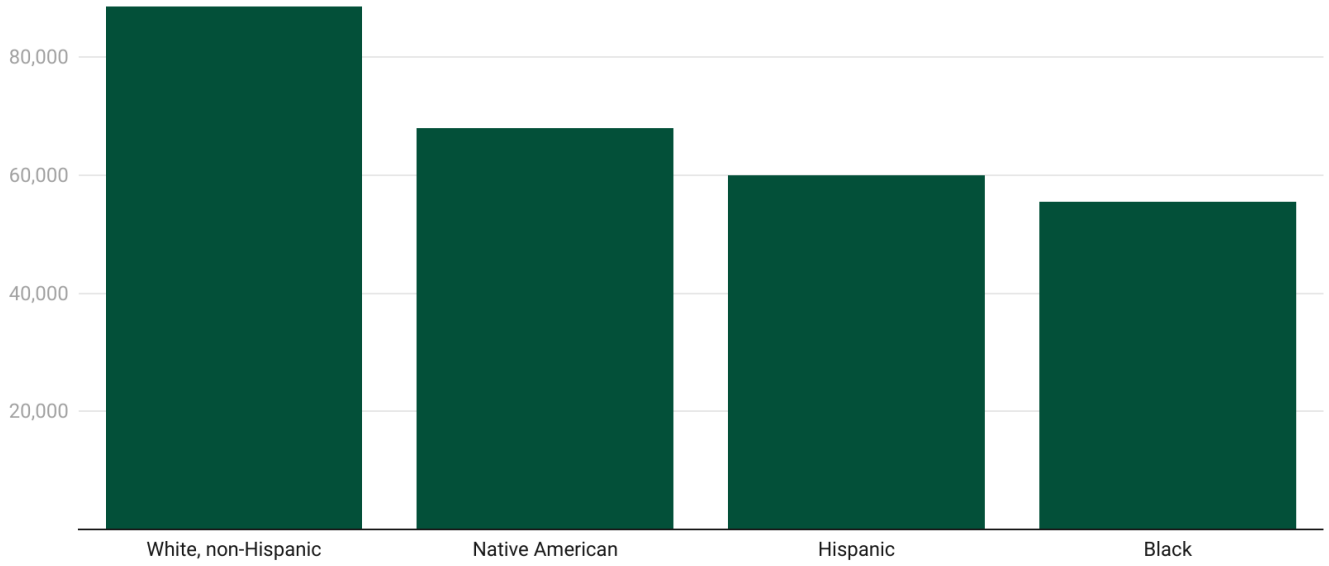


Chart: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: U.S. Census Bureau • Created with Datawrapper

Construction & Manufacturing Wages and Working Conditions

Racial and income inequality are similarly pervasive in both the construction and manufacturing industries. In 2022, workers in construction occupations nationally earned a median of $943 weekly.[38] White workers had weekly earnings above this median at $952 weekly. Black construction workers made $835 weekly, 87% of what White construction workers made, and Hispanic construction workers made $822 weekly, just 86% of what White construction workers made.[39] A similar pattern emerges in manufacturing: in the national manufacturing occupations in 2022, the median weekly earning was $862. White workers earned $889 weekly, which is above the national median in the manufacturing occupations. At the same time, Black manufacturing workers made $764 weekly, 89% of what White workers made, and Hispanic/Latino workers made $748 weekly, 87% of what White workers made.[40]

Collective bargaining under the process prescribed by the National Labor Relations Act levels the playing field between workers of different backgrounds, while low unionization rates in Texas may exacerbate inequalities.[41] National data demonstrates that collective bargaining can help equalize pay among employees with different backgrounds, and can help reduce unsafe working conditions.[42,43] Despite the benefits of collective bargaining for working people, Texas is one of the least unionized states in the country. In 2023, BLS reported the union membership rate across all sectors in Texas was an average of 4.5%. The national union membership rate was more than double than this at a rate of 11.2%.[44] Texas's 1.1 million manufacturing jobs have a unionization rate of 2.4%, compared to 8.1% nationally.[45] Similarly, the Texas construction industry has more than 1 million employees in 2023, but only 1.8% of workers belong to a union. This is lower than the 11.5% unionization rate nationally in the construction industry.[46]

These numbers are in part a result of policymaking that has eroded worker rights in Texas through repressive labor laws. For example, every other state requires employers to participate in a workers' compensation program -- except for Texas.[47] This means that if workers are injured on the job, they are responsible for covering all of their medical costs, not their employers. Additionally, since 1947, Texas has hindered workers' ability to collect union dues through its right-to-work law.[48] In 1993, Texas became one of six states to ban employees of public utilities and other state employees from negotiating union contracts that raise wages and improve working conditions.[49] In 2023, the state enacted HB 2127 to prevent cities from setting their own requirements to protect workers, such as mandating water breaks and paid sick leave.[50] The deterioration of worker rights in Texas plays a significant role in job site safety.

Worker Safety and Labor Violations

Beyond wages, Texas workers also experience racial disparities in safety on the jobsite. The Texas construction industry is the most dangerous for foreign-born Hispanic or Latino workers, who made up 41% of all construction deaths in Texas in 2021.[51] Additionally, in 2022, 15 of the 34 manufacturing fatalities in Texas were to Hispanic/Latino workers.[52] These inequalities mirror national trends. One study that used data from the 2004–2017 National Health Interview Survey found that non-white, non-Hispanic workers were 70% more likely to experience injuries on the job, and that their injuries tended to be more severe than those for White, non-Hispanic construction workers.[53]

Due to the nature of the work, clean energy workers may be at an elevated risk from a variety of occupational hazards, including falls from elevated working surfaces, electrical hazards, musculoskeletal disorders, and heat-related health complications.[54,55] It is possible that not all job site Injuries are officially reported, especially considering the incentive for Texas workers to return to work quickly due to a systemic lack of supportive benefits like health care and workers' compensation insurance coverage. An overview of recent OSHA data indicates unsafe and dangerous conditions in Texas clean energy industries. In 2022, OSHA reported 171 worker injuries in Texas in solar, wind, and clean energy manufacturing companies.[56] Fifty-two of these cases involved days away from work, with an average of 34 days away from work per case, raising the prospect that these injuries were particularly severe. Additionally, according to OSHA's inspection system, there has been one reported death at a Texas clean energy company in the last two years.[57]

Layoffs in the Texas Clean Energy Industry

In Texas, the clean energy industry reported over 4,800 layoffs since 2021.[58] This mandated reporting under federal law, the Worker Adjustment and Retraining Notification (WARN) Act, requires employers with 100 or more full-time employees to report layoffs to the state and to give workers at least 60 days' notice before 1) mass layoffs affecting at least 50 workers and 33% of the total workforce at a single job site or 2) before closing a worksite that affects more than 50 employees.[59] The layoffs included jobs in component manufacturing, project development, and Engineering, Construction, & Procurement (EPC) firms that provided services for the renewable energy industry and had job-sites in Texas.[60]

The majority of layoffs identified were from EPC firms involved in the clean power sector. Zachry Industrial Inc. had the highest-recorded layoff in both the state and industry as a whole, with over four thousand workers dismissed after the contractor filed for bankruptcy, including at a liquefied natural gas facility.[61] The parent

company, Zachry Holdings Inc., is an EPC firm servicing both fossil-fuel and clean energy projects, including green hydrogen production, and laid off a total of 4,410 workers at four locations.[62] Another firm providing EPC work for green hydrogen projects is S&B Engineers & Constructors, whose subsidiary S&B Plant Services LTD filed notices for nearly two hundred layoffs across three job-sites.[63]

Amongst solar installers, the largest WARN notices reported were by ADT Solar and HCS Renewable Energy LLC, which laid off 53 and 62 workers respectively.[64] In the renewable energy manufacturing sector, the electrical component producer Carling Technologies Inc. laid off 83 workers since 2021.[65] Between 2016-2017, over 150 workers in the state were laid off by module manufacturers Mission Solar Energy.[66]

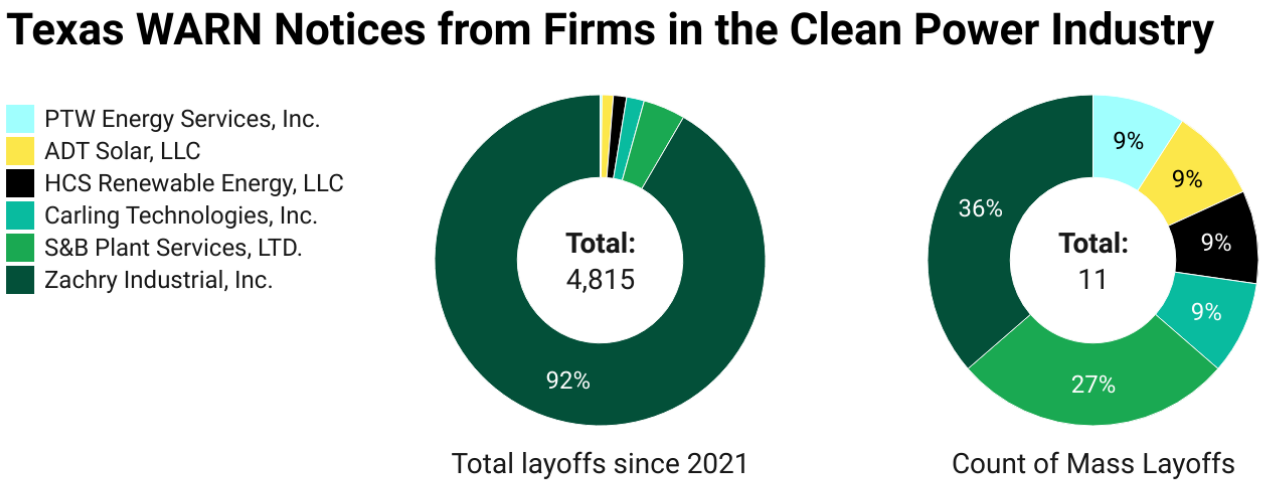


Chart: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: Worker Adjustment & Retraining Notification Notices 2021 - 2024 (Texas Workforce Commission, 2024) • Created with Datawrapper

These statistics indicate that WARN notices by large-scale EPC firms, with more than 5,000 employees, are more documented in the industry compared to small-scale installers and developers with less than 5,000 employees. This could be due to some firms not employing enough full-time employees to report layoffs to TWC under the WARN Act.[67],[68]

Importance of an Equitable Energy Transition

Working Texans are already facing the impacts of the climate crisis. Climate change increases risks for workers, especially those who work outdoors, in the form of heat-related illness and respiratory disease.[69] Solar workers in particular may be at an especially high risk of heat related complications, as they typically perform physical labor in sunny areas.[70] Extreme weather, which is exacerbated by climate change, also negatively impacts the physical and economic security of working families in Texas: Texans have seen higher food prices as a result of increased drought and flooding,[71] as well as significantly increased insurance premiums to cover the increased risks of wildfires and hurricanes due to climate change.[72]

With Texans already facing these growing climate risks, the state cannot delay actions to mitigate and reduce these risks and must rapidly deploy clean energy. However, this must be done in an equitable manner that centers working people and local communities, and facilitates workforce growth at the scale necessary to build the infrastructure needed to confront the climate crisis.[73],[74] The growing clean energy industry has the potential to decrease carbon emissions while reversing racial and income inequality and rebuilding the middle class in Texas if the work is completed by well-trained workers, has strong pay and benefits, and leads to stronger social protections for workers. As the clean energy transition in Texas accelerates, opportunities in the clean energy industries must provide high-quality jobs comparable to those for union members in Texas' existing oil and gas workforce industries, ensuring a truly just transition for those workers who have helped power the nation.

Requirements on Public Funds

The IRA and IIJA have played a significant role in the continued development and deployment of clean energy in Texas. There are a number of labor standards attached to the provisions in this legislation to support high-quality job growth as these industries expand.

To obtain IRA tax credits bonuses worth five times the base amount, projects must generally satisfy both prevailing wage and apprenticeship requirements, with some limited exceptions.[75] The prevailing wage rule requires that laborers and mechanics employed on the qualifying facility to be paid at least the prevailing wage pursuant to the Davis-Bacon Act.[76] The apprenticeship requirement requires the use of qualified apprentices from a registered apprenticeship program for a minimum proportion of total labor hours, which is further subject to apprentice-to-journeyworker ratios and a participation requirement that a project with at least four employees hires at least one apprentice.[77],[78] Additionally, to satisfy the apprenticeship requirement, taxpayers must contact at least one registered apprenticeship program to identify apprentices for their projects.[79]

These labor standards create an opportunity to advance racial and economic equity in Texas and across the country. However, enforcement, oversight, and compliance must be strengthened to ensure companies are meeting these federal labor standards. One barrier to enforcement of these standards arises from how tax credits are administered: tax credits are claimed after the project is placed in service or is operational, at which point the construction of the project is complete and the workers and apprentices will have moved on. This creates significant challenges to verify if workers are being properly paid and classified, if qualified apprentices are being utilized during construction, and to therefore enforce violations of these standards.

Closing the Texas Clean Energy Job Research Gap

As the clean energy workforce continues to grow, more research must be done in order to build a deeper understanding of different job quality metrics in the industry. Currently, the data available about clean energy workers come from surveys of employers, like the U.S. Energy Employment Report (USEER) and the Bureau of Labor Statistics' Occupational Employment and Wages Survey (OEWS). These surveys do not provide worker-level data to examine working conditions and disparities within clean energy jobs.[80],[81] Additionally, there are few peer-reviewed journal articles on workers in the renewable energy industry.[82],[83] This survey was designed to fill this knowledge gap and center the worker experience by including questions on benefits, employment status, safety training, and other workplace conditions in this emerging industry.

Methodology

How we did this

This research employed mixed methodologies, primarily relying on quantitative and qualitative survey data to understand the working conditions of non-union solar, wind, and clean energy manufacturing workers across the state of Texas. Numerous methods were implemented to gather data, resulting in a total of 1,224 survey responses that resulted in this reports' findings and recommendations. Methods of survey administration included physical site visits and digital outreach. In addition, qualitative in-depth interviews were utilized to triangulate quantitative data gathered through surveys. Quality control measures were implemented before and after completion of all surveys to ensure data integrity.

Survey Design & Data Protection

Researchers designed the quantitative and qualitative survey instruments with questions intended to investigate job quality metrics in emerging clean energy industries in Texas. The quantitative survey was conducted using Alchemer. The qualitative survey was conducted through an in-person interview.

Researchers protected survey respondents' identities and responses by maintaining high data security practices. All electronic survey results were transported securely from users' devices to our storage provider (Alchemer). Upon receipt by Alchemer, survey data was stored in an encrypted format; this protected our response dataset from exposure in the event of a data breach on the provider side.

Field Outreach

Researchers utilized publicly and commercially available data to compile a list of active solar, wind, and clean energy manufacturing sites in Texas to inform survey outreach. To maximize the chances of encountering workers who were willing to be interviewed, researchers and field staff prioritized utility-scale projects, as there are more workers on utility scale sites.[84] In total, researchers and field staff visited over two dozen utility-scale solar, wind, and clean energy manufacturing sites in every region of the state except the Panhandle. While some workers completed surveys in publicly accessible areas next to sites where respondents worked, field staff often identified and visited popular off-site locations in nearby areas where clean energy workers temporarily resided, ate, or shopped to help protect individuals from retaliation.

Digital Outreach

For this portion of the study, Organized Power In Numbers (OPIN) acquired and synthesized publicly and commercially available lists of potential clean energy workers. The lists that yielded the highest return of engaged green energy workers were gathered through Freedom of Information Act (FOIA) requests of community colleges and state trade certifications. Individuals were contacted using peer-to-peer texting software to reach likely workers in both English and Spanish. Additional virtual leads were identified via green energy related Facebook groups. Once a substantial number of leads were identified, a predictive audience model was trained on the initial set of leads. Using this model across a series of statewide voter and consumer databases, data analysts

identified a broader set of leads that were similar to the initial survey population, which allowed them to expand the reach of the study. OPIN ran virtual outreach programs to convert leads into survey respondents. Workers were offered a $50 gift card if their survey was deemed legitimate after quality control.

Sampling and Quality Control

In addition to the field and digital outreach, the sample in this study was built in part through snowball sampling. Respondents were offered an additional $10 gift card when someone they referred to the survey was (a) eligible for the study, and (b) also completed the questionnaire.

Workers who identified as a solar, wind, or clean energy manufacturing worker were asked a series of short, industry-specific screening questions by field staff to help ensure quality control and data integrity. Individuals who completed the survey, were compensated with a $50 gift card for completing all questions. Additionally, field staff checked the data of already completed surveys, including name and contact information, to ensure individuals were not permitted to complete the survey more than once.

For questionnaires that were digitally administered, additional steps were taken to ensure quality control and data integrity. In order to fully approve a survey, all survey responses were reviewed to ensure that the answers were logical to individuals familiar with the field. Additional metadata, such as IP address location, were reviewed for every survey collected to ensure that the individuals completing the survey were located in this study's geographic range of Texas and not duplicative.

Quantitative and Qualitative Analysis

Once survey data was received, it was cleaned by fixing incorrectly formatted data and removing incomplete data. It was then separated into solar, wind, and manufacturing surveys. For each of these categories, a series of hypotheses were developed regarding what factors would influence outcomes such as pay, access to benefits, and incidence of injuries/illnesses, among others. Unless stated otherwise in the survey findings, managers are included in all reported results. Some respondents indicated they spent some or all of their time supervising others, and regression models therefore included management status as a variable. From these hypotheses, the team used R to create dozens of linear and logistic regression models to find statistically significant relationships.

To provide clarity to quantitative findings, this report also interviewed workers to probe deeper into dynamic workplace conditions outlined in previous chapters, as well as initial findings in the quantitative analysis. For these qualitative interviews, a member of the field team utilized a semi-structured interview script to collect information from eleven solar workers. The workers agreed to have their conversations recorded to ensure accuracy. Interview transcripts were then analyzed in MAXQDA to identify key themes and better contextualize the overall experience of the solar worker. To protect the workers' privacy, their names and identifying details were kept anonymous. By combining these interviews with the survey data, the study provided a more complete picture of the working conditions and challenges faced by solar workers in Texas.

Survey Findings

Demographics

Industry of Workers

Chart: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: Texas Climate Jobs Project • Created with Datawrapper

In total, 1,224 workers were surveyed. Of these, 842 respondents had performed utility scale solar installation and were thus classified as solar workers. Researchers on this study estimate that, using Bureau of Labor Statistics data as a metric, these 842 workers may account for over 20% of the total number of solar installers.[85],[86]

Additionally, 223 respondents worked in clean energy manufacturing, and 98 respondents performed utility scale wind turbine installation. The sampling size for each is therefore estimated to be approximately 3% and 1% of each sector's Texas workforce, respectively.[87],[88] These field surveys capture shares of the target population that are similar to the major data sources that currently report on conditions for renewable energy workers: The Department of Energy's USEER survey analyzed 21.1% of their target population, and the BLS' Survey of Occupational Injuries and Illnesses surveyed 2.3% of their target population.[89]

Sixty-one workers who were employed at both solar and wind sites, or did work outside of clean energy construction or clean energy manufacturing, that completed this survey were omitted from this report's analysis. Workers who perform across different industries in the clean energy sector should be investigated further.

Racial Composition

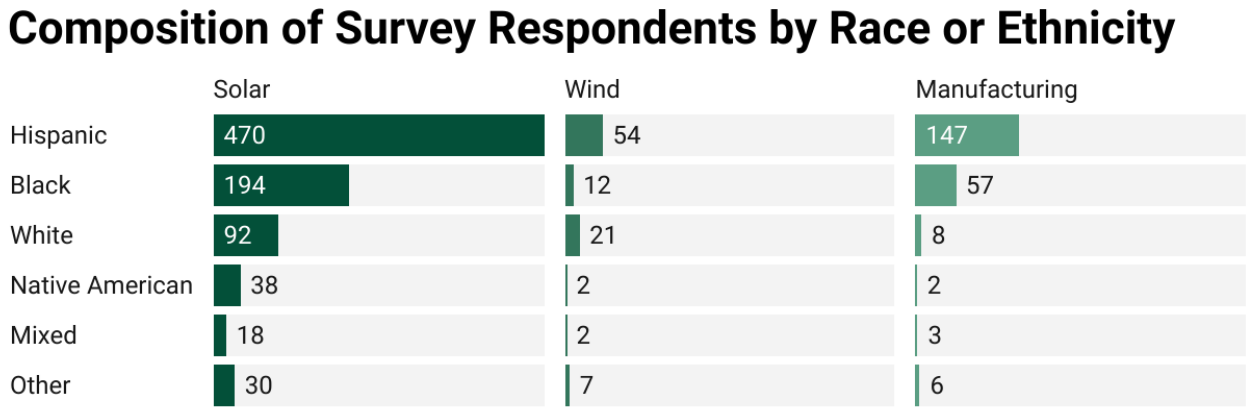


Chart: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: Texas Climate Jobs Project • Created with Datawrapper

The majority of survey respondents were Hispanic, which is reflective of the racial and ethnic composition of the larger Construction, Installation, and Production occupations in Texas in 2022, according to BLS.[90] However, compared to data on similar occupational groups, Black workers make up 4-19% more of the clean energy workers in this sample than similar occupational groups. Compared to White workers in similar occupational groups, there were also 7-23% fewer White respondents in this clean energy sample.

Gender Composition

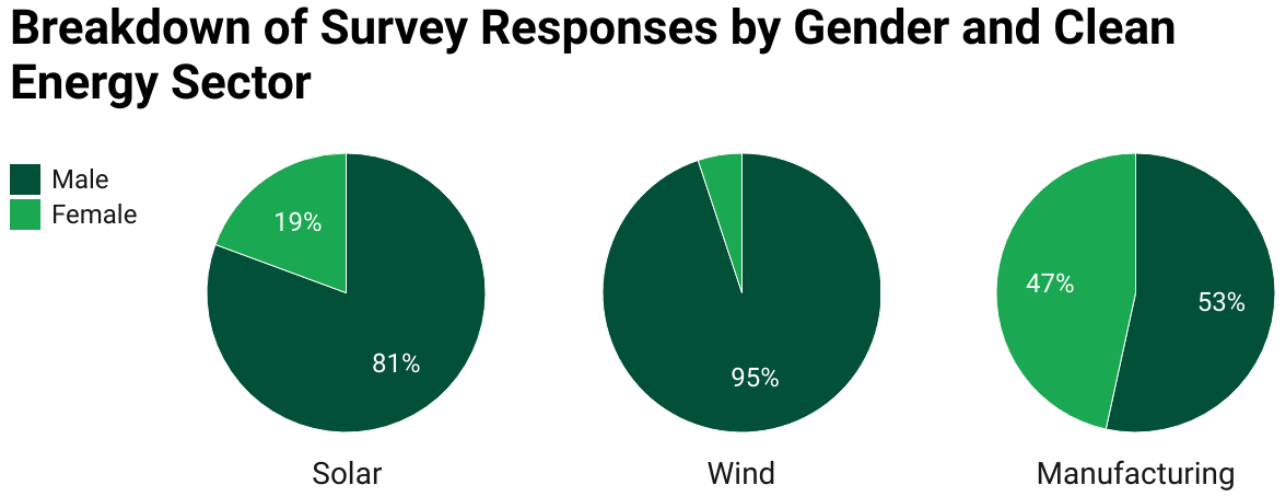
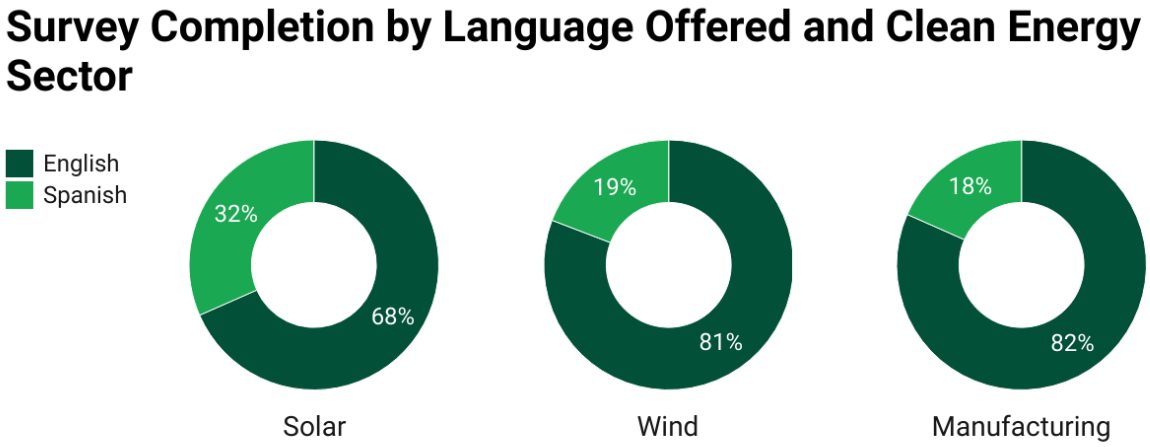


Chart: Texas Climate Jobs Project • Source: Power and People: Working Conditions in the Texas Clean Energy Transition • Created with Datawrapper

Most survey respondents identified as male. Again, this reflects the gender breakdown in these occupation classes in Texas as reported in 2022.[91] In the wind sector, the gender composition of respondents matched those reported by the BLS: 95% men and 5% women. For solar sector respondents, the proportion of female respondents was 16% higher than the proportion of solar workers reported in BLS data. For the manufacturing sector, the difference was even more substantial, with this survey yielding a 29% larger share of women respondents than reported by the BLS.

Lastly, it is important to note that BLS does not track the population of transgender and nonbinary workers in comparable occupational groups. Fewer than 15 transgender or nonbinary workers responded to this study overall. This percentage is similar to previous studies on clean energy workforces; however, more research should be done to ensure further understanding of how gender affects working conditions in the clean energy industry.[92],[93]

Survey Completion by Language Offered



A previous field study analyzing the Texas construction industry completed in collaboration with the University of Texas in Austin found that 75% of Texas construction workers indicated that Spanish was their first language.[94] This report's survey instrument did not ask for the respondents' primary language. The survey was, however, offered in both English and Spanish, and the majority of survey respondents chose to complete the English language version of the survey, with a large proportion of the participants responding to the Spanish language version of the survey. More research is needed to better understand the demographics and potential language barriers of the Texas clean energy industry.

Educational Attainment & Registered Apprenticeship

Through new rules promulgated by the IRS under the Inflation Reduction Act, solar projects seeking the 30% investment tax credit ("ITC") must ensure at least 15% of the total job hours for construction, alteration, and repair of the project are performed by qualified apprentices from a registered apprenticeship program. In addition, projects are subject to strict ratios of apprentices-to-journeyworkers laid out in the participating registered apprenticeship program, and projects must hire at least one qualified apprentice if at least four individuals are hired for construction, alteration, or repair.[95]

This study found that only seven of the 1,001 solar and wind construction workers (0.7%) surveyed identified as apprentices. The gulf between the number of apprentices required on Texas utility scale solar projects seeking the 30% ITC and the number of individuals identifying as apprentices in this survey warrants further investigation.

Breakdown of Survey Responses by Educational Attainment and Industry

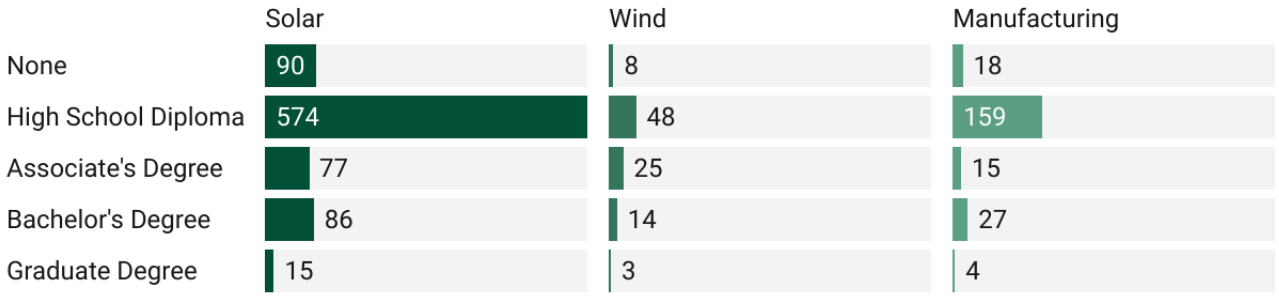


Chart: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: Texas Climate Jobs Project • Created with Datawrapper

The majority of respondents reported completing high school as their highest level of educational attainment, with ten percent of individuals reporting to have attained a Bachelor's degree.

Management Status

There were 159 respondents, or approximately 13% of all respondents, who reported that most of their job duties included supervising others. Unless stated otherwise, managers are included in the results. This report found that respondents that submitted surveys in English reported being 21% more likely to become management than respondents that submitted surveys in Spanish. White workers were 42% more likely to be managers than Black workers and were 4% more likely to be managers than Hispanic workers.

Solar Worker Survey

Pay

> *"The pay has kind of gone down on solar sites...They [don't] want to pay me for my experience."*
>
> *East Texas Solar Worker*

Wage Ranges

Median hourly wage masks deep pay inequity

Hourly Median Wages for Solar Installers, 2023 BLS vs. Survey Estimates

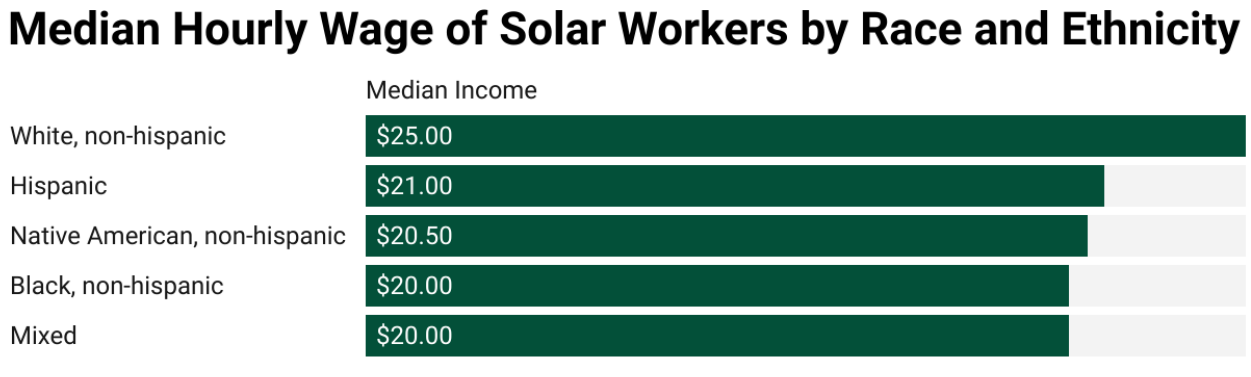
Region	Hourly median Wages
El Paso, TX (BLS)	$22.65
Houston-The Woodlands-Sugar Land, TX (BLS)	$19.79
Statewide, Texas (BLS)	$18.98
Statewide, Texas (Survey Respondents)	**$20.00**
National (BLS)	$23.46

Table: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: U.S. Bureau of Labor Statistics and Texas Climate Jobs Project • Created with Datawrapper

The 2023 BLS median wage for solar installers is $18.98 per hour. This report's survey results indicate the non-manager pay ranged from $11.53-$28.47 per hour, with a median wage of $20 per hour. However, examining deeper wage trends by different demographic indicators reveals inequalities within the Texas solar workforce.

Pay Disparities

Worker's race, survey language choice, and gender negatively impacted wages



The chart above demonstrates a clear divide in median hourly wage between self-identified race categories of individual survey respondents. By analyzing the hourly rate reported by respondents, further analysis of survey data shows that Black workers were paid $8,500 a year less than other workers; workers who completed this survey in Spanish were paid $5,900 less, and women were paid $2,700 less. Qualitative interviews reinforced these findings of pay inequality by identity, with one worker commenting that *"hay americanos haciendo el mismo trabajo, misma experiencia, y le pagan más al americano",* or translated to English *"there are Americans doing the same work, same experience, and they pay more to Americans."* While the National Labor Relations

Act provides legal protection for employees to freely discuss wages and benefits[96] between colleagues, another clean energy worker indicated that discussing pay on the job was discouraged: *"I was told before, if you discuss pay with people, telling people what you're getting paid, you can get in trouble for it."*

Wages for Solar Survey Respondents Compared to Union Wage Rates

Region	Median Wage for Survey Respondents with College Degrees	Median Union Electrician Wage	Laborer First-Year Apprentice TX Solar Wage Rate	Laborer TX Solar Wage Rate
Central Texas	**$21.00**	$33.51	$22.95	$25.50
East Texas	**$20.00**	$33.51	$22.95	$25.50
Gulf Coast	**$20.00**	$33.51	$22.95	$25.50
North Texas	**$22.50**	$33.51	$22.95	$25.50
Panhandle	**$24.00**	$33.51	$22.95	$25.50
Rio Grande Valley	**$23.00**	$33.51	$22.95	$25.50
South Texas	**$23.00**	$33.51	$22.95	$25.50
West Texas	**$22.00**	$33.51	$22.95	$25.50

**Median union electrician wage determined by calculating median wage for current IBEW contracts for Texas locals.*

Table: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: Data was collected from IBEW and LiUNA representatives directly to compare with the respondents to this survey • Created with Datawrapper

While previous demographic findings in this report indicate that the majority of solar and wind workers had attained a high school diploma or equivalent, the table above focuses on comparing the median hourly wage of college-educated respondents with the union wage rate of electricians, journeyworker laborers, and laborers in the first year of their registered apprenticeship program. The data shows that the wages of college-educated, non-union workers in the survey are lower than almost all wage rates for union electricians and laborers in the state (as reported by IBEW and LiUNA representatives), including laborers in the first year of their registered apprenticeship program. This finding is included in the report's analysis because it is illustrative, and helps disrupt traditional narratives that college educational attainment consistently results in higher wages. In fact, a first-year apprentice working as a laborer on a Texas solar project earns more than an individual that spent four years earning a college degree.

Benefits and Working Conditions

> *I've been to some companies that don't give you any benefits. They ain't trying to make sure you're being taken care of.*
>
> Gulf Coast Solar Worker

Job Quality Metrics, Including Benefits

This report's survey asked solar workers to identify whether they received a number of benefits such as health care or retirement, and whether their working conditions included a number of metrics generally associated with higher job quality such as rest breaks and overtime pay. The survey data showed that 94% of solar workers indicated that they had access to overtime, 79% of workers indicated that they received breaks, 53% of workers indicated they received health insurance, and 28% of workers reported having access to worker's compensation insurance coverage and retirement benefits. While creditable fringe benefits are an important measure of job quality, it is possible that the benefits which qualify as Bona Fide, creditable fringe benefits may vary based on local laws.[97]

It is important to note that even when a respondent indicated the presence of a benefit or job quality metric such as breaks or overtime, the survey did not capture data regarding the quality of these benefits or positive working conditions. For example, a respondent may have indicated the presence of a health care plan, but the survey would not capture whether the plan's deductible was affordable. In addition, many respondents may have indicated they receive breaks, but as this report explores later, many respondents reported also suffering from heat-related illnesses. This was reinforced by a female solar worker researchers interviewed who had experienced sexual harassment on the job: *"It's not just about pay and benefits, the place with the best pay treated me like dog-crap."*

The presence of a benefit does not always indicate a quality job. One solar worker retold a story about navigating the company health care plan:

> *I had contacted HR for assistance with enrolling... and they said 'hey, I'm not supposed to tell you this, but we're instructed not to answer our phone.'*

Disparities in Benefit Takeup

Benefits Access for Solar Workers by Completed Survey Language

Chart: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: Texas Climate Jobs Project • Created with Datawrapper

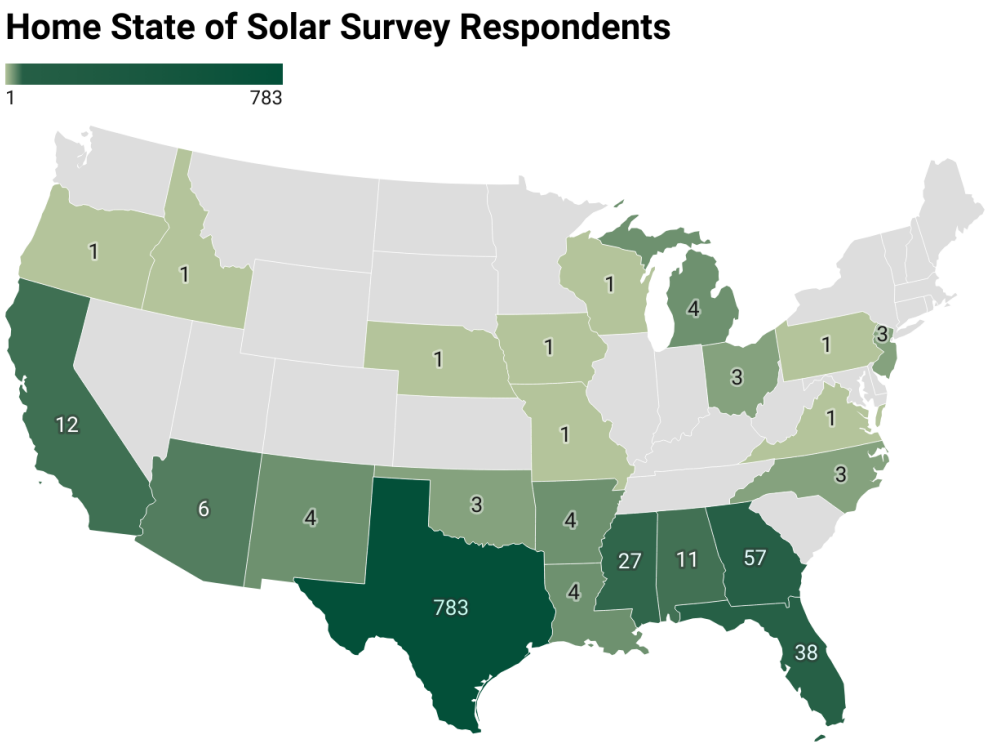
Workers that submitted surveys in English were over four times more likely to report access to workers' compensation insurance coverage than workers that submitted surveys in Spanish. They were also nearly five times more likely to report having retirement benefits; 40% more likely to receive health insurance; and 20% more likely to receive breaks.

White workers more likely to receive certain benefits
White workers were 82% more likely to receive retirement benefits, and 43% more likely to report having health insurance than other workers.

Piece-rate pay impact on benefit access
Approximately three percent of surveyed workers reported being paid by the day, panel, or watt; these workers were less likely to receive overtime than other workers.

Regional impacts on benefit access
Lastly, this report found that solar installers in the Gulf Coast, Central Texas, and the Rio Grande Valley were less likely to have access to health insurance than workers in other regions.

Precarity of a Transient Workforce



Map: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: Texas Climate Jobs Project • Created with Datawrapper

Of the total workers surveyed, 76% indicated that they resided in Texas, while the remaining 24% of solar construction workers surveyed traveled from outside the state to perform solar construction work in Texas. One solar worker from Florida says,

> ***"Cuando mi mujer viene aquí o cuando tengo un fin de semana que nos sueltan el viernes, me voy. Pero ahora mismo no nos están dejando descansar ni los sábados, casi todos los sábados tenemos trabajo."...or "When my wife comes here or when I have a weekend that they let us go on Friday, I go. But right now they are not letting us rest even on Saturdays, almost every Saturday we have work."***

The finding of a large transient solar workforce is consistent with a recent study which investigated the working conditions of solar workers in New York State.[98]

Inconsistent per diem for transient workforce

In the vast majority of interviews, workers mentioned the issue of insufficient benefits. One major area of concern highlighted by interview participants was per diem pay, which is when the solar company gives workers a daily stipend for living expenses while working on the solar site due to the distance of sites from where many workers live. As workers travel from site to site, they are forced to stay in motels, short-term rentals, rent RV space, and buy additional groceries, increasing their cost of living. This level of transience is common, and one worker even said that,

> **“I’ve moved around five times in the last ten months.”**

The per diem benefit offered by some employers is intended to help offset these costs, but one of the biggest challenges workers reported with the per diem benefit was its inconsistency. Weather-related pauses on work also meant that per diem would be paused, but workers were still expected to stay near their site until the work was complete. One participant explained, *“...one thing I do hate is if you get rained out, you don’t get paid, you don’t even get per diem. So if I got rained out for two weeks, then I got no money coming in... that’s no housing, no, nothing.”*

Safety

> ***“This work puts a lot of wear and tear on your body. At a young age I started feeling pains in my body I never felt before.”***
>
> ***North Texas Solar Worker***

Illnesses, Injuries, and Fatalities

Reported illness, injuries, and fatalities prevalent on Texas solar worksites

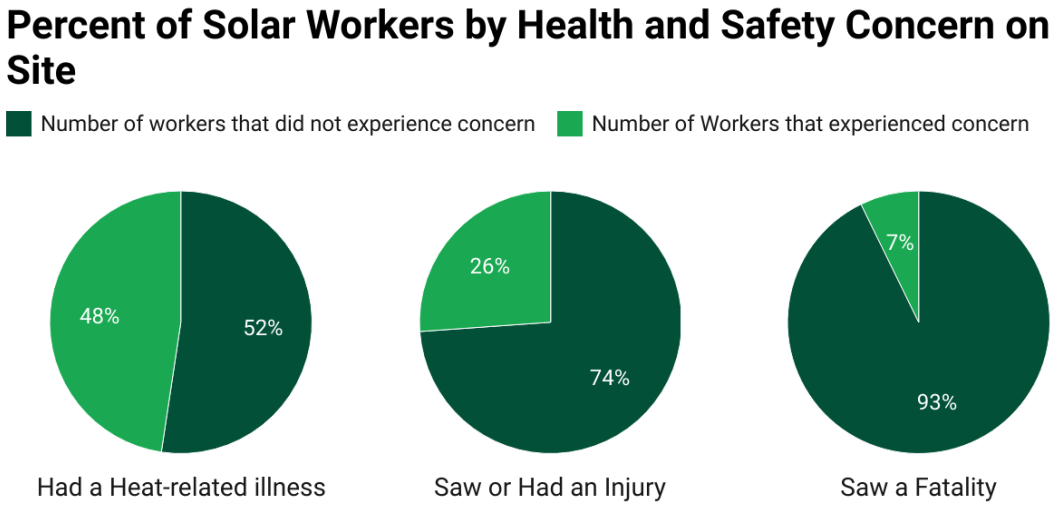


Chart: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: Texas Climate Jobs Project • Created with Datawrapper

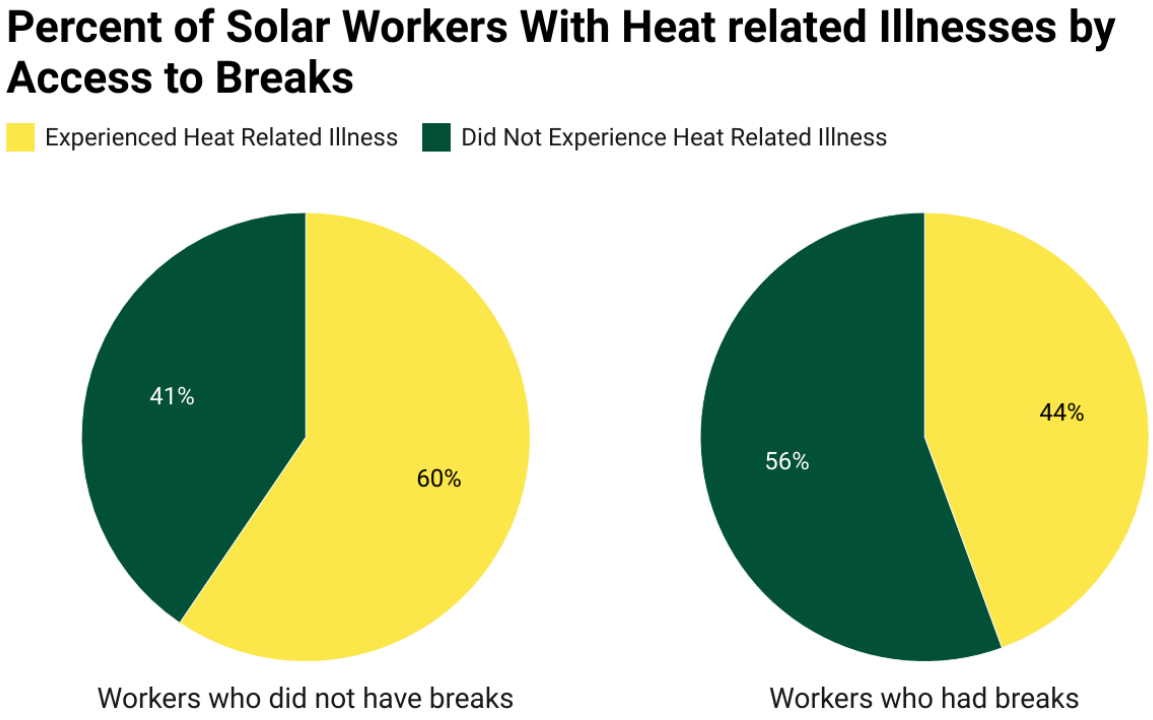
Forty-eight percent of solar workers surveyed reported experiencing a heat-related illness. In addition, 26% indicated they saw or experienced an injury, and 7% witnessed a death on the job. Comparatively, the BLS estimates that only 91.4 solar installers are injured per every 10,000 solar workers nationally every year.[99] Rates of heat-related illness, injury, and fatality were disportionate by race, ethnicity, and by which language the respondent chose to complete the survey.

Black and Hispanic workers were more likely to indicate that they had witnessed work-related deaths and injuries than other workers. Nine of eleven interviewees indicated that employers were not addressing health and safety concerns. In fact, one worker recalled an incident of a worker who was injured on the job: *"el otro día dieron una actividad en el trabajo que para mí es comprando el silencio de los trabajadores. Rifaron dos televisiones, un PlayStation, porque había ocurrido un accidente donde un muchacho se dio un golpe en un ojo y se perdió el ojo."* which translates to *"the other day they gave an activity at work that for me is buying the silence of the workers. They raffled off two televisions, a PlayStation, because there had been an accident where a boy hit himself in the eye and lost his eye."*

The Impact of Solar Worker's Access to Breaks on Incidence of Heat-Related Illness

> *"...We work outside in inclement weather conditions... cold, hot, the thermal ranges, or when it's wet outside... I have worked in snow."*

Despite pervasive inclement weather and heat-related illnesses, one fifth of solar workers reported not receiving rest breaks. Nearly half (47%) of solar workers surveyed reported experiencing a heat-related illness, and 21% reported they did not receive rest breaks. Survey data also showed that 60% of solar workers who did not receive breaks experienced a heat-related illness, compared to 45% of solar workers who did receive breaks. Access to breaks decreased the likelihood of heat-related illness for surveyed solar workers.



Experience of Texas Solar Workers

In addition to the 842 solar surveys, researchers conducted eleven qualitative surveys with solar workers across the state. In these in depth interviews, workers provided additional insight and detail of working conditions in the solar industry beyond what was asked about in the survey. Interviewees shared positive associations with the line of work they were in, such as feeling satisfied with changing the energy landscape in Texas, pride in their work, and comradery with their colleagues. They also mentioned key workplace issues that reinforce and expand on issues raised by workers in the quantitative survey, including job security, insufficient benefits, and precarity.

One finding from qualitative interviews was the frequency of layoffs. In eight of eleven interviews, respondents mentioned that layoffs were rampant, and at times arbitrary. One respondent said that, *"...when they lay you off, they don't give you notice. They just tell you that day that hey, you don't have a job tomorrow."* Other times, interviewees reported that layoffs could happen in a retaliatory fashion. One female solar worker recalled that, *"My general foreman was hitting on me... I reported it to the supervisor... I was laid off a week later."*

In nine of the eleven interviews, workers mentioned the ways in which social networks were relevant to obtaining or maintaining employment in the solar industry, or even ways that social networks led to advancement or preferential treatment in the industry. When asked about career advancement, one participant noted *"it's not really about your hard work [...] I feel like mostly these days it's about who you know."* This theme of social connections seeming more important than skills or hard work is consistent with previous research, which has shown that social networks can perpetuate occupational segregation and labor market inequality based on gender or race.[100]

Key Topics from Interviews with Solar Workers

Key Topic	Description	Representative Quote
Precarity	Instability around employment	"there's no contract. You know you can get terminated at any time for whatever reason"
Employment and social networks	The role of social networks in recruitment and advancement	"it's not really about your hard work...I feel like most mostly these days it's about who you know" When asked about career advancement
Health/safety	Incidences related to health or safety	"as far as it being a big problem...nothing's ever happened...most people do get a little nick or a cut, that's the way it is."
Positive experience with coworkers	positive relationships born out of solar work	"My crew...they really like family man... I don't have an issue with nobody"
Insufficient benefits	Insufficiency in either benefits offered or accessibility of benefits	"if we don't work on Fridays we don't get no per diem... that's a big problem... you have to have your own, provide your own housing"
Transience	Travel away from home for solar work	" I could go like six months without seeing my family. It's hard."
Enjoying work	Positive feelings about work in the solar industry	"I have a good day every day."
Negative experience with management	Issues with managers	"when management has their own family come in and they, they get paid more for doing less."
Privacy around pay	Unwillingness to discuss topics around pay	"I don't try to count nobody's money but mine."
Disparities/inequality	Unequal conditions/compensation between workers	"There's a lot of conflict regarding like identity, or like racial stuff"

Table: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: Texas Climate Jobs Project • Created with Datawrapper

Wind Worker Survey

Pay

Median wages found lower than BLS estimates

Hourly Median Wages for Wind Turbine Technicians, 2023 BLS vs. Survey Estimates

Region	Hourly Median Wages for Wind Turbine Technicians
Amarillo, TX (BLS)	$28.34
Abilene, TX (BLS)	$27.35
Coastal Plains Region (BLS)	$28.04
Dallas-Fort Worth-Arlington, TX (BLS)	$28.66
Houston-The Woodlands-Sugar Land, TX (BLS)	$29.58
West Texas Region (BLS)	$28.44
Statewide, Texas (BLS)	$28.50
Statewide, Texas (Survey Respondents)	**$25.00**
National (BLS)	$29.70

Table: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: U.S. Bureau of Labor Statistics and Texas Climate Jobs Project • Created with Datawrapper

Non-management pay for individuals engaged in wind turbine installation activities ranged from $13.52- $36.48 an hour, with a median wage of $25 an hour. This is lower than the BLS's finding of $28.50 as the median wage for wind turbine technicians in 2023.[101]

Median Hourly Wage for Wind Workers by Race and Ethnicity

Race	Wind Worker Wage
Black, non-Hispanic	$22
Hispanic	$25
White, non-Hispanic	$29

Table: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: Texas Climate Jobs Project • Created with Datawrapper

Survey findings also indicate that the median hourly wage was even lower for Black wind workers with a reported median hourly pay of $22, which is $7 less than the median hourly pay reported by White respondents. Although these differences were not statistically significant, the difference in pay and existing literature on racial pay disparities in the construction industry warrant further investigation of these disparities for wind technicians.[102]

Benefits and Working Conditions

Access to benefits variable by type of benefit

Chart: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: Texas Climate Jobs Project • Created with Datawrapper

Twenty-six percent of wind workers surveyed reported that they did not receive overtime pay, 24% reported they did not get breaks, and 56% reported that they did not have access to worker's compensation insurance coverage. While U.S. Census data from the American Community Survey indicates that 20% of employed Texans lacked health insurance in 2022, 45% of Texas wind workers in this survey reported that they did not have access to health insurance.[103] These rates of benefit access mirror similar findings in this report for solar construction workers. Access to benefits like health insurance are especially critical to those in jobs with many occupational hazards, such as construction workers.[104]

The data also indicate that workers that submitted surveys in English were 125% more likely to receive breaks than workers that submitted surveys in Spanish. Black and Hispanic respondents were also half as likely to indicate they had access to worker's compensation insurance coverage as a benefit than White workers.

Safety

Majority of onshore wind workers report heat related illnesses

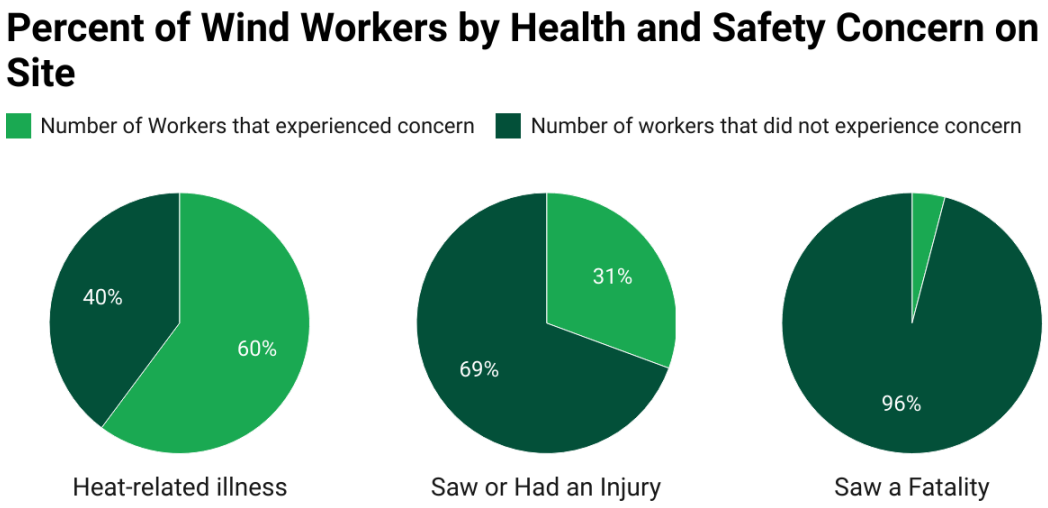


Chart: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: Texas Climate Jobs Project • Created with Datawrapper

Fifty-nine surveyed workers, or 60% of the onshore wind workers surveyed, reported experiencing a heat-related illness on the job, while thirty (40%) workers reported experiencing an injury, and four workers observed a fatality on the job. Higher rates of injury and illness for wind workers is consistent with BLS findings in 2017, the latest year data is available, which showed that wind turbine technicians had the fifth highest incidence rates of job related illness or injury compared to all occupational groups.[105] The report's modeling found that access to breaks more than halved the likelihood of heat-related illnesses.

Manufacturing Worker Survey

Pay

Wage Ranges

Clean energy manufacturing median pay lower than national average

Hourly Median Wages for Electrical Assemblers, 2023 BLS vs. Survey Estimates

Region	Hourly Median Wages for Electrical Assemblers
Amarillo, TX (BLS)	$17.36
Austin-Round Rock, TX (BLS)	$18.68
Dallas-Fort Worth-Arlington, TX (BLS)	$18.74
Houston-The Woodlands-Sugar Land, TX (BLS)	$18.07
Longview, TX (BLS)	$14.50
McAllen-Edinburg-Mission, TX (BLS)	$16.56
San Antonio-New Braunfels, TX (BLS)	$17.35
West Texas Region (BLS)	$17.34
Statewide, Texas (BLS)	$18.40
Statewide, Texas (Survey Respondents)	**$19.00**
National (BLS)	$21.03

Table: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: U.S. Bureau of Labor Statistics, Texas Climate Jobs Project • Created with Datawrapper

Survey respondents that work in clean energy supply chain manufacturing reported a median hourly pay of $19 per hour, with ranges as low as $12.46 up to $26.58. However, additional survey data indicates that median pay does not tell the full story: nearly one-in-six (13%) respondents reported that their employer had failed to pay them, or refused to pay them, for hours they had worked. Additional data gathered by the survey demonstrates additional noteworthy disparities.

Spanish speaking workers and Black workers paid less

Average Manufacturing Wage by Completed Survey Language

Completed Survey by Language	Average wage
Spanish	$19
English	$20

Table: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: Texas Climate Jobs Project • Created with Datawrapper

In addition, workers that submitted surveys in Spanish reported earning $4,667 per year less than workers that submitted surveys in English, and Black workers reported earning $2,788 less than respondents who self-identified with other race and ethnicity categories.

Benefits and Working Conditions

Limited access to benefits for clean energy manufacturing workers

Benefit Access for Clean Energy Manufacturing workers

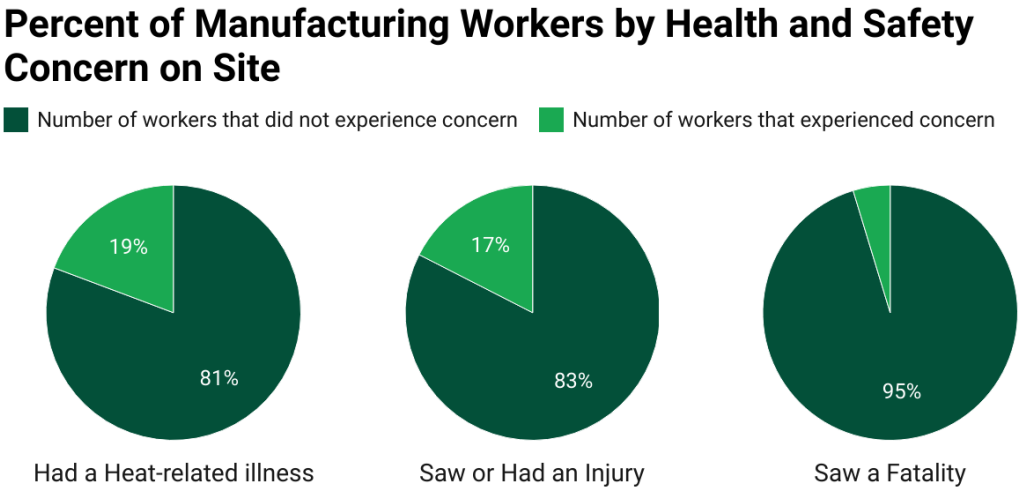
Chart: Power and People: Working Conditions in the Texas Clean Energy Transition • Source: Texas Climate Jobs Project • Created with Datawrapper

Manufacturing workers may be more likely than others to have access to employer provided benefits.[106] However, the data collected on clean energy supply chain manufacturing workers in this sample present a contradictory narrative: survey respondents reported limited access to benefits, indicating lower rather than higher job quality.

Half of surveyed workers in clean energy supply chain manufacturing reported receiving paid time off and life insurance, and 58% of workers had access to health insurance. Forty-three percent of workers reported receiving paid sick time, and 46% reported receiving retirement benefits. Only one third of respondents reported receiving workers' compensation insurance coverage. Survey data also pointed to disparities: women were less likely to have access to life insurance than men, and Hispanic workers were 81% less likely to report receiving paid sick time than other workers.

Safety

Workers with access to water breaks less likely to report heat related illness



Twenty percent of workers reported experiencing a heat-related illness. Workers with water breaks were less likely to experience heat-related illness: 25% of workers without water breaks suffered a heat-related illness, while only 15% of workers with water breaks had a heat-related illness. For other worksite safety concerns, 18% of survey respondents indicated that they experienced or witnessed a worksite injury, and 5% of workers surveyed witnessed a worksite fatality.

Recommendations

Recent historic federal climate investments were passed to achieve the dual purpose of dramatically reducing carbon emissions and creating high-quality jobs through deep engagement with community and labor union stakeholders. Federal, state, and local policymakers may consider a number of options to help ensure that the private sector and governmental entities live up to the intended purpose of this legislation and similar initiatives. The following recommendations would ensure that Texans building our clean energy future have family-sustaining wages, benefits, pension retirement plans, safety, and a voice on the job.

Ensuring High Labor Standards

Community Workforce Agreements

A Community Workforce Agreement (CWA) is a binding agreement that contractors and participating building and construction trade unions enter into prior to hiring to establish the working conditions for a construction project. These agreements exist on many federally-funded projects and clean energy projects nationally.[107] These agreements ensure that uncertainty in working conditions for large-scale construction projects is avoided, and that workers can have a safe workplace. A CWA is a tool to ensure that prevailing wage and apprenticeship utilization requirements for federally funded projects are being met. These agreements also incorporate community demands for local hiring and other community benefits.

Labor Peace Agreements

Labor Peace Agreements are agreements between employers and labor unions which ensure that workers have a free and fair process to choose to join a union without employer interference through neutrality and card check. Public dollars should not be spent on union-avoidance firms or other strategies to coerce workers into voting against unionization.

Just Transition for Oil and Gas Workers

It is critical that workers in the oil and gas industry have a secure plan to transition into emerging clean energy industries if oil and gas facilities are closed. It is imperative that the wages, benefits and protections in new solar and wind jobs are comparable or better than current standards in oil and gas jobs. Enforceable just transition plans for oil and gas workers like those outlined in the American Energy Workers Opportunities Act provide a clear pathway to help secure these outcomes.

Federal Policy Changes

Require that Companies Provide Notice to Claim Bonus Tax Credits

Solar and wind project owners in Texas utilizing the 30% ITC must adhere to the IRA's regulations on the prevailing wage and apprenticeship requirements. However, companies seeking these tax credits are not required to demonstrate compliance with these requirements until the tax credit is filed, at which point the project's construction is likely completed.[108] Final IRS regulations on this matter do not require project owners to post

prevailing wage rates at the site, and workers will likely be left unaware of their right to receive prevailing wages and fringe benefits. The failure of companies to pay prevailing wage can and has led to wage theft.[109] This report demonstrates that Black and Hispanic clean energy workers, and women, are often paid less per hour despite doing similar work. Existing IRS rules should be revised to require companies to give advance notice of their intention to claim bonus tax credits to project workers.

Strengthen Compliance with Apprenticeship Requirements

The Department of Labor Registered Apprenticeship program was enacted in 1937, and exists to ensure that high-quality training is being provided to workers. Graduates of these programs are expected to make up to nearly $300,000 more in their lifetime.[110] The Internal Revenue Service ("IRS") has published final regulations to meet the prevailing wage and apprenticeship requirements in the IRA. Specifically, the IRS requires that (1) A minimum percentage of total labor hours on a project be performed by qualified apprentices; (2) The applicable apprentice-to-journeyworker ratio of either the Department of Labor (DOL) or the applicable state apprenticeship agency is met; and (3) the taxpayer, or the taxpayers' contractor or subcontractor, employing four or more individuals must hire at least one qualified apprentice.[111] This study found only seven of the 1,001 solar and wind construction workers (0.7%) surveyed identified as apprentices. This finding is noteworthy, given the IRS requires that 15% of the total project job hours for the construction, alteration, or repair work to be performed by qualified apprentices for projects beginning construction in 2024 in order to be eligible for IRA tax credits.[112] Because project owners are not required to provide notice, it is very challenging to determine whether IRS requirements are being violated at the project and employer level without additional data. The gap between the low rate of respondents identifying as apprentices in this report and existing IRS requirements described above warrants further investigation.

When searching for qualified apprentices, project owners may be deemed to have satisfied the apprenticeship requirement under the "good faith effort" exception if the taxpayer requests the apprentices from a registered apprenticeship program and the program either 1) denies such request or 2) fails to respond within five business days. As long as a registered apprenticeship program fails to respond to a request from a project owner for qualified apprentices within five days, the IRS will consider the project owner to have made a good faith effort, and is fully exempt for 365 days.[113] This compliance requirement should be strengthened by 1) requiring that employers reach out to all apprenticeship programs in their geographic area; 2) increasing the time limit for these programs to respond; and 3) reducing the duration of the exemption from 365 days to a more reasonable window.

Increased Monitoring of Companies Receiving Tax Credits

IRS must increase project site visits to directly interview impacted workers to ensure prevailing wage and apprenticeship requirements are met. Companies who are claiming bonus credits should be required to submit monthly sworn labor reports prior to claiming the credits, which include certified payroll records, information regarding workforce numbers, and information about contractors or subcontractors. Modeled after the Paycheck Protection Program forgivable loan public disclosures administered by the Small Business Administration, all information about clean energy project owner tax credits and associated compliance documents should be made publicly available in accessible format. Project owners that sign a CWA for their site should be assumed to be in compliance with these reporting requirements.

Immediately Implement an Enforceable National Heat Standard

The rate of inclement weather, including extreme heat, is expected to increase due to the impacts of climate change.[114] This report's findings indicate that a significant number of workers do not receive rest breaks on the job. OSHA initiated a rulemaking process and has released a proposed rule on a workplace-based heat standard, which addresses the provision of water, rest breaks, and shade during hot conditions, among other provisions.[115] However, OSHA rulings can take an average of seven years, and there is ample evidence of the immediate need to enforce heat-related illness prevention both in this report and from OSHA's National Emphasis Program.[116]

State Policy Changes

Require Employers to Enroll their Employees in Workers' Compensation Insurance

Texas is the only state in the country to allow private companies to opt-out of providing workers' compensation to their employees.[117] More than two-thirds of this survey's respondents lacked access to workers' compensation, meaning that for many, an injury at work can lead to a permanent loss of income.[118] Given the high rate of injuries and illnesses these workers sustain, action must be taken to protect those hurt on the job.

Repeal HB 2127 to Stop State Interference in Workplace Conditions

HB 2127 takes away the ability of local communities in Texas to decide how the places where they live and work are governed. This is a blatant attack on all Texans that could end essential workplace protections, such as water and rest breaks for workers. This law increases the risk of workers suffering from heat-related illnesses and other occupational hazards, which this study shows are widespread.

Local Policy Changes

Ensure that Municipally Owned Utilities Take Responsibility for Clean Energy Projects

Municipally Owned Utilities (MOUs) in Texas have made commitments to increase the amount of clean energy they provide to customers in their energy portfolio.[119],[120] These utilities are accomplishing this by contracting with companies that build and maintain the clean energy projects, and agreeing to buy the energy from these projects for up to 25 years. Municipalities should require that these agreements prioritize projects with high-road labor standards, and should include strong enforcement and clawback measures, such as taking back public funds, when existing rules are not followed.

Utilize changes to the Uniform Guidance to Provide Worker Protections for Federally-funded Projects

The Office of Management and Budget has released guidelines that allow localities to set stipulations on the provision of federal funds like IRA's Solar For All grants.[121],[122] These include the allowance of local hire requirements, the use of job quality scoring which include pay and benefits, and requirements of binding and enforceable pre-hire construction agreements. These are powerful tools that counties and cities can use to ensure federally funded projects they administer can create good, safe jobs for their communities.

Negotiate Stronger Worker Protections in Local Tax Abatements and Grants

Clean energy projects often receive local tax abatements through Chapter 311/312 agreements, and can receive grants through Chapter 380 agreements.[123] These agreements provide millions of dollars to clean energy projects, and should include common sense labor standards to ensure high-road employment practices.[124] These provisions should be included, and must come alongside strict clawback requirements, which ensure that companies which violate their obligations must pay the value of the abatements back to the city or county.

Conclusion

This study sought to understand the conditions of working people on the front line of the state's energy transition in utility-scale solar and wind construction, as well as clean energy supply chain manufacturing. To that end, this report surveyed over 1,200 non-union workers in these industries with a mix of digital and in-person outreach and interviews. This report also sought to triangulate quantitative data with in-depth, qualitative worker interviews to better understand conditions in these industries.

The findings are clear: while there are important examples of recent federal climate investments playing a catalytic role in reducing carbon emissions and promoting high-quality job creation, this report demonstrates with statistically significant data that the private sector may not always be living up to the promise of ensuring that these jobs are high-quality, risking leaving working families behind in the state's clean energy transition. Specifically, this report reveals that workers in solar and wind installation are often subject to low pay, have limited access to benefits like health insurance, face difficult working conditions like transience, persistent and unpredictable layoffs, as well as dangerous and sometimes deadly working conditions. Clean energy manufacturing workers in Texas similarly reported dangerous working conditions, pay lower than the national average, wage theft, and limited benefits. Report findings also indicated deep racial, gender, and language disparities in pay, benefits, and working conditions.

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