ENERGIZING CALIFORNIA: REGIONAL LESSONS AND RECOMMENDATIONS FOR ACTION

SEPTEMBER 2023

CAFWD
CALIFORNIA FORWARD

TABLE OF CONTENTS

02 INTRODUCTION

03 REGIONAL SUMMARIES

03 • SIERRA NEVADA AND RURAL FORESTED COMMUNITIES

06 • IMPERIAL VALLEY

08 • LOS ANGELES

11 • KERN COUNTY

14 FINDINGS & RECOMMENDATIONS

INTRODUCTION

California stands at a crossroads. The state's energy system is tasked with meeting ambitious renewable production goals and decarbonization objectives. The federal and state governments have made historic levels of funding available to incentivize that energy transition and also increase demands for electrification through increased electric vehicle adoption, home appliance changes and other pathways.

Leading up to the October 2022 California Economic Summit in Kern County, California Forward (CA FWD) published a Call to Action focusing on the need for realistic, reliable and regionally centered solutions. The state still does not have an integrated plan for meeting its energy and decarbonization goals – as is the case in comparably sized economies like the United Kingdom or India.[1] California has a complex array of disjointed state and local plans that outline what needs to be done, but the roadmap for how to get there is at times unclear.

Since publishing the Energy Call to Action, CA FWD worked with the Newsom Administration and regional partners on broader reforms to accelerate how we build energy and other critical infrastructure. The Governor signed an infrastructure-focused legislative package into law in July – an important first step on the path to ensuring California builds infrastructure equitably and expeditiously. Much more reform is needed to build at the speed and scale required to meet the state's existing clean energy and decarbonization goals.

Across the state, Californians continue to innovate and pioneer a brighter energy future. Last December, the Lawrence Livermore National Laboratory achieved the first net positive fusion reaction in the history of humanity. [2]

Throughout 2023, CA FWD hosted regional energy listening sessions with regional partners in the Sierra and rural forested communities, the greater Los Angeles area, the Imperial Valley, and Kern County, to hear from leading practitioners and those on the ground on what is working, where there are outstanding barriers and how to move California's energy resilience forward. Below summarizes the input received and lessons learned from these listening sessions across California. The regional summaries are then synthesized into findings and recommendations for moving California's energy system forward equitably and expeditiously.

1 "Next green leader? India halts new coal plant construction." CS Monitor
2 "The UK's 'green day' avalanche of climate and energy announcements," Carbon Brief
"Lawrence Livermore National Laboratory achieves fusion ignition," Lawrence Livermore

REGIONAL SUMMARIES

Sierra Nevada and Rural Forested Communities

In the Sierra Nevada and rural, forested regions of California, building decarbonization and the transition to clean energy is going to take immense investment. Between mountainous geographies, limited populations, and minimal workforce in the clean energy sector, the rural regions of the state are already falling behind more urban regions. High wildfire risk and unreliable electrical grids have made the transition to clean energy a crucial need in rural, forested communities. The scale of wildfire in California has been catastrophic, and the Sierra Nevada's numerous large wildfire seasons have left communities in dire conditions.

Home to a vast forest community, quantified costs including firefighting, utility maintenance and insured property losses ran upwards of $18 billion in annual costs and repairs in recent years according to the California Council of Science and Technology. Unquantified costs through public health impacts and losses of ecosystem services may likely exceed those more easily quantified costs. According to the California Air Resources Board, forests are linked to California's largest carbon sink. In 1990, it was estimated that forested areas were removing 13 million metric tons of carbon dioxide per year. However, many forests are unhealthy and may not be sequestering and storing the same level of carbon today.

Unhealthy forests and increased wildfire risk pose threats to all Californians. A loss of cost-free and significant carbon storage coupled with an increase in greenhouse gas emissions from unprecedented wildfires makes it harder for California to meet emission-reduction goals, leads to increased sediment production affecting water quality and water infrastructure, damages other critical infrastructure, and costs tax-payer dollars to fight fires and restore communities.

Forest biomass utilization is part of the solution to solve the wildfire crisis in forested, rural regions. Forest biomass utilization is a process in which material from forest management treatments is removed and converted to create electricity and innovative wood products. Biomass utilization reduces the risks of catastrophic wildfires, supports forest management, makes watersheds more efficient, strengthens rural economic activity, and expands renewable energy resources.

Many community members are interested in opportunities to establish community microgrids. Microgrids are local energy systems that use renewable energy resources to provide electricity to a smaller, more resilient scale area. This would allow critical infrastructure to remain powered during utility power shut-offs, can be powered through renewable energy sources, and can be installed in rural regions.

With resources that bear opportunities both at the local and state levels, more can be done by the state to support forest biomass utilization and microgrids in Sierra Nevada communities. Some challenges to implementation include: energy from forest biomass is more expensive than other renewables, the process of securing power purchase agreements from utilities is complex and difficult, there is a lack of private investment based on regulatory burdens, and infrastructure connectivity due to the outdated electrical design. Nearly 70% of transmission lines and transformers in the United States are over 25 years old.

Nevertheless, several investment opportunities are paving the way to target and help flourish the state's energy efficiency issues:

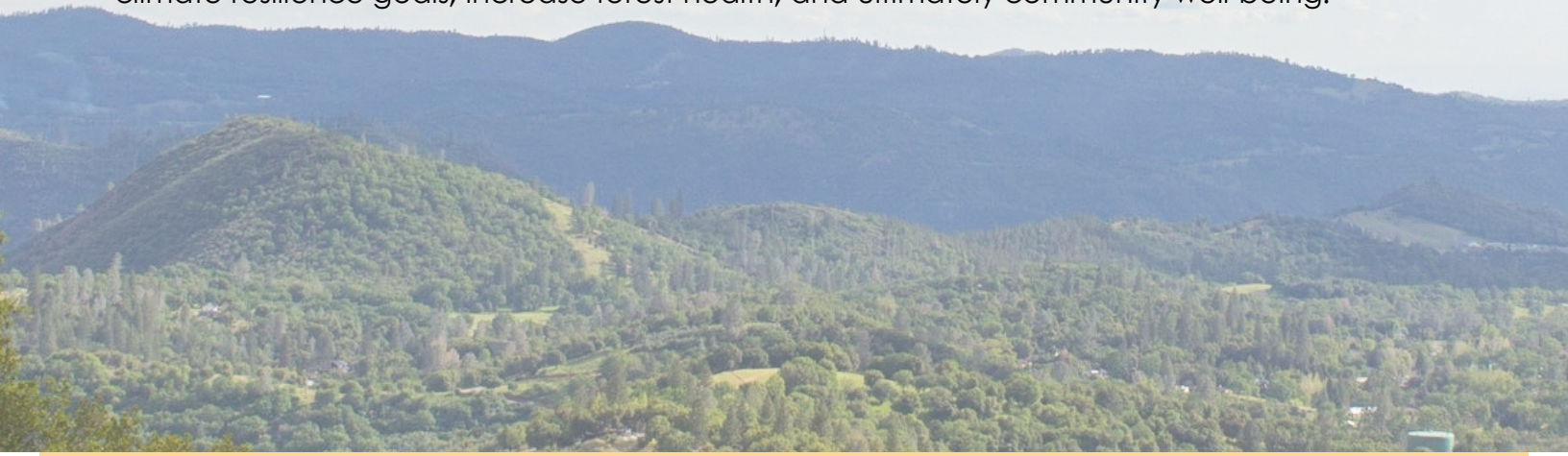
- The Sierra Nevada Energy Watch is a program that expands energy efficiency and renewable energy use in the region. It offers no-cost services that range from helping link to resources, conducting energy use analysis and audits, providing project management support, and finding funding.

- The Migrid Incentive Program would cover the total cost of a program and pay up to $15 million per project including generation and storage, and the full cost of a community microgrid. It aims to advance microgrid resilience technology and distribute the benefits of microgrids equitably across these communities.

- The PowerPathway Signature program assists with helping new or experienced workers develop skills and apprenticeship career paths in both gas and electric operations. It is free and unpaid training led by Pacific Gas & Electric instructors with hands-on training in the field.

- The Sierra Business Council was awarded $5 million to support sustainable and resilient regional economies through the Community Economic Resilience Fund. It will facilitate the Eastern Sierra's initial CERF planning phase and develop the region's economic strategy with priority projects and recommended series of investments.

More investment and resources need to be allotted to break down some barriers that are still prominent in the area. Increased wildfire funding, forest management, and the need to reestablish the natural fire ecosystem are critical. In terms of microgrids, resources need to be provided to local jurisdictions for the implementation of a system. Microgrids replace the need for gas-fired plants that emit hazardous fossil fuels, avoid expensive and inefficient long-distance transmission of power, and can attract private investment and create jobs for residents. As for forest biomass, it offers a range of benefits which include net improvements to air quality, increased water quality and yield, net reductions in greenhouse gas emissions, and improved public health and productivity. By working together to develop stronger policies that address the concerns of the Sierra Nevada community, the region can meet its climate resilience goals, increase forest health, and ultimately community well-being.



Imperial Valley

The Imperial Valley has been endowed with an abundance of green energy potential and is becoming a fast growing center for renewable energy production plants. Having access to one of the hottest, largest, and most saline geothermal fields in the world, the Salton Sea has more geothermal generating capacity than anywhere in the United States. Currently, Imperial County has eleven operating geothermal energy fields. After the discovery of one of the largest underground reserves of lithium, a vital mineral for rechargeable batteries and renewable-energy technologies, Imperial County looks to transform into Lithium Valley.

Despite its access to a plethora of lithium that is predicted to be a potential value of $500 billion to $1 trillion, Imperial Valley still faces substantial local challenges. According to CA FWD's California Dream Index, Imperial County ranks below the state average in various indicators of economic well-being, including residents living with income above the cost of living, children enrolled in early childhood education, residents obtaining a college or career technical education, and residents residing in prosperous neighborhoods.

According to the U.S. Census Bureau, Imperial County falls into the third highest poverty rate in the state. Will the increase in geothermal plants and lithium production bring greater economic opportunities to the region and those living there, or will outside entities reap the success and leave Imperial Valley in its current state?

There are examples of early success. The Imperial Irrigation District has met or exceeded all of California's Renewable Portfolio Standard requirements to date, obtaining renewable energy from diverse sources, including biowaste, biomass, solar, geothermal, hydroelectric, and wind. Several investment opportunities are paving the way to address the county's education and job issues:

- In 2022, Governor Newsom committed $80 million in state funding for a new STEM facility on San Diego State University's Brawley campus that will support the region's exploration of extraction and uses of lithium.
- California Blueprint includes a tax credit for those that opt in for the development of green energy technologies, totaling $100 million per year for three years. This will fund pre-development costs for new technologies such as: geothermal, lithium extraction, battery manufacturing, electric vehicle manufacturing and infrastructure, long-duration storage, and more.
- Through the Lithium Extraction Tax Law, the funds received from the per-ton revenues will go to Imperial Valley communities so they are benefited by the extraction. Producers of lithium in California will be required to pay a $400 per-ton fee for the first 20,000 tons they produce, $600 per ton for between 20,000-30,000 tons produced, and $800 per ton for anything above.

The critical areas of focus are adopting policy and financing strategies to streamline lithium recovery projects and aligning stakeholders, including local communities, at the outset and throughout the process to ensure they do not bear the burden of climate change.

Lithium Valley provides California with a unique resource. By working together to develop stronger policies that address the concerns of Imperial Valley's residents, California can support the county and help its renewable energy sector prosper. Lithium Valley has the potential to establish California as a global production hub that could potentially employ thousands of workers and drive economic prosperity for generations to come.

Los Angeles

Los Angeles is a major oil and gas refinery and distribution hub for all of Southern California, Southern Nevada, and Arizona and is the second largest oil-producing county in the state. The City of Los Angeles has the largest concentration of urban oil fields in the nation, but only contributes about 2% of California's total oil production. Currently, Los Angeles has 26 oil and gas fields and more than 5,000 oil and gas wells.

On average, the county's energy burden grows dramatically as household income declines. Households earning between 30-60% of the state median income have an energy burden near 4% of household income, while those households making 30% or less of the state median income can spend more than 10% of their income on energy.

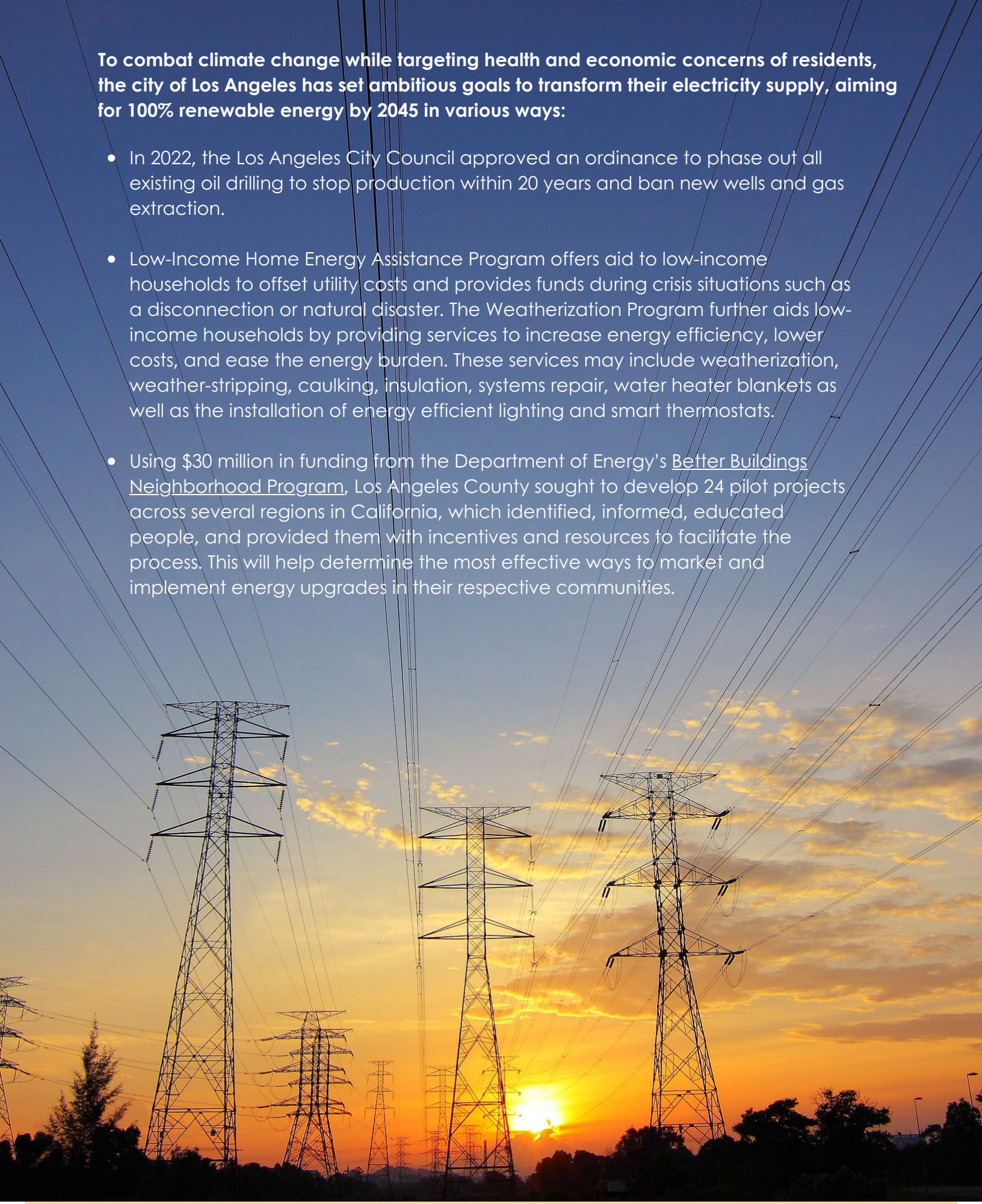
However, the county also receives 50% of its energy from renewable sources and Los Angeles is the nation's leading city for installed solar capacity. As of October 2022, customers in incorporated areas of the region received 100%, instead of 50% in the past- renewable energy- wind, geothermal, solar, from the Clean Power Alliance. Southern California Gas Co. also has proposed the development of the nation's largest green hydrogen energy infrastructure system (the "Angeles Link") to deliver clean, reliable renewable energy to the Los Angeles region. This would support the integration of more renewable electricity resources and would significantly reduce greenhouse gas emissions.

To combat climate change while targeting health and economic concerns of residents, the city of Los Angeles has set ambitious goals to transform their electricity supply, aiming for 100% renewable energy by 2045 in various ways:

- In 2022, the Los Angeles City Council approved an ordinance to phase out all existing oil drilling to stop production within 20 years and ban new wells and gas extraction.

- Low-Income Home Energy Assistance Program offers aid to low-income households to offset utility costs and provides funds during crisis situations such as a disconnection or natural disaster. The Weatherization Program further aids low-income households by providing services to increase energy efficiency, lower costs, and ease the energy burden. These services may include weatherization, weather-stripping, caulking, insulation, systems repair, water heater blankets as well as the installation of energy efficient lighting and smart thermostats.

- Using $30 million in funding from the Department of Energy's Better Buildings Neighborhood Program, Los Angeles County sought to develop 24 pilot projects across several regions in California, which identified, informed, educated people, and provided them with incentives and resources to facilitate the process. This will help determine the most effective ways to market and implement energy upgrades in their respective communities.



While Los Angeles County strives towards renewable energy efforts, ensuring prioritization of the disadvantaged communities affected by the production of fossil fuels will be critical during the clean energy transition to thrive under a changing future of climate. Green hydrogen derived from renewable sources has the capacity to achieve notable decreases in emissions within industries and domains that cannot be sufficiently addressed by renewable electricity alone. The majority of studies focused on substantial decarbonization and increased reliance on renewable energy highlight the significant contribution of solar, wind, and batteries in reducing carbon emissions from a considerable portion of the electricity sector.

The climate crisis faced in the region is not only an environmental issue but is also linked to the challenges of inequality and poverty. Home to more than 4 million people who are at risk of droughts, fires, and earthquakes, Los Angeles has been working to transform its environment and economy. In 2015, The LA Sustainable City pLAn was at the forefront of this transition. By 2019, Los Angeles became the number-one solar city in the country, reduced the city's greenhouse gas emissions by 11% in a single year, and created more than 35,000 green jobs. Later in 2019, the city's 2019 Green New Deal pLAn focused on the creation of sustainable employment opportunities and community resilience. As Los Angeles County continues towards its goal of achieving complete renewable energy by 2045, the rate at which its efforts are being achieved makes that dream possible.

Kern County

Kern County is one of the largest gas and oil producing counties in the nation, producing 70% of all the oil and gas in California. The history of oil runs deep in the county, as a means of funding services, supporting jobs and part of the regional ethos. The industry supports more than 25,000 high wage jobs in their community and accounts for more than $4 billion in income for the families in the county each year.

Like the rest of the state, the region faces increasing threats of climate change, high energy burden, and health risks. According to the American Lung Association, Kern County ranks among the top three worst cities in the United States for air quality in both ozone and particle pollution.

While oil and gas remain a critical aspect of job opportunities and economic prosperity, the county is the number one renewable energy producer in the state. The region is home to significant solar, geothermal, wind, and biofuels energy generation, generating approximately twice as much renewable energy as the second most productive county in California.

As Kern makes the transition to providing lower carbon and renewable energy for use across the state, several investment opportunities have become available:

- The state of California awarded Kern Community College District $50 million to create a renewable energy hub called the California Renewable Energy Laboratory. The areas of interest include transportation, carbon management, microgrids, agrivoltaics, curriculum and workforce development.

- The Department of Energy awarded three projects involving energy producers in Kern County $20.6 million to advance feasibility studies and design work on proposed direct air capture (DAC) hubs in the region. The DOE also awarded nearly $3 million to a consortium led by the U.C. Regents to study the feasibility of community-based DAC solutions in Kern County.

- A Communities Local Energy Action Program technical assistance grant to Kern County created an interactive website with technical and economic information on a variety of industries with carbon dioxide (CO2) capture that could utilize subsurface resources in Kern for permanent CO2 storage. The website explains potential benefits and impacts if these industries were to be developed within a Carbon Management Business Park (CMBP) sited in Kern County. The analysis found that a CMBP could generate between 13,540 and 22,014 jobs, and $41 million to $88 million in local tax revenues.

- A second Communities Local Energy Action Program pilot technical assistance grant will help increase local understanding of energy resilience technology options. It will prioritize community resilience projects that support low-income, energy-cost-burdened, and historically marginalized households through developing an equity and site evaluation framework that enables the coalition to equitably select sites for analysis.

The oil and gas industry goes back more than a hundred years in the region. The industry is a driving force in the region's economic economic vitality. While there is excitement amongst many stakeholders for the newly awarded grant funding for technologies like carbon capture and storage in Kern, there are challenges in fully transitioning to clean energy. Jobs in the oil and gas industry offer significant opportunities for upward mobility for diverse individuals at all levels of education. Replacing these quality jobs is a top concern of local residents. Additionally, property tax revenue paid by oil and gas producers will be a major challenge for the county to replace as production decreases.

According to Resources for the Future study, United States tax revenues from oil and gas production, which currently approximates $34 billion per year, would fall by two-thirds by 2050. In 2020, oil and gas generated nearly one-quarter of Kern's property tax revenue, $197 million, which helped fund hospitals, schools, law enforcement, water agencies, etc. During the 2022-23 tax year, oil and gas producers were five of the top ten taxpayers in Kern County, generating approximately 12.1% of total taxes due to the County.

As California transitions towards 100% clean energy by 2045, Kern County faces challenges replacing the quality jobs and tax revenue associated with old energy as the county transitions to the new. In addition to addressing revenue and employment losses from the contraction of carbon-emitting industries, the County also faces barriers to attracting investment in carbon management projects due to unclear permitting and regulatory pathways.

FINDINGS & RECOMMENDATIONS

California's regional economies operate in a highly competitive, dynamic global landscape. The global energy transition has accelerated beyond expectations. According to the International Energy Agency, the world's total renewable energy capacity is set to exceed the total power output of China and the United States combined in 2023.[3]

With world-leading state goals, technology companies and a track record of pioneering bold public works, California has the opportunity to provide a model for how the energy transition can enhance equity and economic growth. Yet there are ample barriers and also untapped opportunities evident across California's regions.

In the listening sessions, participants frequently spoke about the challenges navigating cumbersome state grant applications, the burden of permitting requirements, the uncertainty of changing regulations, the gaps in workforce skills and availability, the need for a just transition for high paying petroleum jobs, and the need for clear rules and expectations from the state.

3 "Renewable power on course to shatter more records as countries around the world speed up deployment," International Energy Agency

To realize the state's potential potential and address those challenges:

- California needs a statewide energy plan for ensuring reliable, realistic and regionally based solutions to meet its existing clean energy and decarbonization goals. An equitable and expeditious energy transition requires clearly articulating pathways for meeting the state's ambitious goals.

- California should create more spaces in regions for state regulators and policymakers to hear from on the ground energy practitioners and discuss challenges with existing rules and regulatory requirements. Those dialogues would help avoid unnecessarily confrontational and contentious regulatory rule setting processes by surfacing facts, evidence and regional realities.

- California should build on the recently enacted package of reforms to accelerate infrastructure project delivery with additional state policy and immediate regionally centered operational support as detailed below. Without structural reform, the current paradigm of permitting and approving energy projects will cause California to fail to meet its energy and decarbonization goals on schedule.

- California needs to simplify and better coordinate state grant programs. The administrative burden of state government grant programs often runs at cross purposes against the state's goals for enabling inclusive access for rural and disadvantaged communities.

- California should continue funding intermediary organizations to convene and connect critical stakeholders such as employers, institutions of education, and community-based organizations, to collaboratively develop and support our rising workforce to be leaders in the green economy.

- California needs clear rules of the road for carbon capture and storage, including how abating carbon emissions aligns with the existing cap and trade system.

- California should utilize historically proven models for building large projects expeditiously, such as the public-private partnership led by the federal government in the Pacific DC Intertie model from the 1960s and explore other federalization models in select regions such as the Tennessee Valley Authority. The federal government has long planning horizons and the ability to absorb financial risk requisite for major regional and interregional projects.[4]

- California should integrate, align and enable concurrent approval through the integrated resources planning process, transmission studies, construction permitting and local licensing where possible. Currently new transmission projects can take upwards of ten years to permit and approve before beginning construction.

- California should increase the capacity of courts processing environmental impact analyses with more staff, resources and training to help expedite and meet the new legislative goal of processing CEQA applications in 270 days for clean energy projects.

4 "Mind the Gap," Southern California Edison

These recommendations were included in CA FWD's 2023 infrastructure Report, "Building a More Inclusive and Sustainable California," [5] and were themes emphasized in the regional energy listening sessions.

Establish a strike team to help prioritize resources and identify when regions do not have required capabilities to implement and review planning for regionally significant projects. Develop policy guidelines, time limits, incentives, and an infrastructure navigator / strike teams to expedite review and permitting across authorities.

Develop standardized data tracking tool(s) and regular reporting of performance to project stakeholders for consistent, comparable data across project portfolios. A standardized approach to data collection allows for accurate comparisons across different project types, values and statuses through the project permitting and development pipeline.

Collaborate with philanthropy to provide long-term funding to regions to identify and prepare a portfolio of regionally significant and high- impact projects that match local needs with regional priorities.

Develop guidelines and framework for statewide coordination between industry and education stakeholders to form a job creation framework, guiding needed skills, employer incentives and procurement practices, and training curriculum to California's economic development goals such as programs for disadvantaged or under-resourced communities.

Retrain and upskill workers for jobs in opportunity sectors to enable a just transition, especially for those most at risk of job displacement.

Incentivize employers to revisit job requirements and employment incentives to quickly attract a broader talent pool. These measures could include skill-based hiring, second-chance programs, and improved compensation packages.

Secure federal reciprocity (e.g., NEPA statutory exemptions for CEQA statutory exemptions), more review capacity / standardization of NEPA reviews (including review timelines/schedules) and additional NEPA assignments for state/regional agencies to facilitate joint CEQA/NEPA reviews.

Shorten construction times and reduce costs for projects over a designated threshold by emphasizing speed over disruption mitigation and providing incentives for contractors and agency staff to meet or beat deadlines.

Enact legislation to expand the use and number of alternative delivery models to allow for early vendor input and best-value bidding.

5 "Building a more inclusive and sustainable California," CA FWD