**DOCKETED**

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<td>California's Energy Policy Leadership</td>
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<td>Description:</td>
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<td>Filer:</td>
<td>Stephanie Bailey</td>
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TOWARD A
CLEAN ENERGY FUTURE
INTEGRATED ENERGY POLICY REPORT

Every two years, the California Energy Commission prepares the Integrated Energy Policy Report (IEPR). This year, the IEPR Update contains two volumes. Volume I (this document) highlights the implementation of California’s innovative policies and the role they have played in establishing a clean energy economy. Volume II, scheduled for completion in February 2019, will provide more detail on several key energy issues and will encompass new analyses, as well as significant opportunities for public participation.

CLIMATE CHANGE

Climate change represents one of the greatest threats facing the world today. Already, California has seen impacts in the form of sea-level rise, drought, wildfires, coastal erosion, disruption of water supply, and threats to agriculture. Last year, California experienced the largest and most damaging forest fires in the history of the state. In total, the 2017 fire season killed 43 people and damaged or destroyed more than 10,000 structures. Just two years prior, the drought cost the state’s agricultural sector an estimated $2.7 billion and more than 20,000 jobs. The most recent drought was followed by record-breaking rains, resulting in flooding that tore through freeways and threatened rural and coastal communities. Climate change continues to increase the risk of natural disasters in California and around the globe.

California’s leadership in climate change policy builds on a strong foundation of climate science and research. The state’s Climate Change Assessments provide interagency analysis of climate change impacts. The Fourth Climate Change Assessment, to be released in 2018, will detail climate impacts on regions, industries, ecosystems and communities, highlighting key vulnerabilities and adaptation and mitigation priorities. These assessments inform policymakers, influence legislation, and support California’s commitment to reduce greenhouse gas emissions and build a healthy, safe, and sustainable future.

“\textit{It’s time for courage, it’s time for creativity, and it’s time for boldness to tackle climate change.}”
- Governor Edmund G. Brown Jr.
LEADING THE WAY TO A CLEAN ENERGY FUTURE

CLIMATE LEADERSHIP
For decades, California has remained at the forefront of clean energy leadership, demonstrating that environmental protection does not need to come at the expense of a thriving economy. Today, California is committed to addressing climate change in partnership with other states and nations around the world.

CALIFORNIA’S GROWING ECONOMY
With the fifth largest economy in the world, California is implementing an ambitious array of climate and renewable energy policies, demonstrating that economic growth and environmental protection can go hand in hand. As California has pressed forward to reduce pollution, the state’s gross domestic product (GDP) growth has consistently outpaced the U.S. national average.

BUILDING A CLEAN ECONOMY

GDP GROWTH SINCE 2000

<table>
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<tr>
<th>Region</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>46%</td>
</tr>
<tr>
<td>Rest of United States</td>
<td>35%</td>
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Source: California Department of Finance and U.S. Bureau of Economic Analysis

PERCENT CHANGE SINCE 2000

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP</th>
<th>Population</th>
<th>GHG Emissions</th>
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<tbody>
<tr>
<td>2000</td>
<td>40%</td>
<td>5%</td>
<td>10%</td>
</tr>
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<td>2005</td>
<td>30%</td>
<td>10%</td>
<td>15%</td>
</tr>
<tr>
<td>2010</td>
<td>20%</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td>2015</td>
<td>10%</td>
<td>20%</td>
<td>25%</td>
</tr>
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</table>

Data only available through 2016

Source: U.S. Census Bureau, California Air Resources Board, and California Department of Finance

SINCE 2000 CALIFORNIA HAS SEEN ...

- 9% decrease in GHG emissions
- 16% increase in population
- 46% increase in GDP
AMBITIOUS TARGETS

California’s greenhouse gas reduction targets are a cornerstone of the state’s groundbreaking efforts to fight climate change. Under the leadership of the last two governors and through landmark legislative actions, the state has cultivated a robust climate policy portfolio that addresses emissions across sectors including electricity, buildings, transportation, land use and agriculture, and industry. This comprehensive approach helps reduce the impacts of climate change, promotes energy resiliency, improves public health, supports disadvantaged and low-income communities, and fosters economic growth and jobs.

CALIFORNIA GREENHOUSE GAS EMISSIONS (MMTCO2e)

Source: California Air Resources Board

INTERNATIONAL COLLABORATION

The Under2 Coalition, co-chaired by Governor Edmund G. Brown Jr., is an international pact among cities, states, and countries formed to galvanize bold climate action around the globe. Signatories pledge to limit the increase of the global average temperature to below 2 degrees Celsius and strive to remain below 1.5 degrees—the level of potentially catastrophic consequences—by either reducing emissions by 80 to 95 percent below 1990 levels or holding annual emissions to less than 2 metric tons per capita by 2050. Since 2015, the coalition has grown to include 206 jurisdictions, representing 43 countries, 1.3 billion people, and almost 40 percent of the global economy.

PUTTING A PRICE ON CARBON

The Cap-and-Trade Program helps California reach its climate targets at low costs. The program places a firm, declining cap on the primary sources of emissions. Businesses can then choose to reduce emissions below the cap or use a limited number of tradable emissions allowances. More than $6 billion collected through these allowance auctions is being invested in programs to further reduce emissions, including energy efficiency upgrades, clean transportation incentives, urban tree planting, and affordable housing development. More than $1 billion (half of the funding spent through 2017) has benefited disadvantaged communities.

SPOTLIGHT: CALIFORNIA-MEXICO PARTNERSHIP

California has established multiple channels of cooperation with Mexico to promote renewable energy, clean transportation, energy efficiency, and climate mitigation. California has signed agreements with the federal government of Mexico, and at the subnational level with the Mexican states of Aguascalientes and Jalisco. Both states, as well as 11 others, have also joined the Under2 Coalition. In addition, the Mexican federal government has endorsed the Under2 MOU.

SPOTLIGHT: CALIFORNIA-CHINA PARTNERSHIP

In 2017, Governor Brown met with President Xi Jinping of the People’s Republic of China and signed an agreement with the Chinese Minister of Science and Technology to cooperate on research, innovation, and investment to develop low-carbon energy technologies. California also has agreements with the National Development and Reform Commission (NDRC) and strong regional relationships with several municipalities and provinces, including Jiangsu, Sichuan, Shenzhen, and Beijing, to advance clean energy and reduce greenhouse gas emissions and air pollution.
CLEANING UP THE ELECTRIC GRID

California’s electric grid relies increasingly on clean sources of energy such as solar, wind, geothermal, hydroelectricity, and biomass. As this transition advances, the grid is also expanding to serve new sectors including electric vehicles, rail, and space and water heating. California has installed more renewable energy than any other U.S. state with 22,250 megawatts (MW) of utility-scale systems operational today. The state continues to shatter installation records and is home to some of the largest solar, wind, and geothermal power plants in the world.

RENEWABLE ENERGY GENERATION

CLEAN ENERGY TARGETS

California’s Renewables Portfolio Standard (RPS) is among the most ambitious energy policies in the nation. The RPS establishes increasing renewable energy procurement requirements for electric utilities and other load-serving entities.

RENEWABLE ENERGY PROCUREMENT REQUIREMENTS

EXPLORING OFFSHORE WIND

In 2016, former U.S. Interior Secretary Sally Jewell and Governor Brown signed a memorandum of understanding to implement renewable energy goals including potential offshore wind development. To support this effort, a joint federal and state government task force was formed to coordinate planning and permitting for offshore renewable energy. The task force is engaging with stakeholders to explore opportunities for offshore wind development along the California coast.
DISTRIBUTED RENEWABLE ENERGY GENERATION

THE ROOFTOP REVOLUTION: ONE MILLION SOLAR ROOFS

Distributed renewable energy systems play an important role in helping California meet its climate goals and produce clean energy locally. In 2005, Governor Arnold Schwarzenegger established the audacious goal to install one million solar roofs. Since then, incentives, rate design, and new construction requirements have streamlined installations, reduced costs, and supported deployment across the state. Today, California is fast-approaching one million rooftop solar energy systems on homes, schools, businesses, and public buildings. Total installed behind-the-meter solar capacity is expected to reach 7,900 MW by the end of 2018.

SOLAR ON NEW HOMES: FROM INCENTIVE TO NEW STANDARD

The 2019 Building Energy Efficiency Standards, adopted by the Energy Commission and set for approval by the Building Standards Commission in late 2018, will require new homes in California to include enough solar to meet the home’s electricity consumption annually—a critical stepping stone for moving toward zero-emission buildings. The standard ensures new homes install solar during construction, when it is least expensive, often reducing costs by up to 20 percent compared to installations on existing homes. At the time of construction, developers can also address challenges, including shading, tilt, and roof obstructions that can significantly reduce system efficiency or make it difficult to install a system at all.

This major milestone was made possible by the New Solar Homes Partnership (NSHP) voluntary incentive program, which helped grow the market for solar installations on new homes. NSHP has allocated nearly $400 million over 10 years, providing higher incentive levels for affordable housing projects and highly energy-efficient homes.

KEY INCENTIVE PROGRAMS

CALIFORNIA SOLAR INITIATIVE

The California Solar Initiative (CSI) was a decade-long program designed to create a self-sustaining solar market by providing rebates for solar power installations for homes and businesses. The incentive program, which included specific funding for installations on low-income housing and new homes, helped create economies of scale, drive down costs of solar energy, create jobs, and reduce pollution. Overall, CSI provided more than $2.9 billion in incentives to California customers. As of 2018, nearly 248,000 residential and commercial solar systems totaling 2,500 MW of were installed through the program.

The CSI also expanded use of net energy metering (NEM), another key program that has helped make rooftop solar installations cost-effective for California consumers. NEM allows solar customers to be credited at the full retail value for the electricity their system generates, using the grid to balance discrepancies between supply and demand. In addition to an interconnection fee and service charges, customers pay only for the net electricity used above the amount generated by their solar system. New solar customers are now enrolled in time-of-use electric rates and further work is underway to ensure electric rates, including those for NEM program, meet the needs of California’s evolving grid.

SELF-GENERATION INCENTIVE PROGRAM

The Self-Generation Incentive Program (SGIP) is one of the longest-running and most successful distributed generation incentive programs in the country. The program was created in response to the 2000-2001 energy crisis to encourage the adoption of distributed generation technologies and reduce peak energy loads. Over nearly two decades, the program has evolved to reflect market conditions and the state’s commitment to reduce emissions and increase system reliability. Today, 80 percent of program funding is reserved for energy storage projects, while 20 percent supports the installation of generation technologies such as small-scale wind turbines, combined heat and power, and fuel cells. In total, the program has awarded more than $1.5 billion to support the installation of 7,100 projects.

TOTAL INSTALLED BEHIND-THE-METER SOLAR CAPACITY (MW)

- PRIOR YEARS’ CAPACITY
- ANNUAL CAPACITY ADDED
- PARTIAL YEAR CAPACITY ADDED
- FORECASTED CAPACITY ADDITIONS

Source: California Distributed Generation Statistics

Photo credit: Sunpower
**ENERGY EFFICIENCY**

**EFFECTIVENESS STANDARDS**

California developed the nation’s first energy conservation standards for buildings and appliances in the 1970s. Since then, the state has continued to establish cost-effective efficiency standards and incentive programs, and the resulting energy savings translate to financial savings for California consumers. The standards developed in California continue to be adopted around the world.

**BUILDINGS**

New buildings are becoming increasingly energy-efficient, due to progressive building standards, which are updated and improved about every three years. A home built under the recently adopted 2019 standards, for instance, will use 53 percent less energy than a home built under the 2016 building code. Existing buildings, however, are often more challenging to upgrade. To address this hard-to-reach sector, California developed the Existing Building Energy Efficiency Action Plan, which provides a 10-year roadmap to activate market forces and transform California’s existing building stock into high-performing and energy efficient buildings.

**APPLIANCES**

Appliance standards have proven to be effective levers to reduce statewide energy consumption. California regulates the efficiency of many common appliances, including computers, televisions, light bulbs, battery chargers, and plumbing fixtures, and continues to set the most aggressive standards in the nation. These standards shift the market toward more efficient products, providing energy, water, and cost savings without compromising appliance utility or functionality.

**SPOTLIGHT: LIGHTING EVOLUTION**

California has adopted a series of lighting standards to transition away from the nearly 150-year old incandescent light bulb. Since commercialization in the late 1880s, the incandescent bulb has remained highly inefficient, wasting about 90 percent of the electricity it uses as heat, which is why incandescent bulbs are hot to the touch. California’s most recent lighting standards, which went into effect in January 2018, established requirements that only highly efficient bulbs, such as light-emitting diodes (LED), can meet.

**ENERGY SAVINGS**

For more than 40 years, California has been a pioneer in energy efficiency, which remains one of the state’s top energy priorities. California provides $1.2 billion in funding annually, from ratepayers of investor-owned and publicly owned utilities, to support a portfolio of energy efficiency programs. Resulting energy savings have surpassed 957,000 gigawatt hours (GWh) of electricity and 93 billion therms of natural gas. Over time, California’s per capita energy use has dropped significantly below the U.S. average, helping reduce the number of power plants constructed. In 2015, California enacted landmark legislation to achieve a cost-effective cumulative doubling of energy efficiency savings in electricity and natural gas end uses by 2030.

**BUILDING BENCHMARKING**

In March 2018, California launched the first statewide building energy-benchmarking program in the nation, which requires large commercial building owners to report the building’s energy use data. The program enables comparison between similar sized buildings, allows owners and tenants to make more informed purchasing and leasing decisions, and encourages energy efficient upgrades.

**DECOUPLING UTILITY SALES FROM REVENUES**

In the 1980s, California adopted “decoupling,” eliminating the direct link between energy sales and utility revenues. This better aligns financial incentives for utilities with societal benefits, supporting the goal to provide energy services at overall least cost with minimal environmental impact.

**EFFICIENCY JOBS**

California employs more than 300,000 workers in energy efficiency fields. These jobs—spanning construction, manufacturing, distribution, transportation, and professional and business services—are largely non-exportable and benefit California communities through better performing buildings and indoor environments.

**INVESTING IN SCHOOLS AND LOCAL GOVERNMENTS**

Through the California Clean Energy Jobs Act (Prop 39), the state has approved more than $1.5 billion for energy efficiency and clean energy generation projects in public and charter schools. This program provides improvements in the majority of school districts and educational organizations across the state, with about 70 percent of these funds allocated to schools within disadvantaged areas. Projects such as lighting improvements, heating and cooling upgrades, thermostat controls, and solar panel installations, make schools more comfortable, create better learning environments, and help California schools reduce their utility bills.

Through the Energy Conservation Assistance Act (ECAA), the state also provides low- and zero-interest loans to cities, counties, school districts, community colleges, and universities to implement energy efficiency upgrades. Since 1979, more than $414 million has been loaned to 860 recipients across California.

**Since 1990, the state’s energy efficiency standards for buildings and appliances have saved Californians more than $100 billion in utility costs.**
CLEAN TRANSPORTATION

TRANSFORMING CALIFORNIA’S TRANSPORTATION LANDSCAPE

Today, the transportation sector is the largest source of greenhouse gases in California, responsible for 50 percent of emissions when fuel refining is included, as well as 60 percent of smog-forming pollutants. However, transportation markets and services are evolving quickly, and California is at the forefront of the transition. The state has outlined a vision to power California’s cars, public transportation, and freight systems with clean electricity and low carbon fuels in the decades ahead and to promote active modes of transportation, including walking and cycling. Though this shift will take time, California has begun laying the groundwork necessary to make this vision a reality.

ZERO-EMISSION VEHICLE SALES

Scalable market

To support continued market growth and make zero-emission vehicles (ZEVs) accessible to more Californians, the state administers programs to offer incentives for the purchase of ZEVs in the light, medium, and heavy duty sectors.

Passenger Cars

With more than 40 light duty battery electric, plug-in hybrid, and fuel cell electric models available today, and many more expected in the years to come, the light duty ZEV market in California continues to expand. California’s Clean Vehicle Rebate Project provides rebates of up to $7,000 for the purchase or lease of eligible zero-emission and plug-in hybrid vehicles.

Medium and Heavy Duty Vehicles

While medium and heavy duty vehicles represent only 3 percent of California’s vehicle stock, this small subset of vehicles is responsible for about 22 percent of California’s on-road emissions. Providing zero- and near-zero-emission technology options can dramatically reduce emissions while targeting only a small number of vehicles. To date, the state has invested more than $360 million to advance clean vehicle technologies that can be incorporated into California’s truck and bus fleets.

Laying the foundation

The success of a zero-emission transportation system depends on the deployment of robust charging and refueling infrastructure across California and beyond. Today, California has the largest network of nonresidential electric vehicle chargers in the nation (accounting for nearly 25 percent of public charging stations) and is home to the nation’s largest open-retail hydrogen refueling network.

Five million zero-emission vehicles by 2030

This year, Governor Edmund G. Brown Jr. signed an executive order calling for at least five million ZEVs on California roads by 2030 and an extensive expansion of charging and refueling infrastructure. This goal will boost the ZEV market from just over 1 percent of California’s fleet today to nearly 20 percent by 2030.

FIVE MILLION ZERO-EMISSION VEHICLES BY 2030

<table>
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<tr>
<th></th>
<th>ZER0-EMISSION VEHICLES</th>
<th>CHARGING STATIONS</th>
<th>HYDROGEN STATIONS</th>
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</thead>
<tbody>
<tr>
<td>TODAY</td>
<td>420,000</td>
<td>15,000</td>
<td>35</td>
</tr>
<tr>
<td>GOAL</td>
<td>5 MILLION</td>
<td>250,000</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>BY 2030</td>
<td>(INCLUDING 10,000 DC FAST CHARGERS)</td>
<td>BY 2025</td>
</tr>
</tbody>
</table>

California is home to:

- 50% of zero-emission vehicles in the U.S.
- 90% of total U.S. investment in clean transportation
- 10,900 electric vehicles purchased per month
- 11 electric vehicle manufacturers

High Speed Rail

California has started construction on the nation’s first high-speed rail system, which will connect Northern and Southern California, transforming the way people move around the state. The fast, efficient, and clean rail system will be electric and powered with 100 percent renewable energy. All stations and high-speed rail facilities along the network will be zero-net-energy buildings, further contributing to the decarbonization of the economy.

Program successes:

Building the West Coast Electric Highway

The Electric Highway will include fast-charging stations every 25 to 50 miles, allowing plug-in EV drivers to travel from British Columbia, Canada, to Baja California, Mexico.

Deploying a Hydrogen Refueling Network

California has committed to building an initial network of 200 public hydrogen refueling stations, 35 of which are operating today. These stations allow fuel cell electric vehicle drivers to move freely between Northern and Southern California.

Supporting California’s Seaports

Recognizing the growing economic and environmental challenges facing California’s seaports, the Energy Commission has partnered with six ports–Oakland, Stockton, Hueneme, Los Angeles, Long Beach, and San Diego–to collaborate on transitioning to cleaner transportation technologies.
Maintaining the reliability of the electricity system while integrating larger amounts of variable wind and solar generation, distributed energy resources, and electric vehicle charging infrastructure requires a more flexible grid with new communication capabilities. California has taken bold steps to ensure supply and demand remain in balance as more clean energy resources are added to the grid.

ENERGY STORAGE
California has required the investor-owned utilities to procure 1.3 GW of energy storage by 2020, and authorized an additional 500 MW specifically connected to the distribution grid or located on the customer side of the meter. The state also provides incentives and grants for research and demonstration projects to advance technology development and encourage adoption of multiple storage technologies.

INTEGRATED RESOURCE PLANNING
State agencies oversee resource planning for California’s load-serving utilities. Through this process, California guides energy procurement decisions, supporting efforts to implement emissions reduction targets, achieve at least 50 percent renewable energy procurement, double energy efficiency, and promote transportation electrification. This process also helps ensure planning decisions advance clean energy access in disadvantaged communities.

GEOGRAPHIC DIVERSITY
Much of California’s grid is connected to the western Energy Imbalance Market (EIM), which enables real-time energy trading across eight western states. By optimizing energy resources, the EIM has generated more than $400 million in gross benefits for participants and displaced 300,000 metric tons of CO₂ emissions from 2014 through the second quarter of 2018.

SMART ENERGY RESOURCES
Since 2017, solar and energy storage projects connected in utility territories must be enabled with smart inverter technology, providing functions that support grid operations. In the years ahead, systems are expected to have additional communication functionalities and provide services such as data monitoring and advanced power controls.

CONNECTED BUILDINGS
Through California’s demand response programs, participating buildings adjust energy loads according to grid conditions. During times of high electricity demand, these buildings receive signals to reduce electricity use or shift loads to other times, saving money on electric bills while providing greater grid reliability. In addition, buildings increasingly provide valuable grid resources, such as generation and storage.

INTEGRATION OF ELECTRIC VEHICLES
The state is exploring the integration of plug-in electric vehicles onto the grid with smart charging technologies. These technologies provide charging flexibility and can help maximize consumption of renewable energy resources. New research, including a pilot project at the Los Angeles Air Force Base with 43 vehicles, will also help assess long-term viability of vehicle-to-grid programs, in which electric vehicles can provide energy back to the grid.
A number of state-funded energy efficiency research projects have helped inform changes to the building and appliance energy codes, resulting in savings of up to $350 to Californians for every $1 invested in R&D.
CLEAN ENERGY FOR ALL CALIFORNIANS

FOCUS ON DISADVANTAGED AND LOW-INCOME COMMUNITIES

The burden of pollution disproportionately falls on communities where power plants, refineries, and heavy traffic contribute to high rates of cancer and asthma, among other health impacts. Many low-income customers spend a larger share of their income on utility bills than the rest of the state and are often the last to gain access to clean energy technologies. California is committed to addressing these challenges and increasing the equitable distribution of clean energy benefits. To this end, state agencies completed the two-part Low-Income Barriers Study to identify strategies to overcome structural, policy, and market barriers that limit access to energy efficiency, renewable energy, and clean transportation options for low-income customers. The state is implementing priorities set forth in the two-part study to ensure all Californians are able to benefit from new economic opportunities created by a low-carbon economy.

PRIORITY ACTIONS TO INCREASE CLEAN ENERGY ACCESS

Promote Interagency Coordination

Since 2017, the state has formed two new entities to improve efficiency of energy equity programs. The Barriers Interagency Task Force increases coordination and collaboration among state agencies for energy, water, resilience, housing, transportation, and infrastructure, while the Disadvantaged Communities Advisory Group engages directly with local governments and community organizations. Together, these groups help ensure clean energy efforts reach and benefit communities as intended.

Outline Solutions for Multifamily Residents

Nearly half of low-income residents live in multifamily housing, yet these housing units present some of the most complex barriers to clean energy access. Such challenges include aging building structures and complicated ownership models. This year, the state launched a new effort to address barriers specific to residents and owners of low-income multifamily housing and ensure that renters can access the benefits of clean energy technologies.

Formulate a Comprehensive Workforce Development Strategy

Local workforce participation in clean energy programs is integral to enabling the full range of benefits of a clean energy economy to low-income communities. The Low-income Barriers Study calls on state agencies to develop a labor and workforce strategy across clean energy and transportation sectors. Efforts are expected to prioritize collaboration with labor and workforce experts, as well as community-based organizations to support direct hiring, empower communities, and foster local economic development.

Create Regional One-Stop Shops

Regional one-stop shops that provide local outreach and technical assistance are an innovative solution to streamlining access to the state’s energy efficiency, clean energy, low-emission transportation, and water efficiency programs. These crosscutting hubs will use a combination of physical centers and online portals (“bricks and clicks”) to provide information and resources to low-income consumers and stakeholders to navigate available incentive programs and funding opportunities.

Unlock New Financing Opportunities

Although clean energy and efficiency measures save money over time by reducing utility bills, they often require an upfront investment, posing a key barrier to low-income households. State agencies are exploring new financing pilot programs to overcome this challenge and encourage investment for low-income customers. The California Hub for Energy Efficiency Financing pilot is one example of a new public-private partnership model expanding access to capital for energy efficiency retrofits.

Improve Data Collection & Evaluation Metrics

The use of common metrics and data across agencies is vital to accurately evaluate programs and track progress toward statewide goals. This year, the Energy Commission released a new program evaluation framework, including standardized metrics (called energy equity indicators), to track how programs are benefiting low-income customers. Tracking these metrics will help highlight data gaps and opportunities to improve program development and implementation over time.
PARTNERSHIPS ACROSS THE STATE

INTERGOVERNMENTAL COLLABORATION

Partnering across jurisdictions is imperative to achieving California’s climate and clean energy targets. The state collaborates with the federal government and local, regional, and tribal governments to implement clean energy projects and leverage resources across jurisdictions. Below are examples of strong partnerships that are helping make California’s clean energy vision a reality.

CALIFORNIA NATIVE AMERICAN TRIBES

Under Governor Brown’s leadership, state agencies engage in government-to-government cooperation and communication concerning the development of legislation, regulations, rules, and policies that affect tribes and tribal communities. Several tribal governments have also partnered with the state to implement innovative clean energy pilot projects, including the Blue Lake Rancheria and Chemehuevi Indian Reservation renewable energy microgrids. These projects reduce local pollution and emissions, lower energy costs, increase electricity resiliency and create local jobs.

In 2017, the Blue Lake Rancheria completed an award-winning microgrid project that includes a 420-kilowatt solar array and nearly 1 megawatt-hour of energy storage. The system can automatically disconnect from the grid when needed to continue powering critical infrastructure, preparing the local community for the impacts of wildfires, earthquakes, and tsunamis.

Today, cities are exceeding the state’s code with local requirements for rooftop solar systems, increased energy efficiency, cool roofs, and high-efficiency lighting. This is helping create models for military bases around the world.

California has maintained an active partnership with the U.S. Department of Defense to transition military bases to cleaner sources of energy. In 2016, the Energy Commission and the U.S. Department of the Navy, signed a memorandum of understanding, formalizing a partnership to support clean energy installations that increase energy security and resiliency. Recent joint projects on Army, Navy and Marine bases demonstrate a spectrum of technologies, including smart electric vehicle charging, energy storage, demand response services, and microgrids with advanced clean energy capabilities. Information gained from these efforts will help create models for military bases around the world.

LOCAL BUILDING REQUIREMENTS

Local governments in California can adopt clean energy standards for new buildings that are more stringent than the statewide building code. These local standards allow cities and counties to demonstrate cost-effective methods to reduce energy consumption in homes and buildings and often pave the way for statewide requirements.

PROFILE OF SUCCESS: KERN COUNTY

Kern County has more renewable energy capacity than any other county in the United States and is home to some of the nation’s largest wind and solar plants. To date, the county has installed nearly 6 GW of renewable energy projects, ranging from rooftop solar to utility-scale wind and solar. More than $50 billion has been invested in the county’s renewable energy projects, creating thousands of local jobs and raising millions in annual tax proceeds.

KERN COUNTY RENEWABLE ENERGY INVESTMENTS SINCE 2009

- $50.5B in renewable energy investments
- 8,000 construction jobs
- 1,240 permanent jobs
- 18% to 9% unemployment rate decrease
- 6 battery storage projects in permitting process
- 6GW of renewables installed
- 85% local hire rates
- $25M annual tax proceeds from renewables to Kern County

Source: Kern County Planning Department

In 2017, the Blue Lake Rancheria completed an award-winning microgrid project that includes a 420-kilowatt solar array and nearly 1 megawatt-hour of energy storage. The system can automatically disconnect from the grid when needed to continue powering critical infrastructure, preparing the local community for the impacts of wildfires, earthquakes, and tsunamis.

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