

Kings County



“We are proud that Kings County will realize the benefits of renewable energy without compromising the budget...Our future is brighter thanks to the ENGIE Services U.S. team and their commitment to implementing this incredible solar and battery storage project with us.”

Richard Valle, Chairman of the Board of Supervisors, Kings County

THE OPPORTUNITY

Kings County is located in the agricultural region of the San Joaquin Valley, California. In 2004, County officials took action to improve infrastructure, while reducing energy costs and the environmental impact of County facilities. The County partnered with ENGIE Services U.S. (ENGIE) to design and install a comprehensive series of infrastructure improvements at key public facilities including the Government Center and Public Library in Hanford.

THE PARTNERSHIP

Phase I: Keeping Costs Down with Cogeneration Modernizations

The County and ENGIE kicked off the program by installing a cogeneration system which ensured reliable power and reduced energy costs. ENGIE installed ten microturbines to generate power onsite from natural gas at the County Government Center, along with a 175-ton chiller running on the heat waste from the microturbines. The cogeneration system's heat waste is used to heat buildings in the winter and cool them in the summer, significantly lowering the County's electricity and natural gas costs.

The energy savings from the cogeneration system allowed the County to make additional improvements to provide better facilities for occupants, such as roof replacements at four buildings, and the installation of a 70-ton chiller for the Hanford Library to replace the existing chiller. To help cover program costs, the County was awarded \$600,000 from the Self-Generation Incentive Program administered by Southern California Edison.

Program Highlights

- Expected to achieve \$43MM in net savings as a result of the multi-phase energy program
- Awarded a total of \$1.3MM in incentives from Southern California Edison-administered programs across all phases of work
- More than 4.3 MW of solar photovoltaic (PV) systems across four phases
- Expected to reduce CO₂ emissions by 7,700 metric tons annually, the equivalent to removing over 1,650 cars from the road



Technical Scope

Phase IV (In Development)

- More than 3.8 MW of solar photovoltaics (PV):
 - 2.6 MW of ground-mount PV at the Government Center
 - 1 MW of solar PV on parking canopies at the Government Center
 - 130 kW of ground-mount PV system at the Road Yard and Fleet Management Buildings
- 500 kW battery storage system for the Government Center

Phase III

- Interior/exterior lighting retrofits at 21 sites
- Irrigation upgrades at the Government Center, Kingston Park, and Hickey Park
- New air conditioning units at the Data Center and Health Administration Facility
- 504 kW of solar PV power on parking canopy systems at Hanford Library and the Government Center

Phase II

- New 1,100-ton central cooling and heating plant
- New thermal energy storage system to store enough energy to satisfy summer on peak cooling demand
- New energy management system
- Interior/exterior lighting retrofits at 27 buildings

Phase I

- 600 kW cogeneration system, comprised of ten 60 kW microturbines
- 175-ton absorption chiller
- Roof replacements at four buildings at the Government Center
- 70-ton chiller replacement at Hanford Library



Phase II: Making Strides towards More Comfortable Facilities

A second phase of work, which focused on HVAC and other critical energy efficiency upgrades, launched in the summer of 2008. ENGIE helped the County accomplish its key objectives, including providing chilled and hot water to the new Human Services and Public Works building, upgrading the existing Main Campus Central Plant, and lowering operating expenses. The new, more efficient and reliable boilers, chillers, interior/exterior lighting systems, energy management system, and the thermal energy storage system reduce energy usage on campus, improve the working environment for the staff and visitors, and allow the County to use inexpensive energy to run the chillers at night. As a result of the upgrades, County staff now has more capability to manage energy use with an expanded energy management system. Additionally, for this phase of work, the County received \$100,000 in incentives from Southern California Edison's Express Efficiency program.

Phase III: Lighting the Way to Renewable Power

In 2011, Kings County leveraged momentum from the cogeneration and energy efficiency projects for the next phase of improvements. Solar PV parking canopies at the Hanford Library and the Government Center enabled clean energy generation and decreased energy costs. High efficiency and LED interior/exterior lighting retrofits were performed at critical, high-traffic County service facilities including Animal Control, the Fire Department, the Health Department, and several libraries. In a region struggling to preserve its water resources, the County's irrigation upgrades were a critical component of meeting broader, regional water conservation efforts. To help offset the cost of the project, the County secured over \$600,000 in incentive funding from the California Solar Initiative managed by Southern California Edison.

Phase IV: Reduced Spending with Solar and Storage

In early 2018, Kings County continued progress towards fully developing its energy efficiency portfolio by commissioning a photovoltaic energy production feasibility study from ENGIE. This phase of work focused on the perfect pairing of PV generation and battery storage capacity at the Government Center, the Road Yard, and Fleet Management buildings, with the ultimate goal of reducing electricity spending at these facilities by 60%. Solar parking structures at the Government Center provide shade for cars, while the energy storage units create cost savings by reducing the peak demand charges and tariff rates associated with the electrical grid. Additionally, the energy storage capacity helps to secure the investment in the solar arrays by boosting performance. The development of this exciting capstone of over 14 years of partnership with ENGIE commenced in May 2018, with a target completion date of April 2019.

3 DIMENSIONS OF IMPACT

ENGIE is committed to building three dimensions of impact in every customer's future:



Supporting People

- This self-funding program has improved lighting quality, comfort and aesthetics of County facilities, and provides consistent indoor climates for occupants.
- Solar parking structures provide protection for vehicles at key County facilities while serving as a visible representation of the County's commitment to sustainable energy in the community.



Saving Money

- As a result of the long-lasting, multi-phased partnership with ENGIE, Kings County is expected to achieve nearly \$43 million in net energy savings.
- Throughout all phases, the County maximized all available utility incentives, grants and loan opportunities.



Protecting the Environment

- After the completion of all program phases, Kings County will reduce grid electricity use by 10.3 million kWh, the equivalent to the energy consumption of 832 homes.