



Beyond the Light Bulb: Natural Gas Opportunities for Local Agencies

www.ca-ilg.org/NaturalGasOpportunities

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Natural gas is an important part of California's energy mix, meeting almost one-third of the state's total energy needs.¹ As local agencies are becoming increasingly proactive about energy efficiency, cities and counties are looking "beyond the light bulb" for ways to increase efficiency, reduce consumption and save money. Local agencies can reduce natural gas consumption while exploring options to offset electricity consumption through projects that generate power. Using natural gas can also help local agencies reduce greenhouse gas emissions from fleet vehicles because compressed natural gas burns more cleanly than other fossil fuels.

Benchmarking: Determining a Facility's Performance

Benchmarking offers a useful first step by assessing a facility's energy usage and performance and comparing it to similar facilities. Facility energy usage data analyzed through the benchmarking process becomes a roadmap for project investment. Because there's no cookie-cutter approach to energy efficiency, benchmarking identifies options for retrofitting and retrocommissioning (techniques to increase energy efficiency) based on the conditions of the individual facility.

The counties of Kings and Tulare and the cities of Hanford, Lindsay, Porterville, Tulare, Visalia and Woodlake benchmarked all agency facilities through the Valley Innovative Energy Watch (VIEW). VIEW is a collaboration of the two counties, six cities, the San Joaquin Valley Clean Energy Organization and three local utility companies: Southern California Edison, Southern California Gas Company and Pacific Gas and Electric Company (PG&E).

While the VIEW partnership's benchmarking efforts identified a limited number of natural gas retrofit opportunities, each facility's data was entered into an online tool that tracks usage over time. Tracking a building's performance will help the local agencies identify opportunities for and make informed decisions about future energy-efficiency investments. The utilities offer technical assistance for similar benchmarking efforts to other local agencies as well.

Retrocommissioning Facilitates Savings

Retrocommissioning evaluates existing equipment to make sure it performs as originally designed and works efficiently with newer equipment. Benchmarking can help prioritize a local agency's retrocommissioning efforts. According to the U.S. Department of Energy, retrocommissioning public buildings can reduce energy costs by 10 to 20 percent², freeing up public funds for other uses. Improvements are made to heating, ventilation and air conditioning systems, lighting and control systems. Many improvements are inexpensive with relatively quick paybacks, often two years or less³, and can be as simple as reprogramming controls with no need to replace equipment.

Retrocommissioning offers a cost-effective strategy to increase natural gas and electricity efficiency and achieve cost savings. This option makes sense for most cities and counties, including agencies with few facilities and minimal natural-gas powered equipment. Local agencies may want to consider adopting a retrocommissioning policy to go beyond a one-time effort and ensure regular feedback on facility performance.

Retrofitting Facilities with Energy-Efficient Equipment

Upgrading, or retrofitting, facilities with more energy-efficient equipment can reduce consumption and costs. Incentives and rebate programs may be available to help reduce the expense of energy-efficiency retrofits. Opportunities to save on natural gas include making upgrades to furnaces, pool heating, pumps, motors, space heating, boilers, water heating, controls and pipe and tank insulation.⁴ Retrofitting natural gas equipment is especially effective for facilities that use large amounts of natural gas.

The types of local agency facilities that are considered “larger” users of natural gas include:

- Those with central plants, combined heat and power (cogeneration) and/or natural gas chillers;
- Hospitals;
- Jails; and
- Municipal water and wastewater facilities, including treatment plants.

Other facilities that may be considered larger natural gas users — but should be evaluated on a case-by-case basis — include courthouses, police and fire stations, administrative offices and maintenance facilities.

Utility providers are working with cities and counties to review capital projects and determine if projects that include energy efficiency can qualify for new options such as on-bill financing and incentives. On-bill financing provides easily accessible, low- to zero percent-interest loans for purchasing and installing energy-efficient equipment; loan payments are included on the monthly utility bill. Exploring financing options can help cities and counties stretch budgets further.

The City of Carpinteria used on-bill financing and received a \$5,555 incentive from Southern California Gas Company to replace its outdated community pool boiler in 2012. The project is slated to save the city \$4,379 in natural gas costs annually, repaying the cost of the zero percent interest loan in less than eight years.⁵ The project also yields environmental benefits for the city, saving 5,555 therms, which is equivalent to almost 28 metric tons of carbon dioxide or the amount of carbon absorbed annually by approximately 23 acres of U.S. forests.⁶

In 2012 cities and counties in the North San Francisco Bay Area worked with PG&E to replace boilers and heating, ventilation and air conditioning systems. Sonoma County and its cities achieved a one-time savings of more than 22,000 therms, while Marin County and its cities achieved a one-time savings of more than 29,000 therms — the greenhouse gas reduction equivalent of taking approximately 53 passenger vehicles off the road for a year.⁷ More than \$50,000 in financial incentives from PG&E helped reduce the cost of the projects.

Offsetting Consumption with Generation

Natural gas emits less carbon dioxide than any other fossil fuel; for example, it emits 50 percent fewer greenhouse gas emissions than coal.⁸ For this reason, local agencies are exploring ways to offset electricity usage with natural gas to reduce greenhouse gas emissions and benefit from cost savings. Natural gas generation projects can also help local agencies offset utility bills and possibly provide a revenue source through the capture and sale of biogas.

The City of Tulare reduced its electricity bills by more than \$1 million a year since 2007 after installing fuel cells at its wastewater treatment plant. The fuel cells run on biogas, a byproduct of the wastewater treatment process, and generate clean electricity to help power the plant. Wastewater treatment facilities provide the opportunity to convert waste into biogas to meet on-site energy needs. Excess biogas can also be sold to natural gas providers or electric utilities for power generation.

Tulare's system generates 1.2 megawatts of electricity, or 45 percent of the plant's needs. City staff estimates that the system saves the city about \$3,500 per day in avoided electricity costs. Considering operations and maintenance costs, electricity savings and other factors, Tulare estimates the project will pay for itself within about five years and then generate future savings.⁹

Natural Gas and Local Agency Fleets: A Road to Greenhouse Gas Reduction

In an effort to save energy and further reduce greenhouse gas emissions and costs, many cities and counties have replaced gasoline-powered fleet vehicles with natural gas-

powered vehicles. Light-duty cars and trucks powered by natural gas generate 30 to 40 percent fewer greenhouse gas emissions than gasoline-powered vehicles and reduce smog-producing gases by 60 to 90 percent.¹⁰ Many cities and counties also operate and maintain natural-gas fueling stations for their fleets.



During the renovation of its transit maintenance facility, the City of Simi Valley expanded and upgraded its natural-gas fueling station that supplies fuel to the city's bus fleet, which runs on compressed natural gas. Because of the increased local availability of the fuel, a waste management company was able to convert its fleet of diesel-powered trash trucks to a fleet of 25 new trucks powered by compressed natural gas. Sales of natural gas have become a revenue source for the city, and use of the fuel contributes to both municipal and communitywide greenhouse gas emission reductions.

Resources to Support Local Efforts

Three California investor-owned utilities — San Diego Gas & Electric Company, Southern California Gas Company and PG&E — serve 98 percent of the state's natural-gas customers.¹¹ These natural-gas providers offer technical assistance and financial and informational resources to support local government efforts.

The Institute for Local Government's Sustainability Program offers best practices, case stories and white papers about energy efficiency and efficient transportation. ILG also provides recognition for energy efficiency accomplishments through the Beacon Award program. The Beacon Award is sponsored by ILG and the Statewide Energy Efficiency Collaborative (SEEC), which offers no-cost resources to support the energy and climate initiatives of California local governments. SEEC is an alliance between three statewide nonprofit organizations and California's four investor-owned utilities.

Footnotes

(If using a printed copy of this resource, please go to www.ca-ilg.org/NaturalGasOpportunities to access the links below.)

- 1 [Total Electricity System Power](#)
- 2 [Retro-Commissioning for State and Local Governments](#)
- 3 [Retro-Commissioning for State and Local Governments](#)

- 4 [General Equipment Rebates and Financial Incentives](#)
- 5 [Carpinteria Agenda January 23, 2012](#)
- 6 [Greenhouse Gas Equivalencies Calculator](#)
- 7 [Greenhouse Gas Equivalencies Calculator](#)
- 8 [Natural Gas: Part of the Clean Energy Solution](#)
- 9 [Fuel Cells – Reports / Case Studies](#)
- 10 [Environmental Benefits](#)
- 11 [An Overview of Natural Gas in California](#)

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