

United States Conference of Mayors
Business Council 2017 Best Practices Report:

Mayors and Businesses Driving Economic Growth

2017



Foreword

The United States Conference of Mayors is proud of the members of the Mayors Business Council and the work they have accomplished with cities to improve the quality of life in America's cities. Working together, our cities have become more livable and more competitive, and the economy is growing stronger every day.

The *United States Conference of Mayors Business Council Best Practice Report: Mayors and Businesses Driving Economic Growth* showcases outstanding and innovative public/private partnerships submitted by the Mayors Business Council to inspire other cities and companies to work together in addressing the economic challenges facing cities and our nation.

Mayors and business leaders agree that creative public/private partnerships are a major force in shaping cities of the 21st century and experience has shown when businesses and local governments work together, our cities benefit and our nation is stronger.

The Mayors Business Council has been an integral part of the structure and activities of The United States Conference of Mayors for over 15 years. Central to the mission of our Business Council is the goal of both improving the business environment in cities and sharing the successful public/private partnerships that take many forms with benefits ranging from economic development and environmental improvements to better schools, a more educated workforce, and connected cities through technology.

In an era of diminishing federal funds and increasing unfunded federal mandates, the Conference must continue to strengthen its relationship with the business community by nurturing and celebrating the new and creative partnerships between cities and businesses.

Tom Cochran

CEO and Executive Director

The United States Conference of Mayors

Siemens: Hill Canyon Wastewater Treatment Plant: On Site Power Generation from Renewable Resources Lowers Costs, Reduces Emissions and Increases Department Value to the Community

Challenge: Nestled deep in the hills of Thousand Oaks, California is Hill Canyon Wastewater Treatment Plant (HCTP) providing wastewater treatment for the residents of the City of Thousand Oaks. Hill Canyon by the numbers:

- A 14 million gallon per day capacity wastewater treatment plant
- 8.5 million gallons of wastewater are treated each day

The City Council challenged the HCTP staff to transition the plant from its reliance on utility-provided power to generating 100% renewable energy on site. This ambitious challenge motivated the HCTP team to implement a program rarely seen at wastewater treatment facilities in the United States.

Through exemplary public-private partnerships and substantial assistance from the California Self-Generation Incentive Program (SGIP), the facility now provides 100% of operations needs from renewable energy created by a large on-site solar farm and a co-generation system that turns biogas into electricity. This best practice is focused on the co-generation system implemented through a partnership between Siemens and BioSpark Clean Energy.

Description: According to the EPA, for many municipal governments, drinking water and wastewater plants typically are the largest energy consumers, often accounting for 30-40% of total energy consumed and accounting for approximately 2% of energy use in the US, adding over 45 million tons of greenhouse gases annually.

The HCTP project allows the city to provide sustainable on-site renewable energy capable of providing 100% of the plant's needs while saving over \$300,000 per year in energy costs and providing additional revenue of \$500,000 in tipping fees from their third-party waste receiving facilities.

These revenue enhancements have allowed the Public Works department to keep sewer fees low and created a disposal resource for waste haulers, food processing facilities and local agriculture. This biogas-to-energy system annually reduces carbon by 1,600 metric tons; which is the equivalent of planting 1,659 acres of forest or taking 1,037 cars off the road every year.

Impact: The co-generation facility creates energy from digested waste in the form of methane gas, which is used to produce electricity at a less expensive rate than grid supplied energy. The City staff estimates that these renewable energy projects save ratepayers approximately \$300,000 annually. HCTP now also has the capability to export renewable energy to other City facilities generating approximately \$600k per year in annual revenue from this stream.

The projects also serve as an exemplary private/public partnership, as each project is privately owned and operated. The co-generation facility is owned by CHP Clean Energy LLC, who provides electrical energy from methane gas to Hill County Treatment Plant via a Power Purchase Agreement. Both the solar and co-generation projects received substantial grant funding from the California Self-Generation Incentive Program (SGIP).



HCTP Aerial View



Engines supporting HCTP Cogeneration Plant



Cogeneration Plant at HCTP

How-To: In order to carry out the vision of the City Council, the plant and partners implemented the following steps:

- Executed an end-to-end energy plan for plant
 - Assessment of current energy use
 - Development of energy reduction plan focused on conservation and optimization
 - Reduced energy use at plant by 20%
 - Engaged plant staff to actively participate in energy goals
 - Ongoing reduction goal of 2% annually
 - Optimized plant digester biogas production
 - Implemented power purchase agreements for renewables
 - 500 kW Solar farm – generates 15% of electric load
 - 1,050 kW Biogas-fired Cogeneration System - generates 85% of electric load
- Built a third party waste receiving facility to increase biogas production
 - Receive wastes and tipping fees from industrial waste haulers
 - Waste storage and blending system “dispatches” gas production during energy peaks
- Collaborated with generation providers to optimize system run hours and output to match plant load
 - Minimize generation downtime and energy production losses via pro-active maintenance
 - Dispatch generation production to match plant load via control integration
 - Actively engaged public and private partners to achieve goals

General Tips: Rationale for implementing a Power Purchase Agreement (PPA) for biogas combined heat and power at wastewater treatment plants:

- Municipalities typically have limited expertise, resources and/or funds to execute an ongoing plan
- Facility Discharge Permit compliance is a challenging priority for power generation
- Challenges with access to capital or competing infrastructure priorities within the plant
- Municipalities cannot benefit from tax-based incentives
- Many wastewater treatment plants that have implemented Biogas CHP see performance drop off significantly due to limited expertise in operations and maintenance; PPA's incentivize the private partner to produce energy reliably and consistently

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Tags: Service Delivery Improvement, Innovation, Cost Savings, Environmental Impact, Impact on City Economy, Business Benefits



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