



EPA Local Guide on GHG Reduction Programs with CHP

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Presentation Objectives

- Purpose: discuss how local governments can consider combined heat and power (CHP) as part of a greenhouse gas (GHG) reduction program
- Design focus: policy makers and program implementers interested in cost-effective climate and energy strategies
- Audience: mayors, city or town council members, energy managers, city planners, metropolitan and regional planning organizations, and their private and nonprofit partners

Presentation Overview

- Introduction
- Benefits of CHP
- CHP opportunities for local governments
- Key participants in CHP implementation
- Fundamentals of project development
- Strategies for effective project implementation
- Cost and funding opportunities
- Federal, state and other program resources

Benefits of CHP

- Reduces GHG emissions and other environmental impacts
- Offsets capital costs
- Supports economic growth through job creation and market development
- Demonstrate environmental leadership
- Hedges against financial risks
- Increases electric reliability

Examples of CHP Benefits

Reduces Emissions: Dougherty County Landfill, Albany, GA

- 1.9 MW CHP plant installed in 2011 sells energy to nearby Marine base
- CHP system + other EE measures reduce base's GHG emissions by 9,300 metric tons annually (= annual electricity use of 1,200 homes)

Hedge Against Financial Risks: Back River WWTF, Baltimore, MD

- CHP system installed in 2008 reduces electricity consumption by 19.4 million kWh/yr
- Saves the City of Baltimore \$1.4 million in annual electricity costs (= 3.5% of the city's annual energy bill)

CHP Opportunities for Local Government

Several types of facilities and operations are good candidates for CHP, including:

- Wastewater Treatment Facilities (WWTF)
- Landfill gas energy projects (LFG)
- K-12 schools
- Multi-family housing
- District energy systems

Examples of Local Government Projects

WWTF: City of West Lafayette, IN

- CHP installed in 2009 recognized with an EPA PISCES award as a project that furthers the goals of safe and clean drinking water
- Supplies over 18% of the WWTF electricity needs
- Reduces natural gas consumption at the facility by 60%

K-12 Schools: Southeastern Regional School District, Easton, MA

- 250 KW CHP system installed in 2009 through a energy performance contract with an ESCO
- Contract includes additional energy and water conservation projects and is expected to save the District \$276k annually

Key Participants in CHP Implementation

- Mayor or county executives
- City and county councils
- Local code enforcement officials and planning departments
- State energy and environmental departments
- State PUCs
- Local businesses
- Utilities and Energy Service Companies (ESCO's)
- Non-profit companies

Examples of CHP Participants

Utilities: Lansing Board of Water and Light (LBWL), Lansing, MI

- The combined cycle CHP plant started operating in 2013 and generates up to 300,000 pounds of steam for 225 steam customers in downtown Lansing and provides 20 % of BWL's electric generation.
- Generated jobs and pumped money in the local economy.

Non-profit Organizations: Southwest Energy Efficiency Project (SWEEP)

- In 2013, received a 4-yr, \$2.2M grant from DOE to promote energy efficiency through the use of CHP
- SWEEP will promote best practices for CHP project financing, management and state policies, market analysis tools and resources, and site evaluations in CO, AZ, OK, NM, TX, UT, and WY

Fundamentals for CHP Development

- Local government planning processes
- Incentives
 - Private and public entities
 - Financial and educational

Examples of Fundamentals

Local Government Planning Processes: Philadelphia, PA

- Philadelphia's 2007 Climate Change Action Plan recognizes the role CHP can play in reducing GHG emissions from city buildings
- The city initially evaluated the feasibility of CHP in its prison system, and will explore other options to promote CHP

Financial Incentives: Chicago, IL

- Chicago organized a seminar in 2003 for hospital administrators on cost-effective CHP
- The city followed up with an offer to fund 50% (up to \$5,000) of the cost of CHP screening analysis for each participating hospital

Strategies for Effective Project Implementation

- Assess local CHP potential
- Select an approach to project development
- Enter maintenance contracts
- Involve local planning departments
- Sell excess energy

Examples of Strategies

Select an Approach to Project Development: Austin Energy, TX

- The utility worked with a private CHP developer to construct a CHP system at the Dell Children's Medical Center in 2006
- The Center saved \$8 million in capital costs by outsourcing its power, chilled water, and thermal needs to Austin Energy, which owns and operates the system

Sell Excess Energy: Winnebago County, WI

- County earns \$400k to \$500k annually from selling power generated by a 1.06 MW CHP system at the sheriff's office to a local utility
- Sheriff's office keeps the 4,700 MBtu/hr of thermal energy for space heating and hot water

Costs and Funding Opportunities

- Costs
- Funding opportunities:
 - Performance contracting
 - State government programs
 - Federal government programs
 - Utility programs
 - Non-profit organization programs

Examples of Opportunities

Performance Contracting: Millbrae WWTP, CA

- Millbrae used an energy performance contract with an ESCO to install a 250 kW CHP system at its WWTF
- The ESCO integrated a grease receiving station as an extra source of fuel
- The city saves \$112,000/yr on energy costs and the grease receiving generates \$152,000/yr
- The system reduces CO₂ emission by 544 metric tons

State Government Programs: NYSERDA programs

- NYSERDA's CHP program provides technical and financial assistance
- About 180 projects at over 190 sites that will produce a combined 260 MW capacity

Federal, state and other program resources

- Federal programs
 - EPA resources – CHPP, SLB, OW, LMOP.
 - Other federal programs
- State programs
- Other resources
 - Data resources
 - Incentive resources

Examples of Program Resources

Regional: U.S. DOE Technical Assistance Partnerships (TAPs)

- DOE has established seven regional CHP centers across the country
- TAPs provide information on the benefits of CHP systems and project-specific support, including feasibility screenings and third-party reviews of vendor proposals

Federal: U.S. Department of Housing and Urban Development

- HUD administers a number of programs to improve energy efficiency in the public housing sector
- The HUD Office of Energy and Environment provides information on CHP systems in multi-family housing
- HUD, DOE, and EPA recently issued a guide on CHP's role in reliability and resiliency

Questions and Contact Information

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