

CEE June Program Meeting
Breakout Session

Water-Wastewater Committee: Program Opportunities in the Municipal Sector: Priorities for 2006

Ted Jones, CEE
Wednesday, June 14, 2006
Boston, MA



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Agenda

- Background on CEE Initiative
 - Highlights from 2005 NACWA Financial Survey
- Program Updates
 - PG&E
 - NYSERDA
- Discussion with WERF



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Background

Opportunity

- 15,000 public wastewater treatment plants; 60,000 community water systems
- Consume 105,000 billion kWh annually
- Savings of 15-30 percent; reduce peak load demand
- \$1 trillion needed to meet current mandates over the next 20 years; \$460 billion gap (WIN)

Member Interest

- Strong presence in member service territories
- Similarities among facilities (processes, decision-making, motivations, mission)
- Members are serving this sector
 - dedicated programs
 - existing programs



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Background on CEE Initiative

- Two-year committee exploration
- Launched CEE Municipal Water and Wastewater Facilities Initiative in Dec. 2004



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Background on CEE Initiative

Objectives:

- Support the development of an industry-accepted, energy-performance benchmark
- Identify and support best practices for energy efficiency (e.g., motor systems, processes)
- Raise awareness among senior-level decision-makers within municipalities about the benefits of energy-efficiency
- Develop cooperative partnerships with major water and wastewater industry associations



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2006 Strategies

- Convene members to identify and share best energy-efficiency program approaches
- Identify and/or develop resources that members can use to communicate best practices for energy-efficiency to municipal customers
- Explore opportunities to promote national awareness among municipalities, including a program-led national campaign



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2006 Strategies

- Further explore opportunity for programs to establish “partnerships” with municipalities to help institutionalize energy-efficiency in decision-making
- Support the development of an industry-accepted, energy performance benchmarking metric, perhaps by adding member customer data to a national database.



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2006 Priorities

- National Awareness
- Best Practices



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National Awareness Strategies

- Identifying the opportunities at the local and national level
- Developing a consistent message among programs
- Identifying and developing supporting resources (EPA, Programs, Industry)
- Highlighting best practices (5)



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National Awareness Strategies

- **Model market approaches**
 - developing a series of templates (e.g., press releases, articles, case studies, letters to distributors/specifiers)
 - leveraging national resources (ENERGY STAR, AWWA, WEF, WEFTEC)
 - supporting local industry partner meetings
 - coordinating with local municipalities water agencies & association chapters



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A Starting Point for Energy Efficiency: Best Practices in W/WW Facilities

- 1. Consistent Approach to Benchmarking**
 - *Best Practice:* Common framework to identify, collect and assess relevant data given the externalities
- 2. Energy Information and Tracking Systems**
 - to monitor and manage energy consumption over time
 - *Best Practice:* Essential Variables to track over time & submetering
- 3. Facility Energy Performance Assessment**
 - Review trends over time (energy, cost, etc.)
 - Future: High, low compared to like facilities
 - *Best Practice:* Standardized Assessment



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A Starting Point for Energy Efficiency: Best Practices in W/WW Facilities

- 4. Promote Opportunities for Savings**
 - *Best Practice:* Set of common energy-saving opportunities to look for; establishing a clearinghouse.
 - Scheduling operations to account for peak load demand (electricity)
 - Sizing equipment appropriately (pumps)
 - Scheduling equipment/operations to optimize energy use
 - Opportunities for more efficient equipment and processes (a growing list)
 - o PEM, Pump & Blower Optimization, ASDs
 - o Fine Bubble Diffusers, membrane technology, etc



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A Starting Point for Energy Efficiency: Best Practices in W/WW Facilities

5. Promote Awareness and Support for Facility Energy Management

- Municipal-Level: Partnerships, Commitments, Procurement, Capital Planning Process
- Plant Level: Training, seminars, demonstrations, collaborative sessions with water/wastewater associations (e.g., Efficiency Vermont and leak detection)
- Best Practice: Model Cooperative Agreement between energy-efficiency programs and municipalities (and their water/wastewater facilities)



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Meeting Schedule

- CEE Meetings
- MT Symposium in March (Washington)
- EPA Focus Meeting in May (Washington)
- CEE June Program Meeting (Boston)
- CEE Sept. Ind. Partner Meeting (Dallas)
- WEFTEC October (Dallas)



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2006 Accomplishments

- A Subcommittee was formed to identify best practices for energy-efficient municipal water pumping that could effectively be incorporated into programs. The Subcommittee was strongly advised to consult with leading consulting engineering firms.



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2006 Accomplishments

- Participated in Hydraulics Institute annual meeting in Feb. to explore opportunities for cooperation, potentially in the area of pump system optimization within water and wastewater facilities
- Organized and moderated a working session on national water and wastewater facility efficiency at the 2006 Market Transformation Symposium in March.



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2006 Accomplishments

- Participated on WERF Exploratory Team in March to review draft research plan and provide input from program perspective
- Met with two pump industry representatives in May to explore areas of mutual interest in water/wastewater sector. A number of specific action items were identified to help facilitate future collaboration with the pump industry.



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2006 Accomplishments

- Briefed the committee on 2 research projects in April:
 - AWWARF's development of an industry-wide, energy-performance metric for water and wastewater facilities
 - WERF's efforts to identify research needs to support improved energy management within wastewater facilities



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Highlights from 2005 NACWA Survey



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NACWA Survey

- National Association of Clean Water Agencies
 - Financial survey of members conducted every 3 years
 - Membership includes 300 public wastewater treatment agencies in 45 states
 - 141 clean water agencies representing over 81 million people responded
 - Asked energy cost and use data for the first time



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NACWA Survey Highlights

- Increase in long term dept service, coupled with increasing capital needs
 - Dept Service has increased from 22-25 percent of total expenditures.
 - Long-term dept rising – 17 percent increase
- Operation and maintenance costs increased by 14 percent over the past three years



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NACWA Survey Highlights

- Capital needs rise by 16% since 2001
 - Federal and state assistance diminishing from 1.2 to 5.0 percent of total revenues
 - State revolving loan funds comprise 5.4 percent, increasing from 3.6 percent
- Asset management programs implemented by 73 percent of respondents
- Average sewer service charge continues to rise faster than inflation, rising 13 percent (\$232 to \$263 per year)



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NACWA Survey Highlights Energy Use and Cost

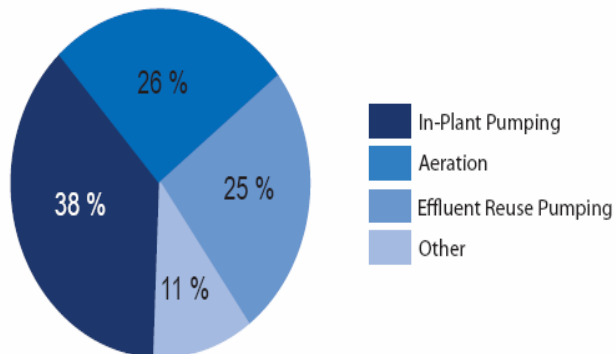
- 59 agencies responded using nearly 3 billion kWh in 2004
 - average use was 50.5 million kWh in 2004
- Average energy costs of survey respondents
 - 6 cents per kWh on average
 - \$1.22 per therm on average



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NACWA Survey Highlights Plant Energy Use (Process)

Figure E.2-3 Percent Breakdown of 2.1 billion kWh Plant Energy Use (47 Respondents)



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Natural Gas Use

Table E.6-1 Frequency of Natural Gas Use (45 Responses)

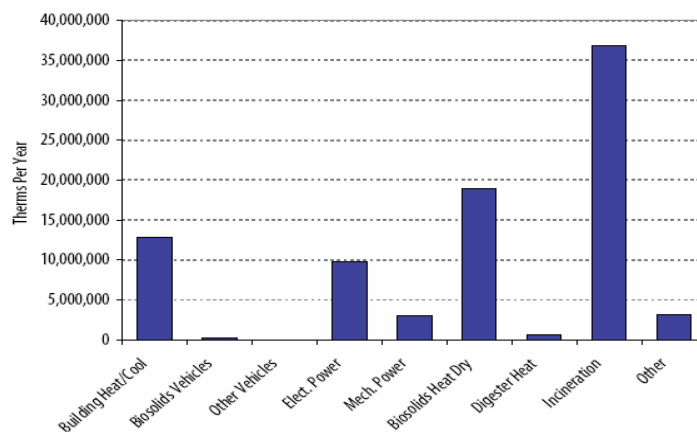
Fuel Use Category	Number of Agencies Indicating Use of Natural Gas
Building Heat/Cooling	28
Biosolids Vehicles	1
Other Vehicles	0
Electric Power Generation	9
Mechanical Power Production	4
Biosolids Heat Drying	5
Digester Heating	8
Incineration	16
Other Uses	8



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Natural Gas Use

Figure E.6-1 Breakdown of Annual Use (85.2 Million Therms:Year) of Natural Gas (45 Respondents)



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NACWA Survey Highlights Bio-Gas Recovery

- 60 percent recover some percentage of digester bio-gas for heating, power generation or other purposes
 - on average 3.6 million therms of bio-gas was recovered
- 40 percent generate some electricity on-site
- 16 percent of agencies generate 20 percent or more of their energy needs



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Program Update

- Program Updates
 - PG&E
 - NYSERDA



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Discussion with WERF



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