Municipal Energy
Challenges and Opportunities

Presented to:
Mayors Innovation Project
Summer Meeting
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By: Mike Wiza
Municipal Energy - Facts

• The municipal operations are usually one of the largest consumers of energy.

• Cities are expected to provide essential services.

• Costs are increasing and budgets are not.

• Many opportunities exist to develop sustainable operations and we must seek them out.
Municipal Initiatives

• Eco-Municipality Task Force/Green Tier program
  
  LED Street Lighting – DPW  (American Recovery & Reinvestment Act ‘09)
  Hybrid Busses – City Transit Department
  Ice Arena/ Restrooms – Parks Department
  Building Efficiency Projects – All City Depts.

  Green Hinges, motion lighting, LED, GPS on vehicles, GIS overlays
Wastewater Utility

• The Wastewater Utility is responsible for:

  – Treatment of wastewater
    • Customers Served: 27,000 (daytime around 40,000)
    • Type of treatment: Activated Sludge
    • Treatment capacity: 4.6 MGD
    • Average flow: 3.0 MGD
How do you get here?

Annual Net Electricity Consumed (kW)

- 23.5% decrease in annual net electricity consumed 2002 – 2011
- 98% decrease in annual net electricity consumed 2012-2014
Efforts toward Energy Independence

• Energy Audit by Focus on Energy 2003

• Started Tracking and Understanding Energy consumption

• Set realistic goals for lowering energy consumption

• Operational changes to conserve energy

• Plant equipment upgrades for energy conservation
Energy Monitoring

### Stevens Point Wastewater Treatment Plant
### Energy Usage Summary 2015

| Date       | WWTP kWh (purchased) | WWTP kWh (pushed on to grid) | On-Peak kWh | Off-Peak kWh | Total Energy Charges (On-Peak) | Total Energy Charges (Off-Peak) | Total System Demand | Peak Demand (kW) | Demand Cost per kW | Total Customer Demand | Total Electric Charges minus credits | % Credit for efficiency | % Credit for energy reduction | % Credit for S&D credits | % Credit for PCC credits | % Credit for using RCO credits | % Credit for using RPS credits | % Credit for using RE credits | % Credit for using Renewable Energy | % Credit for using Non-renewable Energy | % Credit for using Energy Savings | % Credit for using Water Savings | % Credit for using Waste Water Savings | % Credit for using ADA Testing
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### Energy Charges vs. Demand Charges

- **Total Energy Charges**: 27%
- **Total System Demand**: 73%

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### WWTP Purchased kWh

- **Month vs. WWTP kWh (pushed on to grid)**
- **Peak Demand**

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### Total Electric Charges minus credits

- **Month vs. Total Electric Charges minus credits**
- **Peak Demand**

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### Energy Charges

- **Total Energy Charges**: 27%
- **Total System Demand**: 73%
- **Total Electric Charges minus credits**: 100%
Biogas Utilization 2012-2014

• Biogas Conditioning
  • Hydrogen Sulfide Removal
  • Siloxane Removal
  • Moisture Removal

• Biogas Generator
  • 180 KW (4320 KWh/day)
  • Heat recovery for digester heating and building heating
High Strength Waste Program

- Currently bring in over 2,000,000 gallons of HSW Annually
  - Dairy waste
  - F.O.G
  - Food Waste
  - Beer Waste
- Newly Constructed 40,000 gallon HSW tank (Brewery Project)
- Utilize two 6,000 gallon retrofitted tanks as HSW receiving tanks
- Currently generates over $30,000 annually in tipping fees
Resource Recovery

• The Wastewater Treatment Plant recovers:
  – Clean water
  – 98% of the energy needed to run the plan
  – Nutrients that are applied to crops
  – Heat that gets used in the treatment process
Planning for Sustainability

- Energy Audit (Focus on Energy & others)
- Capital Improvement Plans (CIP)
- Follow-through
  - Staff and other champions are the only answer
- In all improvements, upgrades and planning - consider energy and sustainability
Thank You!

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