

# Consumers Energy Business Energy Efficiency Program



*Identifying Energy Saving Opportunities in  
Water and Wastewater Treatment*

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**Consumers Energy**

*Count on Us*

- Introduction – Energy Efficiency Program Results
- Municipal Facilities Pilot Program
- Commercial and Industrial Incentive Program
- Resources for Identifying Savings

- Over 27,000 business customers have participated in the Consumers Energy incentive program since 2009
- We have helped customers save over \$440 million in energy costs
- Customers have received over \$100 million in incentives
- Average Incentive of over \$4,000

# **Municipal Facilities: Face of the Community**



- Serves to identify opportunities for Energy Efficiency in municipal government buildings and facilities
- Provides Technical Education and Financial Incentives by providing:
  - ENERGY STAR® Benchmarking: to help increase awareness and set priorities
  - Funding for select few in-depth 3<sup>rd</sup> party audits
  - Walk-Through Assessments

## (Continued)

- **Eligibility:**

- Municipal customers with multiple buildings

- **Requirements for detailed assessment**

- Building size >35,000 sq. ft.
- Minimum of 1 project to Incentive Program per year

- **Target Market:**

- City, Township and County
- Offices
- Public Safety
- Transportation
- Libraries
- Recreation
- Water Treatment Plant
- Wastewater Treatment Plant

# Commercial and Industrial Incentive Program





## Prescriptive Incentives

- Think “**off the rack**,” get it and go
  - Predetermined incentive levels
- 250 measures in total
- Average 30% to 70% of the incremental project cost



## Custom Incentives

- Think “**tailored**,” custom fit to your business
- Incentives are determined on a case-by-case basis
- Must be >1 year and <8 year payback period



- Aeration Systems: Blowers, Diffusers, Controls, Motors<sub>1</sub>
- Pumps: Capacity, System Assessment, Motors, Drives<sub>1</sub>
- Other: Variable Speed Drives, Automatic Controls, Operation Changes<sub>1</sub>



# Consumers Energy Customers: Examples

|                         | Project                           | Annual Energy Savings | Incentive |
|-------------------------|-----------------------------------|-----------------------|-----------|
| <b>Aeration Systems</b> | Turbo Compressor Blower           | 1,415,700 kWh         | \$105,023 |
|                         | Blower Replacement with VFD       | 563,330 kWh           | \$45,066  |
|                         | VFDs Installed on Agitators       | 528,455 kWh           | \$42,276  |
| <b>Pumps</b>            | Pumps with VFD                    | 1,839,651 kWh         | \$147,172 |
|                         | RAS Pump Replacement              | 120,520 kWh           | \$10,455  |
| <b>Other</b>            | UV Disinfection Controls          | 720,309 kWh           | \$56,824  |
|                         | Real Time Nitrogen Control System | 734,105 kWh           | \$58,728  |
|                         | Screen Room and Grit Blowing      | 498,081 kWh           | \$39,846  |

# Custom Process Improvement

- For projects which demonstrate an improvement in production energy efficiency
  - Reduced kWh/unit
  - MCF/unit produced
- A wide range of facility improvements can qualify for the program including:
  - Process Improvements
  - Blower Replacement
  - Variable-Speed Control on Motors



# New Blower with VFD

- Existing 250-hp constant speed blower replaced with 150-hp blower with VFD
- Annual Savings: 563,330 kWh
- Incentive: \$45,066
- Payback of 2.81 years  
(without rebate)
- Greater than a 10% savings in the facility's total annual electrical budget (saving approx. \$45,000/year)



- Aeration and mixing: most energy consuming step<sup>5</sup>
  - Improved efficiency yields vast improvement in the total electrical use
- Reduced demand on the electrical utility



- Precisely determining the motor speed/air flow required for treatment of the wastewater at the facility
- Using blowers appropriately sized for the need
- Making use of available VFD technology for precise air flow control



- Existing 400-hp constant speed pumping station pump replaced with new 250-hp pump with VFD; and elimination of bypass to inlet header
- Results:
  - Annual Savings:  
1,839,651 kWh
  - Incentive: \$147,172
  - Payback: 1.7 years



- Predict and demonstrate energy performance improvements<sup>3</sup>
- What does baseline reflect<sup>4</sup>
- Determine savings





# Resources



- Water Environment Federation
- Focus on Energy, Water and Wastewater Industry Energy Best Practice Guidebook
- Hydraulics Institute – Pump Systems Matter
- American Water Works Association
- Water Energy Research Foundation
- U.S. Department of Energy
- Your local electric provider for info on electric peak reduction

- **Install High Efficiency Motors and Variable Speed Drives**

- U.S. Department of Energy
- Hydraulic Institute – Pump Systems Matter
- Drive Manufacturer’s Websites

- **Optimize Pump System Efficiency**

- American Water Works Association
- Water Environment Association
- Pump Systems Matter
- Europump

1. Focus on Energy, Water and Wastewater Industry Energy Best Practice Guidebook, 2006
2. Focus on Energy, Water and Wastewater Industry Energy Best Practice Guidebook, 2006
3. Water Environment Federation (WEF): The Energy Roadmap, A Water and Wastewater Utility Guide to More Sustainable Energy Management. 2013. [www.wef.org](http://www.wef.org).
4. Ideas for establishing an Energy Baseline Methodologies for Industrial Facilities, Northwest Energy Efficiency Alliance, October 17, 2013, Report #E13-265.
5. Chapter 11 of the Water Environment Federation Manual of Practice No. 32, Energy Conservation in Water and Wastewater.

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