ENERGY EFFICIENCY PROGRAMS FOR PUBLIC WATER & WASTEWATER FACILITIES

Brian Katamay, Energy Resources Center
CSWEA/IAWA| February 25th, 2015
The Energy Resources Center (ERC), founded in 1973, is located within the College of Engineering at the University of Illinois at Chicago (UIC) and is a non-profit, interdisciplinary public service, research, and special projects organization that works to improve energy efficiency and the environment.

Areas of Expertise:

- Energy Efficiency
- Distributed Generation
- Utilities Billing Management
- Biofuels and Bioenergy

Website: [www.erc.uic.edu](http://www.erc.uic.edu)
**Smart Energy Design Assistance Center**

**A public/private partnership:**

IL Department of Commerce and Economic Opportunity (DCEO)
- Energy Office
- Illinois Energy Now Program

University of Illinois
- Urbana-Champaign and Chicago

360 Energy Group
- Private energy sub-contractors
ENERGY ASSESSMENTS

• Provide energy efficiency recommendations
• Level of service varies based on size and EUI of building, as well as client need
  • Phone help, anytime!
  • May include utility bill analysis, site visit, energy modeling
NEW CONSTRUCTION DESIGN ASSISTANCE

- Eligible: new construction or additions and remodels
- Pre-construction advice, construction document review
- Research available grants and incentives

Illinois Energy Now | 1-800-214-7954 | www.ILenergynow.org
Part of the Energy Efficiency Portfolio Standard (EEPS).
Funded by utility rate-payer energy tax.

### Public Sector Programs
- Standard Rebate
- Custom Rebate
- Aggregation / Key Account
- Clean Water Energy Efficiency (new)
- Boiler System Efficiency
- Combined Heat & Power Pilot (new)
- New Construction
- Retro-commissioning

### Low Income Programs
- Energy Efficient Affordable Housing Construction Program
- Residential Retrofit Program
- Public Housing Authorities: Efficient Living Program
- Energy Savers (new)

### Education & Training
- Smart Energy Design Assistance
- DCEO Trade Ally Program
- Building Industry Training and Education
- Building Energy Codes Training and Compliance (new)
- Energy Performance Contracting Assistance
- Home Performance with Energy Star
- Lights For Learning
- Savings Through Efficient Products (new)
- Building Operator Certification
## Illinois Energy Now Eligibility

<table>
<thead>
<tr>
<th>Utility Service Areas</th>
<th>Public Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ameren IL</td>
<td>Government</td>
</tr>
<tr>
<td>ComEd</td>
<td>Schools, Colleges</td>
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<tr>
<td>Nicor Gas</td>
<td>Universities</td>
</tr>
<tr>
<td>North Shore Gas</td>
<td>Municipal Corporations</td>
</tr>
<tr>
<td>Peoples Gas</td>
<td>Public Works</td>
</tr>
</tbody>
</table>

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Pilot program released PY6 (2013-2014)

Created in response to high energy bills for aeration systems
CLEAN WATER ENERGY EFFICIENCY INITIATIVE

Program increases incentive for High Efficiency Blowers, Aeration Diffusers, and Controls

- $0.36/kWh saved annually
- Maximum funding: 100% of equipment cost
- Must achieve 25% minimum energy savings

Please contact:

Tom Coe at Tom.Coe@Illinois.gov or (217) 785-2433
DCEO PUBLIC SECTOR STANDARD & CUSTOM INCENTIVES

Standard Measures

- Lighting
  - Fluorescents, LEDs, Induction Lighting
- HVAC
  - Boilers, Hot water heaters
- Equipment
  - HVAC VSD
  - NG Water Heaters
  - Showerheads
  - Compressed Air
  - LED Traffic Signals
- Kitchen

Custom Measures

- Electric & Nat. Gas measures not listed as Standard and show 1-7 year payback
- Non-HVAC VSD
- Geothermal
- Incentive based off of Annual Savings:
  - $0.12 per kWh saved
  - $3.00 per Therm saved
EXAMPLES OF CUSTOM MEASURES

- Infrared Heating Systems
- Solids Separation Units (Dewatering, Thickening, etc.)
- High Efficiency Grinders
- High Efficiency Pumps
- Low Pressure – High Output UV (over conventional)
- Dose-Paced UV Controls
- Linear Digester Mixing
Incentives capped at 75% of total project cost (incl. labor and equipment)
  - Not including bonus offers (Sweet Deal, Customer Coupon)
Can be combined with outside sources of funding (max 100% of TPC)

Grant versus Rebate:
  - Rebates received after project completion
  - Grant funding received throughout the project

Pre-apply to reserve funding for small projects.
* Required for incentive levels ≥$10,000
Illinois Energy Now is an ongoing program beginning June 1 and ending May 31 each year.

Funding is distributed on a first-come, first-served basis.

**April 1, 2015** – Deadline for submitting new Pre-Approval Applications.

**May 8, 2015** – Deadline for completing projects and submitting Final Applications.
BIOGAS AND BIOGAS TO ENERGY
- GRANT PROGRAM

Funds projects that demonstrate the use of biogas and biomass to energy generation (electricity and/or heat).

Excellent application for facilities with Anaerobic Digesters

- **$2,500 awards** available for biogas to energy feasibility studies
- Maximum grant award is **$225,000** up to 50% of eligible project costs

Please Contact:

Brian Katamay at bkatam2@uic.edu, (312) 355-2019

Cliff Haefke at chaefk1@uic.edu, or (312) 355-3476
Currently, there are 169 WWTFs operating CHP systems in the U.S. representing 700+ MW of CHP generation capacity (Source: ICF International)

Looking at 1 MGD as the cut-off size limit for technically feasible AD/CHP applications:

<table>
<thead>
<tr>
<th>State</th>
<th>Potential Projects</th>
<th>Potential MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illinois</td>
<td>467</td>
<td>175</td>
</tr>
<tr>
<td>Total U.S.</td>
<td>6,850</td>
<td>4,275</td>
</tr>
</tbody>
</table>

**RULES OF THUMB FOR CONSIDERING CHP**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td># of gallons a typical WWTF processes per day for every person served</td>
<td>100 gallons</td>
</tr>
<tr>
<td>Heating value of WWTF biogas</td>
<td>600 btu/ft³</td>
</tr>
<tr>
<td>Cubic feet (ft³) of digester gas generated per person per day</td>
<td>1.0 ft³</td>
</tr>
<tr>
<td>Power generation rate (watts) at that gas flow rate</td>
<td>2.2 watts</td>
</tr>
<tr>
<td>Power generation rate (kW) for a 4.5 million gallon per day (MGD) WWTF</td>
<td>100 kW</td>
</tr>
<tr>
<td><strong>Preferred</strong> size of WWTF for an economically feasible biogas-to-energy facility</td>
<td>4.5 MGD</td>
</tr>
<tr>
<td>More industry (fats, grease, carbohydrates, organics), more gas!</td>
<td></td>
</tr>
</tbody>
</table>

ELECTRIC VEHICLES

• EV Infrastructure Rebate Program

Provides rebates for purchase and installation of EV charging stations

Rebate award maximum: $50,000 or 50% of the total project cost

Deadline: April 16th, 2015

Email: IllinoisEV@Illinois.gov for more information
ALTERNATE FUELS

- Alternate Fuel Research and Infrastructure Grant Program

  Closed Program, but will open again later in the year

Funds the construction or upgrade of alternate fueling facilities

- E85 blend, propane, ≥20% biodiesel blended fuel, and CNG

- Maximum Grant: $350,000

Please Contact:

Paul Pierre-Louis at Paul.Pierre-Louis@Illinois.gov or (312) 814-3630
FACILITY ASSISTANCE

Energy Resources Center is available to individually work with your facility

Funded to specifically work with Wastewater Treatment Facilities

• Determine incentive opportunities and eligible technologies/projects

• Energy savings calculations and creation of EE goals

• Maximize project funding through DCEO, ICECF and IEPA SRF

Please Contact:

Brian Katamay at bkatam2@uic.edu or (312) 355-2019
FOR ANY QUESTIONS OR CONCERNS

Illinois Energy Now
1-800-214-7954
www.ILEnergynow.org