



Providing effective energy strategies for buildings and communities

Trends in Building Energy Efficiency:

SEDAC Updates, Observations from the Field, and Collaboration

Dr. Brian Deal – Executive Director, SEDAC



Who we are

The Smart Energy Design Assistance Center is an applied research program at University of Illinois at Urbana-Champaign

Our mission:

Reduce the energy footprint of the State of Illinois



What we do

SEDAC:

- Helps facilities become more energy efficient
- Educates
- Researches
- Advocates for a greener future



Key SEDAC Services



**New Construction
Design Assistance**

Benchmarking



**Cost Savings
Analysis**



**Retro-
commissioning**

**Long-term
Energy Planning**



Trends in Building Energy Efficiency

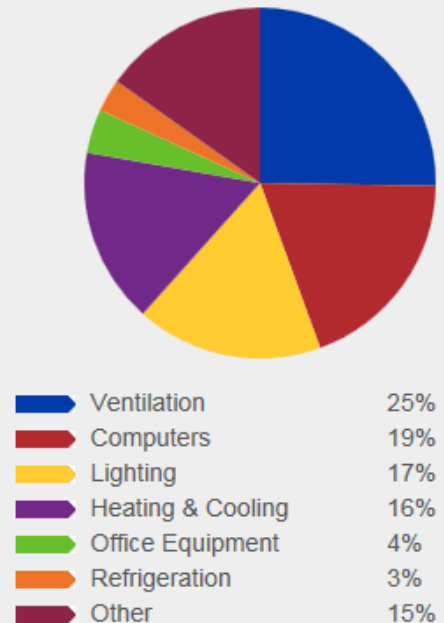
Updates on SEDAC
Projects and Programs



Energy Assessments – AIC

- Limited FREE energy assessments to public sector customers
 - Must be a DS-3 customer and in Ameren Illinois territory
 - Site visit and energy analysis
 - Comprehensive report
- Retro-commissioning studies
 - HVAC and building optimization

Electricity Consumption by Local Government Facilities



Source: U.S. Energy Information Administration



Energy Assessment Benefits

- Benchmarking
 - Understand current energy use
- Review of all major building systems
- Recommendations
 - economic and environmental analysis
- Qualifying incentives
 - estimates for recommendations
- Implementation support



Case Study – John A. Logan College

- Thirteen opportunities for energy savings identified through SEDAC energy assessment

Estimated Annual Savings	Identified Savings	Implemented Savings
kWh	906,900	525,000
Therms	23,710	5,620
Cost Savings	\$90,300	\$46,300



Case Study: Pekin Community High School

- Retro-commissioning (RCx) study and an energy assessment

Program	Energy Cost Reduction Measures
RCx (2013) Implemented Measures	<ul style="list-style-type: none">- Air handling unit scheduling- VFD programming economizer optimization- Holiday schedule programming- Temperature sensor repairs- Parking lot light upgrade- Pool pump VFD
Energy Assessment (2018) Recommendations	<ul style="list-style-type: none">- Exterior and interior lighting- Steam trap survey and repair- Water heater replacement- Kitchen demand control ventilation



Case Study: Pekin Community High School

- Schedule an energy assessment every 5 years to review progress and set new goals.

Estimated Annual Savings	2013 RCx Study (Implemented)	2018 Energy Assessment (Recommendations)
kWh	378,000	265,000
Therms	27,000	33,000
Cost Savings	\$44,000	\$36,000

- RCx Recommendations – 1.4 year payback
- Assessment Recommendations – 4.1 years



We're Seeking Assessments!

Help us promote free assessments to your municipalities, counties and public sector facilities!

- Call: 800-214-7954
- Email: info@SEDAC.org



Workforce Development - AIC

- SEDAC and AIC's Energy Workforce Development and Diversification Initiative Goals:
 - Identify constraints and create awareness of systemic opportunities
 - Develop measures that will address constraints in ways that meet all stakeholder needs
 - Raise awareness of opportunities within certain job roles to address skill gaps



Workforce Development - AIC

- Connect with us!
- Attend the Summit: TBD
- Participate in a regional networking event: TBD



ComEd Energy Efficiency Program

- Program Outreach Services
 - Interest in exploring incentives?
Call us!
- Public Buildings in Distresses
Communities Offering
- PHA Energy Efficiency Needs
Assessment
 - Introduce us to your local PHA



Energy Code Training Program

- Illinois EPA Office of Energy
 - Technical support 800.214.7954 energycode@sedac.org
 - Online resources at sedac.org/energy-code
 - Workshops, webinars, online on-demand training modules



Illinois Energy Conservation Code Update

- UII Energy Conservation Code, based on 2018 IECC and IL Amendments, *SHOULD* be effective on July 1, 2019
- Key changes on the updated rules:
 - State-funded facilities can comply with IECC. ASHRAE 90.1 compliance is optional but not required.
 - Removal of previous amendments on exceptions to roof assembly
 - Definition of high efficacy lighting (≥ 65 lm/W for lamps, ≥ 55 lm/W for fixtures)
 - Air exchange rate for residential buildings: 4 ACH (previous amendment was 5 ACH)



Energy Code Training Program

Upcoming Events – Spring 2019

- Workshops: June 28, 2019 – Oregon Public Library – Oregon, IL
 - 10:00am- 12:00pm: Commercial Energy Code Basics & 2018 IECC Updates
- Webinars
 - More coming soon! Review past webinars at the website below.
- Registration at sedac.org/energy-code



WWTP Energy Assessment Program

Illinois EPA Office of Energy has teamed up with SEDAC and Illinois Sustainable Technology Center to help local municipalities reduce the cost of wastewater treatment.

Comprehensive energy assessments provided at no cost to publicly-owned wastewater treatment plants in Illinois.

There are IEPA Incentives.

We are taking applications!!





Top Energy Efficiency Trends

Aeration
Blowers
Electric Motor Control

Snapshots: WWTP Program



Village of Swansea Facility

Type of facility	Activated sludge
Potential kWh savings/yr	750,000
Potential cost savings/yr	\$65,000
Potential incentives identified	\$253,000
Simple payback (in years) with incentives	1.8

Main recommendations

1. Variable frequency drives on blowers and centrifugal pumps
2. Exterior and interior lighting upgrade to LED



Village of Annawan Facility

Type of facility	Lagoon
Potential kWh savings/yr	101,000
Potential cost savings/yr	\$9,600
Current operation cost/yr	\$14,000
Proposed operation cost/yr	\$5,000
Simple payback (in years) with incentives	7.5

Main recommendations

1. Fine bubble aeration with blower controls
2. Downsize blowers
3. High efficiency motors



Solar Development Suitability for IDNR

- Assess feasibility and appropriateness of solar development on Illinois Department of Natural Resources lands
- Systematic process for identification and evaluation
 - Rapid pre-screening of IDNR properties
 - Agency requirements; Developer requirements
 - Evaluate financial models



Photo credit: Illinois Department of Natural Resources



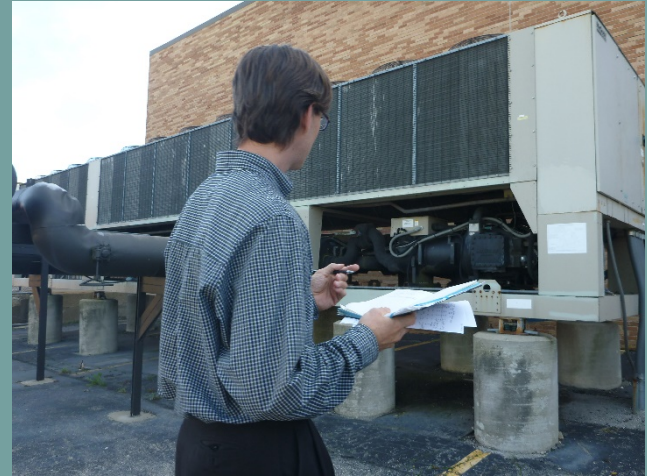
Illinois - Commercial PACE

- PACE = Property Assessed Clean Energy
- Economical financing for:
 - Alternative energy
 - Energy efficiency
 - Renewable energy
 - Resiliency improvement
 - Water use improvement
- Available in: City of Chicago, DuPage Co.
- Programs in-development: Kane, Cook and Madison Co.



SEDAC Regional Council Services

- Energy assessments
- Technical support
- Energy Code training
- Net Zero Energy planning
- Energy education
- Workforce Development
- Solar feasibility studies
- Energy performance contracting support and 3rd party verification



Let's Collaborate!

Do you have a problem or idea? Need a partner?



Let's talk!





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