

ENERGY CONSERVATION TECHNICAL ASSISTANCE UPDATE

January 2015 through December 2015



Illinois Department of Commerce and Economic Opportunity
Illinois Energy & Recycling Office
500 East Monroe
Springfield, Illinois 62701



Illinois
Department of Commerce
& Economic Opportunity

Bruce Rauner, Governor

Executive Summary

By Illinois law, the Department of Commerce and Economic Opportunity (Department) is required to provide technical assistance to local governments, to help them save energy and taxpayer dollars with energy efficiency. During the first six months of 2015, the Department fulfilled this mandate, by assisting units of government and other stakeholders, through its Energy Efficiency Portfolio Standard programs, referred to as Illinois Energy Now. The programs were affected by a freeze on projects during this time which were eased up by the end of the program year, May 31st, so we were able to finalize most projects. In the second half of 2015, without a budget, the Office of Energy & Recycling reviewed project applications, but we have not been able to execute grants or rebates.

Programs that assist local governments include Energy Performance Contracting; Energy Code Training, Education and Technical Assistance; and the Smart Energy Design Assistance Center. In addition, grants to three organizations provided further opportunities for technical assistance to local governments through the Trade Ally program, Application Outreach program, and Metropolitan Mayors' Caucus Aggregation program.

Some of the highlights include:

Energy Performance Contracting Program

Energy Savings Performance Contracting (ESPC) is a budget-neutral approach to make building improvements that reduce energy and water use and increase operational efficiency. By partnering with an energy service company (ESCO), a facility owner can use an ESPC to pay for today's facility upgrades with tomorrow's energy savings—without tapping into capital budgets.

For over 15 years, the Energy Performance Contracting Program has provided assistance to the public and not-for-profit sectors in Illinois, to help them take advantage of the ESPCs. During this time, program staff oversaw the implementation of over \$491 million in energy efficient capital improvements through performance contract arrangements, resulting in over \$35 million in combined annual savings.

In 2015, the Department worked on large ESPCs and project development with the City of Chicago, Cook County (Phase 2 Project), Metropolitan Wastewater Reclamation District, Chicago Transit Authority, Chicago Dept. of Aviation, Central Management Services, City of Decatur, and University of Illinois campuses at Champaign and Chicago, Southern Illinois University, Northeastern Illinois University, Eastern Illinois University and Western Illinois University. Housing Authorities in Chicago, Franklin, Bloomington, Joliet, Champaign County, Cook County and Decatur also received a substantial amount of support. The Program also

assisted on a wide number of smaller projects including school districts in Freeburg, Teutopolis, Valmeyer, Park Ridge and Shelbyville as well as villages and cities like Niles, Glenview, Oak Forest, East Peoria and Tinley Park.

Energy Code Building Industry Training and Education Program

Energy codes and standards set minimum efficiency requirements for new and renovated buildings, assuring reductions in energy use and emissions over the life of the building. Energy codes are a subset of building codes, which establish baseline requirements and govern building construction. In 2012 alone, building energy codes saved the U.S. an estimated \$5 billion on consumers' energy bills.

Energy codes, like building codes, are adopted at the state and then local level, and Illinois' code is called the Illinois Energy Conservation Code. This Code is periodically updated, most recently at the end of 2015, effective 1/1/16. The Department provides training and education to the implementers of these codes – homebuilders, general contractors, architects, engineers, code officials, HVAC specialists, realtors, and home performance professionals – to ensure that they effectively apply the latest code, for new construction, additions and renovation projects in Illinois.

During 2015, DCEO partnered with International Energy Conservation Consultants, LLC (IECC_LLC), to hold 38 events, training 878 state and local code officials, engineers, architects, builders, home energy raters and HVAC contractors on the Illinois Energy Conservation Code. Further, the Department provided code-related technical assistance in the form of: 526 total code interpretations, speaking engagements at 18 stakeholder workshops, 13 strategic consulting sessions to municipalities across the state, and 5 consulting sessions to the City of Chicago (which is undergoing a major overhaul to its local energy code).

Smart Energy Design Assistance Center (SEDAC)

The Smart Energy Design Assistance Center provides advice and analysis enabling public and private facilities, in the State of Illinois, to increase their economic viability through the efficient use of energy resources. During 2015, SEDAC provided multiple services to local governments:

- SEDAC provided 266 energy conservation technical assistance services to local government clients. Of those local government clients, 41 initially received quick technical assistance in response to an inquiry via telephone, email, or SEDAC application. SEDAC completed energy assessments for 79 local government buildings, with 45 receiving additional cost analysis and energy modeling services. Energy assessments inform local governments to take immediate action and plan future

investments to reduce energy usage and costs associated with their buildings through recommendations based on the analysis of the building structure, equipment, and usage. Nine local government projects received follow up implementation assistance.

- SEDAC provided 149 Retro-commissioning (RCx) services to local governments in Illinois. Retro-commissioning analyses use a systematic process to analyze existing building operating systems to identify low-cost and no-cost operational improvements that increase occupant comfort and save energy in existing buildings. SEDAC completed RCx plans and began ongoing implementation assistance for 17 local government buildings. SEDAC continued ongoing implementation assistance and verification for 24 RCx clients. SEDAC also began work on 11 new RCx projects. SEDAC completed Mini-Retro-commissioning services for 5 local government buildings, and provided dashboard energy monitoring services for 6 local governments.
- SEDAC also conducted a variety of outreach and training events discussing topics such as opportunities for energy efficiency savings in existing buildings, high performance design for new public sector buildings and state programs to support energy savings efforts. In 2015, SEDAC conducted 11 workshops, trainings, and presentations targeted to Illinois local governments and other building managers.

ENERGY CONSERVATION TECHNICAL ASSISTANCE UPDATE

For the period January 2015 through December 2015

INTRODUCTION

The Energy Conservation Act (20 ILCS 1115) was signed into law September 1979. The law requires that the Department provide technical assistance in the development of thermal efficiency standards and lighting efficiency standards to units of local government, upon request by such unit. The law also states that the Department shall provide technical assistance in the development of a program for energy efficiency in procurement to units of local government, upon request by such unit. Ultimately the goals of these mandates are to help local governments and their residents save energy and money, by making their buildings more energy efficient. By providing technical assistance – in the form of outreach, education and training, and one-on-one assistance – the Department is able to ensure that industry professionals are aware of the benefits of energy efficiency and have the technical information they need to effectively implement cost-saving strategies. These goals complement and are in line with related energy efficiency mandates the Department must meet, under the State’s Public Utilities Act Energy Efficiency Portfolio Standards (220 ILCS 5).

In 2015, the Department fulfilled its mandate to provide energy efficiency technical assistance, by assisting units of government and other stakeholders, through its Energy Efficiency Portfolio Standard programs, referred to as Illinois Energy Now. These programs include Energy Performance Contracting; Energy Code Training, Education and Technical Assistance; and the Smart Energy Design Assistance Center. In addition, grants to three organizations provided further opportunities for technical assistance to local governments through the Trade Ally program, Application Outreach program, and Metropolitan Mayors’ Caucus Aggregation program.

The technical assistance programs provided by the Department are supported largely by Energy Efficiency Portfolio Standard Funds, which are received annually, by law from the State’s investor-owned utilities. These programs were not supported by the State’s Energy Efficiency Trust Fund (0571) as they had been in prior years due to a fund sweep.

PROGRAM OVERVIEWS

ENERGY PERFORMANCE CONTRACTING PROGRAM

Energy Performance Contracting is an innovative arrangement for designing, installing and financing energy improvements, where the savings achieved by the project are guaranteed to amortize the cost of the project over the term of the agreement. Energy performance

contracts provide a practical means to fund many types of building improvements, including: new lighting technologies, high-efficiency boilers and chillers, and energy management controls. Under an energy performance contract an agreement is made with a private energy service company (ESCO) that will identify and evaluate energy-saving opportunities and then recommend a package of improvements to be paid for through savings. To ensure savings, the ESCO offers staff training and long-term maintenance services. Additionally, the ESCO will guarantee that project savings meet or exceed annual payments and cover all project costs. Energy performance contracts are typically 10-20 years in length, are adaptable to site specific needs, and are best suited for facilities that have the following characteristics:

- Annual utility cost in excess of \$100,000;
- Stable use of the facility for the next five to ten years;
- Minimal availability of funds for energy related capital improvements; and
- Have accomplished minimal energy efficiency upgrades over the past ten years.

Through the Department's Energy Performance Contracting Program, assistance is provided to units of state and local government, schools, and not-for profit organizations, to promote the use of energy performance contracting. Services provided by the Department include:

- Competitive Procurement Process
- Comparative Evaluation Methodology
- Review and analysis of ESCO proposals
- Technical Review of Project Audits and Scope
- Review and comment on Basic Contract Documents
- Advice on Contract Negotiations
- Assistance on Evaluating Project Financing Options
- Review of Project Performance Based on Measured Savings

For over fifteen years, the Energy Performance Contracting Program has provided assistance to the public and non-profit sectors. During this time \$645.9 million in energy efficient capital improvements through performance contract arrangements resulted in over \$46.5 million in combined annual savings. In 2015:

- Over 1,200 hours of technical assistance was provided to 82 local governments, schools, universities, housing authorities and not-for-profit entities seeking assistance with considering or implementing an energy performance contracting.
- 29 energy performance contract projects with a total project cost of over \$154.9 million were completed and are now in the "Measurement & Verification of Savings" stage of the process. These projects are expected to save over \$ 11.5 million annually.
- 9 additional projects with a total project cost of over \$124 million are over 50% construction complete with total annual savings of \$8.3 million.

BUILDING ENERGY CODES PROGRAM

The Department is required under the [Energy Efficient Building Act \(20 ILCS/3125\)](#) to provide training and technical assistance on the Illinois Energy Conservation Code, for both commercial and residential buildings. Energy codes and standards set minimum efficiency requirements for new and renovated buildings, assuring reductions in energy use and emissions over the life of the building. Energy codes are a subset of building codes, which establish baseline requirements and govern building construction.

Energy codes, like building codes, are adopted at the state and then local level, and Illinois' code is called the Illinois Energy Conservation Code. This Code is periodically updated, most recently at the end of 2015, when the Administrative Rules to adopt the 2015 *International Energy Conservation Code*, with amendments, as Illinois Energy Conservation Code, were approved by the Joint Committee on Administrative Rules. The Department provides training, education, and technical assistance to the implementers of these codes – homebuilders, general contractors, architects, engineers, code officials, HVAC specialists, realtors, and home performance professionals. Through the Building Industry Training and Education Program and the Code Technical Assistance Program, the Department helps local governments ensure that the latest code is effectively applied, for new construction, additions and renovation projects in Illinois. The work is performed under Illinois Energy Now, with prior minimal support from the Department's Energy Efficiency Trust Fund, which was not available in 2015.

For its training and education efforts, in 2015, the Department focused specifically on maintaining energy codes momentum attained during 2012, 2013 and 2014 while improving upon and diversifying instructional topic centers. For instance, the need for “basic code awareness” and “HVAC sizing fundamentals” training warranted full day sessions while “Developing & Reviewing Performance-Based Home Designs for Code Compliance” events were offered in shorter, “half-day” builder and performance contractor formats, to draw more from the construction trades and energy raters. Additional topics included teaching commercial energy modeling as a game, founded in part upon the paper, “[Learning by Playing – Teaching Energy Simulation as a Game](#),” work developed by the Department of Architecture, Graduate School of Design at Harvard University. The Department's newest educational opportunity was a full-day offering entitled “Inside the Game! Modeling to Code with OpenStudio 1.5.0. ” Based on the success of previous year's “Learning by Playing!” events, this workshop trained more than 70 architects, engineers, and code officials on how to use the Department of Energy's “open-source” energy modeling tools, OpenStudio and EnergyPlus, to submit code-compliant energy modeling reports in an interactive computer-classroom environment.

Overall, in 2015, DCEO partnered with IECC_LLC to hold 38 events, training 878 industry professionals. Of the 38 total events, 8 trainings were held for 135 Illinois heating and air-

conditioning contractors and code enforcement officials on ACCA Manuals 'J', 'S', and 'D' to improve right-sizing of home heating and air-conditioning equipment in residential buildings. The Department also participated in outreach speaking engagements at 6 workshops, sponsored by groups including: The Chicago Roofing Contractors Association, The Chicago Electric Association, The Illinois Institute of Technology (NECA), The Better Buildings, Better Business (B4) Conference, The U.S. Department of Energy (DOE) "Energy Codes in Action" Conference in Nashville, Tennessee, and the Ameren Illinois Act On Energy Business Symposium.

The Department's Office of Energy & Recycling accepted the 2015 Standard Bearer's Award, presented by the Institute for Market Transformation with support from the International Code Council, to recognize State Energy Code Program leadership in raising energy code compliance. IECC_ILLC assisted in the preparation of Illinois' application.

Through IECC_ILLC, the Department also provided one-on-one code-related technical assistance, in 2015, including:

- 526 total code interpretations (351 written letters/e-mails and 175 verbal/telephone responses).
- Five consulting sessions specifically with the City of Chicago's Department of Buildings, Office of Regulatory Review, for the development of the City's municipal energy code adoption ordinance.
- Eighteen Energy Conservation Advisory Council consultations providing technical support to the Illinois Capital Development Board as set forth in the *Illinois Energy Efficient Building Act* ["the Act" 20 ILCS 3125].
- Four keynote addresses to design, construction and code enforcement community organizations including, Suburban Building Officials Conference (SBOC), Illinois Mechanical Inspectors' Association (IMIA), Tazewell County's Code Enforcement Workshop, and Village of Shorewood's Annual "Contractor's Breakfast."
- Thirteen strategic consulting sessions to circuit municipalities (Jersey Co., Geneva x2, Will Co., Wilmette, Sycamore x2), homeowners, HERS/BPI Consultants and HVAC Contractors.

SMART ENERGY DESIGN ASSISTANCE CENTER

The Smart Energy Design Assistance Center (SEDAC) provides advice and analysis enabling private and public facilities, in the State of Illinois, to increase their economic viability through the efficient use of energy resources. SEDAC is sponsored by the Department, in partnership with investor owned utilities, to provide valuable services at no cost to public facilities, as well as to businesses and nonprofit organizations. SEDAC is managed by the Department of Urban

and Regional Planning, at the University of Illinois at Urbana-Champaign, and operates as a public-private partnership, in collaboration with the 360 Energy Group, along with other energy entities across the state.

SEDAC was started in 2004, targeting small business energy opportunities. In June 2008, under the Illinois Energy Efficiency Portfolio Standard (EEPS), SEDAC services were expanded to include public entities in Ameren Illinois and ComEd electric delivery territories. In June 2011, public entities in Ameren Illinois Gas, Nicor Gas, North Shore Gas, and Peoples Gas delivery service territories were added.

During 2015, SEDAC provided 226 energy conservation technical assistance services to local government clients. 41 of those local government clients initially received quick technical assistance in response to an inquiry via telephone, email, or SEDAC application. SEDAC completed energy assessments for 79 local government buildings, with 45 receiving additional cost analysis and energy modeling services. Energy assessments inform local governments to take immediate action and plan future investments to reduce energy usage and costs associated with their buildings through recommendations based on the analysis of the building structure, equipment, and usage. In 2015, SEDAC identified potential annual energy savings from quantified energy reduction measures of 760,180 MBtu (5,839,325 therms and 51,655,221 kWh) with potential annual cost savings of \$7,627,682 annually. SEDAC also provided follow up implementation assistance to nine local governments. This service moves beyond the identification of appropriate energy savings measures to additional technical assistance needed for implementing the energy savings measures.

In 2015, SEDAC also provided retro-commissioning (RCx) services. SEDAC offers RCx guidance, by identifying quick payback measures (payback of 18 months or less) to improve the control, scheduling, and operation of energy-consuming systems to match the current functional requirements of a building. The end result is significant energy and demand savings, and in many cases, improved occupant comfort and productivity. In 2015, SEDAC completed retro-commissioning plans and began ongoing implementation assistance for 17 local government buildings. For these local government clients, SEDAC identified 97,198 MBtu (8,743,650 kWh and 673,567 therms) in estimated annual energy savings and \$1,000,506 in estimated annual cost savings for quick-payback RCx measures. SEDAC continued ongoing implementation assistance and verification for 24 RCx clients. In addition, SEDAC began work on 11 new Pilot RCx projects including Mini-Retro-Commissioning and Energy Dashboards. SEDAC conducted mini-retro-commissioning (Mini-RCx) services for 5 local government buildings. Mini-RCx projects are structured to provide relatively quick review of two major RCx recommendation areas: scheduling and setpoints. These projects are targeted to buildings that would not

qualify for the regular RCx service because of building size or equipment. SEDAC identified 17,429 MBtu (131,798 therms and 1,245,598 kWh) in estimated potential annual energy savings and \$232,785 in estimated annual cost savings for these projects. SEDAC also continued its energy dashboard pilot program to install and monitor energy dashboards for RCx clients, with installation completed for 6 new local government projects in 2015. After installation, SEDAC continued to provide dashboard monitoring services to identify ongoing energy conservation opportunities.

In addition to direct technical assistance to local governments focused on their specific buildings, SEDAC also provided workshops and other outreach activities on energy efficiency to local governments throughout the state. In 2015, SEDAC conducted 11 workshops, trainings, and presentations targeted to Illinois local governments and other building managers covering energy efficiency topics including energy-savings strategies in existing buildings, pools, and park district facilities, and energy efficiency implementation, funding, and management strategies.

OTHER ILLINOIS ENERGY NOW PROGRAMS

Grants to three organizations under the DCEO Illinois Energy Now programs provide additional opportunities for local governments in Illinois to receive technical assistance on energy efficiency. Each is briefly described below.

Illinois Energy Now Trade Ally Program

The Illinois Energy Now Trade Ally Program has been created for the benefit of Trade Ally partners and their clients, forging connections that can lead to increased energy savings through the Department incentives. Trade Allies are general contractors, lighting contractors, HVAC contractors, engineers, architects, energy service companies, and energy-saving product wholesalers, distributors and retailers who are trained on the Program to deliver more cost-effective energy efficient building solutions to their public sector clients. Through a series of workshops, webinars, trade shows and rallies, they are fully trained on the portfolio of energy efficiency programs and develop a solid understanding of program rules and procedures. With ongoing support and guidance from staff and engineers, Trade Allies can help their clients navigate the incentive process, including completing Department incentive applications.

Unlike trade ally programs offered through public utilities, the Trade Ally Program is designed exclusively for industry professionals working with local government and other public sector clients. The participation of over 450 active Trade Allies has increased the number of applications to the Illinois Energy Now Program and thus has helped the Department achieve its EEPS goals.

Illinois Association of County Board Members

Under this project, the Illinois Association of County Board Members (IACBM) assists units of local governments, along with seven regional planning agencies, to participate in the Illinois Energy Now incentive programs. Specifically, IACBM markets the programs to hard-to-reach audiences, focusing on smaller municipalities across the state, and assists those communities in obtaining energy audits and in maneuvering the application process. IACBM also continues to expand and maintain an on-line energy efficiency toolkit that provides units of local government with energy efficiency facts sheets, energy planning guidance and IEN case studies. IACBM's work focuses on governments within the Ameren, ComEd, and NICOR utility territories.

Metropolitan Mayors' Caucus

In 2015, under the Department's Energy Efficiency Aggregation Program, the Metropolitan Mayors' Caucus (MMC) assisted 140 individual public sector agencies benefiting nearly 100 units of local government in the metropolitan Chicago area to take advantage of Illinois Energy Now financial incentives. MMC, in partnership with 360 Energy Group, identifies, qualifies, and assists many of its 273 local government members in implementing energy efficiency projects. These projects include lighting and other fast turnaround measures (e.g., HVAC, controls) in the ComEd territory and thermal efficiency projects for North Shore, Peoples, and NICOR gas delivery customers. For 2015, savings achieved were 8,173,687 kWh and 638,543 therms due to \$3.57 million of Department incentives administered. Additionally, nearly \$13 million has been leveraged in local energy efficiency investment by these public agencies. These projects have created more than 252 jobs in the Illinois economy over four years of participation.

LOOKING AHEAD & SUMMARY

In the year to come, once a budget is passed, the Department will be able to implement plans to continue supporting local governments with energy efficiency technical assistance. Efforts to comply with Energy Conservation Act mandates will continue to be coordinated with the Energy Efficiency Portfolio Standard mandates. The Department's technical assistance will maintain its focus on high impact areas like ESPC, codes, and design assistance, as well as other potential areas where there may be gaps and opportunities. Resource distribution in these areas will be based on an assessment of relative program success and areas where the greatest impacts are being seen in terms of assistance ultimately resulting in actual savings. The Department is pleased to be able to offer a range of energy efficiency assistance, to ensure that Illinois local governments have the technical tools they need to save money by saving energy.