ComEd Energy Efficiency Program

CY2020

THIRD QUARTER REPORT

ENERGY STAR AWARD 2013 PARTNER OF THE YEAR Sustained Excellence
ENERGY STAR AWARD 2014 PARTNER OF THE YEAR Sustained Excellence
ENERGY STAR AWARD 2015 PARTNER OF THE YEAR Sustained Excellence
ENERGY STAR AWARD 2016 PARTNER OF THE YEAR Sustained Excellence
ENERGY STAR AWARD 2017 PARTNER OF THE YEAR Sustained Excellence
ENERGY STAR AWARD 2018 PARTNER OF THE YEAR Sustained Excellence
ENERGY STAR AWARD 2019 PARTNER OF THE YEAR Sustained Excellence

Data presented in this document is based on preliminary results and is subject to revision and evaluation adjustments. ComEd Energy Efficiency is funded by ComEd customers in compliance with Illinois Public Act 95-0481.

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Portfolio Summary

1,221,576

Actual Net MWh YTD

1,710,300

CY2020 MWh Forecast

1,637,572

CY2020 MWh Filed Goal

$227,215,870

Actual Spend YTD

$351,334,190

CY2020 Spending Cap

PORTFOLIO

- Through Q3, the portfolio has achieved 71% of its CY2020 forecast of 1,710,300 MWh and 75% of its CY2020 filed goal of 1,637,572 MWh.
- Since its inception in 2008, the ComEd Energy Efficiency Program has saved ComEd customers over $5.2 billion on their electric bills.
- For granular breakout by program, please see the narrative.

RESIDENTIAL PROGRAMS

- Through Q3, residential programs have achieved 70% of its combined CY2020 forecast of 271,343 MWh.
- Customers have received over 89,688 rebates and over 10,564 homeowners and tenants have received free direct install products from assessments through Q3.

INCOME ELIGIBLE PROGRAMS

- Through Q3, income eligible programs have achieved 65% of their combined CY2020 forecast of 68,085 MWh, not including MWh savings from converted therms.
- Over 5,257 income eligible households have participated through Q3.

BUSINESS PROGRAMS

- Through Q3, business private sector programs have achieved 70% of its combined CY2020 forecast of 736,113 MWh; business public sector programs have achieved 65% of its combined CY2020 forecast of 138,077 MWh.
- Over 8,250 business private sector projects and 868 business public sector projects have been completed through Q3.

THIRD PARTY PROGRAMS

- Through Q3, third party programs have achieved 62% of their combined CY2020 forecast of 164,375 MWh.

COVID-19

- While this report covers Q3, and reflects spend and energy savings accordingly, within the program narrative sections, there are some notes about steps that have been taken both during and since the end of Q3, in light of COVID-19.

Residential Programs

Home Energy Reports

Overview: The Home Energy Report provides select residential customers with information on how they use energy within their households. Reports and the online portal include usage comparison to that of similar, nearby households, personalized energy efficiency advice, program promotions, and application of behavioral principles and social norms to drive adoption of energy efficient behaviors.

- **50,753 MWh savings achieved (75% of forecast)**

Report generation year-to-date, as of August 2020:

- Home Energy Reports (print): 5,849,773
- Home Energy Reports (email): 5,527,117
- High Usage Alerts (email,): 1,133,661
- Weekly Usage Reports: 1,645,457
- The program continues to have a low opt-out rate, high customer satisfaction through customer inquiries, and high digital communication engagement rate

Lighting Discounts

Overview: The Lighting Discounts Program provides instant in-store discounts to ComEd residential customers at participating retail stores on select ENERGY STAR® certified lighting: LEDs, LED trim kits, and LED integrated fixtures.

- **103,250 Net MWh savings achieved (71% of forecast) based on 3,821,337 LED bulbs and fixtures discounted**
- The ComEd Lighting Discounts program continues to see strong customer participation despite the COVID-19 pandemic
- Introduced a special lighting promotion, in partnership with the lighting manufacturer Greenlite, at Walgreens; this promotion allowed us to add 214 Walgreens stores to the program that are spread across the service territory.

Appliance Rebates

Overview: Appliance Rebates offers rebates to ComEd residential customers on the purchase of new, select ENERGY STAR® certified appliances/products including: air purifier, clothes washer, electric clothes dryer, refrigerator, freezer, dehumidifier, variable speed pool pump, room air conditioner, smart thermostat, and advanced power strip.

- **18,429 Net MWh savings achieved (61% of forecast) based on 89,688 rebated appliances**
- ComEd continues to see a reduction in customer participation year-over-year for Smart Thermostats, Dehumidifiers and Pool Pumps
- Introduced a bulk rebate tool to our multi-family energy assessment offering; this tool provides multi-family property managers and owners the opportunity to apply for multiple rebates on qualifying appliances and smart thermostats through one application, rather than applying for each item and tenant unit individually

Fridge and Freezer Recycling

Overview: The Fridge and Freezer Recycling Program provides ComEd customers free pickup and recycling of older, working refrigerators and freezers from residential customer homes. In addition to free pickup, customers receive a $35 incentive for fridge and freezer units and $10 for AC units and dehumidifiers when collected in conjunction.

- **2,317 MWh savings achieved (100% of forecast) based on 6,508 units**
- Program was suspended in mid-March and will likely not resume before 2022.

Residential Programs

Home Energy Assessment

Overview: Offered in partnership with Nicor Gas, North Shore Gas, and Peoples Gas, the Home Energy Assessment is a free walkthrough assessment with an energy advisor that determines the ways energy is used in the home. Customers receive personalized energy-efficiency recommendations, and the following energy-saving products are installed for free: ENERGY STAR® certified LEDs, programmable thermostats, WaterSense® certified showerheads, faucet aerators, and hot water pipe insulation. Advanced Power Strips are provided and left behind for the customer to install. Nest Learning and Nest E smart thermostats are also available for purchase at a discount and include free installation.

- **7,033 MWh savings achieved (55% of forecast) based on 6,538 in-home and 189 virtual assessments completed**
- Program successfully and safely relaunched in late July, after four-month suspension due to COVID, completing 189 virtual and 2,825 in-home assessments
- Virtual Home Energy Assessment (vHEA) pilot was launched in Q2 as a pilot and expanded into a full program in Q3, resulting in 189 vHEAs
- Q3 program demand remains consistent with pre-COVID levels, and Energy Advisors are flexible to offer either in-home or vHEA assessments based on customer preferences

Multi-Family Energy Savings

Overview: In partnership with Nicor Gas, North Shore Gas, and Peoples Gas, the Multi-Family Energy Savings Program provides multi-family tenants and property owners and managers with a variety of ways to save electricity and natural gas. The program will serve as a "one stop shop" to generate energy savings throughout the property. After an initial assessment, immediate energy savings are generated by the direct installation of energy-saving products in both tenant and common area spaces. The program further provides Service Provider installs of common area lighting measures.

3,564 MWh savings achieved (40% of forecast) based on 3,632 tenant units, 205 common-area installs, and $1,359,020 in Service Provider Installation

- Program successfully and safely relaunched in late July after four-month COVID suspension by completing 147 Assessments, 1851 tenant unit and 177 common area installs, and $262,755 in Service Provider Installation.
- Program eased restrictions (DI Prerequisite/Co-Pays) around Service Provider Installation projects in order to increase project pipeline and encourage Multi-Family property managers to move forward with projects.

Heating & Cooling Rebates

Overview: The Heating & Cooling Rebates Program promotes investment in long-term savings by providing rebates for the purchase and installation of high efficiency central air conditioners, air source heat pumps, ductless mini-split heat pumps, ECM furnace blower motors, smart thermostats, and ground source heat pumps.

- **3,635 MWh savings achieved (82% of forecast) based on 8,551 rebates**
- Launched Ductless Mini Split Heat Pump (DMHP) promotion for installations after 8/1/2020, which increased rebates on one DMHP to $500 and $600 per system for two or more
    - Early results through the first two months of the promotion show positive results including 96 DMHP rebates as compared to 180 during the first seven months of the year.

Income Eligible Programs

Income Eligible Product Discounts

Overview: Overview: Income Eligible Retail Discounts provides deeper instant in-store discounts to ComEd residential customers at participating retail stores located in qualifying neighborhoods on select ENERGY STAR® certified lighting: LEDs, LED trim kits, and LED integrated fixtures as well as instant in-store discounts on select ENERGY STAR certified appliances such as air purifiers. Instant in-store discounts are also available on advanced power strips. Instant Discounts are offered to minimize the burden on the target market by lowering barriers to participation.

- **39,413 MWh savings achieved (67% of forecast) based on 895,924 Units sold (appliance: 67,882 and lighting: 822,912)**
- Added LED Nightlights to Dollar Tree's, Ace Hardware's and other Independent Retailers
- Walgreens promotion with Greenlite manufacturer began in July. The promotion featured the Gateway fixture at 56 Walgreens locations
- Year to date, over 21,000 advanced power strips sold through income eligible store locations
- 60 Family Dollar store locations added to program in late September

Single-Family Retrofits

Overview: The Single-Family Retrofits Program is delivered through several channels including, Illinois Community Action Agencies, the Chicago Bungalow Association (CBA) and the Chicagoland Vintage Home Association (CVHA). The offering includes comprehensive home energy audits and work through contractors to complete weatherization, health and safety and additional upgrades at no cost to the customer. CBA/CVHA identifies and determines qualified vintage homeowners located in the City of Chicago and certain Cook County suburbs and coordinates home assessments to identify areas prone to air leaks or drafts and works with contractors to make weatherization and health and safety updates at no cost to the customer. This program covers costs associated with completing air sealing, attic and wall insulation, duct sealing, direct install measures (LEDs, water saving measures, programmable thermostats) as well as health & safety improvements. This program is delivered in partnership with Peoples Gas.

ComEd, in coordination with the CAA's and the northern gas utilities partially and, in some cases fully funds whole home energy upgrades in coordination with the State-run Illinois Home Weatherization Assistance Program (IHWAP). Measures may include all of those in the CBA/CVHA side, as well as mechanical system upgrades or replacements.

- **2,235 MWh savings achieved (54% of forecast) based on 415 participating customers (Includes IHWAP +CBA/CVHA)**
- **CBA/CVHA Projects:**
  - **Joint with Peoples Gas: 280**
  - **ComEd Only: 266**
- **Single family IHWAP**
  - **289 Total Projects**

Illinois Home Weatherization Assistance Program (IHWAP)

Community Action Agencies participated in a mid-year budget redistribution activity in September; they were asked to reflect upon their production YTD, their staff and contractor capacity, and their pipeline to revise their year-end projections. In light of this feedback from agencies, more than $500k were redistributed from agencies facing challenges to agencies with additional capacity while maintaining overall program goals.

CBA/CVHA

- The program relaunched field activities on July 13th and steadily ramped up production throughout the month, returning to full production in August

Income Eligible Programs

Multi-Family Retrofits

Overview: The Multi-Family Energy Upgrade Program is delivered through several channels including Illinois Community Action Agencies (for the Illinois Housing Weatherization Program – IHWAP - multi-family offering) and the multi-family energy savings (IEMS) offering. The program offers one-stop shop options for multi-family building owners and managers whose buildings serve income-eligible residents, including energy assessments, direct installation of energy-saving devices, and replacement of inefficient equipment/systems at no or very limited cost. The IHWAP work is jointly funded with all the northern Illinois gas utilities and IEMS offering is joint with Peoples Gas and NorthShore Gas.

- **940 MWh savings achieved (29% of forecast)**
- **IEMS:** Completed 213 projects and upgraded 3,860 residential units
- **IHWAP:** No Multi-family projects completed through Q3

IHWAP

The Community Economic Development Association of Cook County (CEDA) obtained approval for the Dearborn Homes Multi-Family project in late July. This project, scheduled for completion in November, will serve 44 units with lighting and mechanical improvements as well as air sealing and compartmentalization improvements. This project will leverage funding from multiple partners, including the Illinois Home Weatherization Assistance Program, Peoples Gas, ComEd, the Chicago Housing Authority.

IEMS

- Relaunched field activities including assessments and DI installations.
- Program focus for Q3 was building pipeline. Incentives ramped up throughout Q3 from $5,239 in July to $182,666 in August and $346,320 in September.
- Developed and began offering Virtual Energy Assessments, available if customer prefers virtual option.
- Began CY2021 program planning

Affordable Housing New Construction

Overview: The Affordable Housing New Construction (AHNC) Program offers technical support and incentives for whole-building efficiency for new construction and major renovation projects that increase the energy efficiency of income eligible households.

- **1,532 net MWh savings achieved (95% of forecast) based on 11 projects and 502,927 sq. ft. of eligible building area from completed projects through Q3. This includes a total of 982 units, all of which are at or below 80% AMI.**
- Completed a Return on Investment Study that will inform 2021 program design changes, such as changes to some energy efficiency measures, updated incentives with tiered options, and revised measure requirements.
- AHNC projects continue to win national awards, which increases awareness of the program among design firms and developers. This includes a Preservation award for Miriam Apartments and AIA/ALA awards for the Northtown and Independence Library and Apartments projects.

Standard

Overview: The Standard Program provides monetary incentives to customers on a "Standard" per-unit or per-fixture basis. Offered measures include LEDs, T-8 and T-5 lighting and controls, building automation systems, air- and water-cooled chillers and variable speed drives, ground source heat pumps, roof top units, Q-sync motors, energy recovery ventilators, absorbent air cleaners, as well as equipment with niche or targeted market applications, such as laboratory, farm and commercial food service equipment, and grocery refrigeration measures.

- **Private: 158,881 MWh savings achieved (77% of forecast) based on 2,025 projects**
- **Public: 18,669 MWh savings achieved (69% of forecast) based on 596 projects**
- The standard offering continued to see strong project throughput this quarter resulting in increasing the original total year end goals from 224,695 net MWh to 233,464 net MWh (4% increase) and from $36.1M to $39.4M (9% increase) despite market impacts from the pandemic.
- In comparison to Q3 2019, we received a higher number of public final applications (259 in 2020 and 220 in 2019) and a higher number of private pre-applications (717 in 2020 and 681 in 2019).
- Public Standard had the strongest quarter in terms of savings this year with a total of 6,719 net MWh (Q1: 6,169 net MWh, Q2: 5,918 net MWh).

Custom

Overview: The Custom Program identifies and implements site-specific and unique cost-effective energy efficiency opportunities that are not available via the Standard program. Customized incentives based on per kWh basis and calculated for specific customer projects are offered. Measures include process efficiency improvements, system upgrades, and those measures not covered by the Standard program.

- **Private: 9,846 MWh savings achieved (45% of forecast) based on 108 projects**
- **Public: 373 MWh savings achieved (10% of forecast) based on 7 projects**
- Compared to this time last year, the private custom program in 2020 has completed 33% more applications, but 22% fewer incentives paid. This is because, in 2019, the program paid out applications with larger incentives.
- The program is performing 16% above the monthly projections.
- As the program continues into the 4th quarter, the outreach and engineering team is keeping close contacts with remaining pipeline applicants to understand project status and schedule.

Small Business Energy Savings (SBES) & Small Facilities

Overview: The SBES Program and Public Small Facilities Program implement energy efficiency projects for customers under 100 kW peak demand. The program provides comprehensive energy savings solutions for customers including advanced lighting, refrigeration, HVAC, and compressed air.

- **Private: 152,827 MWh savings achieved (75% of forecast) and 5,594 projects**
- **Public: 5,353 MWh savings achieved (63% of forecast) based on 124 projects**

Small Business

- With the strong participation thus far in 2020, increased saving goal and budget by an additional 40,000 MWh and $10MM from the mid-year portfolio rebalancing.
- Started a pilot for 0-200 kW private business customers in 39 zip codes with low participation. Have 998 projects reserved for an estimated 31,183 MWh savings and incentives over $7.5MM.
- Q3 continued to see strong participation, paying out over $12M of incentives to help over 1,800 customers save 51,325 net MWh
- Infield project inspections have restarted using federal, state, and local safety protocols and are being used in combination with virtual methods. 324 inspections were completed in Q3.
- The direct deposit (ACH) pilot has been happily accepted by the service providers as it has reduced payment times from an average of 11 days by

check to 2 days by ACH. Pilot expanded from original 11 service providers to 22 with plans to have all 70 onboarded by the start of 2021.

Public Small Facilities

- Worked with the city of Zion to develop 20 projects to be completed by YE. Four projects completed in Q3 with 350 net MWh in savings.

Business Instant Discounts

Overview: The Instant Discounts Program provides instant discounts on qualifying commercial screw-in, pin-base, HID, exit signs and forklift battery chargers. Linear fluorescent lamps can be replaced with reduced wattage T8 lamps or Tubular LED (TLED) lamps. All screw-in, pin-base and exit sign replacements are LED.

- **Private: 133,171 MWh savings achieved (71% of forecast) based on 1,410,293 products sold**
- **Public: 21,101 MWh savings achieved (73% of forecast) based on 364,140 products sold**
- Guidehouse's Wave 2 data review determined that Instant Discounts should use a different methodology for calculating Energy Star fixtures; by adopting the new methodology, program savings improving by over 30%.
- Adjusted incentive structure for Energy Star fixtures to be more cost effective for the program effective 8/1/20.
- A4Q incentive promotion was announced to ensure strong year-end results and mitigate trending market risks

C&I New Construction

Overview: The New Construction Program provides technical assistance, support for the Leadership in Energy and Environmental Design (LEED) rating system, and incentives for efficient designs and measure implementation to influence building design practices during the design and construction of new buildings, major renovations of existing buildings, and tenant build-outs in the C&I market. The program serves private commercial and industrial buildings (CINC) as well as public sector buildings (PSNC) through a combined offering.

- **Private: 9,779 MWh savings achieved (72% of forecast) based on 41 projects and 7,306,448 sq. ft. of building area from completed projects**
- **Public: 748 MWh savings achieved (38% of forecast) based on 8 projects and 479,050 sq. ft. of building area from completed projects**
- Due to COVID-19, developed a remote verification process, which is currently being implemented for all projects that require verification.
- The program has seen significant interest in the Best Practices Program Path with 50% of new applications pursuing one of the Best Practices offerings.

Industrial Systems

Overview: The Industrial Systems Program is a study-based offering for compressed air, process cooling, industrial refrigeration and wastewater treatment plant. The target customer is over 100 kW but under 10 MW. Because this is a study-based program, there are no predefined measures. Measures are a mix of no- to low-cost system optimization as well as capital improvements like custom measures.

Private: 16,396 MWh savings achieved (46% of forecast) based on 245 projects

- COVID restrictions have been lifted at customer sites with a return to near normal site activity for investigation studies, project implementation, and verification reports
- Mid-year portfolio rebalancing provided additional funds to the Fix It Now Compressed Air Leak Repair offering resulting in an additional 4,500 MWH to the year-end goal. This resulted in a significant increase for both August and September of more than double the normal expected project savings.
- Released a new webinar series for industrial customers with the objective to learn about how to obtain internal approval for EE projects, Fix It Now offering for easy to implement projects and how to manage energy use with BEA tool.

Retro-Commissioning (RCx)

Overview: The RCx Optimization Program provides detailed engineering analysis of building systems designed to identify energy-saving operational improvements with a bundled simple payback of 18 months or less. Incentives are provided to customers who commit to implementing agreed-upon energy-saving equipment scheduling, optimization of economizer operations, and adjustment of heating, ventilation, and air conditioning (HVAC) setpoints.

- **Private: 22,006 MWh savings achieved (79% of forecast) based on 113 projects**
- **Public: 8,979 MWh savings achieved (94% of forecast) based on 69 projects**
- By the end of Q3 2020, RCx had achieved 33.6 net GWh in savings, or 75% of the annual goal of 44.6 GWh.
- Of the five program options, Virtual Commissioning (VCx) has continued to contribute the most savings year to date, with 14 GWh.
- During Q3, the VCx team continues to use AMI data to remotely identify business and public sector customers affected by the COVID-19 shelter-in-place order whose energy usage data did not reflect reduced operations. They successfully assisted over 35 customers with operational adjustments, resulting in an estimated 1.1 GWh in energy savings for those customers (primarily schools).

Strategic Energy Management (SEM)

Overview: Strategic Energy Management provides tools, coaching and technical resources to support customers' energy goals through a year-long series of workshops and one-on-one coaching. It draws on principles of continuous improvement and organizational change and integrates Lean, Six Sigma and other cost savings and operational excellence initiatives. SEM helps implement organizational structures, behavior changes, and systematic practices that can lead to reducing energy costs by up to 15% for both electricity and natural gas.

- **Private YTD: 0 MWh savings achieved (0% of forecast) based on 42 Customers energy savings are generally recognized at the end of the year once the cohort completes.**
- **Public YTD: 0 MWh savings achieved (0% of forecast) based on 8 WWT customers, 6 School District customers – covering 70 schools**
- 90% of energy models are tracking providing confidence in year-end forecast.
- Kicked off innovative SEM Water Pilot cohort and successfully met target of 8 Alumni participants
- Continued challenges due to COVID-19 impacting some customers, specifically K-12 public schools and a few industrial customers. Further developed virtual workshop curriculum, including the delivery of a technical BAS workshop to Alumni customers and modeling workshops to first-year customers.

LED Street Lighting

Overview: The program replaces existing ComEd-owned mercury vapor (MV) or high-pressure sodium (HPS) fixtures with LED street lights. These street lights are installed and maintained by ComEd and the municipality pays a rental charge for the fixture as well as an energy charge. LED street lights provide energy efficient lighting which reduces operating costs and increases the life of street lighting.

- **Private (ComEd Owned): 7,723 MWh savings achieved (52% of forecast) based on 37 applications**
- **Public (Municipality Owned): 33,361 MWh savings achieved (66% of forecast) based on 54 applications**

Private

- Offering picked up in Q3 with 6,091 MWh in savings, compared to 1,632MWh in Q1 and Q2 combined.

Public

- A Q4 promotion was announced to encourage streetlighting project completions in 2020.

Operational Savings

Overview: The Operational Savings Program identifies no-cost/low-cost opportunities that do not qualify for incentives. These opportunities are identified by engineers during various types of ComEd Energy Efficiency Program studies and Facility Assessments (FAs). Examples of such opportunities include shutting off idle

equipment, optimizing the efficiency of existing systems and changes in the operating habits of occupants.

- **Private: 1,593 MWh savings achieved (54% of forecast) based on 82 implemented measures**
- **Public: 180 MWh savings achieved (39% of forecast) based on 27 implemented measures**
- In-person Facility Assessments have resumed following the end of the COVID-19 'Stay-at-Home' orders. This has helped engineers identify more operational measures, increase the program's pipeline and quantity of conversions.

Public Housing Retrofits

Overview: The Public Housing Retrofits Program provides energy efficiency retrofits in Public Housing Authority (PHA) facilities in the ComEd service territory. The program offers energy assessments and incentives to upgrade most inefficient equipment in buildings owned and managed by a PHA, including residential units, and common areas at no cost. For energy efficiency projects requiring funding beyond program incentives, technical assistance will be offered to support implementation and identify financing options.

- **499 MWh savings achieved (40% of forecast)**
- Completed 23 projects and upgraded 3,171 residential units
- Resumed normal in-field program operations. Both assessments and service provider installed projects were completed in Q3, including lighting projects for Chicago Housing Authority, Lee County Housing Authority, and Housing Authority for LaSalle County totaling $92,726 in incentives and 154,892 kWh in savings.
- Large effort to coordinate with active customers on COVID-related policy and priority shifts. Updated pipelines, modified delivery methods, and prioritized requested projects for remaining program year.
- Successfully coordinated with the Housing Authority for LaSalle County according to COVID safety protocols to complete lighting projects in coordination with their Energy Performance Contract timeline.

Third Party Programs

Elementary Energy Education

Overview: ComEd, Nicor Gas, Peoples Gas, and North Shore Gas have partnered to offer schools the opportunity to teach 5th grade students and their families how to use less energy at home. Students learn about valuable ways to save energy and money through in-class education. They also receive free take-home kits containing ENERGY STAR®-certified LEDs, faucet aerators, and other energy-saving products to install at home with their families.

- **718 MWh savings achieved (13% of forecast) based on 4,165 shipped kits**
- Worked collaboratively with partner gas utilities to create a program model conducive to hybrid and virtual learning environments.
- Leveraged relationships with schools across service territory to assess best kit distribution method at a classroom level. However, as a result of COVID-19, teacher engagement and enrollments have been lower than anticipated.

Small Business Kits

Overview: The Small Business Kits Program is an entry level program targeting C&I and public sector customers <100KW peak demand in restaurants and other general/office facilities and fire stations, libraries, park district offices and public works offices who have not previously participated in energy efficiency programs. The program achieves savings through a kit of self-install energy efficiency measures delivered directly to customer facilities. A customer survey is used to determine installation rates for each measure.

- **4,172 MWh savings achieved (67% of forecast) based on 4,911 Kits**
- Continue to successfully target open businesses (computer businesses, dental offices, eye doctors and veterinary clinics) through 4 of 5 phases of the Restore Illinois COVID plan.
- Increased call center staff from 3 to 7 CSRs to drive participation.
- Implemented pilot recruitment email campaign to 4,700 private sector customers.

Food Banks LED Distribution

Overview: The Food Banks Distribution Program provides ENERGY STAR® LEDs to food banks affiliated with Feeding America, as well as through pantries outside the Feeding America network. The food banks then use their network of local food pantries to distribute the bulbs to utility customers in need, who may elect to receive the offered products.

- **63,314 MWh savings achieved (71% of forecast) based on A19s: 864,520 11W fixtures: 120,000 BR30s: 608,000 Night Lights: 3,000 APS: 4,000**
- The Food Bank program participated in 9 events in Q3 distributing pre-packed ComEd branded grocery bags with free LEDS, night lights, Advanced Power Strips, and other branded giveaways to over 3,000 ComEd customers.
- College food pantries remained closed due to COVID-19. However, the program partnered with community organizations supporting back to school initiatives to donate over 3,000 Advanced Power Strips to students, as they prepare for virtual learning.
- Greater Chicago Food Depository (GCFD), who took a reprieve from the program to solely focus on distributing food during the COVID-19 pandemic, returned to the program in September. GCFD has over 400 affiliated food pantries.

Income Eligible Kits

Overview: The Income Eligible Energy Saving Kits Program provides energy efficiency kits to income eligible residential customers, primarily through the network of Illinois Community Action Agencies (CAAs). The kits include (1) tier 1 advanced power strip, (2) 9W LED bulbs, (1) 15W LED bulb, (1) 5W LED Globe, (1) 5W LED Candelabra, (1) 3-way 15W LED, (1) 8W BR30 LED, (1) Night Light, (1) low-flow kitchen aerator, (1) low-flow bathroom aerator, (1) low-flow showerhead, and general guidelines for energy savings.

- **10,863 MWh savings achieved (43% of forecast) based on 26,000 IE Energy Savings Kits delivered**
- The IE Kits program was able to continue to distribute kits to program participants despite the COVID-19 pandemic. Due to the success of the direct mail component, the program goal was increased to 60,000 kits which equates to 25,069,050 kWh in savings.
- The program produced instructional videos for the bathroom showerhead, and bathroom and kitchen faucet aerators. The instructional videos demonstrate how to install and use these measures to achieve maximum savings.
- The program developed enhanced IE Kits content on the ComEd website to increase participation in the program and provide information on where participants can receive a kit. The webpages will inform interested participants on the energy saving measures provided by the IE Kit as well as additional ComEd Energy Efficiency programs that can be taken advantage of.

Existing Manufactured Homes

Overview: The ComEd Manufactured Homes offering is available to income eligible residents of manufactured homes at no cost to the customer. If the customer is approved to participate in the program after being screened over the phone or during an onsite visit at the community park, an appointment will be scheduled with a program technician. Customers may receive an energy assessment, duct sealing and insulation, air sealing, belly insulation, installation of free energy-savings devices such as LED bulbs, faucet aerators, smart power strips, advanced thermostats, and some health and safety measures; and educational tips to save energy

- **64 MWh savings achieved (81% of forecast) based on 49 Homes**
- Existing Manufactured Homes Program offering has not performed as expected. Therefore, the Existing Manufactured Homes program offering is scheduled to sunset at the end of October 2020.

Grocery Program

Overview: The Grocery Program provides free customized assessments to identify energy-saving opportunities for lighting and commercial refrigeration system retrofits and upgrades, along with financial incentives and implementation assistance.

- **7,333 MWh savings achieved (81% of forecast) based on 54 projects**
- The Grocery program targets customers between 100 and 400 kW in peak demand, while also performing outreach to customers of all sizes. Project leads for customers outside of that size range are referred to either Standard or Small Business.
- Through Q3 2020, the program achieved 7.1 net GWh in savings. That is 159% of the end of year target of 4.5 GWh.

Non-Profit Offering (NPO)

Overview: The Nonprofit Organizations Program is a new program designed for nonprofit, 501(c)3 organizations with a maximum peak demand of 400 kW and that provide direct services to at-risk populations. The Program provides free energy assessments, procurement assistance, project oversight and a comprehensive list of incentives. Direct install is available for LED lamps and vending machine misers.

- **3,067 MWh savings achieved (92% of forecast) based on 44 projects completed, 12,060 units of measures installed, and 22 assessments completed**
- Mid-year portfolio rebalancing provided additional funds to NPO to provide 7 additional projects to move forward; these projects will be completed in 4Q.
- The offering is now closed through the remainder of 2020. The team is encouraging EESPs and customers to access other applicable offerings for projects this year and has begun planning for 2021.

Third Party Programs

Agriculture

Overview: The Agricultural Program is a specialized offering that targets the full vertical market including farms (dairy, poultry, hogs, cash crops, etc.), greenhouses, indoor agriculture facilities, supply houses, and on-site processing facilities. It serves both existing facilities and new construction and offers Standard and Custom type of incentives. Once a customer is engaged, the program will offer customers a free walk through assessment appropriate for their facility to identify energy efficiency opportunities and assist the customer with prioritizing projects and through the application process.

- **2,470 MWh savings achieved (62% of forecast) based on 91 projects**
- In Q3 the agriculture offering saved 1,403 net MWH in the agriculture community. Our boots on the ground approach and working closely with EESPs, has proven to be effective.
- This quarter, the Agriculture offering continues to lead discussions around energy efficiency and Controlled Environmental Agriculture (CEA), speaking at 3 different webinars.
- As the harvest season approaches in the late Q3 the Agriculture Offering experiences a decrease in new projects.

Telecommunications

Overview: The Telecommunication program offers incentives for telecommunication and internet service providers and associated systems such as rectifiers, soft switches, air flow management, HVAC solutions, economization and lighting. Customer engagements are supported from the national and local levels with dedicated energy advisors and engineers providing individual customized assessments and reports on energy efficiency opportunities throughout the network infrastructures and facilities within ComEd's territory.

- **3,644 MWh savings achieved (49% of forecast) based on 37 completed projects**
- Performed 3 site assessments for one customer with over 1GWh of savings opportunities identified. We will realize savings in 2020 and 2021 from these sites. In addition, one customer has moved forward on all recommendations from a June 2019 Facility Assessment.
- Executive Door Opener outreach campaign is providing new contacts for companies. Telecom is utilizing this tool to build additional pipeline for 2021, along with developing new customer connections.
- COVID has adversely impacted ability to access customer sites. The ongoing corporate site restrictions have made on-site assessments infrequent.

Public Building in Distressed Communities

Overview: Public Building in Distressed Communities provides LED light kits for self-install, and the top 6 HVAC measures, to provide energy efficiency to public buildings that do not have extra capital for these upgrades.

- **6,256 MWh savings achieved (43% of forecast) based on projects (installation phase) YTD: 300 Projects, Verified projects YTD: 175 Projects**
- Project verifications increased by five times from Q2 2020.

Voltage Optimization

Overview: The Voltage Optimization Program deploys circuit voltage detectors and control equipment that will effectively assess and adapt the amount of voltage traveling across a power line at any given time. Once in place, these devices will allow ComEd to more precisely monitor, manage and deliver the voltage customers need. No additional effort by consumers will be required as the control equipment will automatically adjust to consistently deliver only the voltage each customer requires while providing energy savings.

- **188,453 MWh of energy savings (90% of YE target) based on 33 commissioned substations and 355 feeders**
- This is equivalent to 293M pounds of carbon dioxide reduction or removing ~28,000 passenger vehicle driven each year.

Emerging Technology and Market Transformation Programs

The mission of the Emerging Technologies team is to identify, test, validate, and integrate new energy-saving technologies and program delivery strategies into the ComEd Energy Efficiency Program so that it continues to meet customers' needs and its energy savings goals cost-effectively.

- Please refer to the attached PDF for a catalog of all Emerging Technology completed and active projects.

ComEd Emerging Tech Project Catalog

Marketing Education & Awareness

Rebates Campaign - Neighbors

Overview: The campaign was created to promote awareness of the rebate offerings with a call to action of ComEd.com/Rebates.

- In-market through November 23rd, 2020
- Included TV, Cinema, Digital, Billboards and Hispanic Transit Shelters
- Generated 3,550,313 digital impressions as of 9/14
- Generated 24,555 clicks to ComEd.Com/Rebates

Lighting Discounts Campaign – Saved by Savings

Overview: The campaign was created to create awareness of lighting discounts and drive purchase at local retailers.

- In-market August – November 29th
- Included cable, digital, radio, CTA rail cards and transit shelters
- Has generated 4,183,440 impressions as of 9/21
- Generated 20,079 clicks to ComEd.Com

Residential E&A Campaign – Saving Energy

Overview: This campaign was created to talk about our available offerings for residential customers with a call to action of ComEd.com/HomeSavings

- In-market June 29th - October 31st
- Included Radio, Outdoor, Digital and Print
- Drove 3,560 + unique page visits to ComEd.com/HomeSavings in the last few days of June.

Public Sector Campaign – K-12 Schools

Overview: The campaign was created to promote awareness of our public sector offerings for K-12 schools with a call to action to look at incentives available on ComEd.com/Schools

- In-market August 17th – November 15th
- Includes digital and print
- Generated 3,659,141 impressions as of 10/5
- Generated 19,600 clicks to ComEd.com/Schools

Commitments Regarding Interactions with the Income-Qualified Advisory Committee (Settlement Stipulation § IV(D)(1))

ComEd agrees to report on a quarterly basis to both the Income-Qualified Energy Efficiency Advisory Committee and the SAG on the development of reporting metrics on the following topics:

- Identification of budget, savings, and number of participants served through Income-Qualified Plan funding, separately tracking by single-family and multi-family programs:
  - For budget and savings, please refer to the Income Qualified Programs section on the "Ex Ante Results" tab of the statewide quarterly report template. Total Income Qualified homes served is captured on the "Other" tab of the statewide quarterly report template.
  - The Single-Family Retrofits program has completed projects in 415 income-qualified homes through Q3.
  - The Multi-Family Retrofits program has completed direct install work in 3,632 tenant units through Q3.
  - The Public Housing Retrofits program has completed direct install work in 3,171 residential units through Q3.
  - The Affordable Housing New Construction program has completed 11 projects for a total of 982 tenant units for income eligible residents through Q3.
  - The Income Eligible Kits program has distributed 26,000 kits to income-qualified single-family homes through Q3.
  - The Food Banks Distributions program has distributed 11W fixtures: 120,000; A19s: 864,520; BR30s: 608,000; Night Lights: 3,000; APS: 4000 through Q3.

- Income-Qualified pilot program results:
  - The Emerging Technologies program has several pilot and research projects specific to income eligible and public housing customers.
  - Information on these projects can be found in the Emerging Technologies section of this report.

- Identification of implementation vendors who receive funding designated for Income-Qualified programs, indicating whether each vendor is an independent third party that has demonstrated capabilities to serve such households, including not-for-profit entities and government agencies that have existing relationships with or experience serving Low-Income communities in the State:
  - Single-Family Retrofits – Chicago Bungalow Association (not-for-profit), Chicagoland Vintage Home Association (not-for-profit), Franklin Energy (for-profit), Illinois Association of Community Action Agencies (not-for-profit), Resource Innovations (WBE for-profit), 15 community action agencies in the ComEd territory (not-for-profits)
  - Multi-Family Retrofits – Elevate Energy (not-for profit), Franklin Energy (for-profit), Resource Innovations (WBE for-profit), Shelton Solutions (WMBE for-profit), 15 community action agencies in the ComEd territory (not-for-profits)
  - Public Housing Retrofits – Elevate Energy (not-for-profit), Franklin Energy (for-profit), University of Illinois at Chicago Energy Resources Center (not-for-profit)
  - Affordable Housing New Construction – Slipstream Group Inc. (not-for-profit)
  - Income Eligible Lighting Discounts – CLEAResult (for-profit)
  - Income Eligible Energy Saving Kits – University of Illinois at Chicago Energy Resources Center (not-for-profit), 15 community action agencies in the ComEd territory (not-for-profits)
  - Food Bank – CLEAResult (for-profit), food banks affiliated with Feeding America, including Greater Chicago Food Bank (not-for-profit), Northern Illinois Food Bank (not-for-profit), Riverbend Food Bank (not-for-profit); as well as through (not-for-profit) food pantries outside the Feeding America network.
  - Outreach & Marketing – Eire (WBE for-profit), Franklin Energy (for-profit), Ignition (for-profit), PACO (MBE for-profit), Surge Solutions (MBE for-profit), The L3 Agency (WMBE for-profit)

- Job training in economically disadvantaged and diverse communities within its service territory that is supported by ComEd's efficiency program portfolio funding, including training offered through the IHWAP program necessary to increase capacity to deliver services in ComEd's territory

Stipulations

- ComEd intends to develop metrics for this area in coordination with the Income Eligible Advisory Committee. A Workforce & Business Development Working Group was established in 2019. ComEd agrees to work with the Income-Qualified Advisory Committee in the development of a metric to be added to quarterly energy efficiency reports filed with the Commission that reports the number of businesses and employees based in economically disadvantaged communities hired to assist in the delivery of energy efficiency programs. ComEd agrees to discuss and establish goals and best practices outside the context of Docket No. 17-0312, in consultation with the Income Qualified Advisory Committee and other job training initiatives for increasing the diversity and number of locally-based trainees, vendors and employees of its energy efficiency workforce, and for establishing tracking methodologies for reporting purposes. ComEd presented at the SAG and IQ Advisory Committee in October. This was a joint meeting on equity hiring and workforce development. ComEd discussed their workforce development activities highlighting the Diverse Energy Efficiency Incubator Program. The program has provided training and support services to enable diverse contractors to join the ComEd Energy Efficiency Service Provider Network, represent the portfolio to customers and complete energy efficiency projects by leveraging existing workforce development frameworks, community-based agency partnerships and support from ComEd's Energy Efficiency Portfolio Implementation Contractors.

CY2020 New Measures

All measures in the table below were launched in CY2020.

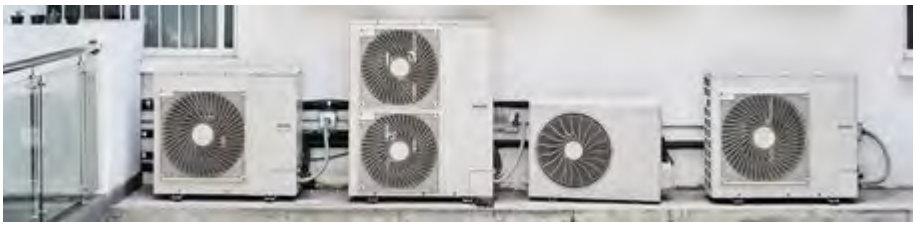
MEASURE TOTAL RESOURCE COST (TRC)	Sector	IL TRC
Central Air Conditioner Tier 1 (15 SEER) - Midstream Distribution	Residential	6.57
Furnace Filter Whistle - Single-Family	Residential	1.52
Furnace Filter Whistle - Multi-Family	Residential	0.66
Above-Ground Pool Pump	Residential	0.71
Heat Pump Water Heater	Residential	0.31
Occ Controlled Bi-Level LED Fixtures 25-99W_CA SPIA	Residential	1.14
Occ Controlled Bi-Level LED Fixtures 100-152W_CA SPIA	Residential	2.32
Occ Controlled Bi-Level LED Fixtures 153-204W_CA SPIA	Residential	3.28
Occ Controlled Bi-Level LED Fixtures 205-256W_CA SPIA	Residential	4.24
In Unit Interior LED - 5W Mini-globe (40 W) DI	Residential	4.73
0-30W LED Fixture_CA 24/7 SPIA	Residential	1.17
31-60W LED Fixture_CA 24/7 SPIA	Residential	1.50
61-90W LED Fixture_CA 24/7 SPIA	Residential	1.30
>90W LED Fixture_CA 24/7 SPIA	Residential	1.09
Tankless Hot Water Heater	Residential	0.33
Agricultural End Use LED Grow Lights	Business	2.63
Agricultural End Use Lower Pressure Sprinkler Nozzles	Business	1.09
Agricultural End Use Fan Thermostat Controller	Business	15.02
Agricultural End Use High Speed Fans	Business	1.33
Agricultural End Use Dairy Refrigeration Scroll Compressor with Heat Exchange	Business	2.58
Agricultural End Use Dairy Refrigeration Scroll Compressor without Heat Exchange	Business	5.17
Agricultural End Use VSD Milk Pump with Plate Cooler Heat Exchanger	Business	0.27
Agricultural End Use Milk Pre-Cooler	Business	1.33
Agricultural End Use Dairy Refrigeration Heat Recovery	Business	0.80
Packaged Terminal Heat Pump	Business	4.95
Ozone Laundry (Laundromat)	Business	1.88
Ozone Laundry (Other)	Business	5.86
Commercial Clothes Dryer Moisture Sensor	Business	1.91
Domestic Hot Water Demand Recirculation Pumps	Business	6.92
Smart Socket	Business	0.16

ATTACHMENT

ComEd
Energy Efficiency Program

Research and Development

Emerging Technologies and Market Transformation Project Catalogue



Q3 2020 Report
Updated October 2020

ComEd
An Exelon Company
powering lives

Q3 2020 Activity Summary

In Q3 the R&D team continued to explore new energy efficiency program and technology areas and execute impactful research and pilot projects across virtually every customer sector. Having made several pivots earlier in 2020 to accommodate COVID-19 impacts, we worked closely across the industry on new concepts, and closely within the energy efficiency program implementation teams to share findings and identify points of integration for recently completed projects.

We are proud to report the launch of many exciting new projects with promising potential, including several field demonstrations focused on emerging technologies with high energy saving potential and several research projects aimed at uncovering new savings and program opportunities for high-need customer segments or portfolio gaps. Examples include a pilot that will validate a cutting edge data center server technology, and a comprehensive study that will explore new opportunities in indoor agriculture operations.

The catalogue contains the active and completed initiatives under both the Emerging Technologies and Market Transformation areas of ComEd's EE portfolio. All projects in this catalogue, regardless of category, are aimed at identifying and validating new energy savings opportunities for ComEd customers. We encourage all stakeholders to reach out to us with any questions or wish to access complete findings from these projects. Please visit ComEdEmergingTech.com to learn more about each project and submit a proposal for a new research or pilot concept. Despite the ongoing utility portfolio planning process we will remain open to new ideas and will continue to solicit proposals, so we recommend signing up for updates via the website.

Sincerely,
The ComEd R&D Team

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The ComEd Energy Efficiency Program is funded in compliance with state law.

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Active Projects

Market Segment: Commercial

Market Transformation - Active Project

Building Operator Certification®

MEEA
MIDWEST ENERGY EFFICIENCY ALLIANCE

Primary Objective

To support ComEd customers in pursuing the Building Operator Certification® (BOC) training program and better understand the energy savings they achieve.

Primary Research Question

Does BOC produce additional savings beyond those from energy efficiency projects submitted through ComEd programs? Is supporting BOC a cost-effective means for ComEd to drive projects and energy savings among commercial and public sector customers? Should BOC become a more permanent part of ComEd's energy efficiency portfolio?

Overview

BOC is a nationally recognized, eight-day, in-person training program for commercial facility personnel including building engineers, maintenance technicians, operations staff and other building management professionals. Focused on the energy efficient operation of building equipment and energy systems, BOC training provides these personnel with the background and the perspective needed to implement cost-saving operational improvements, from no- or low-cost maintenance upgrades to large-scale energy efficiency retrofits. These improvements not only reduce facility energy costs, but also improve indoor air quality, improve the tenant experience, increase equipment durability and garner other important benefits. This is a statewide training effort supported by all the Illinois IOUs.

Status

2020 BOC training has been moved online due to COVID-19. Two Level 1 trainings are underway and one Level 2 training will begin in late October. Guidehouse is nearing completion of an interview plan for 2018 and 2019 participants, with the goal of completing interviews before Thanksgiving.

Additional Partners

Northwest Energy Efficiency Council (NEEC)

Type

Program Design

Timeline

January 2020 to December 2020

Emerging Technologies - Active Project

Energy Efficiency R&D Lab Partnership

NREL
NATIONAL RENEWABLE ENERGY LABORATORY

Type
Technology Assessment

Timeline
January 2019 to December 2021

Primary Objective

To create a partnership with a leading national laboratory focused on high-impact energy efficiency research and development that supports the ComEd Emerging Technologies team in identifying, selecting, testing and validating large-scale, high-impact energy efficiency emerging technologies.

Overview

This partnership is a two-and-a-half-year agreement between ComEd and NREL to carry out various research projects at NREL's state-of-the-art Energy Systems Integration Facility (ESIF). Located in Golden, Colorado, the ESIF provides a unique contained and controlled platform on which research partners (like ComEd) can identify and resolve the technical, operational, and financial risks of integrating emerging energy technologies in today's environment. NREL and ComEd will engage technology providers to obtain and test promising products and equipment that could help increase energy efficiency for ComEd customers. These laboratory tests may result in work papers and measure development for the Illinois TRM, as well as identify non-energy benefits. ComEd will also participate on the ESIF Commercial Building Lab Technical Advisory Board to help steer overall laboratory design and technology strategy.

Status

After project delays due to COVID-19 related lab closures, work has resumed on projects originally expected to be carried out in 2020. These include switched reluctance motors for conveyor belt systems, refrigerated display cases using R-290 propane refrigerant, and high-performance cold climate heat pumps for residential and small commercial applications. These projects are now expected to be completed in 2021. In addition, a new project for advanced self-contained refrigerated display cases has been approved and is expected to begin work soon. More information on these projects is available upon request.

Emerging Technologies - Active Project

Flash Gas Condensers Field Study

Type
New Technology

Timeline
October 2020 to June 2021

Primary Objective
Field evaluation of a unique refrigeration technology with potential benefit to a wide range of ComEd commercial customers.

Overview
Some refrigeration systems experience a reduction in efficiency due to the boiling of refrigerant material before entering the evaporator ("flash gas"). Flash gas condensers use a phase change material to remove heat absorbed by refrigerant when forced through the thermal expansion valve before entering the evaporator, keeping the refrigerant in liquid form. This reduces the energy required to cycle the refrigeration system and overall stabilizes the refrigeration cycle.

DNV GL will evaluate the energy savings from installing flash gas condensers into the walk-in coolers and freezers of a sample of commercial customers in ComEd service territory. They will determine a baseline of energy use, monitor each site after flash gas condenser installation, and ensure that savings analysis isolates the new equipment savings from other energy savings produced by changes to the refrigeration system during installation. If significant energy savings are validated a workpaper will be drafted for submission to the Illinois Technical Reference Manual.

Status
Project kickoff occurred the first week of October, and installations are expected by the end of 2020; monitoring will occur through the first half of 2021.

Emerging Technologies - Active Project

Indoor Agriculture Study

ers energy & resource solutions

Primary Objective

To help ComEd better promote energy efficiency to indoor agribusiness, determine the current marketplace's baselines and standard practices, and assist in the evaluation of the challenges and opportunities the indoor agribusiness sector faces in the ComEd service territory.

Primary Research Question

- What are the standard equipment and controls baselines for cannabis and non-cannabis in controlled environment agriculture facilities?
- How can utilities effectively reach growers?
- What are cannabis growers' reactions to, and understanding of, HB 1438?
- What are the non-energy benefits (NEBs) of energy efficiency measures in controlled environment agriculture?
- In those areas that have experienced significant growth of the controlled environment agriculture industry (non-cannabis), what effect is that growth having on the distribution system?

Overview

With the passage of HB 1438, the indoor agriculture sector is expected to grow significantly in ComEd's territory in the coming years. It is unknown what the impact of this new sector will be on ComEd's grid, and this study will be an important first step in understanding not only the impact on the grid, but what baselines and standard practices are currently observed in the industry and what role energy efficiency can play. Furthermore, non-energy benefits (NEBs) are extremely important to growers in this sector, and this study will include research into the potential NEBs of adopting energy efficient solutions.

ERS has assembled a strong team with significant experience in the indoor agriculture sector from across the country. Growers are a notoriously difficult group to reach, and this team will be able to leverage their extensive experience to gain first person insights through primary and secondary research methods, including interviewing growers in ComEd's territory.

Status

This study kicked off in late September and the first deliverable will be a detailed research plan that ERS is expected to deliver to ComEd in late October.

Additional Partners
ACEEE, D+R International, Resource Innovation Institute

Type
Research

Timeline
October 2020 to April 2020

Solicitation
ComEd Controlled Environment Agriculture Research Study RFP, June 2020

Emerging Technologies - Active Project

Interior Insulating Shades

ILLINOIS INSTITUTE OF TECHNOLOGY

Primary Objective

Field evaluation of energy savings by using an insulating shade system in conjunction with a building control system in high rise office buildings.

Overview

Glass windows lose heat to the environment during heating season and let in unwanted solar radiation during cooling season. Interior insulating shades are a form of window covering that work to increase the overall thermal resistance of windows and reduce solar heat gain. Shades create a pocket of air between the window surface and the conditioned space that acts as extra thermal insulation to minimize heat loss/gain through the window. Automated systems monitor the sky conditions to allow solar gain when beneficial in winter and to lower the shades when the heat loss outweighs solar gain.

The project team will evaluate the potential energy and cost savings of installing interior insulated shades manufactured by Parata Solutions and control systems manufactured by Amatis Controls at a high-rise commercial building customer in ComEd territory. A full year of heating and cooling season data will be obtained across four control strategies for the blinds: baseline, manual, on-schedule, and dynamic. The final report will include the results of all data streams leading to a savings measurement as well as recommendations for a potential program design for interior insulated shades including incentives.

Status

The project kicked off in September, and coordination with the customer is ongoing. Installation of the shades and control systems is scheduled for mid-October.

Additional Partners

Parata Solutions
Amatis Controls

Type

New Technology

Timeline

September 2020 to August 2021

Emerging Technologies - Active Project

Liquid Cooled Server Racks for Telecom

FRANKLIN ENERGY

Primary Objective

Field evaluation of a new technology to benefit commercial customers, especially telecom and data center facilities.

Overview

Immersion cooling consists of placing servers in a dielectric liquid to remove heat efficiently. In a traditional data center, waste heat from servers is rejected to room air and that air is then moved around and cooled. In immersion cooling, the heat is absorbed by a liquid at the point of heat generation. The liquid is significantly more effective at absorbing heat than air because of its higher density and heat capacity. As a result, the liquid can be maintained at higher temperatures than room air in a traditional data center, improving chiller performance and allowing for more free cooling opportunities.

The project team will conduct a field evaluation of savings from the installation of a liquid-cooled server rack at a telecom customer site in ComEd service territory, including establishment of baseline energy use, data monitoring post-installation, and analysis of achieved savings. They will also interview customers and manufacturers to understand barriers for implementation of liquid cooled server racks, as well as conduct a market analysis and potential study of the measure for ComEd territory.

Status

Kickoff for this project took place in early September. Site installation is currently scheduled for late October.

Additional Partners

ERS
LiquidCool Solutions

Type

New Technology

Timeline

September 2020 to January 2021

ComEd Energy Efficiency Program

Emerging Technologies - Active Project

Real-Time Virtual Commissioning

PowerTakeOff

Type
New Technology

Timeline
September 2020 to December 2021

Primary Objective

ComEd's Virtual Commissioning (VCx) program has proven effective at remotely identifying operational improvements for commercial and public sector customers using 30-minute AMI usage data. This pilot will test whether more granular (1-minute) data provided in real time can result in deeper energy savings, and whether the target market for VCx can be expanded to more complex situations and buildings where the existing approach is unable to be employed effectively.

Overview

A major school district will provide 50-60 facilities to be studied in this pilot. Initial site selection was conducted to capture locations with a wide range of characteristics (past VCx project or not, various building ages and types, and various types and vintages of equipment). This should enable results to be applied across many commercial and public sector customer segments.

The pilot will support the installation of equipment needed for real-time data capture and transport via a cellular network connection, and the provision of customer-facing energy dashboards with associated recommendations and alerts. Based on prior VCx experience significant savings opportunities are expected to be identified during this pilot, but whether the magnitude of opportunities identified will vary greatly from the typical VCx approach remains to be seen.

Status

SOW has been executed and a preliminary list of locations has been created. Pre-work is underway to enable installation of pulse meters at participating sites.

ComEd Energy Efficiency Program

Emerging Technologies - Active Project

Smart Pressure Independent Control Valves

slipstream

Type
Technology Assessment

Timeline
December 2018 to April 2021

Primary Objective
Understand the energy and associated cost savings of utilizing smart valves in chilled water systems. Determine optimal applications for maximum savings, operator and installer satisfaction with these devices, and if energy savings are maintainable.

Primary Research Question
What are the potential energy savings from the application and use of connected or smart pressure independent control valves in chilled water systems?

Overview
This two-year research and pilot project will investigate the potential energy savings of smart valve technology in the commercial sector. Smart valves reduce demand for chilled water by stabilizing pressure and flow in connection with sensors able to integrate with building automation systems. Slipstream will test the smart valve technology developed by manufacturer FlowEnergy. In the first phase, the project team will conduct product analysis to compare manufacturer savings estimates and verify FlowEnergy's savings methodology. Phases two and three will involve site recruitment and real-world installation of smart valves at commercial facilities in ComEd service territory, as well as field monitoring and savings verification.

Status
Installation at the customer site has completed and monitoring is ongoing. The project team additionally is determining the main drivers of energy savings for smart valves in chilled water systems to determine the building types most suitable for this technology.

Emerging Technologies - Active Project

Switched Reluctance Motor Field Evaluation

slipstream

Additional Partners
Turntide

Type
New Technology

Timeline
June 2020 to August 2021

Primary Objective

To better understand the energy savings and economic viability of switched reluctance motors (SRMs) in commercial and industrial applications in ComEd territory.

Primary Research Question

- What are the projected annual energy (kWh) savings of SRMs in rooftop unit supply fans?
- What are the estimated annual energy (kWh) savings for SRMs for each of the most common building and system types in ComEd territory? What is the total resulting technical potential for the territory?
- Are there any aspects of installation or operation of the SRMs from the perspective of building owners and/or contractors, that could affect the ease and scale of future program deployment of SRM technology?

Overview

This field evaluation of switched reluctance motors targets commercial and potentially industrial customers. The project team will coordinate with the manufacturer to install/retrofit SRMs in the rooftop units of the selected customer sites. The project team will validate the energy savings of each retrofitted motor and its operating characteristics using primary data collected on site. Data from both pre- and post-installation operating periods will be weather-normalized and extrapolated to a typical year to draw conclusions regarding projected annual energy savings of these SRMs. Additionally, the project team will conduct additional market research to understand ComEd building stock with rooftop units and applicable motors, then extrapolate the estimated annual energy savings results for the sample SRM units to the most common building and system types in ComEd territory to estimate the total resulting technical potential for the territory.

Status

Installation and monitoring setup at the initial sites are complete, and monitoring is underway. Further recruitment efforts will be complete in October, and the monitoring period has extended to understand both heating and cooling season usage and savings.

Market Transformation - Active Project

Upstream Commercial Food Service Pilot

gti

Additional Partners
Frontier Energy
Smith Energy Engineers

Type
Program Design

Timeline
April 2019 to December 2020

Primary Objective
To test an upstream program approach to promoting energy efficiency in the food service industry.

Primary Research Question
How is the food service supply chain organized? Can an upstream program approach increase the adoption of efficient equipment in the energy-intensive food service industry? Which market actors play the most important roles?

Overview
The energy intensity of a restaurant or foodservice operation can be several times higher than that of most other commercial building types due to a high density of equipment and long hours of business. However, due to the unique structure of this industry and the equipment supply chain, traditional rebate models may not be the most effective program approach. This project seeks to test a custom upstream model that engages directly with manufacturers, distributors and other key market actors to advance efficient equipment purchases.

Phase 1 of this project collected information on how the supply chain is organized, the local market share of various efficient products, which market barriers are strongest, and the energy savings potential of different energy end uses. Phase 2 is a pilot phase, where upstream market actors with direct-to-customer sales channels were recruited to participate. These actors, which include manufacturers, distributors, and kitchen equipment suppliers, directly receive incentives in exchange for providing sales data. This is a joint pilot effort of ComEd, Nicor Gas, Peoples Gas and North Shore Gas.

Status
Distributor recruitment and engagement has largely been successful, although COVID-19's impacts on the food service industry have been visible in the lower than expected pilot participation. Gas equipment rebates have been more prevalent than electric equipment rebates in Q2 and Q3 2020. To encourage participation and support the industry, a bonus incentive was provided to dealers in August and September. Currently, the team is discussing expansion of the pilot for 2021, looking for increased participation next year. Visit the pilot website at www.il-foodservicerebates.com for more information.

Emerging Technologies - Active Project

Variable Refrigerant Flow for Cold Climates

slipstream

Type
New Technology

Timeline
September 2020 to March 2021

Primary Objective

To better understand the current market potential for ccVRF systems and identify whether there is a path for ccVRF systems to become a ComEd program offering.

Overview

Variable refrigerant flow systems allow for varying degrees of heating and cooling in certain areas of a building, reducing energy consumption. Recent advances in cold climate variable refrigerant flow systems (ccVRF) allow this technology to be viable in northern Illinois, providing buildings with energy savings, space savings and flexibility, and cooling in places where there was only heating beforehand. In this initial research, Slipstream will examine the current state of the market for ccVRF. The project team will conduct a product and service provider review, including a comparison of the supply chain network between urban and rural areas. They will also review likely building types and applications of ccVRF through a market assessment, as well as conduct initial energy, baseline and economic analysis of the technology. The results of this initial research should indicate if field evaluation of ccVRF in ComEd territory is warranted.

Status

The project kicked off in mid-September. Initial interviews of service providers, vendors, program staff, and customers in the service of initial market assessment tasks will be completed by December.

Market Segment: Cross Cutting

Emerging Technologies - Active Project

Cooling Tower Potential Study

Alliance for Water Efficiency

Additional Partners
Pacific Northwest National Laboratory

Type
Research

Timeline
July 2020 to October 2021

Primary Objective
This project will provide estimates of the total cooling load, water usage and water savings potential for cooling towers in ComEd service territory. It will also assess the water and energy savings potential for alternative cooling tower treatments.

Primary Research Question
What is the water and energy savings potential for making efficiency upgrades to cooling towers in the ComEd service territory? Which upgrades present the greatest opportunity?

Overview
The Alliance for Water Efficiency (AWE) is working closely with the Pacific Northwest National Laboratory (PNNL) to lead a cooling tower study for 18 water and energy utility members including ComEd. The study started in early 2020 and ComEd joined in July 2020, adding new tasks focused on energy savings and alternative cooling tower technologies. PNNL is developing a Cooling Tower Estimating Model (CTEM) to determine cooling tower cooling demand and water consumption. Along with the CTEM, PNNL will develop best practices for identifying water cooled facilities in their territories and for estimating the consumptive and non-consumptive water demands for cooling. ComEd has added additional tasks to this study to determine the water savings and energy savings potential of new and alternative treatment technologies for cooling towers and to identify potential barriers to retrofit.

Status
PNNL has completed the Cooling Tower Estimating Model and data collection, developed best practices for identifying water cooled facilities and for estimating consumptive and non-consumptive water demands for cooling, determined the water savings potential of alternative technologies and they are starting their research and analysis on the energy consumption and costs associated with cooling towers.

Emerging Technologies - Active Project

Customer Targeting Through NMEC

Primary Objective

To leverage customer interval energy usage data to identify high-potential opportunities for energy savings. Also, to identify instances where actual savings may exceed deemed values and explore ways to target those customers for program participation.

Primary Research Question

Can NMEC-enabled methods enhance energy efficiency program administration and savings through customer targeting? Is this concept technically viable?

Overview

Two separate research teams will independently perform data analysis to identify which energy efficiency programs or measures are best suited for recruitment through a normalized metered energy consumption (NMEC) approach. Using historical usage and participation data, the teams will identify ComEd customers with the highest potential for achieving savings. Using a form of experimental design, the R&D team will work with each research team and Guidehouse to validate the success of each analytical approach. The outcomes will guide a discovery process around how ComEd might integrate new customer targeting strategies into the future portfolio.

Status

Both project teams kicked off their data analysis in October 2020.

Project Partners

Power TakeOff
Recurve

Type

Outreach, Research

Timeline

October 2020 to October 2021

Emerging Technologies - Active Project

Fan Energy Index Research

slipstream

Type
Research

Timeline
August 2020 to April 2021

Primary Objective
To test the market readiness of the Fan Energy Index metric (FEI) and potential ways to integrate it into the ComEd Energy Efficiency Program.

Primary Research Questions
- What is the magnitude of savings for selecting more efficient fans in specific applications using the FEI metric?
- What is the economic viability of selecting high efficiency fans which exceed code requirements?
- What are the market barriers to a successful FEI program offering?

Overview
Customers or contractors selecting fans have historically used a rating called the Fan Efficiency Grade (FEG) metric. This rating defines a fan's efficiency at a rated condition that is rarely its eventual actual condition. As a result, fan performance often deviates greatly from intended performance due to factors such as oversizing, operating pressure, and operating speed.

The Air Movement and Control Association (AMCA) has developed a new metric, the Fan Energy Index (FEI), which allows for the comparison of different fans at application specific operating conditions. The research team will explore the application of this metric by quantifying the energy savings potential of using FEI across a variety of sectors, fan types, fan speeds, drive types and fan powers. Additionally, the project team will conduct interviews with manufacturers, contractors, designers, building owners and facility operators to understand potential barriers to widespread adoption of the FEI metric and to the adoption of high-efficiency fans whose FEI score exceeds 1.0, including where program efforts might be best focused.

Status
The project team submitted an interim report in September that provided energy savings and simple payback calculations for fan types across 504 applications in the commercial and industrial sectors. The team has begun initial interviews with market actors to better understand market barriers to using FEI as a decision-making tool for fan selection.

Emerging Technologies - Active Project

Water Energy Savings with Strategic Energy Management

CLEAResult®

Type
Program Design

Timeline
June 2020 to September 2021

Primary Objective

To understand how a strategic energy management (SEM) approach might be leveraged to reduce water consumption for commercial and industrial customers in the ComEd service territory.

Primary Research Question

Can the strategic energy management (SEM) approach be used to implement and incentivize cost-effective energy savings through reductions in water consumption at commercial and industrial customer sites?

Overview

This project will utilize the SEM program structure and approach to pilot the addition of water conservation practices and technologies to achieve energy savings for commercial and industrial customers. The project will target and enroll 8 customers currently enrolled in the alumni SEM program. The project started in June 2020 and will run over the course of 15 months. The project team will create statistical water models for each participating site to track water savings and will provide funding to install submeters to measure water consumption and perform data logging and perform engineering calculations to determine energy savings. SEM Coaches will support participants in identifying and implementing water savings measures and will coordinate engineering support for site water audits and monitoring of water and energy consumption.

Status

The pilot team has recruited and onboarded eight customers to participate in the project including k-12 schools, a university, a hospital, food processing plants and a manufacturing plant. Cumulatively, these customers' facilities consume nearly a half billion gallons of water per year. The participants are collecting and submitting their data to the pilot team and scheduling water audits to be completed in early Q4.

ComEd Energy Efficiency Program

Cross Cutting

Emerging Technologies - Active Project

Water Infrastructure Leak Reduction

TRC

Primary Objective

To demonstrate how ComEd might create new energy savings opportunities by helping municipalities reduce losses in water distribution systems.

Primary Research Question

What is the opportunity for ComEd to provide incentives to municipalities to reduce water losses and therefore save energy through water infrastructure improvements?

Overview

The pilot team will identify and select three communities in ComEd service territories with high water loss: one income eligible community in Cook County, one income eligible community outside of Cook County, and one non-income eligible community outside of Cook County. The team will review existing data from each community and will work with their subcontractor Rezatec to enter this data into geographic information system (GIS) models to pinpoint problems and risk areas in the communities' water infrastructure to target. They will then use the data derived from the geospatial analysis to target deployment of leak detection sensors and will develop onsite testing methods. Throughout the course of the project the team will communicate with stakeholders and potential funders that have previously expressed interest in this work to outline the water and energy savings potential and request commitments to fund water savings infrastructure programs for the selected communities.

Status

Maywood and Melrose Park have committed to participate in the project and TRC has identified two other potential communities for consideration. The TRC project team is working with Maywood and Melrose Park to collect the water system data they have available and converting it to a GIS model format.

Additional Partners

Rezatec

Type

Program Design

Timeline

June 2020 to November 2021

Market Segment: Income Eligible

Emerging Technologies - Active Project

Affordable Multi-Family Passive House

slipstream

Additional Partners
LUCHA

Type
Technology Assessment

Timeline
June 2018 to November 2020

Primary Objective
To study the energy efficiency potential of a very high building standard for affordable multi-family housing and explore pathways to more savings for the affordable new construction offering.

Primary Research Question
Can the Passive House design standard achieve increased energy savings cost-effectively in an affordable multi-family building?

Overview
Slipstream will help ComEd study the energy-savings and non-energy benefits of the Passive House building standard for a multi-family building constructed and owned by Chicago-based affordable housing developer LUCHA (Latin United Community Housing Association). The building is one of the six buildings in LUCHA's Tierra Linda housing development located in Chicago's Humboldt Park neighborhood. The building is constructed according to the Passive House building standard, which provides unique design and construction requirements with the goal of low energy consumption, such as:

- Continuous insulation throughout the building envelope to prevent thermal bridging
- Triple-pane, low-E glass windows
- Utilizing balanced heat- and moisture-recovery ventilation
- Exploiting and minimizing solar gain strategically

Before construction was completed in late 2018, Slipstream embedded energy and air quality monitoring equipment throughout the Passive House building as well as a neighboring, similar multi-family building. These two buildings will be compared to one another as data is collected and analyzed across 2019.

Status
Site access restrictions due to COVID-19 have impacted some additional monitoring tasks, but active site monitoring has completed on schedule. The project team is finalizing their savings analyses for presentation in Q4 2020.

Emerging Technologies - Active Project

BIT Neighborhood

slipstream

Primary Objective

Develop solutions to address barriers to income eligible customer participation in energy efficiency programs such as limited resources, unclear benefits and low trust in or awareness of offerings.

Primary Research Question

Can trained community members build trust and localized momentum around energy efficiency and building improvements for public housing buildings.

Overview

The BIT Neighborhood pilot aims to apply BIT Building practices to unite energy efficiency projects and workforce development initiatives in these communities. BIT Building is a set of cost-effective industry standards for existing buildings that enables all types of property owners and operators (except single family residential) to understand and adopt high-performance best practices. The pilot will recruit and train Section 3 qualified workforce members to serve as energy performance improvement coaches, called BIT Aides, using the BIT Building curriculum.

In addition to training BIT Aides, Slipstream will work with the Chicago Housing Authority to identify 20-30 CHA buildings into a process involving the benchmarking of energy, air quality, water and waste performance. BIT Aides will then lead enrolled buildings toward an improvement goal of 10 percent or greater and implement a continuous improvement workplan. BIT Aides will assist buildings in making operational improvements that generate energy savings and support owners/operators through utility energy efficiency incentive application processes. Slipstream will assist BIT Aides in collecting operational and energy usage data for each project and will create a robust measurement and verification strategy to understand the program's overall impact on energy use over time.

Status

Slipstream and Faith in Place have hired 3 BIT Aides from a pool of 10 BIT trainees. The Aides will support the CHA and their BIT building benchmarking and improvement process. The Aides will now begin benchmarking 40 CHA buildings selected to participate in the project in Q4. The project team has developed plans for proceeding with the building audits either virtually or in-person depending on guidance provided by the Cook County Department of Public Health and the CHA.

Additional Partners

Southface
Illinois Green Alliance
Environmental Defense Fund

Type

Outreach

Timeline

February 2019 to April 2021

Solicitation

2018 Income Eligible Call for Ideas

Emerging Technologies - Active Project

Breathe Easy

ELEVATE ENERGY
Smarter energy use for all

Primary Objective

Quantify the health impacts of different residential ventilation systems and better understand their energy impacts.

Primary Research Question

What is the most effective approach to upgrading residential mechanical ventilation systems in existing homes to reduce indoor pollutants of both indoor and outdoor origin, maintain adequate environmental conditions and ventilation rates, and improve asthma-related health outcomes?

Overview

Breathe Easy is a study initially funded by the U.S. Department of Housing and Urban Development (HUD) in partnership with Elevate Energy and Illinois Institute of Technology that began in December 2016. The study is investigating the ability of three distinct approaches to mechanical ventilation in income eligible customer homes to improve indoor air quality. The team is collecting and analyzing data on indoor air quality and environmental conditions and obtaining participant asthma symptom data through Institutional Review Board-approved health surveys. They will also evaluate the impacts of each system type on building energy use and real-world cost of installation by contractors to provide a holistic understanding of the costs and benefits of ventilation systems.

Forty-four low- and moderate-income single and multi-family homes with at least one adult asthmatic resident in Chicago have been recruited for this study and are divided into three groups:

- Group A will receive exhaust-only ventilation systems
- Group B will receive central-fan-integrated-supply systems with electronically commutated motors and auto fan-cycler timers integrated into existing air handling units
- Group C will receive continuous balanced supply and exhaust systems with energy recovery ventilator units

Status

Elevate Energy and IIT are completing the final data analysis and completing a statistical comparison of the three test groups to identify significant changes in indoor air quality and asthma symptoms after measure installation. The final report and presentation will be delivered in December 2020.

Additional Partners

Illinois Institute of Technology

Type

Program Design

Timeline

December 2018 to December 2020

Solicitation

2018 Income Eligible Call for Ideas

Emerging Technologies - Active Project

EcoAdvocates

slipstream

Primary Objective
Demonstrate the effectiveness of a novel, community- and workforce development-centered approach to increasing energy efficiency program participation in income eligible neighborhoods.

Primary Research Question
How can engaged community members act as advocates and trusted advisors that positively impact energy efficiency program participation in income eligible communities?

Overview
Slipstream and Faith in Place will partner with community organizations to recruit and train residents to become trusted energy advisors in their neighborhoods to boost participation in energy efficiency offerings. Each EcoAdvocate will coach, promote and track energy efficiency participation within their community. The pilot will seek to recruit, hire and train three EcoAdvocates from each community for a total of nine individuals.

The pilot will utilize existing offerings and online tools to the maximum extent possible, including signups for home energy assessments, fridge recycling, the ComEd mobile app and My Account with the suite of online tools. EcoAdvocates will seek to create multiple touchpoints with each participant through several visits throughout a year. EcoAdvocates will be compensated for their work, will receive training prior to the pilot and will receive real job placement support following the pilot. Slipstream will analyze and report energy savings and participant survey results.

Status
After pausing all participant and community engagement since March due to COVID-19, the EcoAdvocates were able to continue the remainder of their outreach and re-engage the existing program participants. The EcoAdvocates have collected data and tracked their community engagements and interactions with program participants and are analyzing this data to include in the final report. Slipstream and the EcoAdvocates are also distributing post-participation surveys to all participants and will include and assessment of the results in the final project report which will be submitted in December 2020.

Additional Partners
Faith in Place

Type
Outreach

Timeline
February 2019 to February 2021

Solicitation
2018 Income Eligible Call for Ideas

Emerging Technologies - Active Project

Income Eligible Paging Display

ComEd Customer Innovation Lab

Type
Technology Assessment

Timeline
May 2019 to September 2020

Primary Objective

Provide a simple and inexpensive real-time messaging channel to ComEd customers without requiring access to the internet, smartphones, computers or similar devices.

Primary Research Questions

Can ComEd's existing 152 mHz paging network be used to message customers useful energy-related information in homes with different construction types and layouts? How are specific types of messaging and display indicators interpreted and used by residents? What is the lifetime of the device battery based on message frequency?

Overview

This project represents phase two of the paging network display effort. Phase one tested the ability to connect a device to the 152 mhz paging network and receive data from it. A customer roundtable discussion was also conducted to validate the design of using a simple set of indicators on a fridge magnet to relay information to the customer. These activities were associated with the income eligible customer journey mapping project described in the completed projects section. Phase two will deploy prototype devices to 40 homes and test the robustness of the paging signals, device battery life and participant reactions to better understand how the ComEd Energy Efficiency Program could leverage these devices to help customers save energy.

Status

The paging devices were deployed to pilot participants in Q3. Data collection and surveys are underway and preliminary results are expected in Q4.

Market Segment: Industrial

Emerging Technologies - Active Project

Industrial EMIS

leidos

Primary Objective

Demonstrate the potential for Energy Management Information Systems (EMIS) to make energy visible within industrial manufacturing processes and drive optimization of energy consumption.

Primary Research Question

Can an industrial EMIS system identify energy efficiency opportunities in core industrial processes beyond typical program offerings (which focus primarily on support systems such as compressed air, lighting, etc.) and help customers take concrete steps to address these deep savings opportunities?

Overview

This pilot aims to recruit 4-5 large industrial customers with the goal of installing a new EMIS and deploying associated energy efficiency recommendations over a two-year period. In the first year, the pilot team will focus on developing and implementing a unique EMIS at each pilot site. In the second year, they will focus on helping each participant use the EMIS to achieve energy savings.

Status

Recruitment has begun, with one facility currently participating and more two sites in active discussions with the project team. The team is looking to recruit one to two more sites as COVID-19 restrictions begin to be lifted.

Additional Partners
EPS Energie

Type
Program Design

Timeline
February 2020 to June 2022

Market Segment: Residential

Emerging Technologies - Active Project

All-Electric Residential New Construction

slipstream

Type
Program Design

Timeline
March 2019 to December 2022

Primary Objective
To study the savings potential and programmatic viability of an all-electric new homes offering.

Primary Research Question
What is the market potential, incremental cost and energy savings for all-electric new homes in the residential new construction market in the ComEd service territory?

Overview
This research project will quantify the current market size, home buyer demand and growth trajectory of the all-electric homes market in Illinois along with associated program cost and energy-savings potential. This will include a market analysis informed by secondary research and interviews with local builders and home energy raters. The findings from the market analysis will be used to evaluate different potential pathways for incentivizing deeper levels of energy efficiency in residential new construction. The research team will then compare various incentive strategies for all-electric homes using existing ComEd incentive offerings. The team will make recommendations for an all-electric homes pilot; such an effort will seek to create partnerships with several builders and incentivize 5-20 homes for construction in 2020-2021. The pilot will investigate an emerging opportunity to influence build demand for high performance all-electric homes with a goal for a cost-effective program in 3 years (10, 35, 70 incentivized all-electric homes respectively in 2020 – 2022).

Status
EHNC officially launched in January of 2020 with a goal of ten pilot participant homes in the first year. Marketing and outreach efforts are underway. As of September, four homes have completed, and another ten homes are in progress. The team has collected good data and good early feedback on the pilot offering from builders.

Market Transformation - Active Project

ENERGY STAR® Retail Products Platform

Additional Partners
US EPA

Type
Program Design

Timeline
April 2020 to December 2021, with extension into Plan 6

Primary Objective

To study the market impacts and energy savings potential associated with the ENERGY STAR® Retail Products Platform (ESRPP) Program in the ComEd service territory.

Primary Research Question

What is the savings potential for ComEd through active participation in the ESRPP Program? Does a unified, national approach help ComEd achieve greater market influence? How will these savings be evaluated?

Overview

The ESRPP Program is a national-level collaborative effort designed to designed to influence retail product manufacturers to build energy efficiency into product design, creating permanent change to their processes. By employing strategies such as midstream incentives and support of standards and specifications, RPP motivates retailers and manufacturers to continually transform their product mix toward more energy-efficient models.

The current program sponsors include NEEA and major utilities around the country representing almost 16% of US retail market. With the addition of ComEd, this coverage increased to over 18%. ComEd's initial participation is focusing on clothes washers and refrigerators.

Status

ComEd has presented several RPP overviews to the SAG and established an advisory group of experts to inform program strategy going forward. A business plan and set of preliminary product strategies have been developed for both clothes washers and refrigerators, and incentives have begun to be paid out. By the end of October, all historical and current sales data for major retailers will be available for analysis, allowing confirmation of initial strategies by product. Multiple conversations with Guidehouse have taken place, and the evaluation plan is in review as of October 2020.

Emerging Technologies - Active Project

Home Energy Reports Paperless Experience

ORACLE

Type
Program Design

Timeline
April 2019 to December 2021

Primary Objective
To determine if a fully digital Home Energy Report (HER) experience can produce similar savings to the well-tested paper/digital experience residential customers traditionally receive.

Primary Research Question
Does a fully digital HER experience generate similar savings?

Overview
Oracle will field test a paperless, fully digital behavioral program for residential customers. Oracle will provide monthly electronic Home Energy Reports (eHERs) and High Bill Alerts (HBAs) to up to 20,000 customers who have not previously received digital HERs. An equivalent number of customers will serve as a control.

Status
Early results are indicating that this digital-only wave is performing well, but the pilot needs much more time to properly evaluate against paper-based waves which have been running at many utilities, some for over ten years. More solid conclusions will be drawn after Q4 2020 but the first indications are promising.

Emerging Technologies - Active Project

Residential Market-Based Savings

enervee®

Type
New Technology

Timeline
May 2020 to June 2021

Primary Objective
To study the market impacts and energy savings potential associated with the Enervee Choice Engine platform in the ComEd service territory.

Primary Research Question
Can the Enervee Choice Engine platform achieve significant, verified net energy savings without the use of customer incentives?

Overview
This project will test the Enervee Choice Engine platform for ComEd residential customers. The Choice Engine brings together data for users to review and compare residential products such as appliances and electronics, including pricing, features, popularity and user feedback. The platform also rates the energy efficiency of products compared to similar models using a proprietary scoring system. The platform provides links to local retailers where chosen products may be purchased. By providing energy information in an accessible format, the platform seeks to drive customer behavior to make energy-informed decisions without the use of utility incentives.

ComEd customers will be invited and directed to the platform through various marketing methods, including direct emails and notices on the ComEd website. A sample of customers who use the platform will be surveyed to understand how their purchasing decisions were impacted by the Choice Engine, as well as if product purchases may result in measurable and predictable energy savings.

Status
The Choice Engine Platform is live at https://comed.efficientchoice.com, and marketing and outreach efforts to customers are underway. The evaluation plan is nearly finalized, and early marketing results are showing strong positive impacts on site traffic.

Emerging Technologies - Active Project

Smart Vents Research

slipstream

Type
New Technology

Timeline
August 2020 to November 2020

Primary Objective
To assess the potential savings and market impact of internet-connected adjustable vent products.

Primary Research Question
- What is the current state of smart vent products available on the market, including claimed product savings?
- What home or customer characteristics are most likely to lead to the adoption of smart vents?
- What is the market potential of smart vents in ComEd territory?
- What are barriers to smart vent capabilities and/or adoption?

Overview
Slipstream is conducting initial research into the state of smart ventilation systems. Smart vents allow residential HVAC systems to operate dynamically. The vents use motion and proximity sensors to detect which rooms are in use, residents set room-by-room target temperatures and motorized vents automatically open and close to redirect air as needed. Used with in conjunction with a smart thermostat, smart ventilation systems can save energy and increase thermal comfort to residences.

The project team will address the primary research questions through literature review and interviews with manufacturers, distributors and early adopting customers of smart vents. The results of this initial research will direct further investigation into the product, including through lab or field savings evaluations.

Status
Research began in early August, and results are expected from the project team by the end of November.

Emerging Technologies - Active Project

Water Heating Technology Potential Research

EVERGREEN ECONOMICS

Primary Objective

To identify water heating-related technologies that have significant energy savings potential and market potential for ComEd residential and commercial customers, to quantify the savings potential and characterize the supply chain for those technologies.

Primary Research Question

What new and existing water heating technologies have the greatest energy savings potential and are best suited for residential and commercial customers in the ComEd service territory?

Overview

The research team is conducting a technology and market potential study for a variety of new and existing water heating-related technologies. They will identify the most promising technologies for ComEd to pursue and then study which program models may be most effective at serving customers with these top measures. The team will start with a broad list of technologies including water heaters, water heating systems, controls, and other related technologies and will screen for those with the greatest relevance and potential for ComEd's portfolio. The team will complete a full technology potential review of the selected technologies to understand the energy savings and then will complete a market potential assessment for those technologies with significant technology potential. The market potential assessment will include primary research with relevant market actors and secondary research on supply chain structures, product costs, and an assessment of the complexity of program intervention needed. Finally, the project team will develop one or more program strategies for the residential and commercial sectors based on the insights from the research.

Status

The team has completed their initial screening of technologies and are working on completing a full technology potential assessment for the identified technologies.

Additional Partners
GDS Associates

Type
Research

Timeline
August 2020 – April 2021

Solicitation
Water Heating Emerging Technologies RFP

Completed Projects

Since January 1, 2018 (start of the ComEd 2018-2022 Plan)

Projects Completed in 2018

Emerging Technologies - Completed Project

Alternative Refrigerants

slipstream

Type
Technology Assessment

Timeline
December 2017 to September 2018

Primary Objective
Develop measurement and verification procedures for the testing of alternative refrigerants and conduct a field test for the Alltemp-M product.

Primary Research Question
What are the energy use and performance impacts of the Alltemp-M alternative refrigerant product on walk-in cooler and freezer refrigeration systems compared to systems using standard R-404A?

Overview
This pilot focused on commercial customers with walk-in cooler and freezer refrigeration systems using HFC blend refrigerant R-404A. Alltemp-M refrigerant is marketed as a replacement product for R-404A, as 404A is now discouraged for use in retrofits due to its high global warming potential.

In early 2018, Slipstream recruited five sites for the pilot, including three quick-service restaurants and two hotels. Among these sites, seven systems were selected for testing, including four walk-in freezers and three walk-in coolers, all using R-404A. Monitoring of the systems included measurement of refrigeration system electrical energy consumption; temperatures of the freezer or cooler interior, the room area near the freezer or cooler, and outdoor temperature for systems with outdoor condensers; and freezer or cooler door opening times.

Results and Outcomes
Slipstream found that the capacity of both coolers and freezers was reduced when using the alternative refrigerant, and energy savings varied greatly across the five systems tested. Also, the manufacturer-recommended conversion procedures and pressure-temperature tables for Alltemp-M were inadequate at the start of work. Full results can be found in the final project report, available upon request. The Emerging Technologies Team has taken lessons learned during this project into account when presented with new alternate refrigerant products as energy saving opportunities.

Emerging Technologies - Completed Project

Synchronous Motors

slipstream

Primary Objective

To validate the energy savings of new synchronous motor technology for walk-in freezer and cooler applications.

Primary Research Question

How does the installation of Q-Sync motors to drive evaporator circulation fans in refrigerated display cases and walk-in coolers/freezers in supermarkets impact energy use, performance and savings for ComEd commercial customers?

Overview

The pilot team deployed Q-Sync motors, a new type of permanent magnet alternate current motor that can replace shaded pole or electronically commutated motors in existing refrigerated cases and walk-in coolers/freezers and monitor fan/motor energy performance before and after replacement. Slipstream recruited three supermarkets and deployed 18 Q-Sync motor retrofits in walk-in coolers and refrigerated display cases. Slipstream analyzed field data and provided qualitative lessons derived from field work, including cost, installation and operational impacts.

Results and Outcomes

It was determined in early 2018 that there was already enough available data verifying the energy savings associated with Q-Sync motors for reach-in refrigerated display cases. Thus, the measure was submitted as a workpaper to the TRM. As less validation data was available for walk-in freezer/cooler applications, ComEd decided to obtain the necessary data through this pilot. Full results can be found in the final project report, available upon request. A TRM measure update for version 8 was submitted using the savings estimates from the pilot. Incentives for the Small Business and Standard offerings were added in 2019.

Additional Partners

QM Power
OGNI Group

Type

Technology Assessment

Timeline

April 2018 to November 2018

Emerging Technologies - Completed Project

Variable Frequency Drives for Refrigeration Condenser Fans

slipstream

Type
Technology Assessment

Timeline
January 2018 to September 2018

Primary Objective
To test in real-world conditions an emerging technology retrofit concept and assess its relevance to the ComEd Energy Efficiency Program.

Primary Research Question
How does adding variable frequency drives (VFDs) to refrigeration systems in supermarkets impact system performance and energy use?

Overview
Slipstream studied the impact of adding VFDs to refrigeration system condenser fans in 23 condensers in four supermarkets. The pilot compared pre- and post-condenser fan retrofits with VFD and provided energy and cost impacts in a TRM workpaper.

Results and Outcomes
Four supermarkets participated in the pilot, and savings estimates were developed based on the monitoring results. Full results can be found in the final project report, available upon request. Navigant conducted an impact evaluation in addition to Slipstream's analysis. A new TRM measure was added in 2018 and updated in 2019.

Emerging Technologies - Completed Project

Holiday Light Exchange

CLEAResult®

Type
Program Design

Timeline
April 2017 to April 2018

Primary Objective

Identify the energy-savings opportunities associated with LED holiday string lighting, develop a TRM measure and create a new offering.

Overview

This pilot, centered around the 2017/18 winter, targeted LED holiday string lights as a new energy efficiency measure. Customers were encouraged to exchange their traditional (incandescent) holiday light strands for efficient LED strands. Exchange events were held in convenient locations such as Home Depot and Lincoln Park Zoo and supplemented with educational materials and other efficiency measure giveaways.

Results and Outcomes

In 2018, a TRM workpaper was completed and accepted for version 7. The new TRM measure requires the exchange of old lights for new lights rather than just the purchase of new lights, which limits its potential. In winter 2018/19, the residential offerings team held another series of exchange events and may continue to repeat them in the future; the events are high visibility and create a positive interaction between customers and the ComEd Energy Efficiency Program.

Emerging Technologies - Completed Project

Home Energy Monitor Disaggregation

bidgely

Type
Technology Assessment

Timeline
June 2016 to January 2018

Primary Objective
To test the reduction of energy use among residential customers through a new means of digital engagement.

Primary Research Question
How does the Bidgely home energy monitor application create energy savings through behavioral change in residential customers?

Overview
This pilot targeted residential customers, combining energy usage information and digital messages to help customers save energy. Customers opted in to downloading Bidgely's home energy monitor application. Using AMI data for their households, customers received energy usage information in hourly, daily and monthly increments. This information was further disaggregated into heating load, cooling load, pool pump load and always-on load segments. Customers also received tips and recommendations to reduce consumption, as well as actual and projected spend for the current billing cycle. Some pilot participants also received a HomeBeat home area network device allowing real-time usage information through a connection with their smart meter.

Results and Outcomes
After evaluation, this pilot demonstrated PY9 (June 1, 2016 to December 31, 2017) verified savings of 99,586 kWh for 1,218 participants. This represented an average of 1.1 percent of participant energy use; however, participants who logged into the app more often were shown to have saved more energy. The measure life was deemed to be one year for the pilot evaluation, and there may have been some self-selection bias in enrollment as pilot participants had lower average home energy usage than other ComEd Energy Efficiency Program participants.

Several valuable lessons were learned throughout this pilot, including best practices related to AMI data access, customer recruitment, residential pilot design, energy use disaggregation services and how customers prefer to access and receive energy usage information. Due to small savings potential and short measure life, this pilot has not yet been scaled into a larger offering.

Emerging Technologies - Completed Project

HVAC SAVE Quality Installation

CLEAResult®

Primary Objective

To test a service-provider-driven verified quality installation offering that yields improved residential air conditioner savings and performance.

Overview

For this midstream-focused pilot, approved contractors who participated in the residential HVAC rebate offering were trained and certified to perform a verified quality installation (QI) for residential HVAC equipment, in accordance with the HVAC SAVE (Systems Adjustment and Verified Efficiency) program model developed by MEEA. Special software and bonus incentives were provided to ComEd Energy Efficiency Program Service Providers verifying each QI project. To adequately evaluate the impact of training and the QI process, this pilot aimed to complete 400 projects across the 2018 cooling season.

Results and Outcomes

This pilot resulted in a new addition to the existing central air conditioners measure in TRM version 7. The measure addition proposed a de-rating value for the actual installed efficiency of baseline equipment and of non-QI replacements. The de-rating assumptions are based on research from many sources, including the U.S. Department of Energy. To verify additional savings as well as any impacts from the HVAC SAVE training alone, replacements completed in this pilot were evaluated through billing analysis, electric submetering and ride-along interviews with installing technicians. However, issues with recruitment of trade allies resulted in only 120 homes being recruited for QI, which was not a large enough sample size to conduct a statistically robust impact evaluation. The Emerging Technologies Team did not continue the pilot in 2019 but will continue to explore alternative ways to capture QI data, such as through sensors or data analytics.

Additional Partners
Midwest Energy Efficiency Alliance (MEEA)

Type
Program Design

Timeline
January 2018 to January 2019

Emerging Technologies - Completed Project

Seasonal Savings

nest

Type
Technology Assessment

Timeline
June 2017 to December 2018

Primary Objective

To determine whether Seasonal Savings, a schedule optimization offering provided by Nest, is effective at delivering additional energy savings to customers above the standard performance of a smart thermostat.

Primary Research Question

Does Seasonal Savings provide persisting energy savings across multiple years? How do customers respond to two summers of schedule adjustments?

Overview

This pilot was conducted in two phases across 2017 and 2018. The Seasonal Savings offering allows customers with Nest Learning Thermostats to opt-in to a service that makes small adjustments to thermostat setpoints over a three-week tune-up period while maintaining customer comfort. On average, scheduled setpoints are adjusted up by 1.5°F during the cooling season, with the biggest temperature adjustments taking place when customers are typically away from home. The pilot was implemented using a randomized encouragement design, in which all customers in ComEd's service territory with a Nest thermostat were randomly assigned into a treatment or a control group. Treatment group participants opted in using a prompt shown on their thermostat.

Results and Outcomes

The first pilot found an average savings per treated thermostat of 71.7 kWh or 4.5 percent of cooling load from late June/mid-July through October 14, 2017; and 38.8 kWh or 2.5 percent of daily heating load for the 2017/18 heating season. The number of opt-in participants as compared to all qualifying devices was 53,334, meaning 62 percent of eligible devices opted in.

Navigant's evaluation found it was successful in testing the technical feasibility of thermostat optimization and in customer acceptance of the offering. However, important questions remained regarding incremental savings from future deployments, persistence of savings and expected savings from a full season deployment. The second season of pilot participation was aimed at determining measure persistence or whether there may be increased savings, as ComEd had recently transitioned to CPAS goals. That impact evaluation found some interesting multi-year effects and evidence that could potentially support a two-year measure life, but due to the short overall measure life, we do not anticipate scaling this service into a larger-scale offering.

Emerging Technologies - Completed Project

Smart Home Interaction Study

slipstream

Primary Objective

To better understand potential mechanisms by which home automation and connected devices can save energy.

Overview

This pilot, a partnership with ComEd's Customer Solutions Innovation Team, aimed to gain a better understanding of how residential customers view and interact with smart home technologies. Numerous devices exist to control home functions remotely or wirelessly, from light bulbs and outlets to thermostats and faucets. Green Marbles installed bundles of connected devices in eight homes, and Slipstream analyzed device-level usage data and surveyed homeowners to determine how people use connected devices that impact energy, how customers feel about that experience and which functions within these devices have the potential to save energy.

Results and Outcomes

The project team encountered major issues establishing consistent access to the output data from most of the connected devices. There were also issues experienced during system setup. However, these were important lessons learned from this effort. The project was unable to evaluate energy savings.

Additional Partners
Green Marbles

Type
Technology Assessment

Timeline
March 2018 to December 2018

Emerging Technologies - Completed Project

Total Connected Savings: Thermostat Optimization

WHISKERLABS

Additional Partners
Honeywell

Type
Program Design

Timeline
December 2017 to December 2018

Primary Objective

Test the ability of Whisker Labs' total connected savings thermostat optimization offering to provide cost-effective energy savings to residential customers with a common thermostat type.

Primary Research Question

Does the total connected savings service deliver HVAC savings for Wi-Fi-connected thermostats?

Overview

This pilot, a collaboration between ComEd and Nicor Gas, tested an over-the-air deployed algorithm that promised to convert a connected thermostat (from manufacturer Honeywell) to a smart thermostat. Whisker Labs leverages real-time weather data to update setback schedules and shorten run times, potentially presenting ComEd with a lower first-cost alternative to expensive smart thermostats. If the algorithm and advanced control being tested were successful, this system had potential to be expanded to other brands and types of thermostats, providing ComEd with a unique retrofit path toward smart thermostat customer adoption goals.

Results and Outcomes

The algorithm was deployed to more than one thousand residential participants during the pilot period and Navigant conducted an impact evaluation in April 2019. The pilot demonstrated low savings potential; due to this and the assumed short measure life of such a service, the decision was made not to proceed. Additionally, shortly after the pilot launched, Nest released the Nest-E, reducing the value of this concept as the incremental cost (particularly after incentives) made the Nest-E smart thermostat cost competitive with a programmable Wi-Fi thermostat.

Projects Completed in 2019

Emerging Technologies - Completed Project

Energy Incentive Acceleration

AECOM

Type
Program Design

Timeline
October 2018 to December 2019

Primary Objective

Test new ways to introduce information about ComEd energy efficiency incentives to commercial real estate customers and better understand how to take advantage of time of sale as a motivating time for building owners.

Primary Research Question

Can actively engaging owners of newly acquired commercial real estate lead to expanded and accelerated applications for ComEd energy efficiency incentives?

Overview

When commercial real estate changes hands, the new owners typically make significant investments in upgrades and repairs as they seek to increase the value of their asset. At the time of transfer, AECOM assisted building teams to better understand how to employ ComEd energy efficiency offerings to meet real estate investors' goals of attracting and retaining tenants, as well as meet energy efficiency goals.

For each participant in the pilot, AECOM developed a specifically tailored energy incentive acceleration plan. This plan provided the customer with energy efficiency opportunities and assist them in participating in existing ComEd energy efficiency offerings. AECOM held follow-up meetings with the customers with the goal of each customer applying within the end of the year.

Results and Outcomes

AECOM engaged the owners of 20 large commercial real estate properties and provided each with a comprehensive energy upgrade plan. 15 of the 20 customers submitted project applications during the pilot period. The R&D team is working with the Business team to understand and transfer any best practices and promising outreach strategies learned during the pilot.

Emerging Technologies - Completed Project

Retrofit Chicago Roadmapping 2.0

AECOM

Type
Outreach

Timeline
January 2018 to December 2019

Primary Objective

Determine how a modified and improved energy road map design combined with continued engagement can help achieve greater energy savings for ComEd customers.

Overview

The first phase of this pilot was a review of the 2012 gateway energy road maps developed for customers participating in the Retrofit Chicago Energy Challenge. AECOM reviewed the energy savings of participants and conducted interviews to see how future energy road map efforts could be more effective.

The second phase of the project was to develop an improved energy roadmap process and engage with several facilities in Chicago to test the procedure. The improved road map includes several features:

- Establishment of baseline energy use conditions
- Incorporation of past studies, capital plans, operating budgets, contracts and proposals
- Consideration and planning for capital investment constraints
- Alignment with the ComEd Energy Efficiency Program
- Prioritization of energy efficiency projects

The goal of the pilot was to start customers on the path to achieving 20 percent facility energy savings over the next five years.

Results and Outcomes

Road maps were developed for three facilities in Chicago. The R&D team worked with the Business team to understand and transfer any best practices learned during the pilot.

Emerging Technologies - Completed Project

Upstream Small Embedded Data Center Program Design

slipstream

Type
Research

Timeline
September 2018 to August 2019

Primary Objective

Characterize energy-savings market potential among small embedded data centers (SEDCs) in the ComEd service territory and develop recommendations for potential upstream program design.

Primary Research Questions

How may improving energy efficiency at SEDCs fit into the ComEd Energy Efficiency Program portfolio? What program pathways are most appropriate?

Overview

This research project will evaluate the market potential for an upstream SEDC offering for commercial customers in the ComEd service territory. Slipstream will first characterize the magnitude of potential energy savings and translate their recent Minnesota and Wisconsin research results to the ComEd service territory. Then they will develop a preliminary program design vetted through conversations with key market actors, including data center owners and operators and IT equipment suppliers and installers. The results of this research will be used to recommend a program design for implementation of an upstream SEDC offering with ComEd.

Results and Outcomes

Opportunities for new measures and program designs were identified, but the R&D team determined that for the time being, the opportunities are likely not significant enough to pursue on a program level.

Emerging Technologies - Completed Project

Building Science Assessment

BERKELEY LAB

Type
Research

Timeline
September 2018 to December 2019

Primary Objective

To enhance ComEd's understanding on several critical research questions related to state-of-the-art building science developments.

Overview

In this year-long research project, Lawrence Berkeley National Laboratory (LBNL) conducted research and provided expert analysis on the latest developments in building science, including:

- Identification and measurement techniques for energy and health parameters
- Building energy diagnostic tools and their potential relationship to energy efficiency programs
- Building simulation tools and energy assessments
- Building zoning control strategies
- New methods of building and ventilation system air sealing
- Energy retrofits and the discovery/remediation of health and safety issues
- The state-of-the-art in monitoring building occupant comfort and health
- Best practices among energy utility energy efficiency programs in the areas of diagnostics, ventilation and health
- New technologies in these areas and the testing required to determine and realize the benefits of those technologies

Results and Outcomes

LBNL completed their technical assessments and final report deliverable in December 2019 and presented their findings to ComEd. The R&D team is using the findings of this report to direct research and project strategy in 2020.

Emerging Technologies - Completed Project

Energy-Water Nexus Initial Research

ELEVATE ENERGY
Smarter energy use for all

Type
Research

Timeline
January 2018 to January 2019

Primary Objective

To understand the energy-savings potential of water conservation activities and to explore new opportunities for customer water and energy savings.

Primary Research Questions

What is the average kWh/gallon of delivered water to a customer site, and how can water-saving measures be valued as energy-saving measures? What measures might be cost-effective additions for the ComEd Energy Efficiency Program?

Overview

This research project was cross-cutting in scope, addressing all market segments of ComEd customers. Elevate Energy conducted a literature review and led discussions with local water utility stakeholders (Metropolitan Water Reclamation District and Chicago Department of Water Management) to develop a TRM workpaper with an energy-water factor accounting for water-system-wide energy savings created during conservation activities at customer sites. The energy savings from hot water reduction (water heating) was already known for many measures; however, the distribution and treatment system savings of cold-water reduction had not yet been explored.

Results and Outcomes

The project team submitted a TRM workpaper that was eventually accepted into TRM version 7 as a secondary savings factor added to existing water conservation-related measures. A report was also produced with examples of water utility incentive programs, water-energy utility partnerships, and recommendations for new potential measures focused on cold water efficiency. Much of the R&D team's work on this topic in 2019 and 2020 has been informed by this research project.

Emerging Technologies - Completed Project

Technology Scouting and Analysis

clean energy trust

Primary Objective

Search start-up, incubator, accelerator and venture capital networks to identify emerging companies with technologies or services that align with the goals of the ComEd Energy Efficiency Program and facilitate introductions to those companies.

Primary Research Question

What are the most promising startups and emerging growth companies that align with the goals of the ComEd Energy Efficiency Program?

Overview

Clean Energy Trust (CET) led a scouting effort drawing on their database of startups and outreach to their networks to identify 50-75 highly relevant companies for consideration. CET conducted analysis of the top 5-10 companies selected from the list and facilitated introductions to the selected companies.

Results and Outcomes

This project produced a short list of promising start-up companies for the R&D team to pursue for potential future pilots. CET facilitated introductions with these companies and discussions are ongoing.

Additional Partners

Freshwater Advisors

Type

Research

Timeline

April 2019 to December 2019

Emerging Technologies - Completed Project

Water Market Analysis

Axiom Marketing, Inc.

Type
Research

Timeline
April 2019 to November 2019

Primary Objective

Better understand the northern Illinois water market and help determine potential water-energy savings opportunities.

Primary Research Questions

What makes up the water channel in the ComEd service territory? Which technologies, processes and products are being considered in this territory and what is their likelihood of adoption? How will the water market, the channel and the consumption of water and electricity be impacted by these new technologies, processes and products?

Overview

Axiom led research on the water channel in the ComEd service territory and the latest industry trends and technologies used by the biggest players in the water market in this territory. Through two rounds of depth interviews and a Delphi Study with municipalities, government agencies and large industrial and commercial high users of water, the team characterized the water market and demonstrated the potential for emerging technologies as well as the implications and opportunities for ComEd.

Results and Outcomes

The research concluded the greatest cold-water savings can be achieved from updating water pumps, aeration and filtration systems. Axiom identified ample opportunity to save 10 GWh of energy through cold-water savings and potentially over 24 GWh by focusing on the production of drinking water and the treatment of wastewater. Based on their research and data analysis, Axiom made the following recommendations to ComEd for continued work in the energy-water nexus: provide municipal and manufacturing incentives for more efficient technologies for moving and treating water; explore financing opportunities; partner with water consultants and experts; establish a specific energy-water nexus audit program for manufacturers and municipalities; and create a communication plan for sharing out these findings.

Emerging Technologies - Completed Project

Green Stormwater Infrastructure

GREENPRINT PARTNERS

Additional Partners
MIST Environment

Type
Research

Timeline
March 2019 to November 2019

Primary Objective

To identify the municipalities in the ComEd service territory with the greatest potential for adoption of green stormwater infrastructure (GSI) and to quantify the energy-savings potential and non-energy impacts.

Primary Research Question

What is the energy-savings potential of, and adoption potential for, GSI projects in municipalities in the ComEd service territory with combined sewer systems?

Overview

The project team used scoring criteria to select 10 municipalities in the ComEd service territory with high potential for adoption of GSI. Municipal leaders in each selected community were interviewed to better understand the likelihood of adoption of GSI, the level of intervention needed for adoption, and how income eligible customer and business participation can be prioritized in these cities. The team modeled GSI energy saving potential and non-energy impacts including economic development, public safety and environmental health. Finally, the team created customer journey maps to demonstrate the process of, and best practices for, building strong relationships with municipalities and water utilities.

Results and Outcomes

Greenprint Partners and MIST Environment completed interviews with nine municipalities and used this data to outline the potential for energy-savings and non-energy benefits from GSI in these municipalities. The energy analysis Greenprint Partners conducted showed a range of energy-savings potential between 1.4-8.3 GWh/year between the nine municipalities. The non-energy impact analysis estimated measurable benefits that could be expected for each municipality from the installation of GSI, such as reduced crime, beautification and increased wildlife and pollinator habitat. Greenprint Partners made the following recommendations to ComEd based on the project findings: investigate the viability of a GSI incentive for municipalities, modify the TRM to include GSI as a measure, research best practices for GSI incentive programs across the country and invest in a pilot to test a GSI incentive program with municipalities.

Emerging Technologies - Completed Project

Income Eligible Customer Journey Mapping

FJORD™
Design and Innovation from Accenture Interactive

Type
Research

Timeline
October 2018 to March 2019

Primary Objective

To define a better overall experience for income eligible customer participation in the ComEd Energy Efficiency Program.

Overview

This customer journey mapping project was focused on three goals:

- Gain an understanding of the current-state program experience through the eyes of current participants and non-participants
- Define the ideal future-state vision that is grounded in human needs and business goals
- Create a strategic roadmap to move from the current state to the future state

Results and Outcomes

This project featured workshops with stakeholders and interviews with income eligible customers. Recommendations were generated out of the strategic roadmap to move from the current state to a future state that is now more clearly defined. The R&D team acted on these recommendations within projects underway in 2019 and 2020, and the Income Eligible programs team incorporated some of the recommendations into their outreach strategy.

Emerging Technologies - Completed Project

Rockford Housing Authority Demonstration

FRANKLIN ENERGY

Primary Objective

To test a suite of efficient HVAC and weatherization technologies to reduce energy use in income eligible public housing properties.

Primary Research Question

Can a combination of highly efficient technologies reduce energy use by over 50 percent in income eligible public housing buildings?

Overview

This pilot is a carryover project from the Illinois Department of Commerce and Economic Opportunity's research and development initiative. The goal was to test low-capacity furnaces and cold-climate heat pumps with standard weatherization practices in seven units in Rockford Housing Authority residential properties. Modeling suggested these measures could reduce total energy use by over 50 percent. Franklin Energy and the Gas Technology Institute led the testing of the ability of these newer technologies to deliver efficient comfort and recorded installation costs and experience.

Results and Outcomes

A final report was delivered in Q3 2019. The project demonstrated deep savings through the combination of retrofit strategies implemented, although it was difficult to separate the combinatorial effects of some of the measures. These results will be valuable if in the future duel fuel heat pump HVAC systems become an area of interest.

Additional Partners

Gas Technology Institute
Rockford Housing Authority

Type

Program Design

Timeline

June 2017 to July 2019

Emerging Technologies - Completed Project

Save and Share

Multiple Partners

Primary Objective

Leverage smart meters and Technology Assessment to provide customers with information to help them save energy and support their local community.

Primary Research Question

Can ComEd create a mobile app that is personalized to both the customer and their community to better drive energy savings?

Overview

The Save and Share Mobile App leverages AMI data to provide day-after energy information to help residential customers save energy. It also provides the user with weekly energy usage predications based on AMI data.

The pilot was aimed at income eligible residential customers within Chicago's Bronzeville neighborhood. The app offered users information on their energy usage and personalized energy savings recommendations. The app predicted a baseline energy usage for the week, and energy savings that customer achieves (beating the pre-established baseline) were matched by ComEd in a special account the customer can use to share with local community groups including churches, youth organizations and other not-for-profits. In 2019, ComEd worked with the L3 Agency to engage local community groups to drive customer participation and register organizations on the app. EnergySavvy (now Uplight) provided the M&V 2.0 backbone while Metergenius developed the app interface.

Results and Outcomes

Customer adoption of the Save and Share Mobile App was initially low, so to foster more participation among both customers and partner organizations ("Community All-Stars"), the R&D team partnered with L3 Agency to host a re-launch of the pilot in Q3 2019. A successful re-launch event was held, and L3 helped the partner organizations participate in several local community events throughout Q4 2019 to encourage additional participation.

Ultimately, participation remained very low throughout the pilot period. The L3 team explored several new ways to promote participating organizations to their community. L3 held a presentation early Q1 2020 to discuss the results of the pilot. The findings from working so closely with Bronzeville community organizations through this pilot will help influence future ComEd efforts in that neighborhood.

Partners
EnergySavvy
MeterGenius
L3 Agency

Type
Technology Assessment

Timeline
April 2018 to December 2019

Solicitation
Request for Proposals
March 2018

Emerging Technologies - Completed Project

Smart Home Research

ILLUME

Type
Research

Timeline
January 2019 to May 2019

Primary Objective

Inform cost-effective program delivery strategies, future requests for proposals/pilots, and short- and long-term strategies around the technology area of smart home and residential connected devices.

Primary Research Question

- Understand customer expectations, desires, needs and experiences with current smart home products and services, including potential service gaps and opportunities for utility program models.
- Identify promising future technologies and/or trends that can be tested now (e.g., voice control, whole building management) even if they are still 3-5 years from impacting the energy efficiency space.
- Identify vendors who may be candidates for ComEd smart home pilots, including vendors already operating in the energy space, and those with capabilities aligned with ComEd needs.

Overview

This research initiative assessed the applicability of smart home products and services to the ComEd Energy Efficiency Program portfolio and looked at smart home opportunities from multiple perspectives, including customer needs (and the ability of a potential smart home offering to serve a range of customers); existing utility smart home offering, pilot and business models; the vendor landscape; and the broader consumer market (e.g., established and emerging products and services).

Results and Outcomes

Initial research concluded in 2019. The R&D team is considering options for further smart home research and has discussed options with US EPA and multiple stakeholders in the SHEMS specification process. However, the team currently believes the energy-savings potential of such a pilot is likely to be low, and the costs and complexity for participants is likely to be high, so a full-scale pilot has yet to be launched.

Projects Completed in 2020

Emerging Technologies - Completed Project

Adsorbent Air Cleaner

slipstream

Type
Technology Assessment

Timeline
April 2018 to April 2020

Primary Objective
Assess the energy-savings impacts of the enVerid HVAC Load Reduction (HLR) Module in a real-world large commercial building setting.

Primary Research Questions
How does deployment of the Adsorbent Air Cleaner technology impact HVAC energy usage and savings in commercial buildings? Does this constitute a reliable and cost-effective measure for further promotion?

Overview
The Adsorbent Air Cleaner technology saves energy through reducing energy use in conditioning outdoor air. The enVerid HLR Module adsorbs gas-phase contaminants from ventilation air, allowing outside air intake to be reduced.

Phase one of the pilot developed energy models for technology deployment, completed a TRM white paper and performed outreach for a field study. Phase two of the pilot secured an agreement to participate with a commercial building customer and evaluated energy usage as well as other non-energy benefits including indoor air quality.

Results and Outcomes
The project team delivered the final report in April 2020. The study found a net electricity savings of 3.5 kWh per cfm reduced per year and load reduction during on-peak periods of 5.7 W per cfm reduced in the subject building. This was substantially lower than predicted energy savings. Indoor air quality remained largely unchanged in the subject building. Further investigation showed that the subject building was not an ideal fit for the measure due its combination of 1) low supply air temperature delivery, 2) low percent-outdoor-air and 3) a tight HVAC system operating schedule. Based on these results, the ComEd Emerging Technologies Team is exploring next steps for the technology, including a better understanding of the building characteristics most important for driving savings from adsorbent air cleaning.

Emerging Technologies - Active Project

Commercial Geothermal Advancement

AECOM

Primary Objective

Increase market adoption of geothermal heat pump installations in the commercial and light industrial market sectors by streamlining how customers access ComEd incentives for this highly efficient technology.

Overview

To date, ComEd customers could receive incentives for non-residential geothermal or ground-source heat pump (GSHP) installations through the ComEd Energy Efficiency Program custom incentive offering. Feedback from the geothermal installer community indicated that a more streamlined incentive process could help drive customer adoption of this measure. In 2018, the pilot team collected information on the market opportunity for commercial GSHP projects, developed a streamlined incentive offering ($1,000/ton) and submitted a TRM workpaper for v7 to help standardize M&V. Pre-applications for pilot incentives were accepted until February 28, 2019 and completed by February 2020.

Status

Installations have been completed at four locations, with a total of 48 tons of geothermal capacity. The pilot team is preparing a final report incorporating an energy-savings estimate for these sites. Guidehouse completed customer interviews of both pilot participants and near-participants to determine the effectiveness of the pilot incentive rate and to determine other key customer motivators when considering geothermal technology. In early 2019, the standard incentive offering introduced a new prescriptive measure similar to the pilot incentive, and the Emerging Technologies Team and standard team are using the findings from this pilot to identify the most effective way to adapt the standard incentive going forward and promote this effective but underutilized technology.

Results and Outcomes

Results from the pilot surveys indicated that the streamlined incentive was easier for customers and service providers to utilize. However, few projects have been submitted since the introduction of the Standard incentive. The R&D team is working with the Business programs team and geothermal industry stakeholders to evaluate potential future changes to ComEd's geothermal offerings.

Additional Partners

Energy Resources Center
Geothermal Alliance of Illinois

Type

Program Design

Timeline

April 2018 to February 2020

Emerging Technologies - Completed Project

Commercial Plug Load Opportunities

Type
Research

Timeline
July 2019 to July 2020

Primary Objective

Identify new energy efficiency program opportunities for managing and reducing energy consumption associated with commercial customer plug loads, and provide recommendations on best practices, market potential and potential program design.

Overview

Plug load, the energy used by plugged-in devices as opposed to energy used for lighting and HVAC, is growing in its share of overall energy use in commercial buildings. The California Plug Load Research Center (CalPlug) based at the University of California Irvine conducted research to identify and prioritize energy end use with high potential impact on plug load consumption, as well as assessed the effectiveness of different energy efficiency program design approaches (e.g., new technologies, control strategies, direct-to-buyer rebates, midstream, or upstream targeting) on these device categories. This research involved review of existing and prior utility programs; historical activity and trends in ComEd's plug load-related measures; regional estimates for current commercial stock of device categories matching the territory and population served by ComEd; and trends in commercial devices, including automation, Internet of Things, and other singular or combined device/central control strategies.

Results and Outcomes

CalPlug submitted their final study and presented their findings to ComEd in early July. In the study, CalPlug developed a protocol for comparing utility plug load program features and technologies and identifying potential gaps. They reviewed and categorized plug load devices that use the most energy in ComEd's service territory and made recommendations on how ComEd could incorporate them into their energy efficiency programs. The ET team is currently reviewing the report and determining next steps, including incorporating CalPlug's recommendations into ComEd's current EE offerings and exploring additional opportunities for further research.

Emerging Technologies - Completed Project

Networked Lighting Controls Survey

ILLUME

Type
Research

Timeline
March 2020 to September 2020

Primary Objective

To better understand customer and energy efficiency service provider drivers and barriers to adopting networked lighting controls (NLC).

Primary Research Questions

- What are the drivers to NLC adoption?
- What are the barriers to NLC adoption?
- Are NLC systems being utilized to their full capacity?
- How can ComEd encourage further adoption in the market?

Overview

There is growing industry recognition that networked lighting controls (NLC) may represent a significant source of potential future savings for utility energy efficiency programs. While ComEd's NLC offering has been initially successful in adapting to and capturing an emerging market, there is consensus that there are still many barriers to customer adoption. ILLUME conducted qualitative research in the form of in-depth interviews with commercial and industrial customers and energy efficiency service providers. These interviews explored:

- Knowledge, perception and experience with NLC technologies
- Primary motivators and perceived benefits/downsides to NLC installation
- Perspectives on NLC equipment and current ComEd offerings
- Business decisions and priorities, including how different segments stage or prioritize lighting projects
- Equipment and system operation practices, including the impact of ComEd incentives on customer decision-making.

Results and Outcomes

The project team presented their findings to stakeholders in August. They found that manufacturers are a critical source of education and expertise for customers in proper installation and commission of NLCs, as well as that small business energy efficiency service providers are trusted messengers for new and emerging technology offerings. However, differences exist between small business and larger commercial customers in their decision-making and desire for options in an NLC program offering; inclusion of NLCs in a larger or full-service package offering may help overcome return on investment barriers. The Emerging Technologies team is using these findings in conjunction with overall portfolio planning efforts to determine the shape of future NLC research.

ComEd Energy Efficiency Program

Commercial

Emerging Technologies - Completed Project

PMAC Adoption Research

ILLUME

Type
Research

Timeline
April 2020 to September 2020

Primary Objective

To better understand customer and energy efficiency service provider drivers and barriers to adopting permanent magnet alternate current (PMAC) synchronous 38 to 50-watt evaporator fan motors in walk-in coolers and freezers.

Primary Research Questions

- Who are the ideal candidates for this technology?
- Who makes purchasing decisions?
- What market actors are involved in distributing the technology?
- What is the customer perspective?
- How can ComEd encourage further adoption in the market?

Overview

PMAC motors in walk-in coolers and freezers potentially represent a significant source of potential future savings for utility energy efficiency programs. However, this technology currently has very low market penetration. This study explored why the current market adoption is low, and then based on the findings, created a market intervention strategy to increase market adoption. To develop a market intervention strategy, ILLUME conducted qualitative research in the form of in-depth interviews to characterize and better understand the target market and broader market actor ecosystem.

Results and Outcomes

The project team completed their study and found several factors have contributed to the low market adoption of PMAC motors thus far, including:

- Customers tend to be unengaged and reliant on their EESP when making refrigeration equipment decisions.
- Lack of sufficient training and participation by refrigeration contractors has limited adoption.
- Often times, non-refrigeration and unaffiliated contractors are being called upon to fix ECMs or controllers that had been installed through ComEd offerings.
- Customer experience varies by EESP, and customers typically view EESPs as an extension of ComEd.

The results from this study will be used to continue ongoing efforts to further PMAC motor adoption in addition to informing future market adoption efforts.

Emerging Technologies - Completed Project

Refrigeration Thermal Energy Storage Research

slipstream

Type
Technology Assessment

Timeline
March 2020 to September 2020

Primary Objective
To better understand the energy savings potential and economic viability of refrigeration thermal energy storage (TES).

Primary Research Questions
- What is the magnitude and feasibility of both energy savings (annual) and load shifting (daily) of various refrigeration TES approaches?
- What is the economic viability of the approaches, accounting for all benefits?
- Which of the TES approaches have potential to be a ComEd program offering?

Overview
The market for refrigeration TES in ComEd's territory was not fully understood and certainly not quantified. This six-month research project helped ComEd better understand the market and potential for three refrigeration TES approaches (static thermal mass, phase change material, external storage) in their service territory.

For each refrigeration TES approach, Slipstream defined the market in ComEd's territory and quantified the potential energy savings, in addition to establishing the magnitude and feasibility of both saving energy and shifting load throughout the day using these technologies. This pilot also analyzed the economics of each approach and solicited feedback on these technologies from refrigerated warehouse and industrial food processing vendors in ComEd's territory.

Results and Outcomes
The research team demonstrated TES in refrigerated facilities has the potential to save significant kWh in a number of ComEd customer types. Furthermore, TES also offers customers the ability to reduce peak demand by shifting their load. Static thermal mass is the most promising of the three strategies but is limited to freezers only. The phase change material approach is potentially viable and provides more flexibility and increased savings potential. External Storage is expensive and has a significant payback time in most scenarios, making it the least viable in ComEd's territory.

Emerging Technologies - Completed Project

AMI Data Analytics for Program Administration Enhancements

uplight

Type
Program Design

Timeline
August 2018 to March 2020

Primary Objective
Understand the value of certain advanced AMI analytics approaches to enhance aspects of program management.

Primary Research Question
How can advanced AMI analytics enhance the management, oversight and delivery of ComEd's residential HVAC and small business offerings?

Overview
ComEd provided Uplight with historical customer energy usage data, firmographic and demographic data, and energy efficiency program participation data from the residential HVAC and small business offerings. Their analytics process overlays all these datasets and detects potentially useful trends, and this approach was evaluated based on its ability to accomplish the following:

- Identify top kWh savers and reasons why
- Improve program cost-effectiveness through customer targeting
- Increase the cost-effectiveness of QA/QC inspections
- Identify high- and low-performing Service Providers in terms of metered savings
- Help ComEd understand pathways to future pay for performance models.

Results and Outcomes
All work for this project is complete, and the dashboards have been finalized. A presentation to ComEd staff was held in April, and next steps are underway in terms of leverage backcasting techniques and other M&V 2.0-related analyses for use cases such as customer targeting (NMEC).

ComEd Energy Efficiency Program

Cross Cutting

Emerging Technologies - Completed Project

Baseline and Potential Study

Itron

Primary Objective

Understand the current landscape of energy use in ComEd service territory and remaining potential for energy efficiency.

Primary Research Question

What is the current baseline for energy efficiency consumption and where is there potential for further energy efficiency?

Overview

This large-scale research project consists of two main components:

- Baseline study: A statistically representative survey of ComEd residential, commercial and industrial customers to determine energy-using equipment stock, efficiency, age and utilization
- Potential study: Determine energy-savings potential for more efficient equipment and behaviors and guide ComEd program design

Itron will take a multi-modal data collection approach leveraging web-based surveys that will greatly increase sample size while reducing cost. The research team will work closely with ComEd to identify the highest-priority energy end uses and customer segments of interest – using ComEd's previous potential and baseline studies as initial guideposts. Approximately 5,000 multi-modal surveys will be issued for the residential sector, and a total of 450 on-site nonresidential surveys will be conducted.

For both the baseline and the potential portions of the project, Itron will break out public sector and income eligible customers. In addition to gaining a holistic understanding of energy end uses and energy efficiency at each survey site, the team will also ask to investigate the prevalence of and potential for solar, electric vehicles and related charging infrastructure.

Results and Outcomes

The baseline and potential studies have been completed. Final baseline results have been delivered, and final potential study results will be published in August. Results were presented to the SAG in July and August.

Additional Partners

Dunsky Energy Consulting
Energy Resources Center

Type

Research

Timeline

October 2018 to July 2020

Solicitation

Request for Proposals in 2018

Emerging Technologies - Completed Project

Building Energy Code Advancement

slipstream

Additional Partners
Midwest Energy Efficiency Alliance

Type
Program Design, Research

Timeline
May 2020 to September 2020

Primary Objective
This preliminary analysis will determine the feasibility of achieving energy savings from a utility-led building stretch code and retrofit code/ordinance program.

Primary Research Question
Is there significant energy savings potential for a utility-led stretch code ordinance or retrofit code/ordinance program?

Overview
This research project was cost shared between ComEd, Nicor Gas, People's Gas, and North Shore Gas. The project team established a path for municipalities and other localities to implement stretch codes and/or new retrofit codes with the aid of utilities. Throughout the process, the team engaged the Illinois Stakeholder Advisory group and others in a process to identify potential utility program support for more stringent building codes that would capture additional energy savings during building retrofits and new construction of commercial and residential buildings. Finally, the team determined potential savings and attribution methodologies for utility building energy code programs that involve stretch codes and retrofits for existing buildings.

Results and Outcomes
This project wrapped up in September 2020. The team developed a stretch code technical and program concept for Illinois municipalities and utilities and engage with major municipalities across the state. They were able to estimate the claimable savings potential for two pathways for stretch code programs in Illinois. However, it remains to be seen how quickly municipalities across the state will be willing to adopt stretch codes and how the utility savings attribution models for claiming those savings will work in practice. Future research efforts in this space will likely focus on these last two subjects. This project now faces a go/no-go for further research and that decision will be made in Q4 2020.

Emerging Technologies - Completed Project

Chicago Income Eligible, Multi-Family Benchmarking Outreach

ELEVATE ENERGY
Smarter energy use for all

Primary Objective

Test a novel outreach strategy involving the City of Chicago's energy benchmarking ordinance.

Overview

For this pilot, Elevate Energy and the Institute for Market Transformation partnered with the City of Chicago to design and test a novel outreach strategy for the income eligible multi-family sector. The pilot team analyzed benchmarking results for large income eligible, multi-family buildings in Chicago and targeted their owners with a unique support package. The team tested various outreach strategies on the target audience including curated educational resources, workshops and free energy assessments. The pilot team then collected and analyzed information on building performance, participant engagement in incentive programs, and participant feedback, using this information to develop recommendations for next steps.

Results and Outcomes

Elevate Energy completed their last outreach campaign to income eligible multifamily building owners in January 2020 and submitted their final project report in March. Elevate found that 13 percent of the target group that were contacted through the outreach campaigns submitted applications for a free energy assessment compared to just 2 percent of the control group, which supported their project hypothesis that increased outreach efforts would motivate more property owners with low energy scores to sign up for a utility energy efficiency offering. However, the engagement rate for the treatment group was still much lower than anticipated and the team concluded that the outreach efforts were not a cost-effective approach to increasing participation in energy efficiency incentive programs.

Additional Partners
City of Chicago
Institute for Market Transformation

Type
Outreach

Timeline
March 2019 to March 2020

Solicitation
2018 Income Eligible Call for Ideas

ComEd Energy Efficiency Program

Income Eligible | Residential

Emerging Technologies - Completed Project

Data Analysis, Market Research and Segmentation

ELEVATE ENERGY
Smarter energy use for all

Type
Research

Timeline
March 2019 to March 2020

Solicitation
2018 Income Eligible Call for Ideas

Primary Objective

Identify ways to better target income eligible customer households and increase participation in the ComEd Energy Efficiency Program.

Primary Research Question

How can an affordability and occupancy analysis of ComEd residential customers inform program design and generate recommendations to meet the unique needs of income eligible communities?

Overview

This research project aimed to inform residential program design and marketing with a focus on the building stock that serves income eligible households. The research team conducted an affordability and occupancy analysis with tract-level breakdown of single and multi-family housing occupancy and household income, as well as a parcel-level breakdown that included building characteristics such as age, size, construction type and energy use. These results were then used to create program recommendations specific to geography, housing type and income based on community and sub-market profiles identified by the project team. Necessary data sets were collected from existing surveys, property assessments and ComEd customer meter records.

Results and Outcomes

Elevate Energy submitted to ComEd the final Tableau dashboard tool, the ArcGIS community profiles for the ten selected communities and the full dataset used for this project. Elevate led an instructional meeting with the Emerging Technologies and Income Eligible teams to walk through the final project deliverables and how they could be used to inform program planning.

Emerging Technologies - Completed Project

Ductless Heat Pumps

CMC ENERGY SERVICES

Additional Partners
Franklin Energy
Mad Dash

Type
Technology Assessment

Timeline
September 2018 to June 2020

Solicitation
Request for Proposals August 2018

Primary Objective

Investigate performance and feasibility for high-performance, cold-climate ductless heat pumps (DHPs) in income eligible, multi-family buildings.

Primary Research Question

How can DHPs contribute to energy savings for income eligible, all-electric multi-family residential buildings in the ComEd territory?

Overview

This pilot targeted income eligible customers living in low-rise, all-electric multi-family buildings. During the 2018-2019 winter, CMC and partners installed DHPs in 80 apartment units across seven low-rise multi-family buildings to test the performance and feasibility of DHPs in the ComEd market. The pilot team worked with Franklin Energy to identify and recruit buildings, with certified contractors to install the systems, and with Mad Dash to install submetering systems to ensure all relevant performance data was captured.

Results and Outcomes

The final report was delivered to ComEd in early June 2020, and includes a full year's data analysis, the results of two customer surveys, and a summary of lessons learned while designing the pilot, recruiting participants and installing the equipment. Key findings include:

- Pre-heat (baseline heating use) usage is directly correlated to heating energy impacts. There is a directional relationship where lower pre-heat usage led to less positive or negative heating energy impacts
- Units receiving ambient lock-out controls had more positive heating energy impacts
- Focusing the sales process on property managers as opposed to tenants would be more effective in a future program.
- Many of the tenant related issues or concerns were behavioral, so education on proper DHP operation is critical. Incorporating additional on-site instruction and leave-behind materials with the tenants and property managers would likely enhance the overall customer experience

The Emerging Technologies Team is currently discussing next steps and how to integrate these findings into ComEd's IE offerings.

Emerging Technologies - Completed Project

Energy Efficiency in Two-Unit Buildings

ELEVATE ENERGY
Smarter energy use for all

Type
Program Design

Timeline
April 2019 to March 2020

Solicitation
2018 Income Eligible Call for Ideas

Primary Objective

Provide insight into the existing two-unit building stock, understand the needs and opportunities of their owners and identify technical solutions for deeper energy savings.

Overview

This project involved a market assessment of the small residential buildings sector with a focus on two-unit buildings in the ComEd service territory. The project team's goal was to identify new energy-saving opportunities for both deep energy retrofits and new construction markets. The assessment considered best practices from other markets and analyzed the northern Illinois building stock to identify segments that represent the most opportunity for ComEd. Following the market assessment, Elevate Energy submitted an interim report to ComEd, at which point it was determined not to proceed with the second task. For the second task, Elevate proposed to conduct interviews and focus groups with owners of two-unit buildings to better understand barriers and motivations to making energy efficiency improvements. Finally, the project team conducted a technical innovation analysis to identify advanced residential technology opportunities relevant to the small residential energy retrofit and new construction markets.

Results and Outcomes

Elevate Energy completed a final report and presented their findings to ComEd. The Income Eligible programs team has taken the recommendations into consideration for future program design. The Emerging Technologies Team decided not to move forward with the proposed focus group task because ComEd completed similar focus groups in 2018 and did not see a need to conduct additional focus groups at this point.

Emerging Technologies - Completed Project

Healthy Homes

ELEVATE ENERGY
Smarter energy use for all

Primary Objective

Identify, develop and validate scalable approaches to collaborate with local health entities, allowing ComEd to deliver cost-effective energy savings and health benefits for income eligible customers.

Primary Research Question

What are the benefits of coordinating a home-based asthma services program with ComEd's income eligible multi-family offering?

Overview

The primary goal of the pilot was to develop a coordinated service delivery model that achieves a whole-home retrofit for ComEd customers with significant health, safety and energy needs and that leverages both time and financial resources of ComEd and AMITA Health. The pilot took an iterative approach to developing this model and sought to serve up to twenty enrollees over a fifteen-month period. Funds from ComEd provided energy efficiency and health and safety modifications (e.g. mold, moisture sources, pests) that improved indoor air quality for the asthma patients, while the healthcare funds supported in-home education for asthma self-management .Elevate Energy partnered with Green and Healthy Homes Initiative (GHHI), AMITA Health and Sinai Urban Health Institute (SUHI) for this project. AMITA Health received co-funding for the project and led the patient recruitment and enrollment, SUHI community health workers led patient asthma education and support, GHHI provided technical assistance, and Elevate Energy managed the pilot and led the energy assessments and remediation.

Results and Outcomes

Elevate Energy and their project partners recruited and enrolled six households into the pilot but ultimately were only able to complete home upgrades for two of the households during the pilot. The two participating households received a variety of healthy home upgrades including new furnace filters, a bathroom fan, removal of moldy drywall, and a HEPA air filter. One household recently received a gut rehab and opted not to make energy efficiency upgrades and the other household installed a high efficiency furnace, replaced an ECM blower and an efficient hot water heater. The greatest challenges for this project stemmed from the limited capacity and differing priorities of the health care partners leading to low participant recruitment. Ensuring a strong alignment of project goals, data security agreements, timeline, and level of commitment between all project partners is important to this coordinated delivery approach.

Additional Partners

AMITA Health
Green & Healthy Homes Initiative

Type

Program Design

Timeline

February 2019 to May 2020

Solicitation

2018 Income Eligible Call for Ideas

Emerging Technologies - Completed Project

Energy Efficiency Needs Assessment for Public Housing Authorities

SEDAC
SMART ENERGY DESIGN ASSISTANCE CENTER

Type
Research

Timeline
March 2019 to February 2020

Solicitation
2018 Income Eligible Call for Ideas

Primary Objective

To better understand barriers to, and opportunities for, increasing participation among Public Housing Authorities (PHAs) in the ComEd Energy Efficiency Program.

Primary Research Questions

What are the top interests, needs and constraints of PHAs related to energy efficiency, and how can a better understanding of these help ComEd increase the level of participation in energy efficiency offerings and increase savings in buildings owned and operated by PHAs?

Overview

For this six-month research project, SEDAC conducted an energy efficiency needs assessment to identify barriers to PHA engagement and implementation and to develop solutions to increase participation in and savings from energy efficiency offerings. The project consisted of four tasks: a literature review, a future-looking technical strategies assessment, a stakeholder engagement process and the completion of a final roadmap report. SEDAC also provided a segmentation analysis of PHA building inventory in the ComEd service territory and a map showing geographic gaps and target areas.

Results and Outcomes

SEDAC identified eight key barriers hindering PHA participation in energy efficiency programs ranging from capital needs backlogs, limited staff capacity, and the inability for PHA's to capture payback from energy efficiency. In the roadmap report, SEDAC proposed a pilot program to address these barriers that integrates the following solutions: rolling energy efficiency into capital needs projects, batching projects to simplify and expedite project implementation and targeting education and support for PHAs of different sizes to help them navigate the complexities of various contracts and funding opportunities. No decision has been made yet on next steps, but the Income Eligible programs team has taken the recommendations into consideration for future program design.

Emerging Technologies - Completed Project

Home Energy Reports Target Rank

ORACLE

Type
Program Design

Timeline
June 2019 to March 2020

Primary Objective

To test a modified Home Energy Report (HER) format with residential customers.

Primary Research Questions

- Does the temporary (six month) replacement of the neighbor comparison module with the target rank module increase engagement and customer satisfaction of income eligible customers?
- Does the addition of a short-term, achievable energy efficiency goal to an emailed Home Energy Report (eHER) increase engagement, resulting in energy savings?

Overview

Target rank is an alternative user experience that will be deployed for 18,000 income eligible customers already receiving electronic eHERs. During the pilot, the neighbor comparison module will be replaced with a target rank module for six months; the new module provides the customer with a short-term achievable energy saving target (called a "challenge") in the format of a score on a 100-point scale. The pilot will impact 38,000 total customers that currently receive eHERs; 18,000 will receive the target rank module as a treatment group, and the rest will serve as a control.

Results and Outcomes

Due to challenges in report configuration and roll out, the test took place from June 2019 to December 2019, with analysis and survey work conducted in Q1 2020. While several promising indicators were observed, the differences between the treatment and control groups were not large enough (or the sample size was not large enough) to achieve statistical significance and prove/disprove the null hypotheses. One contributing factor was fewer than 200 participants completed both the pre and post satisfaction survey, limiting the reliability of those survey results. Despite this, the treatment (Target Rank) groups reported more positive responses to questions like, "[the report] helps me better understand my energy usage" and "[the report] provides value to me". Both Target Rank groups had triple the click-through rate compared to the eHER control group (1.7 percent vs 0.6 percent), which is an indicator of higher customer engagement. Participants receiving the Target Rank experience rated it as more useful compared to those receiving a customized Low Income marketing module. Given these results, the Residential Programs and Oracle teams will consider future inclusion of the Target Rank module but may not proceed with immediate integration.

Emerging Technologies - Completed Project

Income Eligible, High User Customer Needs Assessment

EVERGREEN ECONOMICS

Additional Partners
Leede Research

Type
Research

Timeline
February 2019 to February 2020

Solicitation
2018 Income Eligible Call for Ideas

Primary Objective

To characterize ComEd's income eligible, high-energy users and inform ComEd's implementation teams about unique circumstances among this customer group that have implications for their energy consumption, use of existing offers or benefit they derive from the ComEd Energy Efficiency Program.

Overview

This research project focused on income eligible, residential customers with high energy usage. Bilingual surveys and in-home assessments of these customers combined with focus groups and interviews identified not only factors that limit customer access to ComEd energy efficiency offerings, but also customer needs not fully addressed by current ComEd energy efficiency offerings.

Results and Outcomes

The project team surveyed 298 income eligible customers in single family and multifamily homes that were identified as high energy users, then followed up with a sample of respondents to complete 19 in-home visits and 16 telephone interviews to gather additional qualitative data. The survey results showed that nearly all eligible high users (94 percent) said it was important or very important to them to reduce energy costs, and just under half (44 percent) reported that energy bills are often or nearly always difficult to pay. Evergreen Economics also found several common contributors to high energy usage among the participants, including electric space and/or water heating (often complementing natural gas furnaces), building envelope deficiencies, use of multiple refrigerators and freezers and in-home behaviors including high winter and low summer thermostat savings. Evergreen Economics developed a set of recommendations for new energy efficiency offerings and modifications to existing offerings based on their findings. The top three program opportunities identified were the following:

- Increasing high user participation in the Home Energy Upgrades program by cross marketing with LIHEAP and Payment Plan Programs.
- Modifying offerings available through Home Energy Upgrades to address the common contributors to high energy usage like medical equipment.
- Complementing Home Energy Upgrades with services like seasonal weatherization to address common building issues.

Emerging Technologies - Completed Project

Income Eligible Program Design

FRANKLIN ENERGY

Type
Program Design

Timeline
October 2018 to January 2020

Solicitation
2018 Income Eligible Call for Ideas

Primary Objective
Inform cost-effective program delivery solutions to income eligible customers and establish new partnerships that can enable access to communities currently underserved by certain energy efficiency offerings.

Primary Research Question
Can engaging new income eligible market providers and trade allies catalyze greater program participation and reduce program delivery costs?

Overview
The aim of this pilot was to define a framework for scalable program delivery through dedicated market providers and trade allies to create deeper savings, improved delivery and lower delivery costs for the income eligible weatherization offering. Franklin Energy executed four pilots with three different market providers and one trade ally serving as the primary delivery channel.

The pilot had two phases. The first phase involved research and assessment of the housing stock and potential market providers within ComEd's service territory as well as the creation of an onboarding packet and an implementation plan for pilot partners. In phase two, the pilot team selected three communities to test the viability of working with different market providers, or local community organizations, to recruit customers for home energy assessments and weatherization work. The fourth pilot explored the use of a trade ally-driven model to recruit customers.

Results and Outcomes
Four pilots were completed in three communities in 2019 – Joliet, Aurora and Elgin – with varying levels of success. Pilot findings indicated that market providers with deep community relationships are more successful at recruiting income eligible customers to participate in energy efficiency offerings. The trade ally pilot was successful and indicates that a trade-ally led income-eligible program offering could be a cost-effective avenue to deliver weatherization services to customers outside of the CBA and CVHA footprint, if ComEd chooses to expand the offering in this way.

Emerging Technologies - Completed Project

Savings for Income Eligible Seniors

Green Home Experts

Primary Objective

To test an approach aimed at providing greater access to energy efficiency measures for income eligible, senior customers.

Primary Research Question

How can engaging case workers and member agencies working with income eligible, senior customers increase access and remove barriers to energy efficiency measures for these customers?

Overview

The pilot team targeted income eligible senior (aged 60 and older) residential ComEd customers for direct installation of a standard measure package (free for participants). The measure package included weather stripping, door sweeps, caulking, smart thermostats, LED lamps and LED nightlights. Green Home Experts worked with AgeOptions, the state of Illinois Department on Aging's Area Service Agency for suburban Cook County, to solicit participants for the pilot, including a marketing strategy and customer verification. Because of their direct interaction with the target audience, AgeOptions and similar agencies may be promising avenues for increasing participation in energy efficiency offerings for a traditionally underserved customer segment.

Results and Outcomes

The project concluded with 257 total installations, and the final report was submitted in April 2020. Overall, the senior care agencies proved to be valuable partners for recruiting income eligible senior customers, providing steady recruitment throughout the pilot period. Feedback from participating customers was largely positive. Nearly 60 percent of the provided smart thermostats were installed; this is a notably high installation rate for the senior population. Participants expressed appreciation for a walkthrough of ComEd's customer protection guidelines. Based on the pilot's cost and recruitment success, the project team estimates a favorable cost-effectiveness and recruitment rate if this strategy were to be incorporated into ComEd's portfolio. The Emerging Technologies team will explore in 2020 how to best incorporate these findings into Income Eligible program offerings.

Additional Partners
AgeOptions,
Illinois Department on Aging

Type
Outreach

Timeline
February 2019 to April 2020

Solicitation
2018 Income Eligible Call for Ideas

Emerging Technologies - Completed Project

Street Operating System (SOS)

blacks in green

Type
Outreach

Timeline
January 2019 to March 2020

Solicitation
2018 Income Eligible Call for Ideas

Primary Objective

Increase awareness of and engagement in the ComEd Energy Efficiency Program in income eligible communities facing numerous social and economic challenges.

Primary Research Questions

Can the principles and strategies of Blacks in Green (BIG) SOS promote and drive adoption of energy efficiency options in the West Woodlawn community? Specifically, what increases in (a) access to energy efficiency resources, (b) awareness of energy efficiency resources, (c) use or installation of energy efficiency equipment/technology, and (d) participation in the ComEd Energy Efficiency Program can these strategies deliver?

Overview

BIG has developed a novel outreach pilot project that will increase awareness of ComEd's energy efficiency offerings in Chicago's Woodlawn neighborhood. SOS and the Green Living Room (a community destination, including free Wi-Fi and similar amenities) is a communications conduit through which climate, energy, emergency, community news, career connections and conservation lifestyle tips can move. BIG brings real, trusted avenues to reach populations that face barriers to participating in the ComEd Energy Efficiency Program. BIG has delivered sustainability education and outreach nationally since 2007 and since 2010 in Woodlawn.

Results and Outcomes

Over the course of the project, BIG conducted door-to-door outreach to 1,146 homes in the West Woodlawn community and hosted 55 events to share information about the Green Living Room, energy efficiency and relevant ComEd offerings. Since the opening of the Green Living Room in August 2019, over 1,919 people have visited or attended community events hosted there. Over the course of the project BIG hired 17 part time staff members to lead the SOS outreach and to work at the Green Living Room. As of February 2020, three of the project staff members received other offers for full-time jobs in the industry.

Emerging Technologies - Completed Project

Residential Real Estate Opportunities

ELEVATE ENERGY
Smarter energy use for all

Primary Objective

Improve training for real estate professionals and expand the amount of home energy information available to homebuyers and their real estate agents in the Chicago area to increase participation in the ComEd Energy Efficiency Program.

Overview

The project team developed and implemented an educational outreach plan to the real estate professional community focused on providing continuing education units with training focused on local energy efficiency programs and Energy eCompliance, a tool that provides access to home energy use information via real estate listings. Outreach included lunch-and-learns, trainings and affiliation with local real estate associations.

In part two, the project team conducted focus groups with recent homebuyers to understand what energy efficiency features are most important to them in the homebuying process and will outline how ComEd can integrate the real estate transaction and key stakeholders into energy efficiency outreach strategies. The team also worked with Midwest Real Estate Data (MRED) and its members to understand how Energy eCompliance is currently being used in real estate transactions.

Results and Outcomes

Through the real estate agent courses and focus groups with agents and homebuyers, Elevate Energy and MEEA found that the majority of homebuyers want their real estate agents to talk to them about energy efficiency but many times agents did not feel comfortable making claims about the benefits of energy efficiency improvements without third-party certifications. Therefore, they recommend continuing to promote educational opportunities to real estate agents to help them understand and communicate the value of energy efficiency to their clients. The project team also found there is opportunity to tailor energy efficiency messaging to homebuyers by generation since different messages resonate with homebuyers in different generations. From their assessment of the Energy eCompliance tool, the team concluded that the City of Chicago should update their energy disclosure ordinance to mandate the disclosure of utility bills at the time of listing a home to inform homebuyers on the total cost of homeownership before making a decision to purchase a home.

Additional Partners

Midwest Energy Efficiency Alliance

Type

Program Design

Timeline

January 2019 to September 2020

Solicitation

2018 Income Eligible Call for Ideas