ComEd Energy Efficiency Program

CY2020

FIRST 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.

Table of Contents

Portfolio Summary

397,787

Actual Net MWh YTD

1,726,196

CY2020 MWh Forecast

1,637,572

CY2020 MWh Filed Goal

$73,333,586

Actual Spend YTD

$351,334,190

CY2020 Spending Cap

PORTFOLIO

- Through Q1, the portfolio has achieved 23% of its CY2020 forecast of 1,726,196 MWh and 24% 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 $4.7 billion on their electric bills.
- For granular breakout by program, please see the narrative.

RESIDENTIAL PROGRAMS

- Through Q1, residential programs have achieved 22% of its combined CY2020 forecast of 333,673 MWh.
- Customers have received over 28,931 rebates, recycled over 3,770 appliances, and over 5,910 homeowners and tenants have received free direct install products from assessments through Q1.
- ComEd has collected and responsibly recycled more than 500,200 refrigerators and freezers since ComEd began to offer this service to our customers in June 2008.

INCOME ELIGIBLE PROGRAMS

- Through Q1, income eligible programs have achieved 18% of their combined CY2020 forecast of 61,202 MWh, not including MWh savings from converted Therm.
- Over 2,966 income eligible households have participated through Q1.

BUSINESS PROGRAMS

- Through Q1, business private sector programs have achieved 23% of its combined CY2020 forecast of 703,059 MWh; business public sector programs have achieved 22% of its combined CY2020 forecast of 141,772 MWh.
- Over 2,732 business private sector projects and 289 business public sector projects have been completed through Q1.

THIRD PARTY PROGRAMS

- Through Q1, third party programs have achieved 17% of their combined CY2020 forecast of 156,072 MWh.

COVID-19

- While this report covers Q1, and reflects spend and energy savings accordingly, within the program narrative sections, there are some notes about steps that have been taken since the end of Q1, 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.

- **27,212 MWh savings achieved (22% of forecast)**

Total customers per product*:

- Home Energy Reports (Paper – mailed): 345,864**
- Home Energy Reports (emailed – monthly): 554,066
- High Usage Alerts (total unique customers): 753,107
- Weekly Usage Report: 194,246

*Number of customers per product are from the February 2020 Monthly Engagement Report. **February paper reports were limited to new enrollees only.

- ComEd auto-enrolled approximately 365,000 customers in Home Energy Reports (January 12th) and 325,000 customers in emailed Home Energy Reports (February 23rd), as ComEd increased the number of Home Energy Reports participants to 1.8 million for 2020. ComEd auto-enrolled 450,000 customers into High Usage Alerts in two enrollments, with 225,000 customers being added on February 21st & 28th.

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.

- **32,180 MWh savings achieved (30% of forecast) based on 1,152,819 bulbs/fixtures discounted**
- New to the program in 2020:
  - LED connected lighting products and LED night lights with instant in-store discounts, and
  - 36 Best Buy locations supporting the instant in-store discounts on LED connected lighting products.
  - Field rep in-store visits were adjusted to virtual due to the COVID-19 'Stay-at-Home' orders in mid-March.

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.

- **4,005 MWh savings achieved (9% of forecast) based on 28,931 rebated appliances**
- New to the program in 2020:
  - A $75 rebate on ENERGY STAR certified above-ground pool pumps, and
  - Menards is displaying in-store point of purchase materials promoting the ComEd rebate offer in the appliance department of all 42 stores in the ComEd territory for the first time.
- Field rep in-store visits were adjusted to virtual due to the COVID-19 'Stay-at-Home' orders in mid-March.

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.

- **2026 MWh savings achieved (17% of forecast) based on 6,508 units**
- Change to the 2020 program:

- Refrigerators and Freezer incentives decreased from $50 to $35 (per unit), and
- Dehumidifiers were removed

- Appointments were suspended due to the COVID-19 'Stay-at-Home' orders in mid-March.

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.

- **4,366 MWh savings achieved (16% of forecast) based on 3,713 Assessments Completed in 2020 through Q1**
- New to the program in 2020:
  - A copay was introduced for the advanced power strip, and
  - A third smart thermostat option was introduced to expand the offering to more mechanical systems.
- Appointments were suspended due to the COVID-19 'Stay-at-Home' orders in mid-March.

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.

1,979 MWh savings achieved (16% of forecast) based on 2,101 tenant units, 96 common-area installs, and 33 projects

- New to the program in 2020:
  - Copays were introduced where existing lighting is already moderately efficient, to cover Service Provider work in those common areas and outdoor spaces.
- Appointments were suspended due to the COVID-19 'Stay-at-Home' orders in mid-March.

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.

- **1,627 MWh savings achieved (30% of forecast) based on 3,770 rebates**
- New to the program in 2020:
  - Central Air Conditions were transitioned to midstream for 2020. During Q1, 19 distributors were onboarded and began processing incentives.
  - In-home QAQC visits were suspended due to the COVID-19 'Stay-at-Home' orders in mid-March.

Income Eligible Programs

Income Eligible Product Discounts

Overview: Income Eligible Retail Discounts provides deeper 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 as well as instant in-store discounts on select ENERGY STAR certified appliances such as air purifiers and room air conditioners. 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.

- **9,192 MWh savings achieved (19% of forecast) based on 211,241 units sold –** 190,326 lighting units discounted; 20,915 appliances discounted
- Greenlite, Leedarson and Maxlite were the top three manufacturers in incentives paid. In total, they accounted for 52% of incentive paid through Q1. Greenlite and Maxlite (2 of the top 3 manufacturers) primarily sold measures through independent retailers.
- This is the first year the income eligible program offering no longer incentivizes omni directional light bulbs in big box & DIY stores due to net to gross reduction in those retailers (Home Depot, Lowe's, Menards, Target & Walmart).
- Added additional appliance retailer partner, Lowe's.
- Field rep in-store visits were adjusted to virtual due to the COVID-19 'Stay-at-Home' orders in mid-March.

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.

- **783 MWh savings achieved (19% of forecast) based on 331 participating customers (Includes IHWAP +CBA/CVHA)**

Illinois Home Weatherization Assistance Program (IHWAP)

- CEDA utilized a community-based approach to outreach in Q1, including: an on-site demo at a housing cooperative in Ford Heights; and partnership with Rebuilding Together, a nonprofit working in Englewood and Chicago Heights to recruit and find customers eligible for retrofit work. A community-based approach, with such partners, uses resources and allows agencies to work more efficiently in a localized area.
- On February 11th, program representatives conducted outreach, in partnership with DuPage County, to the Brandywine Subdivision HOA, an all-electric housing community in Villa Park. Brandywine was the first all-electric community in the United States consisting of more than 1,100 housing units. The initial outreach set the stage for future opportunities to find resources and further serve this community beyond the three units completed in 2019.
- In-person work was suspended due to the COVID-19 'Stay-at-Home' orders in mid-March.

CBA/CVHA

- Steady production starting on January 2nd through mid-March, until in-person work was suspended due to COVID-19 'Stay-at-Home' order.

Income Eligible Programs

- Increased DI production starting in March, as direct installs began to be completed during the audit phase as opposed to during the weatherization installations.

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/NorthShore.

- **384 MWh savings achieved (4% of forecast)**
- **2,212 residential units completed for IEMS and none for IHWAP**

IHWAP

- CEDA identified a substantial multi-family development in Bronzeville, Chicago, IL. Dearborn Homes, which is operated by the Chicago Housing Authority (CHA), is a good opportunity to leverage Illinois Home Weatherization Assistance Program funds. There may be opportunity to leverage additional funds from CHA to improve the overall savings per investment for all funders. There are 16 buildings, 6 and 9 stories, for a total of 668 units with potential for utility funding.
- COVID-19 'Stay-at-Home' order suspended in-person program operations mid-March.

IEMS

- Completed 115 projects and upgraded 2,212 residential units.
- $686,255 and 2,599,242 kWh saved in Q1 before work stoppage, serving over 45 different owners including $90,000 of lighting for Mercy Housing, a thermostat DI project at a 176 unit property in Nicor Gas territory, and $76,000 of work for individual "mom and pop" building owners including DI, refrigerators, asbestos remediation, pipe insulation, and attic weatherization.
- Over 1/3 of the spend and savings came from capital measures, mainly refrigerators and boilers/boiler controls but also some furnaces and room ACs.
- COVID-19 'Stay-at-Home' order suspended in-person program operations mid-March.

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.

- **743 MWh savings achieved (65% of forecast) based on 6 projects and 271,903 sq. ft. of eligible building area from completed projects in Q1 2020. This includes a total of 423 units.**
- AHNC Program staff are following up with 2020 project owners to track project delays due to COVID-19. There are many unknowns at this point, but this could affect the ability to meet year-end goals. The program will continue to monitor this.

Business Programs

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: 57,610 MWh savings achieved (29% of forecast) based on 775 projects**
- **Public: 6,310 MWh savings achieved (26% of forecast) based on 193 projects**
- Paid out more energy efficiency incentives in Q1 compared to all previous program year first quarters.
- Completed more private projects in Q1, 2020 than in Q1, 2019.
- Reduced reservation processing time for incentives less than $10,000 through new Express Reservation track.

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: 1,163 MWh savings achieved (4% of forecast) based on 32 projects**
- **Public: 61 MWh savings achieved (2% of forecast) based on 2 projects**
- Several large application completions have been pushed out to the end of 2020 due to Covid-19. This will cause a steep Q4 performance curve for the program's performance in 2020.
- The private-sector offering is continuing to receive pre-applications during the COVID-19 'Stay-at-Home' order.

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: 44,549 MWh savings achieved (27% of forecast) and 1,729 projects**
- **Public: 1,453 MWh savings achieved (12% of forecast) based on 37 projects**

Small Business

- Paid out $8.7M of incentives to help over 1680 customers saving 44.5 net GWh (27% of annual forecast). This is a 25% increase in customer participation and the strongest Q1 savings and incentive volume in the history of the offering.
- Projects are more comprehensive. Non-lighting measure implementation has increased from 20% to 30% comparing with 2019 Q1.
- Minimized impacts caused by COVID-19 product delays, by connecting service provider network to available product channels.

Small Facilities

- Focused on building customer interest resulting in a pipeline of 44 projects expected to close in 2020.
- Increased data tracking from 13 to 20 facility types to better quantify savings impact.

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: 38,616 MWh savings achieved (20% of forecast) based on 557,883 products sold**
- **Public: 6,483 MWh savings achieved (27% of forecast) based on 121,714 products sold**
- In Q1 the program had 90 active distributors who delivered 45,098,700 net kWh savings (~25% of the annual goal).
- Developed HVAC offering launch plan and corresponding materials.

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.

- **Private: 6,293 MWh savings achieved (37% of forecast) based on 22 projects and 5,244,895 sq. ft. of building area from completed projects in Q1 2020**
- **Public: 231 MWh savings achieved (12% of forecast) based on 3 projects and 242,734 sq. ft. of building area from completed projects in Q1 2020**
- Streamlined the program incentive structure for the Performance Path. Went from three different tracks and six different incentive rates to a single track with one incentive rate.
- The CINC and PSNC Programs are forecasting to achieve 88% and 97% of their savings goals for 2020, respectively. Savings shortfalls are due to construction completion delays. Additional delays are anticipated due to COVID-19.
- Launched a new High-Performance Design Incentive that will drive deeper savings and encourage projects to achieve high-performance requirements. Projects who apply early in the design phase and demonstrate achievement of one of the required high-performance standards will be eligible for a $4,000 incentive. In addition, design firms that utilize the online modeling tool to calculate savings will be eligible to receive $1,000 + 2% of the owner's incentive.

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 500 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: 5,050 MWh savings achieved (16% of forecast) based on 74 projects

- Strong Q1 results for projects completed that resulted in 5,050 net MWh, which is 14% above target for this quarter. The challenge for the remainder of 2020 will be to ramp up implementation of projects, once COVID-19 restrictions are lifted.
- There is a strong, active pipeline that carried over from 2019 to 2020 (54,000 MWh). This pipeline will be impacted by COVID-19, but with a weighted probability as low as 31% for the pipeline projects, the program is projected to achieve the 2020 year-end goal.
- The Fix it Now (FIN) Compressed Air leak repair remains a strong, cost effective offering for the program, with 80% of the projects completed. In addition, there is a lot of interest in the new FIN CA Plus Monitoring that will allow customers to better monitor and improve the operation of their compressed air systems.

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: 5,332 MWh savings achieved (16% of forecast) based on 30 projects**

- **Public: 3,508 MWh savings achieved (33% of forecast) based on 29 projects**
- At the end of Q1 2020, RCx had achieved 9.4 gross GWh in savings, or 20% of the annual goal of 48.3 GWh. Another 44.3 GWh are forecasted to complete by end of year, putting the program on track to overachieve EOY goal.
- Of the five program options, Virtual Commissioning (VCx) has contributed the most savings year to date, with 3.8 GWh.
- The VCx team is using AMI data to remotely identify business and public sector customers affected by the COVID-19 shelter-in-place order, whose energy usage data does not reflect reduced operations, and then reaching out to provide assistance.

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 92 schools**
- Nine of eleven SEM cohorts are under way with virtual workshops, treasure hunts and energy data analysis keeping expected energy savings unchanged to year-end. Recruiting challenges to fill the Municipal cohort with public sector customers was delayed, however the team is seeing an increase in customer interest.
- COVID-19 impacts to SEM are minimal to the private sector. Public sector employees are being spread out more to allow for staggered shifts, and as a result are not as responsive as previous months.
- An SEM roundtable with ICs was attended in February to review any additional needs of the program.

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): 0 MWh savings achieved (0% of forecast) based on 0 fixtures (number of fixtures in completed applications)**
- **Public (Municipality Owned): 12,504 MWh savings achieved (22% of forecast) based on 20,678 fixtures**
- Private sector utility owned installations are ahead of schedule at 5,555 fixtures installed versus a target of 3,197. Zero energy savings to date since energy savings are realized once final applications are received and approved. No final applications have been received to date. Given that the streetlight installations, as of the end of March, were 800 fixtures ahead of the end of April forecast, it is unlikely that any slowdown in installations for April will impact the year end installation goal of 24,000. Note: installations significantly lead final applications, and no final applications were received in the first quarter.
- Public sector – 20,678 fixtures were converted to LED, on 22 projects, resulting in annual energy savings of 15,438 MWh, and incentives of $2,469,432, putting the offering ahead of goal for the first quarter.

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: 282 MWh savings achieved (9% of forecast) based on 28 implemented measures**
- **Public: 29 MWh savings achieved (6% of forecast) based on 4 implemented measures**
- Since mid-March, Facility Assessments have been offered solely via virtual site visits, due to the COVID-19 'Stay-at-Home' orders. As engineers are not able to go on customer sites, it is more difficult to identify operational measures, negatively affecting the pipeline and amount of opportunities to convert to wins. As a result of these challenges, ComEd Large Customer Services (LCS) organization has been engaged to assist with gaining customer interest in Virtual Facility Assessments. A Virtual Facility Assessment fact sheet has been created to assist LCS in conversations on this topic with their customers.
- Cascade Energy (OSP) has started a joint effort, with the FA engineers, to target large industrial customers with recent FAs, where one of the primary goals is converting operational measures.

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.

- **280 MWh savings achieved (11% of forecast)**
- Completed 7 projects and upgraded 805 residential units.
- $123,702 and 278,967 kWh saved in Q1 before work stoppage, including AC Covers installed in 2 all-electric buildings.
- Projects completed at 4 PHAs in Q1: Housing Authority of the City of Freeport, Kankakee County Housing Authority, Chicago Housing Authority, and Aurora Housing Authority.
- COVID-19 led to the suspension of in-home work in mid-March.

Third Party Programs

Elementary Energy Education

Overview: ComEd, Nicor Gas, North Shore Gas, and Peoples 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.

- **0 MWh savings achieved (0% of forecast) based on zero kits**
- New measures for 2020 include advanced power strip, LED nightlight and furnace whistle.
- No kits were shipped during Q1, due to marketing updates and COVID-19 impacts, which closed schools.

Small Business Kits

Overview: The Small Business Kits Program is an entry level program targeting small C&I customers in office, restaurant, or other general facilities located in ComEd's service territory 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.

- **13 MWh savings achieved (0% of forecast) based on 12 Kits**
- Q1 focus on designing product mix and strategy for new markets in preparation for a Q2 launch.
- Developing new marketing and outreach channels, to gain the attention of underserved small businesses.
- New measure – smart sockets – added to general kit.

Food Banks LED Distribution

Overview: The Food Banks Distribution Program provides ENERGY STAR® LEDs to food banks affiliated with Feeding America. 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 a free 4-bulb pack.

- **16,462 MWh savings achieved (21% of forecast) based on 498,816 A19s and 200 night lights**
- In January, program representatives hosted the offerings first Rx mobile event. Northern Illinois Food Bank has partnered with local health care organizations, to increase awareness and access to patients that are food insecure. Along with free health screenings, information, and food, the program distributed free LEDs, giveaways, and other educational and cross promotional material to over 100 customers.
- In Q1, ComEd completed its first customer satisfaction survey. This survey provides the program a first-time opportunity to collect direct feedback from customers, as well as capture customer data. Customers can complete the survey in person. during scheduled events, and on the online market research tool.
- The impact of COVID-19 has caused food banks to shift their focus solely on food distribution. As a result, Greater Chicago Food Bank (GCFB) who is responsible for distributing over 60% of program measures to its network of food pantries, has temporary suspended distribution of non-food items. To ensure we met the needs of ComEd customers during these difficult times, the program has developed a direct ship opportunity for GCFB's 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.

- **3,343 MWh savings achieved (16% of forecast) based on 8,000 IE Energy Savings Kits delivered**
- 2020 introduced a program-branded specialty box, which includes new energy-saving measures – 5W LED 60W Replacement Candelabra, 5W LED 60W Replacement Globe, 3-Way 15W LED Replaces 100W, BR30 8W LED 65W Replacement

Third Party Programs

- COVID-19 temporarily disrupted kit distribution in mid-March, while agencies adjusted to remote enrollment processes.

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

54 MWh savings achieved (5% of forecast) based on 42 Homes

- Switched marketing efforts to focus on existing manufactured home parks and building park manager relationships. This will be a grassroots approach to assist with referrals, while building awareness and increasing weatherization participation.
- Despite a small sample size, the program offering was on track to complete 40 homes and over 100 MWh, for month of March, prior to COVID-19 disruption
- COVID-19 'Stay-at-Home' order suspended in-home work in mid- March.

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.

- **2,306 MWh savings achieved (57% of forecast) based on 18 projects**
- In 2020, the Grocery program is targeting customers between 100 and 400 kW 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.
- Completed projects include interior lighting for refrigerated cases, anti-sweat heater controls, and VFDs for condenser fans.

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.

- **2,063 MWh savings achieved (69% of forecast) based on 35 projects completed, 9,194 units of measures installed, and 18 assessments completed**
- Strong participation in Q1, due to robust service provider pipeline, rolled over from 2019.

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.

- **458 MWh savings achieved (9% of forecast) based on 14 projects**
- Conducted a joint EESP training breakfast with the Industrial Solutions program (2/25), attended the IL Pork Expo (2/4 and 2/5) and the IL Dairy Summit (2/6) to promote the offering.

Third Party Programs

- Completed a marketing campaign, targeting rural communities and a radio interview with the IL Farm Bureau.
- Offering continues to build momentum with the agriculture community and service providers, and we are building a steady pipeline of projects that span facility types from indoor farms, dairy farms, grain cooperatives, and poultry operations.
- Identified several large projects involving controlled environment agriculture for microgreens, cannabis and industrial hemp facilities. Projects involve LED grow lights, HVAC, and dehumidification energy efficient measures.

Telecommunications

Overview: 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.

- **1,723 MWh savings achieved (22% of forecast) based on 25 completed projects**
- Custom Switch Peripheral Consolidation projects within the Telecommunications Offering have allowed certain companies to prioritize energy efficiency, along with reclaiming precious real estate within their facilities.
- Guidehouse has recommended the creation of a Standard Measure for the Illinois TRM v9.0, based on the near perfect realization rate and volume of opportunities within this sector.

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.

- **335 MWh savings achieved (2% of forecast) based on 10 projects**
- The Public Buildings in Distressed Communities offering has had 225 applications submitted, with over 8,000,000 kWh in savings identified from those sites.
- COVID-19 had a significant impact on lighting kit installations and HVAC work at sites during the month of March. However, some customers have begun to install lighting kits again and are looking to expedite installations, in an effort to reduce layoffs and get work done while sites are empty. Site visits and verifications are now being done virtually, which has been well received.

Voltage Optimization

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.

- **71,252 MWh savings (34% of forecast) based on 10 commissioned substations and 142 feeders**
- This is equivalent to ~111M pounds of carbon dioxide reduction or removing ~11,000 passenger vehicles driven each year.
- The realization rate from the initial estimates in the AEG study is assumed to be 90% at this time, pending the finalization of the VO TRM methodology for 2020 and 2021.

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

General Outreach

- Participated in 32 energy efficiency events
- Interacted with approximately 5,842 customers

Stipulations

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 331 income-qualified homes through Q1.
  - The Multi-Family Retrofits program has completed direct install work in 2,212 tenant units through Q1.
  - The Public Housing Retrofits program has completed direct install work in 805 residential units through Q1.
  - The Affordable Housing New Construction program has completed 6 projects through Q1.
  - The Income Eligible Kits program has distributed 8,000 kits to income-qualified single-family homes through Q1.
  - The Food Banks Distributions program has distributed 499,016 LED though Q1.
- 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), Greater Chicago Food Bank (not-for-profit), Northern Illinois Food Bank (not-for-profit), Riverbend Food Bank (not-for-profit)
  - Outreach & Marketing – Eire (WBE for-profit), Franklin Energy (for-profit), Ignition (for-profit), PACO (MBE for-profit), Surge Solutions (MBE 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
- 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

Stipulations

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.

CY2020 New Measures

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
Agricultural End Use LED Grow Lights	Business	2.63
Agricultural End Use Lower Pressue 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

Updated April 2020

ComEd
An Exelon Company
powering lives

Introduction

The first quarter of 2020 was a busy one for our team. Much of our recent focus has been devoted to working closely with our research and pilot partners to wrap up projects where the bulk of work occurred in 2019, and then also with our program implementation colleagues to transfer project outcomes and recommendations into customer offerings. We have begun to organize the back half of this catalogue chronologically as the list of completed projects has grown.

We're excited to have also launched several new projects with promising potential. Examples include pilots to promote all-electric residential new construction and to study the application of customized Energy Management Information Systems on energy-intensive industrial processes, as well as research projects exploring market barriers and future program potential on leading-edge technology topics like thermal energy storage and networked lighting controls.

To reflect a complete portfolio of innovation-focused initiatives, this catalogue has been renamed and now includes our Market Transformation projects. Although these projects are distinct in that their purpose is to test new program design and evaluation approaches, everything in this catalogue – Emerging Technologies or Market Transformation – is aimed at exploring, creating and validating new energy savings opportunities for ComEd customers.

Despite the impacts we are all experiencing related to COVID-19, our team continues to accept new project proposals; please visit ComEdEmergingTech.com to learn more and submit. If you have questions about the proposal process or any projects in this catalogue please reach out to us at EmergingTech@ComEd.com or the contact information below.

Sincerely,

The ComEd R&D Team

Mark Milby, Manager of Energy Efficiency R&D, ComEd, Mark.Milby@ComEd.com
Steven Labarge, Senior Business Analyst, ComEd, Steven.Labarge@ComEd.com
Kelly Gunn, Senior Engineer, ComEd, Kelly.Gunn@ComEd.com
Rick Tonielli, Senior Program Manager, ComEd, Richard.Tonielli@ComEd.com
CLEAResult team – Brittany Zwicker, Program Portfolio Manager, Brittany.Zwicker@CLEAResult.com
ILLUME team – Kelly Mulder, Managing Director, Kelly@ILLUMEadvising.com

Table of Contents

Active Projects

Market Segment: Commercial

ComEd Energy Efficiency Program

Commercial

Emerging Technologies - Active 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 will evaluate energy usage as well as other non-energy benefits including indoor air quality.

Status
Winter heating season monitoring completed at the end of March. The project team is conducting wrap-up analysis and writing the final report, to be delivered at the end of April.

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

Due to COVID-19, no trainings have been held yet. MEEA will begin scheduling and recruitment in Q2 for trainings later in 2020. Discussions are underway with Guidehouse on an evaluation plan.

Additional Partners
Northwest Energy Efficiency Council (NEEC)

Type
Program Design

Timeline
January 2020 to December 2020

ComEd Energy Efficiency Program

Commercial

Emerging Technologies - Active Project

Commercial Plug Load Opportunities

CalPlug

Type
Research

Timeline
July 2019 to May 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 will conduct research to identify and prioritize energy end use with high potential impact on plug load consumption, as well as assess 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 will involve 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.

Status

In late summer 2019, CalPlug started the first phase of their research, which primarily consisted of data gathering and a literature review. Due to the prioritization of project resources in 2019, this research was paused until February 2020. Since the projected restarted, CalPlug has developed a protocol for comparing utility plug load program features and technologies and identifying potential gaps. The research team has also made progress toward developing a matrix for prioritizing technologies with the greatest potential for the ComEd service territory.

ComEd Energy Efficiency Program

Commercial | Industrial

Emerging Technologies - Active Project

Energy Efficiency R&D Lab Partnership

NREL
NATIONAL RENEWABLE ENERGY LABORATORY

Type
Technology Assessment

Timeline
January 2019 to December 2020

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

In early 2019, NREL delivered a prioritized list of relevant technologies for testing, and the Emerging Technologies Team reviewed, ranked and selected several promising technologies based on fitness for the ComEd Energy Efficiency Program. The first of these projects was completed in Q4 2019, a comparison and performance evaluation of three energy efficiency measures for commercial HVAC systems, including a rooftop unit retrofit with switched reluctance motors.

In Q1 2020, the NREL and ComEd teams finalized assessment plans and began work on several additional projects to be carried out in 2020, including 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.

ComEd Energy Efficiency Program

Commercial

Emerging Technologies - Active Project

Networked Lighting Controls Survey

ILLUME

Type
Research

Timeline
March to July 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 will conduct qualitative research in the form of in-depth interviews with commercial and industrial customers and energy efficiency service providers. These interviews will seek to explore:

- 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 analysis from this qualitative research will be used to inform further Emerging Technologies projects in the NLC space.

Status

The project kicked off in late March. The research plan has been reviewed and approved.

ComEd Energy Efficiency Program

Commercial

Emerging Technologies - Active Project

Refrigeration Thermal Energy Storage Research

slipstream

Type
Technology Assessment

Timeline
March 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 thermal energy storage (TES) in ComEd's territory is not fully understood and certainly not quantified. This six-month research project will help ComEd understand the market and potential for three refrigeration TES approaches in their service territory:

1. Control of refrigerated walk-in and storage spaces to harness the static thermal mass of the stored product (e.g., food).
2. Control of refrigerated walk-in and storage spaces to harness tuned phase change material as thermal mass.
3. Use of the existing refrigeration system in parallel with an active ice storage system that meets some portion of the system load.

For each refrigeration TES approach, Slipstream will define the market in ComEd's territory and quantify 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 will also analyze the economics of each approach and solicit feedback on these technologies from refrigerated warehouse and industrial food processing vendors in ComEd's territory.

Status
The project kicked off in late March.

ComEd Energy Efficiency Program

Commercial

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
The project team is in final negotiations with a hospital customer to approve a field installation and monitoring plan. The project team is also modeling expected energy savings from smart valve installations based on the chilled water system specifications most impacting energy savings as determined from Phase 2 research.

ComEd Energy Efficiency Program

Market Transformation | Commercial

Market Transformation - Active Project

Upstream Commercial Food Service Pilot

gti

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 will be recruited to participate. These actors, which include manufacturers, distributors, and Kitchen Equipment Suppliers, will 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
Around 20 distributors have been recruited to participate and the first incentives were paid in Q1 2020. However, due to significant impacts from COVID-19 on the food service industry, this pilot may face a major slowdown in Q2. Impacts across the remainder of 2020, and whether the pilot will be able to achieve its goals despite the situation have yet to be determined.

Additional Partners
Frontier Energy
Smith Energy Engineers

Type
Program Design

Timeline
April 2019 to December 2020

Market Segment: Cross Cutting

Emerging Technologies - Active 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 will provide 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 will be evaluated based on its ability to:

- 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

Status
All work for this project is complete, and the dashboards have been finalized. A presentation to ComEd staff will occur in April, where we will collect program manager feedback and determine next steps.

Emerging Technologies - Active 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.

Status

The baseline study portion of the project is complete, and final data sets have been delivered to ComEd. Modeling for the potential study is still underway, and the entire project will wrap up in Q2 2020.

Additional Partners
Dunsky Energy Consulting
Energy Resources Center

Type
Research

Timeline
October 2018 to June 2020

Solicitation
Request for Proposals in 2018

Market Segment: Income Eligible

ComEd Energy Efficiency Program

Income Eligible | Residential

Emerging Technologies - Active Project

Affordable Multi-Family Passive House

slipstream

Additional Partners
LUCHA

Type
Technology Assessment

Timeline
June 2018 to May 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
Monitoring of energy use and air quality in both buildings continues, with a first-year report expected at the beginning of Q2 2020. This report will also include full energy modeling results conducted for both buildings as well as resident survey results.

ComEd Energy Efficiency Program

Income Eligible | Residential

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 multi-family buildings as well as small and medium-sized commercial buildings within their underserved communities?

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 workforce initiative graduates to serve as energy performance improvement coaches, called BIT Aides, using the BIT Building curriculum.

In addition to training BIT Aides, Slipstream will recruit 20-30 buildings in income eligible communities 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 received 46 applications from CHA residents for the BIT Aide positions. Slipstream will set up virtual interviews with candidates and will aim to host trainings in early May, depending on COVID-19 response protocols and their ability to meet in person.

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 was able to complete 94 percent of all participant field visits prior to the COVID-19 response and has since suspended all visits. In the coming weeks they will determine whether they are able to continue with the remaining visits once it is safe or if they need to close out the study with the data they have. The study team will analyze the final data from the participating homes between February and June 2020, and further statistical analysis on the indoor air quality data will be completed between June and October 2020. Elevate will submit an interim report in June 2020, and the final report with the analysis of the indoor air quality data will be available in November 2020.

Additional Partners
Illinois Institute of Technology

Type
Program Design

Timeline
December 2018 to June 2020

Solicitation
2018 Income Eligible Call for Ideas

ComEd Energy Efficiency Program

Income Eligible | Residential

Emerging Technologies - Active 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 aims to inform residential program design and marketing with a focus on the building stock that serves income eligible households. The research team will conduct 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 includes building characteristics such as age, size, construction type and energy use. This study will be used to create program recommendations specific to geography, housing type and income based on community and sub-market profiles that the research team will create. Necessary data sets will be collected from existing surveys, property assessments and ComEd customer meter records.

Status
The data analysis and Tableau tool are complete. The research team has integrated additional levels of customer and building segmentation into the tool, including information on whether homes are owner occupied vs. renter occupied and the age of the building. Elevate Energy is finalizing the ArcGIS community profiles for the 10 communities selected by ComEd and will deliver this in April.

ComEd Energy Efficiency Program

Income Eligible | Residential

Emerging Technologies - Active Project

Ductless Heat Pumps

CMC ENERGY SERVICES

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 targets 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 is captured.

The team will monitor performance of each system over 12 months, with quarterly checkups and surveys for participants. CMC's final reporting after the completion of the monitoring period will evaluate the performance and energy-savings potential of DHPs, as well as evaluate the technology cost and steps of deploying DHPs in a large-scale program effort.

Status
The participant evaluation period has concluded, and the team is currently preparing the final report for April delivery. The final report will include 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.

Additional Partners
Franklin Energy
Mad Dash

Type
Technology Assessment

Timeline
September 2018 to April 2020

Solicitation
Request for Proposals August 2018

ComEd Energy Efficiency Program

Income Eligible | Residential

Emerging Technologies - Active Project

EcoAdvocates

slipstream

Additional Partners
Faith in Place

Type
Outreach

Timeline
February 2019 to February 2021

Solicitation
2018 Income Eligible Call for Ideas

Primary Objective
Increase awareness of, and participation in, energy efficiency offerings in income eligible neighborhoods through trained community energy advocates.

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
Around 80 participants have been recruited to date. EcoAdvocates are testing different outreach strategies and messages by working with key community partners and hubs, such as houses of worship and social justice groups, to target new participants through April. The EcoAdvocates have also developed a communications plan to continue outreach and support to people enrolled in the pilot during the COVID-19 response. Slipstream will submit an interim report detailing progress to date in June.

ComEd Energy Efficiency Program

Income Eligible | Residential

Emerging Technologies - Active 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 offering with ComEd's income eligible, multi-family offering?

Overview

The year-long healthy homes pilot targets income eligible, multi-family residences with high numbers of severe asthma patients. The pilot aims to partner with AMITA Health (formerly known as Presence Health Systems) and complete joint health-energy assessments in 20 units from two multi-family buildings. Green & Healthy Homes Initiative will train and certify two of Elevate Energy's energy assessors as Healthy Home Evaluators so they are able to conducts assessments for asthma triggers and energy efficiency opportunities at each of the units. Elevate Energy will coordinate the schedule of the subcontractors and families as well as with the community health worker and energy assessor to ensure the installation schedule and measures align with the expectations and desires of the family. In addition to tracking and recording energy cost savings, pre- and post-surveys will be conducted to track and report feedback from pilot participants and staff to evaluate the success of the coordinated delivery model through energy savings and customer health improvements.

Status

This project is closing out early due to low participant enrollment in the program. Participant recruitment from the hospital has experienced an extended delay due to staffing challenges at AMITA Health. Elevate Energy and AMITA have concluded outreach,and Elevate is conducting phone interviews with project stakeholders in preparation of a final report.

Additional Partners

AMITA Health
Green & Healthy Homes Initiative

Type

Program Design

Timeline

February 2019 to February 2020

Solicitation

2018 Income Eligible Call for Ideas

ComEd Energy Efficiency Program

Income Eligible | Residential

Emerging Technologies - Active 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.

Status

This pilot has concluded, and an analysis of results will be shared in April. There have been early indications that participants responded well to the new content. After receiving the final report, we will determine next steps and how this may transition into the core HER offering.

ComEd Energy Efficiency Program

Income Eligible | Residential

Emerging Technologies - Active 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 focuses on income eligible, residential customers with high energy usage. Bilingual surveys and in-home assessments of these customers combined with focus groups and interviews will identify 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.

Status

Evergreen Economics has completed a draft version of a final report that includes an analysis of the data they collected from the 298 customer surveys, 19 in-home visits and 16 telephone interviews and recommendations for program improvements. This will be finalized and delivered in April.

ComEd Energy Efficiency Program

Income Eligible | Residential

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 have been constructed in the ComEd Customer Solutions Innovation Lab and will be deployed to 40 pilot participants in Q2 2020. The team experienced some delays in Q4 2019 due to network setup and IT integration, and again in Q1 2020 due to the COVID-19 response.

Emerging Technologies - Active 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 is 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 will research, design and execute multiple implementation projects incorporating different combinations of housing stock, measures, market providers and included services (audits, direct install and weatherization).

The pilot has two phases. The first phase will involve 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 will select up to 10 groups to test a variety of program design elements determined by the results of phase one. Franklin Energy will work with local Service Providers and new market providers to identify 25 customer sites that meet the needs of each pilot group, then complete the installations and monitor established metrics throughout the process.

Status
Four pilots were completed in three communities in 2019 – Joliet, Aurora and Elgin – with varying levels of success. Several potential new delivery models have been submitted to ComEd, and there has been an ongoing feedback process. Any next steps should be identified in Q2.

ComEd Energy Efficiency Program

Income Eligible | Residential

Emerging Technologies - Active 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 will target income eligible senior (aged 60 and older) residential ComEd customers for direct installation of a standard measure package (free for participants). The measure package will include weather stripping, door sweeps, caulking, smart thermostats, LED lamps and LED nightlights. Green Home Experts will work 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 income eligible participation in energy efficiency offerings.

Status
This pilot was nearing completion, but concluded early due to COVID-19 precautions. The project will conclude with 257 total installations and a final report will be submitted in Q2 2020.

Additional Partners
AgeOptions, Illinois Department on Aging

Type
Outreach

Timeline
February 2019 to April 2020

Solicitation
2018 Income Eligible Call for Ideas

ComEd Energy Efficiency Program

Income Eligible | Residential

Emerging Technologies - Active 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.

Status
The initial project tasks and deliverables are complete as of March. Over the course of the project, the SOS conducted door-to-door outreach to 1,146 homes in the West Woodlawn community 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. We are currently working together to prepare a final report and evaluate the impact on program participation.

Market Segment: Industrial

ComEd Energy Efficiency Program

Emerging Technologies - Active Project

Industrial EMIS

leidos

Additional Partners
EPS Energie

Type
Program Design

Timeline
February 2020 to June 2022

Primary Objective
Energy Management Information Systems (EMIS) have the potential to make energy visible within industrial manufacturing processes to enable optimization of their unique process energy usage.

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 target 4-5 large industrial customers with the goal of installing a new EMIS system 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
The project kicked off in February, and customer recruitment has begun. Recruitment impacts from the COVID-19 response are expected.

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
This pilot launched January 1, 2020. The project team has completed application documents and a program overview for marketing purposes and has a detailed marketing brochure in development. The team met with several builders and energy raters in Q1 leading to commitments of ten all-electric builds to-date. Although COVID-19 may impact progress of the developments, the team is currently on track to hit the incentive goal for 2020 while working with “fast-followers” to understand all-electric building market needs and address a variety of technical questions/concerns.

ComEd Energy Efficiency Program

Market Transformation | Residential

Market Transformation - Active Project

ENERGY STAR® Retail Products Platform

neea

Additional Partners
US EPA

Type
Program Design

Timeline
April 2020 to December 2021

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 increase adoption of higher efficiency consumer products sold through retail. Now in its fifth year of operation, ESRPP currently includes 10 program sponsors and five participating national retailers. 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 will increase to over 18%. Through executive sponsorship by the national ENERGY STAR program and the ENERGY STAR Retail Action Council, ESRPP provides direct engagement with corporate-level decision makers at the top retailers in the nation.

Status
Project to be launched in early Q2.

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
The treatment group for this pilot has successfully begun receiving the digital-only HER experience. Analyses comparing the treatment group to control groups will occur in late 2020.

Emerging Technologies - Active 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.

Primary Research Question

Can training for real estate professionals and a home energy scorecard increase communication about, and participation in, energy efficiency offerings?

Overview

The project team will first develop and implement 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 will include lunch-and-learns, trainings and affiliation with local real estate associations.

In part two, the project team will conduct 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 will also work with Midwest Real Estate Data (MRED) and its members to understand how Energy eCompliance is currently being used in real estate transactions.

Status

Elevate Energy and MEEA have completed focus group interviews with recent homebuyers on the real estate transaction process and will use the feedback to inform recommendations for real estate agent trainings and for future program offerings. The project team is also working with the real estate associations to reschedule trainings and lunch-and-learn sessions that were postponed due to COVID-19 for late summer and early fall 2020.

Additional Partners
Midwest Energy Efficiency Alliance

Type
Program Design

Timeline
January 2019 to May 2020

Solicitation
2018 Income Eligible Call for Ideas

Completed Projects

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

Projects Completed in 2018

ComEd Energy Efficiency Program

Commercial

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.

ComEd Energy Efficiency Program

Commercial

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. In 2020, we are creating a plan to promote new Standard and Small Business incentives for this technology.

Additional Partners

QM Power
OGNI Group

Type

Technology Assessment

Timeline

April 2018 to November 2018

ComEd Energy Efficiency Program

Commercial

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®

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.

Type
Program Design

Timeline
April 2017 to April 2018

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 is exploring 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 don't anticipate scaling this service into a larger-scale offering.

ComEd Energy Efficiency Program

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

ComEd Energy Efficiency Program

Commercial

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 is assisting 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 is developing a specifically tailored energy incentive acceleration plan. This plan will provide the customer with energy efficiency opportunities and assist them in participating in existing ComEd energy efficiency offerings. AECOM is holding follow-up meetings with the customers and aims to have each customer submit an application 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.

Commercial

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 is 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 is 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 is working with the Business team to understand and transfer any best practices learned during the pilot.

ComEd Energy Efficiency Program

Commercial

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) will conduct research and provide 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

Additional Partners
Freshwater Advisors

Type
Research

Timeline
April 2019 to December 2019

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) is leading a scouting effort drawing on their database of startups and outreach to their networks to identify 50-75 highly relevant companies for consideration. CET will conduct extensive analysis of the top 5-10 companies selected from the list and facilitate 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.

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 will use scoring criteria to select 10 municipalities in the ComEd service territory with high potential for adoption of GSI. Municipal leaders in each selected community will then be 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 will also model GSI energy saving potential and non-energy impacts including economic development, public safety and environmental health. Finally, the team will create customer journey maps to demonstrate the process of, and best practices for, building strong relationships with municipalities and water utilities. A report will be produced and recommendations made on whether ComEd should consider a GSI-centered offering for municipalities.

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.

ComEd Energy Efficiency Program

Income Eligible | Residential

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 has incorporated some of the recommendations into their outreach strategy.

ComEd Energy Efficiency Program

Income Eligible | Residential

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.

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

Partners
EnergySavvy
MeterGenius
L3 Agency

Type
Technology Assessment

Timeline
April 2018 to December 2019

Solicitation
Request for Proposals
March 2018

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 is aimed at income eligible residential customers within Chicago's Bronzeville neighborhood. The app offers users information on their energy usage and personalized energy savings recommendations. The app predicts a baseline energy usage for the week, and energy savings that customer achieves (beating the pre-established baseline) is 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.

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 will assess the applicability of smart home products and services to the ComEd Energy Efficiency Program portfolio and will look 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). The outcome of this research will be a strategy document that guides the Emerging Technologies Team toward next steps in this space.

Results and Outcomes

Initial research has concluded. 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

ComEd Energy Efficiency Program

Commercial | Industrial

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. All pilot installations will be complete by the end of the pilot period.

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

ComEd Energy Efficiency Program

Income Eligible | Residential

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 will partner with the City of Chicago to design and test a novel outreach strategy for the income eligible multi-family sector. The pilot team will analyze benchmarking results for large income eligible, multi-family buildings in Chicago and target their owners with a unique support package. The team will test various outreach strategies on the target audience including curated educational resources, workshops and free energy assessments. The pilot team will then collect and analyze 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. The project is now complete and Elevate has submitted their final project report. 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

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 will involve 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 is to identify new energy-saving opportunities for both deep energy retrofits and new construction markets. The assessment will consider best practices from other markets and analyze the northern Illinois building stock to identify segments that represent the most opportunity for ComEd. Following the market assessment, Elevate Energy will submit an interim report to ComEd at which point they will determine if they should move forward with the second project task. For the second task, Elevate proposes 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 will conduct 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 R&D 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.

ComEd Energy Efficiency Program

Income Eligible | Residential

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 will conduct 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 will consist 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 will also provide 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 proposes 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.