

# ComEd Energy Efficiency Program



# CY2019

## THIRD QUARTER REPORT



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## Portfolio Summary

1,144,539

Actual Net MWh YTD

1,702,247

CY2019 MWh Forecast

1,629,783

CY2019 MWh Filed Goal

\$242,508,554

Actual Spend YTD

\$351,334,190

CY2019 Spending Cap

### PORTFOLIO

- Through Q3, the portfolio has achieved 67% of its CY2019 forecast of 1,702,247 MWh and 70% of its CY2019 filed goal of 1,629,783 MWh.
- Since its inception in 2008, the ComEd Energy Efficiency Program has saved ComEd customers over \$4.3 billion on their electric bills.

### RESIDENTIAL PROGRAMS

- Through Q3, residential programs have achieved 74% of its combined CY2019 forecast of 315,576 MWh.
- Customers have received over 168,266 rebates, recycled over 40,074 appliances, and over 15,308 homeowners and tenants have received free direct install products from assessments through Q3.
- ComEd has collected and responsibly recycled more than 481,027 refrigerators and freezers since ComEd began to offer this service to our customers in June 2008.

### INCOME ELIGIBLE PROGRAMS

- Through Q3, income eligible programs have achieved 70% of their combined CY2019 forecast of 76,261 MWh, not including MWh savings from converted Therm.
- Over 50,600 income eligible households have participated through Q3.

### BUSINESS PROGRAMS

- Through Q3, business private sector programs have achieved 67% of its combined CY2019 forecast of 852,168 MWh; business public sector programs have achieved 28% of its combined CY2019 forecast of 152,357 MWh.
- Over 4,800 business private sector projects and 265 business public sector projects have been completed through Q3.

### THIRD PARTY PROGRAMS

- Through Q3, third party programs have achieved 59% of their combined CY2019 forecast of 111,626 MWh.

# 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.*

- **45,199 MWh savings achieved (77% of forecast)**

Total customers per product\*:

- Home Energy Reports (Paper – mailed): 1,455,000
- Home Energy Reports (emailed – monthly): 660,926
- High Usage Alerts (total unique customers): 302,034
- Weekly Usage Report: 49,331

\*Number of customers per product numbers are from the August 2019 Monthly Engagement Report

- ComEd developed about a dozen Google Ads that promote My Account features. Customers will see ads that promote the View My Usage widget, Neighbor Comparison, Weekly Usage Reports, and What Uses Most (online questionnaire). The ads started earlier this summer and after a few adjustments, ComEd is starting to see a good number of impressions and click-throughs rates that will lead to more My Accounts and sign-ups for reports and alerts.

## 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.*

- **106,822 MWh savings achieved (73% of forecast) based on 3,540,703 bulbs discounted**

- The retailer Lowe's has informed all utilities with instant in-store discount programs that they now have the ability to print utility attribution on the customer receipt. We worked with Lowe's to provide a template of the ComEd attribution we would like to see on the receipt. This new opportunity will go live in Q4.

## 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.*

- **28,235 MWh savings achieved (75% of forecast) based on 152,958 measures rebated**
- Implemented the changes necessary to reduce our smart thermostat rebate from \$100 to \$75 and also changed the limit from two to one per ComEd account. This change was implemented on 8/1/19.

## 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 \$50 dollar incentive for fridge and freezer units and \$10 for AC units and dehumidifiers when collected in conjunction.*

- **15,039 MWh savings achieved (80% of forecast) based on 39,627 units**
- The program has successfully taken off the grid and recycled more than 400,000 inefficient units since it's original launch.
- The program also continues to have a high customer satisfaction at 95% mainly driven by the convenience the program offers and the courtesy and professionalism crews show to customers during appointments.

# Residential Programs

## Home Energy Assessment

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

- **20,046 MWh savings achieved (73% of forecast) based on 15,308 Assessments Completed in 2019 through Q3**
- Online scheduling launched on June 18 at ComEd.com/Assessment
- Targeted marketing campaigns continue to effectively generate participation

## 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.*

- **10,923 MWh savings achieved (78% of forecast)**
- Completed direct install work in 14,615 tenant units, 418 common-area installs, and 156 SPIA incentive projects.
- The program has been experiencing greater demand than anticipated compared to the initial forecast for the year
- Smart thermostats adoption is higher than anticipated with 908 installed for CY2019 through Q3.

## 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.*

- **6,589 MWh savings achieved (75% of forecast) based on 18,663 rebates**
- The Incentive Processing Center (IPC) staffing changes at the beginning of August caused a backlog of rebates – the team lost 3 processors for HVAC and hired 5 new ones within a 3-week period. This, paired with a large influx of rebates, caused a rebate processing backup / delay – and resulted in two specific customer complaints.
- Marketing efforts in Q3 focused on preparation for the Residential Energy Efficiency Service Provider (EESP) Fall Forum (to occur 11/7) that will provide 2020 program updates, feedback sessions, and technical training, in person to approximately 150 of our Res HVAC EESPs.
- The ECM + Smart Thermostat “bundle bonus” closed out in Q3 for instant discount installations.

## Weatherization Rebates

*Overview: The Weatherization Rebates Program promotes investment in long-term savings by providing rebates for the purchase and installation of weatherization measures including air sealing, duct sealing, and attic and wall insulation. The program is offered jointly with Nicor Gas, North Shore Gas and Peoples Gas.*

- **274 MWh savings achieved (50% of forecast) based on 894 projects**
- Customers continue to report high satisfaction through survey results.
- Yard signs (3 per EESP) were finalized and distributed to EESPs for use during project installation to notify / advertise of Weatherization (Wx) rebate offering.
- Due to low productions, high cost, low cost effectiveness, and despite a variety of program design scenarios investigated, the decision was made by ComEd

# Residential Programs

to sunset the Res Wx rebate offering for 2020. The gas utilities plan to continue the offering in 2020 without ComEd partnership.

## Residential New Construction

*Overview: In partnership with Nicor Gas, the Residential New Construction Program increases awareness and understanding among Home Energy Rating System (HERS) rating companies and home builders of the benefits of energy-efficient building practices with a focus on capturing energy efficiency opportunities available during the design and construction of new single-family homes. Incentives are provided to HERS-certified consultants that certify homes and builders who construct homes that are at least 20 percent more energy-efficient than what currently is required by the State of Illinois Energy Code. Incentives are also provided to RESNET/HERS-certified consultants for submitting homes to the program.*

- **177 MWh savings achieved (84% of forecast) based on 545 (540 Joint and 5 electric only) homes**
- The current Residential New Construction offering will be sunset at the end of 2019, projects will have to be submitted for final QA review and rebate processing by 12/15/19.

# 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.*

- **44,888 MWh savings achieved (72% of forecast) based on 1,075,888 units sold** – 1,027,822 bulbs/fixtures discounted, 48,066 appliances discounted
- ComEd presented at the ENERGY STAR Products Partners Meeting in Charlotte, NC. The presentation shared an overview of the many new offerings ComEd has implemented for the Income Eligible customer segment since 2018.

## Single-Family Retrofits

*Overview: The Single-Family Retrofits Program is implemented by Resource Innovations and the Illinois Community Action Agencies, as well as Franklin Energy, the Chicago Bungalow Association (CBA) and the Chicagoland Vintage Home Association (CVHA). Implementers complete comprehensive home energy audits and work with contractors to make weatherization and additional upgrades at no cost to the customer. With Franklin/CBA/CVHA, CBA/CVHA identifies and determines qualified vintage homeowners located in the City of Chicago and coordinates Home Assessments to identify areas prone to air leaks or drafts and works with contractors to make weatherization 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. With Resource Innovation/CAA, ComEd, in coordination with the northern gas utilities is partially and, in some cases, fully funding whole home energy upgrades, in*

*coordination with the State and its Illinois Home Weatherization Assistance Program. Measures may include all of those in the Franklin/CBA side, as well as mechanicals.*

- **3,245 MWh savings achieved (70% of forecast) based on 1509 homes**
- Community & Economic Development Association completed their first-ever energy efficiency retrofits through this program funded solely by utility dollars in Q3. The 36 projects completed July-September were CEDA's first opportunity to serve the new customer segment of households over 200% FPL but under 80% AMI.
- The Illinois Association of Community Action Agencies completed a staffing survey among agencies statewide to identify staffing challenges and opportunities, with 80% of agencies responding. Feedback helped IACAA prepare a future succession planning workshop with CAAs to prevent future disruptions to production due to staff capacity.
- DuPage County completed their first-ever projects through this program in Q3, adding another agency to the growing network of CAAs participating in this program.

## Multi-Family Retrofits

*Overview: The Multi-Family Energy Upgrade Program is implemented by Elevate Energy, and Resource Innovations and the Illinois Community Action Agencies. The program is a one-stop shop 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 CAA work is jointly funded with the gas utilities and Elevate is joint with Peoples/NorthShore.*

- **3,558 MWh savings achieved (52% of forecast)**
- 12,627 units completed
- 10 of 14 community action agencies are now considering utility-funded income-qualified multi-family projects for the remainder of this year and into 2020; this is the largest number to-date for this program.

## Income Eligible Programs

### IHWAP

- Midwest Energy News published an article about equity-focused income qualified work and highlighted a multi-family project in Bronzeville completed in partnership with Community and Economic Development Association, Chicago Housing Authority, Peoples Gas, and DCEO. <https://energynews.us/2019/09/18/midwest/community-partners-help-come-steer-efficiency-funds-to-low-income-customers/>
- On Tuesday, September 17, the program led a ribbon-cutting event and ice cream social at Saratoga Tower, a 95-unit apartment complex for seniors and people with disabilities. The event was planned and executed in partnership with Nicor Gas, Kendall Grundy Community Action, and Grundy County Housing Authority and brought together local government officials, utility representatives, and tenants to celebrate the success of this building's energy efficiency retrofit.
- The energy efficiency retrofit at 3940 N. Clark St., a 96-unit Chicago Housing Authority property, was completed ahead of schedule in September 2019. This project accounted for 20% of this program's target savings for PY2019 at 1,033,258 net kWh

### IEMS

- Strong progress toward savings and spend goals -- \$4.7M cumulative and 14,584 MWhs saved to date resulting in average cost-effectiveness below plan at \$0.30/kWh to date due to steam trap savings.
- Two new diverse EESP contractors added: Eco-Energy Solutions and Lightitech

### Affordable Housing New Construction

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

- **1,934 MWh savings achieved (80% of forecast) based on 8 projects**
- The program is currently forecast to achieve 32% above its 2019 forecasted goal and 7.9% above the Filed Plan savings goals. This may shift based on updates using new evaluation methods with analysis to be completed by mid-November.
- Developed the Multi-Family Standard v2.0 which provides a more robust renovation pathway allowing full and partial renovations means to participate currently in marketing review for 2020 launch.

# 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: 125,941 MWh savings achieved (67% of forecast) based on 1,848 projects**
- **Public: 15,765 MWh savings achieved (59% of forecast) based on 439 projects**
- The program's dedicated outreach focus on major retailers has driven strong national account participation., One national retailer submitted 23 applications with estimated incentives exceeding \$1.1M and more than 17 GWh (Gross) in estimated savings.
- The program's new online application tool continues to see rapid adoption. Since launched June 20th, 218 applications have been submitted online with total incentives exceeding \$1.5M
- Customer satisfaction continues to remain strong -9.1 out of 10.0 scale.

## 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: 10,595 MWh savings achieved (65% of forecast) based on 82 projects**
- **Public: 1084 MWh savings achieved (23% of forecast) based on 27 projects**

- The city of Chicago is conducting a massive street lighting initiative. Part of this work is an extensive and far-reaching controls strategy which is eligible for custom incentives.
- The team presented at a number of joint Implementation Contractor (IC) events promoting the custom program. Effort has been made in working with the OSPs, third party programs and ICs in cross promoting programs for the overall improvement of the ComEd portfolio.

## Combined Heat & Power (CHP)

*Overview: The Combined Heat and Power (CHP) Program supports the investigation of CHP opportunities for conventional and waste heat to power (WHP) systems, existing systems that have been dormant for at least three years, and generation equipment that currently does not have waste heat recovery capabilities. The program provides an economic assessment of site-specific CHP opportunities and promotes implementation of CHP projects by customers.*

- Completed 8 feasibility studies for Private YTD and 1 feasibility study for public YTD
- 3 webinars and 2 site visits to support the program

## 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: 119,056 MWh savings achieved (73% of forecast) and 5,227 projects**
- **Public: 8,655 MWh savings achieved (72% of forecast) based on 205 projects**  
**Small Business**
- Focused outreach in Chicago (Beverly, South Lawndale, DePaul and University Village) resulting in 58 project reservations with 1.3 GWh in savings.

## Business Programs

- Program's Apprenticeship track participants completed 20 projects with 253 MWh in savings.  
**Small Facilities**
- Multiple public entities in the city of Freeport participated in the Program including six projects saving a total of 211,000 net kWh.
- The city of Freeport has also initiated a new round of lighting and HVAC projects for the fourth quarter.

Additional outreach resources have been assigned to the Program to grow customer awareness and fill project pipeline.

### Business Instant Discounts

*Overview: The Instant Discounts Program provides instant discounts on qualifying commercial screw-in, pin-base, HID, and exit signs. 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: 171,783 MWh savings achieved (80% of forecast) based on 1,930,498 products sold**
- **Public: 19,962 MWh savings achieved (83% of forecast) based on 358,089 products sold**
- Continued uptick from network distributors who were less productive in prior quarters and years. The program now has 116 active distributors, up from 90 active distributors in 2018.
- Some newer distributors have sought out the program at their customer's insistence – per ComEd's 2019 ad campaign focused on lighting incentives for business customers.
- Public sector participation increased by 54% Q1 through Q3.

### 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: 10,795 MWh savings achieved (77% of forecast) based on 25 projects and 5,370,436 sq. ft. of building area from completed projects through Q3 of 2019**
- **Public: 930 MWh savings achieved (81% of forecast) based on 3 projects and 142,670 sq. ft. of building area from completed projects through Q3 of 2019**

#### CI-NC Private

- The program is forecast to come in above its 2019 forecasted goal. However, this is more than 50% below Filed Plan goal.
- The program is on track to receive a record number of project applications in 2019, which fill the pipeline for future years.
- The program is challenged by a lower net to gross and smaller savings per project than program historical averages. To overcome these challenges, the program has launched a streamlined "Best Practices" offering for select, high-volume project types and is investigating further cost reduction opportunities.

#### PS-NC Public

- The program is forecast to come in above its 2019 forecasted goal.
- The program is on track to receive a record number of project applications in 2019, which fill the pipeline for future years.
- The program is challenged by a lower net to gross and smaller savings per project than CI-NC/PS-NC program historical averages. The program is investigating cost reduction opportunities.

### Industrial Systems

*Overview: The Industrial Systems offering is a study-based program 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: 10,581 MWh savings achieved (38% of forecast) based on 143 projects**
- **Public: 0 MWh savings achieved (0% of forecast)**

## Business Programs

- Started a Compressed Air EMIS – Energy Management Information System (EMIS) offering for smaller compressed air systems (less than 150 HP) that is a low-cost solution to monitor the performance of compressed air systems and identify capital measures for implementation and savings analysis.
- Reduced the high barrier of entry to the program for public customers for the WWTP offering by lowering the capital commitment to under \$10,000. This has resulted in more studies.
- Increase in outreach activity to expand the number of Fix It Now for compressed air leak repairs which will create opportunity to do more energy efficiency for a customer.

### 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: 31,378 MWh savings achieved (71% of forecast) based on 88 projects**
- **Public: 3,253 MWh savings achieved (43% of forecast) based on 25 projects**
- Added to the program this year, Virtual Commissioning (VCx) has grown significantly, particularly in the public sector. Total end of year target is 15 GWh, three times the original goal of 5 GWh.
- Forecasted 2020 pipeline for four traditional program tracks is at 97% of program goal for year.
- RCx and MBCx 101 educational videos have been released and are generating positive feedback from customers and service providers.

### 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: 4 workshops**
- **Public YTD: 2 workshops**
- Multiple cohorts are operating well and involve involving teaching 63 customers in the cohorts how to identify, promote and implement energy efficiency
- Cohorts include: Commercial / Industrial, K-12, commercial real estate, wastewater treatment, industrial refrigeration and alumni.
- Alumni and K-12 cohorts are being run in conjunction with Nicor
- C&I cohort is being run in conjunction with North Shore / Peoples Gas

### LED Street Lighting

*Overview: The program is to replace 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): 5,140 MWh savings achieved (39% of forecast) based on 7,078 fixtures (number of fixtures in completed applications)**
- **Public (Municipality Owned): 32,643 MWh savings achieved (44% of forecast) based on 41,519 fixtures**
- Private sector to date -18,000 fixtures have been installed in 58 towns and we anticipate completion of the installation of 21,000 fixtures by December 1st .
- Public sector City of Chicago (about 70% of the overall goal Public goal) has paid applications for just under 35% of the overall goal (Phase 2A) with nearly 50% of Phase 2B expected to hit in October with the rest to hit in November and December ensuring adequate pipeline through year end.

# Business Programs

## 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. Examples of such opportunities include shutting off idle equipment, optimizing the efficiency of existing systems and changes in the operating habits of occupants.*

- **Private: 1,699 MWh savings achieved (57% of forecast) based on 124 implemented measures**
- **Public: 308 MWh savings achieved (67% of forecast) based on 27 implemented measures**
- Through Q3, 790 FAs have been completed in 2019.
- Outreach is working to convert operational opportunities in the pipeline generated from FAs completed in 2018 through the present.

## 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.*

- **1,983 MWh savings achieved (73% of forecast)**
- Completed 78 projects and upgraded 12,558 residential units YTD.
- Completed plus committed projects puts PHES at full program year spend and approximately 25% above savings goals.
- 6 new PHAs participating in the program this year.
- PHA projects are already being lined up for 2020.

## 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 5<sup>th</sup> 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.*

- **2,683 MWh savings achieved (30% of forecast) based on 23,508 shipments as of the end of Q3.**
- ComEd was able to add a Consumer Protection and ComEd CARES information to all the fall 2019 kits (about 55,000 kits) to better protect recipients from fraud and to share information about ComEd's assistance programs.

### Small Business Kits

*Overview: The Small Business Kits Program targets harder to reach electric energy savings in office, restaurant, or other general facilities located in ComEd's service territory. The program achieves savings through a kit of self-install energy efficiency measures delivered directly to customer facilities. A customer survey is used to determine installation rates for each measure.*

- **4,577 MWh savings achieved (98% of forecast) based on 3,674 kits**
- 50% of program (kit deliveries) completed.
- Leads for small business assessments continue to trend upwards.

### 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.*

- **48,128 MWh savings achieved (78% of forecast) based on 1,457,376 A19 LEDs**

- Program representatives participated in the Greater Chicago Food Depository's Annual Hunger Walk including a booth where representatives interacted with at least 2,000 customers.
- The program met with food banks to discuss plans and solicit feedback for 2020. The food banks are supportive of program plans for quarterly distribution of new measures.
- Through the meeting with River Bend Food Bank, a commitment was made to greatly increase the number of participating pantries on the Western side of the service territory.

### Income Eligible Kits

*Overview: The Income Eligible Kits Program delivers energy efficiency kits to single family income eligible homes. The kits include (4) 9-watt LED bulbs, (2) 15-watt LED bulbs, (1) tier 1 advanced power strip, and general guidelines for energy savings. A portion of the kits will also contain (1) low-flow kitchen aerator, (1) low-flow bathroom aerator, and (1) low-flow showerhead.*

- **8,030 MWh savings achieved (48% of forecast) based on 23,925 kits (January-September)**
- The program continues to work with its diverse subcontractor to employ people with special needs and disabilities to construct boxes, assemble kits, and manage inventory.
- 18 new Community Action Agencies have signed on to assist in the distributing the kits to their communities.

### New Manufactured Homes

*Overview: ComEd's New Manufactured Home offering is designed to provide Income Eligible residents with the opportunity to lower electric bills by purchasing new manufactured homes that are upgraded with energy-efficient measures such as Energy Star® appliances, air source heat pumps, heat pump water heaters and low flow showerheads. The energy efficient measure upgrades are eligible for instant discounts that are applied to the customer's bill of sale for the home purchase.*

## Third Party Programs

*Rebates will also be provided to the customer, dealer, and manufacturer when a ComEd customer purchases an ENERGY STAR® Certified New Manufactured Home.*

- **0 MWh savings achieved (0% of forecast) based on 0 projects**
- ComEd will be sunsetting the program due to lack of savings at the end of 2019. During Q3, the implementer and outreach specialists for related offerings stopped distributing program collateral and performing outreach for this offering.

### 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 via a screening 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*

- **223 MWh savings achieved (10% of forecast) based on 201 projects**
- Estimated savings of 512 MWh achieved to date (23% of goal completed including converted therms)
- Currently active within 18 manufactured home communities
- Launched \$25 gift card offer to customers for completing their initial appointment without cancellation
- Completed in-person canvassing in 8 communities
- Completed 6 park events

### 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.*

- **722 MWh savings achieved (16% of forecast) based on 17 projects**
- Program is partnering with Illinois Retail Merchants Association to generate awareness and drive participation among grocery store members
- Work continues to address overlaps between incentives from Grocery and other EE programs, particularly Standard and Small Business
- Due to late start, program did not complete first projects until July. Volume is increasing rapidly, with 4Q expected to generate at least four times the savings generated during the first three quarters of 2019.

### Non-Profit Offering (NPO)

*Overview: The Nonprofit Organizations Offering 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.*

- **1,149 MWh savings achieved (57% of forecast) based on 29 projects completed, 5436 units of measures installed, and 48 assessments completed**
- The program has gained momentum in Q3 with savings and spend increasing by over 40% from Q2.
- Program is growing its nonprofit service provider channel to scale customer recruitment efforts and fill project pipeline.

### Agriculture

*Overview: The Agricultural offering 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*

## Third Party Programs

*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.*

- **0 MWh savings achieved (0% of forecast) based on 21 facility walkthroughs**
- The agriculture offering has 5 Energy Advisors engaged in the ComEd territory, focusing on various agribusiness markets i.e. grain farms, dairy farms, greenhouses, hemp, swine, and equine.
- 1 GWh in pipeline for 2020, 20 Energy Efficiency Service Providers engaged with the program in the ComEd territory.
- We have performed outreach activities at four local county events, attended the Chicago Cannabis Expo, World Dairy Expo, and 2019 Illinois Farm Bureau Annual Meeting.

## Telecommunications

*Overview: The Telecommunication program offers incentives for telecommunication and internet service providers and associated systems such as rectifiers, soft switches, air flow management, HVAC solutions, economization and lighting. This is a market that has been underserved by other programs due to the specialized technology and access to the facilities. 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.*

- **811 MWh savings achieved (24% of forecast) based on 21 completed projects**
- Making progress with network combing. (10 complete) (22 additional on track to complete in 2019)
- Large UPS/controls project is beginning the process of pre-approval.
- 51 projects for pre-approval.

## 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.*

- **0 MWh savings achieved (0% of forecast) based on 0 projects**
- Contract complete in August with eligible communities defined
- Applications and documentation developed.
- Service Providers onboarding.

# Emerging Technology

## 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.*

- **89,973 MWh savings (47% of forecast) based on 45 commissioned substations**
- The realization rate that is being used for 2019 savings has increased from 66% to 80% of the AEG report values. This is due in large part to the increased confidence in the forecast savings because the recently approved stipulation includes an evaluation methodology for VO that provides for a higher confidence in the realized savings for 2019. Using the 80% realization rate we are at 60% of the yearend target of 200,000 MWh.

## Building Operator Certification (BOC)

*Overview: This training and certification program for large commercial building managers is operated by the MEEA Team. Energy savings are attributed to both increased awareness of energy efficiency opportunities from the training and from participation in utility programs.*

- BOC held 6 trainings throughout 2019 (Grayslake, Chicago Level I, Springfield, Algonquin, Chicago Level 2, Itasca), with a 7th in Ameren's

territory that ultimately did not occur due to low enrollment. 12 veterans' scholarships have been reserved, which is up from 0 last year. 185 renewal scholarships were given out to IL graduates, additional scholarships will be awarded in December for the 2020 renewal period. 2 continuing education webinars have been held with record high attendance, additional webinars are scheduled for November and December. Any ongoing trainings will be concluded by mid-December. More information on training options and schedules is available at <http://www.boccentral.org/training/illinois>

## Illinois Home Performance (IHP)

*Overview: The Illinois Home Performance with ENERGY STAR® Program consists of processing ENERGY STAR® certificates for homeowners, training realtors and appraisers, and conducting a building science training series.*

- The CY2019 IHP program is operating in Northern Illinois with funding from ComEd, Nicor Gas, and Peoples/North Shore Gas. Thus far through the program, 150 contractors have been trained through the Building Science Training Series, 199 realtors have been educated on IHP, energy efficiency and utility rebates available and 1,368 Home Performance with ENERGY STAR certificates of completion have been issued. The program has also held three separate CE courses geared towards realtors and appraisers that focus on marketing and valuing energy efficiency features during the time of sale. More information on training options and schedules is available at <http://www.illinoishomeperformance.org>

# Emerging Technology

*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

**ComEd**  
Energy Efficiency Program

## Emerging Technologies Project Catalogue



Updated October 2019

Photos: Save and Share Kickoff Event (Chicago, IL Q3 2019) (credit: Cooley's Video), Opening of the Green Living Room (Chicago, IL Q3 2019), mockup of Income Eligible Paging Display (Q3 2019).

# Marketing Education & Awareness

## General Outreach

- Participated in 221 energy efficiency events
- Interacted with approximately 52,841 customers

## Residential E&A Campaign

*Overview: The campaign was to promote awareness of the ComEd Energy Efficiency Program offerings with a call to action of ComEd.com/HomeSavings*

- In-market February 4 – December 22, 2019
- Included TV, Cinema, Radio, OOH, Social and Print
- Generated 140,580,900 impressions to date
- Drove 175,000 + page visits to ComEd.com/HomeSavings

## Business E&A Campaign – Saving Energy

*Overview: The campaign was to promote awareness of the ComEd Energy Efficiency Program offerings with a call to action of ComEd.com/SavingEnergy*

- In-market February 4 – December 22, 2019
- Included TV, Radio, Social and Print
- Generated 24,942,588 impressions to date
- Drove 27,585 + page visits to ComEd.com/SavingEnergy

## Facility Assessment Campaign – Moving Up

*Overview: The campaign was to promote awareness of our facility assessment offerings with a call to action of ComEd.com/FacilityAssessments.*

- In-market April – December 2019

- Includes TV, cable, digital, radio, social and print
- Generated 12,016,865 impressions to date
- Drove 14,630 + visits to ComEd.com/FacilityAssessments

## Rebates Campaign - Neighbors

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

- In-market through November 31, 2019
- Included cable, digital, radio, social and print
- Generated 27,265,263 digital impressions to date
- Drove 410,654 + page visits to ComEd.Com/Rebates

## Fridge Recycling Campaign – Find Joy

*Overview: The campaign was created to promote awareness of the fridge recycling through the ComEd Energy Efficiency program with a call to action to recycle your old, working fridge.*

- In-market March – December 2019
- Included digital, radio and billboard
- Has generated 65,841,452 impressions to date
- Drove 419,216 + page visits to ComEd.com/FridgeRecycling

## IE Single Family Campaign

*Overview: The campaign was created to promote awareness of the offerings for income eligible single-family customers through the ComEd Energy Efficiency program with a call to action to learn more.*

- In-market June – September 2019
- Included Print, Digital, OOH, and Social

## Marketing Education & Awareness

- Has generated 7,144,341 digital and print impressions to date
- Drove 161,520+ page visits to ComEd.com/EnergyUpgrades

### Public Sector Campaign – Kid Powered

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

- In-market April – December 2019
- Includes TV, digital, social and print
- Generated 33,339,937 impressions to date
- Drove 31,249+ page visits to ComEd.com/Schools

### Home Energy Assessments – Savings Advice

*Overview: Create awareness and drive participation of free home energy assessments with a call to action to schedule at ComEd.com/HomeAssessment*

- Included Print, Digital and Social
- In-market April– September 2019
- Generated 9,317,103 impressions to date
- Drove 120,803+ page visits to ComEd.com/HomeAssessment

### Lighting Discounts – IE Lighting Discounts

*Overview: The campaign was created to create awareness of lighting discounts among income eligible customers in targeted zip codes and drive purchase at local retailers.*

- Included TV, print, OOH, social and radio
- In-market February – November 2019

- Generated 14,957,205 impressions to date
- Drove 49,036+ page visits to ComEd.com/LightingForAll

### Lighting Discounts Campaign – Saved by Savings

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

- In-market March – December 2019
- Included digital, radio and transit
- Has generated 7,409,842 impressions to date
- Drove 49,036+ page visits to ComEd.com/LightingForAll

### Lighting Discounts Campaign – Business Lighting Discounts

*Overview: The campaign was created to create awareness of lighting discounts for business customers and how to find lighting distributors.*

- In-market March – December 2019
- Included radio, print, digital and OOH
- Has generated 26,410,402 digital impressions to date
- Drove 49,036+ page visits to ComEd.com/LightingforAll

### C&I Campaign – Like a Boss

*Overview: The campaign was to promoted awareness of offerings for custom projects, IT optimization, industrial systems and retro-commissioning through the ComEd Energy Efficiency program with a call to action.*

- In-market November -December 2019
- Included Cable, radio, OOH, print and digital
- Has generated 29,871,364 digital impressions to date.
- Drove 53,841+ page visits to ComEd.com/LikeABoss

# 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 1,509 income-qualified homes through Q3.
  - The Multi-Family Retrofits program has completed direct install work in 12,627 tenant units through Q3.
  - The Public Housing Retrofits program has completed direct install work in 12,558 tenant units through Q3.
  - The Affordable Housing New Construction program has completed 8 projects through Q3.
  - The Income Eligible Kits program has distributed 23,925 kits to income-qualified single-family homes through Q3.
  - The Food Banks Distributions program has distributed 1,457,376 products through Q3.
- Income-Qualified pilot program results:
  - The Emerging Technologies program has over a dozen projects specific to income eligible and public housing customers: High Efficiency Public Housing Retrofit, Affordable Multifamily Passive House, Chicago Income Eligible Multifamily Benchmarking Outreach, EcoAdvocates Community Engagement, Healthy Homes, Income Eligible High User Customer Needs Assessment, Income Eligible Program Design, Public Housing Authority Energy Efficiency Needs Assessment, Savings for Income Eligible Seniors, BIT Neighborhood Pilot, Breathe Easy IAQ Study, Income Eligible Paging Display, Energy Efficiency in 2-4 Unit Buildings Market Research, Ductless Heat Pumps, Home Energy Reports Target Rank, and Blacks In Green Street Operating System.
- Please refer to the Emerging Technologies section of this report for additional information on each project.
- 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 – CLEARResult (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 – CLEARResult (for-profit), Greater Chicago Food Bank (non-for-profit), Northern Illinois Food Bank (non-for-profit), Riverbend Food Bank (non-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

## Stipulations

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 has been established in 2019. ComEd agrees to work with the Income-Qualified Advisory Committee in the development of a metric to be added to quarterly energy efficiency reports filed with the Commission that reports the number of businesses and employees based in economically disadvantaged communities hired to assist in the delivery of energy efficiency programs. ComEd agrees to discuss and establish goals and best practices outside the context of Docket No. 17-0312, in consultation with the Income Qualified Advisory Committee and other job training initiatives for increasing the diversity and number of locally-based trainees, vendors and employees of its energy efficiency workforce, and for establishing tracking methodologies for reporting purposes.

## CY2019 New Measures

### CY2019 New Measures

All measures in the table below were launched in CY2019.

| MEASURE TOTAL RESOURCE COST (TRC) |          |      |
|-----------------------------------|----------|------|
|                                   | Sector   | TRC  |
| Ground Source Heat Pump           | Business | 5.47 |
| Rooftop Units                     | Business | 2.74 |
| Q-Sync Motors                     | Business | 1.69 |
| Energy Recovery Ventilators       | Business | 1.50 |
| Adsorbent Air Cleaner             | Business | 1.19 |

**ATTACHMENT**

# Emerging Technologies

## Project Catalogue



Updated October 2019

Photos: Save and Share Kickoff Event (Chicago, IL Q3 2019) (credit: Cooley's Video), Opening of the Green Living Room (Chicago, IL Q3 2019), mockup of Income Eligible Paging Display (Q3 2019).

# Introduction

How is this year almost over already? It seemed only a few months ago we were launching over a dozen new projects ranging from exciting technologies such as ductless heat pumps, adsorbent air cleaning and switched reluctance motors to innovative outreach models with a broad array of pioneering partners such as Blacks in Green, Elevate Energy, Green and Healthy Homes Initiative and L3 Agency. We're eager to share with you an increasingly diverse and impactful portfolio of research and pilot projects aimed at becoming a trusted energy partner for customers and helping customers achieve their preferred energy footprint. We're also proud to showcase over 50 project partners' commitment to innovation, customer-centricity, and operational excellence.

Our team celebrated several milestones in Q3 2019. In Bronzeville, we welcomed a large crowd of community members to promote a new lineup of Community All-Stars and a reinvigorated Save and Share pilot. Blacks in Green's hard work paid off with a successful grand opening of their Green Living Room concept. Slipstream delivered noteworthy analysis on our affordable multifamily Passive House project, on which they are collecting over 30 million data points per day. First-of-its-kind energy usage modeling started up at NREL. We hit milestones in our research on the energy-water nexus, health-energy nexus, and other groundbreaking opportunities for energy efficiency in Illinois. To get the word out on the work we and our partners are accomplishing, our team presented on all this and more at half a dozen events across the U.S. and Canada.

We're looking forward to Q4 2019 as several high-impact projects conclude and we shift 2020 planning into high gear. Please visit our new website at [ComEd.com/EmergingTech](https://ComEd.com/EmergingTech) to learn more and submit a proposal for our next project.

Sincerely,

The ComEd Emerging Technologies Team

Mark Milby, Manager, ComEd, [Mark.Milby@ComEd.com](mailto:Mark.Milby@ComEd.com)

Steven Labarge, Technical Lead, ComEd, [Steven.Labarge@ComEd.com](mailto:Steven.Labarge@ComEd.com)

Kelly Gunn, Technical Lead, ComEd, [Kelly.Gunn@ComEd.com](mailto:Kelly.Gunn@ComEd.com)

CLEAResult team – Brittany Zwicker, Program Portfolio Manager, [Brittany.Zwicker@CLEAResult.com](mailto:Brittany.Zwicker@CLEAResult.com)

ILLUME team – Kelly Mulder, Managing Director, [Kelly@ILLUMEdadvising.com](mailto:Kelly@ILLUMEdadvising.com)

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# Active Projects

## **Market Segment: Commercial**

## 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 ComEd's Custom Program. 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 program offering (\$1000/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 are wrapping up, bringing the total number of installations on the pilot to five. The pilot team is preparing a measurement and verification plan involving customer interviews in coordination with Navigant. In early 2019, the Standard program introduced a new prescriptive measure similar to the pilot incentive, and the Emerging Tech and Standard teams are utilizing findings from the pilot to identify the most effective way to adapt the Standard incentive going forward and promote this highly effective but underutilized technology.

### Additional Partners

Energy Resources Center at  
UIC  
Geothermal Alliance of Illinois

### Type

Program Design

### Timeline

April 2018 to February 2020

## Emerging Technologies - Active Project

### Commercial Plug Load Opportunities



#### 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

CalPlug started the first phase of their research in the late summer of 2019, which primarily consisted of data gathering and literature reviews. Due to ongoing prioritization of project resources, this research was paused in Q3 2019 and will resume in 2020.

#### Type

Research

#### Timeline

July 2019 to May 2020

## Emerging Technologies - Active Project

### Adsorbent Air Cleaner



#### 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 Question

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 I of the pilot developed energy models for technology deployment, completed a TRM whitepaper, and performed outreach for a field study. Phase II 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

The installed enVerid Module will undergo additional monitoring in the 2019-2020 winter heating season to ensure sufficient data to verify both cooling and heating savings. Navigant is reviewing the data collection plan in preparation for an impact evaluation in 2020.

#### Type

New Technology

#### Timeline

April 2018 to April 2020

## Emerging Technologies - Active Project

# Smart Pressure Independent Control Valves



### 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 pilot investigates 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 detailed sensors able to integrate with building automation systems. Slipstream will test the smart valve technology developed by manufacturer FlowEnergy. In the first phase, Slipstream will conduct product analysis to compare FlowEnergy's savings estimates to other small smart pump technology and verify their savings methodology. Phases 2 and 3 of the pilot involve site selection and real-world installation of FlowEnergy smart valves at commercial sites in ComEd service territory, as well as field monitoring and savings verification.

### Status

Phase 1 indicated the potential of field testing smart valve technology in ComEd service territory, and at least 2 sites will be selected for installation by the end of Phase 2 if recruitment is successful. Phase 3, installation and monitoring of the smart valves, is scheduled to begin in early 2020.

### Type

New Technology

### Timeline

December 2018 to December 2020

## Emerging Technologies - Active Project

### Energy Efficiency R&D Laboratory



#### 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

The team held a working session with NREL in June 2019 to review the assessment plans for 2-stage RTU, VSD RTU and smart motors. NREL shared additional research and findings on smart motors from the GSA GPG. The team also reviewed and ranked the remaining technologies and provided feedback on fitness for the ComEd Energy Efficiency Program; several additional technologies were identified as having potential, including propane refrigerant cold cases and certain sizes of cold climate heat pumps.

#### Type

New Technology

#### Timeline

January 2019 to December 2020

## Emerging Technologies - Active Project

### Energy Incentive Acceleration

# AECOM

#### 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 programs 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 programs. AECOM is holding follow up meetings with the customers and aims to have each customer submit an application within the end of the year.

#### Status

AECOM has engaged the owners of 20 large commercial properties. They are in the process of finishing EIA plans for all the participants and have completed follow-up meetings for the customers that have had plans developed. The pilot final report is in development.

#### Type

Program Design

#### Timeline

October 2018-December 2019

## Emerging Technologies - Active Project

# Retrofit Chicago Roadmapping 2.0

# AECOM

### Primary Objective

Determine how a modified and improved Energy Roadmap 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 Chicago Energy Retrofit 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 Roadmap 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 ComEd energy efficiency incentive programs
- Prioritization of energy efficiency projects

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

### Status

Three participants have received updated Energy Roadmaps. Follow-up meetings with the customers are wrapping up to ensure the customer understands and incorporates the finding of the roadmaps into their long-term energy plans. The pilot final report is in development.

**Type**

Outreach

**Timeline**

January 2018-December 2019

# Market Segment: Cross Cutting

## Emerging Technologies - Active Project

### Baseline and Potential Study



#### 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 research team has completed the baseline study portion of the project and is compiling final reports. They will present those findings in October 2019. They have recently begun the potential study portion and will complete that analysis in late 2019/early 2020.

#### Additional Partners

Dunsky  
Energy Resources Center at  
UIC

#### Type

Research

#### Timeline

October 2018 to October 2019

#### Solicitation

Request for Proposals in 2018

## Emerging Technologies - Active Project

# Green Stormwater Infrastructure



### 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, green stormwater infrastructure projects in municipalities in the ComEd service territory with combined sewer systems?

### Overview

The project team will use scoring criteria to select ten 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.

### Status

Greenprint Partners and MIST Environment completed interviews with nine municipalities. They also created a customer journey map outlining the expected experience of city leaders, public works officials, and landowners through the phases of installing green stormwater infrastructure, and to identify potential barriers and opportunities for each group. The research team also completed an energy savings analysis for the selected municipalities as well as non-energy impact analysis that includes benefits such as reduced crime, beautification and increased wildlife and pollinator habitat. The team is writing the final report, which will be submitted in November 2019.

### Additional Partners

MIST Environment

### Type

Research

### Timeline

March 2019 to November 2019

## Emerging Technologies - Active Project

### Building Science Assessment



**BERKELEY LAB**

#### 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 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

#### Status

LBNL has completed their technical assessments and is now completing the final deliverable. They will present their findings as part of a final report-out to ComEd in December 2019.

#### Type

Research

#### Timeline

September 2018 to December 2019

## Emerging Technologies - Active Project

# AMI Data Analytics for Program Administration Enhancements



### Type

Program Design

### Timeline

August 2018 to December 2019

### 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 EnergySavvy with historical and current customer energy usage data, firmographic and demographic data, and energy efficiency program participation data. The EnergySavvy software performs large-scale analyses to detect useful trends, and for this pilot, the ComEd Emerging Tech team will apply these analyses to the Residential HVAC and Small Business offerings. These analytical approaches will be evaluated based on their ability to:

- Improve program cost-effectiveness through customer targeting
- Increase the cost-effectiveness of QA/QC inspections
- Support successful trade ally networks
- Potentially support a platform for future Pay for Performance models

### Status

Data transfer is complete and analysis is underway, with completed dashboards expected in Q1 2020.

## Emerging Technologies - Active Project

# Technology Scouting and Analysis



### 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.

### Status

The initial list of scouted companies was down-selected with review underway through the end of October. Final selection of a handful of promising companies will occur in the first week of November for facilitated introductions.

### Additional Partners

Freshwater Advisors

### Type

Research

### Timeline

April 2019 to November 2019

## Emerging Technologies - Active Project

### Water Market Analysis



#### 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 will lead 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 aims to better understand the water market, the potential for emerging technologies and implications and opportunities for ComEd.

#### Status

Axiom has completed research on the water channel in ComEd service territory and conducted 27 in-depth interviews to identify top technologies with opportunity to reduce water and energy usage. Axiom is finalizing data analysis and writing the final report. A final presentation is scheduled for December 2019.

#### Type

Research

#### Timeline

April 2019 to November 2019

# Market Segment: Income Eligible

## Emerging Technologies - Active Project

### BIT Neighborhood



#### 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 multifamily 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% 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

Rather than working with workforce development groups as initially planned, Slipstream is taking a more straightforward path by working with Mercy Housing and the Chicago Housing Authority to train BIT Aides through Section 3 requirements for community development partners. Slipstream plans to have the BIT Aide onboarding and training complete by the end of November 2019.

#### 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 IRB-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.

44 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 ECMs 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

All ventilation systems have been installed in participating homes and the interim qualitative analysis is complete. The study team is continuing to monitor and collect data on energy use, indoor air quality and participant health.

#### Additional Partners

Illinois Institute of Technology

#### Type

Program Design

#### Timeline

December 2018 to June 2020

#### Solicitation

2018 Income Eligible Call for Ideas

## Emerging Technologies - Active Project

# Chicago Income Eligible Multifamily Benchmarking Outreach



### 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 multifamily sector. The pilot team will analyze benchmarking results for large income eligible multifamily 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.

### Status

Elevate Energy and the City of Chicago have completed two outreach campaigns to multifamily building owners and are tracking interest and enrollment in building assessments and no-cost resources.

### Additional Partners

City of Chicago  
Institute for Market Transformation

### Type

Outreach

### Timeline

March 2019 to June 2020

### Solicitation

2018 Income Eligible Call for Ideas

## Emerging Technologies - Active Project

### Income Eligible Paging Display

#### Internally-Led Project

##### Primary Objective

Provide a simple and inexpensive real-time messaging channel to ComEd customers without requiring access to the internet, smart phones, 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 2 of the paging network display effort. Phase 1 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 2 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 pilot participants in Q4 2019. Customer experience surveys are under development.

##### Type

New Technology

##### Timeline

May 2019 to December 2019

## Emerging Technologies - Active Project

# Data Analysis, Market Research and Segmentation



### 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 multifamily 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 initial data collection and analysis is complete as is a newly created Tableau tool. The research team has integrated additional levels of customer and building segmentation into the tool.

#### Type

Research

#### Timeline

March 2019 to March 2020

#### Solicitation

2018 Income Eligible Call for Ideas

## Emerging Technologies - Active Project

### Ductless Heat Pumps



#### Primary Objective

Investigate performance and feasibility for high performance cold climate ductless heat pumps (DHPs) in income eligible multifamily 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 2018-19 winter, CMC and partners installed DHPs in 80 apartment units across seven low-rise multifamily 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

Quantitative monitoring continues at the installation sites. Feedback from the Phase 1 qualitative report will be incorporated into the final report. The first quantitative analysis is expected to be delivered in Q4 2019. The pilot team is preparing to issue a second round of customer experience surveys focused on the cooling season, as well as follow-ups from the first survey.

#### Additional Partners

Franklin Energy  
Mad Dash  
Mitsubishi

#### Type

New Technology

#### Timeline

September 2018 to February  
2020

#### Solicitation

Request for Proposals August  
2018

## Emerging Technologies - Active Project

### EcoAdvocates



#### 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 program offerings and online tools to the maximum extent possible, including signups for Home Energy Assessment, 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

The EcoAdvocates have begun their outreach efforts and have signed up approximately 75 people in the program, leaving them on track to meet their target goal of 150 people. The EcoAdvocates have also scheduled community outreach and education events throughout the fall and are working on event promotion and educational components. Slipstream will track and record participant energy use throughout the course of the pilot.

#### Additional Partners

Faith in Place

#### Type

Outreach

#### Timeline

February 2019 to February 2021

#### Solicitation

2018 Income Eligible Call for Ideas

## Emerging Technologies - Active Project

# Energy Efficiency in 2 Unit Buildings



**ELEVATE ENERGY**  
Smarter energy use for all

### Primary Objective

Provide insight into the existing 2-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 2-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. Interviews and focus groups with owners of 2-unit buildings will also be conducted 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.

### Status

The market analysis of 2-4 unit buildings in Cook County and the interviews with utility program staff are complete. The preliminary results have been compiled into an interim report which, upon review, will determine the research project's next steps.

### Type

Program Design

### Timeline

April 2019 to December 2019

### Solicitation

2018 Income Eligible Call for Ideas

## Emerging Technologies - Active Project

# Energy Efficiency Needs Assessment for Public Housing Authorities



### 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 Question

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 programs. 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 ComEd service territory and a map showing geographic gaps and target areas.

### Status

The Literature Review and Technical Strategies Report are complete and submitted to ComEd. The stakeholder engagement phase of the pilot and final roadmap report tasks are currently underway with stakeholder engagement scheduled to be complete in November 2019.

#### Type

Research

#### Timeline

March 2019 to December 2019

#### Solicitation

2018 Income Eligible Call for Ideas

## 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 program 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 that they are able to conduct 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

Participant recruitment from the hospital has been ongoing. The pilot team is coordinating with the community health workers to schedule in-home visits for the enrolled participants and working with AMITA to boost the number of referrals.

#### Additional Partners

AMITA Health  
Green & Healthy Homes  
Initiative

#### Type

Program Design

#### Timeline

February 2019 to February 2020

#### Solicitation

2018 Income Eligible Call for  
Ideas

## Emerging Technologies - Active Project

# Residential Real Estate Opportunities



### 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 continuing education units, energy efficiency programs, and the Energy eCompliance program, 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.

The team will then examine best practices from across the country to make recommendations for new ways to engage home buyers and sellers with energy efficiency offerings, and will also develop and test a residential home energy scorecard that displays Energy eCompliance information alongside an asset rating like Home Energy Score. These scorecards will be tested with 50 single family homes that have already had a Home Energy Score assessment or received an Illinois Home Performance with ENERGY STAR® certificate.

### Status

The real estate professional educational curriculum has been approved by the Chicago Association of REALTORS and is awaiting review by the state of Illinois for approval for continuing education credits. The scorecard iteration and program proposal are on track to be complete in January 2020.

### Additional Partners

Midwest Energy Efficiency Alliance

### Type

Program Design

### Timeline

January 2019 to May 2020

### Solicitation

2018 Income Eligible Call for Ideas

## Emerging Technologies - Active Project

### Income Eligible Program Design



#### 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 ten groups to test out a variety of program design elements determined by the results of phase one. Franklin Energy will work with local trade allies 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

Test designs were completed in three communities – Joliet, Aurora and Elgin in 2019. Further pilot groups are under development and will be implemented in 2020.

#### Type

Program Design

#### Timeline

October 2018 to January 2020

#### Solicitation

2018 Income Eligible Call for Ideas

## Emerging Technologies - Active Project

# Income Eligible High User Customer Needs Assessment



### 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 programs, or benefit they derive from the programs.

### 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 program offerings.

### Status

Customer surveys have been completed. Draft interview guides are in development and in-home visits and customer interviews are scheduled to take place in November 2019.

#### Type

Research

#### Timeline

February 2019 to February 2020

#### Solicitation

2018 Income Eligible Call for Ideas

## Emerging Technologies - Active Project

### Passive House



#### Primary Objective

To study the energy efficiency potential of a very high building standard for affordable multifamily 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 multifamily building?

#### Overview

Slipstream will help ComEd study the energy savings and non-energy benefits of the Passive House building standard for a multifamily 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 multifamily building. These two buildings will be compared to one another as data is collected and analyzed across 2019.

#### Status

Pilot stakeholders met in September 2019 to review the interim findings from the summer cooling season and feedback on initial results and areas of further analysis will be incorporated into the final report. Energy modeling of both the Passive House building and the neighboring control building are underway. Both buildings are fully occupied as of Q3 2019.

#### Additional Partners

LUCHA

#### Type

New Technology

#### Timeline

June 2018 to May 2020

## 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

Installations continue at a steady rate, though the pilot team anticipates an influx of customer recruitment from senior care agencies with the opening of LIHEAP enrollment in late 2019.

### Additional Partners

AgeOptions  
Illinois Department on Aging

### Type

Outreach

### Timeline

February 2019 to April 2020

### Solicitation

2018 Income Eligible Call for Ideas

## Emerging Technologies - Active Project

# Street Operating System (SOS)



### 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 Question

Can the principles and strategies of 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

Blacks in Green (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 soft launch of the Green Living Room was held on August 31<sup>st</sup> and the official opening was held on October 1<sup>st</sup>, with steady attendance and positive reception from the community since opening. The Street Operating System team has started door-to-door outreach and has coordinated training and professional development opportunities for their staff on topics related to energy efficiency and sustainability.

### Additional Partners

TBD

### Type

Outreach

### Timeline

January 2019 to January 2020

### Solicitation

2018 Income Eligible Call for Ideas

## Emerging Technologies - Active Project

# Home Energy Reports Target Rank ORACLE®

### 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 Home Energy Reports (eHER). 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 eHER; 18,000 will receive the Target Rank module as a treatment group, and the rest will serve as a control.

### Status

Customers are currently receiving eHERs with the Target Rank module. Oracle is performing an initial analysis, and there are early indications of success (influencing additional customer behaviors).

#### Type

Program Design

#### Timeline

June 2019 to December 2019

# Market Segment: Residential

## Emerging Technologies - Active Project

### All Electric Residential New Construction



#### 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 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 would likely seek create partnerships with several builders and incentivize 5-20 homes for construction in 2020-2021.

#### Status

Phase 1 research has completed, and the Emerging Technologies and Residential teams approved moving forward with a pilot across 2020 and 2021, beginning January 1, 2020. Planning for pilot launch is currently underway. This will coincide with the sunset of the existing Residential New Construction program.

#### Type

Program Design

#### Timeline

March 2019 December 2021

## Emerging Technologies - Active Project

# Home Energy Reports Paperless Experience

## ORACLE®

### 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 home energy reports. 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 2020.

### Type

Program Design

### Timeline

April 2019 to December 2021

## Emerging Technologies - Active Project

### Save and Share

#### Multiple Partners

#### Primary Objective

Leverage smart meters and new technology 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 non-for-profits.

ComEd is working with Faith in Place and the L3 Agency to engage local community groups to drive customer participation and register organizations on the app. EnergySavvy provides the M&V 2.0 backbone while Metergenius developed the app interface.

#### Status

To foster more participation among both customers and partner organizations ("Community All-Stars"), the Emerging Technologies team in partnership with L3 Agency led a significant relaunch event of the pilot. That event was a success, and L3 will be leading several promotional events throughout Q4 2019 to encourage additional participation.

#### Partners

EnergySavvy  
MeterGenius  
L3 Agency

#### Type

New Technology

#### Timeline

April 2018 to December 2019

#### Solicitation

Request for Proposals  
March 2018

# Completed Projects

Since January 1, 2018

## Emerging Technologies - Completed Project

### Alternative Refrigerants



#### 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 Tech team has taken lessons learned during this project into account when presented with new alternate refrigerant products as energy saving opportunities.

#### Type

New Technology

#### Timeline

December 2017 to September 2018

## Emerging Technologies - Completed Project

# Variable Frequency Drives for Refrigeration Condenser Fans



### 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 variable frequency drives (VFDs) to refrigeration system condenser fans in 23 condensers in 4 supermarkets. The pilot compared pre- and post-condenser fan retrofit 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 TRM measure update was submitted based on these savings estimates. As next steps, the Emerging Technologies team plans to work with the Standard incentive and Small Business teams to consider a new incentive around this measure; there is not currently an incentive and this project was originally developed as a Custom incentive concept.

#### Type

New Technology

#### Timeline

January 2018 to September 2018

## Emerging Technologies - Completed Project

### Energy-Water Nexus Initial Research



#### 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 Emerging Technologies team's work on this topic in 2019 was informed by this research project.

Type

Research

Timeline

January 2018 to January 2019

## Emerging Technologies - Completed Project

### Synchronous Motors



#### 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 EC 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 has been submitted using the savings estimates from the pilot. As next steps, the Emerging Technologies team will work with the Standard incentives and Small Business teams to create a plan to promote their new Q-Sync motors measures.

#### Additional Partners

QM Power  
OGNI Group

#### Type

New Technology

#### Timeline

April 2018 to November 2018

## Emerging Technologies – Completed Project

# Upstream Small Embedded Data Center Program Design

**slipstream**

### Primary Objective

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

### Primary Research Questions

How may improving energy efficiency at SEDCs fit into ComEd's energy efficiency program portfolio? What program pathways are most appropriate?

### Overview

This research project will evaluate the market potential for an upstream SEDC program for commercial customers in 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. They will then 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 program with ComEd.

### Results and Outcomes

Opportunities for new measures and program designs were identified, but the Emerging Technologies team is determining whether those opportunities are significant enough to pursue on a program level.

#### Type

Research

#### Timeline

September 2018 to August 2019

## Emerging Technologies - Completed Project

# Income Eligible Customer Journey Mapping

**FJORD**<sup>TM</sup>

Design and Innovation from  
Accenture Interactive

### 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 Emerging Technologies team is acting on recommendations within projects underway in 2019.

Type

Research

Timeline

October 2018 to March 2019

## Emerging Technologies - Completed Project

### Rockford Housing Authority Demonstration



#### 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% 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%. 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

# Holiday Light Exchange CLEAResult<sup>®</sup>

### 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 programs 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

## Emerging Technologies - Completed Project

### Home Energy Monitor Disaggregation



#### 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% 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 program offering.

#### Type

New Technology

#### Timeline

June 2016 to January 2018

## Emerging Technologies - Completed Project

# HVAC SAVE Quality Installation CLEAResult<sup>®</sup>

### Primary Objective

To test a service provider-driven Verified Quality Installation program that yields improved residential air conditioner savings and performance.

### Overview

For this midstream-focused pilot, approved contractors who participated in the residential HVAC rebate program 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 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



#### Primary Objective

To determine whether Seasonal Savings, a schedule optimization program 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 3-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% of cooling load from late June/mid-July through October 14, 2017; and 38.8 kWh or 2.5% 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% 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 support a two-year measure life, but due to the short overall measure life, the Emerging Technologies team has not yet developed this service into a larger scale offering.

#### Type

New Technology

#### Timeline

June 2017 to December 2018

## Emerging Technologies - Completed Project

### Smart Home Interaction Study



#### Primary Objective

To better understand potential mechanisms by which home automation can save energy. 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. However, this is an important lesson learned from this effort. Due to delays in collecting output data, the final report and analysis was delivered in Q2 2019. The Emerging Technologies team is reviewing the report and its recommendations, and will provide a summary in the next Project Catalogue update.

#### Additional Partners

Green Marbles

#### Type

New Technology

#### Timeline

March 2018 to December 2018

## Emerging Technologies – Completed Project

### Smart Home Research

# ILLUME

#### 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 program, 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 Emerging Technologies team is considering options for further smart home research and an RFP for a smart home pilot during Q4 2019.

#### Type

Research

#### Timeline

January 2019 to May 2019

## Emerging Technologies - Completed Project

# Total Connected Savings: Thermostat Optimization



WHISKERLABS

### 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

Over a thousand residential participants used the deployed algorithm during the pilot period. The Navigant impact evaluation results were received 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 launched 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.

### Additional Partners

Honeywell

### Type

Program Design

### Timeline

December 2017 to December 2018