

ComEd Energy Efficiency Program



CY2021

Third QUARTER REPORT



ComEd has received the ENERGY STAR Partner of the Year Award for Sustained Excellence for the 9th consecutive year. ComEd customers have saved more than \$6.1 billion on energy bills and avoided 61 billion pounds of carbon through its energy efficiency programs.

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Portfolio Summary

1,214,037

Actual Net MWh YTD

1,817,991

CY2021 MWh Forecast

1,659,037

CY2021 MWh Filed Goal

\$242,800,115

Actual Spend YTD

\$351,334,190

CY2021 Spending Cap

PORTFOLIO

- Through Q3, the portfolio has achieved 67% of its CY2021 forecast of 1,817,991 MWh and 73% of its 2021 filed goal of 1,659,037 MWh.
- Since its inception in 2008, the ComEd Energy Efficiency Program has saved ComEd customers over \$6.1 billion on their electric bills.

RESIDENTIAL PROGRAMS

- Through Q3, residential programs have achieved 75% of its combined 2021 forecast of 341,833 MWh.
- Customers have received over 272,955 rebates, and over 20,725 homeowners and tenants have received free direct install products from assessments through Q3.

INCOME ELIGIBLE PROGRAMS

- Through Q3, income eligible programs have achieved 73% of their combined 2021 forecast of 204,611 MWh, not including converted therms.
- Over 37,276 income eligible households have participated through Q3.

BUSINESS PROGRAMS

- Through Q3, private sector programs have achieved 67% of their combined 2021 forecast of 661,247 MWh; public sector programs have achieved 57% of their combined 2021 forecast of 126,455 MWh.
- Over 7,919 business private sector projects and 827 business public sector projects have been completed through Q3.

THIRD PARTY PROGRAMS

- Through Q3, third party programs have achieved 71% of their combined 2021 forecast of 43,804.

Residential Programs

Residential Program Highlights

- **Appliance Rebates** – The Instant Coupon offering had its most successful quarter to date with over 7,300 reservations by individual ComEd account holders. These coupons saw a 50% redemption rate which is above average. Promotions held over the 4th of July holiday contributed to 20% of the total instant coupon reservation activity for all of 2021.
- **Home Energy Assessment** – In Q2, the program tapped select Energy Advisors with high Smart Thermostat installation rates to provide peer mentorship and share best practices with other Energy Advisors. As a result, Smart Thermostat installations increased by 30% in Q3.
- **Multi-Family Energy Savings** – In Q3 the program launched the Self-Installation verification portal which allowed Property Managers to easily submit photos of the work completed through the self-install offering. The purpose of this portal is to store the completed work for measurement and verification purposes.

Program	Net MWh YTD	% Savings Achieved to Plan Savings Goal	Program Participation YTD	Unit Definition
Residential Behavior	82,829	110%	Home Energy Reports (print): 3,707,869 Home Energy Reports (email): 3,917,610 High Usage Alerts (unique customers): 1,108,837 Weekly Usage Reports: 4,186,894	Reports and alerts
Residential Lighting Discounts	115,930	79%	4,117,724	Number of bulbs and fixtures incentivized
Marketplace 2.0 Lighting Discounts	531	Not included in Plan 5	20,026	Number of bulbs and fixtures incentivized
Appliance Rebates	18,868	60%	214,995	Rebates processed
Marketplace 2.0 Appliance Rebates	14,382	Not included in Plan 5	56,301	Rebates processed
Home Energy Assessment	11,298	65%	11,683	Home upgrade
Multi-Family Assessments	6,874	75%	9,042	Projects completed
Residential HVAC	3,581	106%	1,659	Rebates processed

Income Eligible Programs

Income Eligible Program Highlights

- **Income Eligible Product Discounts** – Non-lighting measures had their strongest performance YTD in Q3, as both supply and demand of summer seasonal measures such as room air conditioners and dehumidifiers increased.
- **Single Family Retrofits** – Under Chicago Bungalow Association/Chicagoland Vintage Home Association (CBA/CVHA) channel, a 2-Flat pilot was started in September and will continue through the end of the year. Under Illinois Home Weatherization Assistance Program (IHWAP) channel, starting in Q3, Community Contacts Inc. began blending utility-only funding with Community Development Block Grant. They are set to do three blended projects in 2021.
- **Multi-Family Retrofits** – Under IHWAP, final two phases of Olympic Village were completed in July. This project was made possible by leveraging utility funding along with funding from the building ownership and the IL Department of Commerce & Economic Opportunity.
- **Affordable Housing New Construction** – Passive Building Pathway pilot launched to provide higher incentives for projects attaining rigorous third-party certification. Two projects applied and under consideration; three others anticipated pending documentation. Also, coordinated with IL Housing Development Authority and IL Housing Council to present educational webinars to ~150 industry attendees on sustainable design requirements for affordable housing projects, and available resources from ComEd and local gas companies to support energy efficiency.

Program	Net MWh YTD	% Savings Achieved to Plan Goal	Program Participation YTD			Unit Definition
Income Eligible Product Discounts	48,668	73%	545,500			Products and bulb/fixture/nightlight packages incentivized
Single-Family Retrofits (IHWAP+CBA/CVHA)	2,814	83%	IHWAP	CBA/CVHA		Homes upgraded
			421	928		
Multi-Family Retrofits (IHWAP+Elevate)	2,998	56%	IHWAP	Elevate		Total units upgraded
			390	6492		
Affordable Housing New Construction	1,245	82%	545			Eligible tenant units

Business Programs

Business/Technical Program Highlights

- **Standard** – Q3 was the largest quarter to-date in terms of claimed savings and incentives paid (private: 43.8 net GWh and \$8.3M; public: 10.5 net GWh and \$1.5M).
- **Custom** – The program remains on track to meet 2021 annual savings goals with paid and reserved applications. For custom combo promotion - to date, the programs have received 38 applicants intent on receiving the promotional incentives and 9 applications have been already paid.
- **Business Instant Discounts** – Participation in HVAC continued to outpace projections in Q3 due to high demand. The highest performing months of the year occurred in Q3, topping out with August at \$1,377,281 and 20,992 MWh following incentive reductions to TLEDs and PAR lamps.
- **C&I New Construction** – Initiated a warehouse outreach campaign in coordination with the industrial market outreach service provider in anticipation of a growing warehouse construction market.
- **Industrial Systems** – Created and implemented an email/direct mail marketing campaign targeting Plastics manufactures to promote the FIN+Monitoring and process cooling offerings.
- **Retrocommissioning (RCx)** – Traditional RCx track (MBCx and RCx Flex) pipeline is growing and picking up pace compared to earlier in the year. Implementation timelines continue to be longer than usual while customers take precautions due to COVID safety concerns.
- **Strategic Energy Management** – Completed 4 customer workshops. 80% of SEM customers have completed on-site treasure hunts.
- **Operational Savings** – Facility Assessment requests continue to trend upward, resulting in an increase in identified operational measures.

Program	Net MWh YTD	% Savings Achieved to Plan Goal	Program Participation YTD	Unit Definition
Standard – Private	115,676	68%	1,254	Projects completed
Standard – Public	12,491	62%	283	Projects completed
Custom – Private	6,390	50%	85	Projects completed
Custom – Public	1,013	36%	16	Projects completed
Small Business – Private	153,245	84%	5,191	Projects completed
Small Facilities – Public	15,855	122%	301	Projects completed
Business Instant Discounts – Private	115,184	75%	1,412,489	Lighting battery chargers HVAC
Business Instant Discounts – Public	15,592	70%	294,087	Lighting battery chargers HVAC
New Construction – Private	8,749	60%	47	Projects completed
New Construction - Public	1,261	72%	18	Projects completed
Industrial Systems - Private	16,596	36%	150	Projects

Business Programs

Retro-commissioning - Private	18,930	64%	86	Projects
Retro-commissioning - Public	6,140	40%	14	Projects
Strategic Energy Management - Private	0	0%	74	Participating customers
Strategic Energy Management - Public	814	15%	25/86	Participating customers/accounts
LED Streetlighting - Private	8,207	55%	57	Projects completed
LED Streetlighting - Public	17,650	40%	23	Projects completed
Operational Savings/Facility Assessment - Private	1,155	39%	66	Projects
Operational Savings - Public	397	86%	4	Projects
Public Housing Retrofits	832	38%	271/4,348	Buildings served/total units impacted

Third Party Programs

Third Party Program Highlights

- **Non-Profit Offering (NPO)** – In Q3, incentive funds for the NPO offering became fully reserved, due to high customer demand.
- **Agriculture** – Strong customer outreach in Q3 resulted in building project pipeline sufficient to achieve annual savings target. Coordinating with other EE programs to close out Agriculture Third Party offering at the end of 2021 and transition customers to other offerings.
- **Telecommunications** – Conducted Executive Door Opener marketing campaign designed to help develop relationships with telecommunications customers in ComEd’s territory. Results included the pre-approval of a large containment project, projected to claim over 2 GWh in savings. Began data logging at three large data centers with the long-term goal of completing a multistage EE project. Stages will include UPS replacement, controls upgrades and containment with over 6 GWh in savings.

Program	Net MWh YTD	% Savings Achieved to Plan Goal	Program Participation YTD	Unit Definition
Grocery Offering	3,212	62%	19	Projects
Food Bank LED Distribution	77,870	87%	1,408,860	Products distributed
Non-Profit Offering	2,963	75%	12,911	Lighting and HVAC projects
Income Eligible Kits/Energy Savings Kits IE/UIC Low Income	15,364	50%	28,500	Kits
Agriculture	3,520	40%	96	Projects
Telecom	5,093	61%	45	Projects
Small Business Kits	5,702	78%	6,549	Kits
Public Building Safety in Distressed Communities	10,604	68%	216	Project Phases Completed
Elementary Energy Education	2,752	62%	Kits - 12,711; LED Portal Redemptions - 160	Kits and Unique Portal Orders/Redemptions

Voltage Optimization

Voltage Optimization Highlights

- Savings below are equivalent to 172M pounds of carbon dioxide reduction or removing ~17,000 passenger vehicles driven each year.

Program	Net MWh YTD	% Savings Achieved to Plan Goal	Program Participation YTD	Unit Definition
Voltage Optimization	110,223	42%	29/257	Substations/feeders

Emerging Technologies and Market Transformation (“R&D”)

R&D Highlights

The mission of the R&D 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 summary of active Emerging Technologies and Market Transformation projects.



2021 Q3 ComEd EE
RD Portfolio Summa

R&D Portfolio Summary Q3 2021							
Name	Partners	Project Type	Customer Segment	Start	End	Quarterly Update	Web Link
Validating New Technologies for New Energy Savings							
Commercial Interior Insulating Shades	ITT, Panda Solutions, Amadeo Controls	Technology Assessment	Commercial	Sep-20	Mar-22	Monitoring of the installation continues on schedule.	Link
Cooling Tower Future Opportunities	AWE, PHNE	Research	Cross Cutting	Jul-20	Oct-21	AWE and PHNE completed a memo outlining the water and energy savings potential of the selected alternative technologies and started an economic and market barriers analysis of the three technologies that were found to have energy savings potential for the ComEd market.	Link
Deep Well Market Research	Frontier Energy	Research	Commercial	Jan-21	Sep-21	The project team submitted the final report in September. The R&D and Small Business teams are collaborating on next steps.	Link
Flash Gas Condensers	DNV GL	Technology Assessment	Commercial	Oct-20	Oct-21	The project team was unable to successfully recruit customers for technology installation, the final report will be submitted in early November and explain adoption barriers in more detail.	Link
Gear and Hydraulic Oils Efficiency Evaluation	Leidos, ExxonMobil	Technology Assessment	Industrial	Aug-21	Jun-22	This project kicked off in Q2. Installations at one site have begun and the project team is actively recruiting additional sites.	Link
Industrial Energy Management Information Systems (EMS)	Leidos, EPS eCharge	Technology Assessment	Industrial	Feb-20	Jun-22	The project team has selected 5 sites for installation and implementation of an EMS plan. Facility audits have been completed and proposed EMS plans have been presented to all participants. Three plans have been accepted, these sites are moving to the installation phase, with installations beginning at the end of the year. The remaining two sites are expected to accept their plans and begin work Q1 2022.	Link
Innovations in Efficient Elevator Systems	360 Energy Group, SEDAC, Kahle-Engineering	Research	Commercial	Dec-20	Nov-21	The project team submitted a first draft of their final report in October. While technical potential for retrofitting elevators with energy efficiency measures in ComEd's service territory is significant, the interviews with elevator manufacturers, building managers, architectural engineering firms, and contractors highlighted a number of market barriers, including a low concern for elevator energy usage and high cost of retrofit.	Link
National Laboratory Emerging Tech Partnership	NREL and various technology partners	Technology Assessment	Commercial, Industrial	Jan-19	Dec-21	Progress continues to be made on projects originally scheduled for completion in 2020 but were delayed due to COVID-19-related lab closures. The project team delivered the final reports for refrigerated display cases using R-290 propane refrigerant and the high-performance cold climate heat pumps for residential and small commercial applications in Q3. Both technologies showed promising energy savings potential and are currently being reviewed by ComEd.	Link
Refrigeration Thermal Energy Storage	Slostream	Technology Assessment	Commercial	Apr-21	Dec-21	This project has entered its Phase 2 which will study the on-site performance of the refrigeration thermal energy storage (TES) approaches identified as the most promising in Phase 1. The project team has had difficulties with recruitment thus far and is hoping to sign up at least one demonstration site in 2021.	Link
Residential Dryer Moisture Sensor	GTI	Technology Assessment	Residential	Jan-21	Sep-21	Summarized results were presented to ComEd in Q3. The moisture sensors displayed serious performance issues during field evaluation, and as such further research will not be conducted at this time.	Link
Secondary Glazing Systems Market Characterization	Slostream	Technology Assessment	Commercial	Sep-21	Dec-21	This project kicked off in September and has just begun to arrange interviews with relevant market actors. The project team will focus on determining what market interventions would be most impactful and whether this measure is best suited for resource acquisition or market transformation program models.	Link

Marketing Education & Awareness

There have been no campaigns in market until the very end of Q3, the more results to come in Q4.

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:

- a. 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 1,349 income-qualified homes through Q3.
 - The Multi-Family Retrofits program has completed direct install work in 6,882 tenant units through Q3.
 - The Public Housing Retrofits program has completed direct install work in 4,348 units through Q3.
 - The Affordable Housing New Construction program has completed a total of 545 tenant units serving income eligible residents through Q3.
 - The Income Eligible Product Discounts program has provided deeper instant in-store discounts to income eligible customers for 545,500 Products and bulb/fixture/nightlight packages incentivized through Q3.
 - The Income Eligible Kits program has distributed 28,500 kits to income-qualified single-family homes through Q3.
 - The Food Banks Distributions program has distributed 1,408,860 products through Q3.
- b. Income-Qualified R&D projects:
 - The ComEd Emerging Tech team has completed several pilot and research projects specific to income eligible and public housing customers in the past year; information can be found at <https://www.comedemergingtech.com>.
- c. 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:
 - Information on active R&D project can be found in the R&D section of this report.
 - 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), 15 community action agencies in the ComEd territory (not-for-profits)
 - Public Housing Retrofits – Elevate Energy (not-for-profit), University of Illinois at Chicago Energy Resources Center (not-for-profit)
 - Affordable Housing New Construction – Slipstream Group Inc. (not-for-profit)
 - Income Eligible Lighting Discounts – CLEAResult (for-profit)
 - Income Eligible Energy Saving Kits – University of Illinois at Chicago Energy Resources Center (not-for-profit), 15 community action agencies in the ComEd territory (not-for-profits)
 - Food Bank – CLEAResult (for-profit), food banks affiliated with Feeding America, including Greater Chicago Food Bank (not-for-profit), Northern Illinois Food Bank (not-for-profit), Riverbend Food Bank (not-for-profit); as well as through (not-for-profit) food pantries outside the Feeding America network.
 - Outreach & Marketing – Eire (WBE for-profit), PACO (MBE for-profit), Surge Solutions (MBE for-profit), The L3 Agency (WMBE for-profit)
- d. 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

- The ComEd Incubator program has provided training and support services to enable diverse contractors to join the ComEd Energy Efficiency Service Provider Network, represent the portfolio to customers and complete energy efficiency projects by leveraging existing workforce development frameworks, community-based agency partnerships and support from ComEd's Energy Efficiency Portfolio Implementation Contractors. The 2021 Incubator cohort (which graduated training on 4/30) has 28 members from five counties in the ComEd service territory. Eight are lighting contractors, seven are HVAC contractors, six are general contractors and the others are in project management, energy consulting or weatherization. Phase 2 of the program will begin in May and run for 6 months. This will include back office support with a focus on 1X1 training with each cohort member in providing support within their

business growth plans. In addition, the program will be conducting a mentoring pilot for cohort members to work with an existing EESP on their first EE project. 2022 Incubator recruitment is anticipated in Q3.

- Additionally, ComEd annually supports IHWAP's training programs.
- In its upcoming Plan 6, ComEd has committed to launch a full Market Development Initiative (MDI), which will focus both on growing diverse business and workforce opportunities. The focus of this work in 2021 will be research to inform the MDI. ComEd issued a related RFP in Q2 and selected a vendor, Griffin & Strong/Emerald Cities, whose work will run from Q4 2021 – Q2 2022.

CY2021 New Measures

CY2021 New Measures

All measures in the table below were launched in CY2021.

Measure TOTAL RESOURCE COST (TRC)	Sector	IL TRC
Mag Bearing - College	Business	7.50
Mag Bearing - Healthcare Office	Business	16.72
Mag Bearing - Hosptial	Business	19.68
Mag Bearing - Hotel	Business	20.21
Mag Bearing - K-12	Business	9.18
Mag Bearing - Office	Business	16.56
VSD Chiller - College	Business	15.37
VSD Chiller - Healthcare Office	Business	26.62
VSD Chiller - Hosptial	Business	24.83
VSD Chiller - Hotel	Business	28.85
VSD Chiller - K-12	Business	15.56
VSD Chiller - Office	Business	23.15
Smart Socket	Business	1.54
Advanced Rooftop Controls with Switch Rotor Pole Motor (> 20 ton)	Business	0.47
Advanced Rooftop Controls with Switch Rotor Pole Motor (> 10 ton to ≤ 20 ton)	Business	0.57
Advanced Rooftop Controls with Switch Rotor Pole Motor (>5 ton to ≤ 10 ton)	Business	0.68
Advanced Rooftop Controls with Switch Rotor Pole Motor (≤5 tons)	Business	0.74
Dipper Wells	Business	41.60
LED Grow Lights - Flowering	Business	3.82
LED Grow Lights - Vegetative	Business	2.09
Energy Efficient Rectifier	Business	3.55
Network Combing, Line and Trunk Equipment Removal	Business	2.60
ENERGY STAR Uninterruptible Power Supply	Business	1.73
Agricultural Swine Heat Pad	Business	0.19
Common Area Vending Miser Non-Refrigerated	Residential	0.40
ENERGY STAR Most Efficient Refrigerators	Residential	0.96
LED Globe 6-watt 450 lumens	Residential	3.57
LED BR30 bulb	Residential	4.15
LED Candelabra 5-watt 325 lumens	Residential	3.40
LED Mini Globe (350 Lumens)	Residential	1.40
Three Way A19 LED (500/1000/1500 lumens)	Residential	2.62

Appendix: Program Descriptions

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.

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.

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.

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 at a discounted price to the customer 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.

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.

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.

Income Eligible Product Discounts

Overview: Income Eligible Retail Discounts provides deeper instant in-store discounts to ComEd residential customers at participating retail stores located in qualifying neighborhoods. These discounts are provided for select ENERGY STAR® certified lighting: LED bulbs, LED trim kits, LED nightlights, and LED integrated fixtures (both interior and exterior); as well as instant in-store discounts on select ENERGY STAR certified appliances, such as air purifiers, dehumidifiers, and room air conditioners. Instant in-store discounts are also available on advanced power strips (APS). These deeper instant discounts are offered to help reduce the energy burden for income eligible customers, by lowering the potential cost barrier to energy efficient products for home use.

Appendix: Program Descriptions

Single-Family Retrofits

Overview: The Single-Family Retrofits Program offering is delivered through several channels including, Illinois Community Action Agencies (CAAs), the Chicago Bungalow Association (CBA), and the Chicagoland Vintage Home Association (CVHA). The offering includes comprehensive home energy audits and work through contractors to complete weatherization (air sealing, attic and wall insulation, duct sealing), health & safety, and additional energy efficiency home upgrades at no cost to the customers served.

CBA/CVHA identifies and enrolls qualified vintage homeowners located in the City of Chicago and certain Cook County suburbs; coordinates home assessments to identify areas in the homes prone to air leaks or drafts; and works with contractors to complete weatherization, health & safety, and direct installation of energy efficiency upgrades (LEDs, water saving measures, programmable thermostats) to their homes. The CBA/CVHA channel delivers the single-family retrofits program offering in partnership with Peoples Gas.

ComEd, in coordination with the CAAs, and in partnership with the northern gas utilities, partially (and in some cases fully) funds whole single-family home energy upgrades in coordination with the Illinois Department of Commerce and Economic Opportunity (DCEO) Illinois Home Weatherization Assistance Program (SF IHWAP). Upgrades may include all measures delivered through the CBA/CVHA channel, as well as mechanical system upgrades or replacements where the customer and equipment qualify.

Multi-Family Retrofits

Overview: The Multi-Family Retrofits Program is delivered through two channels including Illinois Community Action Agencies (CAAs) for the Illinois Housing Weatherization Assistance Program (MF IHWAP) and the multi-family energy savings (IEMS) offering. The program offerings identify and enroll qualified multi-family building owners and property managers whose buildings serve income-eligible residents. Upgrade options include energy assessments, weatherization, and direct installation of energy-saving devices at no cost. As well as replacement of inefficient equipment/systems at no or very limited cost.

The MF IHWAP offering is delivered in partnership with all the northern Illinois gas utilities. The IEMS offering is delivered in partnership with Peoples Gas.

Affordable Housing New Construction

Overview: The Affordable Housing New Construction (AHNC) Program offering provides technical support and incentives for whole-building energy efficiency for new construction and major renovation projects to reduce the energy burden for income eligible households by lowering their potential monthly energy costs. The program supports developers building or providing major renovation to affordable housing buildings, including both single and multi-family projects. The program offering's incentives are based on the square footage of the areas serving income eligible tenants, while upgrade requirements apply to the full building. The Affordable Housing New Construction offering is delivered in partnership with all the northern Illinois gas utilities.

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.

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.

Small Business (Private and Public)

Overview: In 2021, Small Business started offering energy efficiency services for both private and public customers. The eligibility requirements are 0-200 kW for private customers and 0-400 for public customers. The program provides comprehensive energy savings solutions for customers including advanced lighting, refrigeration, HVAC, and compressed air.

Appendix: Program Descriptions

Business Instant Discounts

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

C&I New Construction

Overview: The New Construction Program offering provides technical assistance, support for the Leadership in Energy and Environmental Design (LEED) rating system, and incentives for whole-building energy efficiency for new construction and major renovation projects to influence building design practices during the design and construction of new buildings, major renovations of existing buildings, and tenant build-outs in the C&I market. The program serves private commercial and industrial buildings (CINC) as well as public sector buildings (PSNC) through a combined offering. The New Construction Program offering is delivered in partnership with all the northern Illinois gas utilities.

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.

LED Street Lighting

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

Operational Savings

Overview: The Operational Savings Program identifies no-cost/low-cost opportunities that do not qualify for incentives. These opportunities are identified by engineers during various types of ComEd Energy Efficiency Program studies and Facility Assessments (FAs). Examples of such opportunities include shutting off idle equipment, optimizing the efficiency of existing systems and changes in the operating habits of occupants.

Public Housing Retrofits

Overview: The Public Housing Retrofits Program offering 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 the buildings served, including residential units, and common areas at no cost. The program offering identifies and enrolls qualified public housing buildings. Upgrade options include energy assessments, weatherization, and direct installation of energy-saving devices at no cost. As well as replacement of inefficient equipment/systems at no or very limited cost. For energy efficiency projects requiring funding beyond program incentives, technical assistance is offered to support implementation and identify financing options. The offering is delivered in partnership with Nicor Gas and Peoples Gas.

Elementary Energy Education

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

Small Business Kits

Overview: The Small Business Kits Program is an entry level program targeting C&I customers <200KW and public sector customers <400KW peak demand in restaurants and other general/office facilities and fire stations, libraries, park district offices and public works offices who have not previously participated in energy efficiency programs. Eligibility criteria was changed in 2021 to align with the Small Business Offering requirements. The program achieves savings through a kit

Appendix: Program Descriptions

of self-install energy efficiency measures delivered directly to customer facilities. A customer survey is used to determine installation rates for each measure.

Food Banks LED Distribution

Overview: The Food Banks Distribution Program provides ENERGY STAR® LEDs to food banks affiliated with Feeding America, as well as through pantries outside the Feeding America network. The food banks then use their network of local food pantries to distribute the bulbs to utility customers in need, who may elect to receive the offered products. The offering is designed to help reduce the energy burden for income eligible customers, by providing them with free energy efficient products for home use. Additional products (e.g. weather strips, night lights, and battery back-up LED bulbs) are distributed through pop up events on a limited basis.

Income Eligible Kits

Overview: The Income Eligible Energy Saving Kits Program provides energy efficiency kits to income eligible residential customers, primarily through the network of Illinois Community Action Agencies (CAAs). The kits include (1) Tier 1 Advanced Powr Strip, (4) 9W LED bulbs, (2) 15W LED bulbs, (1) 6W LED Globe bulb, (1) 5W LED Candelabra bulb, (1) 8W BR30 LED bulb, (1) Night Light, (1) Low-flow Kitchen Aerator, (1) Low-flow Bathroom Aerator, (1) Low-flow Showerhead, (1) Plumber's Tape; an instructional brochure which includes links to instructional videos for product use and installation, plus general information on energy savings. The offering is designed to help reduce the energy burden for income eligible customers, by providing them with free energy efficient products for home use.

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.

Non-Profit Offering (NPO)

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

comprehensive list of incentives. Direct install is available for LED lamps and vending machine misers.

Agriculture

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

Telecommunications

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

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.

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.

ATTACHMENT

R&D Portfolio Summary Q3 2021

Name	Partners	Project Type	Customer Segment	Start	End	Quarterly Update	Web Link
Validating New Technologies for New Energy Savings							
Commercial Interior Insulating Shades	IIT, Parata Solutions, Amatis Controls	Technology Assessment	Commercial	Sep-20	Mar-22	Monitoring of the installation continues on schedule.	Link
Cooling Tower Future Opportunities	AWE, PNNL	Research	Cross Cutting	Jul-20	Oct-21	AWE and PNNL completed a memo outlining the water and energy savings potential of the selected alternative technologies and started an economic and market barriers analysis of the three technologies that were found to have energy savings potential for the ComEd market.	Link
Dipper Wells Market Research	Frontier Energy	Research	Commercial	Jan-21	Sep-21	The project team submitted the final report in September. The R&D and Small Business teams are collaborating on next steps.	Link
Flash Gas Condensers	DNV GL	Technology Assessment	Commercial	Oct-20	Oct-21	The project team was unable to successfully recruit customers for technology installation; the final report will be submitted in early November and explain adoption barriers in more detail.	Link
Gear and Hydraulic Oils Efficiency Evaluation	Leidos, ExxonMobil	Technology Assessment	Industrial	Aug-21	Jun-22	This project kicked off in Q2. Installations at one site have begun and the project team is actively recruiting additional sites.	Link
Industrial Energy Management Information Systems (EMIS)	Leidos, EPS Energie	Technology Assessment	Industrial	Feb-20	Jun-22	The project team has selected 5 sites for installation and implementation of an EMIS plan. Facility audits have been completed and proposed EMIS plans have been presented to all participants. Three plans have been accepted these sites are moving to the installation phase, with installations beginning at the end of the year. The remaining two sites are expected to accept their plans and begin work Q1 2022.	Link
Innovations in Efficient Elevator Systems	360 Energy Group, SEDAC, Kone Engineering	Research	Commercial	Dec-20	Nov-21	The project team submitted a first draft of their final report in October. While technical potential for retrofitting elevators with energy efficiency measures in ComEd's service territory is significant, the interviews with elevator manufacturers, building managers, architectural/ engineering firms, and contractors highlighted a number of market barriers, including a low concern for elevator energy usage and high cost of retrofits.	Link
National Laboratory Emerging Tech Partnership	NREL and various technology partners	Technology Assessment	Commercial, Industrial	Jan-19	Dec-21	Progress continues to be made on projects originally scheduled for completion in 2020 but were delayed due to COVID-19-related lab closures. The project team delivered the final reports for refrigerated display cases using R-290 propane refrigerant and the high-performance cold climate heat pumps for residential and small commercial applications in Q3. Both technologies showed promising energy savings potential and are currently being reviewed by ComEd.	Link
Refrigeration Thermal Energy Storage	Slipstream	Technology Assessment	Commercial	Apr-21	Dec-21	This project has entered its Phase 2 which will study the on-site performance of the refrigeration thermal energy storage (TES) approaches identified as the most promising in Phase I. The project team has had difficulties with recruitment thus far and is hoping to sign up at least one demonstration site in 2021.	Link
Residential Dryer Moisture Sensor	GTI	Technology Assessment	Residential	Jan-21	Sep-21	Summarized results were presented to ComEd in Q3. The moisture sensors displayed serious performance issues during field evaluation, and as such further research will not be conducted at this time.	Link
Secondary Glazing Systems Market Characterization	Slipstream	Technology Assessment	Commercial	Sep-21	Dec-21	This project kicked off in September and has just begun to arrange interviews with relevant market actors. The project team will focus on determining what market interventions would be most impactful and whether this measure is best suited for resource acquisition or market transformation program models.	Link

R&D Portfolio Summary Q3 2021

Name	Partners	Project Type	Customer Segment	Start	End	Quarterly Update	Web Link
Smart Controls for Small and Medium Commercial Buildings	E Source	Research	Commercial	Mar-21	Nov-21	The project team completed their research and submitted a summary of the findings in a final report. Closeout meeting is scheduled for early November.	Link
Switched Reluctance Motor Field Evaluation	Slipstream, Turntide Technologies	Technology Assessment	Commercial	Jun-20	Oct-21	The additional customer sites will undergo monitoring through Q1 2022.	Link
Thin Triple Windows Market Characterization	Resource Innovations	Research	Commercial	Sep-21	Dec-21	This project kicked off in September and will begin interviews with relevant market actors in Q4. This project is a collaboration between utilities to assess the existing thin triple window market and qualitatively estimate the market size and potential for this technology in ComEd's service territory.	Link
Variable Refrigerant Flow for Cold Climates	Slipstream	Technology Assessment	Commercial	Sep-20	Sep-22	The project team has begun secondary research on savings drivers and market characterization based on the results of Phase 1, as well as began recruiting sites for field evaluations of VRF.	Link
Variable Speed Heat Pumps as AC Replacement	Center for Energy and Environment	Technology Assessment	Residential	Aug-21	Jan-21	Project kickoff took place in August. Project team developed interview guides and started contractor and manufacturer interview guides to inform recruitment and best practices guide.	Link
Very High Efficiency HVAC	IMT, Slipstream, Ventacity	Technology Assessment	Cross Cutting	Dec-20	Dec-23	Several customer sites are in the process of design and modeling for an eventual installation. As of this report, installation and monitoring at sites are not expected until 2022.	Link
Water Heating Technology Opportunities	Evergreen Economics, GDS Associates	Research	Residential	Aug-20	Nov-21	The research team submitted a memo outlining the findings of the market potential research and recommendations for a unitary heat pump water heater strategy.	Link

R&D Portfolio Summary Q3 2021

Name	Partners	Project Type	Customer Segment	Start	End	Quarterly Update	Web Link
Increasing Market Adoption Through Innovative Program Design							
Affordable Multifamily Electrification Demonstration	Elevate and Slipstream	Technology Assessment and Program Design	Residential, Income Eligible	Aug-21	Jun-22	Project kickoff took place in August and Elevate worked with the Bickerdike building management to recruit participants and begin installation of the pre-monitoring equipment. The project team recruited tenants from twelve units in the selected building and pre-retrofit monitoring is ongoing.	Link
BIT Neighborhood	Slipstream, Southface, Illinois Green Alliance, Environmental Defense Fund	Outreach Strategy	Income Eligible Residential	Feb-19	Oct-21	The project completed in October 2021. Slipstream and the BIT Aides completed the implementation of the BIT Building program for the 13 participating CHA sites including the energy modeling and analysis as the development of the BIT Playbook. Slipstream continued to provide career guidance and professional development to the three BIT Aides through the end of the pilot. Slipstream hired one of the BIT Aides for a full time position and is continuing to work with the other two BIT Aides to find full time employment in the energy industry.	Link
Building Operator Certification	Midwest Energy Efficiency Alliance	Program Design	Commercial	Jan-21	Dec-21	BOC was successfully introduced into the IL TRM v10. In Q3 The R&D team created new marketing/promotional approaches to student recruitment.	Link
Customer Targeting through NMEC	Power TakeOff, Recurve (separate projects)	Research	Cross Cutting	Oct-20	Oct-21	The Recurve research team received customer AMI data in Q3 and their analysis of the selected measures is underway with a target completion date of EOY 2021. The Power TakeOff team completed their analysis on indoor lighting, outdoor lighting and variable speed drive measures and were unsuccessful at identifying or predicting common traits of high energy saving customers for those measures, other than high users tend to be high energy savers post program participation.	Link
Electric Homes New Construction	Slipstream	Program Design	Residential	Mar-19	Dec-21	EHNC has closed out 7 projects in 2021 through end of Q3. The program has seen delays due to high construction costs in the market. There are 5 additional projects with pre-applications submitted and 5-10 others pending submission. The EHNC will transition from pilot offering to program implementation (as part of the EHNC + AHNC contract) in 2022, SOW under development managed by implementation team.	Link
ENERGY STAR® Retail Products Platform	NEEA, US EPA	Market Transformation	Residential	Apr-20	Dec-21	The project team has participated in ongoing discussions with Guidehouse and the SAG Market Transformation Working Group on details of the evaluation plan. A letter of support for enhanced ENERGY STAR testing procedures was submitted by NEEA with ComEd and Ameren as supporters.	Link
Home Energy Reports Paperless Experience	Oracle	Program Design	Residential	Apr-19	Dec-21	The digital-only reports experience for 20,000 pilot customers is ongoing. As of mid-2021 the test group had generated over 3 GWh in new energy savings.	Link
Income Eligible Electric Heating Heat Pump Barriers Research	Resource Innovations	Research	Residential, Income Eligible	Sep-21	Dec-21	This pilot kicked off at the end of Q3 and will identify the all-electric income eligible customer segment and explore its characteristics in ComEd's service territory. The project team is currently conducting utility and customer interviews and will provide a report with their findings at the end of Q4.	Link
Midstream Commercial Food Service	GTI, Frontier Energy	Program Design	Commercial	Apr-19	Dec-21	Electric measure rebates continue to lag behind gas measures. Bridging the pilot into 2022 for a state-wide pilot offering is currently under discussion between all the IL utilities as GTI recently proposed a plan for 2022 implementation.	Link

R&D Portfolio Summary Q3 2021

Name	Partners	Project Type	Customer Segment	Start	End	Quarterly Update	Web Link
Bronzeville Next Generation HVAC Demonstration	Slipstream	Technology Assessment	Commercial, Income Eligible	Jul-21	Dec-22	Discussions are progressing with two sites in the Bronzeville neighborhood to design, install and monitor savings from next-gen HVAC solutions; installations are expected in 2022.	Link
Online Choice Engine Program Model	Enervee	Technology Assessment	Residential	May-20	Dec-21	Wave 2 evaluation analysis and results were completed in Q3. The Enervee platform will remain operational through the end of 2021. ComEd team is internally discussing next steps for the platform in 2022.	Link
Passive House Affordable Housing New Construction Portfolio Integration	Slipstream	Program Design	Income Eligible	May-21	Dec-22	The pilot kicked off during mid-2021 and the team is performing marketing and outreach to builders and stakeholders across the local affordable housing industry. R&D will be supporting this pilot with enhanced incentives to reach the PHIUS+	Link
Real-Time Virtual Commissioning (VCx)	Power TakeOff	Technology Assessment	Commercial, Public Sector	Sep-20	Dec-21	Real time monitoring equipment and pulse meter upgrades have been ordered for another 10 CPS locations, with installation expected by the end of 2021. VCx engagement continues and the project team will receive the verified results from the first batch of participant data in early Q4.	Link
Scalable Community Building Energy Modeling	Mapdwell	Technology Assessment	Cross Cutting	Jan-21	Nov-21	The pilot team completed phase 1 work which included initial database setup and data mapping. The pilot community has been selected (Rockford, IL). Phase 2 requires a customer AMI data overlay and that transfer from ComEd to Mapdwell is in progress.	Link
Smart Home Income Eligible Pilot	Slipstream, Ezlo	Technology Assessment	Residential, Income Eligible	Jul-21	Jun-22	Project kickoff took place in October, and recruitment of customers for monitoring of smart plugs is expected through the remainder of the year.	Link

R&D Portfolio Summary Q3 2021

Name	Partners	Project Type	Customer Segment	Start	End	Quarterly Update	Web Link
Thinking Outside the Box for Future Opportunities							
Hybrid Heat Pump System Future Opportunities	Center for Energy and Environment	Research	Residential	Dec-19	Sep-21	CEE completed an additional analysis of customer economics for several residential air source heat pump applications to supplement the ASHP research they completed earlier in 2021. In this analysis, CEE used a more detailed building simulation model to estimate the hourly load and system performance for the four original applications from the initial study by which they were able to determine which heat pump applications and rates structures would yield the greatest cost savings for customers.	Link
Illinois Building Energy Code Advancement	Slipstream, Midwest Energy Efficiency Alliance	Research	Cross Cutting	Jan-21	Dec-21	Slipstream/MEEA have continued their conversations with municipalities in ComEd's service territory about the long-term savings potential from stretch codes and building performance standards. In addition, the research team has made significant progress on developing an attribution model to enable the claiming of savings under stretch codes and building performance standards. They have requested input from the SAG Market Transformation Working Group on a draft program logic model and evaluation pathway for a stretch energy codes program by the end of October.	Link
Municipal Water Infrastructure Leak Reduction	TRC, Rezatec	Program Design	Cross Cutting	Jun-20	Dec-21	The pilot team is wrapping up infrastructure testing and the development of smart water infrastructure upgrade plans for the four participating communities. Two of the communities immediately fixed some of the leaks identified in the onsite testing that resulted in water and energy savings. TRC worked with Guidehouse to establish an evaluation plan for claiming 2021 pilot savings and potential future program savings. They also continue to research available funding opportunities and support the communities in applying for funding.	Link
Water Energy Savings with Strategic Energy Management	CLEARresult	Program Design	Commercial	Jun-20	Dec-21	The project team and SEM coaches continued to work with the participant champions to implement the identified water savings projects and purchase water sub meters. The project team compiled project files and completed models and calculations to submit to Guidehouse for an early evaluation trial of the three selected participant sites.	Link