

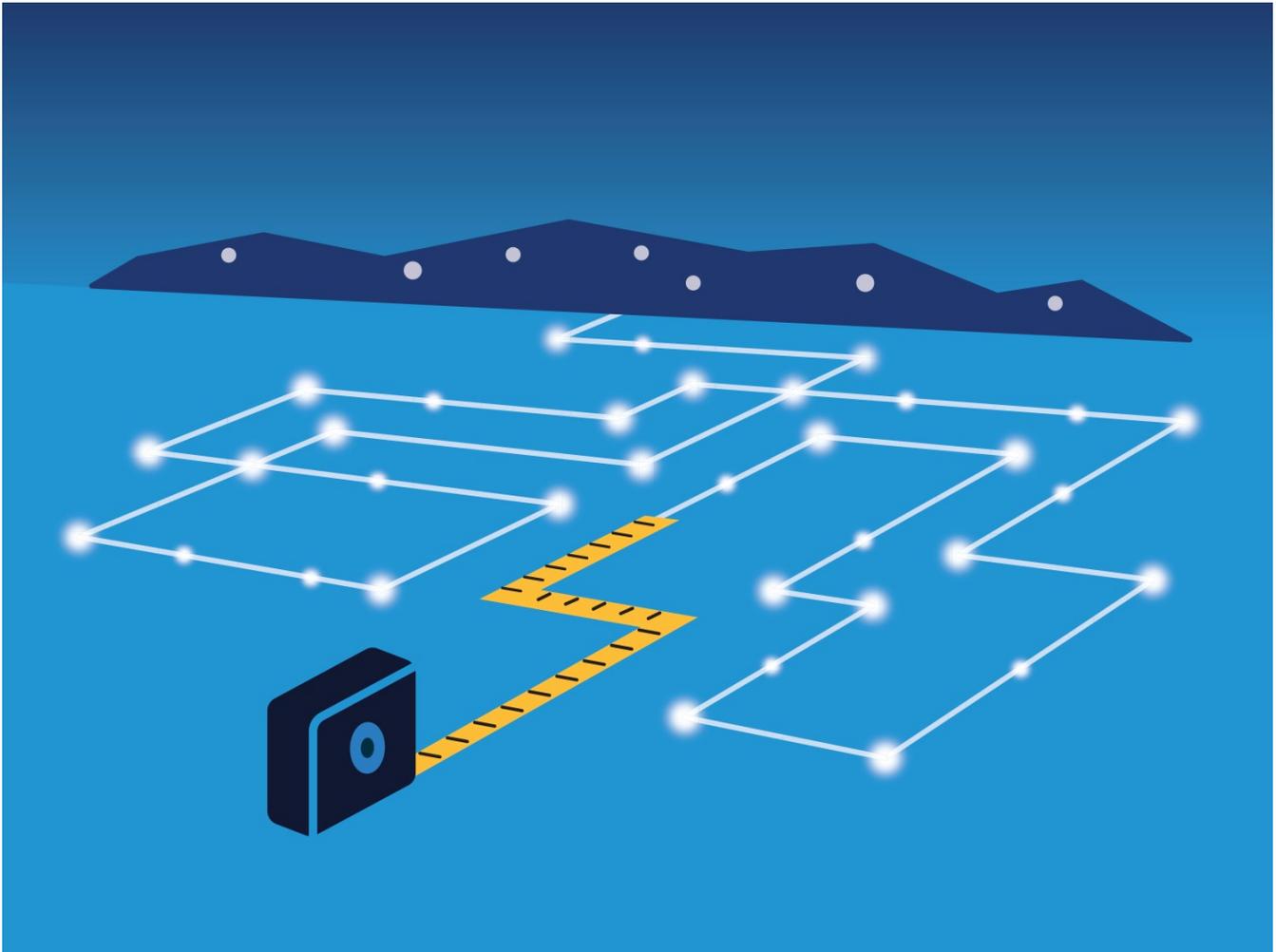


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2020 Evaluation Plan

Ameren Illinois Company Energy Efficiency Programs

Final
February 24, 2020



Table of Contents

1. Introduction	1
2. Program-Specific Evaluation Plans	1
2.1 Residential Program	1
2.1.1 Retail Products	2
2.1.2 Income Qualified	5
2.1.3 Public Housing	9
2.1.4 HVAC	12
2.1.5 Appliance Recycling	15
2.1.6 Multifamily	18
2.1.7 Direct Distribution of Efficient Products	22
2.1.8 Smart Savers	26
2.1.9 Cross-Cutting Multifamily Research	28
2.2 Business Program	32
2.2.1 Standard	32
2.2.2 Custom	38
2.2.3 Retro-Commissioning	44
2.2.4 Streetlighting	49
2.2.5 Building Operator Certification	51
2.3 Voltage Optimization Program	52
3. Cross-Cutting Evaluation Activities	56
3.1 Illinois Statewide Technical Reference Manual Support	56
3.2 Non-Energy Impacts Research	57
3.2.1 Economic and Employment Impacts of AIC Energy Efficiency Programs	60
3.3 Pilot Research	60
3.4 Cost-Effectiveness Analysis	60
3.5 Quality Assurance and Control	61
3.6 Integrated Reporting	61
4. 2020 Evaluation Budget	62

Table of Tables

Table 1. Schedule of 2020 Residential Program Evaluation Deliverables.....	1
Table 2. Summary of Retail Products Initiative Evaluation Activities for 2020.....	3
Table 3. Retail Products Initiative 2020 NTGRs.....	4
Table 4. Retail Products Initiative 2020 Evaluation Schedule and Budget.....	5
Table 5. Summary of Income Qualified Initiative Evaluation Activities for 2020	7
Table 6. Income Qualified Initiative 2020 Evaluation Schedule and Budget.....	9
Table 7. Summary of AIC Public Housing Initiative Evaluation Activities for 2020	11
Table 8. Public Housing Initiative Evaluation Schedule and Budget.....	12
Table 9. Summary of HVAC Initiative Evaluation Activities for 2020	13
Table 10. HVAC Initiative 2020 NTGRs.....	14
Table 11. HVAC Initiative 2020 Evaluation Schedule and Budget.....	15
Table 12. Summary of Appliance Recycling Initiative Evaluation Activities for 2020.....	16
Table 13. Appliance Recycling Initiative 2020 Evaluation Schedule and Budget.....	18
Table 14. Summary of Multifamily Initiative Evaluation Activities for 2020.....	20
Table 15. Multifamily Initiative 2020 NTGRs.....	21
Table 16. Multifamily Initiative Evaluation Schedule and Budget.....	22
Table 17. Summary of School Kits Initiative Evaluation Activities for 2020	23
Table 18. Direct Distribution Initiative 2020 NTGRs.....	24
Table 19. Direct Distribution Initiative 2020 Evaluation Schedule and Budget	25
Table 20. Summary of Smart Savers Initiative Evaluation Activities for 2020.....	27
Table 21. Smart Savers Initiative 2020 Evaluation Schedule and Budget	28
Table 22. Summary of Cross-Cutting Multifamily Research Activities for 2020	30
Table 23. Cross-Cutting Multifamily Research Schedule and Budget	31
Table 24. Schedule of 2020 Business Program Evaluation Deliverables.....	32
Table 25. Summary of Standard Initiative Evaluation Activities for 2020.....	34
Table 26. Standard Initiative 2020 NTGRs.....	37
Table 27. Standard Initiative 2020 Evaluation Schedule and Budget	38
Table 28. Summary of Custom Initiative Evaluation Activities for 2020	40
Table 29. Custom Initiative 2020 Evaluation Schedule and Budget.....	44
Table 30. Summary of Retro-Commissioning Initiative Evaluation Activities for 2020	46
Table 31. Retro-Commissioning Initiative 2020 Evaluation Schedule and Budget.....	48

Table 32. Summary of Streetlighting Initiative Evaluation Activities for 2020.....	50
Table 33. Streetlighting Initiative 2020 Evaluation Schedule and Budget	51
Table 34. Summary of Voltage Optimization Evaluation Activities for 2020.....	53
Table 35. Voltage Optimization 2020 Evaluation Schedule and Budget.....	55
Table 36. 2020 NEI Evaluation Budget	60
Table 37. 2020 AIC Evaluation Budget.....	62

Table of Equations

Equation 1. Ratio Estimate of Population Total.....	43
Equation 2. VO Savings Algorithm	54
Equation 3. Decay Rate Calculation	57
Equation 4. Lifetime Persistence Savings	57
Equation 5. Measure Life.....	57

1. Introduction

Ameren Illinois Company (AIC) hired the Opinion Dynamics evaluation team to perform impact and process evaluations for AIC's portfolio of energy efficiency programs implemented between January and December 2020. As part of the 2020 evaluation effort, the team will assess AIC's Residential, Business, and Voltage Optimization Programs, which are further split into a number of initiatives detailed below, as well as pilot efforts.

- Residential Program
 - Retail Products
 - Income Qualified
 - Public Housing
 - Heating and Cooling (HVAC)
 - Appliance Recycling
 - Multifamily
 - Direct Distribution of Efficient Products
 - Smart Savers
- Business Program
 - Standard
 - Custom
 - Retro-Commissioning (RCx)
 - Streetlighting
- Voltage Optimization Program

This document provides detailed evaluation plans for each program and their associated initiatives and serves as the framework for the evaluation of program impacts and process improvements. The overarching evaluation objectives are to determine gross and net energy and demand impacts associated with the AIC portfolio and to suggest improvements in the design and implementation of existing and future programs.

2. Program-Specific Evaluation Plans

2.1 Residential Program

In this section, we outline the anticipated evaluation activities for each of the Residential Program initiatives. AIC’s planned Residential Program provides services to residential customers, and is made up of eight initiatives:

- Retail Products
- Income Qualified
- Public Housing
- Heating and Cooling (HVAC)
- Appliance Recycling
- Multifamily
- Direct Distribution of Efficient Products
- Smart Savers

These initiatives are largely consistent with AIC’s 2019 Residential Program. The only major change from the 2019 Program we expect is the discontinuation of the Residential Behavioral Modification Initiative, which AIC does not plan to implement in 2020.

In accordance with Illinois evaluation requirements, we will deliver a draft annual Residential Program impact evaluation report on March 15, 2021, covering the 2020 program year. This report will include information on 2020 program participation, 2020 verified gross and net impacts for all Residential Program initiatives, as well as initiative and program-level weighted average measure life (WAML) and cumulative persisting annual savings (CPAS) for the Program.

In addition, we will deliver stand-alone memos summarizing results of process and NTGR research, where applicable. At the close of the 2020 evaluation, we will deliver an integrated process/forward looking evaluation report that rolls up all the stand-alone memos relevant to the 2020 Residential Program.

Table 1. Schedule of 2020 Residential Program Evaluation Deliverables

Deliverable	Date
Draft Annual Residential Program Impact Evaluation Report	March 15, 2021
Comments Received from Stakeholders (15 business days)	April 3, 2021
Second Draft of Annual Residential Program Impact Evaluation Report	April 13, 2021
Comments Received from Stakeholders (5 business days)	April 20, 2021
Final Annual Residential Program Impact Evaluation Report	April 30, 2021
Annual Integrated Impact Report	April 30, 2021
Annual Integrated Residential Program Process/Forward Looking Evaluation Report	May 31, 2021

2.1.1 Retail Products

The objective of the Retail Products Initiative is to increase awareness and sales of high efficiency products through retail and online stores. The Initiative provides discounts for a range of products, including omnidirectional and specialty LEDs, advanced thermostats, and a range of appliances and consumer electronics.

Customers can receive a rebate for their purchase of qualifying products through the following channels:

- By receiving a point-of-sale discount on purchases of qualified LEDs, advanced power strips, air purifiers, dehumidifiers, bathroom vent fans, and water dispensers at participating retailers;
- By submitting an online or mailed-in rebate application for the purchase of qualified advanced thermostats, variable-speed pool pumps, refrigerators, freezers, clothes washers, and electric clothes dryers purchased at a retail location or online retailer;
- By registering online and downloading a coupon for qualified advanced thermostats that can be used at the check-out at select in-store and online retailers; and
- By purchasing discounted LEDs, advanced thermostats, advanced power strips, air purifiers, dehumidifiers, or bathroom vent fans through the Ameren Illinois Online Marketplace.

The implementation contractor will work with participating retailers to promote qualifying products through in-store marketing, special product placement, and product demonstrations. Implementation staff will also visit participating retailers to provide sales associates with training on how to best promote the Initiative with customers.

Evaluation Approach

The assessment of the 2020 Retail Products Initiative includes both process and impact analyses and also looks to answer several forward-looking questions, as outlined in the following sections.

Research Objectives

Impact Questions

1. What were the estimated gross energy and demand savings from this initiative?
2. What were estimated net energy and demand savings from this initiative?
3. What are the installation rates of new products introduced to the Initiative in 2020, if any?
4. What are NTGRs of new products introduced to the Initiative in 2020, if any?

Process Questions

5. Was initiative implementation effective and streamlined?
6. In what areas could the Initiative improve to increase its overall effectiveness, or ease of implementation?
7. How did the various rebate channels perform relative to one another? Did rebated measures align well with the channels through which they were offered?
8. Were customers satisfied with the Initiative, products, and participation channels?

Evaluation Tasks

Table 2 summarizes the 2020 evaluation activities planned for the Retail Products Initiative.

Table 2. Summary of Retail Products Initiative Evaluation Activities for 2020

Activity	Impact	Process	Forward Looking	Details
Initiative Staff Interviews & Ride-Along		✓	✓	Conduct interviews with AIC and implementation contractor staff to understand initiative design and implementation.
Initiative Materials and Database Review	✓	✓		Review all initiative tracking data, relevant administrative reports, and marketing and outreach materials to document and provide feedback on initiative design with a focus on any changes introduced in 2020.
Participant Survey	✓	✓	✓	For any additional non-lighting products introduced in 2020, we will conduct quarterly participant interviews with participating customers. If executed, participant survey results will be used to estimate NTGRs, installation rates, and participant satisfaction and use of the newly introduced products.
Impact Analysis	✓		✓	Calculate gross and net impacts using the IL-TRM V8.0 and SAG-approved NTGR values for 2020.

We describe each of these activities in detail below.

Task 1. Initiative Staff Interviews and Ride-Along

The evaluation team will conduct up to four in-depth phone interviews with AIC and implementation staff involved in the design and administration of the Retail Products Initiative. We will conduct two rounds of interviews. We will schedule the first round at the beginning of the program year to understand initiative design elements that could impact evaluation methods. We will conduct another round of interviews towards the end of the program year to gather feedback on the initiative performance and implementation challenges that occurred during the year. This second round of interviews will involve an in-person visit by Opinion Dynamics staff to meet with implementation team staff and get firsthand exposure to implementation processes. These interviews and ride-along will allow us to fully explore the details of the initiative design and implementation and to examine the perspective of the people who are in direct contact with participating retailers and processing initiative payments and data. We will conduct phone interviews using experienced Opinion Dynamics staff. We will record and transcribe all interviews to facilitate analysis.

Deliverable: Completed interviews

Deliverable Date: April and December 2020

Task 2: Initiative Materials and Database Review

The evaluation team will conduct a comprehensive review of all initiative materials. This includes initiative implementation plans, marketing plans, QA/QC documents, all materials provided to retailers, as well as mass marketing and in-store materials. We expect to submit a request at the beginning of the program year to obtain materials related to initiative design. We will request additional materials at the end of the program year to ensure we have a complete set of materials used throughout the year. These activities will inform our process evaluation.

Deliverable: Data requests

Deliverable Date: April and December 2020

Task 3: Participant Survey

For any additional products introduced in 2020, the evaluation team will conduct a rolling survey with participating customers. If executed, we will use these surveys to estimate NTGRs and installation rates for each measure. We will also measure participant satisfaction with the initiative measures and processes, as well as how customers are using the discounted products. We will work with initiative staff to determine the best approach to fielding based on the availability of customer contact information. Ideally, we would conduct surveys every few months with recent participants to minimize the time between initiative participation and survey date. The number of target survey completes by measure type will depend on the number of participants, which is unknown at this point. We will target enough completes to achieve 10% precision at 90% confidence for NTGRs and installation rates by measure type.

Deliverable: Draft and final data collection instruments

Deliverable Date: May 2020

Task 4: Impact Analysis

The evaluation team will review all records in the initiative database. We will check to ensure that the correct savings assumptions have been applied for each product type, to verify that the database is providing correct information. We will also assess the database to ensure that project data has been recorded fully and correctly. We will resolve any discrepancies found in the database and report on findings.

We will use the savings parameters outlined in the IL-TRM V8.0 to estimate gross energy and demand savings for each measure. The evaluation team will use these values and data from the initiative tracking database to calculate gross initiative savings. The evaluation team will apply verified installation rates from the IL-TRM V8.0.

For all measures rebated by the Retail Products Initiative, we will calculate 2020 verified net savings by applying SAG-approved NTGRs to verified gross electric and gas savings (see Table 4). We expect that new products will be introduced in 2020 for which a SAG-approved NTGR is not available, and we expect to provide supplemental NTG recommendations to SAG no later than January 2020 for these measures. We will also use the participant survey to estimate NTGR for these new measures to support a recommendation for future years of the Initiative.

Table 3. Retail Products Initiative 2020 NTGRs

Measure Description	NTGR
LED Lighting	0.69
Tier 1 Advanced Power Strips	0.86
Tier 1 Advanced Power Strips (Income Eligible)	1.00
Advanced Thermostats	N/A ^a

^a No NTGR because savings are deemed net savings.

Deliverable: Analysis in draft annual impact evaluation report

Deliverable Date: March 2021

Task 5: Reporting

The evaluation team will include 2020 initiative impacts in the draft Residential Program annual impact evaluation report. We will incorporate our responses to stakeholder feedback in a final report. We will submit separate deliverables containing results from process and forward-looking research tasks.

Deliverable: Chapter in draft annual Residential Program impact report *Deliverable Date:* March 15, 2021

Deliverable: Chapter in final annual Residential Program impact report *Deliverable Date:* April 30, 2021

Evaluation Budget and Timeline

Table 4 summarizes the timing and budget associated with each evaluation activity.

Table 4. Retail Products Initiative 2020 Evaluation Schedule and Budget

Task	Evaluation Activity	Deliverable Date	Budget
1	Initiative Staff Interviews	April and December 2020	\$14,900
2	Initiative Materials and Database Review	April and December 2020	\$12,800
3	Participant Survey	May 2020	\$44,600
4	Impact Analysis	March 2021	\$31,700
5	Draft Annual Impact Report	March 15, 2021	\$52,000
	Comments from AIC and ICC Staff	Within 15 Business Days	
	Final Annual Report	April 30, 2021	
	Process Deliverables	TBD	
Total Budget			\$156,000

2.1.2 Income Qualified

The AIC IQ Initiative is a home energy diagnostic and whole house retrofit offering. The target markets for the initiative are (1) single family customers with household incomes up to 300% of federal poverty guidelines for household size and (2) multifamily properties with the majority of tenants receiving state, federal, or other income-qualified assistance. The IQ Initiative provides no-cost Building Performance Institute (BPI) energy audits that identify building shell and HVAC retrofit opportunities and provide health and safety inspections. During the audit, implementation staff also install energy efficient “direct install” (DI) measures such as LEDs, showerheads, faucet aerators, advanced power strips, pipe insulation, and programmable/advanced thermostats at no cost. Following the audit, customers may also receive building shell measures such as air sealing and insulation, and HVAC measures such as central air conditioner replacements, boilers, and heat pumps. In addition, the IQ Initiative distributes kits with energy efficient products¹ at community events to build customer interest in participating.

The initiative provides all audit services and DI measures at no cost to the customer. Low-income single family customers and multifamily properties pay no out-of-pocket costs for HVAC and shell retrofits through the CAA

¹ Kit contents vary depending on customer type. Dual-fuel (“full”) kits include four LEDs, two faucet aerators, one showerhead, one advanced power strip, and a water heater temperature card. Electric-only kits exclude hot water measures and include four additional LEDs (eight total). Gas-only kits exclude LEDs and power strips, but include a shower timer and a thermostatic valve.

channel. Moderate Income channel² participants may pay out of pocket costs for HVAC-related mechanical repairs and building shell retrofits.

Leidos oversees the implementation of the IQ Initiative in coordination with several implementation partners, across three channels. Walker-Miller and AIC program allies serves moderate-income single family properties and low-income who do not participate in IHWAP. Community Action Agencies (CAAs), with support from AIC partner Resource Innovations, serve low-income single family customers that participate in the IHWAP program at the same time. CMC Energy and three³ AIC program allies serve IQ multifamily properties. All AIC program allies providing initiative services must be “core” allies, meaning they are BPI-certified.

Evaluation Approach

The 2020 evaluation of the Initiative includes both process and impact analyses as outlined in the following sections.

Research Objectives

Impact Questions

1. What are the estimated gross energy and demand impacts from this initiative?
2. What are the estimated net energy and demand impacts from this initiative? (Note: the IQ initiative uses an assumed net-to-gross ratio (NTGR) of 1.0; gross and net savings are identical)
3. What are in-service rates for DI, HVAC, and building shell measures provided during audits?

Process Questions

4. Initiative Design and Implementation Effectiveness
 - a. What were the Initiative’s marketing and outreach efforts?
 - b. Is the Initiative being implemented according to design?
 - c. Have there been any modifications to design or implementation for the Initiative compared to 2019?
 - d. How clearly defined are the roles and responsibilities of the various implementation partners?
 - e. How effectively are the various implementation partners working together to achieve the goals of the Initiative?
 - f. Did implementation and design changes/enhancements in 2019 or 2020 achieve their intended outcomes? What areas for improvement exist?
 - g. What implementation challenges occurred in 2020, if any, and how were they overcome?
 - h. What successes and challenges, if any, has the inclusion of CAAs created? What are the opportunities for improvement?
5. Initiative Participation
 - a. How many single-family homes received audits, direct install measures, and shell/HVAC measures? Has participation met expectations? If not, why?

² Low income customers are defined as those less than 200% of federal poverty guidelines. Moderate income customers are defined as those between 200% and 300% of federal poverty guidelines.

³ In 2019, Assured Energy completed all shell retrofits. AAA Northgate or Rebel Inc. completed all HVAC retrofits.

- b. What was the distribution of CAA and non-CAA single family projects? Did CAA channel participation meet expectations?
 - c. How many multifamily properties and units received audits, direct install measures, and shell/HVAC shell measures? Has participation met expectations? If not, why?
 - d. How many energy savings kits were distributed?
6. Participant Experience and Satisfaction
- a. Are customers satisfied with the participation processes?
 - b. Are customers satisfied with the participation process and Initiative measures?
 - c. How does the participation experience compare between participants who participated through AIC staff versus community agencies?
 - d. What are multifamily property managers'/owners' experiences and satisfaction with the initiative?

Evaluation Tasks

Table 5 summarizes the 2020 evaluation activities planned for the IQ initiative.

Table 5. Summary of Income Qualified Initiative Evaluation Activities for 2020

Activity	Impact	Process	Forward Looking	Details
Initiative Staff Interviews		✓		Gather information about initiative marketing, implementation, and success and challenges in 2020; capture changes compared to 2019; ensure the evaluation plan covers current initiative design and operations.
Initiative Material & Tracking Data Review	✓	✓		Review of implementation plans, marketing plans and collateral, and the initiative tracking database
Process Model Updates		✓		Update initiative process models to reflect any changes made in late 2019 or 2020.
Single Family Participant Survey	✓	✓	✓	Verify measure installation, gather satisfaction and participation experience metrics, understand plan/barriers to converting from audit to retrofits, and experiences working with implementation partners and CAAs
Overarching Income Qualified Process Evaluation Report		✓	✓	Overarching process report presenting a holistic assessment of the operation of the IQ Initiative, incorporating program administrator, implementation partner, and customer perspectives.
Impact Analysis	✓		✓	Estimate gross impacts for 2020 through review of the initiative tracking database and application of the IL-TRM V8.0 and net impacts using the SAG-approved NTGR of 1.0.
Reporting	✓		✓	Final chapter of the Residential Program Annual Impact Evaluation Report

We describe each of these activities in detail below.

Task 1. Initiative Staff Interviews

We will conduct two rounds of interviews with the AIC initiative manager and AIC implementation contractor staff. We will schedule the first round in Q3 2020 and use the process model developed in the 2019 evaluation

as a foundation to discuss planned or executed changes to initiative design and implementation. We will also discuss planned marketing and outreach efforts and any challenges initiative staff have faced or anticipate they will face in 2020. Next, we will conduct another round of interviews in Q4 2020 to get feedback on initiative performance and implementation challenges that occurred during the year. We anticipate conducting five interviews per round (ten total).

Deliverable: Completed interviews

Deliverable Date: June and December 2020

Task 2. Initiative Material & Database Review

We will review initiative materials, including implementation plans, marketing plans and collateral, and tracking databases to assess initiative implementation and provide recommendations for improvement, where applicable. In July 2020, we will request interim program tracking data through June 2020 and other initiative materials. We will use this data to complete initiative process model updates (see Task 3) and to develop a participant survey sample (see Task 4). We will request final program tracking data in January 2021 for use in the final impact evaluation.

Deliverable: Data requests

Deliverable Date: July 2020 and January 2021

Task 3. Initiative Process Model Development

AIC, Leidos and the implementation partners continually adjusted implementation processes throughout 2018 and 2019, and they plan to make substantial changes in 2020. We will update these our implementation process models to capture implementation or design changes in 2020. This task may include additional follow-up e-mails or calls with initiative and implementation staff to confirm process details.

Deliverable: Updated process models (included in the process memo)

Deliverable Date: November 2020

Task 4. Single Family Participant Survey

The evaluation team will field a participant telephone survey with single-family initiative participants in the first half of 2020. We will use a stratified sampling approach to calculate robust verification rates at the measure level. We will also attempt to survey a mix of non-CAA and CAA channel projects and test for significant differences in responses between these groups. The survey will verify measure installation as well as gather information regarding satisfaction with the initiative and the overall participation experience. For customer who have received an audit and DI measures, but not shell and HVAC work, we will ask whether they plan to move forward with shell and HVAC work and if not, why. The evaluation team will conduct the survey in Q3 2020. We expect to complete approximately 250 surveys, but specific targets for measures and channels will depend on the project and measure mix in the tracking data through June 2020.

Deliverable: Draft and final survey instrument

Deliverable Date: August 2020

Task 5. Overarching Income Qualified Process Evaluation Report

Drawing on our process evaluation activities for 2020, the evaluation team will prepare an overarching process evaluation report for the IQ Initiative. The report will aim to provide a holistic assessment of the operation of the IQ Initiative, incorporating program administrator, implementation partner, and customer perspectives.

Deliverable: Draft and final process report

Deliverable Date: November 2020

Task 6. Impact Analysis

The 2020 evaluation will include gross and net impact estimates. The impact evaluation team will use savings algorithms from the IL-TRM V8.0, and data inputs from the initiative tracking database to estimate verified gross savings. Finally, we will calculate 2020 net savings by applying the SAG-approved NTGR of 1.0 to verified gross electric and gas savings.

Deliverable: Results provided in annual impact evaluation report

Deliverable Date: March 2021

Task 7. Reporting

The evaluation team will provide all impact findings in the Residential Program Annual Impact Evaluation Report in March 2020. The evaluation team will provide a draft report for AIC, ICC staff, and SAG review and then deliver a final report that incorporates any comments from the review.

Deliverable: Draft and final annual impact report

Deliverable Date: March 2021

Evaluation Budget and Timeline

Table 6 summarizes the timing and budget associated with each evaluation activity.

Table 6. Income Qualified Initiative 2020 Evaluation Schedule and Budget

Task	Evaluation Activity	Deliverable Date	Budget
1	Initiative Staff Interviews	April and December 2020	\$15,400
2	Initiative Material & Database Review	July 2020 and January 2021	\$8,400
3	Initiative Process Model Development	November 2020	\$10,800
4	Single Family Participant Survey	August 2020	\$45,400
5	Overarching Income Qualified Process Evaluation Report	November 2020	\$20,000
6	Impact Analysis	March 2021	\$51,700
7	Draft Annual Impact Report	March 15, 2021	\$12,400
	Comments from AIC and ICC Staff	Within 15 Business Days	
	Final Annual Impact Report	April 30, 2021	
Total Budget			\$164,100

2.1.3 Public Housing

The AIC Public Housing Initiative offers home energy diagnostic services and whole-house retrofits to multifamily properties owned by government entities (i.e., federal, state, and municipal housing authorities). The Initiative serves properties within AIC territory with an average household income at or below 300% of federal poverty guidelines that are owned or managed by Public Housing Authorities (PHAs).

Leidos and CMC Energy work collaboratively to recruit and deliver the Initiative to customers. Leidos fields initiative inquiries from interested customers through their call center and they complete technical reviews on completed applications to ensure that participants qualify for the Initiative and are in good standing as PHAs.

CMC Energy supports Leidos with customer recruitment through their dedicated outreach representative who contacts eligible PHAs to inform them about the Initiative’s offerings. CMC also leads the day-to-day implementation of the Initiative which includes assisting PHA staff with initiative enrollment, conducting audits,

installing in-unit measures, and following up with participating property managers to confirm installed measures are performing as planned.

Customers are eligible to receive in-unit direct install and building envelope measures through the Initiative. The process for the delivery of these measures is as follows:

- **In-Unit Measures:** An energy advisor from CMC Energy contacts the PHA to schedule an audit and develop a scope of work. CMC then processes the audit and submits the project information to Leidos for approval. Upon receiving project approval, CMC Energy proceeds with installing in-unit direct install measures including (but not limited to) LEDs, low-flow faucet aerators and showerheads, pipe wrap, advanced thermostats, and advanced power strips in tenant units at no cost to the PHA.
- **Building Envelope Measures:** Participants can decide to install envelope measures, such as air sealing, insulation, and mini-split heat pumps either independently or in addition to direct install measures. CMC, Leidos, and program allies all help with generating leads for building envelope upgrade installations. Interested properties must submit an additional application and an energy advisor from Leidos performs a pre-inspection to ensure that the property is eligible to receive building envelope measures. Program allies complete the upgrades upon approval of the pre-inspection. Leidos verifies measure installation by performing a final technical review of 5% of completed projects.

Evaluation Approach

The 2020 evaluation of the Public Housing Initiative includes an impact analysis and a limited process analysis as outlined below. To support these efforts, the evaluation team plans to interview the AIC initiative manager and implementation team, review relevant background materials and documentation and conduct an engineering analysis to determine gross and net impacts.

Research Objectives

Impact Questions

The objective of the 2020 Public Housing Initiative evaluation is to provide estimates of gross and net electric (kWh, kW) and gas (therm) savings associated with the initiative. The 2020 impact evaluation will answer the following questions:

1. What are the estimated gross energy and demand impacts from the Initiative?
2. What are the estimated net energy and demand impacts from the Initiative?

Process Questions

The evaluation team will also explore several process-related research questions as part of the 2020 evaluation:

3. How many projects were completed? By how many different customers? What types of projects?
4. Did participation meet initiative planning expectations? If not, how different was it, and why?
5. What implementation challenges have occurred in 2020, and how has the Initiative overcome them?

6. What have been the biggest successes for the Initiative in 2020? What are the reasons for these successes?

Evaluation Tasks

Table 7 summarizes the 2020 evaluation activities planned for the AIC Public Housing Initiative.

Table 7. Summary of AIC Public Housing Initiative Evaluation Activities for 2020

Activity	Impact	Process	Forward Looking	Details
Initiative Material & Database Review		✓		Review the 2020 database, relevant administrative reports, and marketing and outreach materials to document initiative design and changes.
Initiative Staff Interviews		✓		Conduct interviews with AIC and implementation staff to further understand Initiative performance in 2020.
IL-TRM Application Review	✓			Review initiative tracking data for accuracy, completeness, and to ensure that correct deemed input values and IL-TRM V8.0 specified algorithms are used in calculating savings.
Net Impact Analysis	✓			Calculate net impacts using the IL-TRM V8.0 and SAG-Approved NTGR value of 1.0

Task 1. Initiative Materials and Database Review

The evaluation team will conduct a comprehensive review of all initiative materials and tracking data including marketing and implementation plans, customer communications, and extracts from the tracking database. The purpose of this review is to document the design and implementation of the 2020 Initiative. We anticipate requesting tracking data at mid-year and the end of the year to support the impact evaluation.

Deliverable: Data requests

Deliverable Date: Ongoing

Task 2. Initiative Staff Interviews

We will conduct early-evaluation interviews with AIC and implementation contractor staff to confirm our understanding of the Public Housing Initiative design and implementation in 2020. These interviews will provide AIC and implementation staff with an opportunity to discuss their evaluation priorities for 2020. As in past years, we also plan to complete an interview with initiative staff closer to the end of the year to get staff perspective on initiative performance and detailed information on initiative marketing. In total, we expect to complete four interviews: one interview each with Leidos, CMC, and AIC initiative staff early in the program year and one follow-up interview with Leidos staff at the end of the year. We plan to collect detailed process information about initiative design changes through a separate Multifamily Cross-cutting research activity.

Deliverable: Completed interviews

Deliverable Date: May and December 2020

Task 3. Impact Analysis

To determine gross impacts associated with the Public Housing Initiative, we plan to review contents of the tracking database to identify database errors and duplicate records, and to ensure that the implementer correctly applied savings algorithms and assumptions stated in the IL-TRM V8.0. We will resolve any discrepancies found in the database, report on findings, and provide details related to any gross savings adjustments. The team will use algorithms and assumptions from the IL-TRM V8.0 to calculate verified gross savings associated with the measures recorded in the database. We will calculate 2020 net savings by applying the SAG-approved NTGR of 1.0 to verified gross electric and gas savings. We anticipate beginning the impact analysis in August 2020 based on the expected availability of the final initiative tracking data.

Task 4. Reporting

The evaluation team will provide all impact findings in the Residential Program Annual Impact Evaluation Report in March 2021. The evaluation team will provide a draft report for AIC, ICC staff, and SAG review and then deliver a final report that incorporates any comments from the review.

Deliverable: Chapter in draft annual Residential Program Impact Report *Deliverable Date:* March 15, 2021

Deliverable: Chapter in final annual Residential Program Impact Report *Deliverable Date:* April 30, 2021

Evaluation Budget and Timeline

Table 8 summarizes the timing and budget associated with each evaluation activity.

Table 8. Public Housing Initiative Evaluation Schedule and Budget

Task	Evaluation Task	Deliverable Date	Budget
1	Initiative Material & Database Review	Ongoing	\$7,600
2	Initiative Staff Interviews	May and December 2020	\$6,200
3	Impact Analysis	March 15, 2021	\$32,700
4	Draft Annual Impact Report	March 15, 2021	\$28,600
	Comments from AIC and ICC Staff	Within 15 business days	
	Final Annual Impact Report	April 30, 2021	
Total Budget			\$75,100

2.1.4 HVAC

Through the HVAC Initiative, AIC offers incentives for the purchase of high-efficiency heating and cooling equipment to both single and multifamily homes. The overall goal of this Initiative is to persuade customers to purchase higher-efficiency equipment than they might otherwise purchase. AIC implementation staff work directly with contractors and distributors to educate them about the incentives available, as well as to train them on promoting the initiative. Measures offered through this initiative include: advanced thermostats, air source heat pumps (ASHPs), central air conditioners (CACs), and air source heat pump water heaters (HPWHs). Further, the Initiative includes incentives for both early retirement (ER) and replacement on burnout (RB) of HVAC equipment. Finally, AIC expects to pilot some building envelope measures within this initiative for 2020.

Approved contractors become HVAC Initiative Allies, and receive training from AIC around Initiative requirements, program promotion, and customer communications. AIC assigns a Field Energy Specialist to each ally to support their involvement in the Initiative.

Evaluation Approach

The 2020 evaluation of the HVAC Initiative includes an impact analysis and a limited process analysis as outlined below. To support these efforts, the evaluation team plans to interview the AIC initiative manager and implementation team, review relevant program materials and conduct an engineering analysis to determine gross impacts and apply SAG-approved NTGR values to obtain net impacts.

Research Objectives

Impact Questions

The 2020 impact evaluation will answer the following questions:

1. What were the estimated gross energy and demand impacts from this initiative?
2. What were the estimated net energy and demand impacts from this initiative?

Process Questions

The evaluation team will also explore several process-related research questions as part of the 2020 evaluation:

3. Initiative Participation
 - a. Did customer participation in the initiative meet expectations? If not, how and why did it differ from expectations?
 - b. How many measures were installed through the initiative in 2020? What is the mix of measures?
4. Initiative Design and Implementation
 - a. Did the initiative’s design and implementation change from 2019? If so, how and why was this an advantageous change?
 - b. Did the initiative experience any implementation challenges in 2020? If so, what were they, and how were they overcome?
 - c. What changes could the initiative make to improve participating customer and trade ally experience and generate greater energy savings?

Evaluation Tasks

Table 9 summarizes the 2020 evaluation activities conducted for the HVAC Initiative.

Table 9. Summary of HVAC Initiative Evaluation Activities for 2020

Activity	Impact	Process	Forward Looking	Details
Initiative Material & Database Review	✓	✓		Comprehensive review of initiative data to assess any changes in program processes or impacts and to support sampling and reporting.
Initiative Staff Interviews		✓		Interview AIC and implementation managers to understand goals, progress to date, initiative changes from 2019 and over the 2020 period, successes and challenges, and future goals.

Activity	Impact	Process	Forward Looking	Details
Net Impact Analysis	✓			Review initiative tracking data to ensure that correct deemed input values and IL-TRM V8.0 specified algorithms are used in calculating savings. Determine 2020 net impacts using SAG-approved NTGR values.

We describe each activity below in detail.

Task 1. Initiative Material & Database Review

The evaluation team will conduct a comprehensive review of all initiative materials and tracking data. This includes Residential Program marketing and implementation plans, customer and trade ally communications, and extracts from the Residential Program tracking database (i.e., AMPLIFY). We will request extracts from AMPLIFY on a regular basis and will continue to communicate with AIC and Leidos about data requirements as needed. At a minimum, we will request a mid-year extract of the database in June 2020 and make subsequent requests at the close of 2020 (December 31, 2020) and then again in January 2021, when we expect the database to be finalized.

Deliverable: Data requests

Deliverable Date: Ongoing

Task 2. Initiative Staff Interviews

The evaluation team will conduct two rounds of interviews with AIC and implementation staff. These interviews will focus on assessing goal achievement, initiative design/delivery modifications and reasons for change, implementation challenges and successes, and plans for the initiative’s future. We will plan to conduct the first round of interviews in Q2 2020 and the second round in Q4 2020. Overall, we anticipate conducting four interviews total (two per round).

Deliverable: Conduct Interviews

Deliverable Date: June and November 2020

Task 3. Impact Analysis

To estimate 2020 verified gross savings for the HVAC Initiative, the evaluation team will use appropriate IL-TRM V8.0 savings algorithms to estimate gross savings for each measure. The team will derive inputs for the algorithm primarily from the initiative tracking database (SEER level, climate zone, etc.). When input data are unavailable from the database, the team will use deemed inputs from the IL-TRM V8.0. The team will multiply gross savings by each measure installed, as tracked through the participant database.

The evaluation team will review all of the data in the 2020 tracking database to support estimation of gross impacts for the HVAC Initiative. The evaluation team will apply the SAG-approved NTGRs to gross savings (presented in Table 10) to determine 2020 net impacts.

Table 10. HVAC Initiative 2020 NTGRs

Measure Description	NTGR	
	Electric	Gas
Advanced Thermostats	N/A ^a	N/A ^a
SEER 16+ CAC or ASHP (Early replacement [ER])	0.761	—
SEER 16+ CAC/ASHP (RB)	0.641	—

Measure Description	NTGR	
	Electric	Gas
Heat Pump Water Heaters	0.760	—

^a No NTGR because TRM savings are deemed net savings

Deliverable: Results provided in annual impact evaluation report

Deliverable Date: March 2021

Task 4. Reporting

The evaluation team will provide all impact findings in the Residential Program Annual Impact Evaluation Report in March 2021. The evaluation team will provide a draft report for AIC and ICC staff review and then deliver a final report that incorporates any comments from the review.

Deliverable: Chapter in draft annual Residential Program impact report *Deliverable Date:* March 15, 2021

Deliverable: Chapter in final annual Residential Program impact report *Deliverable Date:* April 30, 2021

Evaluation Budget and Timeline

Table 11 summarizes the timing of each evaluation activity, as well as the budget associated with each task.

Table 11. HVAC Initiative 2020 Evaluation Schedule and Budget

Task	Evaluation Activity	Deliverable Date	Budget
1	Initiative Material & Database Review	Ongoing	\$10,400
2	Initiative Staff Interviews	April and November 2020	\$9,800
3	Impact Analysis	March 2021	\$40,000
4	Draft Report	March 15, 2021	\$30,700
	Comments from AIC and ICC Staff	Within 15 business days	
	Final Report	April 30, 2021	
Total Budget			\$90,900

2.1.5 Appliance Recycling

The Appliance Recycling Initiative promotes the retirement and recycling of functioning, inefficient refrigerators, freezers, and room air conditioners from the homes of AIC’s electric customers by offering a turn-in incentive and free pickup, as well as information and education on the cost of keeping an inefficient unit in operation. This initiative is cross-promoted by the Retail Products Initiative so that customers purchasing new energy efficient refrigerators and freezers know how to dispose of their older equipment, as well as through the Income Qualified Initiative, where in-home assessments are conducted to help identify potential energy efficient upgrades. The initiative also operates alongside the Direct Distribution Efficient Products – Appliance Recycling Kits Initiative (Appliance Recycling Kits Initiative), offering free, energy saving kit items to customers residing within 34 regions identified as having significant populations of low-income customers.

Evaluation Approach

The 2020 assessment of the Appliance Recycling Initiative includes both impact and process analyses as outlined in the following sections.

Research Objectives

Impact Questions

The 2020 Appliance Recycling Initiative evaluation will answer the following questions:

1. What were the estimated gross energy and demand impacts from this initiative?
2. What were the estimated net energy and demand impacts from this initiative?
3. What are the part-use factors, and locations the unit was previously held?

Process Questions

The evaluation team will also explore limited process-related research questions for the 2020 evaluation, including the following:

4. Did the initiative implementation change since 2020? If so, how and why, and was this change advantageous?
5. What were any challenges faced by the implementer in 2020?

Forward-Looking

6. What are the levels of free-ridership and participant spillover for this initiative?

Evaluation Tasks

Table 12 summarizes the 2020 evaluation activities conducted for the Appliance Recycling Initiative.

Table 12. Summary of Appliance Recycling Initiative Evaluation Activities for 2020

Activity	Impact	Process	Forward Looking	Details
Initiative Material and Database Review	✓	✓		Review all initiative materials and data in the tracking database to ensure collection of appropriate data to inform the evaluation.
Initiative Staff Interviews		✓		Interview AIC and implementation staff to gather insights into initiative design and delivery.
Participant Survey (Process & NTG)		✓	✓	The survey will be administered online to gather data to update the Initiative's NTGR, as well as verify participation and appliance locations. The NTG algorithm will be developed based on the IL NTG Protocols.
Impact Analysis	✓			Determine 2020 gross and net impacts using IL-TRM V8.0 and SAG-approved NTGR values.

We describe each activity below in detail.

Task 1. Initiative Material and Database Review

The evaluation team will conduct a review of all initiative materials and tracking data. This will include initiative marketing and implementation plans, as well as the initiative tracking database. The team will rely on tracking

database for relevant data required to estimate gross savings using the IL-TRM V8.0 algorithm. The tracking data also contain measure data, including ex ante savings and incentives.

The team will also request initiative materials, including marketing materials and information regarding the Initiative's processes. These materials will inform the team's design of interview instruments. We will also request customer contact data to support the participant survey effort for this initiative.

The team will make an initial data request in January 2020, with subsequent requests in April 2020 and January 2021, to obtain the final initiative tracking database.

Deliverable: Data requests

Deliverable Dates: January and April 2020 and January 2021

Task 2. Initiative Staff Interviews

The evaluation team will conduct up to two interviews with initiative managers and implementers. The interviews will focus on changes in the Initiative's design or marketing strategy since 2019, specific marketing tactics and perceived results, and initiative performance. Interviews will also provide stakeholders with an opportunity to ensure that the team achieves an up-to-date understanding of initiative operations in 2019 and initiative plans for the near future.

Deliverable: Completed interviews

Deliverable Date: July 2020

Task 3. Participant Survey

The evaluation team will conduct a participant survey to assess participant satisfaction, how often recycled units were plugged in and used, the location of the units, and estimate a NTGR for future application. To capture adequate participant response while minimizing potential recall error and ensuring that the results are available in time for consideration by SAG, we will conduct two waves of surveys (February 2020 and May 2020) with participants who recycled an appliance between April 2019 and April 2020. To streamline evaluation activities, the evaluation team will also include questions and programming to capture data for the Appliance Recycling Kits initiative evaluation. We will deliver a memorandum summarizing these results in mid-2020 so that they may be considered by the Stakeholder Advisory Group in 2020.

Deliverable: Draft and final survey instruments

Deliverable Date: January 2020

Deliverable: Draft memorandum

Deliverable Date: July 2020

Deliverable: Final memorandum

Deliverable Date: August 2020

Task 4. Impact Analysis

The evaluation team will use the tracking database to estimate the Initiative's 2020 verified gross savings. The database contains relevant physical characteristics of appliances recycled through the initiative, including capacity (in cubic feet), year of manufacture, and unit configuration (all inputs to the algorithm for calculating gross savings). We will utilize results of the 2020 participant survey to verify participation and estimate the part use factor (i.e., the proportion of the year the units were plugged in).

To calculate verified net savings, the evaluation team will apply SAG-approved NTGRs (Table 16).

Table 16. Appliance Recycling Initiative 2020 NTGRs

Measure Description	Electric NTGR
Refrigerator	0.71
Freezer	0.64
Room Air Conditioners	0.50

Deliverable: Analysis provided in draft report

Deliverable Date: March 2021

Deliverable: Analysis provided in final report

Deliverable Date: April 2021

Task 5. Reporting

The evaluation team will provide all impact findings in the Residential Program annual impact evaluation report in March 2021. The evaluation team will provide a draft report for AIC, ICC staff, and SAG review and then deliver a final report that incorporates any comments from the review.

Deliverable: Chapter in draft annual Residential Program impact report

Deliverable Date: March 15, 2021

Deliverable: Chapter in final annual Residential Program impact report

Deliverable Date: April 30, 2021

Evaluation Budget and Timeline

Table 13 summarizes the timing of each evaluation activity and provides budgets associated with each task. The total budget for the 2020 Appliance Recycling Initiative evaluation is \$75,500.

Table 13. Appliance Recycling Initiative 2020 Evaluation Schedule and Budget

Task	Evaluation Activity	Deliverable Date	Budget
1	Initiative Material and Database Review	January and April 2020 and January 2021	\$6,000
2	Initiative Staff Interviews	July 2020	\$2,500
3	Participant Survey	August 2020	\$22,000
4	Impact Analysis	March 2021	\$13,500
5	Draft Annual Impact Report	March 15, 2021	\$31,500
	Comments from AIC and ICC Staff	Within 15 business days	
	Final Annual Impact Report	April 30, 2021	
Total Budget			\$75,500

2.1.6 Multifamily

The AIC Multifamily Initiative offers incentives and services that enable energy savings and lower operating costs in market-rate multifamily housing (buildings with three or more units managed by a private entity). The Initiative implementer, CMC Energy (CMC), conducts all outreach and recruitment, performs audits to identify installation opportunities, and provides direct installation of energy-saving measures for building common areas and tenant units. Measures are provided free-of-charge. The types of measures that property managers and tenants are eligible to receive through the Initiative are as follows:

- **In-unit:** Initiative offerings for tenant units include (but are not limited to) specialty LEDs, low-flow showerheads, faucet aerators, programmable thermostats, advanced thermostats, pipe wrap, and

Tier 1 advanced power strips. The implementer is responsible for installing specialty LEDs, low-flow showerheads, faucet aerators, and pipe wrap in tenant units while delivery methods for the advanced and programmable thermostats vary by property. In most cases, property management staff install the thermostats under CMC supervision. However, CMC occasionally leaves thermostats behind for property management staff to install. Before projects are completed, CMC staff verify the installation of all thermostats that were left behind by visiting the units. Similarly, delivery methods for the advanced power strips also vary by property as CMC Energy staff either provide tenants with in-person tutorials about how to use their advanced power strips or they leave the power strips behind for tenants to install (some complexes do not want initiative staff unplugging tenant TVs or other equipment when the tenant is not present).

- **Common Areas:** The Initiative provides lighting and occasional water saving faucet adapter replacements in common areas. More specifically, the implementer offers properties medium screw-based specialty LED replacements for incandescent or halogen lamps in interior and exterior settings. They will also place faucet aerators in common areas with sinks. The implementation contractor conducts all common area lighting upgrades indoors.

Leidos also provides several implementation services to support the Multifamily Initiative including developing marketing materials, providing initiative oversight, networking and outreach with Housing Authorities and other trade organizations and community groups. CMC Energy conducts QA/QC inspections on direct install measures, and is responsible for managing project submissions, inventory, and initiative tracking data.

Evaluation Approach

The 2020 evaluation of the Multifamily Initiative includes an impact analysis and a limited process analysis as outlined below. To support these efforts, the evaluation team plans to interview the AIC initiative manager and implementation team, review relevant background materials and documentation, and conduct an engineering analysis to determine gross and net impacts.

Research Objectives

Impact Questions

The objective of the 2020 Multifamily Initiative evaluation is to provide estimates of gross and net electric (kWh, kW) and gas (therm) savings associated with the Initiative. The 2020 impact evaluation will answer the following questions:

1. What are the estimated gross energy and demand impacts from the Initiative?
2. What are the estimated net energy and demand impacts from this Initiative?

Process Questions

The evaluation team will also explore several process-related research questions as part of the 2020 evaluation:

3. How many projects were completed? By how many different customers? What types of projects?
4. Did participation meet initiative planning expectations? If not, how different was it, and why?
5. What implementation challenges have occurred in 2020, and how has the initiative overcome them?

6. What have been the biggest successes for the Initiative in 2020? What are the reasons for these successes?

Evaluation Tasks

Table 14 summarizes the 2020 evaluation activities planned for the Multifamily Initiative.

Table 14. Summary of Multifamily Initiative Evaluation Activities for 2020

Activity	Impact	Process	Forward Looking	Details
Initiative Material & Database Review		✓		Review the 2020 database, relevant administrative reports, and marketing and outreach materials to document initiative design and changes.
Initiative Staff Interviews		✓		Conduct interviews with AIC and implementation staff to further understand Initiative performance in 2020.
IL-TRM Application Review	✓			Review initiative tracking data for accuracy, completeness, and to ensure that correct deemed input values and IL-TRM V8.0 specified algorithms are used in calculating savings.
Net Impact Analysis	✓			Determine 2020 net impacts using SAG-approved NTGR values.

Task 1. Initiative Materials and Database Review

The evaluation team will conduct a comprehensive review of all initiative materials and tracking data including marketing and implementation plans, customer communications, and extracts from the tracking database. The purpose of this review is to document the design and implementation of the 2020 Initiative. We anticipate requesting tracking data at mid-year and the end of the year to support the impact evaluation.

Deliverable: Data requests

Deliverable Date: Ongoing

Task 2. Initiative Staff Interviews

We will conduct early-evaluation interviews with AIC and implementation contractor staff to confirm our understanding of the Multifamily Initiative design and implementation in 2020. These interviews will provide AIC and implementation staff with an opportunity to discuss their evaluation priorities for 2020. As in past years, we also plan to complete an interview with initiative staff closer to the end of the year to get staff perspective on initiative performance and detailed information on initiative marketing. In total, we expect to complete four interviews: one interview each with Leidos, CMC, and AIC initiative staff early in the program year and one follow-up interview with Leidos staff at the end of the year. We plan to collect detailed process information about initiative design changes through a separate Multifamily Cross-cutting research activity.

Deliverable: Completed interviews

Deliverable Date: May and December 2020

Task 3. Impact Analysis

To determine gross impacts associated with the Multifamily Initiative, we plan to review contents of the tracking database to identify database errors and duplicate records, and to ensure that the implementer correctly applied savings algorithms and assumptions stated in the IL-TRM V8.0. We will resolve any discrepancies found in the database, report on findings, and provide details related to any gross savings adjustments. The team will use algorithms and assumptions from the IL-TRM V8.0 to calculate verified gross savings associated with the measures recorded in the database. For net impacts, we will generally apply the SAG-approved NTGRs for 2020, listed in Table 15. We anticipate beginning the impact analysis in August 2020 based on the expected availability of the final initiative tracking data.

Table 15. Multifamily Initiative 2020 NTGRs

Measure Description	Electric NTGR	Gas NTGR
In-Unit – LEDs	0.960	–
In-Unit – Advanced Thermostat	N/A ^a	N/A ^a
In-Unit – Faucet Aerators	1.004	1.000
In-Unit – Showerheads	1.004	1.000
In-Unit – Pipe Wrap	0.794	1.0
In-Unit – Tier 1 Advanced Power Strips	0.980	–
In-Unit – Shower Restrictor Valve	0.800	0.800
Common Area – LEDs	0.773	–
Air Sealing	0.861	0.800

^a No NTGR because TRM savings are deemed net savings

Deliverable: Chapter in draft annual Residential Program Impact Report *Deliverable Date:* March 15, 2021

Task 4. Reporting

The evaluation team will provide all impact findings in the Residential Program Annual Impact Evaluation Report in March 2021. The evaluation team will provide a draft report for AIC, ICC staff, and SAG review and then deliver a final report that incorporates any comments from the review.

Deliverable: Chapter in draft annual Residential Program Impact Report *Deliverable Date:* March 15, 2021

Deliverable: Chapter in final annual Residential Program Impact Report *Deliverable Date:* April 30, 2021

Evaluation Budget and Timeline

Table 16 summarizes the timing and budget associated with each evaluation activity.

Table 16. Multifamily Initiative Evaluation Schedule and Budget

Task	Evaluation Task	Deliverable Date	Budget
1	Initiative Material & Database Review	Ongoing	\$8,100
2	Initiative Staff Interviews	May and December 2020	\$6,700
3	Impact Analysis	March 15, 2021	\$31,500
4	Draft Annual Impact Report	March 15, 2021	\$23,000
	Comments from AIC and ICC Staff	Within 15 business days	
	Final Annual Impact Report	April 30, 2021	
Total Budget			\$69,300

2.1.7 Direct Distribution of Efficient Products

The Direct Distribution of Efficient Products (Direct Distribution Initiative) provides energy savings kits through two delivery channels, School Kits and Appliance Recycling Kits, described below.

- School Kits:** Provides energy savings kits to students in participating 5th to 8th grade classrooms with a focus on low income communities that receive both electric and gas service from AIC. The kits contain four LED light bulbs, low flow showerheads and faucet aerators, a Tier 1 advanced power strip and a disposable thermometer, as well as a Home Energy Worksheet (HEW) that collects data on fuel type and measure installation. By providing the kits in conjunction with energy conservation education in the classroom, AIC hopes to reduce energy use in participating student homes. To achieve its goals related to the Initiative, AIC will partner with the Illinois Board of Education, parent and teacher organizations, and public and private school systems.
- Appliance Recycling Kits:** Provides energy saving kits to customers, residing within one of 34 low income areas, who have recycled an appliance through the Appliance Recycling Initiative. The kits contain four LED light bulbs, one low flow showerhead, two faucet aerators, a Tier 1 advanced power strip, and a disposable thermometer. By providing the kits through SEEL staff, who are already engaged with the customers, AIC hopes to reduce energy use in participating customer homes.

Evaluation Approach

The 2020 assessment of the Direct Distribution Initiative includes both process and impact analyses for each delivery channel, as outlined in the following sections.

Research Objectives

Impact Questions

For the 2020 evaluation, the team will answer the following questions:

1. What were the estimated gross energy and demand impacts from the Initiative?
2. What were the estimated net energy and demand impacts from the Initiative?

Process Questions

The evaluation team will also conduct a process evaluation to explore how the Initiative is performing. The evaluation will seek to address the following process-related questions:

3. Initiative Participation
 - a. How many kits were distributed to participants?
 - b. What were the installation rates for each measure?
 - c. (Appliance Recycling Kits only) How are participants using advanced power strips? For example, are advanced power strips being used correctly? What equipment is being controlled by advanced power strips?
 - d. (Appliance Recycling Kits only) How well does the Initiative address the historical issue of advanced power strips not being used properly?
4. Initiative Design and Implementation
 - a. Did AIC make any changes to the Initiative since 2019? How did these changes affect initiative performance or delivery?
 - b. What implementation challenges occurred in 2020?
 - c. What changes could AIC make to improve future initiative effectiveness?
 - d. (Appliance Recycling Kits only) What education and training is provided with the kits?
5. Participant Awareness and Satisfaction
 - a. (Appliance Recycling Kits only) How aware are participants of available energy efficiency products?
 - b. (Appliance Recycling Kits only) How satisfied are households with their initiative experience and the measures provided?

Evaluation Tasks

Table 17 summarizes the 2020 evaluation activities conducted for the Direct Distribution Initiative.

Table 17. Summary of School Kits Initiative Evaluation Activities for 2020

Activity	Impact	Process	Forward Looking	Details
Initiative Material and Database Review	✓	✓		Review implementation plan, initiative marketing materials, instructional materials, HEW results (School Kits Initiative only), and data in the tracking database to ensure collection of appropriate data to inform the evaluation.
Initiative Staff Interviews		✓		Interview AIC and implementation staff to gain insights into the Initiative’s design and delivery.
Participant Survey (Appliance Recycling Kits only)	✓	✓	✓	Assess measure installation, collect data for power strip calculations, and lighting measure and NTG for application in future years.
Impact Analysis	✓			Determine 2020 gross and net impacts using IL-TRM V8.0 and SAG-approved NTGR values.

We describe each activity below in detail.

Task 1. Initiative Material and Database Review

The evaluation team will review critical initiative data tracking and documentation, including records of marketing and outreach efforts, instructional materials, web-based student survey results, and all other paperwork. To do so, the team will request the following:

- Initiative tracking database (all available data)
- HEW data (School Kits Initiative only)
- Specification sheets for each item included in the energy efficiency kits
- Initiative instructional materials
- All initiative marketing materials
- Any documentation of implementation processes
- Customer contact data (Appliance Recycling Kits only)

The team will make an initial data request in April 2020, with a subsequent request January 2021 to obtain customer contact information and the final initiative tracking database.

Deliverable: Data requests

Deliverable Dates: April 2020 and January 2021

Task 2. Initiative Staff Interviews

The evaluation team will perform up to six in-depth interviews with AIC staff and implementation contractors, focusing on initiative goals and progress toward meeting these goals. Additionally, the evaluation team will explore the following: Initiative changes since 2019, design and implementation, strengths and weaknesses, and outreach and marketing.

Deliverable: Completed interviews

Deliverable Date: July 2020

Task 3. Impact Analysis

The evaluation team will conduct the following tasks to determine gross and net savings:

- Analyze the initiative tracking database at the end of 2020 to verify participation and measure details
- Apply installation rates for all measures and water heater saturation rate by fuel type, derived from the implementer’s HEW data (School Kits Initiative) and participant surveys (Appliance Recycling Kits)
- Apply the IL-TRM V8.0 per-unit savings for each measure to verified participation numbers to determine verified gross savings
- Apply the SAG-approved NTGRs by measure to calculate net savings (Table 18).

Table 18. Direct Distribution Initiative 2020 NTGRs

Channel	Measure Description	NTGR	
		Electric	Gas
School Kits	LEDs	0.84	–
	Advanced Power Strip	1.00	–

Channel	Measure Description	NTGR	
		Electric	Gas
	Showerheads	1.00	1.00
	Faucet Aerators	1.00	1.00
	Water Heater Setback	1.00	1.00
Appliance Recycling Kits	All measures ^a	1.00	1.00

^a Appliance Recycling Kits are provided to Income Qualified customers only and therefore a NTGR of 1.00 is used.

Deliverable: Analysis provided in draft report

Deliverable Date: March 2021

Deliverable: Analysis provided in final report

Deliverable Date: April 2021

Task 4. Participant Survey

The evaluation team will conduct a participant survey with Appliance Recycling Kit participants to assess measure installation and lighting measure NTGRs. The evaluation team will coordinate this survey with the Appliance Recycling Initiative survey to maximize data collection and minimize customer contact. The evaluation team will use this information to inform future program evaluations and will provide the results in a memorandum delivered in early 2021.

Deliverable: Draft and final survey instruments

Deliverable Date: January 2020

Deliverable: Draft memorandum

Deliverable Date: February 2021

Deliverable: Final memorandum

Deliverable Date: March 2021

Task 5. Reporting

The evaluation team will provide all impact findings in the Residential Program annual impact evaluation report in March 2021. The evaluation team will provide a draft report for AIC, ICC staff, and SAG review and then deliver a final report that incorporates any comments from the review.

Deliverable: Chapter in draft annual Residential Program impact report

Deliverable Date: March 15, 2021

Deliverable: Chapter in final annual Residential Program impact report

Deliverable Date: April 30, 2021

Evaluation Budget and Timeline

Table 19 summarizes the timing of each evaluation activity. Table 19 also shows the budget associated with each evaluation task. The total budget for the 2020 Direct Distribution Initiative evaluation is \$102,100.

Table 19. Direct Distribution Initiative 2020 Evaluation Schedule and Budget

Task	Evaluation Activity	Deliverable Date	Budget
1	Initiative Material and Database Review	August 2020 and January 2021	\$6,800
2	Initiative Staff Interviews	July 2020	\$5,300
3	Impact Analysis	March 2021	\$26,000
4	Participant Survey	March 2021	\$16,000
5	Draft Annual Impact Report	March 15, 2021	\$48,000
	Comments from AIC and ICC Staff	Within 15 business days	

Task	Evaluation Activity	Deliverable Date	Budget
	Final Annual Impact Report	April 30, 2021	
Total Budget			\$102,100

2.1.8 Smart Savers

Smart Savers launched in August 2018 as a pilot market development effort to provide advanced thermostats at no-cost to hard-to-reach customers. Smart Savers has been continued as a regular part of the portfolio in 2019 and is expected to be offered in 2020. For Smart Savers, AIC identifies and targets specific geographic areas. Customers in the targeted areas receive email invitations to apply online or by phone for a free advanced thermostat to install in their home. Implementers also leverage AIC-sponsored events to recruit both single family and multifamily customers. Participating customers in single family homes are given the option of requesting a thermostat to install themselves or a contractor to install the device. For interested multifamily customers, implementation staff contact property managers to arrange for device installs.

Evaluation Approach

The 2020 assessment of the Smart Savers Initiative includes an impact analysis and a limited process analysis.

Research Objectives

Impact Questions

For the 2020 evaluation, the team will answer the following questions:

1. What were the estimated gross energy and demand impacts from the Initiative?
2. What were the estimated net energy and demand impacts from the Initiative?

Process Questions

The evaluation team will also conduct a limited process evaluation to explore how the Initiative is performing. The evaluation will seek to address the following process-related questions:

3. Did AIC make any changes to the Initiative since 2019? How did these changes affect initiative performance or delivery?
4. What implementation challenges occurred in 2020?
5. What changes could AIC make to improve future initiative effectiveness?

Evaluation Tasks

Table 20 summarizes the 2020 evaluation activities to be conducted for the Smart Savers Initiative.

Table 20. Summary of Smart Savers Initiative Evaluation Activities for 2020

Activity	Impact	Process	Forward Looking	Details
Initiative Material and Database Review	✓	✓		Review implementation plan, initiative marketing materials, and data in the tracking database to ensure collection of appropriate data to inform the evaluation.
Initiative Staff Interviews		✓		Interview AIC and implementation staff to gain insights into the Initiative’s design and delivery.
Impact Analysis	✓			Determine 2020 gross and net impacts using IL-TRM V8.0

We describe each activity below in detail.

Task 1. Initiative Material and Database Review

The evaluation team will review Smart Savers data and documentation, including the program implementation plan, marketing materials, and the initiative tracking database.

The team will make an initial data request in April 2020, with a subsequent request in January 2021 to obtain customer contact information and the final initiative tracking database.

Deliverable: Data requests

Deliverable Dates: April 2020 and January 2021

Task 2. Initiative Staff Interviews

The evaluation team will perform up to three in-depth interviews with AIC staff and implementation contractors, focusing on initiative goals and progress toward meeting these goals. Additionally, the evaluation team will explore the following: initiative changes since 2019, design and implementation, strengths and weaknesses, and outreach and marketing.

Deliverable: Completed interviews

Deliverable Date: July 2020

Task 3. Impact Analysis

To determine gross impacts associated with the Smart Savers, we plan to review contents of the tracking database to identify database errors and duplicate records, and to ensure that the implementer correctly applied savings algorithms and assumptions stated in the IL-TRM V8.0. We will resolve any discrepancies found in the database, report on findings, and provide details related to any gross savings adjustments. The team will use algorithms and assumptions from the IL-TRM V8.0 to calculate verified gross savings associated with the measures recorded in the database.

The only measure expected to be delivered through the Smart Savers Initiative in 2020 are residential advanced thermostats. Per SAG agreement, no NTGR is applied to advanced thermostat savings as the savings captured in the IL-TRM V8.0 are inclusive of net effects.

Deliverable: Analysis provided in draft report

Deliverable Date: March 2021

Deliverable: Analysis provided in final report

Deliverable Date: April 2021

Task 4. Reporting

The evaluation team will provide all impact findings in the Residential Program annual impact evaluation report in March 2021. The evaluation team will provide a draft report for AIC, ICC staff, and SAG review and then deliver a final report that incorporates any comments from the review.

Deliverable: Chapter in draft annual Residential Program impact report *Deliverable Date:* March 15, 2021

Deliverable: Chapter in final annual Residential Program impact report *Deliverable Date:* April 30, 2021

Evaluation Budget and Timeline

Table 21 summarizes the timing of each evaluation activity. Table 21 also shows the budget associated with each evaluation task. The total budget for the 2020 Smart Savers Initiative evaluation is \$30,000.

Table 21. Smart Savers Initiative 2020 Evaluation Schedule and Budget

Task	Evaluation Activity	Deliverable Date	Budget
1	Initiative Material and Database Review	August 2020 and January 2021	\$2,000
2	Initiative Staff Interviews	July 2020	\$2,000
3	Impact Analysis	March 2021	\$13,000
4	Draft Annual Impact Report	March 15, 2021	\$13,000
	Comments from AIC and ICC Staff	Within 15 business days	
	Final Annual Impact Report	April 30, 2021	
Total Budget			\$30,000

2.1.9 Cross-Cutting Multifamily Research

AIC plans to make significant changes to the way the multifamily components of the Income Qualified, Public Housing, and Multifamily (market-rate) Initiatives are delivered to property managers during the 2020 program year. In previous program years, property managers that participate in these Initiatives have also been eligible to receive upgrades through the AIC Business Program, including Small Business Direct Install and Custom. In order to access the entire suite of measures available for multifamily facilities, property managers were required to go through a separate application and participation process for each separate initiative.

In 2020, AIC plans to transition the program delivery format for the multifamily components of these three Initiatives to a “one-stop shop” approach. With this format, initiative staff will serve as project coordinators that assist property managers with the process of selecting and implementing a set of upgrades that are best suited for their property. In this context, initiative staff can recommend measures across AIC Residential or Business Program offerings during walk-throughs or audits with property managers. Property managers will then be eligible to receive these upgrades through one streamlined delivery channel.

Illinois stakeholders have expressed an interest in better understanding how to encourage the uptake of more comprehensive energy efficiency for multifamily buildings in AIC service territory. Moreover, early research with property managers can provide valuable insights for initiative re-design efforts as this type of research can help to identify opportunities for course-correction early in the initiative implementation process.

The evaluation team has scoped cross-cutting research to support these research objectives and to provide AIC, Leidos, and CMC with early feedback on the performance of the re-designed multifamily components of the Income Qualified, Public Housing, and Multifamily (market-rate) Initiatives. To make this research most

actionable for the initiative staff, we may adjust the timelines or the research objectives as we receive more information about the rollout of the initiative design changes. In addition to the primary research goals, we will also seek to leverage this research to address initiative-specific issues as needed – e.g., unique barriers facing public housing property managers as compared to property managers in other sectors.

Research Objectives

The following key research objectives shape our planned research:

1. How did the initiative delivery process change in 2020 across the multifamily components of AIC initiative offerings?
2. How do property managers decide whether to complete upgrades at their properties?
 - a. What factors do property managers consider when selecting building upgrades (e.g. cost, comfort, safety, efficiency)?
 - b. How do property managers decide whether it is worthwhile to ad-on high efficiency upgrades?
 - c. What are property managers' decision-making processes for moving forward with more comprehensive upgrades beyond the set of direct install measures that are typically offered through these initiatives?
 - d. How does the initiative re-design delivery model align with property managers' decision-making processes for making upgrades, and for going beyond basic upgrades to incorporate more comprehensive high efficiency measures?
 - e. What are the barriers that may prevent property managers from installing more comprehensive measures?
3. What are property managers' levels of awareness of the different types of measures available to them through additional Residential and Business Program Initiatives?
4. What are property managers' levels of satisfaction with the various aspects of the participation process in which they have been involved (e.g., application process, walk-through or energy audit, measure installation)?
5. What changes could the Initiatives make to improve the initiative participation experience from the property managers' perspective?
6. From the initiative staff perspective, what impact have the 2020 initiative design and delivery changes had on initiative performance compared to previous program years?
 - a. What impact have the changes had on property manager participation?
 - b. What impact have the changes had on property manager satisfaction with the initiatives?
 - c. What impact have the changes had on the types of measures property managers decide to install through the initiatives?
 - d. What impact have the changes had on initiative staff's ability to address issues related to market saturation?
7. What changes could the Initiatives make to increase uptake of energy efficient offerings from across Residential and Business Program offerings (e.g. delivery methods, cross-program channeling, etc.)?

Evaluation Tasks

Table 22 summarizes the planned cross-cutting multifamily research.

Table 22. Summary of Cross-Cutting Multifamily Research Activities for 2020

Activity	Impact	Process	Forward Looking	Details
Initiative Staff Interviews		✓	✓	Conduct interviews with AIC and implementation staff to understand changes in initiative design and implementation
Multifamily Cross-Cutting Property Manager Interviews		✓	✓	Conduct interviews with 45 property manager participants in the Income Qualified, Public Housing, and Multifamily (market-rate) Initiatives to gather feedback about their experience and satisfaction with 2020 initiative design changes
Analysis and Reporting		✓	✓	Develop a final PowerPoint with key findings from the interviews

Task 1. Initiative Staff Interviews

We will conduct interviews with Leidos and CMC to confirm our understanding of the program design changes in 2020 and learn about initiative staff’s experience with these changes in 2020. We plan to conduct interviews at the beginning of the year to learn about the details of initiative re-design plans and at the end of the year to address evaluation questions. In total, we expect to complete four interviews: two interviews each with Leidos and CMC.

Deliverable: Completed interviews

Deliverable Date: August 2020

Task 2. Multifamily Property Manager Interviews

We will conduct up to 45 in-depth interviews with property managers that participate in the multifamily components of the Income Qualified, Public Housing, and Multifamily (market-rate) Initiatives. The purpose of these interviews is to understand property managers’ experiences with the new one-stop shop initiative design. We will specifically explore property managers’ decision-making processes for completing general property upgrades and high efficiency upgrades, assess initiative re-design alignment with these decision-making processes, and investigate property manager satisfaction with initiative components. In addition, we will leverage the information provided in these interviews to make recommendations for opportunities to improve the Initiatives.

Deliverable: Completed interviews

Deliverable Date: October 2020

Task 3. Analysis and Reporting

The evaluation team will provide a summary of key findings from the property manager interviews in the form of a PowerPoint presentation. Where appropriate, we will also report on similarities and differences in findings across the Public Housing, Income Qualified, and Multifamily (market-rate) Initiatives.

Deliverable: PowerPoint presentation with key findings

Deliverable Date: December 2020

Evaluation Budget and Timeline

Table 23 summarizes the timing and budget associated with each evaluation activity.

Table 23. Cross-Cutting Multifamily Research Schedule and Budget

Task	Evaluation Task	Deliverable Date	Budget
1	Initiative Staff Interviews	August 2020	\$6,100
2	Property Manager Interviews	October 2020	\$52,200
3	Analysis and Reporting	December 2020	\$29,800
Total Budget			\$88,100

2.2 Business Program

AIC’s planned Business Program provides services to non-residential customers (including the public sector) and is made up of four main initiatives: the Standard Initiative, the Custom Initiative, the Retro-Commissioning Initiative, and the Streetlighting Initiative. Within these initiatives, numerous subprograms are also offered; for example, AIC offers a small business direct install (SBDI) offering as part of the Standard Initiative. In addition to the four main initiatives being offered in 2020, AIC also offers Building Operator Certification (BOC) training, as well as ongoing pilot efforts including a behavioral effort with a non-residential focus.

In this section, we outline the anticipated evaluation activities for each of the Business Program initiatives. In accordance with Illinois evaluation requirements, we will deliver a draft annual Business Program impact evaluation report on March 15, 2021, covering the 2020 program year. This report will include information in 2020 program participation, 2020 verified gross and net impacts for all Business Program initiatives, as well as initiative and program-level WAML and CPAS for the Program.

In addition, we will deliver a number of stand-alone memos summarizing results of process and NTGR research, where applicable. At the close of the 2020 evaluation, we will deliver an integrated process/forward looking evaluation report that rolls up all the stand-alone memos relevant to the 2020 Business Program.

Table 24. Schedule of 2020 Business Program Evaluation Deliverables

Deliverable	Date
Draft Annual Business Program Impact Evaluation Report	March 15, 2021
Comments Received from Stakeholders (15 business days)	April 3, 2021
Second Draft of Annual Business Program Impact Evaluation Report	April 13, 2021
Comments Received from Stakeholders (5 business days)	April 20, 2021
Final Annual Business Program Impact Evaluation Report	April 30, 2021
Annual Integrated Impact Report	April 30, 2021
Annual Integrated Business Program Process/Forward Looking Evaluation Report	May 31, 2021

2.2.1 Standard

The Standard Initiative offers AIC private and public sector business customers fixed incentives for the installation of prescriptive energy efficiency measures. The following offerings are available through this Initiative:

- The **Core offering** of the Initiative provides incentives for lighting, variable speed drives (VSDs), HVAC equipment, steam traps, compressed air leak repair, and other measures. The Core offering is application-based.
- The **Instant Incentives offering** provides mid-stream incentives to AIC business customers purchasing lighting products at distributor retail locations to help increase the market share of efficient lighting products. Some the products include LED specialty light bulbs, LED tube lighting, and LED recessed lighting. Notched v-belts are available through this offering as well.
- The **Online Store offering** provides all AIC business customers with an e-commerce option to order and receive a variety of energy-saving lighting products, including LEDs, occupancy sensors, advanced thermostats, and advanced power strips.

- The **Green Nozzle offering** provides free efficient water nozzles to gas customers and to customers in the food service sector who use electric or natural gas water heating. This offering has historically accounted for a very small proportion of therm savings for the Standard Initiative.
- The **Small Business offering** provides energy assessments and direct install energy efficiency measures to AIC's small (primarily DS-2 and/or GDS-2) customers. While the Standard Initiative is designed to serve business customers of all sizes, this offering is a critical participation channel for AIC's small customers.

Evaluation Approach

The 2020 assessment of the Standard Initiative focuses on a quantification of energy and demand impacts, estimation of NTGRs for measures sold through the Core, Small Business, and Instant Incentives offerings (for prospective application), as well as process and forward-looking topics.

Research Objectives

Impact Questions

The 2020 impact evaluation will answer the following impact-related questions:

1. What are the estimated gross energy and demand impacts from this initiative? What offerings make up the largest proportions of these impacts?
2. What are the estimated net energy and demand impacts from this initiative?

Process Questions

The 2020 evaluation of the Standard Initiative will also include limited process research, primarily based on our interviews with implementation staff, review of initiative materials, and responses to process-related questions included in the survey efforts planned for this evaluation year. We will seek to answer the following questions:

3. Initiative Participation
 - a. What were the characteristics of participating customers? How many projects were completed and through which offerings? By how many different customers? What types of projects did customers complete?
 - b. Did customer participation meet expectations? If not, how and why is it different from expectations? Were any changes in the mix of customers and projects desirable?
4. Initiative Design and Implementation
 - a. Did the Initiative's implementation change from 2019? If so, how and why? Was this an advantageous change?
 - b. Did the Initiative experience any implementation challenges in 2020? If so, what were they, and how were they overcome?
 - c. What changes could the Initiative make to improve the customer experience and generate greater energy savings?

Forward Looking

The evaluation will also answer the following forward-looking research question:

5. What is the level of participant free-ridership and spillover for measures delivered through the Initiative’s core (application-based), Small Business, and Instant Incentives offerings, for prospective application?

We will explore each of these questions through the activities described in this evaluation plan.

Evaluation Tasks

This section outlines the planned tasks for the 2020 evaluation of the Standard Initiative (Table 25).

Table 25. Summary of Standard Initiative Evaluation Activities for 2020

Activity	Impact	Process	Forward Looking	Details
Initiative Material and Database Review	✓	✓		Gather information about initiative design, implementation and performance in 2020.
Initiative Staff Interviews		✓		Explore changes made since 2019 and gather information about initiative marketing, implementation, and 2020 performance.
Core Participant Survey	✓	✓	✓	Collect information to develop NTGRs for prospective application, verify purchase and installation of equipment, and gather limited information to assess the Core offering’s processes.
Small Business Survey	✓	✓	✓	Collect information to develop NTGRs for prospective application, verify purchase and installation of equipment, and gather limited information to assess the Small Business offering’s processes.
Instant Incentives Survey	✓	✓	✓	Collect information to develop NTGRs for prospective application, verify purchase and installation of equipment, and gather limited information to assess the Instant Incentives offering’s processes.
Impact Analysis	✓			Review initiative tracking data to ensure that correct deemed input values and IL-TRM V8.0 specified algorithms are used in calculating savings. Estimate gross impacts through review of the initiative tracking database and application of the IL-TRM V8.0. Estimate net impacts using SAG-approved NTGR values for 2020.

We describe each of these activities in detail below.

Task 1. Initiative Material and Database Review

The team will conduct a comprehensive review of all initiative materials and tracking data. This includes Business Program marketing and implementation plans, customer and ally communications, and extracts from the Business Program tracking database (i.e., AMPLIFY). We request extracts from AMPLIFY on a regular basis and will continue to communicate with AIC and Leidos about data needs, as needed. At a minimum, we will request a mid-year extract of the database in June 2020 and make subsequent requests at the close of 2020 (December 31, 2020) and then again in January 2020, when we expect the database to be finalized.

Deliverable: Submit data requests

Deliverable Date: Ongoing

Task 2. Initiative Staff Interviews

To support our evaluation, we will develop an in-depth interview guide for 2020 to explore initiative performance, changes since 2019, and other topics relevant to our research objectives. We will conduct two interviews with Business Program staff: (1) a brief interview mid-cycle to understand changes made to the initiative in 2020 and to provide time for the evaluation team to modify any research tasks as necessary and (2) a comprehensive interview toward the end of 2020 allowing the implementation team the opportunity to comment on the initiative's performance throughout the year. In total, we plan to complete between three and five interviews, including interviews with the Business Program managers and marketing staff. We will likely conduct interviews focusing on all Business Program initiatives together, but we will conduct interviews with staff specific to offerings (e.g., implementation staff for the Small Business offering), as needed.

Deliverable: Conduct interviews

Deliverable Date: June and December 2020

Task 3. Core Participant Survey

The evaluation team will conduct a quantitative Internet survey with customers who have completed a project through the Standard Initiative's core (application-based) offering in 2020. The survey will focus on assessing free-ridership and participant spillover for Standard Initiative measures, will include limited questions to verify measure purchase and installation, and will ask questions designed to address initiative processes.

The sample frame will include all customers who have completed a core Standard project achieving savings,⁴ and we anticipate attempting a census of customers in this sample frame with available email addresses. As needed, to ensure representativeness, we will complete up to 25 follow-up phone calls with participants who do not complete the web survey.

We plan to use the data gathered from the survey to develop electric and gas NTGRs that consist of free-ridership and participant spillover for core Standard Initiative measures for prospective application. We will determine the granularity of the NTGRs developed based on a review of initiative data and response rates achieved by the survey. We expect to provide NTGRs for the following equipment types: lighting; Heating, Ventilation, and Air Conditioning (HVAC); specialty equipment; leak survey and repair; variable speed drives (VSDs); and steam traps.

In addition to equipment types, we plan to estimate separate NTGRs for public and private sector participants. However, this requires sufficient participation by public sector customers to support development of separate NTGRs. Depending on the granularity of NTGRs developed, it is possible we will need to provide blended NTGRs incorporating both public and private sector customers for some, if not all, equipment types.

⁴ To expedite survey delivery and analysis, the team plans to conduct this research during the 2020 year and not wait until the initiative year is over. Based on past participation patterns, using a partial year of participant data is unlikely to bias the survey results. The team therefore expects to complete this survey with only a partial program population to ensure delivery of results in Q4 2020. Additionally, evaluation of the Standard Initiative in 2020 includes surveys covering three offerings. While the team plans on attempting a census, there are likely customers who have participated in more than one offering. In these cases, the team will include those customers in the sample for one offering only and will include them to support the NTG analysis for the least common measure they've installed.

We will report results in a memorandum, which will provide our updated NTGRs and include a full description of the methodology used to assess free-ridership and spillover. We will provide a draft memorandum to AIC and ICC staff for review and comment before we finalize results.

Deliverable: Draft and final participant survey instruments

Deliverable Date: June 2020

Deliverable: Draft memorandum

Deliverable Date: November 2020

Deliverable: Final memorandum

Deliverable Date: December 2020

Task 4. Small Business Participant Survey

The evaluation team will conduct a quantitative Internet survey with customers who have completed a project through the Standard Initiative's Small Business offering in 2020. The survey will focus on assessing free-ridership and participant spillover for direct install measures and will also include limited questions to verify measure persistence and to assess initiative processes.

Our sample frame will be customers completing a Small Business project in 2020⁵ and we anticipate attempting a census of customers in this sample frame with available email addresses. As needed to ensure representativeness, we will complete up to 25 follow-up phone calls with participants who do not complete the web survey.

We plan to use the data gathered from the survey to develop electric and gas NTGRs for Small Business measures for prospective application. We plan to estimate separate NTGRs for public and private sector participants, and potentially for different equipment types (note that in 2019 the offering provided direct installation of lighting exclusively). However, this requires sufficient participation by public sector customers to support development of separate NTGRs. We will make the final determination on the granularity of the NTGRs based on a review of initiative data and response rates achieved by the survey.

Similar to the Task 3, we will report results in a memorandum, with updated NTGRs and a description of the methodology used to assess free-ridership and spillover. We will provide a draft memorandum to AIC and ICC staff for review and comment before we finalize results.

Deliverable: Draft and final participant survey instruments

Deliverable Date: July 2020

Deliverable: Draft memorandum

Deliverable Date: November 2020

Deliverable: Final memorandum

Deliverable Date: December 2020

Task 5. Instant Incentives Participant Survey

The evaluation team will conduct a quantitative Internet survey with customers who have made a purchase through the Instant Incentives offering in 2020. The team will use the survey to ask questions designed to illicit information to estimate free-ridership and participant spillover for participants. The survey will also include questions to verify measure installation and to assess initiative processes.

Our sample frame will be customers who made a purchase through this offering in 2020,⁶ and we anticipate attempting a census of customers in this sample frame with available email addresses.

⁵ Ibid.

⁶ Ibid.

We plan to use the data gathered from the survey to develop electric and gas NTGRs that consist of free-ridership and participant spillover for Instant Incentives measures for prospective application. We will determine the granularity of the NTGRs developed based on a review of initiative data and response rates achieved by the survey.

In addition to equipment types, we plan to estimate separate NTGRs for public and private sector participants. However, this requires sufficient participation by public sector customers to support development of separate NTGRs. Depending on the granularity of NTGRs developed, it is possible we will need to provide blended NTGRs incorporating both public and private sector customers for some, if not all, equipment types.

We will report results in a memorandum, which will provide our updated NTGRs, while including a full description of the methodology used to assess free-ridership and spillover. We will provide a draft memorandum to AIC and ICC staff for review and comment before we finalize results.

Deliverable: Draft and final participant survey instruments *Deliverable Date:* August 2020

Deliverable: Draft memorandum *Deliverable Date:* November 2020

Deliverable: Final memorandum *Deliverable Date:* December 2020

Task 6. Impact Analysis

To estimate verified gross impacts associated with measures installed through the Standard Initiative we will conduct an IL-TRM application review for all Standard Initiative projects. We will review initiative tracking data to ensure that correct deemed input values and IL-TRM V8.0 specified algorithms are used in calculating savings, and replicate savings calculations to ensure accuracy. This step will produce gross savings estimates for 2020.

In addition, we will calculate 2020 net savings by applying the SAG-approved NTGRs for 2020 to electric and gas gross savings.

Table 26. Standard Initiative 2020 NTGRs

Measure Description	NTGR	
	Electric	Gas
Core Lighting	83.9%	—
Core HVAC	68.3%	42.6%
Core Leak Survey	84.9%	—
Core Specialty	84.9%	67.5%
Core Steam Trap	—	60.8%
Core VFD	83.3%	—
Green Nozzles	92.0%	89.0%
Instant Incentives – Lighting Measures	91.6%	—
Instant Incentives – Non-Lighting Measures	80.0%	80.0%
Online Store Measures	83.1%	—
Small Business Direct Install	90.8%	90.8%

Deliverable: Results provided in annual report

Deliverable Date: March 15, 2021

Task 7. Reporting

The evaluation team will provide all impact findings in the Business Program Annual Impact Evaluation Report in March 2021. The evaluation team will provide a draft report for AIC, ICC staff, and SAG review and then deliver a final report that incorporates any comments from the review.

Deliverable: Chapter in draft annual Business Program impact report *Deliverable Date:* March 15, 2021

Deliverable: Chapter in final annual Business Program impact report *Deliverable Date:* April 30, 2021

Evaluation Budget and Timeline

Table 27 summarizes the timing and budget associated with each evaluation activity. In total, the 2020 budget for the Standard Initiative evaluation is \$238,700.

Table 27. Standard Initiative 2020 Evaluation Schedule and Budget

Task	Evaluation Activity	Deliverable Date	Budget
1	Initiative Material and Database Review	Ongoing	\$5,100
2	Initiative Staff Interviews	June and December 2020	\$5,300
3	Core Participant Survey	June 2020	\$43,000
4	Small Business Participant Survey	July 2020	\$43,000
5	Instant Incentives Survey	August 2020	\$43,000
6	Impact Analysis	March 2021	\$68,300
7	Draft Annual Impact Report	March 15, 2021	\$31,000
	Comments from AIC and ICC Staff	Within 15 business days	
	Final Annual Impact Report	April 30, 2021	
Total Budget			\$238,700

2.2.2 Custom

The Custom Initiative allows AIC business customers to complete energy efficiency projects that involve the installation of equipment not covered through the Standard or Streetlighting Initiatives. The availability of this initiative allows customers to propose additional measures and tailor projects to their facility and equipment needs. Complex and large-scale new construction and building renovation projects also qualify under the Custom Initiative. Custom incentives are available for both electric and gas equipment, including (but not limited to): lighting, compressed air, HVAC, refrigeration, motors, and industrial process upgrades. These projects normally are complex and unique, requiring separate incentive applications and calculations of estimated energy savings. Incentives are calculated based on energy savings estimates for each project and may vary between different technologies and fuel types.

AIC made the Custom Initiative available to public sector customers beginning in June 2017. Since this time, the Initiative began targeting public sector facilities such as water treatment facilities. Enhanced incentives for public sector or other financially-strained customers is provided where necessary.

The Custom Initiative also includes a number of smaller “incubator” offerings, including:

- The **Metering and Monitoring offering**, which promotes customers’ ability to review and curtail their energy use using sub-meters and software;

- The **SEM offering**, which is designed to help customers achieve ongoing energy and cost savings by motivating changes in participants' organizational culture and business practices to achieve energy reduction and cost savings goals;
- The **Staffing Grant offering**, which provides customers with funding to help address energy efficiency project staffing needs. The offering distributes funds based on the predicted savings that will be achieved by the grant recipients; and
- The **Feasibility Study offering**, which helps participants define project costs and energy savings opportunities, primarily targeting manufacturing/industrial facilities with compressed air systems.

These incubator initiatives are designed primarily to help customers overcome barriers to participation in AIC's Business Program, and typically do not directly yield energy savings.

The Custom Initiative also offers a number of additional services to AIC customers, including education and training opportunities.

Evaluation Approach

The evaluation of the Custom Initiative has impact, process, and forward-looking objectives as outlined below.

Research Objectives

The primary objective of the 2020 Custom Initiative evaluation is to provide estimates of gross and net electric and gas savings associated with the Initiative. In addition, the evaluation includes a targeted process analysis and development of NTGRs (for prospective application).

Impact Questions

The 2020 impact evaluation will answer the following questions:

1. What were the estimated gross energy and demand impacts from the Initiative in 2020?
2. What were the estimated net energy and demand impacts from the Initiative in 2020?

Process Questions

The evaluation team will also conduct a targeted process evaluation in 2020, including both the core Custom Initiative as well as the Initiative's incubator offerings. The process research will utilize data from multiple data collection methods and sources: in-depth interviews with AIC and implementation staff; a quantitative web survey with customers participating in the core Custom Initiative and a review of initiative implementation and marketing materials. We will explore a number of process-related research questions outlined below.

3. Initiative Participation
 - a. What were the characteristics of participating customers? How many projects were completed through the different offerings? By how many different customers? What type of projects?
 - b. Did customer participation meet expectations? If not, how and why is it different from expectations? Would any changes in the mix of customers and projects have been desirable?

4. Initiative Design and Implementation

- a. Did the Initiative’s design and implementation change from 2019? If so, how and why and was this an advantageous change?
- b. Did the Initiative experience any implementation challenges in 2020? If so, what were they, and how were they overcome?
- c. What changes could the Initiative make to improve the customer experience and generate greater energy savings?

5. Participant Experience and Satisfaction

- a. Were participants in the core Custom Initiative satisfied with their experience? What aspects of initiative design or implementation could AIC change to improve effectiveness and participant satisfaction?
- b. What barriers to participation existed for the core Customer Initiative? How is the implementation team seeking to overcome them?

Forward Looking

- 6. What was the level of free-ridership and participant spillover associated with the core Customer Initiative in 2020?

We will explore each of these questions through the activities described in this evaluation plan.

Evaluation Tasks

Table 28 summarizes the 2020 evaluation activities proposed for the Custom Initiative.

Table 28. Summary of Custom Initiative Evaluation Activities for 2020

Activity	Impact	Process	Forward Looking	Details
Initiative Material and Database Review	✓	✓		Gather information about initiative implementation and performance.
Initiative Staff Interviews		✓		Explore changes made since 2019 and gather information about initiative marketing, implementation, and 2020 performance.
Core Initiative Participant Survey		✓	✓	Collect information to develop NTGRs for prospective application, as well as limited information to inform initiative process assessment.
Cannabis Producer Code Compliance Interviews			✓	Research with cannabis producers in Illinois to understand compliance with Illinois energy code and requirements.
Engineering Desk Reviews	✓			Review project documentation and calculations to account for analytical errors, incorrect assumptions, etc.
On-Site Measurement and Verification	✓			Collect data to inform measure verification and verified gross impacts.
Impact Analysis	✓			Review project documentation and calculations to account for analytical errors, incorrect assumptions, etc. Collect data to

Activity	Impact	Process	Forward Looking	Details
				inform measure verification and verified gross impacts. Determine 2020 net impacts using SAG-approved NTGR values.

We describe each of these activities in detail below.

Task 1. Initiative Material and Database Review

The team will conduct a comprehensive review of all initiative materials and tracking data. This includes Business Program marketing and implementation plans, customer and ally communications, and extracts from the Business Program tracking database (i.e., AMPLIFY). We will request extracts from AMPLIFY on a regular basis and will continue to communicate with AIC and Leidos about data needs as needed. At a minimum, we will request a mid-year extract of the database in June 2020 and will make subsequent requests in October, at the close of 2020 (December 31, 2020) and then again in January 2021, when we expect the database to be finalized.

Deliverable: Data requests

Deliverable Date: Ongoing

Task 2. Initiative Staff Interviews

To support our evaluation, we will develop an in-depth interview guide for 2020 to explore initiative performance, changes since 2019, and other topics relevant to our research objectives. We will conduct two interviews with Business Program staff: (1) an interview in the beginning of 2020 to understand changes made to the initiative from 2019 and to provide time for the evaluation team to modify any research tasks as necessary and (2) a comprehensive interview toward the end of 2020 allowing implementation staff the opportunity to comment on the Initiative’s performance throughout 2020. In total, we plan to complete between three and five interviews, including interviews with the Business Program managers and marketing staff. We will likely conduct interviews focusing on all Business Program initiatives together, but we will also conduct interviews with staff specific to this initiative, as needed.

Deliverable: Completed interviews

Deliverable Dates: June and December 2020

Task 3. Custom Participant Survey

The evaluation team will conduct a quantitative web survey with customers participating in the core Custom Initiative in 2020. This survey will collect information on NTGR, as well as initiative processes. The NTGR questions will be used to develop NTGRs for the Custom Initiative for future application.

Our sample frame for the survey will be customers completing a Custom project achieving savings in 2020^{7,8} and we anticipate attempting a census of customers in this sample frame. As needed to ensure representativeness, we will complete up to 25 follow-up phone calls with participants who do not complete the web survey.

⁷ Typically, this does not include participants in incubator offerings. If needed, we will prioritize research with customers participating in incubator offerings.

⁸ To expedite survey delivery and analysis, we will likely begin research during the program year and administer the survey in waves as we receive updated program tracking data.

We will report results from the survey in a memorandum, which will provide our updated NTGRs and include a full description of the methodology used to assess free-ridership and spillover. We will provide a draft memorandum to AIC and ICC staff for review and comment before we finalize results.

Deliverable: Draft and final participant survey instrument

Deliverable Date: July 2020

Deliverable: Draft memorandum

Deliverable Date: January 2021

Deliverable: Final memorandum

Deliverable Date: February 2021

Task 4. Cannabis Producer Code Compliance Interviews

As part of ad-hoc 2019 activities, the evaluation team conducted a brief exploratory analysis to gather information about predicted levels of Illinois Cannabis Regulation & Tax Act energy code compliance among cannabis producers. Results from this analysis revealed several compelling reasons why cannabis producers may be likely to break code requirements. These reasons include the high cost of LEDs in comparison to traditional high-pressure sodium grow lights and producer skepticism about LED impacts on crop quality and yield.

The evaluation team plans to conduct brief, quick-hitting interviews with cannabis producers in AIC service territory to further characterize levels of code compliance. These interviews will help AIC and Illinois stakeholders understand potential market opportunities for AIC to offer efficient lighting to cannabis producers. We plan to conduct interviews with a maximum of 10 cannabis producers in the spring of 2020. We plan to ask producers about the type of lighting currently installed at their facilities including type of lamp technology, lamp wattage, and quantities. Cannabis producers will also be asked to provide additional inputs to measure compliance with lighting power density requirements including facility and canopy size.

Deliverable: Interview findings

Deliverable Date: Q1 2020

Task 5. Impact Analysis

Conducting gross impact analysis for custom projects requires custom engineering calculations. Since custom projects can have large variability in measures and savings, the gross impact analysis for the Custom Initiative will employ a sample-based, bottom-up approach to estimating gross savings. Consistent with prior years, the impact analysis will be based on site-specific engineering desk reviews and on-site measurement and verification.

We will conduct engineering desk reviews and on-site data measurement and verification for a sample of projects to review and verify savings assumptions. This may include an examination of existing equipment and/or the implementer's measurement and verification results. We will tailor the scope of each on-site visit to the specific measures installed at the site, but at a minimum, the review engineer will perform the following actions during the on-site visits:

- Verify that the installed measure(s), for which the initiative participants received an incentive payment, is/are still installed and functioning, and that the quantity is consistent with the number of measures incented.
- Collect additional physical data to further analyze and determine the energy savings resulting from the incented measure(s). The pertinent data collected from each site will be determined based on an in-depth review of the site's project files and will be unique to each installed measure.

As part of this process, the team will submit formal M&V plans and reports for up to 15 of the largest Custom Initiative projects. No other on-site visits will have a written site-specific plan or report.

Based on the results determined for projects in our sample, we will calculate the savings-weighted realization rate (total verified gross savings divided by the total ex ante gross savings). This sample-based realization rate will be used to adjust the ex ante savings for the population of Custom Initiative projects. The ratio estimate of Y , the verified savings for the population of Custom projects, is:

Equation 1. Ratio Estimate of Population Total⁹

$$\hat{Y}_R = \frac{y}{x} X$$

Where:

y = The total verified savings for the sample of projects

x = The total ex ante savings for the sample of projects

X = The ex ante savings for the population of projects

Given the timing of this evaluation plan, it is too early to predict the level of activity expected for the Custom Initiative in 2020 and desirable sample sizes for the impact evaluation. We will determine the optimal sampling approach based on the number, type, and size of projects completed in 2020, and target 10% relative precision at 90% confidence (90/10) by fuel type. For budgeting purposes, we assume 60 project reviews. We believe this is a conservative sample size that will be sufficient to provide 90/10 precision at the initiative level, at a minimum, but likely also for two or more sub-groups. As the 2020 evaluation concludes and we update our understanding of Initiative project characteristics, we will revise our planned sample size as necessary.

In an attempt to conduct impact research in a more “real time” fashion, we will develop our sample for engineering desk reviews and on-site verification in multiple waves, using the initiative tracking database as a sample frame. We expect to conduct three to four waves of impact research for the Custom Initiative in 2020. For each wave, we will stratify the Custom Initiative projects included in the Initiative tracking database by ex ante savings and select a number of projects proportionate to the share of final initiative savings we project the wave represents.

We anticipate drawing separate samples for gas and electric projects and, within each sample, stratifying projects by size. Stratification by size allows us to over-sample large savers, thus ensuring that our analysis covers a sufficient share of initiative savings. From within each stratum, we will randomly sample participants to achieve the precision and confidence targets. As necessary, we will adjust the sample size depending on participation in order to achieve the statistical targets if necessary.

The team will share the results of our gross impact analysis with AIC and ICC staff after the completion of each wave. The Excel file provided for review and discussion will feature the ex ante and verified savings for each project selected for engineering review and/or on-site measurement and verification, the resulting realization rate, and the reasons for the realization rate. To the degree time allows, we will also hold a meeting with AIC and its implementation team, as well as with ICC staff, to discuss the findings and answer any questions.

⁹ Cochran, William. 1977. *Sampling Techniques*. New York: John Wiley & Sons.

We will calculate 2020 net savings by applying the SAG-approved NTGRs for the Custom Initiative of 82.2% and 93.9% to electric and gas gross savings, respectively.

Deliverable: Site visit formal M&V plans *Deliverable Date:* Rolling

Deliverable: Desk review and site visit results *Deliverable Date:* Rolling

Deliverable: Final analysis in draft report *Deliverable Date:* March 2021

Task 6. Reporting

The evaluation team will provide all impact findings in the Business Program annual impact evaluation report in March 2020. The evaluation team will provide a draft report for AIC, ICC Staff, and SAG review and then deliver a final report that incorporates any comments from the review.

Deliverable: Chapter in draft annual Business Program impact report *Deliverable Date:* March 15, 2021

Deliverable: Chapter in final annual Business Program impact report *Deliverable Date:* April 30, 2021

Evaluation Budget and Timeline

Table 29 summarizes the timing and budget associated with each evaluation activity.

Table 29. Custom Initiative 2020 Evaluation Schedule and Budget

Task	Evaluation Task	Deliverable Date	Budget
1	Initiative Material and Database Review		\$6,600
2	Initiative Staff Interviews		\$5,900
3	Core Participant Survey		\$37,300
4	Cannabis Producer Code Compliance Interviews		\$15,000
5	Impact Analysis		\$210,600
6	Draft Annual Impact Report		\$20,300
	Comments from AIC and ICC Staff		
	Final Annual Impact Report		
			\$295,700

2.2.3 Retro-Commissioning

Over time, deferred maintenance and changing operating directives and practices can lead to inefficient operation of building systems. Retro-commissioning is a process that examines current operations relative to the needs of equipment owners and those served by the equipment and determines opportunities for increasing equipment efficiency through maintenance, system tune-ups, scheduling, and optimization of operations.

The Retro-Commissioning (RCx) Initiative helps AIC business and public sector customers identify no-cost and low-cost efficiency optimizations and implement these improvements to achieve energy savings in existing energy-using systems. The initiative includes several offerings:

- Compressed Air
- Large Facilities

- Industrial Refrigeration
- Retro-Commissioning Lite

Secondary objectives of the initiative include:

- Channeling participation into other AIC Business Program initiatives to implement cost-effective equipment replacements and retrofits (e.g., healthcare retro-commissioning studies might recommend that laminar flow restrictors be installed through the Standard Initiative)
- Developing a network of retro-commissioning service providers (RSPs) that will continue to operate in the AIC service territory

Major market barriers to these energy efficiency opportunities are lack of awareness and the cost of the detailed engineering studies. Furthermore, even with a quality study in-hand, customer apathy can inhibit implementation of recommendations, even if they are no-cost. To overcome awareness and financial barriers, the initiative subsidizes RSP studies and publicizes the benefits of retro-commissioning to foster a market for the services, with utility-certified RSPs providing the marketing outreach. AIC incentives pay for 50%–80% of the study cost.

Evaluation Approach

The evaluation of the RCx Initiative includes a quantification of energy and demand impacts and a limited process analysis.

Research Objectives

Impact Evaluation

The 2020 research objectives for the evaluation of the RCx Initiative focus on rigorous impact evaluation. The primary objective of the evaluation is to provide estimates of gross and net electric and gas savings associated with the initiative. More specifically, the 2020 impact evaluation will answer the following questions:

1. What are the estimated gross energy and demand impacts from the Initiative in 2020?
2. What are the estimated net energy and demand impacts from the Initiative in 2020?

Process Evaluation

We plan to conduct a limited assessment of initiative processes in 2020. Our process analysis will primarily focus on changes made by the Initiative moving into 2020 and will be based on our review of initiative materials, initiative staff interviews, and process questions included in the participant survey.

3. Initiative Participation
 - a. What were the characteristics of participating customers? How many projects were completed? By how many different customers? What type of projects?
 - b. Did customer participation meet expectations? If not, how and why is it different from expectations? Would any changes in the mix of customers or projects have been desirable?
 - c. How many RSPs actively participated in the various sectors and offerings targeted by the initiative? How many projects did each RSP complete?

4. Initiative Design and Implementation

- a. Did the Initiative’s design and implementation change from 2019? If so, how and why and was this an advantageous change?
- b. Did the Initiative experience any implementation challenges in 2020? If so, what were they, and how were they overcome?
- c. How satisfied are customers with their experience participating in the Initiative?
- d. What changes could the Initiative make to improve the customer experience and generate greater energy savings?

We will explore each of these questions through the activities described in this evaluation plan.

Evaluation Tasks

The table below summarizes the 2020 evaluation activities proposed for the RCx Initiative.

Table 30. Summary of Retro-Commissioning Initiative Evaluation Activities for 2020

Activity	Impact	Process	Forward Looking	Details
Initiative Material and Database Review	✓	✓		Gather information about initiative implementation and performance.
Initiative Staff Interviews		✓		Explore changes made since 2019 and gather information about initiative marketing, implementation, and 2020 performance.
Impact Analysis	✓			Review project documentation and calculations to account for analytical errors, incorrect assumptions, etc. Collect on-site data to inform measure verification and verified gross impacts. Determine 2020 net impacts using SAG-approved NTGR values.
RSP Interviews		✓		Explore initiative processes, marketing, and overall RSP satisfaction with the initiative.

We describe each of these activities in detail below.

Task 1. Initiative Material and Database Review

The team will conduct a comprehensive review of all initiative materials and tracking data. This includes Business Program marketing and implementation plans, customer and ally communications, and extracts from the Business Program tracking database (i.e., AMPLIFY). We request extracts from AMPLIFY on a quarterly basis and will continue to communicate with AIC and Leidos about data needs as needed.

Deliverable: Data requests

Deliverable Date: Ongoing

Task 2. Initiative Staff Interviews

To support our evaluation, we will develop an in-depth interview guide for 2020 to explore initiative performance, changes since 2019, and other topics relevant to our research objectives. We will conduct two interviews with Business Program staff involved in retro-commissioning: (1) a brief interview mid-cycle to understand changes made to the Initiative in 2020 and to provide time for the evaluation team to modify any

research tasks as necessary and (2) a comprehensive interview toward the end of 2020 allowing implementation staff the opportunity to comment on the Initiative's performance throughout 2020. We will likely conduct interviews focusing on all Business Program initiatives together, but we will conduct interviews with staff specific to this initiative as needed.

Deliverable: Completed interviews

Deliverable Dates: April and November 2020

Task 3. Impact Analysis

Conducting gross impact analysis for retro-commissioning projects requires custom engineering calculations. However, retro-commissioning projects can have large variability in savings among participants. Sources of variability include the physical size of the participant site, the systems installed, the condition of systems prior to retro-commissioning, the extent of control capabilities, the scope and quality of the retro-commissioning study itself, and the willingness of customers to implement recommendations. To appropriately represent this variability, the gross impact analysis for the Retro-Commissioning Initiative will employ a bottom-up approach to estimating gross savings. Consistent with prior years, the impact analysis will be based on site-specific engineering desk reviews¹⁰ and on-site M&V.

Given the timing of this evaluation plan, it is too early to predict the level of activity for the Initiative in 2020 and desirable sample sizes for the impact evaluation. We will determine the optimal sampling approach based on the number and type of projects completed in 2020, and target 90/10 confidence and precision around our results, by fuel type.

We anticipate drawing separate samples for gas and electric projects and stratifying projects into small and large energy savers (or small, medium, and large savers, depending on the initiative results) within each sample. Stratification of projects by size allows us to over-sample large savers, thus ensuring that our analysis covers a sufficient share of initiative savings. From within each stratum, we will randomly sample projects to achieve the desired precision and confidence targets. To ensure diversity of measures and offerings, we may consider stratifying the impact sample by offering if the final population of projects appears to require it.

Depending on the overall level of participation and project characteristics (energy savings and retro-commissioning offering type), we may take one of two sampling approaches to our impact analysis:

- **Conduct engineering desk reviews and on-site M&V for a census of completed projects in 2020.**
- **Conduct engineering desk reviews for a census of completed projects in 2020, coupled with on-site M&V at a stratified random sample of completed projects.** In this case, we will use a stratified ratio estimation technique: we will draw a stratified random sample of projects for on-site verification, determine realization rates for each sampled site (for each impact metric, at the project level), and apply these realization rates to the preliminary verified gross savings values determined for each project through engineering desk reviews to determine overall verified gross savings for the Initiative.

For budgeting purposes, we have assumed that we will conduct 30 engineering reviews and 10 on-site visits. We will adjust the sample size depending on participation in order to achieve the statistical targets, if necessary. As needed, and as project completion timing allows, we will conduct our impact analysis in multiple waves to expedite our 2020 evaluation results.

The team will share the results of our gross impact analysis with AIC and ICC staff in advance of submitting the draft annual report. The Excel file provided for review and discussion will feature the ex ante and verified

¹⁰ As needed, engineering desk reviews will include consumption analysis and modeling on a project-specific basis.

savings for each project selected for engineering review and/or on-site measurement and verification, the resulting realization rate, and the reasons for the realization rate. To the degree time allows, we will also hold a meeting with AIC and its implementation team, as well as with ICC staff, to discuss the findings and answer any questions.

We will calculate 2020 net savings by applying the SAG-approved NTGR of 89.0% to electric and gas gross savings.

Deliverable: Gross impact analysis summary spreadsheet *Deliverable Date:* TBD¹¹

Deliverable: Final analysis in annual report *Deliverable Date:* March 2020

Task 4: RSP Interviews

The evaluation team will develop an in-depth interview guide for 2020 that will explore topics relevant to our evaluation objectives. We will focus on changes to the initiative in 2020, initiative processes, marketing, and overall satisfaction with the initiative. Based on prior RSP participation, we anticipate attempting interviews with a census of participating RSPs and completing no more than 10 interviews, but we will revise these assumptions as necessary upon review of initiative data.

We plan to draft this interview guide in summer 2020 and conduct interviews in fall 2020. We will summarize findings from these interviews in a memo to be delivered in December 2020.

Deliverable: Draft and final interview guide *Deliverable Date:* August 2020

Deliverable: RSP interview findings memo *Deliverable Date:* December 2020

Task 5: Reporting

The evaluation team will provide all impact findings in the Business Program annual impact evaluation report in March 2021. The evaluation team will provide a draft report for AIC, ICC staff, and SAG review and then deliver a final report that incorporates any comments from the review.

Deliverable: Chapter in draft annual Business Program impact report *Deliverable Date:* March 15, 2021

Deliverable: Chapter in final annual Business Program impact report *Deliverable Date:* April 30, 2021

Evaluation Budget and Timeline

Table 31 summarizes the timing and budget associated with each evaluation activity. In total, the 2020 budget for the evaluation of the Retro-Commissioning Initiative is \$105,700.

Table 31. Retro-Commissioning Initiative 2020 Evaluation Schedule and Budget

Task	Evaluation Activity	Deliverable Date	Budget
1	Initiative Material and Database Review	Ongoing	\$2,200
2	Initiative Staff Interviews	April and November 2020	\$4,000
3	Impact Analysis	May 2020	\$59,000
4	RSP Interviews	August 2020	\$18,000
5	Draft Annual Impact Report	March 15, 2021	\$22,500

¹¹ This is dependent upon the sampling approach chosen for 2020.

Task	Evaluation Activity	Deliverable Date	Budget
	Comments from AIC and ICC Staff	Within 15 business days	
	Final Annual Impact Report	April 30, 2021	
Total Budget			\$105,700

2.2.4 Streetlighting

Made available to AIC customers for the first time in 2018, the Streetlighting Initiative incentivizes municipal customers to upgrade their streetlight fixtures. High-intensity discharge (HID) lighting is still the standard technology used for streetlighting in the United States. The Initiative targets existing streetlighting and other outdoor lighting for upgrades from HID to LED technology.

The Initiative targets both municipal customers who own their streetlighting fixtures, and municipal customers with AIC-owned fixtures. For municipalities who own their own fixtures, the Initiative provides incentives for LED replacement at a reduced cost. AIC is currently replacing streetlights it owns with LED technology upon burnout at no cost to customers. However, early replacement of these streetlights is available to customers for a per-fixture fee. The Initiative incentivizes customers to request early replacement of these fixtures and provides an incentive to decrease the per-fixture cost to customers.

Evaluation Approach

The evaluation of the Streetlighting Initiative has both impact and process objectives to provide immediate feedback on this offering to AIC and to ground future evaluation work.

Research Objectives

Impact Questions

The 2020 impact evaluation will answer the following questions:

1. What were the estimated gross energy and demand impacts from the Initiative in 2020?
2. What were the estimated net energy and demand impacts from the Initiative in 2020?

Process Questions

The 2020 process evaluation will answer the following questions:

3. Implementation Improvements
 - a. What actions have taken place to increase Initiative participation in 2020?

We will explore each of these questions through the activities described in this evaluation plan.

Evaluation Tasks

Table 32 summarizes the 2020 evaluation activities proposed for the Streetlighting Initiative.

Table 32. Summary of Streetlighting Initiative Evaluation Activities for 2020

Activity	Impact	Process	Forward Looking	Details
Initiative Material and Database Review	✓	✓		Gather information about initiative implementation and performance.
Initiative Staff Interviews		✓		Discuss theory behind the initiative, implementation challenges, our evaluation approach, and other relevant topics.
Impact Analysis	✓			Review project documentation and calculations to account for analytical errors, incorrect assumptions, etc. Determine 2020 net impacts based on AIC planning assumptions and/or evaluation team recommendations.
IL-TRM Algorithm Updates	✓			Based on engineering desk reviews, develop recommendations for streetlighting measures changes into IL-TRM. (<i>optional task to be performed only on an as-needed basis</i>)

We describe each of these activities in detail below.

Task 1. Initiative Material and Database Review

The team will conduct a comprehensive review of all initiative materials and tracking data. This includes Business Program marketing and implementation plans, customer and ally communications, and extracts from the Business Program tracking database (i.e., AMPLIFY). We request extracts from AMPLIFY on a quarterly basis and will continue to communicate with AIC and Leidos about data needs as needed.

Deliverable: Data requests

Deliverable Date: Ongoing

Task 2. Initiative Staff Interviews

To support our evaluation, we will develop an in-depth interview guide for 2020 to explore initiative performance, changes since 2019 and other topics relevant to our research objectives. We will conduct multiple interviews with Business Program staff: a brief interview mid-cycle to discuss the initiative and to provide time for the evaluation team to modify any research tasks as necessary, as well as a comprehensive interview toward the end of 2020 allowing implementation staff the opportunity to comment on the initiative’s performance throughout 2020. In total, we plan to complete three to five interviews, including interviews with the Business Program managers and marketing staff. We plan to conduct Streetlighting-specific interviews with relevant staff.

Deliverable: Completed interviews

Deliverable Date: April and November 2020

Task 3. Impact Analysis

To assess gross savings in 2020, the evaluation team will conduct engineering desk reviews of the ex ante savings calculations made for streetlighting and apply the IL-TRM algorithm for streetlighting measures. Where necessary, we will assess the assumptions made by the implementation team and comment on their appropriateness. In addition, we will conduct engineering desk reviews of initiative application forms and other supporting documents to ensure that the initiative tracking database represents this information appropriately. To calculate net impacts, the evaluation team will apply the SAG-approved NTGRs of 100% for Utility-Owned Streetlighting and 80% for Municipality-Owned Streetlighting.

Deliverable: Final analysis in annual report

Deliverable Date: March 15, 2021

Task 3a. IL-TRM Algorithm Updates

The evaluation team will use the engineering reviews completed as part of the gross impact analysis to update the streetlighting measure and submit the recommendations for updates to the IL-TRM Technical Advisory Committee for consideration as part of the development process. This task will only occur if necessary (e.g., if the impact evaluation team identifies an issue with the algorithms or participant behaviors that are not captured by the current methodology.).

Deliverable: Recommendations for IL-TRM updates (if necessary)

Deliverable Date: May 15, 2021

Task 4. Reporting

The evaluation team will provide all impact findings in the Business Program annual impact evaluation report in March 2021. The evaluation team will provide a draft report for AIC, ICC Staff, and SAG review and then deliver a final report that incorporates any comments from the review.

Deliverable: Chapter in draft annual Business Program impact report

Deliverable Date: March 15, 2021

Deliverable: Chapter in final annual Business Program impact report

Deliverable Date: April 30, 2021

Evaluation Budget and Timeline

Table 33 summarizes the timing and budget associated with each evaluation activity. In total, the 2020 budget for the evaluation of the Streetlighting Initiative is \$71,500.

Table 33. Streetlighting Initiative 2020 Evaluation Schedule and Budget

Task	Evaluation Activity	Deliverable Date	Budget
1	Initiative Material and Database Review	Ongoing	\$4,500
2	Initiative Staff Interviews	April and November 2020	\$4,500
3	Impact Analysis	March 2021	\$18,500
3a	IL-TRM Algorithm Updates	May 2021	\$7,000
4	Draft Annual Impact Report	March 15, 2021	\$37,000
	Comments from AIC and ICC Staff	Within 15 business days	
	Final Annual Impact Report	April 30, 2021	
Total Budget			\$71,500

2.2.5 Building Operator Certification

AIC, in partnership with the Midwest Energy Efficiency Alliance (MEEA), offers the Building Operator Certification (BOC) training program to building operators in Illinois. BOC is a nationally recognized training and certification program which was developed by the Northwest Energy Efficiency Council (NEEC) and focuses on energy-efficient building operations and preventative maintenance procedures.

The BOC offering consists of two levels of training. The Level I course consists of 8 one-day classes focused on building systems maintenance. The Level II course consists of 7 one-day classes focused on equipment troubleshooting and maintenance. Both courses consist of classroom training, project assignments to be completed at the participant's facility, and in-class tests at the end of each day. Course graduates must renew

their credential annually by accumulating points for maintaining employment; attending approved continuing education webinars; and, implementing projects at their facility. While participants do not need to be AIC customers to enroll in the course, AIC customers receive a discounted rate for early enrollment and receive a partial tuition reimbursement upon completion.

Evaluation Approach

As detailed in the 2018 and 2019 evaluation plans, Opinion Dynamics has developed a gold standard evaluation approach for BOC that uses training industry-standard evaluation models to assess the learning experience of BOC and allows us to link back future outcomes (e.g., EE improvements) to the training itself. This evaluation approach requires a year to pass after training to allow for future outcomes to occur before assessment. As a result, Opinion Dynamics does not yet have results from the evaluation of the 2018 BOC offering, which are expected in early 2020.

Concurrently, the Illinois SAG has formed a Market Transformation Savings Working Group that is likely to discuss similar approaches in 2020. We expect any evaluation approach undertaken by Opinion Dynamics in 2020 for BOC will be consistent with takeaways from the Working Group.

Because of the above (no results from the 2018 evaluation at this time, coupled with Illinois stakeholder work on MT approaches), we do not present a detailed evaluation approach for BOC in this plan, as said approach is likely to be adjusted as a result of these factors. However, should the Working Group not reach a conclusion about how to proceed with BOC, we expect to implement a similar evaluation approach utilized in 2018 and 2019 for the 2020 BOC offering, and have reserved budget in order to do so.

Evaluation Budget and Timeline

The evaluation team has reserved \$120,000 for evaluation of BOC in 2020.

2.3 Voltage Optimization Program

In 2020, AIC will be operating and claiming savings from Voltage Optimization as part of its energy efficiency portfolio. In this section, we outline the anticipated evaluation activities for this program. In accordance with Illinois evaluation requirements, we will deliver a draft annual Voltage Optimization impact evaluation report on March 15, 2021, covering the 2020 program year. This report will include information on 2020 verified impacts.

Voltage optimization (VO) is a form of energy efficiency technology implemented by electric utilities at the distribution substation or circuit level that optimizes voltage levels along distribution circuits to reduce electricity usage. There are two main VO technologies: Conservation Voltage Reduction (CVR) and Volt-Var Optimization (VVO). CVR reduces customer energy consumption by reducing line voltage and VVO improves the power factor to reduce line losses. Once implemented, VO technologies are intended to operate 24 hours a day, 365 days a year. AIC will implement hardware and software solutions using VO technologies.

AIC launched its VO program in 2018, leveraging experience gained from a 2012 VO Pilot Project. As part of 2018 implementation activities, AIC installed hardware, software, and communications components¹² on a

¹² AIC identified multiple technology upgrades required to successfully deploy a VO program. These technology upgrades have hardware, software and communication components.

subset of 1,047 eligible feeders¹³ on a phased basis, with 19 circuits deployed in 2018 and culminating in 1047¹⁴ circuits deployed by 2024. In 2020, evaluation activities will evaluate the impacts of the circuits deployed in 2020.

Evaluation Approach

The 2020 evaluation of the VO Program focuses exclusively on estimating impacts associated with VO implementation.

Research Objectives

Impact Questions

The VO evaluation team seeks to address the following research question:

1. What are the estimated energy savings from VO calculated with the algorithmic approach?

The process evaluation for this program will be limited to annual interviews with program staff, which will aid the evaluation team’s understanding of the status of the program at the start of the evaluation year and inform the team of key developments made as the program matures.

Evaluation Tasks

Table 34 summarizes the 2020 evaluation activities conducted for the Voltage Optimization Program.

Table 34. Summary of Voltage Optimization Evaluation Activities for 2020

Activity	Impact	Process	Forward Looking	Details
Program Staff Interviews	✓			Explore program status, progress deploying VO technology, and potential ramifications for the 2020 evaluation.
Data Request and Materials Review		✓		Request data needed for impact calculations, review and assess data for quality and completeness.
Verification of VO Deployment to Date	✓			Verify installations made through the program.
Impact Analyses	✓		✓	Calculate 2020 impacts using algorithmic approach.

Task 1: Program Staff Interviews

We will conduct an interview with the AIC engineering staff in early 2020 to learn of any changes to program design and implementation, successes and challenges encountered in deploying VO as planned, and any potential impacts changes could have on the evaluation timeline.

Deliverable: Completed interview

Deliverable Date: March 2020

¹³ AIC staff used voltage level as the primary criteria for establishing the initial pool of potential candidate circuits and excluded circuits served by voltage levels > 20 kV or that serve only exempt customers (a customer whose highest 15-minute demand is at or greater than 10 MW).

¹⁴ The number of circuits planned for VO deployment was determined based on calculated assumptions, industry results, and past AIC VO pilot results. The actual number of feeders with VO could increase based on deployment results.

Task 2: Data Request and Materials Review

The evaluation team will request data needed to calculate impacts using the algorithmic approach. We will conduct a comprehensive review of all data submitted in response to the data request. The data review will include a VO program data inventory, QA/QC of submitted data, and an assessment of data coverage.

Deliverable: Data Requests

Deliverable Date: June 2020 and January 2021

Task 3: Verification of VO Deployment to Date

As an ongoing evaluation task, the evaluation team will verify continued operation of VO on circuits for each year of the study. The evaluation team will perform an analysis to verify operations of VO on circuits deployed in 2018 and 2019. This analysis will take place in early 2021 following a data request by January 2021.

Deliverable: VO Verification in Final Report

Deliverable Date: March 2021

Task 4: Impact Analysis: Application of Energy Savings Algorithm

The primary method for calculating energy savings due to VO from January to December 2020 is the following algorithm, which uses AIC's calculated CVR_f as a key input:

Equation 2. VO Savings Algorithm

$$\text{Annual Energy Savings} = \text{Annual Energy Use}_{2014-2016} \cdot CVR_f \cdot \% \Delta V$$

Where:

- Annual Energy Use = The average annual customer energy use over the 2014-2016 timeframe excluding the exempt customers
- CVR_f = The estimate of the conservation voltage reduction factor (assumed to be 0.80)
- $\% \Delta V$ = The percent change in voltage resulting from VO implementation relative to the pre-installation baseline, calculated with one full year of actual pre- and post-voltage using a regression model to control for exogenous factors that may contribute to changes in voltage (e.g., weather) for each circuit.¹⁵
- Through AIC's pilot study and a survey of the literature, AIC estimated that VO will lead to a 3% voltage reduction and a corresponding 2.4% usage reduction on circuits in AIC's territory. Based on these results, a CVR_f of 0.80 is applied to AIC circuits. The evaluation team will utilize the assumed CVR_f factor to calculate impacts from VO in 2020, and the results of this analysis will determine the savings that AIC may claim from the VO program for the program year.

Deliverable: Results provided in annual impact evaluation report

Deliverable Date: March 2021

¹⁵ For circuits that do not have pre-period data, we will use the "off" period during the on/off testing as a baseline.

Task 5: Reporting

The evaluation team will provide all impact findings in the annual impact report in March 2021. The evaluation team will provide a draft report for AIC and ICC staff review and then deliver a final report that incorporates any comments from the review.

Deliverable: Draft and final annual impact report

Deliverable Date: March and April 2021

Evaluation Budget and Timeline

Table 35 summarizes the timing and budget associated with each evaluation activity.

Table 35. Voltage Optimization 2020 Evaluation Schedule and Budget

Task	Evaluation Activity	Deliverable Date	Budget
1	Program Staff Interviews	March 2020	\$7,200
2	Data Request and Materials Review	June 2020, January 2021	\$13,600
3	Verification of VO Deployment to Date	January 2021	\$23,300
4	Impact Analysis: Application of Energy Savings Algorithm	March 2020	\$40,000
5	Draft Annual Impact Report	March 15, 2021	\$30,900
	Comments from AIC and ICC Staff	Within 15 business days	
	Final Annual Impact Report	April 30, 2021	
Total Budget			\$115,000

3. Cross-Cutting Evaluation Activities

3.1 Illinois Statewide Technical Reference Manual Support

The evaluation team is actively involved in the annual IL-TRM update process in a number of ways.

- We are regular participants in Illinois Technical Advisory Committee (TAC) meetings, including participation in weekly calls, as well as reviewing and commenting on IL-TRM update items presented to the TAC.
- Similarly, we are regular participants in Illinois NTG Methods Working Group meetings, and often lead discussion of various topics for consideration during the update cycle.
- In 2020, we expect to be regular participants in the Illinois Lighting Forecast Working Group, formed as part of the 2019 TRM update process to support updates to characterization of the changing lighting market.
- We coordinate and collaborate with other Illinois evaluation teams as needed on key IL-TRM related research.
- We reserve ad-hoc budget and time to support the Illinois TRM Administrator, VEIC, and other Illinois stakeholders in all of the above; for example, during the 2019 evaluation year, we contributed to updates to the TRM's characterization of Tier 2 Advanced Power Strips through an ad-hoc working group that formed as an outgrowth of a pilot study being considered by AIC.

In addition, we scope and execute research activities outside of annual program evaluations and specifically designed to result in IL-TRM updates on an as-needed basis. For the 2020 evaluation cycle, we currently expect to execute the following key research activities to support the IL-TRM.

Residential Advanced Thermostat Research

Consistent with a stipulated agreement reached between the Illinois stakeholders in fall 2018, the evaluation team is currently working with the Illinois Advanced Thermostat Subcommittee and other Illinois evaluators to develop an Illinois-specific approach for design and execution of research to measure the cooling impacts associated with residential advanced thermostats in Illinois.

Based on currently available information on AIC's distribution of advanced thermostats during the 2018 and the rollout of AIC's advanced metering infrastructure (AMI), we expect to begin a study in late 2020, in time to produce an update for the 2021 IL-TRM update cycle. Leveraging the work currently being done as part of the Advanced Thermostat Subcommittee, we expect to submit a research effort-specific evaluation plan later in 2020 that aligns with stakeholder expectations and decision-making and is consistent with other research efforts underway in Illinois. We have begun communications with AIC to initiate AMI data transfer to support this study.

Residential Behavioral Persistence Study

While AIC does not expect to offer a residential behavioral program as part of the 2020 portfolio, 2020 evaluation research will include a study of the persistence of behavioral savings among customers who have previously received HERs through the historical AIC initiative and are currently experiencing a *stoppage* in treatment. Opinion Dynamics began a series of persistence studies starting in 2018, when all but one previously established cohort treated through residential behavioral programs ceased receiving HERs. Results

from this study showed no difference in savings between cohorts that ceased treatment and the cohort that continued to receive treatment. At this time, the 2019 persistence study is in progress using a similar study approach to that employed in 2018, with some modifications.

For the 2020 persistence study, the team will conduct consumption analyses to calculate energy savings for previously treated customers after the *stoppage* in treatment, as well as any decay in savings since the last year in which they received treatment. The team will conduct the consumption analysis at the initiative level to understand the total impacts of the *stoppage* in initiative treatment.

The consumption analysis results will be used to estimate an annual decay rate as follows:

Equation 3. Decay Rate Calculation

$$Decay Rate = 1 - \frac{\% Savings for Treatment Group After Stoppage}{\% Savings for Control in First Year After Stoppage}$$

In addition, the team will estimate lifetime persistence savings:

Equation 4. Lifetime Persistence Savings

$$Lifetime Persistence Savings = \frac{Total Savings for Treatment in First Year After Stoppage}{Decay Rate + Annual Attrition Rate - (Decay Rate * Annual Attrition Rate)}$$

As well as measure life:

Equation 5. Measure Life

$$Measure Life = \frac{Total Savings for Control in First Year After Stoppage + Lifetime Persistence Savings}{Total Savings for Control in First Year After Stoppage}$$

This approach is consistent with other Illinois persistence studies. Findings from the persistence study will be used to inform future updates to the IL-TRM.

Deliverable: Results provided in a persistence study memorandum

Deliverable Date: May 2021

Compressed Air EUL Research

In concert with the ComEd evaluation team, we expect to initiate statewide research designed to inform measure life and persistence estimates for compressed air measures – most notably, compressed air leak repair – in the 2020 evaluation year.

3.2 Non-Energy Impacts Research

Throughout the 2018-2021 evaluation cycle, the Opinion Dynamics team is conducting ongoing research around NEIs. The IL-TRM currently accounts for some NEIs (water savings and some operation and maintenance costs). In addition, the Future Energy Jobs Act (FEJA) instructs Illinois utilities to include greenhouse gas (GHG) emissions reductions in their cost-effectiveness calculations. In conjunction with other statewide evaluators, Opinion Dynamics is investigating other NEIs associated with AIC’s initiatives.

This work plan outlines the research objectives Opinion Dynamics will investigate in 2020. We plan to conduct research that supports NEI quantification for the residential Income Qualified Initiative, the Business Program,

and for cross-cutting public health NEIs of the portfolio overall. We will plan to revise the below tasks as necessary to ensure we most efficiently achieve our research objectives throughout the 2018-2021 cycle.

Research Objectives

The following key research objectives shape our 2020 NEI evaluation plan:

1. What are the pre-treatment conditions for the single- and multi-family participants in AIC’s 2020 Income Qualified Initiative, with respect to prioritized health, safety, and comfort NEIs?
2. What types of NEIs have commercial participants realized as a result of participating in the Business Program’s 2020 Core, SBDI, and Custom initiatives?
3. What are the avoided air quality impacts due to verified net energy efficiency savings from AIC’s 2019 energy efficiency portfolio?

Evaluation Tasks

In this section, we discuss the four tasks we will conduct in 2020.

Task 1: Income Qualified Participant NEIs Assessment

Opinion Dynamics will continue the ongoing primary research to quantify and monetize prioritized health, safety, comfort, and economic NEIs for the Income Qualified Initiative. This research captures NEIs for all types of Initiative participants, including both low- and moderate-income customers and those living in either single-family or multi-family properties. We initiated this multi-year research effort in 2019, developing a pre-treatment survey instrument and sampling plan for initiative participants and a comparison group of similar non-participants. In 2020, we will finalize and field this survey to establish pre-treatment conditions related to participant NEIs. The table below summarizes the research design.

Group	Definition	Pre-Period Survey	Post-Period Survey
Treatment	2020 Participants	<ul style="list-style-type: none"> ▪ Gather self-reported health, safety, comfort, and economic metrics in the 12 months pre-treatment (or past 12 months if comparison) 	<ul style="list-style-type: none"> ▪ Gather self-reported health, safety, comfort, and economic metrics post-treatment (or since first survey, if comparison)
Comparison	Has not participated in AIC Income Qualified Initiative (PY4 - 2019)	<ul style="list-style-type: none"> ▪ Field survey in 2020, using up to four waves to reach participants within 3 months of participation ▪ Survey a share of the comparison group at each survey wave 	<ul style="list-style-type: none"> ▪ Field survey in 2021, using two waves to reach participants 11 to 16 months after participation ▪ Survey a share of the comparison group at each survey wave

Because the pre-treatment surveys will address pre-period conditions retrospectively, we will aim to field the surveys within three months of initiative participation.¹⁶ The evaluation team expects to field the survey in a mail push to web format with the option to call-in to complete. Customers with an email address on file will also receive supplemental email reminders. We will offer respondents a \$30 survey completion incentive.

Results from the pre-treatment survey will comprise the baseline conditions against which we measure NEIs. As such, in 2020 we will also develop a post-treatment survey that correlates to the pre-treatment data collection instrument, with the anticipation of fielding the post-treatment survey to the same respondents in

¹⁶ Pre-treatment surveys will be fielded as soon after participation as possible, but we anticipate that we will not be able to verify specific program participants until after the work has been completed.

2021. In 2020, we will also develop a monetization approach to calculate the economic values of NEIs using Illinois-specific sources.

In 2021, we will combine results from the pre-treatment and post-treatment surveys to calculate changes in NEI metrics due to the initiative. We will use a difference-in-difference formula to calculate the change:

$$\text{Change in NEI Metric Due to Initiative} = (\text{Participant}_{\text{Post}} - \text{Participant}_{\text{Pre}}) - (\text{Comparison}_{\text{Post}} - \text{Comparison}_{\text{Pre}})$$

For example, if 10% of participants reported asthma-related healthcare visits in the pre-period and 7% reported them in the post-period, while 11% of comparison customers reported them in the pre-period and 10% reported them afterwards, the change in asthma-related healthcare visits due to participation would be $(7\% - 10\%) - (10\% - 11\%) = -3\% - -1\% = -2\%$, or a 2 percentage point decrease.

Task 2: Business Program NEI Screening Assessment

Through this task, we will screen for NEIs of commercial energy efficiency. We will develop a set of non-energy impact screening questions to be incorporated in each of the participant surveys planned for the commercial program in 2020, including the Core, Small Business Direct Install (SBDI), and Custom initiatives. Through responses to these questions, we will describe what, if any, added impacts they have realized from their efficiency upgrades beyond energy and cost savings. We anticipate exploring NEIs identified in our 2018 and 2019 literature reviews, including occupant benefits of improved lighting and indoor environments and operations and maintenance impacts (excluding those already captured in the IL TRM). We will also ask participants to identify any additional impacts they have realized, to learn how efficiency has resulted in added costs or benefits for their business. We will report findings as part of the Business program process evaluation reports.

Task 3: Societal Health Benefits Assessment

We will estimate the monetary value of regional air quality-related public health benefits of electric energy efficiency achievements from the AIC portfolio. These benefits accrue to society at large. This task includes two steps: a screening analysis and a more detailed analysis.

First, we will apply U.S. EPA's "Health benefits per kilowatt hour" screening values¹⁷ to rapidly demonstrate the potential order of magnitude of health benefits from AIC's 2019 portfolio verified net kWh impacts. We will report findings in a memo including key assumptions, limitations, and guidance for using the results.

We will then repeat the analysis at a deeper level of detail, using EPA's tools for modeling regional air quality emissions reductions (Avoided Emissions and Generation Tool, or "AVERT") and for modeling the economic value of avoided adverse health outcomes due to air quality (CoBenefits Risk Assessment Health Impacts Screening and Mapping Tool, or "COBRA"). AVERT and COBRA are peer-reviewed tools based on high quality environmental, epidemiological, and economic functions. Both are commonly used in state energy efficiency analysis. We will use AVERT to quantify the emissions avoided (lbs of SO₂, NO_x, CO₂, and PM_{2.5}) due to MWh savings from AIC's energy efficiency portfolio. Using COBRA, we will convert the avoided emissions to improved air quality, estimate the associated annual number of adverse health effects avoided (respiratory symptoms, restricted activity, heart attacks, mortality, etc.), and monetize the annual value of avoided adverse health effects (\$/year). We will coordinate with other Illinois evaluators to develop a consistent approach to using these tools in Illinois. We will report methods and results in a memo.

¹⁷ <https://www.epa.gov/statelocalenergy/estimating-health-benefits-kilowatt-hour-energy-efficiency-and-renewable-energy>

Deliverable: Draft memo summarizing results

Deliverable Date: May 2020

Task 4: SAG and Cross-Utility Coordination

This task covers participation in cross-coordination meetings with other Illinois evaluators, with the goal of aligning methodologies during the evaluation (e.g., methods, survey questions, and others). We will also use this task to prepare for and attend SAG NEI Working Group meetings, as well as the SAG Income Qualified Advisory Committee meetings, when the Committee plans to discuss NEI topics.

Evaluation Budget and Timeline

Table 36 summarizes the budget associated with each 2020 NEI evaluation activity.

Table 36. 2020 NEI Evaluation Budget

Task	Evaluation Activity	Budget
1	Income Qualified Participant NEIs Assessment	\$43,000
2	Business Program NEI Screening Assessment	\$21,000
3	Societal Health Benefits Assessment	\$29,000
4	SAG and Cross-Utility Coordination	\$22,000
Total Budget		\$115,000

3.2.1 Economic and Employment Impacts of AIC Energy Efficiency Programs

During the development of the 2018-2021 portfolios and evaluation plans, as part of NEI research discussions, several stakeholders in Illinois expressed interest in quantifying the impacts of AIC’s energy efficiency portfolio on employment in Illinois. We will be estimating these impacts on a yearly basis.

A range of methods exist for estimating these impacts. During 2018 and 2019, the evaluation team collaborated with the evaluation team for ComEd in development of a methodology for estimating these impacts. A draft methodology has been developed and presented to the SAG NEI Working Group. Draft results from the 2018 portfolio were presented to the Working Group in late 2019, and revisions are in progress. The evaluation team is committed to continuing this research for the 2020 evaluation year, and will do so in a manner consistent with agreement reached in the Working Group on how to proceed for the remainder of the cycle. Once this methodology has been presented and approved, we will add it to this evaluation plan. The budget for the 2020 economic and employment impact research is \$50,000.

3.3 Pilot Research

During the 2020 program year, we understand that AIC is likely to implement a number of pilot efforts that fall outside the bounds of the portfolio as defined in Section 2. Every year, the evaluation team reserves ad-hoc budget to engage with AIC on issues of program design and evaluability. Based on early discussions with AIC, the evaluation team expects to conduct research for multiple pilot efforts in 2020 (e.g. the business behavioral pilot) and has reserved budget to scope and support these efforts as needed.

3.4 Cost-Effectiveness Analysis

Illinois state law (220 ILCS 5/8-103B [“Section 8-103B”] and 220 ILCS 5/8-104 [“Section 8-104”]) directs utilities to operate cost-effective energy efficiency programs, and to demonstrate that their energy efficiency

portfolios are cost-effective using the Illinois Total Resource Cost (TRC) test. In accordance with law, relevant Illinois Commerce Commission (ICC) orders, and policy developed by the Illinois Stakeholder Advisory Group (SAG), we conduct a cost-effectiveness analysis of AIC's energy efficiency portfolio on an annual basis.

Cost-effectiveness testing for the Illinois TRC conducted as part of our annual evaluations will align with national standard practice, as well as directives presented in the Illinois Energy Efficiency Policy Manual Version 2.0, and will incorporate information from AIC program tracking data, Opinion Dynamics' 2020 evaluation of AIC's portfolio, and supporting information from the Illinois TRM (IL-TRM).

To assess cost-effectiveness, the team begins with a valuation of each program's and the portfolio's net total resource benefits, as measured by the avoided costs, the total incremental costs of measures installed, and administrative costs associated with the program. We will work closely with AIC and its implementer to ensure we accurately capture costs and benefits associated with the portfolio.

State law indicates that AIC's requirement is for its energy efficiency portfolio to be cost-effective at the portfolio level, with the exception of Income Qualified programs. Nevertheless, to the degree possible, our analysis will provide insight into the cost-effectiveness of various components of AIC's portfolio to provide further insight for program planning. In addition, we will conduct the program administrator cost test (PA/UCT) to support SAG requested reporting.

We will report results of our analysis in an annual verified cost-effectiveness report to be delivered after yearly program impacts have been finalized. We will utilize best efforts to provide the final 2020 verified cost-effectiveness report no later than July 1, 2021.

3.5 Quality Assurance and Control

Per our contract, the team must hire a separate entity for quality assurance/quality control (QA/QC) review and work collaboratively with this entity to ensure the quality of our evaluation plans, analysis, and reporting. Since PY4, the team has worked with Dr. Richard Ridge, who has a long history in energy efficiency evaluation. In recent years, Dr. Ridge has used his expertise to help write evaluation protocols and oversee other firms in their evaluation efforts, as well as continuing to perform evaluations across the country. From 2005 through 2012, Dr. Ridge was a consultant to the California Public Utilities Commission (CPUC) evaluation staff, where he worked with them to understand evaluation needs, review contractor plans, and participate in many aspects of a multi-million-dollar evaluation effort. From 2008 through 2016, he provided similar support to the New York State Department of Public Service. From 2019 through 2021, he will be assisting in evaluating multiple programs implemented by the California IOUs and third parties and advising the CPUC.

As part of the 2020 evaluation effort, Dr. Ridge will continue to (1) discuss portfolio evaluation plans with the evaluation team, providing advice as needed; (2) participate in ongoing sampling and evaluation design efforts as requested (including the Illinois Net to Gross Working Group); (3) review draft evaluation reports to ensure quality and accuracy; and (4) provide the ICC with a report on the efforts in which he was involved.

3.6 Integrated Reporting

The evaluation team will provide an annual integrated report with impact findings for all AIC initiatives by April 30, 2021. This report will include detailed EM&V tables, an overall AIC portfolio WAML, overall AIC portfolio CPAS calculations, as well as a high impact measure summary table for the Residential Program and Business Program.

Electric utilities may count gas or other fuel savings towards their electric savings goals if (1) a joint electric and gas program runs out of gas funds but electric budget remains available, and (2) if programs save both electricity and gas but there is not a distinct gas program offered. The evaluation team will work with AIC to calculate this conversion. Initial indications for 2020 are that Smart Savers, the Income Qualified Moderate Income channel, and the Custom Initiative will all run out of gas funds in 2020. The lowest cost per unit savings within these three areas is Custom Gas, so it will be included to ensure overall budgets are maximized. Smart Savers and Income Qualified Moderate Income will be included to ensure that prioritization for income eligible residential customers is included to the extent practicable.

4. 2020 Evaluation Budget

The following table outlines the estimated budget to execute the evaluation plans presented above.¹⁸

Table 37. 2020 AIC Evaluation Budget

Initiative/Task		Budget
Initiative-Specific Activities		
Residential Program	Retail Products	\$156,000
	Income Qualified	\$164,100
	Public Housing	\$75,100
	HVAC	\$90,900
	Appliance Recycling	\$75,500
	Multifamily	\$69,300
	Direct Distribution of Efficient Products	\$102,100
	Smart Savers	\$30,000
	Cross-Cutting Multifamily Research	\$88,000
Business Program	Standard	\$238,700
	Custom	\$295,700
	Retro-Commissioning	\$105,700
	Streetlighting	\$72,000
	Building Operator Certification	\$120,000
Pilots		\$180,000
Total Initiative-Specific Efforts		\$1,863,100
Cross-Cutting Activities		
Non-Energy Impacts Research		\$165,000
Illinois Statewide Technical Reference Manual Activities		\$378,200
SAG Participation		\$90,000
Quality Assurance and Control		\$30,000
Verified Cost-Effectiveness Analysis		\$70,000
Integrated Reporting		\$50,000
Other Non-Program Activities (e.g. Evaluation Planning, Utility Collaboration, Project Management, Adjustable Goals Review, etc.)		\$495,000

¹⁸ Please note that the evaluation of the Voltage Optimization Program is conducted under a stand-alone budget and is not included in Table 37. A budget for the 2020 Voltage Optimization evaluation is provided in Section 2.3.

Initiative/Task	Budget
<i>Total Non-Program Efforts</i>	<i>\$1,278,200</i>
Contingency	\$29,575
Total	\$3,170,875

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