



Opinion **Dynamics**

2021 INTEGRATED IMPACT EVALUATION REPORT

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REVISED FINAL



AMEREN
ILLINOIS



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1. EXECUTIVE SUMMARY

This report presents impact evaluation results from Ameren Illinois Company's (AIC) portfolio of energy efficiency programs implemented during the 2021 calendar year. The overarching objective of the 2021 impact evaluation is to determine the gross and net electric energy, electric demand, and natural gas impacts associated with the AIC energy efficiency portfolio. The purpose of this report is to aggregate results from AIC's Residential, Business, and Voltage Optimization Programs and present the utility's performance relative to electric energy savings metrics codified in the Future Energy Jobs Act (FEJA).

Key performance metrics for the portfolio include:

- **Cumulative Persisting Annual Savings (CPAS):** Electric energy savings goals for Illinois utilities are defined based on persisting savings as a percentage of sales. As such, annual evaluations of AIC's programs, including this one, present both first-year savings, as well as persisting savings over the life of delivered measures.
- **Weighted Average Measure Life (WAML):** FEJA allows AIC to create a regulatory asset and amortize and recover the total expenditures of that regulatory asset "over a period that is equal to the weighted average of the measure lives implemented for that year that are reflected in the regulatory asset."¹ Therefore, we present WAML for AIC's electric energy efficiency programs within this report in accordance with the guidelines for calculation presented in the Illinois Stakeholder Advisory Group's (SAG) WAML Report.²
- **Applicable Annual Incremental Goal (AAIG):** The AAIG is defined as the difference between the cumulative persisting electric savings goal for the year being evaluated and the cumulative persisting electric savings goal for the previous year. The utility must achieve sufficient savings through its programs to replace savings from measures at the end of their measure life before progress can be counted towards the AAIG.

1.1 OVERVIEW OF THE AIC PORTFOLIO

AIC's 2021 portfolio is made up of three programs: the Residential Program, the Business Program, and the Voltage Optimization Program. The Residential and Business Programs are split into a number of initiatives, as detailed below:

- **Residential Program**
 - Retail Products Initiative
 - Income Qualified Initiative
 - Public Housing Initiative
 - Multifamily Initiative
 - Home Efficiency – Market Rate Initiative
 - Midstream HVAC Initiative
 - Appliance Recycling Initiative
 - Direct Distribution of Efficient Products (Direct Distribution) Initiative
 - Efficient Choice Tool (ECT)³ Pilot
- **Business Program**
 - Standard Initiative
 - Custom Initiative
 - Retro-Commissioning (RCx) Initiative
 - Streetlighting Initiative
 - Building Operator Certification (BOC)⁴
- **Voltage Optimization Program**

¹ Weighted Average Measure Life Report. Illinois Energy Efficiency Stakeholder Advisory Group. February 20, 2018.

² Ibid.

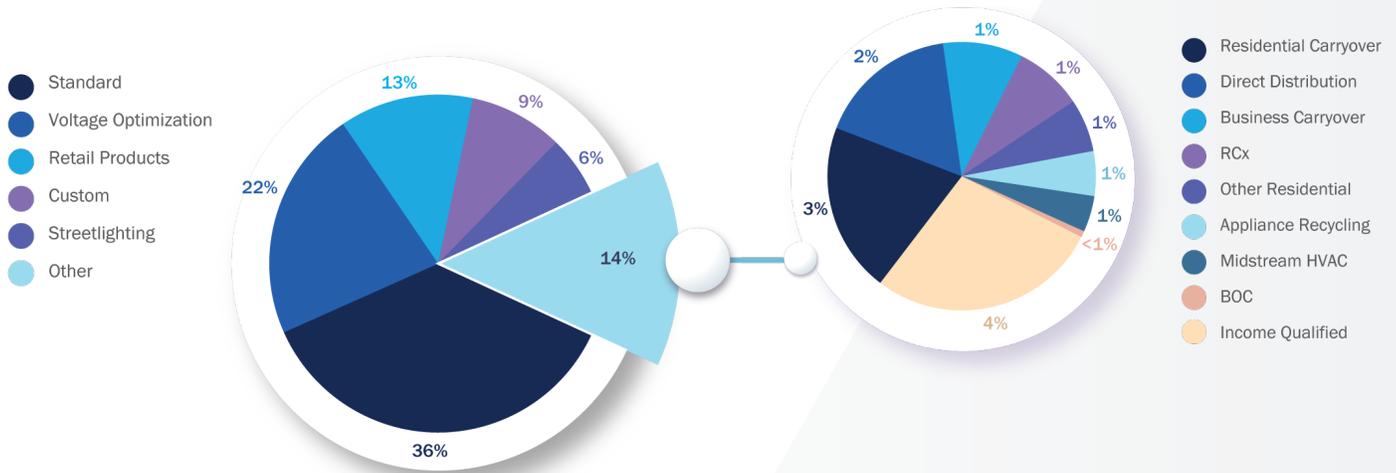
³ The ECT is not technically an initiative but is listed here for simplicity. The ECT is an online platform for comparing and reviewing residential home appliances and consumer electronics. The ECT helps AIC customers conduct relevant product research, providing a range of information that includes product specifications, pricing, tips for use, reviews, images, and vendor locations. AIC piloted the ECT as part of the 2021 Residential Program.

⁴ BOC is not technically an initiative but is listed here for simplicity. BOC provides education and training to customers to encourage more energy-efficient operation of facilities and can lead to energy-efficient actions being taken by customers without further AIC support. We evaluate this offering to estimate energy savings that directly result from it, but AIC does not claim ex ante BOC savings.

Individual Residential and Business Program initiatives may themselves be further split into channels. For more details on the Residential and Business Programs, please see the *2021 AIC Residential Program Annual Impact Evaluation Report* and *2021 AIC Business Program Annual Impact Evaluation Report*.

Overall, the portfolio's savings are driven heavily by a small number of initiatives. The Business Program's Standard Initiative, the Residential Program's Retail Products Initiative, and the Voltage Optimization Program together provide nearly three-quarters (71%) of portfolio verified net electric energy savings.⁵ Figure 1 shows portfolio verified net electric energy savings by initiative.

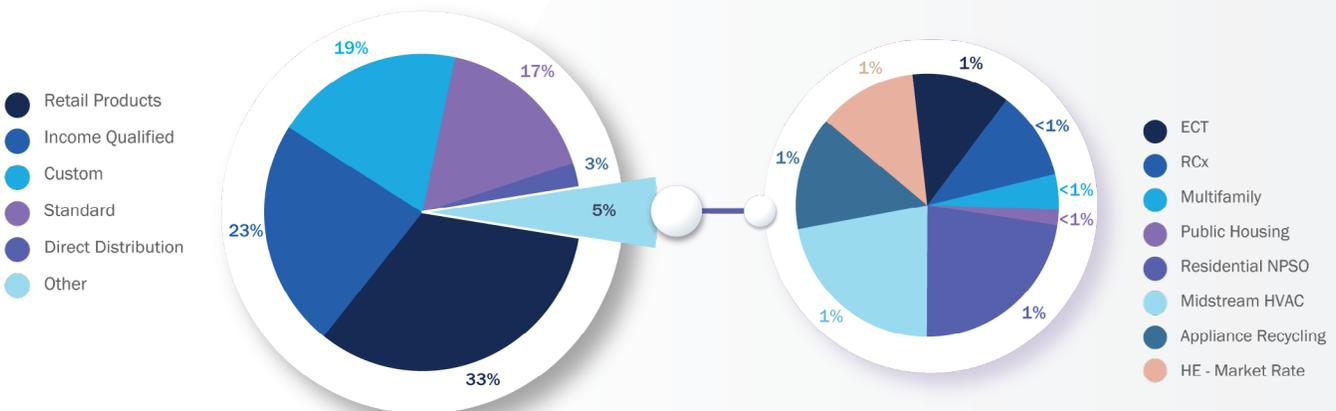
Figure 1. 2021 AIC Portfolio Verified Net Electric Energy Savings by Initiative



Note: Carryover savings are those that derive from measures incented or distributed in prior program years.

Gas savings are somewhat more diversified across initiatives. Four initiatives (Business Standard and Custom, as well as Residential Retail Products and Income Qualified) each provide over 15% of portfolio gas savings. Figure 2 shows portfolio verified net gas savings by initiative.⁶

Figure 2. 2021 AIC Portfolio Verified Net Gas Savings by Initiative



^{5,6} Excluding the conversion of alternate fuels to MWh for goal attainment.

1.2 2021 PORTFOLIO SAVINGS

Overall, AIC's portfolio outperformed its 2021 goal, driven by an increased rollout of Voltage Optimization, and strong performance across the Residential and Business Programs. The portfolio achieved 102% of its AAIG. The portfolio also continued to increase its WAML; the 2021 portfolio achieved a WAML of 13.3 years, continuing its consistent year-over-year increase from 2020 (12.6 years), 2019 (12.2 years), 2018 (11.8 years), and the Transition Period (8.94 years).

1.2.1 ANNUAL SAVINGS

Table 1 presents annual savings achieved by the 2021 AIC portfolio. The conversion of some gas savings to electric energy savings for goal attainment purposes is discussed further in Section 3.1. The calculation of residential nonparticipant spillover (NPSO) is discussed further in Section 2.3.1.

Table 1. 2021 AIC Portfolio Annual Savings

	Energy Savings (MWh)	Peak Demand Savings (MW)	Gas Savings (Therms)
Ex Ante Gross Savings	468,361	64.58	5,076,708
Gross Realization Rate ^a	103%	96%	94%
Verified Gross Savings	482,810	78.11	4,814,208
NTGR	0.890	0.880	0.848
Verified Net Savings Before Conversion, NPSO, BOC	429,666	68.76	4,082,972
Verified Net Savings with NPSO Adder and BOC	430,862	68.97	4,128,388
Converted Savings	21,133	N/A	-721,266
Verified Net Savings After Conversion	451,995	68.97	3,407,122

^a The gross realization rates do not consider all savings for ECT and peak demand savings for the Voltage Optimization Program, as these offerings do not report ex ante demand savings. Therefore, gross realization rates cannot be directly calculated from values presented in this table.

1.2.2 APPLICABLE ANNUAL INCREMENTAL GOAL ACHIEVEMENT

AIC achieved 102% of its 2021 AAIG for electric savings. 2021 AAIG achievement is presented in Table 2.

Table 2. 2021 AIC Portfolio AAIG Achievement

Metric	MWh
2021 Annual Net Savings	451,995
2021 Expiring CPAS from Legislation	139,554
2021 Expiring CPAS from 2020 Portfolio	37
2021 Expiring CPAS from 2019 Portfolio	38,178
2021 Expiring CPAS from 2018 Portfolio	57,665
2021 Annual Incremental Savings Achieved	216,561
2021 AAIG	211,331
% of 2021 AAIG Achieved	102%

1.2.3 CUMULATIVE PERSISTING ANNUAL SAVINGS

Table 3 summarizes overall CPAS and WAML for the 2021 AIC Portfolio. The overall WAML for the portfolio is 13.3 years including Voltage Optimization and 12.9 years excluding Voltage Optimization.

Table 3. 2021 AIC Portfolio CPAS and WAML

Initiative	WAML	First-Year Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2021	2022	2023	2024	...	2030	...	
Residential	10.2	141,554	0.854	120,941	120,941	120,596	120,596	...	84,783	...	1,146,997
Business	14.4	269,320	0.875	235,622	235,622	235,059	230,301	...	208,417	...	3,172,530
Voltage Optimization	15.0	95,431	N/A	95,431	95,431	95,431	95,431	...	95,431	...	1,431,469
2021 Portfolio CPAS		506,305	0.893	451,995	451,995	451,086	446,329	...	388,631	...	5,750,997
Expiring 2021 CPAS				0	0	908	4,758	...	5,808	...	
Expired 2021 CPAS				0	0	908	5,666	...	63,363	...	
WAML	13.3										
WAML without VO	12.9										

1.2.4 CUMULATIVE PERSISTING ANNUAL SAVINGS GOAL ACHIEVEMENT

AIC achieved 103% of its 2021 CPAS goal for electric savings. 2021 CPAS goal achievement is presented in Table 4.

Table 4. 2021 AIC Portfolio AAIG Achievement

Metric	MWh
2021 CPAS from 2021 Portfolio	451,995
2021 CPAS from 2020 Portfolio	442,480
2021 CPAS from 2019 Portfolio	306,057
2021 CPAS from 2018 Portfolio	310,007
2021 CPAS from Legislation	1,116,428
2021 CPAS Achieved	2,626,966
2021 CPAS Goal	2,542,522
% of 2021 CPAS Achieved	103%

2. EVALUATION APPROACH

This section of the report describes the evaluation approach taken for the impact evaluation of the 2021 AIC portfolio. As part of the evaluation process, the evaluation team applied versions of the Illinois Energy Efficiency Policy Manual and the Illinois Technical Reference Manual (IL-TRM) applicable to the 2021 program year (generally Version 1.1⁷ and Version 9.0, respectively) wherever relevant.⁸

2.1 RESEARCH OBJECTIVES AND EVALUATION ACTIVITIES

The overarching research objectives for the impact evaluation of AIC's 2021 energy efficiency programs are:

- What were the estimated gross energy and demand impacts from the portfolio?
- What were the estimated net energy and demand impacts from the portfolio?

The evaluation team met these objectives by conducting the impact evaluation activities outlined in Table 5. As shown, for most initiatives, the impact evaluation primarily consisted of applying savings algorithms from the Illinois Technical Reference Manual (IL-TRM) V9.0 to final initiative tracking databases to estimate verified gross savings. In addition, we reviewed initiative materials and interviewed initiative managers.

Table 5. 2021 Impact Evaluation Activities

Program	Initiative	Gross Impacts					Net Impacts
		IL-TRM Application Review	Engineering Desk Reviews	On-Site M&V	Statistical Analysis	Survey-Based Analysis	Application of SAG-Approved NTGRs
Residential Program	Retail Products	✓					✓
	Income Qualified	✓					✓
	Public Housing	✓					✓
	Multifamily	✓					✓
	Home Efficiency - Market Rate	✓					✓
	Midstream HVAC	✓					✓
	Appliance Recycling	✓					✓
	Direct Distribution	✓					✓
	Efficient Choice Tool	✓				✓	
Business Program	Standard	✓	✓				✓
	Custom		✓	✓	✓		✓
	RCx		✓		✓		✓
	Streetlighting	✓					✓
	BOC	✓	✓				
Voltage Optimization Program		✓			✓		

The following sections provide further detail on the verified gross and net impact evaluation activities.

⁷ Broadly speaking, Version 1.1 of the Policy Manual was in effect during this evaluation. However, a number of individual policies from Version 2.0 of the Policy Manual were also in effect during this evaluation; those individual policies (e.g., Section 11.1) were applied in this evaluation as well.

⁸ In future years, the evaluation team will apply updated versions of these manuals to the evaluation of this Program as required by law, Illinois Commerce Commission orders, and changes to the manuals themselves.

2.2 VERIFIED GROSS IMPACT ANALYSIS APPROACH

2.2.1 APPLICATION OF IL-TRM V9.0

To determine verified gross impacts associated with the majority of the measures delivered through the 2021 AIC portfolio, we reviewed the content of the initiative 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 V9.0 and the IL-TRM V9.0 errata document. In particular, we applied the algorithms and assumptions provided in the IL-TRM V9.0, while using project-specific data from the initiative tracking databases as inputs where appropriate. As part of this process, we also verified measure installations through analysis of initiative tracking databases, as well as through the review of supporting project documentation.

We resolved any discrepancies found in the databases and provide details related to any gross savings adjustments in the initiative-specific sections of this report.

2.2.2 CARRYOVER SAVINGS

In addition to savings achieved by AIC's portfolio through measures delivered during the 2021 program year, AIC also claimed savings in 2021 from lighting measures distributed by the portfolio in prior years but not installed until 2021. The relevant initiatives include:

- **Residential Program**
 - 2019 and 2020 Retail Products Initiatives
 - 2019 and 2020 Direct Distribution Initiative – School Kits Channel
 - 2020 Direct Distribution Initiative – Community Kits Channel
 - 2020 Income Qualified Initiative – Single Family Channel – Safe and Virtual Energy Efficiency (SAVE) Kits
 - 2020 Income Qualified Initiative – Single Family Channel – Bloomington and Normal (BN) Pilot Community Kits
- **Business Program**
 - 2019 and 2020 Standard Initiative: Instant Incentives channel

Carryover savings are evaluated using the applicable net-to-gross ratio (NTGR) from the year in which the product was sold, the applicable in-service rate (ISR) trajectory assumption based on the year in which the product was sold, and IL-TRM V9.0 and IL-TRM V9.0 errata assumptions for all other relevant impact parameters.

We reported previously on AIC's 2021 carryover savings as part of an earlier memo.⁹

2.2.3 APPLICATION OF CUSTOM IMPACT METHODS

The Custom and RCx initiatives, as well as a small number of Standard Initiative measures, savings achieved through BOC, and the Efficient Choice Tool, are not suitable for gross impact analysis solely using the IL-TRM. These initiatives require custom energy savings calculations to determine some or all gross impacts.¹⁰ Further details on the custom impact methods applied for these initiatives are presented in the *2021 AIC Residential Program Annual Impact Evaluation Report* and *2021 AIC Business Program Annual Impact Evaluation Report*.

Custom impact evaluation methods as applied to these programs often involve some degree of direct measurement of either energy savings or relevant impact parameters. As a result of the COVID-19 pandemic, which affected program implementation and operation for the majority of the 2021 program year, customer behavior and energy usage may have changed, potentially affecting custom project evaluation.¹¹ Per SAG agreement, the evaluation team normalized 2021 energy savings estimated through custom evaluation methods to reflect a typical evaluation year,¹² obviating this concern around effects on annual and persisting savings.

⁹ Memo is awaiting finalization.

¹⁰ Note that, where possible, we applied IL-TRM assumptions and measure characterizations for evaluation of these initiatives in accordance with evaluation best practice.

¹¹ Note that because relevant impact parameters for prescriptive measures were deemed in the IL-TRM V9.0 before the program year began, no such effect exists for prescriptive measures.

¹² Illinois Energy Efficiency Stakeholder Advisory Group. Policy Resolution – 2021 Program Year. 2021. Accessed at: https://ilsag.s3.amazonaws.com/SAG-Policy-Resolution_Normalization_Final_3-24-2021.pdf

2.3 VERIFIED NET IMPACT ANALYSIS APPROACH

To determine verified net savings for the 2021 AIC portfolio, we primarily applied SAG-approved NTGRs to verified gross savings. There is one exception to this approach: for BOC training, we treated the savings as participant spillover per IL-TRM guidance.¹³ As a result, we did not apply a SAG-approved NTGR to evaluated savings—all savings claimed were already determined to have been influenced by BOC.

2.3.1 NON-PARTICIPANT SPILLOVER

Net impact evaluation of AIC's Residential Program includes a non-participant spillover (NPSO) adder on net savings for non-income qualified efforts.¹⁴ This adder is 3.1% for non-income-qualified electric savings (energy and demand) and 4.4% for non-income qualified gas savings. Table 6 summarizes verified, non-IQ net savings for AIC's Residential Program by channel and computes the NPSO adder as defined above.

Table 6. 2021 Residential Program Verified Net Savings Summary for Non-IQ Programs

Channel	Verified Net MWh	Verified Net MW	Verified Net Therms
Retail Products (Non-IQ)	24,438	4.30	930,663
Retail Products Carryover (Non-IQ)	5,757	0.69	0
Home Efficiency - Market Rate	112	0.05	24,406
Midstream HVAC	2,561	1.06	44,200
Appliance Recycling	2,515	0.36	0
Multifamily	1,247	0.16	8,712
Efficient Choice Tool	430	0.06	24,209
<i>Non-Income Qualified Residential Program Subtotal</i>	<i>37,060</i>	<i>6.68</i>	<i>1,032,190</i>
Residential NPSO Adder	1,149	0.21	45,416

¹³ 2021 Illinois Statewide Technical Reference Manual for Energy Efficiency Version 9.0, Attachment A: Illinois Statewide Net-to-Gross Methodologies. Table 2-1. 2021. Accessed at: https://ilsag.s3.amazonaws.com/IL-TRM_Effective_010121_v9.0_Vol_4_X-Cutting_Measures_and_Attach_09252020_Final.pdf

¹⁴ Opinion Dynamics. Ameren Illinois Company Energy Efficiency Portfolio 2021 Net-to-Gross Ratios. 2020. Accessed at: <https://ilsag.s3.amazonaws.com/AIC-2021-NTGR-Recommendations-for-SAG-FINAL-2020-09-30.xlsx>

2.4 SOURCES AND MITIGATION OF ERROR

The evaluation team took steps to mitigate potential sources of error throughout the planning and implementation of the 2021 evaluation. Specifically, we took the following actions to address potential sources of error:

Analysis Error

- **Prescriptive Gross Impact Calculations:** For prescriptive gross impact calculations, we applied IL-TRM V9.0 calculations to the participant data in the tracking database to calculate gross impacts. To minimize data analysis error, a separate team member reviewed all calculations to verify their accuracy.
- **Custom Gross Impact Calculations:** We determined custom gross impacts using desk reviews and data collected during remote and on-site measurement and verification (M&V). To minimize data analysis errors, the evaluation team had all calculations reviewed by a separate team member to verify that calculations were performed accurately.
- **Net Impact Calculations:** For net impact calculations, we applied SAG-approved NTGRs to estimated gross impacts to derive net impacts. To minimize analytical errors, all calculations were reviewed by a separate team member to verify their accuracy.

Sampling Error

- **Custom Initiative Impact Sample:** The evaluation team completed an impact review for 44 of 134 Custom Initiative projects achieving savings in 2021, drawing three waves of stratified samples separately for projects claiming electric and gas savings. For gross impact results, at the 90% confidence level, we achieved a relative precision of 8.9% for electric energy savings, 7.4% for electric demand savings, and 9.7% for gas savings.
- **Retro-Commissioning Impact Sample:** The evaluation team completed desk reviews for a census of Retro-Commissioning projects. There is therefore no sampling error around our impact results.

Non-Sampling Error:

- **Measurement Error:** To minimize data collection error during remote and on-site M&V, the evaluation team used trained engineers and technicians familiar with the equipment covered by the Custom Initiative, the Retro-Commissioning Initiative, and BOC training and the methods used to calculate the gross impacts.

For the Virtual Commissioning™ channel specifically,¹⁵ we also addressed the following types of error:

- **Presence of Non-Routine Events:** “Non-routine events” (NREs) refers to changes in facility energy consumption resulting from facility-related changes not related to the interventions recommended through the channel. NREs can make it difficult to accurately measure savings using meter-based approaches, including the approach used for Virtual Commissioning™. NREs were of particular concern in 2021, as facility schedules tended to be irregular and difficult to monitor due to COVID-19 restrictions. The team accounted for NREs in our modeling approach by removing data for the affected period and extending the baseline back in time accordingly, consistent with International Performance Measurement and Verification Protocol (IPMVP) Non-Routine Adjustment Option 1.¹⁶
- **Model Specification Error:** In this type of error, variables that predict model outcomes are included when they should not be or are left out when they should be included, possibly producing biased estimates. The models used to estimate impacts in 2021 included many terms, which increases the risk of overfitting, which cause the regression coefficients, p-values, and R2 to be misleading. The team addressed this type of error by recommending that the program implementer provide documentation on their model selection process and rationale as well as include projected R2 values in each workbook in future program years to help with assessments of overfitting.
- **Measurement Error:** In the context of the Virtual Commissioning™ pilot, measurement error occurs when utility electric meters do not accurately record the true energy consumption of a facility. In practice, little can be done in an evaluation context to address this error. However, it is expected to be small.
- **Prediction Error:** Prediction error occurs when the model does not perfectly predict what future energy consumption will be. We did not have one year of post-period data for all Virtual Commissioning™ projects in 2021, which introduces bias because the model was not able to train on a full range of temperature data after the intervention was initiated. This may increase the prediction error for temperatures that are outside the range of the training data. The team addressed this by carefully examining model fit diagnostics.
- **Multicollinearity:** This type of modeling error can both bias the model results and produce very large variance in the results. The team addressed this issue by carefully considering the model specification and data to ensure that there were no multicollinearity issues.

Finally, note that the calculations in some of the tables in this report cannot be exactly reproduced due to rounding.

¹⁵ Virtual Commissioning™ is a registered trademark of Power TakeOff.

¹⁴ Webster, Lia. IPMVP Application Guide on Non-Routine Events and Adjustments. Efficiency Valuation Organization (EVO). 2020.

3. PORTFOLIO VERIFIED SAVINGS

Within the following sections, the evaluation team presents initiative-level detail on verified Annual Savings (annualized 2021 energy savings).

3.1 SAVINGS CONVERSION

FEJA allows electric utilities, in certain cases, to “convert” non-electric energy savings achieved through efficiency measures or programs funded with electric dollars to electric savings for the purposes of goal attainment.¹⁷ The total amount of savings allowed to be converted is capped at a maximum of 10% of the utility’s AAIG.

AIC met the above criteria in 2021 and chose to convert savings from the Smart Savers channel of the Income Qualified Initiative, the Retail Products Initiative, and the Custom Initiative. Per FEJA, AIC was capped at a total conversion of no more than 21,133 MWh. Using the SAG-approved conversion factor of 29.3 kWh per therm, this equals 721,266 therms that could be converted to electric savings.

AIC identified specific measures in Retail Products and Smart Savers, as well as specific projects in Custom for the evaluation team to convert. We determined that verified net savings for these measures exceeded AIC’s allowable conversion cap and therefore prioritized measures delivered through these channels to align with Illinois guidance around the conversion. All gas savings eligible for conversion were converted for Smart Savers and Custom, and some Retail Products savings eligible for conversion were converted. These converted savings are included as a line item in Table 8, Table 10, Table 11, and Table 13 below. Table 7 summarizes AIC’s 2021 gas conversion.

Table 7. 2021 AIC Gas Conversion

Initiative	Channel	Therms Converted	MWh Equivalent
Income Qualified	Smart Savers	370,114	10,844
Custom	Custom Incentives	127,128	3,725
Retail Products	Retail Products	224,024	6,564
Total		721,266	21,133
<i>Conversion Cap</i>		721,266	21,133
<i>% of Cap</i>		100%	100%

¹⁷ 220 ILCS 5/8-103B(b-25).

3.2 2021 RESIDENTIAL PROGRAM ANNUAL SAVINGS

The 2021 Residential Program achieved 120,941 MWh, 17.44 MW, and 2,026,696 therms in verified net savings. These savings include a non-participant spillover (NPSO) “adder” on net savings.^{18, 19} These savings are also reported after accounting for the FEJA-allowed “conversion” of natural gas savings to electric energy savings for the purpose of goal attainment. Table 8, Table 9, and Table 10 present ex ante gross, verified gross, and verified net electric energy, electric demand, and gas savings by initiative and channel for the 2021 Residential Program.

Table 8. 2021 Residential Program Electric Energy Annual Savings Summary

Initiative	Channel	Ex Ante Gross MWh	Gross Realization Rate ^a	Verified Gross MWh	Net-to-Gross Ratio (NTGR)	Verified Net MWh
Retail Products	Retail Products	65,944	101%	66,523	0.831	55,264
	Retail Products Carryover	15,454	100%	15,454	0.690	10,666
Income Qualified	Single Family	7,169	115%	8,216	1.000	8,216
	CAA	652	99%	642	1.000	642
	Smart Savers	4,052	103%	4,163	1.000	4,163
	Multifamily	3,795	100%	3,777	1.000	3,777
	IQ Carryover	638	100%	638	1.000	638
Public Housing		826	98%	808	1.000	808
Multifamily		1,376	100%	1,375	0.906	1,247
Home Efficiency – Market Rate		124	109%	135	0.833	112
Midstream HVAC		3,177	100%	3,171	0.807	2,561
Appliance Recycling	Appliance Recycling	5,453	95%	5,167	0.487	2,515
	AR Kits	663	104%	691	0.961	663
Direct Distribution	School Kits	2,389	100%	2,389	1.000	2,389
	School Kits Carryover	188	100%	188	0.977	184
	AR Kits Carryover	10	100%	10	1.000	10
	Community Kits	7,262	104%	7,558	1.000	7,558
	Community Kits Carryover	540	100%	540	1.000	540
Efficient Choice Tool		N/A	N/A	630	0.683	430
<i>Residential Program Subtotal</i>		<i>119,712</i>	<i>101%</i>	<i>122,075</i>	<i>0.839</i>	<i>102,384</i>
Residential NPSO Adder						1,149
Retail Products (gas conversion)						6,564
Smart Savers (gas conversion)						10,844
Residential Program Total						120,941

^a Efficient Choice Tool does not report ex ante savings and therefore calculations of gross realization rate at the Residential Program level exclude it entirely.

¹⁸ Opinion Dynamics. Ameren Illinois Company Energy Efficiency Portfolio 2021 Net-to-Gross Ratios. <https://ilsag.s3.amazonaws.com/AIC-2021-NTGR-Recommendations-for-SAG-FI-NAL-2020-09-30.xlsx>

¹⁹ The process of computing savings from the residential NPSO adder is complex. See Section 2.3.1 for more detail.

Table 9. 2021 Residential Program Electric Demand Annual Savings Summary

Initiative	Channel	Ex Ante Gross MW	Gross Realization Rate ^a	Verified Gross MW	NTGR	Verified Net MW
Retail Products	Retail Products	12.67	86%	10.88	0.827	9.00
	Retail Products Carryover	2.05	100%	2.05	0.690	1.41
Income Qualified	Single Family	1.43	100%	1.43	1.000	1.43
	CAA	0.18	100%	0.18	1.000	0.18
	Smart Savers	1.07	110%	1.18	1.000	1.18
	Multifamily	0.57	99%	0.56	1.000	0.56
	IQ Carryover	0.08	100%	0.08	1.000	0.08
Public Housing		0.09	99%	0.09	1.000	0.09
Multifamily		0.18	100%	0.18	0.886	0.16
Home Efficiency – Market Rate		0.06	111%	0.07	0.821	0.05
Midstream HVAC		1.30	101%	1.31	0.806	1.06
Appliance Recycling	Appliance Recycling	0.77	95%	0.73	0.488	0.36
	AR Kits	0.09	104%	0.09	0.963	0.09
Direct Distribution	School Kits	0.55	100%	0.55	1.000	0.55
	School Kits Carryover	0.02	100%	0.02	0.979	0.02
	AR Kits Carryover	<0.01	100%	<0.01	1.000	<0.01
	Community Kits	0.82	105%	0.86	1.000	0.86
	Community Kits Carryover	0.08	100%	0.08	1.000	0.08
Efficient Choice Tool		N/A	N/A	0.09	0.650	0.06
<i>Residential Program Subtotal</i>		22.01	93%	20.44	0.843	17.23
Residential NPSO Adder						0.21
Residential Program Total						17.44

^a Efficient Choice Tool does not report ex ante savings and therefore calculations of gross realization rate at the Residential Program level exclude it entirely.

Table 10. 2021 Residential Program Gas Annual Savings Summary

Initiative	Channel	Ex Ante Gross Therms	Gross Realization Rate ^a	Verified Gross Therms	NTGR	Verified Net Therms
Retail Products	Retail Products	1,496,096	99%	1,479,070	0.930	1,374,813
	Retail Products Carryover	0	N/A	0	N/A	0
Income Qualified	Single Family	524,855	99%	519,519	1.000	519,519
	CAA	56,556	100%	56,491	1.000	56,491
	Smart Savers	370,228	100%	370,114	1.000	370,114
	Multifamily	14,901	99%	14,716	1.000	14,716
	IQ Carryover	0	N/A	0	N/A	0
Public Housing		4,521	83%	3,769	1.000	3,769
Multifamily		9,500	100%	9,483	0.919	8,712
Home Efficiency – Market Rate		27,029	104%	28,084	0.869	24,406
Midstream HVAC		43,670	112%	49,111	0.900	44,200
Appliance Recycling	Appliance Recycling	0	N/A	0	N/A	0
	AR Kits	27,960	100%	27,960	1.000	27,960
Direct Distribution	School Kits	67,322	100%	67,322	1.000	67,322
	School Kits Carryover	0	N/A	0	N/A	0
	AR Kits Carryover	0	N/A	0	N/A	0
	Community Kits	39,188	100%	39,188	1.000	39,188
	Community Kits Carryover	0	N/A	0	N/A	0
Efficient Choice Tool		N/A	N/A	45,738	0.529	24,209
<i>Residential Program Subtotal</i>		2,681,826	101%	2,710,564	0.950	2,575,417
Residential NPSO Adder						45,416
Retail Products (gas conversion)						-224,024
Smart Savers (gas conversion)						-370,114
Residential Program Total						2,026,696

^a Efficient Choice Tool does not report ex ante savings and therefore calculations of gross realization rate at the Residential Program level exclude it entirely.

3.3 2021 BUSINESS PROGRAM ANNUAL SAVINGS

The 2021 Business Program achieved 235,622 MWh, 35.59 MW, and 1,380,427 therms in verified net savings. These savings are reported after accounting for the FEJA-allowed “conversion” of natural gas savings to electric energy savings for the purpose of goal attainment. Table 11, Table 12, and Table 13 present ex ante gross, verified gross, and verified net electric energy, electric demand, and gas savings by initiative for the 2021 Business Program.

Table 11. 2021 Business Program Electric Energy Annual Savings Summary

Initiative	Ex Ante Gross MWh	Gross Realization Rate	Verified Gross MWh	NTGR	Verified Net MWh
Standard – Core	36,801	100%	36,741	0.825	30,325
Standard – SBDI	103,701	100%	103,675	0.908	94,157
Standard – OS	712	94%	670	0.974	653
Standard – II	40,497	100%	40,497	0.794	32,144
Standard – II Carryover	6,186	100%	6,186	0.916	5,667
Custom	54,352	87%	47,151	0.822	38,768
Retro-Commissioning	314	82%	258	0.940	242
Virtual Commissioning	5,166	89%	4,593	1.000	4,593
Streetlighting	25,823	99%	25,533	0.991	25,301
<i>Business Program Subtotal</i>	<i>273,552</i>	<i>97%</i>	<i>265,303</i>	<i>0.874</i>	<i>231,850</i>
BOC					47
Custom (gas conversion)					3,725
Business Program Total					235,622

Table 12. 2021 Business Program Electric Demand Annual Savings Summary

Initiative	Ex Ante Gross MW	Gross Realization Rate	Verified Gross MW	NTGR	Verified Net MW
Standard – Core	6.65	100%	6.65	0.827	5.50
Standard – SBDI	15.69	100%	15.68	0.908	14.24
Standard – OS	0.14	150%	0.20	0.951	0.19
Standard – II	9.58	100%	9.58	0.795	7.62
Standard – II Carryover	1.46	100%	1.46	0.916	1.34
Custom	9.01	90%	8.14	0.822	6.69
Retro-Commissioning	0.00	N/A	0.00	N/A	0.00
Virtual Commissioning	0.00	N/A	0.00	N/A	0.00
Streetlighting	0.05	0%	0.00	N/A	0.00
<i>Business Program Subtotal</i>	<i>42.58</i>	<i>98%</i>	<i>41.72</i>	<i>0.853</i>	<i>35.59</i>
BOC					0.00
Business Program Total					35.59

Table 13. 2021 Business Program Gas Annual Savings Summary

Initiative	Ex Ante Gross Therms	Gross Realization Rate	Verified Gross Therms	NTGR	Verified Net Therms
Standard – Core	1,170,840	102%	1,193,721	0.549	655,711
Standard – SBDI	0	N/A	0	N/A	0
Standard – OS	36,192	102%	36,839	0.880	32,419
Standard – II	0	N/A	0	N/A	0
Standard – II Carryover	0	N/A	0	N/A	0
Custom	1,158,210	73%	849,741	0.939	797,482
Retro-Commissioning	29,640	79%	23,344	0.940	21,943
Virtual Commissioning	0	N/A	0	N/A	0
Streetlighting	0	N/A	0	N/A	0
<i>Business Program Subtotal</i>	<i>2,394,882</i>	<i>88%</i>	<i>2,103,645</i>	<i>0.717</i>	<i>1,507,555</i>
BOC					0
Custom (gas conversion)					-127,128
Business Program Total					1,380,427

3.4 2021 VOLTAGE OPTIMIZATION PROGRAM ANNUAL SAVINGS

The 2021 Voltage Optimization Program achieved 95,431 MWh and 15.95 MW in verified net savings. Table 14 presents ex ante gross, verified gross, and verified net savings for the 2021 Voltage Optimization Program.

Table 14. 2021 Voltage Optimization Program Annual Savings Summary

	Electric Energy Savings (MWh)	Electric Peak Demand Savings (MW)	Gas Savings (Therms)
Ex Ante Gross Savings	75,097 ^a	N/A ^b	N/A
Gross Realization Rate	127%	N/A	N/A
Verified Gross Savings	95,431	15.95	N/A
NTGR ^c	1.000	1.000	N/A
Verified Net Savings	95,431	15.95	N/A

^a Ex ante gross savings sourced from AIC. Ex ante gross savings assume 0.80 CVR factor and 3% voltage reduction across the 125 measured circuits.

^b There are no ex ante demand savings estimates for this program.

^c NTGR is assumed to be 1.000, since absent the VO Program, deliberate changes to distribution voltage would not have been made.

4. PORTFOLIO ECONOMIC AND EMPLOYMENT IMPACTS

The Illinois Energy Efficiency Policy Manual (“the Policy Manual”) Version 2.1 requires that each program administrator in Illinois annually report estimates of the economic development and employment impacts of its energy efficiency programs.²⁰ In accordance with that requirement, this section includes a summary of the economic and employment impacts produced by AIC’s energy efficiency portfolio in 2021, as well as the inputs used to estimate these results.

The methodology used in this analysis is consistent with that developed by consensus with the Illinois Stakeholder Advisory Group Non-Energy Impacts Working Group and used in the previously prepared 2018, 2019, and 2020 analyses.^{21,22,23} While the evaluation team made minor refinements to the analysis as process improvements from the prior analyses, and restructured the analysis in order to support reporting on the timeline required by the Policy Manual, analytical results are directly comparable to those presented in prior years.

Table 15 presents the cumulative economic and employment impacts resulting from AIC’s 2021 energy efficiency programs. Further analytical details are available on request.

Table 15. AIC Portfolio Job and Macroeconomic Impacts

Impact Category	Direct	Indirect	Induced	Total
Industry Output	\$741,931,184	\$315,904,218	\$660,522,805	\$1,718,358,206
Employment (Job-Years)	4,106	1,708	3,179	8,993
Labor Income	\$192,803,423	\$93,592,876	\$134,732,909	\$421,129,208

²⁰ Illinois Energy Efficiency Policy Manual Version 2.1, Section 6.7.

²¹ Guidehouse and Opinion Dynamics. “Illinois DSM Portfolio Non-Energy Impacts Economic Analysis.” July 10, 2020. Available online: https://ilsag.s3.amazonaws.com/IL_NEI_Economic_Analysis_July-2020-Final-Revised-Sept.pdf

²² Opinion Dynamics and Guidehouse. “2019 Ameren Illinois Economic and Employment Impact Analysis.” September 13, 2021. Available online: <https://ilsag.s3.amazonaws.com/AIC-Economic-and-Employment-Impact-Results-FINAL-2021-09-13.pdf>

²³ Opinion Dynamics and Guidehouse. “2020 Ameren Illinois Economic and Employment Impact Analysis.” January 25, 2022. Available online: <https://ilsag.s3.amazonaws.com/AIC-2020-Economic-and-Employment-Impact-Results-FINAL-2022-01-25.pdf>

Table 16. 2021 Detailed Verified Savings Results - Electric

Initiative	Channel	Ex Ante Gross	Realization Rate	Verified Gross			Deemed / Used	Verified Net					Actual	Evaluation Estimate (Where Available)	Participation		Weighted Average Measure Life
		First Year Annual Energy Savings	Energy Savings (Ex Ante Gross / Verified Gross)	First Year Annual Energy Savings	First Year Peak Demand Savings	Lifetime Savings	Net-to-Gross Ratio	First Year Annual Savings	First Year Peak Demand Savings	Lifetime Savings	First Year Cost per First Year Annual Savings	First Year Cost per Lifetime Savings	Program Costs	Net-to-Gross Ratio	# Units	Units Definition	Years
		MWh	%	MWh	MW	MWh	%	MWh	MW	MWh	\$/MWh	\$/MWh	\$	%			
Residential Program																	
Retail Products	Retail Products	65,944	101%	66,523	10.88	587,255	0.831	55,264	9.00	487,864	\$169.38	\$19.19	\$9,360,763	Various	1,439,255	Measures	9.8
Retail Products	Retail Products Carryover	15,454	100%	15,454	2.05	114,492	0.690	10,666	1.41	79,024	N.A.	N.A.	N.A.	Various	N/A	N/A	9.5
Retail Products	Efficient Choice Tool	N/A	N.A.	630	0.09	8,102	0.683	430	0.06	5,531	\$185.59	\$14.43	\$79,808	Various	5,510	Measures	13.2
Income Qualified	Income Qualified - Single Family	7,169	115%	8,216	1.43	87,443	1.000	8,216	1.43	87,443	\$1,059.04	\$99.50	\$8,700,591	N/A - Income Qualified Pop.	2,176,614	Measures	11.6
Income Qualified	Income Qualified - CAA	652	99%	642	0.18	9,959	1.000	642	0.18	9,959	\$3,746.92	\$241.70	\$2,407,173	N/A - Income Qualified Pop.	1,155,932	Measures	15.9
Income Qualified	Smart Savers	4,052	103%	4,163	1.18	45,797	1.000	4,163	1.18	45,797	\$567.74	\$51.61	\$2,363,702	N/A - Income Qualified Pop.	7,681	Advanced thermostats	11.0
Income Qualified	Income Qualified - Multifamily	3,795	100%	3,777	0.56	42,157	1.000	3,777	0.56	42,157	\$563.47	\$50.49	\$2,128,394	N/A - Income Qualified Pop.	3,504	Tenant units	11.5
Income Qualified	Income Qualified - Carryover	638	100%	638	0.08	5,843	1.000	638	0.08	5,843	N.A.	N.A.	N.A.	N/A - Income Qualified Pop.	N/A	N/A	10.0
Public Housing	Public Housing	826	98%	808	0.09	9,490	1.000	808	0.09	9,490	\$1,697.59	\$144.46	\$1,370,969	N/A - Income Qualified Pop.	1,477	Tenant units	12.6
Multifamily	Multifamily	1,376	100%	1,375	0.18	14,233	0.906	1,247	0.16	12,901	\$688.35	\$66.51	\$858,092	No 2021 research	962	Measures	10.9
Home Efficiency	Market Rate	124	109%	135	0.07	1,940	0.833	112	0.05	1,617	\$5,352.21	\$372.11	\$601,665	No 2021 research	172,818	Measures	15.0
HVAC	HVAC	3,177	100%	3,171	1.31	50,411	0.807	2,561	1.06	40,704	\$912.84	\$57.43	\$2,337,594	No 2021 research	3,767	Measures	15.9
Appliance Recycling	Appliance Recycling	5,453	95%	5,167	0.73	33,286	0.487	2,515	0.36	16,202	\$576.65	\$85.29	\$1,832,884	Various	6,620	Measures recycled	6.4
Appliance Recycling	Appliance Recycling Kits	663	104%	691	0.09	5,504	0.961	663	0.09	5,287				Various	2,633	Kits distributed	8.9
Direct Distribution of Efficient Products	Appliance Recycling Kits Carryover	10	100%	10	0.00	98	1.000	10	0.00	98	N.A.	N.A.	N.A.	Various	N/A	N/A	10.0
Direct Distribution of Efficient Products	School Kits	2,389	100%	2,389	0.55	20,794	1.000	2,389	0.55	20,794	\$398.14	\$45.74	\$951,125	N/A - Income Qualified Pop.	8,500	Kits distributed	8.9
Direct Distribution of Efficient Products	School Kits Carryover	188	100%	188	0.02	1,693	0.977	184	0.02	1,654	N.A.	N.A.	N.A.	N/A - Income Qualified Pop.	N/A	N/A	10.0
Direct Distribution of Efficient Products	Community Kits	7,262	104%	7,558	0.86	67,693	1.000	7,558	0.86	67,693	\$119.72	\$13.37	\$904,852	N/A - Income Qualified Pop.	5,443	Kits distributed	9.5
Direct Distribution of Efficient Products	Community Kits Carryover	540	100%	540	0.08	5,059	1.000	540	0.08	5,059	N.A.	N.A.	N.A.	N/A - Income Qualified Pop.	N/A	N/A	10.0
Residential NPSO Adder	Residential NPSO Adder	0	N.A.	0	0.00	N.A.	N.A.	1,149	0.21	10,388	N.A.	N.A.	N.A.	N/A	N/A	N/A	10.2

APPENDIX A. 2021 DETAILED VERIFIED SAVINGS RESULTS

Table 16. 2021 Detailed Verified Savings Results - Electric (Continued)

Initiative	Channel	Ex Ante Gross	Realization Rate	Verified Gross			Deemed / Used	Verified Net					Actual	Evaluation Estimate (Where Available)	Participation		Weighted Average Measure Life
		First Year Annual Energy Savings	Energy Savings (Ex Ante Gross / Verified Gross)	First Year Annual Energy Savings	First Year Peak Demand Savings	Lifetime Savings	Net-to-Gross Ratio	First Year Annual Savings	First Year Peak Demand Savings	Lifetime Savings	First Year Cost per First Year Annual Savings	First Year Cost per Lifetime Savings	Program Costs	Net-to-Gross Ratio	# Units	Units Definition	Years
		MWh	%	MWh	MW	MWh	%	MWh	MW	MWh	\$/MWh	\$/MWh	\$	%			
Business Program																	
Standard	Core	36,801	100%	36,741	6.65	470,254	0.825	30,325	5.50	388,135	\$230.80	\$18.52	\$36,300,408	Various	51,503	Measures	13.1
Standard	SBDI	103,701	100%	103,675	15.68	1,222,761	0.908	94,157	14.24	1,110,512				Various	417,909	Measures	13.4
Standard	Online Store	712	94%	670	0.20	5,905	0.974	653	0.19	5,754				Various	1,271	Measures	9.5
Standard	Instant Incentives	40,497	100%	40,497	9.58	573,722	0.794	32,144	7.62	455,384				Various	806,506	Measures	14.2
Standard	Instant Incentives Carryover	6,186	100%	6,186	1.46	87,996	0.916	5,667	1.34	80,622	N.A.	N.A.	N.A.	Various	N/A	N/A	14.1
Custom	Custom	54,352	87%	47,151	8.14	671,621	0.822	38,768	6.69	552,207	\$306.98	\$21.55	\$11,901,021	No 2021 research	125	Projects	15.2
Retro-Commissioning	Retro-Commissioning	314	82%	258	0.00	2,217	0.940	242	0.00	2,084	\$191.65	\$26.02	\$926,668	No 2021 research	1	Projects	8.6
Retro-Commissioning	Virtual Commissioning	5,166	89%	4,593	0.00	33,529	1.000	4,593	0.00	33,529				No 2021 research	37	Customers	7.3
Streetlighting	Streetlighting	25,823	99%	25,533	0.00	490,151	0.991	25,301	0.00	485,692	\$59.62	\$3.11	\$1,508,353	No 2021 research	40,438	Measures	20.0
Building Operator Certification	Building Operator Certification	0	N.A.	0	0.00	N.A.	N.A.	47	0.00	709	N.A.	N.A.	N.A.	N/A	8	Customers trained	15.0
Voltage Optimization Program																	
Voltage Optimization	Voltage Optimization	75,097	127%	95,431	15.95	1,431,469	1.000	95,431	15.95	1,431,469	\$224.32	\$14.95	\$21,407,601	N/A	180	Circuits	15.0
Portfolio Total	Portfolio Total	468,361	103%	482,810	78.11	6,444,382	0.892	430,862	68.97	5,750,997	\$230.42	\$17.26	\$99,280,781				13.3

NOTES:

- Savings presented reflect actual savings achieved by the programs and do not reflect the Future Energy Jobs Act-allowed conversion of alternate fuels to MWh.
- If the conversion had been included, it would add an additional 3,725 in verified net MWh to the Custom Initiative, 6,564 MWh to the Retail Products Initiative, and 10,844 MWh to the Income Qualified - Smart Savers Initiative as compared to the totals presented here.
- Program costs presented in the "Portfolio Total" row include unallocated portfolio-level administrative costs and therefore are in excess of the sums of the individual rows.

Table 17. 2021 Detailed Verified Savings Results - Gas

Initiative	Channel	Ex Ante Gross	Realization Rate	Verified Gross		Deemed / Used	Verified Net				Actual	Evaluation Estimate (Where Available)	Participation		Weighted Average Measure Life
		First Year Annual Energy Savings	Energy Savings (Ex Ante Gross / Verified Gross)	First Year Annual Energy Savings	Lifetime Savings	Net-to-Gross Ratio	First Year Annual Savings	Lifetime Savings	First Year Cost per First Year Annual Savings	First Year Cost per Lifetime Savings	Program Costs	Net-to-Gross Ratio	# Units	Units Definition	Years
		Therms	%	Therms	Therms	%	Therms	Therms	\$/Therm	\$/Therm	\$	%			
Residential Program															
Retail Products	Retail Products	1,496,096	99%	1,479,070	16,278,865	0.930	1,374,813	15,131,398	\$1.50	\$0.14	\$2,068,020	Various	28,289	Measures	11.0
Retail Products	Retail Products Carryover	0	N.A.	0	-	N.A.	0	N/A	N.A.	N.A.	N.A.	Various	N/A	N/A	N/A
Retail Products	Efficient Choice Tool	N/A	N.A.	45,738	557,500	0.529	24,209	295,082	\$0.54	\$0.04	\$12,992	Various	1,630	Measures	12.2
Income Qualified	Income Qualified - Single Family	524,855	99%	519,519	8,857,155	1.000	519,519	8,857,155	\$8.61	\$0.51	\$4,475,535	N/A - Income Qualified Pop.	1,990,236	Measures	17.0
Income Qualified	Income Qualified - CAA	56,556	100%	56,491	1,121,931	1.000	56,491	1,121,931	\$12.64	\$0.64	\$714,087	N/A - Income Qualified Pop.	1,149,374	Measures	19.9
Income Qualified	Smart Savers	370,228	100%	370,114	4,071,251	1.000	370,114	4,071,251	\$0.51	\$0.05	\$190,167	N/A - Income Qualified Pop.	7,505	Advanced thermostats	11.0
Income Qualified	Income Qualified - Multifamily	14,901	99%	14,716	179,452	1.000	14,716	179,452	\$10.32	\$0.85	\$151,854	N/A - Income Qualified Pop.	3,504	Tenant units	12.2
Income Qualified	Income Qualified - Carryover	0	N.A.	0	-	N.A.	0	N/A	N.A.	N.A.	N.A.	N/A - Income Qualified Pop.	N/A	N/A	N/A
Public Housing	Public Housing	4,521	83%	3,769	68,875	1.000	3,769	68,875	\$43.60	\$2.39	\$164,308	N/A - Income Qualified Pop.	1,477	Tenant units	18.3
Multifamily	Multifamily	9,500	100%	9,483	109,546	0.919	8,712	100,635	\$16.34	\$1.41	\$142,335	No 2021 research	962	Measures	11.6
Home Efficiency	Market Rate	27,029	104%	28,084	419,265	0.869	24,406	364,359	\$9.87	\$0.66	\$240,868	No 2021 research	172,579	Measures	14.9
HVAC	HVAC	43,670	112%	49,111	540,225	0.900	44,200	486,203	\$1.41	\$0.13	\$62,296	No 2021 research	843	Measures	11.0
Appliance Recycling	Appliance Recycling	0	N.A.	0	-	N.A.	0	N/A	\$0.69	\$0.06	\$19,198	Various	N/A	N/A	N/A
Appliance Recycling	Appliance Recycling Kits	27,960	100%	27,960	310,771	1.000	27,960	310,771				Various	2,633	Kits distributed	11.1
Direct Distribution of Efficient Products	Appliance Recycling Kits Carryover	0	N.A.	0	-	N.A.	0	N/A	N.A.	N.A.	N.A.	Various	N/A	N/A	N/A
Direct Distribution of Efficient Products	School Kits	67,322	100%	67,322	748,286	1.000	67,322	748,286	\$4.47	\$0.40	\$301,199	N/A - Income Qualified Pop.	8,500	Kits distributed	11.1
Direct Distribution of Efficient Products	School Kits Carryover	0	N.A.	0	-	N.A.	0	N/A	N.A.	N.A.	N.A.	N/A - Income Qualified Pop.	N/A	N/A	N/A
Direct Distribution of Efficient Products	Community Kits	39,188	100%	39,188	435,570	1.000	39,188	435,570	\$2.60	\$0.23	\$101,782	N/A - Income Qualified Pop.	3,978	Kits distributed	11.1
Direct Distribution of Efficient Products	Community Kits Carryover	0	N.A.	0	-	N.A.	0	N/A	N.A.	N.A.	N.A.	N/A - Income Qualified Pop.	N/A	N/A	N/A
Residential NPSO Adder	Residential NPSO Adder	N/A	N.A.	N/A	-	N.A.	45,416	463,127	N.A.	N.A.	N.A.	N/A	N/A	N/A	10.2

Table 17. 2021 Detailed Verified Savings Results - Gas (Continued)

Initiative	Channel	Ex Ante Gross	Realization Rate	Verified Gross		Deemed / Used	Verified Net				Actual	Evaluation Estimate (Where Available)	Participation		Weighted Average Measure Life
		First Year Annual Energy Savings	Energy Savings (Ex Ante Gross / Verified Gross)	First Year Annual Energy Savings	Lifetime Savings	Net-to-Gross Ratio	First Year Annual Savings	Lifetime Savings	First Year Cost per First Year Annual Savings	First Year Cost per Lifetime Savings	Program Costs	Net-to-Gross Ratio	# Units	Units Definition	Years
		Therms	%	Therms	Therms	%	Therms	Therms	\$/Therm	\$/Therm	\$	%			
Business Program															
Standard	Core	1,170,840	102%	1,193,721	14,093,499	0.549	655,711	7,741,566	\$2.13	\$0.18	\$1,463,077	Various	1,359	Measures	11.8
Standard	SBDI	0	N.A.	0	-	N.A.	0	N/A				Various	N/A	N/A	N/A
Standard	Online Store	36,192	102%	36,839	405,234	0.880	32,419	356,606				Various	361	Measures	11.0
Standard	Instant Incentives	0	N.A.	0	-	N.A.	0	N/A				N/A	N/A	N/A	N/A
Standard	Instant Incentives Carryover	0	N.A.	0	-	N.A.	0	N/A				N.A.	N.A.	N/A	N/A
Custom	Custom	1,158,210	73%	849,741	13,131,798	0.939	797,482	12,324,193	\$3.22	\$0.21	\$2,564,996	No 2021 research	30	Projects	15.5
Retro-Commissioning	Retro-Commissioning	29,640	79%	23,344	200,757	0.940	21,943	188,712	\$17.30	\$2.01	\$379,524	No 2021 research	1	Projects	8.6
Retro-Commissioning	Virtual Commissioning	0	N.A.	0	-	N.A.	0	N/A				N/A	N/A	N/A	
Streetlighting	Streetlighting	0	N.A.	0	-	N.A.	0	N/A	N.A.	N.A.	N.A.	N/A	N/A	N/A	N/A
Building Operator Certification	Building Operator Certification	N/A	N.A.	NA	-	N.A.	0	N/A	N.A.	N.A.	\$2,559	N/A	N/A	N/A	N/A
Voltage Optimization Program															
Voltage Optimization	Voltage Optimization	0	N.A.	0	-	N.A.	0	-	N.A.	N.A.	N.A.	N/A	N/A	Circuits	N/A
Portfolio Total	Portfolio Total	5,076,708	95%	4,814,208	61,413,744	0.858	4,128,388	52,664,897	\$3.62	\$0.28	\$14,964,960				12.8

- NOTES:**
- Savings presented reflect actual savings achieved by the programs and do not reflect the Future Energy Jobs Act-allowed conversion of alternate fuels to MWh.
 - If the conversion had been included, it would subtract 127,128 in verified net therms from the Custom Initiative, 370,114 in verified net therms from the Income Qualified - Smart Savers Initiative, and 224,024 in verified net therms from the Retail Products Initiative, for a total of -587,068 in verified net therm savings as compared to the totals presented here.
 - Program costs presented in the "Portfolio Total" row include unallocated portfolio-level administrative costs and therefore are in excess of the sums of the individual rows.

APPENDIX B. 2021 HIGH IMPACT MEASURE LIST

These results will be provided separately.

APPENDIX C. 2021 PROGRAM EVALUATION REPORTS

The 2021 Residential Program, Business Program, and Voltage Optimization Program Impact Evaluation Reports, as well as the 2021 AIC Carryover Savings Memo are available under separate cover on the Illinois Stakeholder Advisory Group website: (http://www.ilsag.info/draft_evaluation_reports.html).

APPENDIX D. CUMULATIVE PERSISTING ANNUAL SAVINGS

This appendix presents detailed CPAS for the AIC portfolio by initiative and channel. Due to many years of CPAS, tables are challenging to read; please reference the separately provided CPAS spreadsheet for additional detail as needed. Table 18 provides CPAS for the 2021 AIC portfolio through 2048 at the channel level. Lifetime savings for the 2021 AIC portfolio are 5,750,997 MWh.

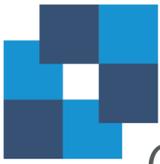
Table 18. 2021 AIC Portfolio CPAS and WAML

Initiative	WAML	First-Year Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)															
				2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Retail Products	9.8	66,523	0.831				55,264	55,264	55,264	55,264	46,745	45,792	45,486	35,648	35,517	35,249	13,466	2,693	2,029
Retail Products Carryover	9.5	15,454	0.690				10,666	10,666	10,666	10,666	6,814	6,683	6,458	5,468	5,468	5,468	0	0	0
Income Qualified – Single Family	11.6	8,216	1.000				8,216	8,216	8,207	8,207	8,207	8,207	7,720	5,456	5,443	5,443	1,753	1,622	1,619
Income Qualified – CAA	15.9	642	1.000				642	642	642	642	642	642	642	591	591	591	375	375	375
Smart Savers	11.0	4,163	1.000				4,163	4,163	4,163	4,163	4,163	4,163	4,163	4,163	4,163	4,163	4,163	0	0
Income Qualified – Multifamily	11.5	3,777	1.000				3,777	3,777	3,777	3,777	3,680	3,680	3,649	3,366	3,348	3,348	1,981	875	866
Income Qualified Carryover	10.0	638	1.000				638	638	638	638	638	638	638	459	459	459	0	0	0
Public Housing	12.6	808	1.000				808	808	808	808	739	739	723	664	664	664	402	360	327
Multifamily	10.9	1,375	0.906				1,247	1,247	1,247	1,247	1,149	1,149	1,146	1,118	1,118	1,118	862	55	55
Home Efficiency – Market Rate	15.0	135	0.833				112	112	112	112	105	105	105	105	100	100	96	51	51
HVAC	15.9	3,171	0.807				2,561	2,561	2,561	2,561	2,561	2,561	2,560	2,560	2,560	2,560	2,557	2,339	2,339
Appliance Recycling	6.4	5,167	0.487				2,515	2,515	2,515	2,515	2,457	2,457	1,228	0	0	0	0	0	0
AR Kits	8.9	691	0.961				663	663	663	663	575	575	575	303	303	303	0	0	0
AR Kits Carryover	10.0	10	1.000				10	10	10	10	10	10	10	8	8	8	0	0	0
School Kits	8.9	2,389	1.000				2,389	2,389	2,057	2,057	2,057	2,057	2,057	1,425	1,425	1,425	196	196	196
School Kits Carryover	10.0	188	0.977				184	184	184	184	170	170	170	136	136	136	0	0	0
Community Kits	9.5	7,558	1.000				7,558	7,558	7,554	7,554	7,554	7,554	7,554	5,215	4,795	4,795	0	0	0
Community Kits Carryover	10.0	540	1.000				540	540	540	540	540	540	540	426	426	426	0	0	0
Efficient Choice	13.2	630	0.683				430	430	430	430	412	412	412	399	399	349	326	290	245
Residential NPSO	10.2	1,614	0.712				1,149	1,149	1,149	1,149	861	861	823	778	776	768	379	121	104
Retail Products (gas conversion)	11.0	7,020	0.935				6,564	6,564	6,564	6,564	6,564	6,564	6,564	6,564	6,564	6,564	6,564	0	0
Smart Savers (gas conversion)	11.0	10,844	1.000				10,844	10,844	10,844	10,844	10,844	10,844	10,844	10,844	10,844	10,844	10,844	0	0
Standard - Core	13.1	36,741	0.825				30,325	30,325	30,296	30,135	29,768	29,590	29,441	29,278	29,190	27,294	25,063	20,004	15,657
Standard - SBDI	13.4	103,675	0.908				94,157	94,157	93,624	90,230	87,473	86,062	85,104	84,404	83,664	81,411	76,586	60,379	34,668
Standard - OS	9.5	670	0.974				653	653	652	645	507	495	478	434	421	419	391	2	2
Standard - II	14.2	40,497	0.794				32,144	32,144	32,144	32,144	31,393	31,393	31,305	30,127	30,031	30,031	30,024	30,024	30,024
Standard - II Carryover	14.1	6,186	0.916				5,667	5,667	5,667	5,667	5,538	5,528	5,510	5,364	5,364	5,364	5,362	5,362	5,362
Custom	15.2	47,151	0.822				38,768	38,768	38,768	38,768	38,720	38,379	37,592	37,257	37,206	36,021	32,469	30,178	25,557
Retro-Commissioning	8.6	258	0.940				242	242	242	242	242	242	242	242	145	0	0	0	0
Virtual Commissioning	7.3	4,593	1.000				4,593	4,593	4,593	4,593	4,593	4,593	4,593	1,378	0	0	0	0	0
Streetlighting	20.0	25,533	0.991				25,301	25,301	25,301	24,105	24,105	24,105	24,105	24,105	24,105	24,105	24,105	24,105	24,105
BOC	15.0	47	N/A				47	47	47	47	47	47	47	47	47	47	47	47	47
Custom (gas conversion)	15.5	3,969	0.939				3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725
Voltage Optimization	15.0	95,431	N/A				95,431	95,431	95,431	95,431	95,431	95,431	95,431	95,431	95,431	95,431	95,431	95,431	95,431
2021 CPAS		506,305	0.893				451,995	451,995	451,086	446,329	429,028	425,994	421,643	397,489	394,439	388,631	337,169	278,234	242,787
Expiring 2021 CPAS							0	0	908	4,758	17,300	3,035	4,351	24,153	3,050	5,808	51,463	58,935	35,447
Expired 2021 CPAS							0	0	908	5,666	22,966	26,001	30,352	54,506	57,556	63,363	114,826	173,761	209,208
WAML	13.3																		

APPENDIX D. CUMULATIVE PERSISTING ANNUAL SAVINGS

Table 18. 2020 AIC Portfolio CPAS and WAML (Continued)

Initiative	WAML	First-Year Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)																Lifetime Savings
				2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2048	
Retail Products	9.8	66,523	0.831	2,029	1,539	366	157	35	35	8	8	8	0	0	0	0	0	0	0	487,864
Retail Products Carryover	9.5	15,454	0.690	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79,024
Income Qualified – Single Family	11.6	8,216	1.000	1,619	1,619	1,347	1,198	1,198	1,143	1,006	0	0	0	0	0	0	0	0	0	87,443
Income Qualified – CAA	15.9	642	1.000	375	375	375	375	375	375	310	0	0	0	0	0	0	0	0	0	9,959
Smart Savers	11.0	4,163	1.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45,797
Income Qualified – Multifamily	11.5	3,777	1.000	866	866	104	104	104	104	104	0	0	0	0	0	0	0	0	0	42,157
Income Qualified Carryover	10.0	638	1.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,843
Public Housing	12.6	808	1.000	327	327	65	65	65	65	65	0	0	0	0	0	0	0	0	0	9,490
Multifamily	10.9	1,375	0.906	55	55	6	6	6	6	6	0	0	0	0	0	0	0	0	0	12,901
Home Efficiency – Market Rate	15.0	135	0.833	51	51	51	51	51	51	44	0	0	0	0	0	0	0	0	0	1,617
HVAC	15.9	3,171	0.807	2,339	2,339	1,502	842	842	0	0	0	0	0	0	0	0	0	0	0	40,704
Appliance Recycling	6.4	5,167	0.487	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16,202
AR Kits	8.9	691	0.961	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,287
AR Kits Carryover	10.0	10	1.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	98
School Kits	8.9	2,389	1.000	196	196	95	95	95	95	95	0	0	0	0	0	0	0	0	0	20,794
School Kits Carryover	10.0	188	0.977	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,654
Community Kits	9.5	7,558	1.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	67,693
Community Kits Carryover	10.0	540	1.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,059
Efficient Choice	13.2	630	0.683	245	222	52	43	1	1	1	1	1	0	0	0	0	0	0	0	5,531
Residential NPSO	10.2	1,614	0.712	104	95	57	32	29	3	2	0	0	0	0	0	0	0	0	0	10,388
Retail Products (gas conversion)	11.0	7,020	0.935	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72,203
Smart Savers (gas conversion)	11.0	10,844	1.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	119,288
Standard - Core	13.1	36,741	0.825	14,962	14,742	396	362	328	328	328	108	108	108	0	0	0	0	0	0	388,135
Standard - SBDI	13.4	103,675	0.908	29,927	28,666	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,110,512
Standard - OS	9.5	670	0.974	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,754
Standard - II	14.2	40,497	0.794	29,776	22,682	0	0	0	0	0	0	0	0	0	0	0	0	0	0	455,384
Standard - II Carryover	14.1	6,186	0.916	5,290	3,909	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80,622
Custom	15.2	47,151	0.822	23,179	13,227	10,722	10,722	10,052	9,965	3,750	925	912	243	35	27	0	0	0	0	552,207
Retro-Commissioning	8.6	258	0.940	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,084
Virtual Commissioning	7.3	4,593	1.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33,529
Streetlighting	20.0	25,533	0.991	24,105	24,105	24,105	24,105	24,105	24,105	24,105	0	0	0	0	0	0	0	0	0	485,692
BOC	15.0	47	N/A	47	47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	709
Custom (gas conversion)	15.5	3,969	0.939	3,725	3,725	2,029	0	0	0	0	0	0	0	0	0	0	0	0	0	57,902
Voltage Optimization	15.0	95,431	N/A	95,431	95,431	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,431,469
2021 CPAS		506,305	0.893	234,652	214,220	41,274	38,159	37,288	36,277	29,825	1,041	1,029	351	35	27	0	0	0	0	5,750,997
Expiring 2021 CPAS				8,135	20,432	172,946	3,115	871	1,011	6,452	28,783	13	678	316	9	27	0	0	0	
Expired 2021 CPAS				217,343	237,775	410,721	413,836	414,707	415,718	422,170	450,953	450,966	451,644	451,959	451,968	451,995	451,995	451,995	451,995	
WAML	13.3																			



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