Commercial Food Service Impact Evaluation Report

Energy Efficiency Plan Year 2021 (1/1/2021-12/31/2021)

Prepared for:

Nicor Gas

Final

May 19, 2022

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1. Introduction

This report presents results from the 2021 impact evaluation of the Commercial Food Service (CFS) Midstream Pilot Program. The CFS Program is a joint pilot between Nicor Gas, ComEd, Peoples Gas, and North Shore Gas. This report summarizes the natural gas savings impacts for the total program and broken out by relevant measure details for Nicor Gas[1]. The appendices provide details on the impact analysis methodology and the total resource cost (TRC) inputs. Program year 2021 covers January 1, 2021 through December 31, 2021.

2. Program Description

The CFS Program incentivizes energy efficient commercial food service equipment using midstream delivery channels. The CFS Program was launched in September 2019 and has added suppliers over time. GTI and Frontier Energy implement this pilot on behalf of the utilities, working with manufacturers and distributers by offering point-of-sale customer rebates, upstream incentives, and a simplified administrative process to obtain the rebates or incentives for cooking, refrigeration, and ventilation measures. The program's goal is to reduce barriers on food service operators for purchasing energy efficient equipment and to reduce energy usage in the commercial food service sector.

The program had 12 unique customer participants in 2021 and completed 65 projects for Nicor Gas as shown in Table 2-1. The program only has participants in the private sector for 2021.

Table 2-1. 2021 Volumetric Findings Detail

Participation	Total
Participants *	12
Installed Projects †	65
Measure Types Installed	10

* Participants are defined as the number of unique businesses in the Nicor Gas program
† Installed Projects are defined as the unique number of Project IDs in the Nicor Gas program
Source: Nicor Gas tracking data and Guidehouse evaluation team analysis.

Table 2-2 summarizes the installed measure quantities that are the basis for verified energy savings.

[1] References in this report to participation counts and savings apply only to projects in the Nicor Gas service territory claimed by Nicor Gas. Evaluators will explore presenting the results for the 2022 CFS Program in a single, statewide report to better represent program accomplishments.

Table 2-2. 2021 Installed Measure Quantities

Program Category	Measure	Quantity Unit	Installed Quantity (Units)
Private	Combination Oven	Unit	8
	Conveyor Oven	Unit	1
	ENERGY STAR Convection Oven	Unit	13
	ENERGY STAR Dishwasher	Unit	6
	ENERGY STAR Fryer - Large Vat	Unit	5
	ENERGY STAR Fryer - Standard	Unit	53
	Infrared Salamander Broiler	Unit	1
	Kitchen Demand Ventilation Controls	Unit	1
	Rack Oven - Double Oven	Unit	1
	Roll-In Rack Single Oven	Unit	3

Source: Nicor Gas tracking data and Guidehouse evaluation team analysis.

3. Program Savings Detail

Table 3-1 summarizes the energy savings the CFS Program achieved in 2021, all savings are in the Private Sector.

Table 3-1. 2021 Annual Energy Savings Summary

Program Path	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTG†	Verified Net Savings (Therms)
CFS Program	53,116	92%	49,013	0.86	42,151

* Realization Rate (RR) is the ratio of verified gross savings to ex ante gross savings, based on evaluation research findings.
† A deemed value. Available on the SAG web site: https://www.ilsag.info/evaluator-ntg-recommendations-for-2021/.
Source: Guidehouse evaluation team analysis.

4. Program Savings by Measure

The program installed 10 measure types as shown in Table 4-1, all in the Private Sector. The ENERGY STAR© Fryer – Standard and Kitchen Demand Ventilation Controls measures contributed the most savings.

Table 4-1. 2021 Annual Energy Savings by Measure

Program Path	Research Category	Ex Ante Gross Savings (Therms)	Verified Gross RR	Verified Gross Savings (Therms)	NTG	Verified Net Savings (Therms)
CFS Program	Combination Oven	3,108	64%	1,988	0.86	1,710
	Conveyor Oven	884	100%	884	0.86	760
	ENERGY STAR Convection Oven	6,733	88%	5,937	0.86	5,105
	ENERGY STAR Dishwasher	1,902	100%	1,904	0.86	1,637
	ENERGY STAR Fryer - Large Vat	2,657	84%	2,220	0.86	1,909
	ENERGY STAR Fryer - Standard	29,661	94%	27,912	0.86	24,004
	Infrared Salamander Broiler	240	100%	240	0.86	207
	Kitchen Demand Ventilation Controls	5,999	100%	5,999	0.86	5,159
	Rack Oven - Double Oven	1,931	100%	1,931	0.86	1,660
	Roll-In Rack Single Oven	0	NA	0	0.86	0
	Total or Weighted Average	**53,116**	**92%**	**49,013**	**0.86**	**42,151**

NA = not applicable.
Source: Nicor Gas tracking data and Guidehouse evaluation team analysis.

5. Impact Analysis Findings and Recommendations

5.1 Impact Parameter Estimates

Table 5-1 shows the evaluated unit therm savings and realization rates for each measure. The realization rate is the ratio of the verified savings to the ex ante savings. Following the table are any findings and recommendations, including discussions, of all measures with realization rates above or below 100%. Appendix A provides a description of the impact analysis methodology. Table B-1 in Appendix B shows the Total Resource Cost (TRC) cost-effectiveness analysis inputs available at the time of producing this impact evaluation report.

Table 5-1. Verified Gross Savings Parameters

Measure	Unit Basis	Ex Ante Gross (therms/unit)	Verified Gross (therms/unit)	Realization Rate	Data Source(s)†
Combination Oven	Unit	Varies	Varies	64%	TRM v9.0*, 4.2.1
Conveyor Oven	Unit	884.00	884.00	100%	TRM v9.0, 4.2.4
ENERGY STAR Convection Oven	Unit	Varies	Varies	88%	TRM v9.0, 4.2.5
ENERGY STAR Dishwasher	Unit	Varies	Varies	100%	TRM v9.0, 4.2.6
ENERGY STAR Fryer - Large Vat	Unit	Varies	Varies	84%	TRM v9.0, 4.2.7
ENERGY STAR Fryer - Standard	Unit	Varies	Varies	94%	TRM v9.0, 4.2.7
Infrared Salamander Broiler	Unit	240.00	240.24	100%	TRM v9.0, 4.2.14
Kitchen Demand Ventilation Controls	Unit	5,999.00	5,998.50	100%	TRM v9.0, 4.2.16
Rack Oven - Double Oven	Unit	1,931.00	1,930.50	100%	TRM v9.0, 4.2.18
Roll-In Rack Single Oven	Unit	0.00	0.00	NA	TRM v9.0, 4.2.18

NA = not applicable.
* State of Illinois Technical Reference Manual version 9.0 (TRM v9.0) from https://www.ilsag.info/technical-reference-manual/il-trm-version-9/ I.
† Program Tracking Data provided by Nicor Gas: extract dated January 31, 2022.

5.2 Findings and Recommendations

5.2.1 Tracking Data

Finding 1. Guidehouse was unable to replicate Combination Oven ex ante savings using the information provided in the tracking data and TRM v9.0. Some inputs were misaligned across different fields and required Guidehouse to manually review which inputs applied to the respective savings. For example, the data field “ASTMEnergy To Food” contains some EFOODConvGas information and some GasIDLE_steambase information. Guidehouse found the information for GasEFF_steambase was not present, so the TRM v9.0 deemed values were used. The evaluation team used custom values for inputs whenever they were provided.

Finding 2. The evaluation team found ex ante input values provided for the change in Daily Idle Energy, change in Daily Preheat Energy, and change in Daily Cooking Energy algorithm input fields do not align with the overall ex ante savings values provided for some ENERGY STAR Convection Oven measures. This applies to measures in project IDs 124, 133, 167, 187, and 198. Guidehouse used the custom value provided for Eff_ENERGYSTAR instead of the TRM v9.0 deemed value, but this does not account for the discrepancy in ex ante and verified savings values.

Finding 3. The evaluation team found ex ante values provided for change in Daily Idle Energy and change in Daily Cooking Energy input fields do not align with the final ex ante savings values provided for many Standard and Large Vat ENERGY STAR Fryers. Verified savings values use the inputs provided in the tracking data to obtain these breakout "Diff" values and overall savings values for fryers.

Recommendation 1. Ensure all algorithm inputs used to obtain ex ante savings are accurately reported in the program tracking data.

5.2.2 Roll-In Rack Single Oven

Finding 4. The tracking data reports zero ex ante savings for the three Roll-In Rack Single Oven measures. The evaluation team reported zero verified savings for these measures.

Recommendation 2. Provide additional notes in the tracking data moving forward when zero ex ante savings are reported.

Appendix A. Impact Analysis Methodology

Guidehouse determined the verified gross ex ante savings for each measure of the program by first conducting a tracking data review. The evaluation team checked that measure names and inputs matched those in the TRM v9.0 algorithms and adjusted as necessary.[2] We then used the algorithms and TRM deemed or custom tracking data values to calculate verified therms savings for the program. The gross realization rates are calculated by dividing the gross savings by the reported ex ante gross savings. The evaluation team calculated verified net therms using a deemed NTG of 0.86 for the Nicor Gas CFS Program[3].

[2] Illinois Statewide Technical Reference Manual for Energy Efficiency Version 9.0 from https://www.ilsag.info/technical-reference-manual/il-trm-version-9/.

[3] Available on the SAG web site: https://www.ilsag.info/evaluator-ntg-recommendations-for-2021/.

Appendix B. Program Specific Inputs for the Illinois TRC

Table B-1 shows the Total Resource Cost (TRC) cost-effectiveness analysis inputs available at the time of producing this impact evaluation report. Additional required cost data (e.g., measure costs, program level incentive and non-incentive costs) are not included in this table and will be provided to the evaluation team later. Guidehouse will include annual and lifetime water savings and greenhouse gas reductions in the end of year summary report.

Table B-1. Verified Cost Effectiveness Inputs

Research Category	Units	Quantity	Effective Useful Life	Ex Ante Gross Savings (Therms)	Verified Gross Savings (Therms)	Verified Net Savings (Therms)
Combination Oven	Unit	8	12.0	3,108	1,988	1,710
Conveyor Oven	Unit	1	17.0	884	884	760
ENERGY STAR Convection Oven	Unit	13	12.0	6,733	5,937	5,105
ENERGY STAR Dishwasher	Unit	6	16.1	1,902	1,904	1,637
ENERGY STAR Fryer - Large Vat	Unit	5	12.0	2,657	2,220	1,909
ENERGY STAR Fryer - Standard	Unit	53	12.0	29,661	27,912	24,004
Infrared Salamander Broiler	Unit	1	12.0	240	240	207
Kitchen Demand Ventilation Controls	Unit	1	20.0	5,999	5,999	5,159
Rack Oven - Double Oven	Unit	1	12.0	1,931	1,931	1,660
Roll-In Rack Single Oven	Unit	3	12.0	0	0	0
Total or Weighted Average		**92**	**13.2**	**53,116**	**49,013**	**42,151**

* Effective Useful Life (EUL) of dishwasher measures vary based on the temperature and type.
Source: Nicor Gas tracking data and Guidehouse evaluation team analysis.