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| Building Operator Certification Impact Evaluation Report  Energy Efficiency: Program Year 2023  (1/1/2023-12/31/2023) | | | | | | | |
| Prepared for:  Nicor Gas Company  DRAFT  March 18, 2024 | | | | | | | |
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# Introduction

This report presents the results of the impact evaluation of the Nicor Gas 2023 Building Operator Certification (BOC) program and summarizes the total energy impacts for the program as well as relevant measure and program structure details. The appendices provide the impact analysis methodology and details of the total resource cost (TRC) analysis inputs. Program Year 2023 covers savings from January 1 to December 31, 2023.

# Program Description

BOC is a training and certification program for commercial building operators. The curriculum teaches participants how to improve building comfort and efficiency by optimizing a building’s systems. The curriculum has been offered for several years and is implemented throughout the region by the Midwest Energy Efficiency Alliance.

The BOC program offers full tuition reimbursement for ComEd, Ameren Illinois and natural gas customers who complete the curriculum. The sponsoring utilities’ goal is to have participants implement energy-saving practices at their facilities. BOC training has two curricula: BOC Level I and BOC Level II.[[1]](#footnote-2) Both curricula require a time commitment of more than 60 hours for class training and assigned projects spread over several months.

The Nicor Gas BOC program coordinates with ComEd and Ameren Illinois where their service areas overlap. The program had 13 participants from the Nicor Gas territory in 2023 as shown in Table 2‑1.

Table 2‑1. 2023 BOC Program Volumetric Findings Detail

|  |  |
| --- | --- |
| Participation | Total |
| Level I Participants\* | 13 |
| Level II Participants\* | 0 |
| **Total Participants** | **13** |

\* Participants are defined as the number of BOC participants from Nicor Gas territory.

Source: Nicor Gas tracking data and Guidehouse evaluation team analysis

# Program Savings Detail

Table 3‑1 summarizes the energy savings the BOC program achieved in 2023.

Table 3‑1. 2023 BOC Program Annual Energy Savings Summary

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Program Path | Ex Ante Gross Savings (therms) | Verified Gross RR\* | Verified Gross Savings (therms) | NTG† | Verified  Net  Savings (therms) |
| BOC | 21,346 | 68% | 14,566 | 1.00 | 14,566 |

\*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 Stakeholder Advisory Group website: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2023/>

Source: Guidehouse evaluation team analysis

# Program Savings by Measure

The BOC program does not claim savings by measure, so this report does not present measure-level savings. Evaluation-verified savings for the program are calculated and reported at the participant level.

# Impact Analysis Findings and Recommendations

Table 5‑1 shows the unit therm savings and realization rate (RR) findings from Guidehouse’s review. The RR is the ratio of the verified savings to the ex ante savings. Following Table 5‑1, Section 5.1 provides findings and recommendations. Appendix A provides a description of the impact analysis methodology.

Table 5‑1. 2023 BOC Program Verified Gross Gas Savings Parameters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Program Path | Unit Basis | Ex Ante Gross (therms/ft2 (capped)) | Verified Gross (therms/ ft2 (capped)) | RR | Data Source(s) |
| BOC | Participant | 0.0046 | 0.0046 | 100% | Nicor Gas PTD\* and IL-TRM, v11.0†, Section 4.8.24 |

\*Program tracking data (PTD) provided by Nicor Gas, extract dated March 4, 2024.

†Illinois Statewide Technical Reference Manual (IL-TRM) version 11.0 from <http://www.ilsag.info/technical-reference-manual.html>.

Source: Guidehouse evaluation team analysis

## Findings and Recommendations

**Finding 1.** The program incorrectly calculated savings for three cases where multiple participants operated the same building (i.e., service address) or group of buildings.

* Three participants (Participant 1, Participant 2, and Participant 10) working for a common employer indicated they manage the same building with the total building area operated by the three participants totaling 526,260 ft2. The ex ante savings capped the managed square footage for all three participants at 500,000 ft2 each. The evaluation team capped the managed square footage for one of the participants at 500,000 ft2 and verified savings only for the remaining 26,260 ft2 for the second participant and verified no savings for the third participant as per the guidance in the Illinois Statewide Technical Reference Manual (IL-TRM) v11.0, Section 4.8.24.
* Two participants (Participant 8 and Participant 11) working for a common employer indicated they manage the same set of 11 buildings with the total building area operated by the two participants totaling 719,204 ft2. The ex ante savings capped the managed square footage for both participants at 500,000 ft2 each. The evaluation team capped the managed square footage for one of the participants at 500,000 ft2 and claimed savings only for the remaining 219,204 ft2 for the other participant as per the guidance in the IL-TRM v11.0, Section 4.8.24.
* Two other participants (Participant 12 and Participant 13) also working for a common employer indicated they manage the same building with each of them reporting a different managed square footage value for it (Participant 12 = 50,000 ft2 and Participant 13 = 220,000 ft2). The evaluation team verified the area of the operated building as 50,000 ft2 and verified no additional savings for participant 13 as per the guidance in the IL-TRM v11.0, Section 4.8.24.

**Recommendation 1.** In cases where multiple participants operate the same building (i.e., service address) or group of buildings and the managed square footage exceeds 500,000 ft2, the program should claim savings up to the 500,000 ft2 per participant cap until the total square footage has been accounted for.

**Finding 2.** One participant (Participant 5) did not completely fill in the Building Information section of the BOC Participant Information Template since they manage a very large number of buildings[[2]](#footnote-3).That participant provided building name and building service address only for three buildings. The evaluation team gathered building area information for these three buildings managed by the participant to verify savings for this participant in CY2023.

**Recommendation 2.** For participant employers with large numbers of buildings, continue to work with them to gather building area information for all available buildings. This approach will allow accurate tracking of eligible building area over time and across multiple participants from the same employer.

**Finding 3.** The participant facility data captured from the BOC trainees had adequate data to calculate impacts using the IL-TRM v11.0 algorithm. The evaluation team researched online sources and confirmed facility details including square footage.

**Recommendation 3.** To ensure the evaluation team has sufficient information to determine verified savings for each participant, the implementation contractor should continue to require BOC participants to provide the completed BOC Participant Information Template.

##### Impact Analysis Methodology

The impact evaluation team applied the algorithms from measure 4.8.24 Building Operator Certification from the IL-TRM v11.0. Guidehouse used information collected from the participants (building area provided in the Nicor Gas tracking data and coordinated with ComEd to gather information for large participants with several building addresses) and internet research (checking building square footage) to determine the inputs into the IL-TRM algorithm. Savings are capped at 500,000 square feet per participant. Table A‑1 shows the savings coefficients from the IL-TRM, which are used in Equation A-1 to verify the estimated annual energy savings. Table A‑2 shows the savings and managed building area for each participant.

Table A‑1. 2023 BOC Program Savings Coefficients

|  |  |  |  |
| --- | --- | --- | --- |
| Savings Type | Variable Name | Value | Unit |
| Natural Gas | Cg | 0.0046 | therms/ft2/participant |

Source: IL-TRM v11.0, Section 4.8.24

Equation A-1. Annual Savings per Participant

*Natural Gas Savings = Cg x Area (Minimum of participant ft2 or 500,000 ft2)*

Table A‑2. 2023 BOC Program Participant-Level Savings

| Participant No. | BOC Level | No. of Buildings | Managed Square Footage per Participant | TRM Capped Square Footage per Participant\* | Verified Gross Savings (Therms) | Verified Net Savings (Therms) |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | Level I | 1 | 500,000 | 500,000 | 2,300 | 2,300 |
| 2 | Level I | 1 | 500,000 | 0 | 0 | 0 |
| 3 | Level I | 4 | 464,661 | 464,661 | 2,137 | 2,137 |
| 4 | Level I | 2 | 49,000 | 49,000 | 225 | 225 |
| 5 | Level I | 66 | 500,000 | 500,000 | 2,300 | 2,300 |
| 6 | Level I | 3 | 33,000 | 33,000 | 152 | 152 |
| 7 | Level I | 1 | 1,000,000 | 500,000 | 2,300 | 2,300 |
| 8 | Level I | 11 | 719,504 | 500,000 | 2,300 | 2,300 |
| 9 | Level I | 3 | 324,000 | 324,000 | 1,490 | 1,490 |
| 10 | Level I | 1 | 526,260 | 26,260 | 121 | 121 |
| 11 | Level I | 11 | 719,504 | 219,504 | 1,010 | 1,010 |
| 12 | Level I | 1 | 50,000 | 50,000 | 230 | 230 |
| 13 | Level I | 1 | 220,000 | 0 | 0 | 0 |
| **Total** |  |  | **5,605,929** | **3,166,425** | **14,566** | **14,566** |

\* Savings are capped at 500,000 square feet per participant, according to the IL-TRM.

Source: Nicor Gas tracking data and Guidehouse evaluation team analysis

##### Program-Specific Inputs for the Illinois TRC

Table B‑1 shows the 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. 2023 BOC Program Verified Cost-Effectiveness Inputs

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Program Path | Savings Category | Units | Quantity | Effective Useful Life | Ex Ante Gross Savings (therms) | Verified Gross Savings (therms) | Verified Net Savings (therms) |
| BOC | Training | Participant | 13 | 13 | 21,346 | 14,566 | 14,566 |
| **Total** |  |  |  |  | **21,346** | **14,566** | **14,566** |

Source: Nicor Gas tracking data and Guidehouse evaluation team analysis

1. Level I BOC Training is Building Systems Maintenance, and Level II BOC Training is Improving Building Operational Performance. The difference between Level I and Level II trainings includes the eligibility criteria: Level II training eligibility requires more years of operations and maintenance experience, higher levels of education, or the completion of Level I BOC training. Source: <https://www.theboc.info/building-operator-training/boc-eligibility/>. [↑](#footnote-ref-2)
2. This participant manages 66 individual buildings. [↑](#footnote-ref-3)