IL EE Stakeholder Advisory Group:
Market Transformation (MT) Savings Working Group Meeting

Monday, June 10, 2024
1:00 – 3:00 pm
Teleconference

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Meeting Materials

Posted on the June 10, 2024 meeting page:

- Monday, June 10 MT Savings Working Group Agenda
- Slipstream, MEEA and Guidehouse Presentation: Stretch Energy Codes Market Transformation Initiative Update
- Nicor Gas Presentation: High Performance Windows MT Initiative – Natural Market Baseline
- Nicor Gas Presentation: Efficient Rooftop Units MT Initiative – Logic Model and Market Progress Indicators
    - Efficient Rooftop Units Logic Model
    - Efficient Rooftop Units Market Progress Indicators Table

Attendees

Name	Company or Organization
Celia Johnson	SAG Facilitator (Celia Johnson Consulting)
Jorge Medina Zambrano	SAG Meeting Support (Inova Energy Group)
Abigail Miner	IL Attorney General's Office
Alison Lindburg	MEEA
Alyssa Kogan	Slipstream
Audrey Horner	Ameren Illinois
Bahareh van Boekhold	Illume Advising
Brady Nemeth	Resource Innovations
Cassidy Kraimer	Community Investment Corp.
Chris Burgess	MEEA
Chris Neme	Energy Futures Group, representing NRDC
Corey Grace	Resource Innovations
Courtney Golino	Guidehouse

Name	Company or Organization
Cynthia Kan	Cadmus Group
Cynthia Segura	Slipstream
Darren Port	Slipstream
Debbie Driscoll	NEEA
Elder Calderon	ComEd
Elizabeth Horne	ICC Staff
Ellen Rubinstein	Resource Innovations
Erin Daughton	ComEd
Erin Stitz	AEG
Hannah Collins	Leidos
Hannah Howard	Opinion Dynamics
Jane Colby	Apex Analytics
Jeannette LeZaks	Slipstream
Jim Fay	ComEd
Joe Ricchiuto	MEEA
John Lavallee	Ameren Illinois
Jonathan Skarzynski	Nicor Gas
Josh Sharon	ComEd
Karen Horkitz	KSH Advising
Kari Ross	NRDC
Kathryn Collins	Guidehouse
Kegan Daugherty	Resource Innovations
Kevin Duffy	ICF
Lilieric Florez Monroy	Peoples Gas and North Shore Gas
Maddie Koolbeck	Institute for Market Transformation
Mark Milby	Elevate
Mark Szczygiel	Nicor Gas
Matt Armstrong	Ameren Illinois
Michael Collins	Franklin Energy
Michael Frischmann	Ecometric Consulting
Mike King	Nicor Gas
Molly Graham	MEEA
Nicholas Crowder	Ameren Illinois
Nicole Karpavich	Resource Innovations
Philip Mosenthal	NV5, representing IL AG and NCLC
Randy Opdyke	Nicor Gas
RIck Tonielli	ComEd
Rocco Guaragno	Resource Innovations
Ryan Wall	Guidehouse
Sarah Wells	Slipstream
Shane Perry	Ameren Illinois
Stu Slote	Guidehouse

Name	Company or Organization
Tamara Anderson	NEEA
Tamika J. Cole	Walker-Miller Energy Services
Tim Dickison	Ameren Illinois
Tina Grebner	Ameren Illinois
Todd Malinick	Opinion Dynamics
Wasiu Adesope	Blacks in Green
Wayne Leonard	Guidehouse

Meeting Notes

See red text for follow-up items.

Opening and Introductions

Purpose of the meeting:

1. For Slipstream and MEEA to share a progress update on the Stretch Codes MT initiative;
2. For Nicor Gas to share a progress update on the High-Performance Windows MT initiative; and
3. For Nicor Gas to share a progress update on the Efficient Rooftop Units MT initiative.

Stretch Codes MT Initiative

Jeannette LeZaks, Slipstream
Alison Lindburg, Midwest Energy Efficiency Alliance
Wayne Leonard and Stu Slote, Guidehouse

Agenda

- Progress update on Stretch Code MT initiative, including Energy Savings Framework, Logic Model, and Evaluation Plan
- Next steps for the MT Stretch Codes Initiative
- Next steps for the Building Performance Standards Stretch Codes Initiative
- Q&A

Advanced Building Policies Overview

Strech Energy Codes

- Locally mandated code that defines a higher level of energy efficiency for new construction and major renovation

Building Performance Standard (BPS)

- Policy that requires improvements to the existing building stock through setting performance targets for efficiency upgrades.

Project Background

Project goal

- Engage with municipalities to adopt and implement stretch energy codes and building performance standards (BPS)

- Ongoing engagement strategies in tandem with ComEd developing support programs to help implement these policies.
- Develop savings and attribution methodologies that follow market transformation protocols in IL TRM Attachment C

Role of Utility
Support for policy adoption/advancement and policy implementation/compliance.
- Support can include incentives for builders and property owners, training and technical guides,
- plan review assistance, compliance support, and technical analysis.
- Implementation support designed to increase likelihood of adoption.
- Current effort is funded by ComEd.

MT versus Resource Acquisition
- Long-term vision, goal is structural change.
- Focus on savings that occur over a longer time horizon, incorporating many levels of engagement.

Illinois Stretch Code timeline
Updates on Capital Development Board process
- On April 9, CDB voted 6-1 to approve proposed language of stretch codes.
- Decarb provisions remain in the body of the stretch codes (i.e., sections re. heat pump products, demand response, EV readiness, electrical energy storage system readiness, solar readiness, electric readiness)
- All-electric appendices removed.
- Codes now go to JCAR for final review and approval with opportunity for public comment.

Timeline for adoption
- Expected to be available for municipalities to adopt later this year, by 10/31/2024.
- CEJA originally required it be available for adoption on 1/1/2024 but pushed back and optimistic that by the end of October, 2024 it will be available.

MT Program Supporting Documents
- Energy savings framework
- Program plan / logic model
- Evaluation plan (Guidehouse)

Goal of this Meeting
Provide a high-level overview of three supporting documents.
- Seeking feedback and approval of the MT supporting docs and approaches
- Supporting documents will be sent after the meeting.

MTI Logic Model
- Market transformation process is meant to be comprehensive and long-term, which is reflected in logic model.
- Utility activities can build off each other.
- Adoption versus compliance

    - Some activities address both adoption and compliance.
    - Illinois municipalities must adopt the base energy code but adopting a stricter 'stretch code' requires approval from local councils or village boards.
    - Adoption alone is not enough; research indicates that compliance with energy codes is often incomplete.
    - The focus is on ensuring both the adoption of energy codes and rigorous compliance, as they are crucial and work hand-in-hand.

Market Barriers

- Business and contractor and inspection community concerns with updates to the building code and new requirements or may not be aware of the code.
- Municipalities often have limited resources to understand, adopt, and enforce new and more efficient codes.
- Design and construction contractors and municipalities may not be aware of the benefits of building more efficiently.
- Design and construction contractors and municipalities may not be aware of or prioritize updated or more complex codes.
- Higher upfront costs for some energy efficiency investments
- Design and construction contractors and municipalities may perceive a lack of consumer demand.

Potential Utility Activities

- Conducting and disseminating research and technical analysis to city staff, building professionals, policymakers, or the general public
- Actively participating in discussions at public or decision-making meetings
- Assisting municipalities with drafting of policy language to formally adopt state stretch code language or amended version.
- Submitting policy language, recommendations, or public comment for consideration of adoption to the state or local municipalities
- Funding and conducting participation in public processes via proxy.
- Giving public testimony in support of or against specific policy language/ideas/activities
- Create programs that provide financial incentives.
- Develop and implement trainings for targeted market.

Market Progress Indicators (MPIs)

- See slide 15 for MPI, logic model output / outcome, and data source

Key Elements of the Energy Savings Framework

- MT Energy Savings Equations – see slide 17

Determining Market Transformation Units

Historical Square Feet Data

- Considerable discussion last year around what the units would be for stretch codes. Came to the decision around square feet versus say energy savings.
- Gather historical new construction square feet data by municipality and building type.
- Use average growth by municipality and building type as projection for future growth.

Natural Market Baseline (NMB) Curve

- Estimate the likelihood of adoption for municipalities without utility support.

- Assume that likelihood of adoption is directly related to percentage of square feet that is part of NMB curve.
- Based on surveys of a sample of municipalities

Determining Likelihood of Adoption Without Utility Support

- Implement surveys to understand likelihood of adoption.
- Estimate likelihood based on responses, grouped by municipality type (Chicago, Evanston, Oak Park, other cities)
    - These three cities have moved forward on different policy fields.
- Calculate NMB based on total square feet in those locations.
- Survey methods and instruments developed in coordination with Guidehouse with input from Resource Innovations and Illume.
- First conducted in August and September 2023; will continue to be conducted on an annual basis to support evaluation. Planning on doing them later this summer 2024.

Determining duration of claimed savings

- Compliance savings duration
- In the TRM, title and explanation are not matching and could be misleading. Question raised about how to possibly be clearer in the wording of the TRM regarding estimating claimed savings.
    - SAG Facilitator to follow-up with Slipstream to discuss whether a text change is needed to IL-TRM Attachment C.

Interactions with Resource Acquisition Programs

ComEd currently has related programs.

- Commercial/Industrial New Construction
- All electric Homes New Construction
- Affordable Housing New Construction

Current and ongoing conversations with MTI & NC contractors

- Savings will be determined to avoid double counting with programs.
- There is an impact and still evaluating how there could be more accurate counting.
- Stretch code managed to improve over time.
- Baselines will have to be recalculated up to 2036 when efficiency drops.
- Stretch code is at a different timeline as the base Energy Code.

Cassidy Kraimer (chat) – With the building/real estate market being so strange/volatile, are there any factors that are taken into consideration to offset or weigh the strange market conditions the surveys and to create the energy savings framework?

Jeannette LeZaks – While forecasting growth in new construction is influenced by market volatility, we haven't seen consistent data over the past few years to use it reliably in our energy savings framework. Municipalities often cite the fluctuating commercial and residential building markets as a concern, worrying that stricter energy codes might impose additional burdens on builders, which affects evaluations and stakeholder feedback.

Stu Slote – If protections are provided then that would be accordingly used.

Overall Stretch Codes MTI Evaluation Approach

IL TRM Attachment C describes three documents needed to define MT approach.

- (1) Energy Savings Framework, (2) Program plan/logic model, (3) Evaluation Plan

IL TRM Att. C provides guidance regarding attribution and evaluation of MT initiatives.

- *Because the unit of analysis is an entire market not a single transaction, MT evaluations tend to require numerous pieces of evidence that 1) change is occurring; and 2) the program is influential in that change. A preponderance of evidence approach, rather than proof, is most often required*
- Evaluation will examine if preponderance of evidence suggests Stretch Codes MTI is achieving desired outcomes

Overview of Stretch Codes MTI Evaluation Plan

- Evaluation Plan – 7 sections
  - (1) Introduction, (2) General Initiative Support, (3) Overview of Evaluation Activities, (4) Evaluation Activity Detail, (5) Determining Stretch Codes MTI Energy Savings, (6) Evaluation of Evidence Gathering, (7) Market Progress Evaluation Report (MPER)
- Guidehouse reviewed and provided feedback on MTI elements.
- Guidehouse will revise schedule each year as part of evaluation planning process.

Assessment of Market Progress Indicators

Evaluation of MPIs

- Guidehouse will report on progress toward goals and objectives described in logic model (LM) and market progress indicators (MPIs) as provided by Slipstream and MEEA, to establish initiative's influence on stretch codes adoption and compliance in ComEd's territory.
- Looking at causality between savings and the work of the program (i.e. adoption and compliance)
- Assessment of MPIs requires incorporation of multiple judgments of progress based on preponderance of evidence approach.
  - Qualitative – based on surveys, in-depth interviews or observational data collection.
  - Quantitative – based on market share or production data.
- Guidehouse will organize and leverage an experts panel comprised of a cross section of local and regional market actors, provide a summary of data (qual and quant), and compile feedback as part of primary data collection process.

Attribution Approach

- Evaluation team will take into consideration input from:
  - TRM, implementer survey, additional survey (as needed), stakeholder comments, expert judgment panel, and independent secondary research to inform the evaluation.
- MT Programs vs RA Programs
- Causality is more towards the general attribution factor

ComEd Stretch Codes MT Initiative Next Steps

- Theory-Based Logic Model for CY2024-CY-2028 (draft 6/10/24)
- Energy Savings Framework (draft 6/10/24)
- Theory-Based Evaluation Plan for CY2024-CY-2028 (draft 6/10/24)
- Comments due by Monday, July 1

- Send comments to Jeannette LeZaks, Slipstream (jlezaks@slipstreaminc.org) and CC Celia@CeliaJohnsonConsulting.com

High Performance Windows MT Initiative
Randy Opdyke, Nicor Gas
Brady Nemeth, Resource Innovations

Agenda
- Introduction to High Performance Windows initiative and progress update
- Overview of Natural Market Baseline
- Next steps for this initiative + discuss whether written feedback is requested.
- Q&A

NMB Purpose
"…a forecast of the future in which no utility-funded energy-efficiency programmatic intervention exists."
- Nicor Gas through collaboration, developed the following:
  - Methodology
  - Data Sources
  - Assumptions
- The Natural Market Baseline (NMB) will be revised over time (on a schedule determined in the Theory Based Evaluation plan) based on new data.

Development & Review Timeline
- Market characterization research which started in 2023.
- NEEA collaboration using their market transformation feedback.
- Cadmus feedback was incorporated as well.

Guidehouse Natural Market Baseline Review
Kathryn Collins

Data Sources Review
- Guidehouse evaluated the data sources provided by RI for the NMB, regarding their scope and accuracy, and checked for more recent updated versions.
- Guidehouse identified three sources with version updates which did not have an explicit impact on the initial NMB; these will be tracked for future NMB reviews and what data sources to utilize.

Variables Review
- Guidehouse conducted an in-depth review of RI's methodology for determining NMB variables.
- This included analyzing given sources and researching market trends.
- Guidehouse found that all variables chosen are well defined and appropriate, with minor comments on how RI may better describe the select "start of hypergrowth."

Internal SME Review
- Guidehouse engaged with its internal window and building envelope SMEs to identify any additional data sources or market identifiers that might be used to improve the NMB.

- No additional resources were identified, but Guidehouse will engage its SMEs to promote future collaborations and as part of the evaluation plan.

Natural Market Baseline
Brady Nemeth
- Market share expected to stay in single digits until 2033 at which point it will start to accelerate.
- Revisions will be made as new data becomes available.

Methodology
- Nicor Gas used a simple S-Curve.
- This curve is estimating unit market share: HPW sales as a percentage of total window sales in any given year. It is not estimating the cumulative installed stock of HPW.

The curve has four main inputs to consider:
- Maximum Market Share: The maximum level of market saturation
- Start of Hypergrowth: The point at which a product's market share begins to rapidly.
- accelerate
- Ramp Period: The period between the start of hypergrowth and takeover point.
- Factor: A factor based on the estimated upper and lower limits of the ramp period
    - Historical data on windows will be used to see where collaboration is possible.

Sources
- Nine unique sources were used to triangulate a NMB unique to Nicor Gas' service territory.
- 2 main sources
    - Nicor market characterization survey 2022-2023
    - HERS ratings over 27k homes in IL (Nicor gas specific)

Assumptions
The data drove several main assumptions:
- HPW sales have been relatively flat for decades, remaining around 2% of market share for the last 15-20 years.
    - With "business as usual", this market share will double in approximately 10 years.
- Illinois has factors that may drive estimates higher than national sales estimates.
    - Colder, northern state with increased need to save energy and improve comfort.
    - High retrofit opportunity, where greater benefits are felt by homeowners in older homes.
- Nicor Gas survey data indicates modest growth above national estimates.
- ENERGY STAR v7 was the largest efficiency jump for windows since before 2010.
- V7.0 is how the IL TRM characterizes high performance windows.
- HPW will likely reach max market share faster than the adoption of double glazing or Low-E largely due to ENERGY STAR's role in the market.

Variable Summary and Natural Market Baseline
- Variable
    - Initial Market Share* → 3.6%
    - Start of Hypergrowth → 2033
    - Ramp Period → 17.25
    - Takeover Point** → 2050

- Maximum Market Share → 85%

Comparison with NEEA and MN CEE NMBs

- Both the NEEA and CEE NMBs represent valuable comparisons for Nicor Gas.
- One curve for new construction and one for residential retrofits.
- Overall, all NMBs estimate slow growth with annual market share in the single digits until beyond 2030.
- The biggest unknown across the board is the impact of ENERGY STAR. Nicor Gas' NMB may be more optimistic due to the historically high market share enjoyed by ENERGY STAR qualified windows.

Nicor Gas High Performance Windows MT Initiative Next Steps

- Comments are requested on the Natural Market Baseline, described in the Nicor Gas June 10 Presentation: High Performance Windows MT Initiative Natural Market Baseline
- Comments due by Monday, July 1
  - Send comments to Randy Opdyke, Nicor Gas (rwopdyke@southernco.com) and CC Celia@CeliaJohnsonConsulting.com

Efficient Rooftop Units MT Initiative

Randy Opdyke, Nicor Gas

Agenda

- Introduction to Efficient Rooftop Units initiative and progress update
- Overview of Logic Model and Market Progress Indicators (MPI)
- Next steps for this initiative + discuss whether written feedback is requested.
- Q&A

Efficient Rooftop Units (ERTUs)

- Improvement over the historically inefficient RTU product
- Improvements affect whole-box efficiency
- Two tiers of equipment with both a prescriptive and performance path to compliance
  - Tier 1 includes box upgrades (box insulation and low leak dampers)
  - Tier 2 includes Tier 1 upgrades and an energy recovery ventilator or condensing furnace.
- https://betterbricks.com/solutions/efficient-rooftop-units
- The market is low but characterization research is helping increase the market.

Other organizations are developing ERTU initiatives.

- NEEA – Nicor Gas and NEEA have been collaborating since 2020 to develop a new testing specification, validate savings through modeling and lab testing, and continue to collaborate on the ERTU product.
- CEE (MN)
- CalMTA
- Department of Energy

ERU Tiers and Components

- Tier 1: Prescriptive Path
  - All panels (door liners, top panels, divider panels, and mullions) adjacent to conditioned air, including the base, shall be fully insulated with a minimum of R-12

    - Leakage rate of outdoor and return air mixing dampers shall be no greater than the rate described in ASHRAE/IESNA 90.1-2019 Table 6.4.3.4.3
- Tier 1: Performance Path
    - ≥ 0.65, as measured by CSA P.8 – Edition 3.0
- Tier 2: Prescriptive Path – must meet all Tier 1 requirements, and:
    - 2A: The unit includes heat or energy recovery with a heat/energy recovery ventilator.
    - 2B: A furnace with a condensing heat exchanger (90+% TE)
- Tier 2: Performance Path
    - ≥ 0.80, as measured by CSA P.8 – Edition 3.0

ERTU Logic Model and MPI Development Process

- Draws on ERTU Research (10,000 sample size):
    - GTI Market Research
- Characterize existing RTUs on buildings.
- Characterization of existing and new/replacement RTUs on buildings
    - NEEA
- Energy modeling of commercial gas rooftop units in support of CSA P.8 standard
- Energy savings from efficient rooftop units in heating-dominated climates
- Review of market share forecast and key assumptions for efficient rooftop units.
    - Co-developed with NEEA, incorporating feedback into the final version.
    - Reviewed by Guidehouse, incorporating feedback into the final version.

Logic Model: Barriers and Opportunities

Barriers

- Limited Tier 1 product availability for light commercial replacement market
- Lack of contractor willingness and capability for Tier 2 interventions
- Insufficient value proposition to overcome higher first cost and risk aversion,
- The supply chain lacks awareness and understanding of efficient equipment designations and options.
- Existing metrics do not differentiate energy efficiency products.
- Differing equipment priorities across climate zones
- Manufacturers lack interest in product development.

Opportunities

- Customer and utility interest in improved energy efficiency
- Other EE & MT organizations focused on products.
- Ongoing updates to IL codes and standards to advocate for whole-unit heating efficiency.

Logic Model: Strategic Interventions

- Develop value proposition and case studies.
- Engage manufacturers with demonstration of market pull.
- Engage and support corporations, maintenance contractors and other partners regarding large purchases or procurement commitments.
    - The pilot with condensing units proved tricky due to savings that it could provide.
- Engage and support supply chain with technology info, installation and sales approach, program info.

- Integrate into program offerings, incentivize, and promote ERTUs to supply chain and customers.
- Collaborate with other gas and dual fuel utilities and allied organizations to encourage industry to adopt updated metrics, develop QPLs, support increased availability and coordinate program offerings.
    - Potential to develop joint programs to develop product qualifying lists.
- Support codes and standards organizations to require prescriptive measures, test procedure and performance standards.

Outcomes Long-Term

- 5-10 years
- Industry-respected organizations incorporate ERTUs into their efficient technology specifications.
- IL base code and/or Federal codes include qualifying ERTUs in compliance paths.
- Majority installed RTUs.

Market Process Indicators

14 MPIs

- Each LM Outcome connected to at least one MPI with associated metric(s) and data source(s)
- Metric Examples:
    - Existence of industry-accepted performance metric
    - # manufacturers producing ERTUs, # of models
    - # suppliers carrying ERTUs
    - # of distributors and installers recommending ERTUs

Data Source Examples

- Supplier websites and catalogs
- Shipment data
- Interviews/surveys
    - Manufacturers
    - Distributors
    - Installers
    - Large purchasers and major maintenance contractors

Next Steps:

- Natural Market Baseline development
- Prepare ERTU evaluation in collaboration with Guidehouse.
- Develop ERTU measure for IL TRMv14 (for inclusion in 2025)

Bahareh van Boekhold – What is what Nicor Gas doing differently than NEEA? Focused on condensing heat pump?

Randy Opdyke – Open to opportunity to various technologies and approaches. Collaboration is crucial and there needs to be a larger consensus and conversations in order to be more effective.

Kegan Daugherty – Aligned with NEEAs definition of product and open to revising depending on the best direction where the markets are going. Highlighting gas savings but not solely focused on that.

Debbie Driscoll NEEA (via chat) – INicor's program is very similar to NEEA's, which is currently gas-focused. CalMTA is in the midst of determining how they will focus their initiative.

Bahareh van Boekhold (via chat) - Thank you. I noticed CalMTI is working on HP RTUs as part of its approach.

Nicor Gas Efficient Rooftop Units MT Initiative Next Steps

- Efficient Rooftop Units Logic Model
- Efficient Rooftop Units Market Progress Indicators Table
- Comments due by Monday, July 1
    - Send comments to Randy Opdyke, Nicor Gas (rwopdyke@southernco.com) and CC Celia@CeliaJohnsonConsulting.com

Closing and Next Steps

Next MT Working Group Meeting: Thursday, August 29

Follow-up items indicated in red throughout the notes