2023 Q4 Market Research & Evaluation Quarterly Newsletter

WHAT'S NEW:

Happy greetings, everyone!

NEEA's Market Research and Evaluation (MRE) team is pleased to share with you the latest research and evaluation project news. Enclosed are important details related to current studies, as well as those that will commence in the first quarter of 2024. There will be a host of studies in the field between now and the end of the first quarter. Several programs are in the midst of their first market progress evaluation report (MPER), including the Commercial HVAC programs (High-Performance HVAC and gas Efficient Rooftop Units) and the Extended Motor Products program. These evaluations will bring increased understanding of the market opportunity for these measures, as well as NEEA's progress toward its Market Transformation goals. There are also several state energy code compliance and standard influence evaluations in the field. In addition, lots of studies are wrapping up, so stay tuned for reports to hit your inbox over the next few weeks. 2023 has been an exciting year with many opportunities to connect in-person, share new ideas, and tackle big challenges. It's been an eventful twelve months, and the MRE team looks forward to what the year ahead brings.

~ **Amy Webb**, Sr. Manager, Market Research & Evaluation ~

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DUAL FUEL (Electric & Natural Gas) PROJECTS:

NATURAL GAS PROJECTS:

***PLANNING:** MRE projects from inception through proposal selection

***FIELDING:** MRE projects from kick-off through the completion of field work

***REPORTING:** MRE projects in the analysis/synthesis stage through report posting

At a Glance

MARKET RESEARCH & EVALUATION PROJECTS

Codes, Standards, New Construction

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DUAL FUEL (Electric & Natural Gas) PROJECTS:

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Commercial Building Market Research | BetterBricks | FIELDING

The research objective for this market research effort is to refine and expand on NEEA's understanding of the building upgrade journey for commercial building decision makers, in order to generate recommendations on how NEEA could support decision makers and their networks. It will also inform NEEA's exploration of interventions and resources for decision makers as they consider making energy efficient upgrades to their buildings. The key research question is: What is the building upgrade journey for commercial building decision makers? NEEA has contracted with ETHNO to address this question through the analysis of secondary materials and by conducting interviews and site visits with commercial building decision makers across the region. Interviews are scheduled to begin in Q4 2023.

This study is expected to be completed in Q1 2024, and a final report is anticipated for Q2 2024.

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Market Progress Evaluation Report #1

Efficient Rooftop Units (RTU) | **FIELDING**

As of late 2022, NEEA's Efficient RTU program is actively promoting efficient RTUs for gas heated commercial buildings across the region. This study will be the first evaluation of the program's Market Transformation efforts. The program's overarching objectives for the study are to:

1. Provide timely and actionable formative evaluation findings and recommendations to enable continuous improvement of the program;
2. Assess Market Transformation progress as measured by program Market Progress Indicators; and
3. Qualitatively assess program influence on observed market transfomation.

NEEA contracted with Apex Analytics and NMR Group to conduct the evaluation. NEEA kicked off the Efficient RTU evaluation in June. This quarter, the evaluation team plans to interview and survey commercial HVAC contractors, distributors, and manufacturer representatives. The evaluation will be ongoing through the fall of 2024, with a final report anticipated in Q4 2024.This evaluation study will be conducted in close coordination with the Market Progress Evaluation for the High-Performance HVAC program, which is also being completed by Apex Analytics and NMR Group.

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Market Progress Evaluation Report #1

High-Performance HVAC | **FIELDING**

As of late 2022, NEEA's High Performance HVAC program is actively intervening to transform the market for very high efficiency Dedicated Outside Air Systems (DOAS) for electrically heated commercial buildings across the region. This study will be the first evaluation of the program's Market Transformation efforts. The program's overarching objectives for the study are to:

1. Provide timely and actionable formative evaluation findings and recommendations to enable continuous improvement of the program;
2. Assess Market Transformation progress as measured by program Market Progress Indicators; and
3. Qualitatively assess program influence on observed market transfomation.

NEEA contracted with Apex Analytics and NMR Group to conduct the evaluation. NEEA kicked off the High-Performance HVAC evaluation in July. In Q3 2023, the evaluation team plans to interview and survey commercial HVAC system designers. The evaluation will be ongoing through the fall of 2024, with a final report anticipated in Q4 2024. The study will be completed in close coordination with the Market Progress Evaluation for the Efficient RTUs program, which is also being conducted by Apex Analytics and NMR Group.

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Market Sizing

Luminaire Level Lighting Controls (LLLC) | **REPORTING**

NEEA's LLLC program is considering adding exterior parking lot lighting to its portfolio. This study's research objective is to attain supported estimates for luminaires in parking lots, current LLLC market penetration, and the potential for market growth in exterior LLLC with NEEA intervention, in order to inform the naturally occurring baseline and projections of energy savings over time. Research questions include: 1) What is the market size for exterior LLLC in parking lots? 2) What is the potential market size for exterior LLLC in parking lots over the next twenty years? Several sub-questions address nuanced assumptions essential for modeling around these two key lines of inquiry. Cadeo will utilize their technical expertise and the selection and review of secondary sources to address the research questions. Research completion and an accompanying final report are anticipated in Q1 2024.

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Key Assumptions Review

Luminaire Level Lighting Controls (LLLC) | **REPORTING**

NEEA contracted with the Cadmus Group in late Q3 to conduct a review of key assumptions underlying its benefit-cost model for its LLLC program. The research objective for this study is to revise LLLC modeling assumptions in order to refine co-created energy savings reporting for the LLLC program. Research questions include: 1) Is it appropriate for NEEA to adjust the Regional Technical Forum's (RTF) recently updated Controls Savings Fraction (CSF) for occupancy sensor with daylighting controls to the current RTF mathematical values or below? If so, what values might be more appropriate? 2) Is NEEA's approach to adjusting new construction baseline CSF to reflect the code requirement of various lighting control types in various space types appropriate? 3) Is it appropriate for NEEA to adjust the baseline CSF that it nets out of retrofits? Cadmus will address the research objective utilizing their technical expertise and through the selection and review of secondary sources. Research completion and an accompanying final report are anticipated in Q1 2024.

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Market Progress Evaluation Report #2

Luminaire Level Lighting Controls (LLLC) | **REPORTING**

NEEA's LLLC program seeks to accelerate the adoption of LLLC in commercial buildings for new construction, major renovation and retrofit projects. NEEA contracted with Cadmus to conduct a second Market Progress Evaluation for the LLLC program and launched the study in September 2022.

Interviews and surveys were collected from November 2022 through May 2023 with stakeholders, manufacturers, installers, designers, specifiers, and lighting decision makers, in order to address the following questions:

1. How do the program documents clarify and align to convey the program's strategy and planned activities to overcome market barriers and drive market changes that will increase LLLC adoption?
2. To what extent has the program progressed toward achieving its short and mid-term outcomes as tracked through its market progress indicators?
3. What leads decision makers to purchase LLLC (versus other NLC) and what features (including non-energy benefits) do they value leading up to purchase and after the product is installed?

The study found that NEEA's program activities were well-aligned with its intended outcomes. The study found that the market had changed in a few ways including an increase in the number of companies recommending LLLC and including it in their building plans and an increase in the number of installers who believed LLLC were easier to install than other networked controlled lighting options. A final report is available on neea.org.

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Market Influence Study

High-Performance Windows (HPW) | **PLANNING**

NEEA is planning an influence study to document HPW program participation within the Partnership for Advancing Window Solutions (PAWS) network that may have influenced the adoption of the ENERGY STAR® 7 specification for windows. A contractor will interview NEEA staff members, other PAWS participants and ENERGY STAR representatives to determine if and how NEEA influenced the new, more energy efficient specification in Q2 2024. These interviews are time sensitive and are usually captured during initial market progress evaluation reports after a program has passed into the market development phase. With NEEA's plans to maintain HPW in the program development phase for this coming year, however, it is important to field a study now in order to capture interviews while program activities have been recently completed.

NEEA plans to complete this study by Q3 2024 with a report available shortly thereafter.

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Agricultural Pumps Market Research

Extended Motor Products (XMP) | **PLANNING**

In order to support ongoing program planning and opportunity assessment, NEEA intends to field a research study exploring the dynamics of the agricultural pump market across NEEA's four-state region. Study methods are likely to include secondary research accompanied by primary data collection (e.g., in-depth interviews, electronically administered surveys) to seek input and insight from professionals active in this market. An RFP will be developed and launched in early Q1 2024, with contractor selection and project kickoff scheduled for late Q1 2024.

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Market Progress Evaluation Report #1

Extended Motor Products (XMP) | **FIELDING**

As of Q2 2022, NEEA's XMP Pumps program is actively engaging with manufacturers' representatives, trade associations, and other market actors to increase adoption of energy-efficient motor-driven products (specifically clean-water pumps and circulators at or below 50 horsepower) across the four-state region. This Market Progress Evaluation Report (MPER) will be the first evaluation of the program's Market Transformation efforts. The program's overarching objectives for the study are to:

1. Review the XMP Market Transformation (MT) Theory, Program Logic Model, and Market Progress Indicators (MPIs) to assess their clarity and alignment in conveying (1) the Program's strategy and planned activities to overcome market barriers and drive market changes that will increase efficient clean-water pump and circulator adoption, and (2) NEEA's proposed approach for evaluating XMP market progress.
2. Conduct the first year of tracking MPIs to lay the groundwork for year-over-year evaluation, and report progress on several near-term outcomes.

Study methodologies are likely to incorporate surveys of XMP Program participants, surveys and/or interviews with additional market actors, and secondary analysis of existing datasets, reports, and other relevant materials. The request for proposals to conduct this evaluation will be released in early Q4 2023, with an award decision and study kick-off targeted for late Q4 2023. The evaluation will be ongoing through Q3 2024, with a final report anticipated in Q4 2024.

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Fan System Market Characterization | Efficient Fans | REPORTING

NEEA contracted with DNV Energy Insights, Inc., to conduct a Market Characterization study to inform development and planning efforts for the Efficient Fans program, which is in the program development stage of NEEA's Initiative Life Cycle. The program aims to accelerate adoption of efficient fans and fan system products, including motors, drives, and controllers, by working upstream with manufacturers and highlighting efficiency metrics within their selection software. The initial program is in the commercial and industrial sectors.

The objectives for this Market Characterization study include:

1. Profiling and sizing of the regional fan system market
2. Identifying and prioritizing market barriers
3. Documenting market actor motivations and fan system path-to-purchase

A project kick-off was held in February 2023, and data collection with multiple market actor groups (e.g., fan system manufacturers, manufacturers' representatives, distributors, and end users) commenced in Q2 2023 and continued through mid-Q2 2023. The study is expected to conclude with a final report posted to neea.org by the end of Q4 2023.

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Connected Consumer Products Market Research

Retail Product Portfolio (RPP) | **PLANNING**

NEEA will engage a contractor to conduct market research to assess consumers' use and attitudes toward purchasing connected consumer products. The RPP team will begin scoping this research in Q4 2023 with the goal of kicking off the project in Q1 2024.

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Retailer and Manufacturer Sustainability Goal Literature Review

Retail Product Portfolio (RPP) | **REPORTING**

NEEA has engaged with Apex Analytics to conduct a literature review of television and white good retailer and manufacturer sustainability goals. Apex will review publicly available information on organizations' sustainability goals as well as academic and popular press articles to meet the following objectives:

- Compile information on regulatory and investor motivations that are driving organizations' sustainability efforts
- Compile retailer and manufacturer sustainability goals and provide a summary of retailers/manufacturers sustainability goals, focus areas, and strategies
- Assess which organizations are considered leaders or are investing heavily in sustainability/efficiency and which are investing less
- Provide recommendations for how the ESRPP program could provide value to retailers/manufacturers pursuing sustainability goals

This project will kick off in Q4 2023 and a final report is expected to be available in Q1 2024.

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Market Progress Evaluation Report #7

Heat Pump Water Heaters (HPWH) | **REPORTING**

NEEA contracted with NMR Group in early 2023 to conduct the 7th Market Progress Evaluation Report (MPER) for the HPWH program. The key objectives of this effort were to:

1. Ensure the logic model accurately reflects how the current Market Transformation theory for the program is being implemented and assess the market progress indicators (MPIs) for usefulness
2. Estimate 2022 penetration of HPWHs in the region with sales broken out by key attributes
3. Evaluate the program's performance over the course of 2022 in achieving outcomes by measuring against a subset of MPIs tied to the program's highest priority barriers
4. Assess the effectiveness and impact of the "Boring but Efficient" downstream marketing campaign conducted in 2022

In Q2 2023, NMR completed a quantitative survey of general installers in the region, as well as in-depth interviews with a few water heater retail representatives to better measure the program's performance over the past year. Analysis is complete, and a final report is available on neea.org.

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Benefit/Cost Model Review | Heat Pump Water Heaters (HPWH) | REPORTING

In late 2022, NEEA contracted with Larson Energy Research to conduct a review of its 2022 Benefit Cost Model. Key activities included:

- A review of extrapolation methodologies used to estimate manufacturer shipments
- An assessment of NEEA estimates for HPWH market share in single-family new construction
- A review and validation of the modeling assumption underlying the removal of Tier 1 and Tier 2 measures for future years

This work was completed in Q3 2023, and a final report is available on neea.org.

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Non-Weatherized Gas Furnaces and Mobile Home Furnaces Standard Evaluation

Standards | FIELDING

NEEA's Codes and Standards team engaged in efforts to increase the stringency of the standard for non-weatherized gas furnaces and mobile home furnaces. NEEA contracted with Michaels Energy to conduct a qualitative assessment of NEEA's influence on the standards processes and provide a quantitative estimate of the share of savings resulting from the standards that are the result of NEEA and other efficiency organizations' efforts. The project will kick off in September 2023, and Michaels Energy will review NEEA records and publicly available documents and will conduct interviews with key stakeholders from NEEA, Department of Energy and other organizations. A final report is anticipated Q2 2024.

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Battery Chargers Standard Evaluation

Standards | FIELDING

NEEA's Codes and Standards team engaged in efforts to increase the stringency of the battery chargers standard. NEEA contracted with Michaels Energy to conduct a qualitative assessment of NEEA's influence on the standards processes and provide a quantitative estimate of the share of savings resulting from the standards that are the result of NEEA and other efficiency organizations' efforts. The project will kick off in September 2023, and Michaels Energy will review NEEA records and publicly available documents and will conduct interviews with key stakeholders from NEEA, Department of Energy and other organizations. A final report is anticipated Q2 2024.

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Idaho Commercial New Construction Code Evaluation

Commercial Codes | **FIELDING**

The Idaho Commercial New Construction Code Evaluation study focuses on (a) assessing the path(s) by which and degree to which code compliance is achieved with the amended 2018 International Energy Conservation Code (IECC) in newly constructed buildings, and (b) measuring the energy performance of a subset of these buildings as compared with the average energy performance of buildings constructed under previous code. The results of the study will provide direction to the development and implementation efforts of the NEEA Codes team and will provide other regional code stakeholders guidance in targeting their energy efficiency work in the commercial new construction sector.

NEEA contracted with Opinion Dynamics to undertake this study. The study design and methodology selected for this project focuses on permit data and building plans as the primary sources of construction and compliance information, with virtual or in-person site visits planned for a subsample of participating buildings in order to validate the accuracy of permit data. The project kicked off in mid-Q3 2022, with planning and sample development continuing through Q4 2023. Data collection, including interviews with site contacts, desk review of permit data, and in-person/virtual site visits, are scheduled to commence in Q4 2023 and conclude in Q3 2024. This study includes analysis of billing data; collection of this data is planned to continue through the end of Q3 2024, with analysis and report preparation to follow. A final report is anticipated in Q4 2024.

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Montana Commercial New Construction Code Evaluation

Commercial Codes | **FIELDING**

The Montana Commercial New Construction Code Evaluation study focuses on (a) assessing the path(s) by which and degree to which code compliance is achieved with the 2018 IECC in newly constructed buildings, and (b) measuring the energy performance of a subset of these buildings as compared with the average energy performance of buildings constructed under previous code. The results of the study will provide direction to the development and implementation efforts of the NEEA Codes team and will provide other regional code stakeholders guidance in targeting their energy efficiency work in the commercial new construction sector.

NEEA contracted with Michaels Energy to undertake this study. The study design and methodology selected for this project focuses on permit data and building plans as the primary sources of construction and compliance information, supplemented by telephone or virtual interviews with building owners and operators to contextualize and enrich the results of permit and plan analysis. The study also includes virtual or in-person site visits planned for a subsample of participating buildings in order to validate the accuracy of permit data. The project kicked off in mid-Q2 2022, with planning and sample development continuing through Q1 2023. Data collection, including interviews with site contacts and desk review of permit data, commenced in Q2 2023 and is scheduled to conclude in Q3 2023, while in-person/virtual site visits commenced in Q4 2023 and are scheduled to conclude in early Q1 2024. This study includes analysis of billing data; collection of this data is planned to continue through Q1 2024, with analysis and report preparation to follow. A final report is anticipated in Q2 2024.

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Montana Residential Code Evaluation

Residential Codes | **FIELDING**

NEEA contracted with Industrial Economics, Inc. (IEc) to review assumptions underlying its estimation of energy savings resulting from NEEA's and its partners' involvement in the Montana state code processes. Using data collected through permit review, site visits to residential new construction building sites, and interviews with market actors, this research will address the following objectives:

1. Assess statewide compliance with selected code requirements among single-family homes built under IECC 2018 with Montana amendments
2. Develop estimates of statewide energy code compliance and compliance within urban and rural jurisdictions separately using data collected on individual code requirements
3. Provide statewide findings regarding primary space and water heating fuel and above-code elements using data collected on individual code requirements

This work kicked off in Q1 2023, and the final evaluation of Montana's residential energy code is expected in Q4 2023.

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Oregon Residential Code Compliance Evaluation

Residential Codes | **FIELDING**

NEEA has solicited bids for a contractor to review assumptions underlying its estimation of energy savings resulting from NEEA's and its partners' involvement in the Oregon state code processes. This evaluation will:

1. Assess statewide compliance among single-family homes built under the 2021 Oregon Residential Specialty Code (ORSC)
2. Provide statewide findings regarding primary space and water heating fuel and above-code elements using data collected on individual code requirements
3. Provide an analysis of builders' choices regarding compliance pathways and efficiency level to which the home is built

The team will select an evaluation contractor and kick off the project in Q4 2023.

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Idaho Residential Code Evaluation

Residential Codes | **REPORTING**

NEEA contracted with Industrial Economics, Inc. (IEc) to review assumptions underlying its estimation of energy savings resulting from NEEA's and its partners' involvement in the Idaho state code processes. Using data collected through permit review, site visits to residential new construction building sites, and interviews with market actors, this research will address the following objectives:

1. Assess statewide compliance with selected code requirements among single-family homes built under IECC 2018 with Idaho amendments
2. Develop estimates of statewide energy code compliance and compliance within urban and rural jurisdictions separately using data collected on individual code requirements
3. Provide statewide findings regarding primary space and water heating fuel and above-code elements using data collected on individual code requirements

This work kicked off in Q1 2023, and the final evaluation of Idaho's residential energy code is expected in Q1 2024.

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Market Research Progress Evaluation #2

Codes | REPORTING

NEEA contracted with ADM Associates to conduct a Market Progress Evaluation Report (MPER) for its Commercial and Residential Codes efforts. ADM will evaluate the logic and clarity of NEEA's updated codes logic model, make recommendations for improvement, and assess outcomes associated with codes training and education and code influence activities. The project kicked off in October 2022, and NEEA expanded the scope to address an assessment of the Code team's code influence activities in April 2023. A report addressing all research objectives is expected in Q1 2024.

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Transition Market Progress Evaluation Report

Manufactured Homes | REPORTING

NEEA contracted with Apex Analytics, LLC to conduct a transition market progress evaluation of its Manufactured Homes program. This is a key input informing the alliance's decision to transition the program to the Long-Term Monitoring and Tracking (LTMT) phase of the Initiative Life Cycle (ILC) process, where NEEA significantly scales back its investments in the market. In this current evaluation effort, NEEA strives to confirm that NEEM+ homes will remain viable in the Northwest once NEEA transitions the program to LTMT. Key research objectives are to:

1. Summarize the initiative's work and achievements since its inception in 2016
2. Track key market progress indicators
3. Recommend viable approaches to conduct subsequent LTMT efforts, including proposing an evaluation plan to track any updated Diffusion Indicators

Data collection and analysis began in Q2 2023 and a final report is anticipated in the first half of Q4 2023.

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Bridger View Housing Development Market Research Project

Residential New Construction | **REPORTING**

NEEA contracted with JG Research & Evaluation to conduct a multiple method research study at the Bridger View Housing Development in Bozeman, Montana. Sixty-two homes are planned in three phases of construction. The first phase began in the fall of 2021. The Bridger View homes will include ductless heat pumps, heat pump water heaters, thin triple pane windows, and other energy-efficient technologies and building practices. To support NEEA's existing Market Transformation programs in designing effective intervention strategies for cold climate markets, NEEA is seeking to better understand any challenges or perceptions associated with these products and practices from the perspective of installers and home occupants unique to colder regions. The study includes three objectives:

- Estimate and identify components of any cost deltas to install these measures in a cold climate.
- Document installers' challenges, work around solutions and other experiences installing each measure.
- Understand homeowner/occupants' perceptions of energy-efficient measures in their homes upon move in and during different seasons (including the winter).

The study incorporates qualitative methods, such as field observations of installations, and video-journaling of home occupants over time, as well as quantitative analysis of the multiple factors that may influence cost. The study launched in November 2021 and continued intermittently throughout the duration of construction and for at least one full year of home occupancy. A final report is anticipated in early 2024.

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