Cost Effectiveness and Evaluation Advisory Committee Meeting

DATE: March 6, 2025

TIME: 9:00AM – 12:00PM

LOCATION: **Microsoft Teams**
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AGENDA

TIME	TOPIC	PRESENTER(S)	Electric/ Gas/Both	Link or Page
TBD (15 min)	**Welcome/Agenda Review** 1. Agenda check 2. Announcements	Jonathan Belais, NEEA Staff		
TBD (15)	**Dual-fuel Measurement Operational Guidelines** NEEA staff will provide an overview of the workgroup process that led to the development of Operational Guidelines that NEEA will use to guide the measurement and reporting on dual fuel market transformation programs Objective: Inform committee of the Operational Guidelines	Ryan Brown, NEEA Staff	Both	3
TBD (30 min)	**Key Inputs and Assumption Updates** NEEA staff will provide a brief presentation on updates to the Incremental Cost Analysis for Refrigerators. NEEA staff will also answer questions on other updates provided in the meeting packet as requested. Objective: Provide opportunity for committee to review and advise on methods and assumptions that impact savings reporting	Ryan Brown, Eugene Pham-Gittens, NEEA Staff	Both	20
TBD (15 min)	**State Energy Code Baseline and Key Assumption Review** Process update and preliminary results as available	Meghan Bean, NEEA Staff, TBD, IEC Staff	Both	

TIME	TOPIC	PRESENTER(S)	Electric/ Gas/Both	Link or Page
	Objective: Inform			
TBD (10 min)	**BREAK**			
TBD (15 min)	**MRE Update** NEEA staff will provide a brief overview and answer any questions regarding the upcoming market research and evaluation activities outlined in the quarterly newsletter. Objective: Committee awareness of market research and evaluation activities	Amy Webb, NEEA Staff	Both	link
TBD (20 min)	**XMP MPER** Overview of key findings Objective: Inform	Chris Cardiel, NEEA Staff	Electric	link
TBD (25 min)	**Montana Commercial Code Compliance Review** Overview of key findings, new methodologies, and possible implications for future studies Objective: Inform	Chris Cardiel, NEEA Staff	Electric	link
TBD (25 min)	**Montana Residential Code Compliance Review** Overview of key findings Objective: Inform	Meghan Bean, NEEA Staff	Electric	
TBD (10 min)	**Wrap up**			



Memorandum

March 6, 2025

TO: Cost Effectiveness Advisory Committee

FROM: Ryan Brown, Manager, Planning and Analysis, NEEA

SUBJECT: NEEA Dual-fuel Measurement Guidelines

NEEA's natural gas portfolio for the 2025-2029 business plan includes dual-fuel market transformation programs that are in development. Starting in late 2023, NEEA convened a work group as a subsidiary of the Cost Effectiveness Advisory Committee to develop guidelines to help NEEA measure and report on the benefits and costs of a dual-fuel program. That work group was put on hold during most of 2024 while NEEA and its Board of Directors worked to clarify policy questions about these programs. In December 2024 NEEA's Board approved new guiding principles for the natural gas portfolio that include dual-fuel program efforts in core gas funding. With these principles established, NEEA reconvened the CEAC Dual-Fuel Measurement Work Group to review and finalize the guidelines that were developed in late 2023/early 2024.

During the March 6th CEAC meeting NEEA staff will provide an overview of the work group process and the guideline document. While we are not seeking input from the broader committee at this time, the current working draft of these guidelines are included here for reference. These will be reviewed and revised in future by the work group as needed.

For more information contact Ryan Brown, Manager, Planning and Analysis at rbrown@neea.org.

OPERATIONAL GUIDELINES FOR DUAL-FUEL MEASUREMENT AND REPORTING ON MARKET TRANSFORMATION PROGRAMS (NEEA)

Dual-fuel Workgroup of NEEA's Cost Effectiveness Advisory Committee

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Revision History

Source	Date	Action/Notes	Next Review Date
Original Workgroup Draft	January 18, 2024	Reviewed with workgroup in meeting	Q1 2024
NEEA Staff	January 2025	Updated with workgroup input, revised Board policy guidance and additional NEEA staff review	Feb 2025
Workgroup review and feedback	February 2025	Edits made to clarify points made by the workgroup	TBD

Key Terminology and Definitions

These key terms and phrases will be used throughout this document. This glossary of terms provides definitions to align understanding and assist readers as they consider the statements made herein.

Term or Phrase	Definition/Explanation
Measure	A measure is one or more changes in equipment, operating practices, or system configuration that are intended to improve efficiency
Retrofit Measure	Measures that are delivered as part of discretionary changes, undertaken, at least in part, for achieving increased energy efficiency. For example, adding attic insulation or upgrading to an efficient motor before it stops working.
Lost-opportunity Measure	Measures that, because of physical or institutional characteristics, can only be delivered during a limited window of opportunity. For example, when a building is built or when a replacement refrigerator is purchased.
Energy Efficiency	Efficiency must lead to a reduction in energy use required to provide the same or greater level of service as compared to the appropriate baseline condition for that measure
Fuel-neutral measure	Measures that impact either fuel energy use indirectly such as shell measures
Dual-fuel measure	Measures that include equipment that directly uses both electricity and gas for the same end-use and can do so interchangeably
Site energy	The amount of energy consumed by a building as reflected in a utility bill
Source energy	The total amount of energy that is required to operate the building, incorporating all transmission, delivery, and production losses in addition to the energy consumed directly on-site
Combined system energy use	The total energy use across all fuels for a particular end-use
Region/Regional	For purposes of this document, the “region” refers to the 4 states of Idaho, Montana, Oregon and Washington. NEEA has direct electric funders in all 4 states listed; however, currently does not receive direct funding from natural gas utilities in Montana.
Native fuel	A singular fuel within a dual-fuel system
Lost and unaccounted for gas	The difference between the quantity of natural gas received into a gas pipeline or distribution system and the quantity of gas delivered to customers
Line Loss	The reduction of electrical energy as it travels through transmission and distribution lines
Fugitive emissions	Emissions of gas to atmosphere or groundwater which result from mining activity
Baseline Condition	The baseline condition is the basis from which energy savings are determined.

Operational Guidelines

Purpose and Background

The Northwest Energy Efficiency Alliance (NEEA) is an alliance of utilities and partners that pool resources and share risks to transform the market for energy efficiency to the benefit of all consumers in the Northwest (Idaho, Montana, Oregon and Washington[1]). NEEA works to increase availability and affordability of efficient products that run on electricity, natural gas or both. Because the alliance includes electric, gas and dual-fuel utilities and program administrators, NEEA an electric portfolio and gas portfolio that are distinct but interrelated. NEEA has found that coordinated efficiency efforts across multiple fuels that focus on customer needs are often more effective than those aimed at only one fuel source.

For purposes of this document, NEEA is defining **dual-fuel market transformation programs** as those that include equipment that directly uses both electricity and gas for the same end-use and can do so interchangeably[2]. NEEA's Emerging Technology team has uncovered potential program opportunities such as hybrid (or dual fuel) residential HVAC that pairs a heat pump with a gas furnace in a single system.

This document is intended to provide operational guidance for NEEA to use when measuring and reporting impacts of Market Transformation programs that have a direct tradeoff between electric and natural gas fuels. This **is not** intended to establish guidelines for any other organization, utility or jurisdiction. This document pertains to NEEA's core funding as articulated in the organization's strategic and business plan[3]; specially funded activities may deviate from this guidance as determined by the funders of those activities.

[1] NEEA has direct electric funders in all 4 states listed; however, currently does not receive direct funding from natural gas utilities in Montana. For purposes of this document, use of the word "regional" refers to the 4 states of Idaho, Montana, Oregon and Washington.
[2] This definition is to call a distinction between this and other programs that may be funded by electric and gas utilities and/or those that impact both fuels indirectly such as shell measures and energy codes.
[3] Northwest Energy Efficiency Alliance (NEEA) | NEEA Strategic +…

Guiding Statements

In December 2024 NEEA's Board of Directors approved[4] the following principles to guide the organization's natural gas market transformation work heading into the 2025-2029 funding cycle:

1. NEEA's natural gas portfolio will increase market adoption of affordable energy efficiency solutions that result in reportable gas energy savings.
2. All activities and programs will be designed to align with state policies and/ or other decarbonization efforts as applicable.
3. The focus of the natural gas portfolio will shift towards commercial, dual-fuel, and fuel-neutral products, systems, and practices.
4. **Dual-fuel equipment programs will be managed as part of the natural gas portfolio due to the increased end-use efficiency and reduction in natural gas usage.**

As NEEA begins work on dual-fuel opportunities, the following internal guidelines have been developed to inform NEEA's approach to this work.

Statement	Implication
Impacts are assessed at the combined system level in addition to within each fuel	NEEA will compare alternatives at the system level by converting kWh and Therms to Btus when determining the system impacts. Any forecasted load increase in a native fuel will be brought forward to stakeholders as part of the decision-making process.
Impacts are assessed at the source level in addition to site level (see Appendix B for further discussion of source and site calculations)	Impacts at the source are important for a regional and societal view of benefits and costs. This should include the entire supply chain for each fuel from the point of generation or extraction to the point of consumption at the end use.
Calculations and reporting follow existing policies and using existing methods where possible and appropriate	NEEA's existing policy on savings, cost effectiveness, and funder reporting provide guidance that should be followed where possible. This includes the principles of best-available data, third-party review, transparency in documentation, and making reporting accommodations to meet regulatory requirements where reasonable
These guidelines will be updated as needed with review from the Cost Effectiveness and Evaluation Advisory Committee (CEAC)	This is based on the known landscape and conditions when developed and will need to adapt and change to be responsive and relevant to future conditions. This will be under the purview of CEAC.

[4] Northwest Energy Efficiency Alliance (NEEA) | Q4 NEEA Board Meeting

Threshold Criteria for Dual-fuel Market Transformation Programs

NEEA's threshold criteria for programs and measures that would be considered for market transformation include the following:

- The efficient solution must lead to a reduction in the combined system energy use required to provide the same or greater level of service as compared to the appropriate inefficient alternative baseline condition for that measure (see Appendix B). This may include absolute usage increases for one of the fuels involved. (see table 1)
- The efficient solution must be cost effective following NEEA's existing cost effectiveness guidelines.

To assess the combined system energy use NEEA will compare alternatives by converting kilowatt-hours (kWh) and Therms to British Thermal Units (BTUs) when determining the incremental benefit. Table 1 provides and illustrative example of how this would work.

Table 1: Illustrative Example of Combined System Savings

	Baseline Annual Usage	**Efficient Case Annual Usage**	**Change**
Electricity (kWh)	2,000 kWh	4,000 kWh	+2,000 kWh
Gas (Therms)	600 Therms	300 Therms	-300 Therms
Combined System (MBTU) 1 kWh = 3.412 MBTU 1 Therm = 100 MBTU	2000 kWh x 3.412 + 600 Therms x 100 = 66,824 MBTU	4000 kWh x 3.412 + 300 Therms x 100 = 43,648 MBTU	-23,176 MBTU

Avoided greenhouse gas (GHG) emissions and peak impacts are additional value metrics that are likely to become more central to decision-making across NEEA's entire portfolio and that will pertain to dual-fuel measures as well (see also Appendix B).

Inputs Needed and Outputs Generated for Measure Impact Assessment

To conduct these calculations, NEEA will require certain inputs and generate certain outputs. Figure 1 below provides a diagram of how these inputs relate to the outputs. Tables 2 and 3 enumerate the likely sources, metrics used and important notes about how the inputs and outputs are formulated and used (see also Appendix B for more discussion of these calculations).

Figure 1: Relationship of inputs to outputs for measure impact assessment

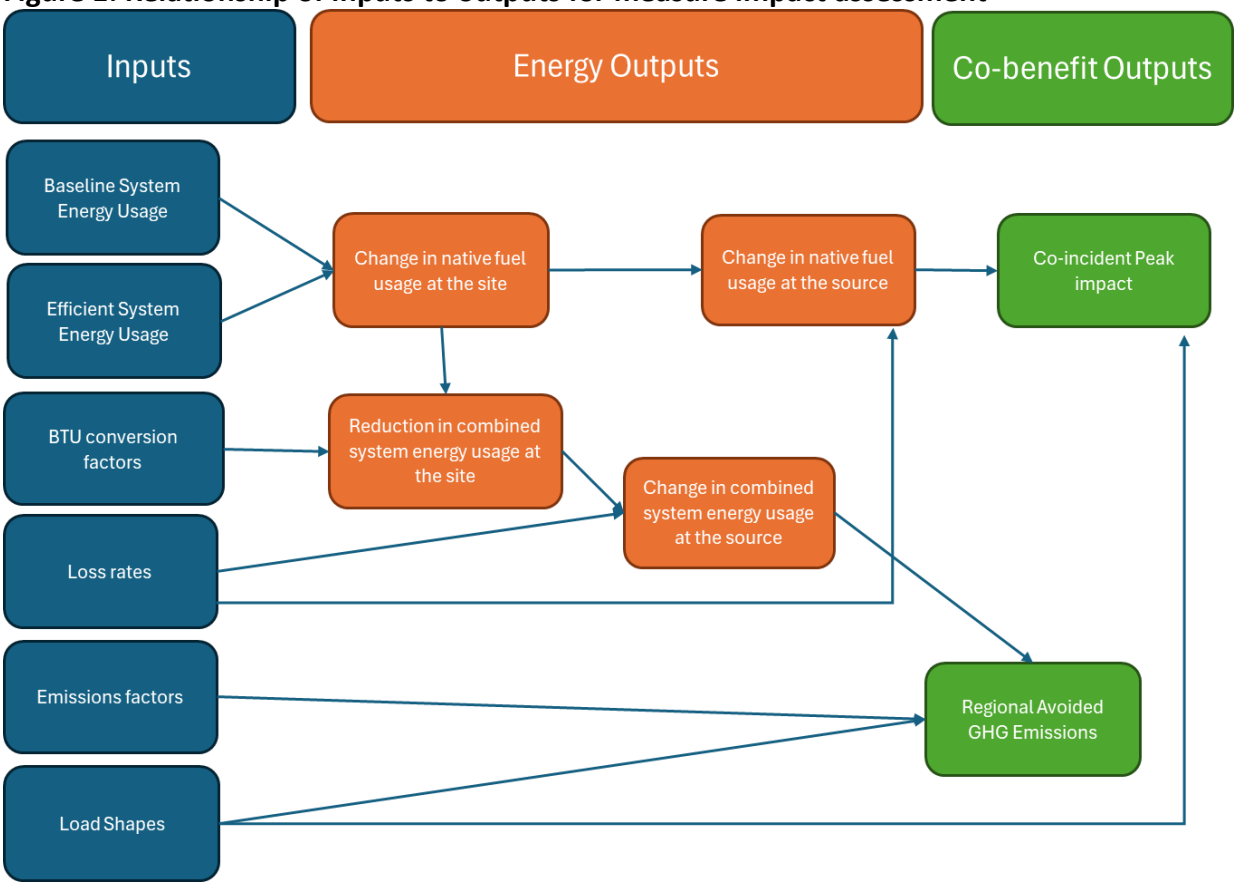


Table 2: Inputs Needed

Inputs	Sources	Definition	Notes
Baseline system energy usage	Lab tests, energy modelling, and/or field verification	The kWh and therms consumed by the baseline comparison system	Analysis should be conducted at appropriate level of granularity in terms of housing type, climate zone, or other factors that materially impact the results.

Inputs	Sources	Definition	Notes
Efficient system energy usage	Lab tests, energy modelling, and/or field verification	The kWh and therms consumed by the efficient system	Analysis should be conducted at appropriate level of granularity in terms of housing type, climate zone, or other factors that materially impact the results. Should also capture usage characteristics such as the hours and timing of use for each fuel.
Emissions factors	NWPCC	Rate of avoided greenhouse gas emissions that are avoided per unit of energy conserved	Emissions factors must be region-specific and be updated over time as the regional electricity supply decarbonizes
Load shapes	NWPCC	The timing of the measure's energy usage spread out across a year	
Loss rates	NWPCC/RTF	The proportion of energy that is lost from the source of generation to the end-use at the site	For electric this is call "Line loss" For gas this is both fugitive emissions during generation as well "lost and unaccounted for gas"
Incremental costs	Market data or research	The cost of the measure, incremental to the comparison alternative for the measure	Including first costs to the consumer, operations & maintenance, administrative and other costs to society
BTU Conversion factors	RTF SIW	Energy equivalencies between electricity, gas and BTUs	Fixed values based in physics

Table 3: Outputs Generated

Outputs	Metric/Units	Description	Notes
Change in native fuel energy usage at the site	kWh and Therms	Difference in site energy usage between the efficient and inefficient case for each fuel individually	This is likely to be an increase for one fuel and decrease for another
Reduction in combined system energy usage at the site	BTUs	Difference in site energy usage between the efficient and inefficient case for the combined system	This is the site-based metric of energy efficiency
Change in native fuel generation needed at the source	kWh and Therms	Difference in source energy usage between the efficient and inefficient case for each fuel individually	This is likely to be an increase for one fuel and decrease for another

Outputs	Metric/Units	Description	Notes
Reduction in combined system energy usage at the source	BTUs	Difference in source energy usage between the efficient and inefficient case for the combined system	This is the source-based metric of energy efficiency
Avoided GHG emissions	CO_2e	The quantity of greenhouse gas emissions to the atmosphere that were avoided due to the efficient measure	Reported as source-based avoided emissions in carbon dioxide equivalent
Co-incident peak impact	kW and Therms	The impact of the measure on the energy system peak	Reported as peak reduction/increase in usage for a particular fuel at the source
Benefit/cost Ratio	Ratio	The ratio of the benefits to the costs of the measure	NEEA utilizes the ProCost calculation tool for cost effectiveness assessments

Reporting to Stakeholders

NEEA will report program outcomes and benefits to direct funders of dual-fuel activities in a manner consistent with existing policies where possible. NEEA will primarily report the direct impact on fuels compared to the appropriate baseline for that measure. Combined system energy savings may be reported as requested.

NEEA currently calculates regional avoided carbon emissions and peak load impacts from the market transformation portfolio. Dual-fuel programs will be included in that going forward.

NEEA recognizes that individual regulatory requirements may drive differences in reporting across funders. NEEA will continue to work with individual funders to deliver reports in a manner that serves regulatory reporting needs wherever reasonable and possible.

Appendix A: Additional Calculation Guidance

The following section describes operational guidance for NEEA to follow when measuring impacts of dual-fuel measures. These impacts include a change in energy usage (a.k.a. energy savings), greenhouse gas emissions, and peak loads. In addition, NEEA requires that programs be cost effective as determined by the Total Resource Cost benefit-cost ratio. The following section provides some detail and guidance for calculations of each of these impacts and metrics.

Measure Application and Baseline Condition

To measure the per-unit impacts from a dual-fuel measure, NEEA must first determine how the measures within a program are defined and the appropriate comparison baseline to use. Table 2 provides a matrix that discusses the various options available using a traditional approach to efficiency program measure types.

Table 2: Measure types and baseline conditions

Measure Type	Requirements for existing fuel	Baseline Condition
Lost-opportunity Measure	None	Pre-intervention weighted average market mix of alternatives within the fuel selected by the customer
Retrofit Measure (including early retirement)	Dependent upon the measure	Pre-existing equipment condition

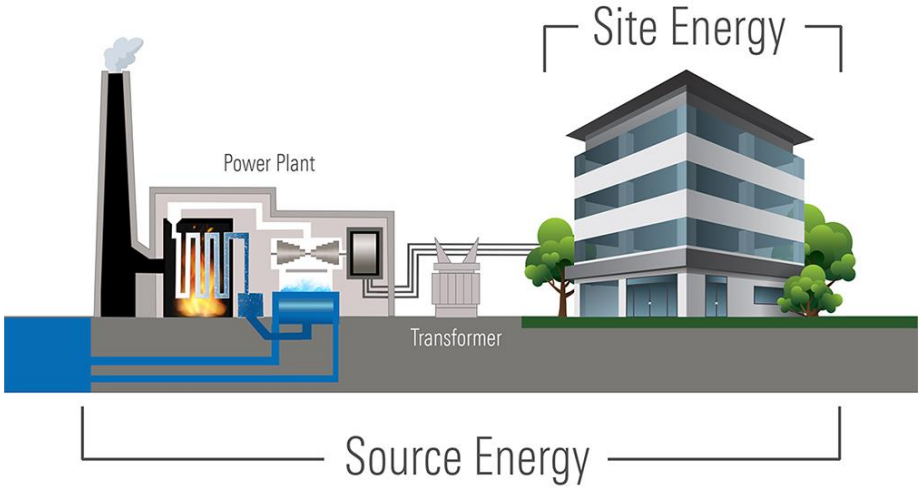
In market transformation however, NEEA is commonly seeking to influence the supply chain upstream of these measure applications and thereby influencing the market for any of the above scenarios. In addition, market data collected at the manufacturer or distributor level does not commonly provide information about specific end use scenarios. For this reason, NEEA may need to utilize a combination of the measure applications above when assessing impacts for a single dual-fuel programs if the transformation logic is not specific to a particular application type.

Site Energy and Source Energy

Site energy is the amount of energy consumed by a building as reflected in a utility bill. Source energy represents the total amount of energy that is required to operate the building, incorporating all transmission, delivery, and production losses in addition to the energy consumed directly on-site. Figure 1 illustrates this concept[5].

[5] The Difference Between Source and Site Energy | ENERGY STAR

Figure 1: Site and Source Energy



Both site and source energy are important when considering a dual-fuel measure. Site energy allows us to understand the direct impact on customers and the loads utilities are serving. Source energy allows us to understand the impact on the holistic energy system and can provide some normalization across the unique attributes of the generation, transmission and distribution infrastructure related to each fuel.

Site energy calculation

When calculating site energy use NEEA's primary metrics are the native units associated with each fuel (kWh for electricity and Therms for natural gas). These calculations are made in adherence with existing guidelines and frameworks for calculating energy savings[6,7] and following the baseline guidance above.

In addition to kWh and Therm savings at the site, it is important for NEEA and stakeholders to understand the combined, normalized energy usage occurring. For this purpose, NEEA will also calculate the total site energy usage in terms of Btus (see callout to the right). Btus allow for a common unit of energy across fuels and for combined system efficiencies to be understood for dual-fuel measures.

Source energy calculations

In addition, it is important for NEEA and stakeholders to understand the impacts of dual-fuel measures on source

British Thermal Units (Btu or BTU)

Btus are the unit of energy for heat. 1 Btu is the amount of energy needed to raise the temperature of 1 lb. of water by 1 degree Fahrenheit. That's not a lot of energy, so we usually talk about thousands of BTUs.

1 kWh = 3.412 MBTU
1 Therm = 100 MBTU

Since Btus are not part of the metric system, the standard SI prefixes don't apply. In recent decades there has been a trend to start using nomenclature that is more in line with the metric system. This has led to two sets of abbreviations.

1BTU = 1 Btu
1 MBTU = 1 kBtu = 1,000 Btu
1 MMBTU = 1,000 kBtu = 1,000,000 Btu
1 BTUH = 1 Btu/hr
1 MBH = 1,000 BTUH = 1 kBtu/hr

Source: Energy Trust of Oregon BTU reference document

[6] https://neea.org/portal/savings-reports/electric-energy-savings-operational-guidelines
[7] https://neea.org/portal/savings-reports/natural-gas-energy-savings-operational-guidelines

energy. Here too NEEA will calculate savings based on the combined Btu savings.

To do this, NEEA needs to apply factors for the transmission, distribution, transportation and generation losses that are A) relative to each fuel and B) specific to the Northwest region. As with other areas of NEEA's measurement and reporting infrastructure, NEEA will align first with the Northwest Power and Conservation Council's (NWPCC) most recent power plan analysis wherever possible and relevant. In cases where values do not exist, are incomplete, or are out of date, NEEA will follow the same practices in place for other assumptions, including third-party validation and transparency with stakeholders through the Cost Effectiveness and Evaluation Advisory Committee (CEAC) when adopting any additional inputs.

Avoided Emissions

NEEA calculates regional avoided emissions from efficiency measures in alignment with the methods used by the NWPCC. These emissions are based on source-level energy savings and associated emissions rates. As stated above, NEEA will add to or update inputs and assumptions as needed, and in alignment with our current practices for developing and reviewing assumptions.

In addition to the calculation of regional avoided emissions, important considerations for NEEA when calculating and reporting emissions include:

- Emissions factors must be region-specific since the Northwest already has more non-emitting generation than other regions.
- Emissions factors must maintain mechanisms to update over time as regional electricity supply decarbonizes.

Peak load impacts and load flexibility benefits

NEEA calculates peak load impacts that come from all measures within the market transformation portfolio. For dual-fuel measures, peak impacts will be specific to the relevant fuel and follow NEEA's peak calculation and reporting framework currently in place for the portfolio[8]. NEEA utilizes the ProCost calculation tool, load shapes[9] and peak hour/day definitions that align with the NWPCC and Regional Technical Forum.

It is important note that peak impacts will be reported in reference to the relevant baseline for any given measure (see above). Actual peak loads may differ since those are relative to the pre-existing equipment installed at the site rather than the counterfactual alternative.

Load flexibility benefits from grid-enabled products are also of interest to the region. Dual-fuel systems present a large opportunity for flexibility of loads and NEEA will also track and monitor the proliferation of grid-enabled systems where possible.

[8] As NEEA moves into the 2025-2029 Strategic and Business Plan period in the coming years NEEA is coordinating with funding stakeholders on metrics and methods for reporting peak savings. Any outcomes from that work that evolve NEEA's approach will be applied to dual-fuel measures as well.

[9] New load profiles may need to be developed to reflect the usage of a dual-fuel system. NEEA will collaborate with stakeholders as needed to develop these.

Cost effectiveness

NEEA has existing guidelines for assessing cost effectiveness of market transformation programs[10,11]. Dual-fuel measures will follow these same guidelines, and it is not expected that there is any alteration needed to the method[12]. This includes the treatment of any non-energy impacts (NEIs) related to dual-fuel measures.

Naturally Occurring Market Transformation Baseline

NEEA utilizes a naturally occurring baseline forecast when measuring the market adoption impacts of market transformation. Dual fuel measures will likely require a baseline forecast that includes assumptions about naturally occurring fuel choice based on current trends. These assumptions would be reviewed by an independent third party in accordance with NEEA's existing naturally occurring market baseline methodologies.

[10] https://neea.org/portal/savings-reports/electric-cost-effectiveness-operational-guidelines
[11] https://neea.org/portal/savings-reports/natural-gas-cost-effectiveness-operational-guidelines
[12] The ProCost tool that NEEA uses for this analysis already includes the capability of assessing a measure that has both gas and electric savings and can also accommodate increases in usage as needed.

Appendix B: Work Group Participation

This document has been authored by NEEA staff with contribution and review from a temporary workgroup consisting of NEEA funders, regional stakeholders, and subject matter experts.

Name	Organization
Laura Thomas	Regional Technical Forum
Peter Kernan	Oregon PUC
Jean-Pierre Batmale	Oregon PUC
Jennifer Snyder	Washington Utilities and Transportation Commission
Jake Kennedy	Energy Trust of Oregon
Michelle Wilde	Puget Sound Energy
Jesse Durst	Puget Sound Energy
Haixiao Huang	Northwest Natural Gas
Caleb Reimer	Cascade Natural Gas
Danie Williams	Northwestern Energy
Whitney Jurenic	Northwestern Energy
Bryan Russo	Tacoma Power
Jonathan Belmont	Bonneville Power Administration
Tina Jayaweera	Northwest Power and Conservation Council
Austin Oglesby	Avista Corp
Michelle Kelley	Bonneville Power Administration
Natasha Jackson	Northwest Gas Association
Adam Schick	Energy Trust of Oregon
Jackie Goss	Energy Trust of Oregon



Memorandum

March 6, 2025

TO: Cost Effectiveness Advisory Committee

FROM: Ryan Brown, Manager, Planning and Analysis, NEEA

SUBJECT: Key Inputs and Assumptions Quarterly Update

Background on this standing agenda item:

The Cost Effectiveness and Evaluation Advisory Committee (CEAC) primary functions[1] include:

1. Review and advise regarding NEEA cost-effectiveness and savings information to inform annual reporting, and
2. Review and advise regarding market transformation cost and savings measurement and estimation methods.

NEEA staff provide various touchpoints for committee members throughout the year to support the committee in their execution of these charter objectives.

NEEA maintains a system of documentation and communication that includes three primary means for committee members to access documentation: methodology documents posted to a funder portal via neea.org[2], data provided in funder reports, and meeting materials and presentation content at each quarterly CEAC meeting (Figure 1).

[1] In addition to the two responsibilities listed above there are 3 more in the charter:

3. Review evaluation findings that affect cost and savings information to inform annual reporting.
4. Work with your organization to provide NEEA staff with relevant incentive data for regional tracking and reporting purposes.
5. Review and advise regarding new market research and evaluation methodologies.

[2] Link to the funder portal: https://neea.org/portal/sign-in

Figure 1: System of Documentation for Key Inputs and Assumptions

Funder Portal **neea.org** *Updated in April*	**Funder Reports** Emailed Directly *Updated Q1/Q2, upon request*	**CEAC Meeting Materials** Emailed in Packet *Updated Quarterly*
Data Sources List of data sources NEEA uses to estimate savings & cost effectiveness and explanation of approach	Annual Report Memo summarizing annual savings results and market updates	Annual Summary Memo summarizing portfolio savings & cost effectiveness results as well as program updates.
Cost Effectiveness Table ProCost Inputs for programs in Market Development	Customized Workbook Workbook with annual savings values, variance summaries, methodology descriptions, measure-level units and other key assumptions specific to the individual funder requests.	Key Assumptions Update Updates to key assumptions (baselines, savings rates, units estimates, etc.), along with contact information for follow-up questions.
Methodology Documentation Report on energy consumption calculations, data sources and technical assumptions		Presentations Slides describing results & updates to inputs used in NEEA's savings and cost effectiveness analyses.
Operational Guidelines Overview on energy savings & cost effectiveness calcs		

Updates for committee review this quarter:

For the Q1 CEAC meeting NEEA is presenting the following updates for the committee's consideration. Please come to the meeting prepared to ask clarifying questions and advise NEEA on any recommended improvements you would like to share.

- Retail Products Portfolio: Refrigerators
  - NEEA contracted Energy Solutions to conduct a new Incremental Measure Cost analysis for refrigerators. The results will be incorporated into benefit cost ratio calculations that will be presented in full during the Q2 CEAC meeting.
- Manufactured Homes
  - The Regional Technical Forum updated UES measures for new manufactured homes in November 2024. NEEA is incorporating these updates to savings calculations moving forward.

Please continue reading for more details on these updates.

Retail Products Portfolio (RPP)

RPP works with extra-regional program administrators, national retailers, and the ENERGY STAR Program to utilize midstream incentives to influence corporate retail buyer's purchase decisions and give RPP access to full-category sales data. The incentives encourage retailers to purchase, stock and promote higher-efficiency products. The data retailers provide allows NEEA to identify the most promising energy efficiency opportunities and gain insights to influence the stringency of ENERGY STAR specifications and the advancement of federal standards. Currently, the program is comprised of a portfolio of ENERGY STAR products including Televisions, Refrigerators, Freezers, Clothes Washers, Clothes Dryers, Air Cleaners, and Room Air Conditioners.

Key Assumptions Update

During 2024, NEEA's RPP team worked with our contractor Energy Solutions to develop a new datasource that scraped retailer websites for information about key product categories. The key piece of information that this provides us is pricing data that is not shared as part of the program's retailer data sharing. Energy Solutions used this webscraped dataset to refresh a prior analysis of refrigerator incremental measure costs (IMC).

The refrigerator IMC analysis utilizes a hedonic regression model approach that has previously been reviewed by the CEAC. This model seeks to isolate the IMC related just to the energy efficiency by controlling for other features. The results showed that the IMC for refrigerators with bottom-mount freezers remains negative, which aligns with the assumptions made by ENERGY STAR and other advocates. For refrigerators with side-mounted, top-mounted or no freezers the IMC for efficient products increased since the prior analysis.

NEEA staff will present this approach and the IMC results during the March 6th meeting. Initial analysis suggests that these results do not change the directionality of the benefit-cost ratio for the refrigerator products in NEEA's program. A full discussion of the impact on the benefit-cost ratio for the measures, the RPP program and the portfolio as a whole will be available during the Q2 CEAC meeting on April 31st & May 1st.

For more information contact Eugene Pham-Gittens, Market Analyst, at EPham-Gittens@neea.org.

Manufactured Homes

The Manufactured Homes market transformation program developed an enhanced, above code specification (NEEM 2.0), and demonstrated its market value by providing manufacturers/retailers with tools and resources to drive consumer demand. The goal is to influence ENERGY STAR specifications and Housing and Urban Development (HUD) standards.

Data collected from the program proved impactful for the U.S. Department of Energy (DOE) when they updated the standard applicable to manufactured homes. The compliance date for multi-section manufactured homes is July 1, 2025. This program moved into the long-term monitoring and tracking phase of NEEA's Initiative Lifecycle in 2024.

Key Assumptions Update

At the November 2024 meeting, the RTF approved an update to the New Manufactured Homes and HVAC UES measure workbook which implemented changes including transitioning the energy modeling from SEEM to REEDR and updating the non-HVAC savings estimates (e.g. lighting and refrigerators) based on other RTF UES work products. NEEA's savings rates for New Manufactured Homes are derived from analysis of the unit energy consumption (UEC) values estimated by the RTF, and as such have been updated to reflect the new RTF estimates. While the RTF voted to approve the workbook update, at the time of NEEA's analysis the RTF's QA/QC process has not yet been completed. If any corrections are made to the RTF analysis, these will be passed through to NEEA's savings rates at the earliest convenience.

As part of this update, the RTF also made an update to the current practice efficiency baseline for new manufactured homes, based on the estimated market mix in 2023 and 2024. For Power Plan reporting purposes, NEEA utilizes the current practice efficiency baseline at the start of the Power Plan (currently ~2021). NEEA is reaching out to Council Staff to confirm an approach to reporting savings against the Power Plan baseline.

Of note, the Federal Conservation Standard, ENERGY STAR, and DOE Zero Energy Ready Home specifications applicable to new manufactured homes are anticipated to update starting July 1, 2025. NEEA's savings analysis update described here does not reflect the updates anticipated in 2025 and beyond.

For more information contact Aaron Ingle, Senior Market Analyst, at AIngle@neea.org.

Memorandum – *Agenda Item*

February 30, 2025

TO: Cost-effectiveness and Evaluation Advisory Committee

FROM: Jonathan Belais, Sr. Policy Manager

SUBJECT: NEEA Reporting Audit & Potential Streamlining

Our Ask of You:

1) Please review the memo and bring any questions, recommendations, feedback, or concerns to the Q1 CEAC meeting on March 6, or contact me at the email below.
2) **Please complete the survey by Friday March 21, 2025.**

Context

NEEA staff are conducting an audit of the reports, newsletters and other materials communicated to alliance members to better understand what's useful and valuable. This effort seeks to achieve balance with the time spent compiling these materials and what's desired/useful, and/or duplicative. Feedback will help determine whether there's a need to streamline the number of reports/materials produced and possibly the communication channels used. Thank you in advance for taking a few minutes to provide us with feedback on what's most useful to you.

SURVEY LINK: https://www.surveymonkey.com/r/2025-Reports-Value-Assessment

REFERENCE ONLY: Current NEEA Reports with Linked Examples

NOTE: Please do not feel the need to review each of these reports. The survey is designed to capture the types of information that are valuable to you more generally. The list below / linked examples are provided so you have the formal names/purpose/content handy in case it's helpful. If you have a strong preference for any of these reports as they are structured today, please include that feedback in the survey.

1. Annual Operations Plan (2025)
2. Annual Report, Key Assumptions and Business Cycle Savings Update (electric + gas, reported to Cost-Effectiveness & Evaluation Advisory Committee in Q2 each year)
3. Annual Cycle Scorecard (as part of Q1 2024 Quarterly Report)
4. Annual Report (2023 is latest available)
5. Coordinating Committees - Semi-annual Program Activity reports:
    - Q4 2024 Residential Program Activity Reports
    - Q4 2024 Commercial & Industrial Program Activity Reports
6. End of Business Cycle Report (2015-19)
7. Quarterly ED Update, Report & Scorecard
8. Quarterly Natural Gas Portfolio Progress Report
9. Quarterly Market Progress Report (Program progress to annual goals: electric + gas)
10. Codes & Standards Newsletter
11. Emerging Technology Newsletter
12. Market Research and Evaluation Newsletter

Please contact **Jonathan Belais (jbelais@neea.org)** if you have questions about this effort.

2024 Q4 Market Research & Evaluation Quarterly Newsletter

WHAT'S NEW:

Greetings to all of you!

Welcome to the Q4 2024 Market Research & Evaluation (MRE) newsletter. Inside are all the details about what NEEA's MRE team has been up to the past few months, as well as what's planned for the start of the new year.

It's been an eventful year. Nearly 40 studies were launched and/or completed in 2024, each of them endeavoring to support continuous improvement of alliance Market Transformation programs by delivering current and high value market insights and evaluation findings. Throughout December and January, look for ten reports to publish to NEEA's website, covering several portfolio programs, including residential code compliance evaluations for both Montana and Oregon, the first Market Progress Evaluation Report for the Extended Motor Products program, and two market research reports to support efforts to transform the gas water heater market.

Looking ahead to 2025, the team is taking time to reflect on the accomplishments of the past year. Thanks to all of our stakeholders for the continued partnership. Best wishes for happy holidays and a prosperous new year.

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

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Questions about this report may be addressed to:

Amy Webb

Sr. Manager, Market Research & Evaluation

awebb@neea.org

PUBLISH DATE: December 12, 2024

At a Glance

MARKET RESEARCH & EVALUATION PROJECTS

		PLANNING*	FIELDING*	REPORTING*
Regional Studies	Northwest Market Characterization			✓
Integrated Systems	Efficient Fans: *Fan Manufacturer Representative and Specifier Market Research*		✓	
	Extended Motor Products: *Agricultural Pumps Market Research*		✓	
	Extended Motor Products: *Market Progress Evaluation Report #1*			✓
	Efficient Rooftop Units: *Market Progress Evaluation Report #1*		✓	
	High-Performance HVAC: *Market Progress Evaluation Report #1*		✓	
	Luminaire Level Lighting Controls: *Market Progress Evaluation Report #3*		✓	
	Luminaire Level Lighting Controls: *Exterior Luminaire Level Lighting Controls in Parking Lots*			✓
	High-Performance Windows: *ENERGY STAR Influence Study*			✓
Products	Retail Product Portfolio: *Market Progress Evaluation Report #3*		✓	
	Retail Product Portfolio: *Connected Consumer Products Market Research*			✓
	Advanced Commercial Gas Water Heaters: *Market Research on Existing Water Heaters in Select Commercial Buildings*			✓
	Efficient Gas Water Heaters: *Condensing Gas Water Heater Qualitative Market Research*			✓

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

Long-Term Monitoring & Tracking

	PLANNING*	FIELDING*	REPORTING*
Standards: *Battery Chargers Standard Evaluation*		✓	
Standards: *Portable AC and Air Compressor Standard Evaluation*		✓	
Codes: *NEEA Codes Baseline and Review*		✓	
Codes: *Market Progress Evaluation Report #6*		✓	
Residential Codes: *Home Energy Raters Market Research*			✓
Residential Codes: *Montana Residential Code Compliance Evaluation*			✓
Residential Codes: *Oregon Residential Code Compliance Evaluation*			✓
Commercial Codes: *Idaho Commercial New Construction Code Compliance Evaluation*		✓	
Commercial Codes: *Montana Commercial New Construction Code Compliance Evaluation*			✓
Ductless Heat Pump Long-term Monitoring and Tracking, Year 3		✓	

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

Northwest Market Characterization | REPORTING

NEEA contracted with LD Consulting to conduct a research project that will contrast and compare characteristics of rural, suburban, and urban markets to identify market transformation strategies that will accelerate the delivery of program benefits to rural markets. The study will use the National Center for Education Statistics (NCES) classification system for geographic locales, which defines areas as either rural, town, suburban, or urban based on population and distance from an urbanized area. The mixed methods study has thus far completed a literature review, interviews with NEEA staff, and a quantitative analysis of existing data sources to compare consumer and supply chain characteristics across four locales. Characteristics examined as part of this analysis include consumer purchasing behaviors, energy burden, building stock, supply chain practices, workforce features, and others.

In Q4 2024, the study initiated a qualitative stage of the research to investigate themes from the data analysis that suggest opportunities to close relative gaps in the delivery of market transformation program benefits. Interviews with residential consumers, supply chain market actors, and community-based organizations involved in energy and energy efficiency began in early Q4. Interview participants were recruited from rural/town county clusters. The county clustering sample design aims to derive insights through comparisons of consumers and supply chain market actors in similar locales across the four-state region. The study will include participatory approaches where research participants are invited to receive, verify and help contextualize findings.

A final report is expected by the end of Q2 2025.

MRE Scientist: Amy Webb
awebb@neea.org

Fan Manufacturer Representative and Specifier Market Research

Efficient Fans | **FIELDING**

NEEA is planning a market research study in support of continued refinement of the Efficient Fans program design and intervention strategy. The study will focus specifically on addressing the following objectives:

- Compile a robust list of C&I stand-alone fan manufacturer representatives and specifying engineers active in the four-state region (ID, MT, OR, and WA);
- Identify and document key communication and relationship dynamics between fan system market actors (including particularly influential sources of information);
- Identify and document persistent challenges ("pain points") endemic to the stand-alone fan specification, sale, and installation process as experienced by manufacturer representatives and specifying engineers; and
- Solicit input from regionally active stand-alone fan manufacturer representatives and specifying engineers regarding the clarity, sensibility, and appropriateness of programmatic language and terminology related to in-scope fan systems.

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 regionally active fan specifiers and manufacturer representatives.

The project is expected to begin in Q4 2024.

MRE Scientist: Chris Cardiel
ccardiel@neea.org

Agricultural Pumps Market Research

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

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. Specific objectives of this study are as follows:

- Identify and prioritize agricultural market barriers to uptake of highly efficient pumps for irrigation purposes.
- Document market actor motivations and agricultural irrigation pump path-to-purchase.
- Assess the accuracy of key market projections documented in NEEA's 2013 Agricultural Irrigation Market Characterization, specifically as pertaining to regional irrigated agricultural acreage and market actor technology usage.

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 is currently under development and is anticipated to be released in Q3 2024; the project kickoff is anticipated for late Q4 2024.

MRE Scientist: Chris Cardiel
ccardiel@neea.org

Market Progress Evaluation Report #1

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

NEEA contracted with ADM Associates, Inc., to field the inaugural XMP Market Progress Evaluation Report (MPER), which serves as the first evaluation of the program's Market Transformation efforts. The overarching objectives for the study are to:

- Review the XMP Market Transformation 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; and
- Conduct the first year of tracking MPIs to lay the groundwork for year-over-year evaluation, and report progress on several near-term outcomes.

A project kick-off was held in January 2024, followed by sample development and instrument preparation. Data collection began in late Q1 2024 with interviews with NEEA XMP program staff, implementation contractors, and industry partners, continuing through Q2 and into Q3 2024 with the administration of surveys or interviews across multiple market actor groups (including pump and circulator manufacturers' representatives, distributors, specifiers, contractors and project owners). Data analysis and initial report preparation occurred in early to mid-Q4 2024. A final report is anticipated in Q1 2025.

MRE Scientist: Chris Cardiel
ccardiel@neea.org

Market Progress Evaluation Report #1

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

As of late 2022, NEEA's Efficient RTU program is actively working to transform the market for efficient RTUs in 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:

- Provide timely and actionable formative evaluation findings and recommendations to enable continuous improvement of the program.
- Assess Market Transformation progress as measured by program MPIs.
- Qualitatively assess program influence on observed market transformation.

NEEA contracted with Apex Analytics and NMR Group to conduct the evaluation. NEEA kicked off the Efficient RTU evaluation in June 2023. The evaluation team conducted focus groups with two small groups of commercial building decision makers (e.g., building owners, operators, and facilities managers); surveyed commercial building decision makers across the region; and interviewed individuals who have or have considered having an efficient RTU on their building. In Q4 2024, the evaluation team plans to conduct focused interviews with a small number of manufacturer representatives active in the Northwest RTU market. The evaluation team is also in the midst of reviewing NEEA documentation and materials related to identified market progress indicators.

This study is being conducted in close coordination with the Market Progress Evaluation Report (MPER) for the High-Performance HVAC program, which is also being completed by Apex Analytics and NMR Group. Coordination between these studies brings about several efficiencies, such as reducing the burden on the market actors recruited to participate in the research and streamlining NEEA staff time and other resources.

The evaluation will continue through winter 2024-2025, with a final report anticipated in Q2 2025.

MRE Scientist: Kirstin Moreno
kmoreno@neea.org

Market Progress Evaluation Report #1

High-Performance HVAC | **FIELDING**

As of late 2022, NEEA's High-Performance HVAC program is 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:

- Provide timely and actionable formative evaluation findings and recommendations to enable continuous improvement of the program.
- Assess Market Transformation progress as measured by program Market Progress Indicators (MPI).
- Qualitatively assess program influence on observed market transformation.

NEEA contracted with Apex Analytics and NMR Group to conduct the evaluation. NEEA kicked off the High-Performance HVAC evaluation in July 2023. In Q2 2024, the evaluation team completed the analysis of HVAC system designer and manufacturer representative survey data. The evaluation team is also in the midst of reviewing NEEA documentation and materials related to identified market progress indicators. The team is also conducting a webscan of teaching materials that draw on NEEA's VHE DOAS principles.

This study is being conducted in close coordination with the MPER for the Efficient RTU program, which is also being completed by Apex Analytics and NMR Group. Coordination between these studies brings about several efficiencies, such as reducing the burden on the market actors recruited to participate in the research and streamlining NEEA staff time and other resources.

The evaluation will be ongoing through winter 2024-2025, with a final report anticipated in Q2 2025.

MRE Scientist: Kirstin Moreno
kmoreno@neea.org

Market Progress Evaluation Report #3

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

NEEA contracted with Cadmus to complete its third MPER for the LLLC Program. This study is crucial for tracking changes in the market that indicate whether the LLLC program is effective in overcoming identified market barriers.

Interviews and surveys will be collected at the end of 2024 and into 2025 with stakeholders, manufacturers, installers, designers, architects, engineers, and decision makers to address the following objectives:

- Review and verify that the LLLC program has conducted the strategic activities described in its quarterly progress tracking documents and outlined in its logic model since the previous MPER;
- Track identified MPIs focused on measuring the reduction of identified market barriers and conduct year-over-year analyses when indicated, in order to report progress on several program outcomes predicted by the logic model; and
- Conduct market research to describe the rationale of buyers and sellers of LLLC that include it in their initial project plans, but do not follow through with the sale.

A final report is anticipated in Q2 2025.

MRE Scientist: Zdanna King
zking@neea.org

Exterior Luminaire Level Lighting Controls in Parking Lots Market Research

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

NEEA is considering adding exterior LLLC in parking lots to the LLLC program. To support this, NEEA is contracting with Cadmus to conduct interviews with parking lot lighting installers and purchasers in Q3 2024. This study will:

- Determine and describe all items that trigger a parking lot lighting replacement or upgrade decision, as well as what factors go into the upgrade and/or replacement decision, so that NEEA can assess alignment of exterior LLLC with their existing LLLC Program.
- Assess the known and potential benefits of LLLC systems compared with other lighting solutions to assist NEEA in refining the value proposition for installing LLLC in exterior parking lots.

A report is anticipated in Q1 2025.

MRE Scientist: Zdanna King
zking@neea.org

ENERGY STAR Influence Study

High-Performance Windows | **REPORTING**

NEEA has contracted with Apex Analytics, LLC to conduct a study that will explore if and how NEEA's High-Performance Window program activities have influenced the new ENERGY STAR® Version 7.0 rating for windows and doors. Through the program's involvement in the Partnership for Advanced Window Solutions (PAWS), its letters to ENERGY STAR, and other related work, it is possible that NEEA influenced the adoption of the new rating. In order to document these findings, Apex Analytics is reviewed documents and interviewed PAWS members, NEEA staff, and ENERGY STAR representatives in Q3 2024. A final report is anticipated in Q4 2024.

MRE Scientist: Zdanna King
zking@neea.org

Market Progress Evaluation Report #3

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

NEEA is preparing to conduct the third MPER for its RPP initiative. This research is expected to begin in Q1 2025. This study will include an ongoing assessment of key MPIs for each product in the portfolio, including documentation of NEEA and its partners' influence on recent federal standards and secondary research on the value of efficiency labels.

MRE Scientist: Zdanna King
zking@neea.org

Connected Consumer Products Market Research

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

NEEA contracted with Level 7 to conduct market research that will support the RPP program as NEEA staff consider how and if to incorporate connected consumer products in the program's scope. This study will:

- Describe consumer awareness, knowledge, and interest regarding connected consumer products
- Describe consumer willingness to purchase connected consumer products and engage with utility programs developed for these products
- Describe consumers' experiences using connected consumer products
- Develop consumer profiles that identify predictors of their interest in and willingness to purchase connected consumer products

Primary and secondary research was fielded in Q3 and Q4 2024, and consisted of a literature review and data collection from end-use customers (including online surveys, discussion boards, and focus groups).

A final report is anticipated in Q1 2025.

MRE Scientist: Zdanna King
zking@neea.org

Market Research on Existing Water Heaters in Select Commercial Buildings

Advanced Commercial Gas Water Heaters | **REPORTING**

NEEA contracted with Lieberman Research to conduct research in a select group of buildings regarding current water heating systems, including the decision making and purchase process, value propositions and barriers to their adoption. The researcher conducted twenty-five in-depth telephone interviews with a series of market actors including, but not limited to, building managers, building owners, and engineers.

Data collection, which started in late Q2 2024, will continue through Q3, resulting in a final report which is anticipated in late Q4 2024.

MRE Scientist: Anu Teja
ateja@neea.org

Condensing Gas Water Heater Qualitative Market Research

Efficient Gas Water Heaters | **REPORTING**

NEEA contracted with ILLUME Advising, LLC to conduct research to better understand the purchase motivators among owners of the most efficient currently available gas storage water heaters (condensing gas water heaters) across North America. This qualitative research will inform the Efficient Gas Water Heater program's future efforts and development of the value proposition for commercialization of residential gas heat pump water heaters. The key objectives of the qualitative research effort are to:

- Understand purchaser behaviors and attitudes that result in the actual purchase and installation of highly efficient condensing gas storage units in their homes
- Understand purchasers' overall satisfaction with the unit and interaction with the unit
- Determine purchaser willingness to replace current units with newer, more efficient units and, if willing, under what scenarios (planned replacement, failure, etc.)

Data collection began in Q2 2024, and a final report is anticipated in late Q4 2024.

MRE Scientist: Anu Teja
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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 kicked off in September 2023 but paused in late 2023 due to a change in the U.S. Department of Energy's (U.S. DOE) timeline for publishing the final rule. Michaels Energy re-launched the project in August 2024, at which point they began reviewing NEEA records and publicly available documents and conducting interviews with a small subset of key stakeholders. The project is currently on hold awaiting the publishing of the final rule, at which time data collection will resume.

MRE Scientist: Meghan Bean
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Portable AC and Air Compressor Standard Evaluation | Standards | FIELDING

NEEA's Codes and Standards team engaged in efforts to increase the stringency of the federal standards for portable air conditioners and air compressors. 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. Both evaluations will kick off in November 2024. Michaels Energy will review NEEA records and publicly available documents and will conduct interviews with key stakeholders from NEEA, U.S. DOE and other organizations. Final reports are anticipated in late Q2 2025

MRE Scientist: Meghan Bean
mbean@neea.org

NEEA Codes Baseline Review | Codes | FIELDING

NEEA is planning for a third-party review of its Naturally Occurring Baselines for commercial and residential energy codes in the Northwest. Specifically, the third-party will:

- Assess whether NEEA's approach of tracking 100% of the Total Regional Savings as Co-Created Savings for 10 years after construction starts without applying an additional adjustment factor is still the most reasonable Natural Market Baseline for codes.
- If not, make recommendations for how NEEA should update its baseline and other assumptions to more accurately capture NEEA and its partners' influence on code changes in the Northwest.
- Assess whether it is appropriate to apply the same approach to all states in the Northwest and to both the residential and commercial sectors.

NEEA anticipates this review to be kicked off in Q4 2024, with a final report published in Q2 2025.

MRE Scientist: Meghan Bean
mbean@neea.org

Market Progress Evaluation Report #6

Codes | **FIELDING**

NEEA contracted with NMR Group, Inc., to field the sixth MPER for its commercial and residential codes efforts. This study is intended to build on and complement the learnings generated through the recently completed Codes MPER #5 and will include ongoing assessment of NEEA's progress in the Northwest codes market relative to recently established MPIs. Specific objectives for the study are to:

- Assess NEEA's progress on selected logic model outcomes, including those associated with (a) the Codes team's training and education activities, (b) voluntary certification and above code construction, and (c) jurisdictional goals and state-level code support;
- Conduct a qualitative analysis of NEEA's progress on outcomes associated with its code influence activities conducted during code cycles occurring from 2018 onward, with a particular focus on code influence activities occurring from 2023 onward; and
- Conduct formative evaluation regarding market actor awareness, use, and valuing of key code compliance tools, including the Washington State Energy Code Commercial Technical Support website and webtool, COMcheck, and REScheck.

A project kick-off was held in mid-Q4 2024, with sample development and instrument preparation to follow. Data collection is scheduled to occur during Q1–Q2 2025, including interviews with NEEA Codes program staff and a wide range of code market actors, as well as surveys with individuals who have completed NEEA-sponsored code trainings. Data analysis and initial report preparation are scheduled to occur in Q2 2025, with a final report anticipated in early Q3 2025.

MRE Scientist: Chris Cardiel
ccardiel@neea.org

Home Energy Raters Market Research

Residential Codes | REPORTING

NEEA contracted with TRC to conduct market research with home energy raters in the Northwest to meet the following objectives: 1) Develop an estimate of the number of home energy raters currently working in the new construction market in each state in the Northwest, and 2) Provide an assessment of:

- Current raters' business practices
- Raters' perceptions of the current market for home energy ratings
- How raters' practices and perceptions differ across urban and rural areas

TRC identified 111 unique raters in the Northwest, most of whom have been working in the field for over five years. Interviews and surveys revealed that both raters and the organizations that certify and support home energy raters believe that the market for home energy rating services will grow due to Inflation Reduction Act (IRA) funds incentivizing above-code homes. While raters report using similar business practices in both urban and rural areas, they perceive less demand for their services in rural areas.

A final is anticipated for late Q4 2024.

MRE Scientist: Meghan Bean
mbean@neea.org

Montana Residential Code Compliance Evaluation

Residential Codes | **REPORTING**

NEEA contracted with 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:

- Assess statewide compliance with selected code requirements among single-family homes built under IECC 2018 with Montana amendments.
- Develop estimates of statewide energy code compliance and compliance within urban and rural jurisdictions separately.
- 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 but paused in mid-2023 due to challenges with collecting permit data. The project re-launched in January 2024 with a new data collection plan that relies on on-site data collection. A final report is expected in Q1 2025.

MRE Scientist: Meghan Bean
mbean@neea.org

Oregon Residential Code Compliance Evaluation

Residential Codes | **REPORTING**

NEEA contracted with IEc 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:

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

IEc will collect data from permits, site visits to residential new construction building sites, and interviews with market actors. In addition, NEEA contracted with NMR Group to collect data on inhabited homes using homeowner self-audits. These data will be provided to IEc for analysis.

This project kicked off in February 2024, and a final report is expected in Q2 2025.

MRE Scientist: Meghan Bean
mbean@neea.org

Idaho Commercial New Construction Code Compliance 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 Q3 2023, with planning and sample development continuing through Q1 2024. Data collection focusing on desk review of permit data began in Q2 2024 and is scheduled to conclude in Q4 2024, with site visits to a subsample of buildings scheduled for Q4 2024 through Q1 2025. This study includes analysis of billing data. Collection of this data is planned to continue through Q1 2025, with analysis and report preparation to follow.

A final report is anticipated in Q2 2025.

MRE Scientist: Chris Cardiel
ccardiel@neea.org

Montana Commercial New Construction Code Compliance Evaluation

Commercial Codes | REPORTING

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 concluded in Q2 2024, while in-person/virtual site visits commenced in Q4 2023 and concluded in Q2 2024. Billing data collection was attempted for this study but has been excluded from ongoing project activities due to a prohibitively low response rate from eligible building contacts.

Compliance analyses are currently underway; a final report outlining the result of compliance analysis and comparative site visits is anticipated in Q1 2025.

MRE Scientist: Chris Cardiel
ccardiel@neea.org

Ductless Heat Pump Long-Term Monitoring and Tracking, Year 3 | FIELDING

NEEA actively worked to accelerate adoption of Ductless Heat Pumps (DHPs) in the Northwest from 2008 to 2020. Once NEEA scales back investments in a Market Transformation program, the organization continues to monitor market diffusion of the energy-efficient product or practice through a series of annual longitudinal evaluations called long-term monitoring and tracking (LTMT) studies. NEEA contracted with OWL Research Partners to conduct the third LTMT study for the DHP program. The study kicked off mid-November 2024. The objective for this evaluation, consistent with the prior two LTMT studies, is to track diffusion of DHPs across the Northwest's residential HVAC market, specifically within the program's three target markets to confirm whether market transformation outcomes are being sustained.

A key activity of the study will be to conduct phone surveys with HVAC installers. The HVAC installer survey seeks to understand trends in DHP installations, the types of homes they are being installed in, the percentage of incented installations, total customer cost, and changes in the DHP market.

The study is targeting 232 installers across the Northwest to complete the survey. Recruiting for the survey will begin in early December 2024, with interviews planned to take place between December 2024 and January 2025.

The final LTMT report is anticipated in Q2 2025.

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