

2022

Q2

Key Assumptions Quarterly Report

WHAT'S NEW:



Hello Everyone,

The update period for 2021 Annual reporting is wrapping up! This key assumption report contains the final set of updates relevant to 2021 reporting of energy savings in NEEA's portfolio.

Select updates in this report will be shared at the upcoming meeting. If there are updates you are curious about, please bring your questions or contact us in advance.

NEEA's planning team looks forward to seeing everyone at the next Cost Effectiveness Advisory Committee meeting on April 28, 2022.

As well, you can find NEEA's Net Market ([Electric](#) & [Natural Gas](#)) and [7th Power Plan](#) Savings Calculations for 2021 using the links provided.

~ **Stephanie Rider**, Sr. Manager, Data Planning & Analytics ~

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Reduced Wattage Lamp Replacement

Lighting

2020 was the last year NEEA received linear fluorescent lamp shipment data from participating lighting distributors. NEEA will depend on Non-Residential Lighting Data Collection efforts for lamp shipment data, which will be available in Q3 2022. In the meantime, NEEA estimated 2021 lamp shipments based on National Electrical Manufacturers Association's 2021 linear fluorescent lamp shipment indexes and will provide historical updates when the lamp shipment data becomes available.

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Window Attachments

Building Envelope

As part of NEEA's Window Attachments program development effort, NEEA staff conducted a Commercial Secondary Window field test. The resulting energy savings from the test will be provided in 2021 Annual Report. A case study for one of the projects is available on [BetterBricks](#).

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High-Performance HVAC Cost Effectiveness Update

High-Performance HVAC

In anticipation of advancing the High-Performance HVAC program into the Market Development phase of NEEA's Initiative Lifecycle (ILC), NEEA staff will present the benefit cost analysis as well as key assumptions and data sources for the program during the upcoming Q2 Cost Effectiveness Advisory Committee meeting. More information on NEEA's ILC phases can be found in the [2022 Operations Plan](#).

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Front Loading Clothes Washers

Retail Product Portfolio

For the Power Plan savings reports, NEEA revised its Unit Energy Savings (UES) estimate with the Regional Technical Forum's (RTF) Dec. 8, 2020, update. Because the RTF includes top-loading clothes washers in the baseline which use more energy, the savings rate for front-loading clothes washers increased.

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Super-Efficient Dryers

Retail Product Portfolio

The Super-Efficient Dryer program transitioned from a stand-alone Market Transformation initiative into part of the broader Retail Product Portfolio program in late 2020. As part of this, NEEA discontinued some market interventions with specialty appliance distributors and therefore no longer receives additional sales data on the pure heat pump dryer products. Due to very low overall market share for these products in NEEA's retail sales dataset the forecast for these highest-efficiency dryers has been reduced.

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Air Cleaners

Retail Product Portfolio

The RTF showed a much higher adoption of the new ENERGY STAR® V2.0 air cleaners specification using NEEA's data based on an updated list of qualifying models from ENERGY STAR. NEEA staff were not able to review the update in time for 2021 Annual Report, and were therefore unable to report savings for 2020 and 2021. NEEA expects to report savings in 2022. NEEA had a significant role in updated the Air Cleaner ENERGY STAR v2 specification. A report can be found on [neea.org](https://www.neea.org).

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Room Air Conditioners

Retail Product Portfolio

NEEA staff contracted with TRC Engineers, Inc. to review NEEA's influence on the ENERGY STAR Most Efficient specification development for room air conditioners (room ACs). The review was used to establish a naturally occurring baseline absent NEEA intervention in the market, which was then used to estimate program savings in 2021. A final report with these findings can be found on [neea.org](https://www.neea.org).

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Refrigerators

Retail Product Portfolio

NEEA was able to match refrigerator models that are as efficient as the ESME specification by identifying models that earned ENERGY STAR's Emerging Tech Award. The award allows manufacturers to use an advanced adaptive compressor test procedure to qualify. This alternative test procedure accounts for adaptive compressor technology by testing energy use at multiple ambient temperatures. Previously, NEEA counted many of these models as ENERGY STAR when they actually save as much as 30% more than ENERGY STAR when the compressor is in variable-speed mode. The Emerging Tech Award is a significant part of NEEA's Retail Product Portfolio Program.

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Market Extrapolation Methodology Update

Heat Pump Water Heaters

In spring of 2021, NEEA developed an extrapolation methodology for estimating total regional market units for Heat Pump Water Heaters (HPWHs) after losing access to key manufacturer data. Ecotope reviewed this methodology and agreed that it was reasonable for the assessment of market units given the absence of complete market data. Despite the lack of complete market data to which we previously had access, NEEA has maintained high level of fidelity and we currently capture 86% of reported regional market units as known sales through other data sources. The remaining 14% of units estimated for 2021 are extrapolated.

In the same project, Ecotope also reviewed NEEA's application of the naturally-occurring baseline for HPWHs to assess whether or not the approach should be updated due to the emergence of higher tiers of efficiency and new residential codes that were not known or considered at the time of the original baseline development. Ecotope agreed with NEEA's current approach for estimating the naturally-occurring baseline.

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Residential Lighting

Retail Product Portfolio

As discussed during the November 2021 CEAC meeting, NEEA has discontinued shelf surveys for residential lighting in favor of retail sales data NEEA has access to as well as the purchased sales data from Nielsen. NEEA conducted internal analysis to update the market analysis for market share, wattage, lumens and price across the various technologies and product applications. The results of this analysis are included in funder reports that use the 7th Power Plan Baseline as well as NEEA's regional power plan baseline report.

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Extended Motor Products Cost Effectiveness Update

Extended Motor Products

In anticipation of advancing Extended Motor Products Pumps program into the Market Development phase of NEEA's Initiative Lifecycle, NEEA staff will be presenting the benefit cost analysis as well as key assumptions and data sources for the program at the Q2 Cost Effectiveness Advisory Committee meeting. More information on NEEA's ILC phases can be found in the [2022 Operations Plan](#).

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Historical Update on 2020 Savings

Commercial Code

NEEA updated 2020 new construction square footage based on the latest report published by Dodge. The update yielded approximately 2% increase in 2020 new construction square footage across the region.

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2018 Washington State Energy Code Savings Analysis

Commercial Code

The 2018 Washington State Energy Code (WSEC) became effective in February 2021. NEEA contracted with NORESCO to conduct savings analysis relative to 2015 WSEC. The final report is expected in Q2 2022.

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Washington State Energy Appliance Standards

Standards

For the Power Plan savings reports, NEEA added energy savings estimates from the Washington State Commercial Kitchen Equipment standards. Savings from the Commercial Steam Cookers started in 2021. NEEA expects to report electric and natural gas Net Market Effects from the appliance standard in 2022 after completion of an influence evaluation. In addition, NEEA will report electric savings from the Washington and Oregon High CRI Lamps standard.

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International Energy Conservation Code

Residential New Construction

This year, NEEA completed savings analysis for Montana and Idaho's amended versions of the International Energy Conservation Code (IECC) 2018. A limitation of the analysis is that it does not consider the rate at which builders will comply with the codes. NEEA plans on completing compliance studies for Idaho and Montana by Q3 2023. For 2021, NEEA used the following assumptions:

- Idaho: Based on prior studies, code compliance in Idaho has been relatively high. A Cadmus study conducted in 2012 to evaluate the IECC 2009 code showed 90% of the homes met all the code requirements. The study conducted in 2018 found the compliance rate increased to 97%. While Idaho's new code makes multiple efficiency improvements, these improvements are largely to areas of historical overcompliance. The glazing, air sealing, and lighting efficiency levels measured by the 2019 Idaho Residential Energy Code Field Study were already at or beyond what the state's new code requires: for example, the current air sealing requirement (5 ACH50) is less stringent than the average envelope tightness of the buildings sampled in this study (4.03 ACH50). Basement walls was the only other area of improvement that was considered in the 2019 study. While the study found compliance gaps for basement walls, this was driven by insulation installation quality issues that would likely remain unchanged under the new code. As a result, high levels of compliance are expected to continue in Idaho.
- Montana: The increased efficiency levels required by Montana's new code are not expected to lead to decreased compliance. Savings from Montana's newest code largely come from glazing, lighting, and mechanical ventilation. A 2019 Montana Residential Energy Code Field Study by PNNL shows that most homes exceeded the prior code window U-Factor and lighting efficiency requirements, so continued high levels of compliance can be assumed for those measures. However, the blower door requirement is one area that may have lower compliance than previously assumed. While the IECC 2018 does not change this requirement, stakeholders have cited envelope tightness as a compliance concern particularly since many jurisdictions in the state do not enforce the energy code. NEEA models energy savings at a whole home level and cannot easily tease out savings by component. The PNNL field study provides some insight into compliance by measure. PNNL estimated that compliance for envelope tightness was 73%, although many homes exceeded the requirements.

Given this information, a conservative estimate of compliance would be to reduce the prior estimate from 95% to 73% until NEEA is able to complete further research.

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Washington State Energy Code Gas Savings

Residential New Construction

NEEA adjusted the natural gas savings rate for WSEC 2018 downward based on preliminary results from its post-code analysis. The purpose of the Washington Residential Post Code Adoption Market Research study is to gather market data about the impact of 2018 WSEC on new construction single family homes in Washington. The study looks at primary heating fuel selection, builders' selection of credits (options chosen), and other characteristics including envelope, heating and cooling, ventilation, and water heating choices. NEEA is seeking this data to inform its 2021 Washington residential code development process. TRC is currently analyzing results from 178 permits pulled under WSEC 2018 and 26 builder surveys conducted in late 2021 and early 2022. In addition, NEEA will complete the Washington Residential Code Evaluation by the end of the year. The combined studies will help the region better understand the effects of the new code on building practices, including fuel choice and the impact on home energy savings estimates.

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TOGETHER We Are Transforming the Northwest

