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Retail Product Portfolio Market Progress Evaluation Report #2

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Executive Summary

The Northwest Energy Efficiency Alliance's (NEEA) Retail Product Portfolio (RPP) program influences ENERGY STAR® qualification specifications and federal minimum efficiency standards, supports emerging technology, improves measurement and compliance through improved testing specifications, and provides participating national retailers with incentives on qualified energy-efficient goods. NEEA provides these incentives to retailers to drive increased stocking and assortment of high-efficiency products. Increased availability should drive increased sales, which should in turn drive manufacturers to produce more high-efficiency goods, eventually leading to higher product specifications and standards for the portfolio of products sold through the retail channel.

This report is the second Market Progress Evaluation Report (MPER) of NEEA's RPP program, intended to gauge NEEA's progress on the program's market progress indicators (MPIs). The key research objectives for this study were:

1. Review the updated NEEA RPP logic model.
2. Document activities and outputs and assess progress on applicable MPIs for each product in NEEA's RPP portfolio.
3. Evaluate NEEA's methodology for extrapolating short-term savings to the full market.
4. Evaluate how any major unexpected events (market shocks) may have affected sales of products within RPP.

Whereas the first MPER assessed progress on MPIs across product categories, this MPER assesses progress on MPIs for each product. In addition, this report analyzes progress achieved in 2021, extending a year beyond the first MPER timeline, which focused on the 2020 program year. To address the objectives above, TRC reviewed internal and external NEEA documents, collected data on retailers within NEEA's region, reviewed economic literature related to market analysis, and analyzed RPP sales data provided by NEEA from participating retailers on clothes dryers, top loading clothes washers, refrigerators, freezers, and room air conditioners.

Key Findings

TRC identified the following key findings:

Logic Model Review

TRC reviewed the NEEA RPP logic model to identify opportunities to improve the accuracy and clarity of the logic model. There is one key finding from the review (Section 2 of this report contains additional findings):

- NEEA's RPP program includes a large number of activities that address many different elements of the market and the program, and some of these activities are not explicitly addressed in the logic model (for example, product testing to support test procedure

updates and work with retailers to influence manufacturers). However, there is a tension between the specificity of the logic model and its simplicity, in terms of how much detail it can provide and how easy it is to interpret.

Market Progress Indicators

TRC examined each product's status with respect to its MPIs in NEEA's RPP program. Products in NEEA's RPP portfolio include clothes dryers, top-loading clothes washers, refrigerators, freezers, room air conditioners, and televisions. There are five MPIs that NEEA uses to measure its influence on the market for each of these products. Each product has different MPIs that assess progress for the specific strategies the program pursued for each product in 2021, detailed in Figure 3-1 in the main report. The following section details the status of products in the portfolio for each MPI:

- **MPI I: *Retailers consider ESRPP qualification in assortment and marketing decisions***

For top-loading clothes washers, clothes dryers, refrigerators, and room air conditioners, the program is making substantial progress on MPI I. There is limited progress in the freezer category for MPI I as the availability of energy efficient freezers appears to be geographically limited.

- **MPI II: *Market share of RPP-qualified product tiers increases***

The program is making substantial progress in the refrigerator category for MPI II, while market share for incentivized clothes dryers and top-loading clothes washers stagnated and may require a different approach. Market share for incentivized room air conditioners greater than 8000 British Thermal Units (BTUs) has reached a saturation point and likely no longer needs to be incentivized.¹ There were almost no sales of room air conditioner models below 8000 BTUs that were incentivized. Market share of incentivized freezer units improved from the previous year, however it remained below previous years' levels.

- **MPI III: *ENERGY STAR-qualifying criteria (or higher tier) increases***

The program is making progress on MPI III for refrigerators, freezers, room air conditioners, and televisions.

- **MPI IV: *Test procedures are improved***

The program is making progress on MPI IV for refrigerators, freezers, and televisions.

- **MPI V: *Federal and state minimum standards increase***

MPI V was not assessed for any product in the RPP portfolio because no federal standards were finalized for RPP products in 2021.

Extrapolation Analysis

TRC evaluated NEEA's methodology for extrapolating short-term savings to the full market. TRC examined current economic literature on market analysis to assess whether there is

¹ As of 2023, NEEA has stopped providing incentives for room air conditioners.

theoretical validation of this methodology. TRC also collected data from participating and nonparticipating retailers in the Northwest to assess if pricing and product assortment were dissimilar in a manner inconsistent with NEEA's extrapolation assumptions. Key findings from this analysis were:

- TRC found NEEA's methodology for extrapolating short-term savings to the full market to be plausible within the prevailing economic theory.
- TRC found prices and product variety of RPP products between participating and nonparticipating retailers to be similar, consistent with NEEA's extrapolation assumptions.

Market Shocks Analysis

TRC reviewed major events (shocks) that occurred between 2016 and 2021 that may have affected consumer behavior and RPP product sales. TRC reviewed data from the following categories for any potential sales impacts: weather, COVID-19 stimulus checks, COVID-19 waves within the NEEA region, housing, wages, unemployment rates, and energy prices. TRC found the following:

- Weather from the heat dome event in the Pacific Northwest in 2021 drove a massive spike in sales of room air conditioners. However, market share of energy-efficient room air conditioners remained constant, suggesting stocking of efficient models for people to purchase was sufficient, even in larger quantities.
- Stimulus checks may have affected the sales of refrigerators. In every quarter where stimulus checks were issued, there was a jump in total refrigerator sales compared to the same quarter in previous years. However, given the variation in sales from year to year, it is difficult to say for certain what the key causes were.
- TRC did not find evidence of any other category of shock influencing sales of RPP product categories.

Key Recommendations

The following are key recommendations based on the findings in this report. Additional recommendations are described in Section 6.

- **Recommendation LM1:** NEEA should develop a written document that can provide more specific detail about program activities—and the relationships between logic model elements—that can help document the program without making the graphical logic model unduly complicated in order to more clearly convey the work of the program.
- **Recommendation MP1:** The market share of qualified top-loading clothes washers has remained the same for multiple years. NEEA should consider additional research to investigate barriers to increased adoption of qualified top-loading clothes washers to determine if alternative strategies are needed to address those barriers.
- **Recommendation MP2:** Sales of ENERGY STAR Most Efficient (ESME) clothes dryers, which are all heat pump dryers, are close to zero. NEEA should consider research to identify if there are additional barriers to sales of these products to determine if alternative strategies are needed to address those barriers. NEEA could consider

stocking surveys or questions in the annual evaluation interviews ESRPP conducts with participating retailers to understand if these products are readily available for consumers to purchase. Because the ESRPP program receives sales data, rather than assortment data, from participating retailers, the program does not currently have insight into model availability. There may also be barriers in terms of installation or other consumer barriers to purchasing heat pump-based models.

- **Recommendation MP4:** There are essentially no sales of RPP-qualified room air conditioners of less than 8000 BTU in the period covered by this report.² There are qualified models in that category, so if more recent sales (in 2022 and 2023) continue to be negligible, NEEA should investigate why consumers are not purchasing qualified low-capacity models, such as whether pricing or other characteristics are inhibiting consumer uptake.

² NEEA has stopped providing incentives for room air conditioners but did provide them during the period covered by this report.

1 Introduction

This report presents the findings from the second market progress evaluation report (MPER) of the Northwest Energy Efficiency Alliance's (NEEA's) Retail Product Portfolio (RPP) program. This project extended the work of the first MPER³ to assess the market progress indicators (MPIs) that NEEA tracks for the products included in RPP, focusing on the 2021 program year. NEEA uses MPIs to assess progress toward the outcomes identified in the program's logic model. This report assessed progress for each product in the portfolio separately, instead of the outcomes for the whole portfolio collectively, as the prior MPER did.

TRC examined participating retailer behavior in response to the program, product level sales data, ENERGY STAR® qualification levels, and ENERGY STAR testing procedures. In addition, this report includes a review of the current NEEA RPP logic model and an assessment of NEEA's approach for extrapolating sales from participating retailers to the full Northwest market. It also provided an analysis of the impact of external shocks (such as COVID or weather events) on market share for products in the RPP portfolio.

The report is structured to cover each of these activities in a self-contained chapter.

- Chapter 1 provides an overview of the program and this research project.
- Chapter 2 covers TRC's review of NEEA's RPP logic model.
- Chapter 3 provides a product-level review of MPIs for the logic model outcomes.
- Chapter 4 explains TRC's review of the extrapolation approach.
- Chapter 5 details TRC's market shocks analysis.
- Chapter 6 offers TRC's overarching summary, conclusions, and recommendations.

1.1 Program Overview

NEEA's RPP program is part of the national ENERGY STAR Retail Products Platform (ESRPP). ESRPP is a nationally coordinated market transformation program that leverages midstream incentives, data analysis (including access to full category sales data provided by participating retailers), retailer engagement, support for testing protocols, and specification and standards advancement. It seeks to increase adoption of efficient models in key consumer product markets by influencing the selection of products available to customers. ESRPP's national scope eases the administrative burden on retailers by coordinating activities, and it increases the program's impact by providing consistent incentives across a large portion of the country, which aligns with retailers' decision-making processes for their national product assortment.

However, this national scope also creates significant challenges. Each ESRPP funder, or Program Sponsor, has unique needs and constraints, and many do not have a well-defined mechanism for addressing market transformation objectives beyond their approach to resource acquisition programs. These challenges may inhibit the recruitment and retention of additional Program Sponsors. Since 2016, NEEA has been a catalyst in advancing ESRPP efforts, playing a critical role in retailer coordination, product testing engagement, and development of federal

³ Apex Analytics. 2021. "Retail Product Portfolio Market Progress Evaluation Report #1" (Report). Boulder, CO. Available at: <https://neea.org/img/documents/RPP-MPER-1.pdf>.

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standards, ENERGY STAR product specifications, and testing procedures, as well as taking on a greater coordination role between all interested parties. In recent years, as the U.S. Environment Protection Agency (EPA) has pulled back from oversight of ESRPP, NEEA has taken on an expanded role coordinating the program nationwide.

1.2 Overview of Second Market Progress Evaluation Report

NEEA identified four key research objectives for this research:

1. Review the updated NEEA RPP logic model.
2. Document activities and outputs and assess progress on applicable MPIs for each product in NEEA's RPP program.
3. Evaluate NEEA's methodology for extrapolating short-term savings to the full market.
4. Conduct a market shocks analysis to provide NEEA with insight into how market volatility affects the market share of high-efficiency models.

Each of these research tasks is linked, so TRC designed the research approach to be holistic for the project, rather than conducting completely separate data collection and analysis tasks. In particular, the logic model informs the assessment of product-level market progress and the extrapolation methodology review; while the sales data analysis to assess market share of RPP product is related to the market shocks analysis. NEEA identified five outcomes and associated MPIs by which to measure progress in their logic model:

1. Retailers and merchants incorporate incentives into their assortment and marketing decision-making process.
 - MPI: Retailers consider ESRPP qualification in assortment and marketing decisions.
2. Increase in ENERGY STAR (or higher tier) market share for RPP product categories.
 - MPI: Market share of RPP-qualified product tiers increases.
3. Increase in ENERGY STAR (or higher tier) qualifying criteria for RPP product categories.
 - MPI: ENERGY STAR qualifying criteria (or higher tier) increases.
4. Better reflection of real-world energy consumption in ENERGY STAR data and federal test procedures.
 - MPI: Test procedures are improved.
5. Change in federal (and state) minimum standards for RPP categories.
 - MPI: Federal and state minimum standards increase.

1.3 Data & Methodology

To address these research questions, TRC reviewed documents provided by NEEA, conducted program staff interviews, analyzed sales data provided by NEEA, collected data on product pricing and availability from participating and nonparticipating retailers in the Northwest, conducted a review of relevant academic literature on product markets, and reviewed ENERGY STAR product and testing specifications.

1.3.1 NEEA Internal Documents

TRC examined communications NEEA had with the U.S. EPA and with other external program partners to assess the impact of the program on retailers' decisions to incorporate RPP incentives into their assortment and marketing decisions (logic model Outcome I) and to review NEEA's recommendations to ENERGY STAR regarding qualification criteria and improving testing procedures (Outcome IV) to better reflect real world use. TRC incorporated any document that provided evidence of the RPP program effects into the evaluation of the MPIs, including memos, reports, and presentations.

1.3.2 NEEA Sales Data

TRC examined sales data provided by NEEA to assess whether there has been an increase in ENERGY STAR (or higher tier) market share for RPP product categories (Outcome II). Participating retailers provide full-category sales data each month they are participating in the ESRPP program, plus monthly historical data for the year prior to when they joined the program. NEEA provided monthly RPP product category data from 2016 to 2021 for the NEEA region (Idaho, Montana, Oregon, and Washington). The data NEEA provided is not broken down by state or retailer.

TRC examined market share of each RPP product two levels. First, TRC examined the proportion of products sold that met ENERGY STAR qualification levels and, second, the proportion of products incentivized by NEEA. This examination gauged the overall market share of energy-efficient products and shed light on the effects incentives may have had on the product market within participating retailers.

1.3.3 Participating & Nonparticipating Retail Data

TRC collected pricing and assortment data from participating and nonparticipating retailer websites to both assess RPP market changes and to evaluate NEEA's assumption that it is reasonable to extrapolate savings associated with participating retailers' sales to the full market (that is, to nonparticipating retailers) in the Northwest.

With respect to the MPI assessment, TRC used the data to determine whether participating retailers were assorting a variety of ENERGY STAR-qualified products, which would imply that the ESRPP program is affecting participating retailers' product assortment decisions. TRC used the data for the extrapolation analysis to evaluate NEEA's assumption that changes in stocking and assortment of RPP products by participating retailers induce similar changes in stocking and assortment of RPP products among nonparticipating retailers due to competitive pressures.

TRC selected eight cities to gather data from within the NEEA region — two population centers from each state that were in different regions of the state. Cities were selected by their population size and their distance from one another. The cities selected were Seattle, Spokane, Portland, Bend, Boise, Idaho Falls/Pocatello, Billings, and Missoula. Within each city, TRC selected one participating retail store per retailer. If a city had multiple stores from a participating retailer, TRC selected the store with the closest proximity to the downtown area. TRC included a wide array of nonparticipating retailer locations in order to assess the assortment and availability of the RPP market as a whole. TRC included smaller retail outlets rather than nonparticipating big box retailers to try and ascertain if the effect from the program were market-wide and not specific to big box retailers.

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TRC reviewed each individual sampled store's website to document the store's price and assortment of energy-efficient products. For a product to be included in the analysis, it had to be available for immediate purchase and have an ENERGY STAR certification. Products not available for immediate purchase were not included as the goal was to evaluate stock and assortment by individual store. TRC used ENERGY STAR certification as an indicator for an energy-efficient product; TRC did not look for RPP-incentivized products specifically, because (1) it would have been difficult to identify qualified products using the information available on retailer websites, and (2) the resulting number of products would be too small to test for meaningful differences. TRC used the original price of products—no sale prices were included.

1.3.4 Literature Review

For the extrapolation analysis, TRC examined existing economic literature in the industrial organization field to see if the theory supported NEEA's assumption of RPP's influence extending beyond the participating retailers. TRC selected three papers based on their relevance to the field. Two, Anderson and Renault (1999)⁴ and Wolinsky (1986)⁵, are foundational papers in the field; and the other, Moraga-González and Sun (2023)⁶ is a contemporary contribution from a major journal.

1.3.5 ENERGY STAR Product & Testing Specifications

In order to assess the MPis related to Outcome III (Increase in ENERGY STAR (or higher tier) qualifying criteria for RPP product categories) and Outcome IV (ENERGY STAR data and federal test procedures better reflect real world energy consumption), TRC relied on third-party evaluations conducted for NEEA to assess NEEA and its partners' influence on ENERGY STAR testing and qualification specifications.

⁴ Anderson, Simon P., and Regis Renault. "Pricing, product diversity, and search costs: A Bertrand-Chamberlin-Diamond model." *The RAND Journal of Economics* (1999): 719-735.

⁵ Wolinsky, Asher. "True monopolistic competition as a result of imperfect information." *The Quarterly Journal of Economics* 101.3 (1986): 493-511.

⁶ Moraga-González, José L., and Yajie Sun. 2023. "Product Quality and Consumer Search." *American Economic Journal: Microeconomics*, 15 (1): 117-41.

2 Logic Model Review

2.1 Background

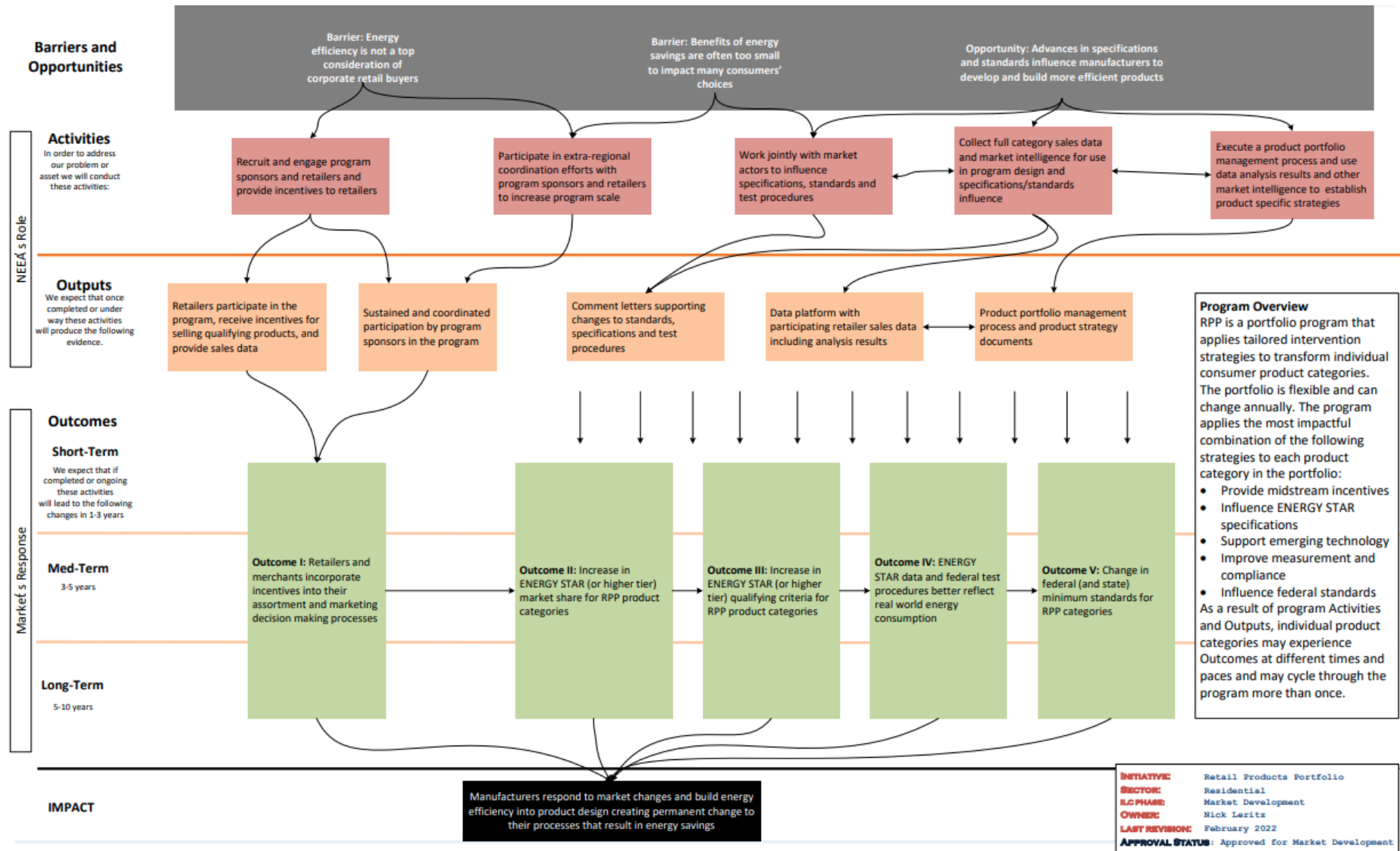
TRC reviewed the updated NEEA RPP program logic model to determine whether the logic model (shown in Figure 2-1) accurately and clearly captures the market transformation logic of the program and to identify opportunities to improve the content or structure of the logic model to better reflect and/or communicate RPP program logic.

In addition to reviewing the logic model itself, TRC conducted interviews with NEEA staff and reviewed relevant program documents.

2.2 Key Logic Model Findings & Recommendations

NEEA's current RPP program logic model is shown in Figure 2-1.

Figure 2-1. NEEA Retail Product Portfolio Logic Model



TRC's review of the logic model produced the following key findings, which informed the recommendations:

Finding: As part of RPP, NEEA conducts a large number of activities that address many different elements of the market and the program, and some of these activities are not explicitly addressed in the logic model. Examples of work NEEA does that is not reflected in the logic model are product testing to support test procedure updates and work with retailers to influence manufacturers. However, there is a tension between the specificity of the logic model and its simplicity in terms of how much detail it can provide and how easy it is to interpret.

- **Recommendation LM1:** NEEA should develop a written document that can provide more specific detail about program activities and the relationships between logic model elements that can help document the program without making the graphical logic model unduly complicated. Specific elements that could be addressed through this written document include the following.
 - Providing more documentation on activities that NEEA conducts, such as extra-regional coordination efforts; the work NEEA performs jointly with market actors to influence specifications, standards, and test procedures; product testing that NEEA conducts; and work with retailers to influence manufacturers (none of which are currently included in the logic model).
 - Describing the program's typical pathways of influence for the different products or product configurations in NEEA's RPP portfolio. For example, NEEA could lay out which of the logic model elements have been used by NEEA for televisions, for which NEEA's strategy has emphasized involvement with the ENERGY STAR specification process and associated test procedure but does not currently include incentives. NEEA could then contrast that with other product groups where retailer incentives are currently a key strategy (for example, refrigerators and freezers) versus the other product categories where other subsets of outcomes have been targeted.
 - Describing the typical causal relationships between outcomes and the variety of relationships that can exist. For example, NEEA staff indicated that sometimes changes in federal standards lead to a change in ENERGY STAR specifications, rather than the other way around (as currently depicted in the logic model).
 - Describing which activities are conducted as part of the five key strategies described in the Program Overview box.
 - Documenting historical progress NEEA has made, including the steps taken to establish program access to full category sales data from retailers.
- **Recommendation LM2:** NEEA should consider adding more detail to the logic model to provide more specificity regarding program activities. In particular, NEEA should consider updating the third activity to provide more detail on the work NEEA does to influence specifications, standards, and test procedures. For example, "Work jointly with market actors to influence specifications, standards, and test procedures through comment letters on proceedings, conducting lab tests, providing market data, and other activities."

Finding: TRC believes that access to full category sales data remains a market barrier that should be reflected in the logic model. Sales data is an input to many of the activities that NEEA

conducts, and it supports multiple outputs and outcomes. Sales data is only available to NEEA and other program administrators because of the incentives paid through the program. Further, NEEA's portfolio management process includes an option to pay incentives if there is "a compelling market analysis or monitoring justification to keep receiving sales data" even if "RPP market share [is not] acceptable to meet program goals."⁷ Previous versions of the logic model included a barrier regarding lack of access to full category sales data, saying it "inhibits ability to influence formal specifications/standards process and allow for informed program decisions." This barrier was removed because (1) NEEA considers securing data a program activity rather than a market barrier, and (2) NEEA was able to successfully set up processes and agreements to gain access to these data. TRC's view is that the RPP program has developed a mechanism to address the data access barrier but that the barrier has not been eliminated because access to data would end if incentives were no longer paid by the program.

Finding: The ultimate impact that the program seeks to achieve, as described by NEEA staff and the logic model impact statement, is to change manufacturer practices. However, the program's influence on manufacturers occurs primarily through indirect rather than direct means, and manufacturers are not directly addressed elsewhere in the logic model.

- **Recommendation LM3:** NEEA should consider adding an outcome to specifically monitor or measure changes to manufacturer practices. As manufacturer changes are the target impact of the program, having an outcome that could be monitored over time would provide NEEA with information about how that element of the market is changing.

Finding: The program impact statement only describes manufacturer changes as the desired impact of the program. TRC believes it may be more appropriate to have both increases in minimum federal efficiency standards and manufacturer changes as outcomes that lead to reductions in energy use intensity, rather than only manufacturer changes leading to energy savings. It is not clear from the logic model why manufacturers' future design changes to produce higher efficiency models are inherently more valuable than standards changes that eliminate lower efficiency models.

- **Recommendation LM4:** NEEA should consider an impact statement that focuses on *permanent changes* to the market that lead to reductions in average energy use intensity without putting one specific mechanism (manufacturer changes) as the target of the impact statement to reflect more ways that market transformation can occur.

Finding: The program works on multiple product categories using multiple strategies, so no single causal chain can encompass the program logic. Further, the causal direction of some elements varies from case to case (for example, federal minimum standards leading to ENERGY STAR specifications or vice versa).

Finding: The flow of the logic model is currently from barriers to activities to outputs to outcomes to impact, but, given the ongoing and dynamic nature of market change, some of the market changes represented in the outcomes influence how NEEA executes activities over time. That is, NEEA conducts these activities on an ongoing basis and adjusts based on the market response, rather than NEEA having completed a fixed activity in the past and continuing to do the exact same thing while letting the market react. For example, progress toward Outcome II

⁷ NEEA. ESRPP Product Portfolio Management Process. Updated 5/3/2019.

and Outcome III likely feed back into NEEA's fifth activity to "Execute a product portfolio management process and use data analysis results and other market intelligence to establish product specific strategies," as NEEA adjusts its strategies based on market changes. Similarly, progress toward Outcome IV likely influences the third activity, as NEEA determines what influence strategies to prioritize as standards and specifications change.

Finding: In addition to the linear flow between barriers, activities, outputs, outcomes, and impact, there is very little differentiation between outcomes in their relationship with each other and the outputs that lead to them. All outcomes are depicted as occurring over short-term, medium-term, and long-term and with Outcome I leading to Outcome II, Outcome II leading to Outcome III, and so on. There is very little differentiation in which outputs lead to which outcomes. For example, Outcome I (retailer incorporating incentives into decision-making) leading to Outcome II (increased market share) is an intuitive relationship. But Outcome III (increased ENERGY STAR qualifying criteria) leading to Outcome IV (improved data and test procedure) is a much less intuitive relationship. It likely does not make sense to differentiate based on specific numbers of years, given the ongoing and dynamic nature of NEEA activities and strategies and the variation between product categories, but differentiating the relationships between the outcomes and other elements could provide additional clarity.

- **Recommendation LM5:** NEEA should consider reflecting key relationships between logic model elements where ongoing outcomes influence activities in order to better reflect the dynamic between the program and the market. Specifically, TRC recommends connecting Outcome II and Outcome III to the fifth activity and Outcome IV to the third activity. This change could be made in the graphical logic model itself, or it could be described in the accompanying written document TRC recommends NEEA develop.
- **Recommendation LM6:** NEEA should consider differentiating outcomes further. This need not necessarily relate to the specific timeframe to achieve a given outcome, but it could reflect the sequencing of the outcomes, the relevant necessary precursors, or which processes are involved. The advantage of this differentiation would be to draw more clear causal connections between outputs to understand market progress.
 - While there is variation in sequencing, having the arrows reflect the most typical cases would make the model clearer (such as the example provided by NEEA where sometimes changes in federal minimum standards lead to changes in ENERGY STAR specifications). For example, the logic model could have Outcome II come from Outcome I (but not the outputs), Outcome IV come from the third through fifth outputs, and Outcomes III and V come from the outputs as well as Outcome IV, as shown in Figure 2-2.

3 Market Progress Indicator Analysis

3.1 Background

The MPI analysis presented in this section examines available data from multiple sources to assess the market progress for each individual RPP product category based on the NEEA logic model. Each MPI is connected to a logic model outcome, which is then associated with strategies NEEA adopts to advance the relevant market. TRC used the language in the current logic model but recommends changes to the logic model in Section 2 above. As shown in Table 3-1, the five RPP products have different relevant logic model outcomes based on the team's strategy for that product in 2021. Table 3-2 breaks down the incentive levels by product and efficiency tier. TRC only assessed the status of MPIs relevant to the team's strategy for a given product in 2021.

Table 3-1. Logic Model Outcomes, MPIs, Applicable Products, Level of Analysis, Recommended Data Sources

	Outcome I	Outcome II	Outcome III	Outcome IV	Outcome V
Logic Model Outcome	Retailers and merchants incorporate incentives into their assortment and marketing decision making process	Increase in ENERGY STAR (or higher tier) market share for RPP product categories	Increase in ENERGY STAR (or higher tier) qualifying criteria for RPP product categories	ENERGY STAR data and federal test procedures better reflect real world energy consumption	Change in federal (and state) minimum standards for RPP categories
Associated MPI	Retailers consider ESRPP qualification in assortment and marketing decisions	Market share of RPP-qualified product tiers increases	ENERGY STAR-qualifying criteria (or higher tier) increases	Test procedures are improved	Federal and state minimum standards increase
Clothes Washers	X	X			
Clothes Dryers	X	X			
Refrigerators	X	X	X	X	
Freezers	X	X	X	X	
Room Air Conditioners	X	X	X		
Televisions			X	X	

Table 3-2. 2021 Incentive Levels by RPP Product and Efficiency Tier

Product	Efficiency Tier	Amount
Clothes Washers	ENERGY STAR Version 8	\$50
Clothes Dryers	Heat Pump Dryers	\$100
Refrigerators	Emerging Tech Award	\$20
Refrigerators	ENERGY STAR Most Efficient 2019-2021	\$10
Freezers	ENERGY STAR Version 5	\$15
Freezers	ENERGY STAR Most Efficient	\$50
Freezers	Emerging Tech Award	\$50
Room Air Conditioners	ENERGY STAR Version 4	\$10
Room Air Conditioners	ENERGY STAR Most Efficient 2020-2021	\$50

3.1.1 Methodology & Data

This section provides an overview of the methodology and data used to assess each of the logic model outcomes.

Outcome I is that “Retailers and merchants incorporate incentives into their assortment and marketing decision-making process.” For analysis of Outcome I, TRC examined internal NEEA documents and ESRPP retailer communications to understand retailer practices and how program participation influences their actions. These documents included email chains, internal presentations on products (for example, product strategy guides), and other sources provided by NEEA. TRC also examined presentations from participating retailers to ESRPP Program Sponsors on progress they had been making as a result of the ESRPP program, as well as any additional marketing or internal changes they have made regarding RPP products. These presentations may not include all retailer activities occurring as part of ESRPP but provide an overview of key changes and strategies associated with the program.

TRC also gathered data from participating and nonparticipating retailer websites on brand availability of ENERGY STAR-qualified RPP products as part of the assessment of competition between participating and nonparticipating retailers. As NEEA does not collect in-store data through shelf surveys or other means, TRC is using the range of brands with available ENERGY STAR products as a proxy for measuring RPP product variety and competition between participating and nonparticipating retailers. This data enabled TRC to examine the variety of choices presented to consumers within each product category.⁸

Outcome II is an “Increase in ENERGY STAR (or higher tier) market share for RPP product categories.” For Outcome II, TRC relied on sales data provided by NEEA for RPP product categories in the NEEA region and used these data to examine market share changes for ENERGY STAR products from 2017 to 2021. TRC also included any ENERGY STAR updates into its analysis. For each product in this report, TRC presented data both in terms of ENERGY

⁸ The analysis of product availability only included a sample of stores within the NEEA region, so it does not include every product available to every consumer in the NEEA region.

STAR qualifications and RPP tiers and RPP incentivized products. The first ties directly to the text of the logic model outcome and extends the time series of the first market progress report, and the second and third provide an assessment of the specific set of products that NEEA and other Program Sponsors support with midstream incentives.

Outcome III is an “Increase in ENERGY STAR (or higher tier) qualifying criteria for RPP product categories.” Outcome IV is that “ENERGY STAR data and federal test procedures better reflect real world energy consumption.” For Outcomes III and IV, TRC pulled from third party evaluations of NEEA and its partners’ influence on ENERGY STAR specifications and test procedures and reviewed ENERGY STAR version documents for any changes in testing and qualifying criteria. TRC also reviewed NEEA’s comment letters that made recommendations to ENERGY STAR for changes and/or updates to ENERGY STAR testing procedures and qualifying criteria. This analysis focused on ENERGY STAR specification development or updated processes that NEEA and its partners were actively involved in.

Outcome V is a “Change in federal (and state) minimum standards for RPP categories”. There are no products for which Outcome V is relevant in the 2021 program year.

3.2 MPI Assessment Findings

3.2.1 Program-Wide Findings

TRC conducted a program-wide assessment of whether participating retailers actively engaged with NEEA to increase their sales of all RPP products (Outcome I: “Retailers and merchants incorporate incentives into their assortment and marketing decision making process”).⁹ **Overall, internal retailer energy efficiency training for sales staff has increased, and ENERGY STAR products feature prominently in retailer advertising.**

Of the participating retailers, three out of four reported internal training programs for their sales staff on all energy-efficient products, up from two in the previous MPER. All participating retailers had a sorting option in their online search for ENERGY STAR-qualified models. When searching for energy-efficient products online, two participating retailers had ENERGY STAR labels next to products that are qualified, further increasing visibility of energy-efficient products. All retailers featured ENERGY STAR-qualified products for sales advertisements during presentations to ESRPP Program Sponsors. It is not known how many advertisements by participating retailers feature RPP-incentivized products.

3.2.2 Clothes Washers

In 2021, NEEA’s clothes washers strategy was to encourage increased assortment and marketing of top-loading clothes washers by providing incentives to participating retailers for sales of qualifying models. NEEA’s strategy focuses on top-loading clothes washers in an effort

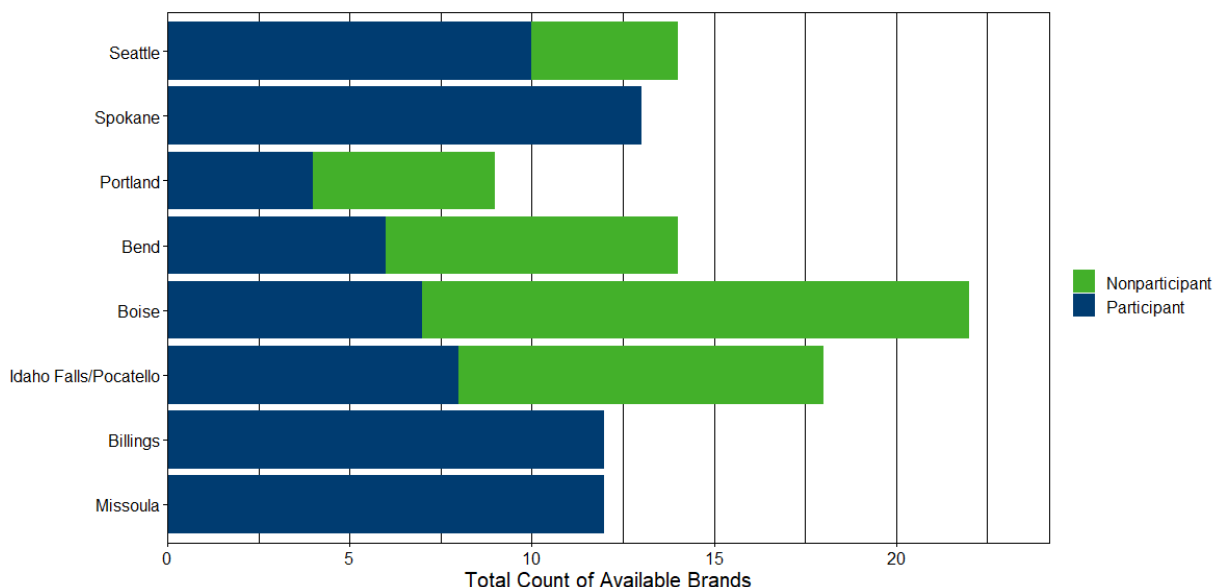
⁹ The logic model does not indicate what elements of marketing will be affected. The American Marketing Association defines marketing as follows: “In basic terms, marketing is the process of identifying customer needs and determining how best to meet those needs. In contrast, advertising is the exercise of promoting a company and its products or services through paid channels. In other words, advertising is a component of marketing.” (<https://www.ama.org/marketing-vs-advertising>). As marketing can include many elements, TRC is using training programs and advertising as measures of marketing.

to increase the overall efficiency of this market segment, which tends to be less efficient than front loading models. Any top-loading washer with a rating of ENERGY STAR Version 8 was incentivized.

Outcome I

Washer brands were well-represented across participating and nonparticipating retailers in all retail locations sampled in the NEEA region, as shown in Figure 3-1 below. ENERGY STAR-qualified clothes washers were shown in nearly every quarterly update presentation from participating retailers to ESRPP Program Sponsors. Washers were primarily paired with energy-efficient dryers in these advertisements. Of the participating retailers, only one featured an advertisement with an RPP-incentivized washer. Given the availability of ENERGY STAR brands and the prominence of energy-efficient washers in quarterly updates, TRC feels NEEA's engagement is influencing participating retailers to pursue more energy-efficient clothes washer models.

Figure 3-1. Total Washer Brands Available by City (Sampled Stores)



Outcome II

Since the beginning of the program, the total market share of ENERGY STAR-qualified, top-loading washers has remained roughly constant while the portion that are ENERGY STAR Most Efficient (ESME) products increased in 2019 and 2020, but held steady in 2021, as shown in Figure 3-2 below. Market share of incentivized washers (ENERGY STAR Version 8 and ESME) also held steady, as shown in Figure 3-3 below.

Figure 3-2. Participating Retailer Sales of Top-Loading Washers by ENERGY STAR Tier 2017 – 2021

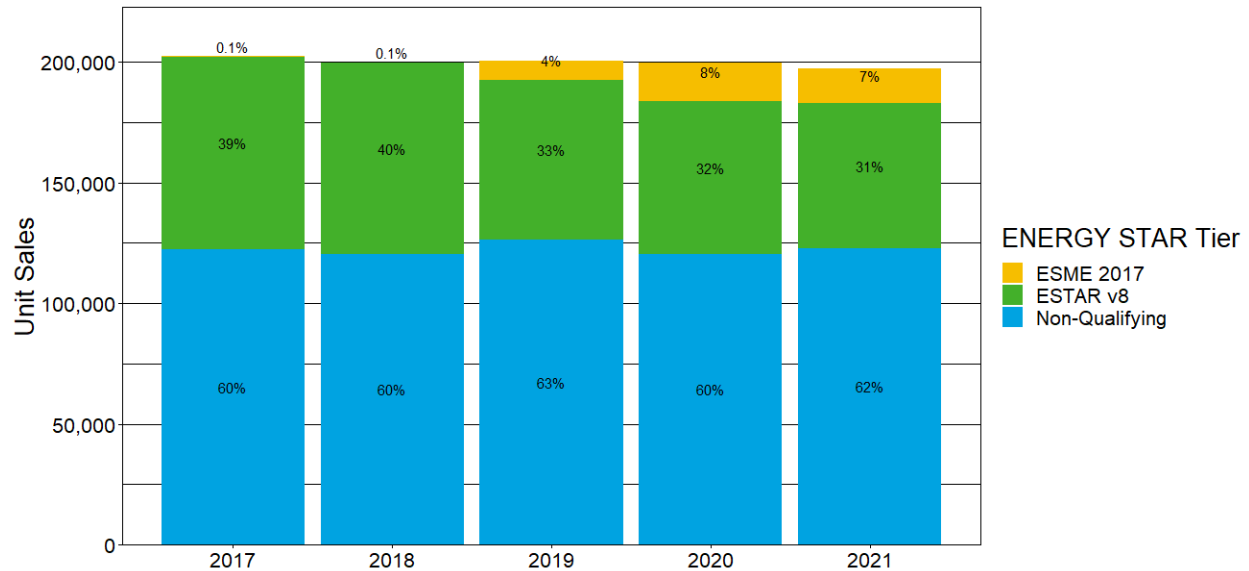
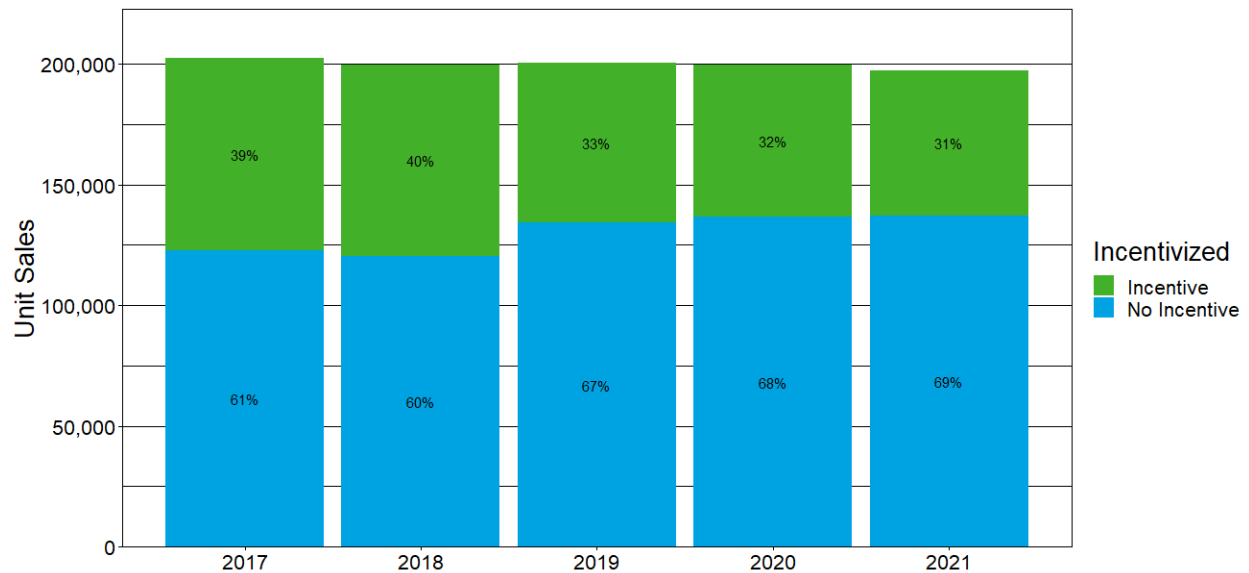
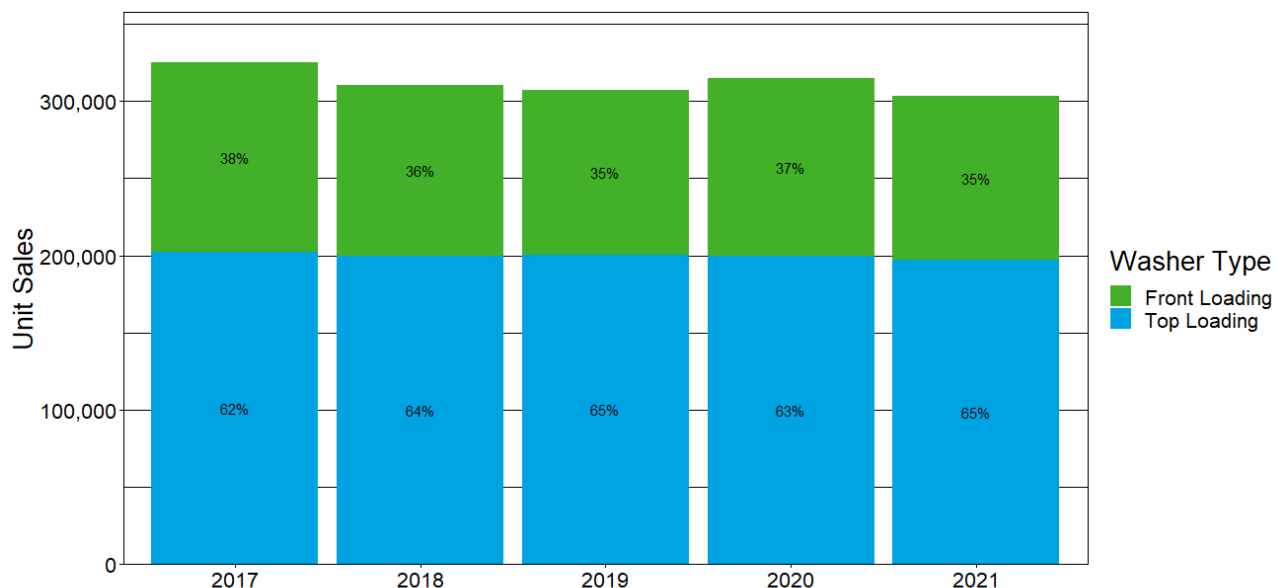


Figure 3-3 Participating Retailer Sales of Top-Loading Washers by RPP Incentive 2017 – 2021



Sales of incentivized clothes washers have stagnated. TRC examined whether this was a result of changing consumer tastes for front loading washers. Front-loading washers are generally more efficient than top-loading washers. If front-loading washers were taking market share away from top-loading washers, overall efficiency of the washer market would still be increasing. However, as Figure 3-4 below shows, front-loading washer share has remained relatively flat. With incentivized clothes washer sales being flat and consumer tastes remaining comparable year over year, it appears this part of the program has stagnated.

Figure 3-4. Participating Retailer Sales of Front- & Top-Loading Washers 2017 – 2021



Clothes Washers Summary

Overall, retailers in 2021 were actively pursuing higher sales of ENERGY STAR-rated clothes washers as a result of the RPP program, but market share of high-efficiency units did not increase.

- Given the wide variety in washer brands sold by both participating and nonparticipating retailers, as well as the availability of ENERGY STAR-qualified washers, TRC feels the market is showing substantial progress on Outcome I. There are many varieties of energy efficient clothes washers for consumers to choose from. Progress on Outcome II has stagnated, however, as the market share for incentivized clothes washers remained roughly the same.
- Market share of incentivized washers is stagnant, and the increases in share of ESME top-loaders did not continue in 2021.

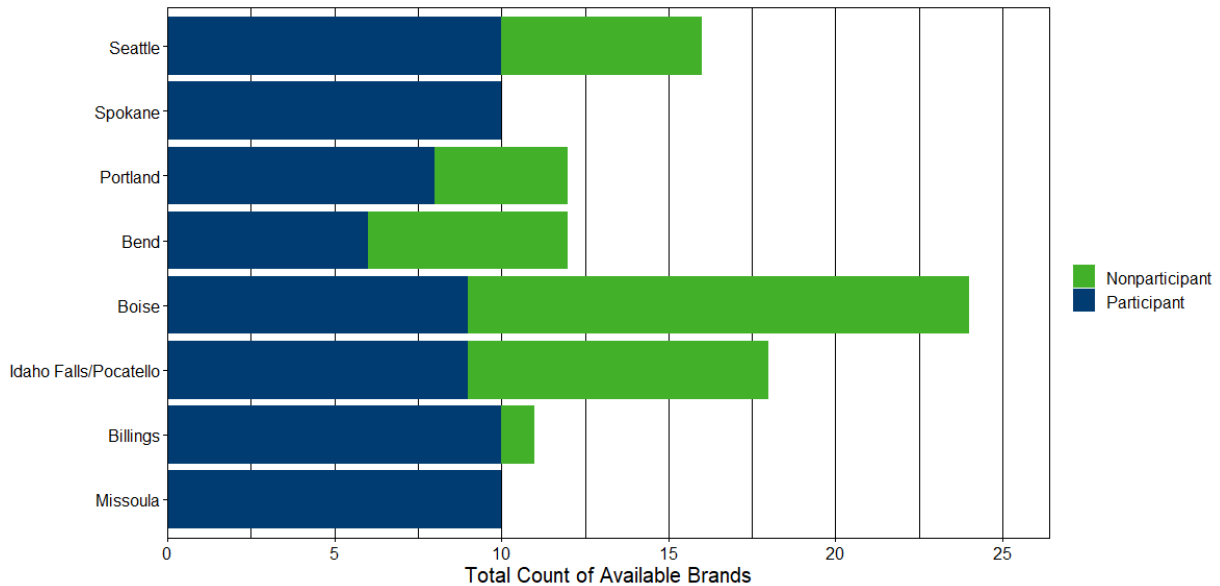
3.2.3 Clothes Dryers

NEEA's strategy for clothes dryers in 2021 also focused on providing incentives to participating retailers. Only heat pump dryers qualified for the NEEA incentive.

Outcome I

The available assortment of clothes dryer brands from manufacturers in sampled stores (as seen in Figure 3-5 below) shows the wide availability for this product. All sampled brands offer an ENERGY STAR-qualified dryer. Similar to clothes washers, ENERGY STAR-qualified clothes dryers are featured prominently in participating retailers' quarterly program updates. Nearly all advertisements of ENERGY STAR dryers were paired with ENERGY STAR washers. Most major holiday sales highlighted by retailers in their quarterly presentations featured these paired products.

Figure 3-5. Clothes Dryer Brands Available by City (Sampled Stores)



Outcome II

Figure 3-6 below shows that the overall market share of energy-efficient dryers remained constant in 2021 from 2020. Market share of heat pump dryers increased slightly, while the market share of ENERGY STAR Version 1 dryers has been holding relatively steady in the mid 40% range.

Figure 3-6. Participating Retailer Sales of Dryers by ENERGY STAR Tier 2017 – 2021

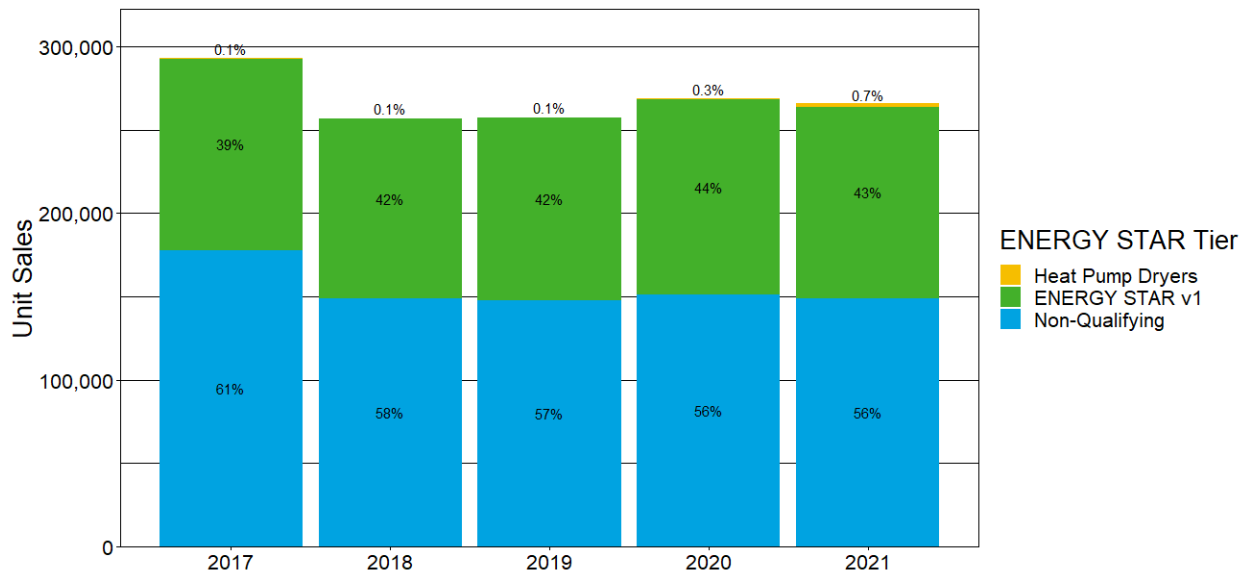
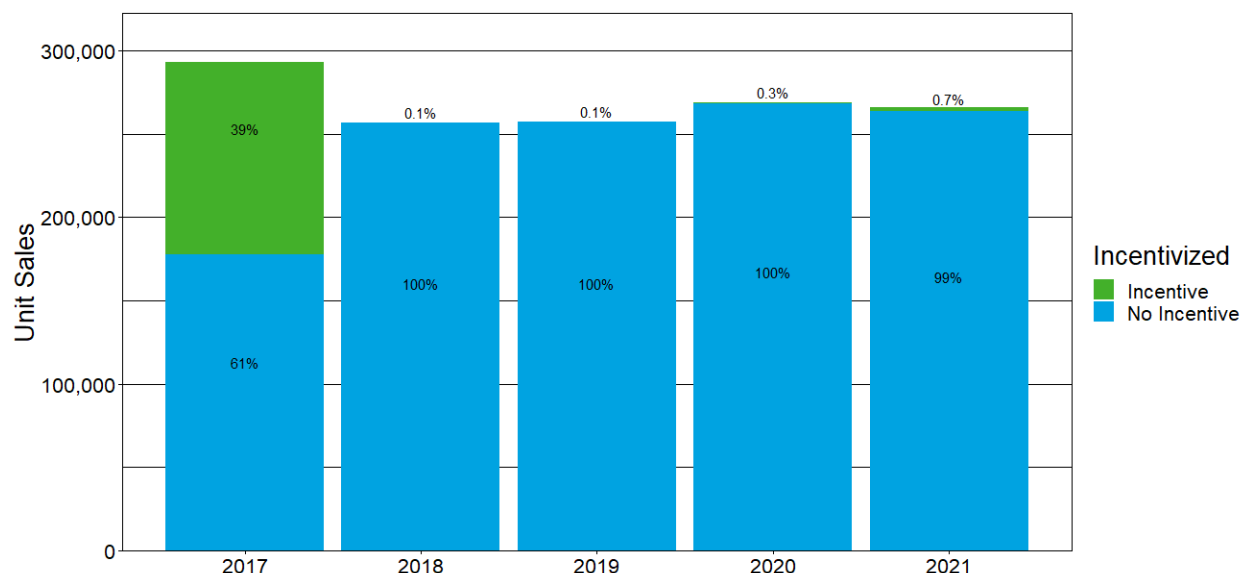


Figure 3-7. Participating Retailer Sales of Dryers by RPP Incentive 2017 – 2021



Clothes Dryers Summary

Overall, the RPP dryer market appears to be making mixed progress with respect to its MPis.

- Participating retailers frequently highlighted advertisements of ENERGY STAR-rated dryers. Additionally, retailers have a wide variety of dryer models to choose from, suggesting progress toward Outcome I.
- However, market share of efficient products has remained constant. Almost none of the efficient models receive incentives, suggesting even if retailers are stocking more incentivized models, consumers are not purchasing them.

Combined, these indicators suggest that, for clothes dryers, the program is making progress on Outcome I and little to no progress toward Outcome II.

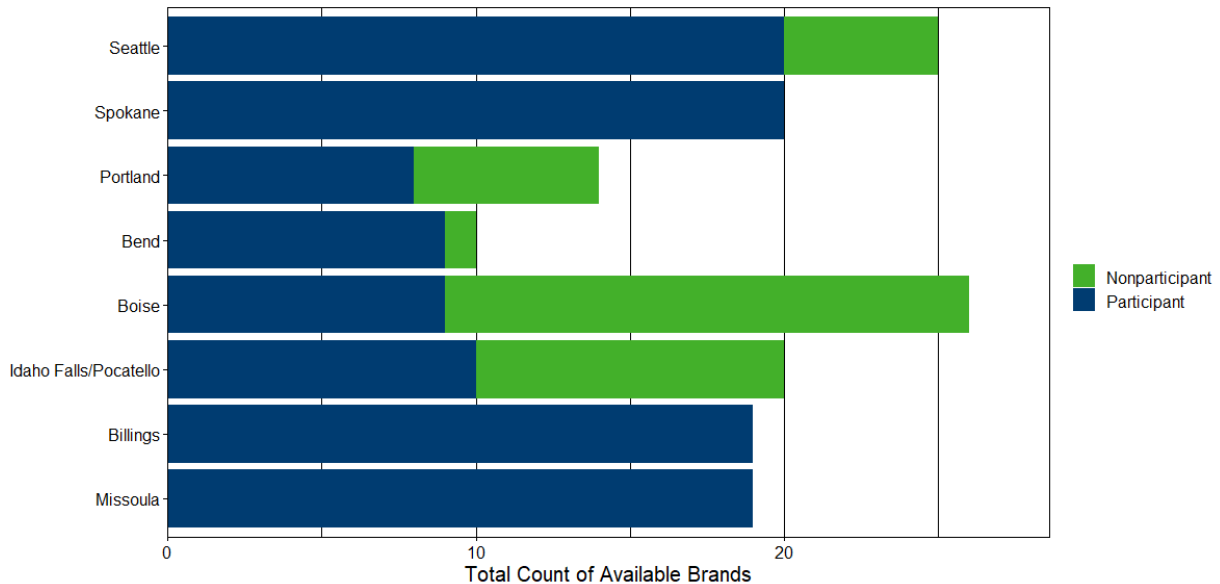
3.2.4 Refrigerators

In addition to providing incentives for qualifying refrigerators in 2021, NEEA was involved with the development of an ENERGY STAR Emerging Technology Award (ETA) for refrigerators and freezers with advanced adaptive compressors, as well as an optional test procedure that better captures the energy used by models with this technology. The program incentivized refrigerators with an ESME rating from 2019 to 2021 and ETA refrigerators in 2021.

Outcome I

Refrigerators were strongly represented in participating retailers' quarterly program updates, and ENERGY STAR-rated refrigerators were featured in nearly every advertisement for holiday sales campaigns. Customers could choose from a wide assortment of products during the latest program year. Additionally, Figure 3-8 shows the wide variety of brands ENERGY STAR refrigerators available for purchase in sampled stores.

Figure 3-8. Total Refrigerator Brands Available by City (Sampled Stores)



Outcome II

Overall, market share of energy-efficient refrigerators continues to grow year over year. As shown in Figure 3-9, the overall market share of energy-efficient refrigerators rose by 5.6% in 2021 from 2020. The market share for ESME-qualified refrigerators grew by 11.6%, while the share for ETA tier models rose 4.6%. Incentivized refrigerator sales grew between 2020 and 2021 from 10% to 26.1% as seen in Figure 3-10 below.

Figure 3-9. Participating Retailer Sales of Refrigerators by ENERGY STAR Tier 2017 – 2021

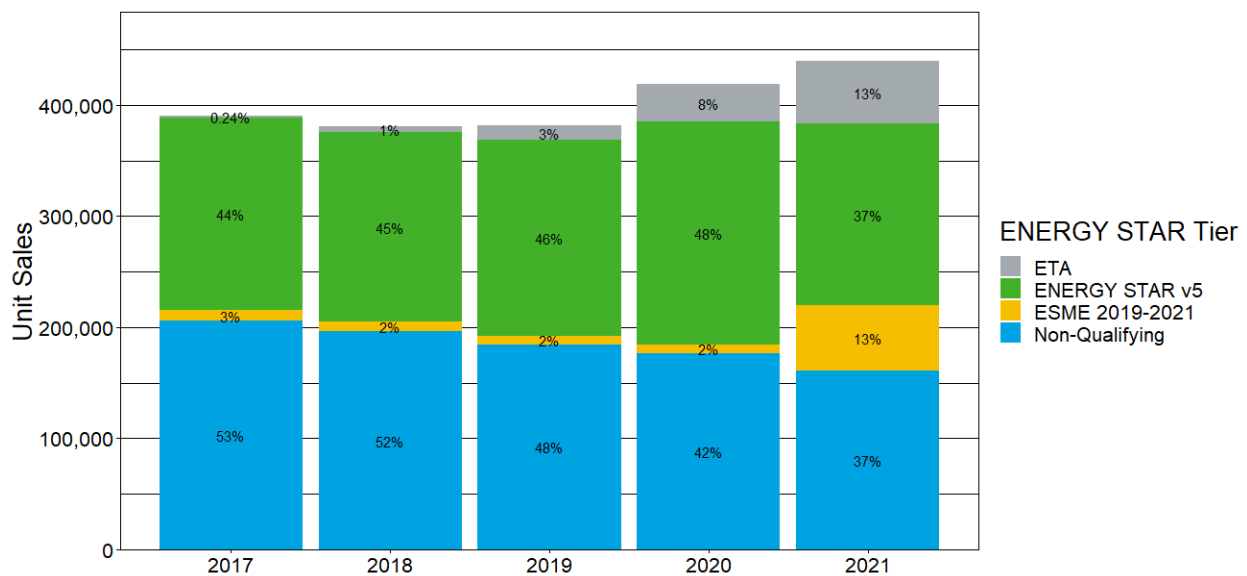
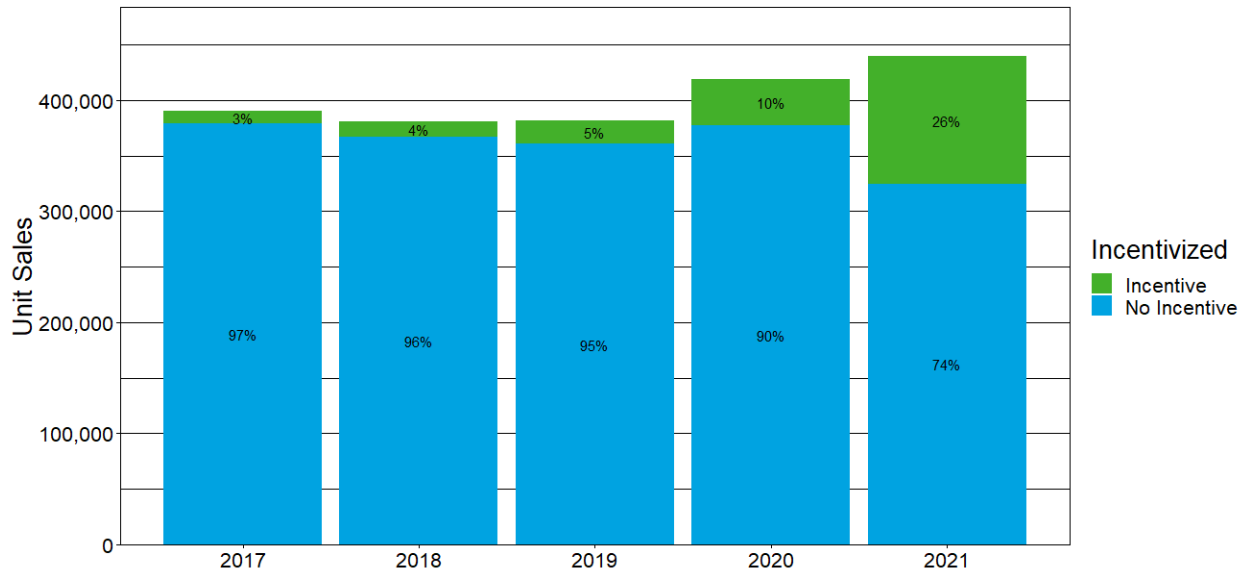


Figure 3-10. Participating Retailer Refrigerator Sales by RPP Incentive 2017 – 2021



Outcomes III & IV

An analysis of NEEA's influence¹⁰ on ENERGY STAR specifications and test procedures for refrigerators and freezers found NEEA influenced adoption of the ETA, and ESRPP sales may have driven manufacturers to develop qualifying models. The analysis found that discussions between NEEA and the U.S. EPA regarding opportunities and challenges associated with advanced adaptive compressors were a driving force behind ENERGY STAR creating the ETA award for refrigerators and freezers.

Refrigerators Summary

Refrigerators represented one of the most successful segments of the RPP program in 2021.

- Advertisements for energy-efficient refrigerators were consistently highlighted by participating retailers. Both participating and nonparticipating retailers in the Northwest retain a wide selection of readily available refrigerators to purchase.
- Market share of energy-efficient refrigerators and incentivized refrigerators continued to climb among participating retailers in 2021.
- Further, a third-party evaluation found that NEEA and its partners supported the adoption of an ETA for advanced adaptive compressors used in refrigerators and freezers.

This evidence suggests that the program is making progress on Outcomes I through IV for refrigerators.

¹⁰ Apex Analytics. Refrigerator and Freezer Influence Assessment and Baseline Review. NEEA Report #E22-447. June 28, 2022.

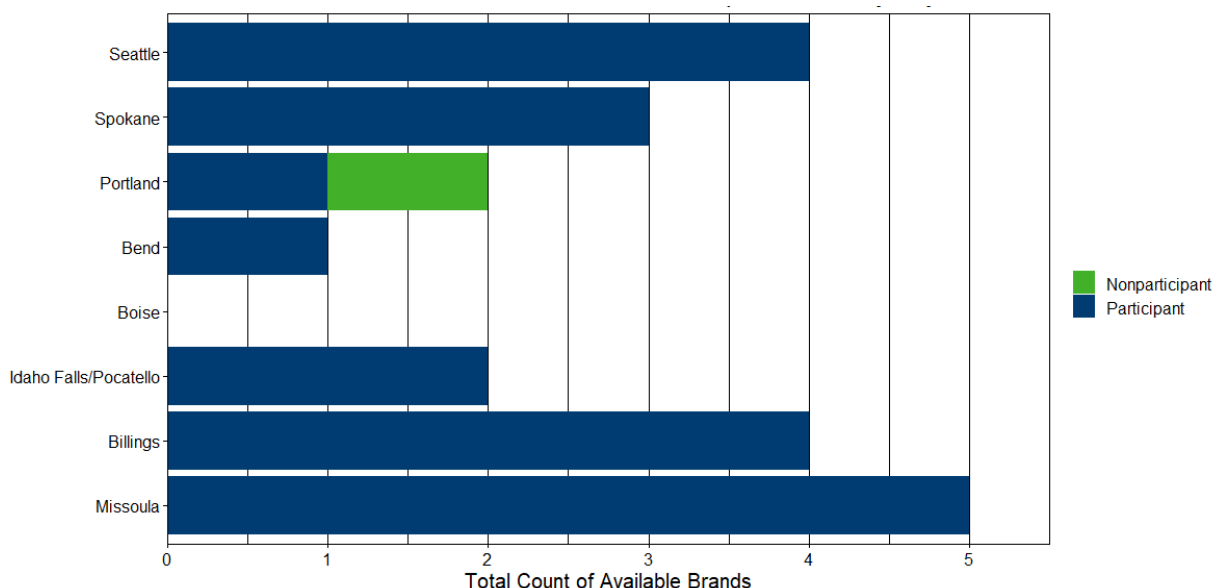
3.2.5 Room Air Conditioners

In addition to providing incentives for qualifying room air conditioners in 2021, NEEA was involved in the development of ESME criteria for room air conditioners. Nearly all room air conditioners larger than 8000 BTUs that were sold were incentivized by the RPP program. This group includes room air conditioners with a Version 4 ENERGY STAR rating or those with an ESME rating. Conversely, nearly all room air conditioners smaller than 8000 BTUs sold by participating retailers were models not incentivized by the program.

Outcome I

Room air conditioner advertisement examples were featured in spring and summer quarterly updates from participating retailers. While all participating retailers had a variety of products for consumers to choose from (Figure 3-11 below), TRC found a lack of nonparticipant retailer product assortment. This is likely due to the fact that TRC collected data on product assortment during the winter, and therefore it is likely not reflective of the market during the spring and summer months.

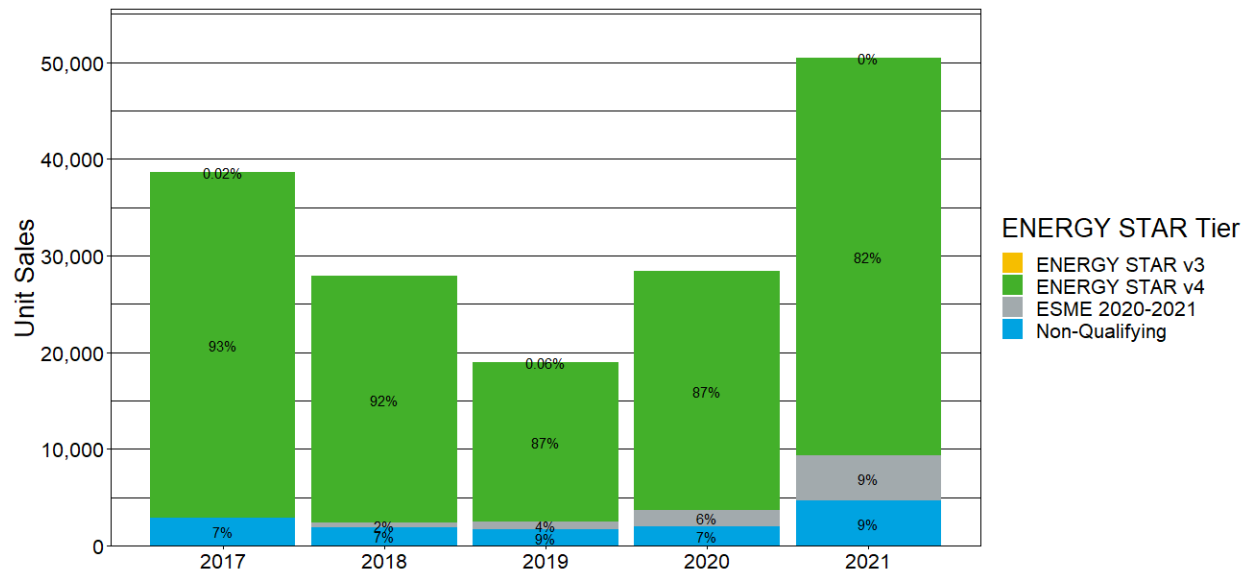
Figure 3-11. Room Air Conditioner Brands Available by City (Sampled Stores)



Outcome II

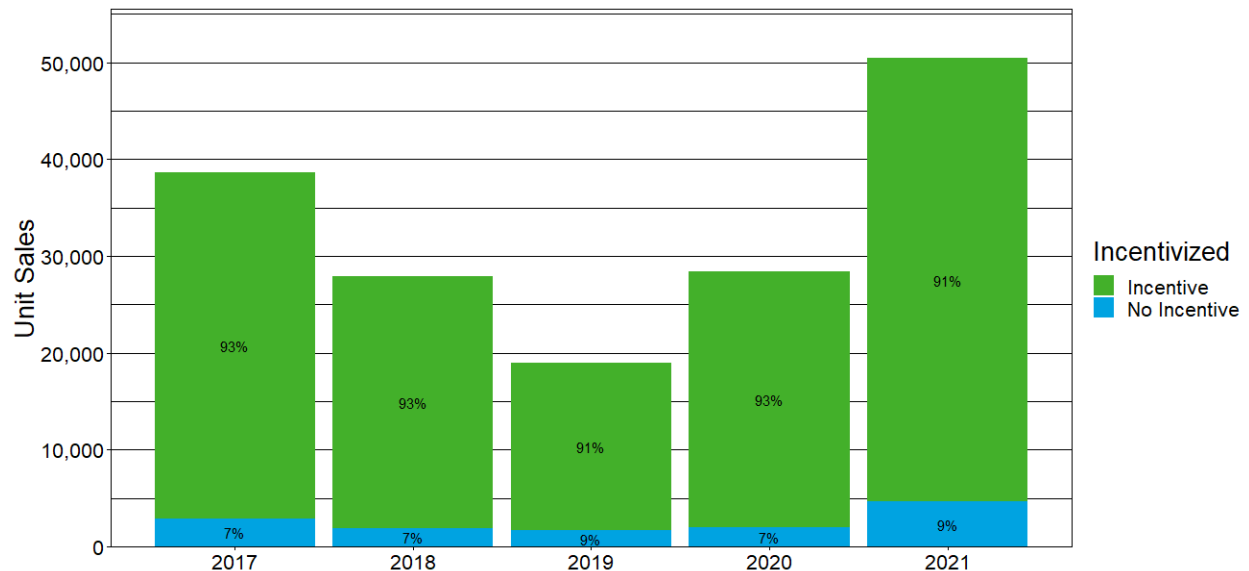
The market share for energy-efficient room air conditioners remained high in 2021, with over 90% of the 8000+ BTU market having an ENERGY STAR rating. Figure 3-12 below shows that the market share of medium and large ENERGY STAR-qualified room air conditioners has been consistent for multiple years, despite substantial changes in overall sales. Importantly, though, the share of ESME models has been increasing. The market share of incentivized room air conditioners has also remained consistent, as shown in Figure 3-13 below.

Figure 3-12. Participating Retailer Sales of Room Air Conditioners >8000 BTUs by ENERGY STAR Tier 2017 – 2021



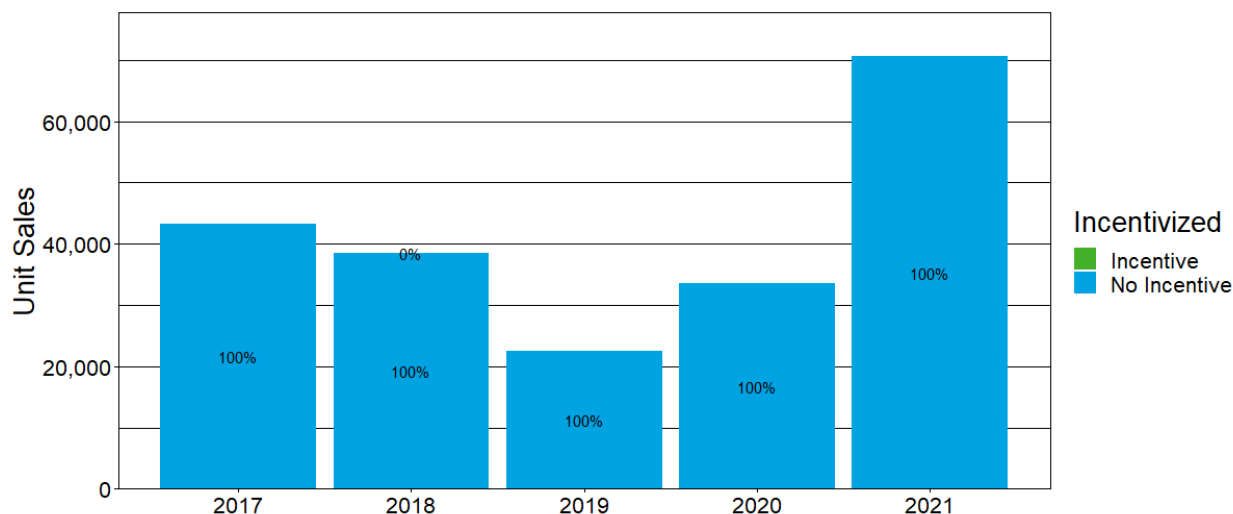
Note: Sales of ENERGY STAR v3 room air conditioners in 2021 were less than 0.01% of total room air conditioner sales but greater than zero in 2021. Sales of ENERGY STAR v3 room air conditioners in 2018 and 2020 were zero.

Figure 3-13. Participating Retailer Room Air Conditioners >8000 BTUs Sales by Incentives 2017 – 2021



When looking at small room air conditioning units (Figure 3-14 below), sales of ENERGY STAR-qualified products remained virtually nonexistent. Only two units sold in this category of room air conditioners in the history of the program have qualified for an incentive.

Figure 3-14. Participating Retailer Small Room Air Conditioners <8000 BTUs Sales by Incentives 2017 – 2021



Note: Less than 0.01% of small room air conditioner sales were incentivized in 2018. Zero were incentivized in 2017, 2019, 2020, and 2021.

Outcome III

A previous analysis of NEEA and other efficiency organizations' influence on the development of the room air conditioner ESME specification conducted by TRC¹¹ found NEEA and its partners influenced the development of the specification.

Room Air Conditioners Summary

It is difficult to ascertain the effect of the RPP program's influence on participating retailers' advertising of room air conditioners, given its seasonality.

- Sampled stores of participating retailers showed a good variety of products, given the time of year website data were collected (winter) and the relatively small size of the market.
- The majority of the sales of medium and large air conditioners are incentivized products, and the market share of energy-efficient room air conditioners is gradually increasing.
- Further, a third-party evaluation found that NEEA and its partners influenced the development of an ESME specification for room air conditioners.

Given these factors TRC believes that the program is making progress on all outcomes for room air conditioners.

3.2.6 Freezers

In 2021, NEEA incentivized freezers with a Version 5 ENERGY STAR rating and those with an ESME rating. Further, as described in section 3.4.2, NEEA and its partners contributed to

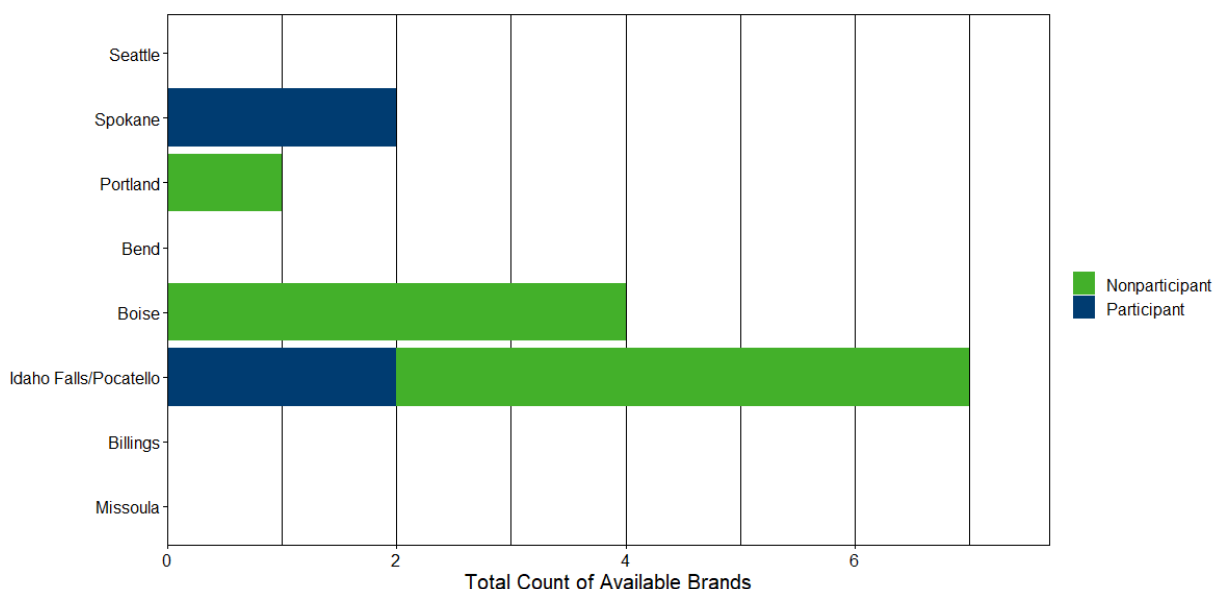
¹¹ TRC. Room Air Conditioners: ENERGY STAR Most Efficient Influence Evaluation and Baseline Assumptions Review. NEEA report #E22-438. February 16, 2022.

development of the ENERGY STAR ETA for refrigerators and freezers with advanced adaptive compressors, as well as the associated optional test procedure.

Outcome I

Freezer availability appeared to be limited to a few cities in the sampled data. Figure 3-15 below shows most sampled participating and nonparticipating retailers did not have many freezers available for immediate in-store purchase, constricting product availability. Freezers' lack of immediate availability for in-store purchases and the availability of fewer brands to choose from, combined with little to no focus on advertising of freezers during participating retailers' quarterly updates to Program Sponsors, suggest the market is not making progress with respect to Outcome I.

Figure 3-15 Freezer Brands Available by City (Sampled Stores)



Outcome II

Market share for both energy-efficient freezers and freezers qualifying for incentives increased in 2021 from 2020, as shown in Figure 3-16 and Figure 3-17. The steep increase in total freezer sales in 2020 resulted in a large market share loss for energy-efficient freezers, which recovered slightly in 2021. Given the recent variation in total sales, it is difficult to predict if market share of energy-efficient freezers will fully recover.

Figure 3-16. Participating Retailer Sales of Freezers by ENERGY STAR Tier 2017 – 2021

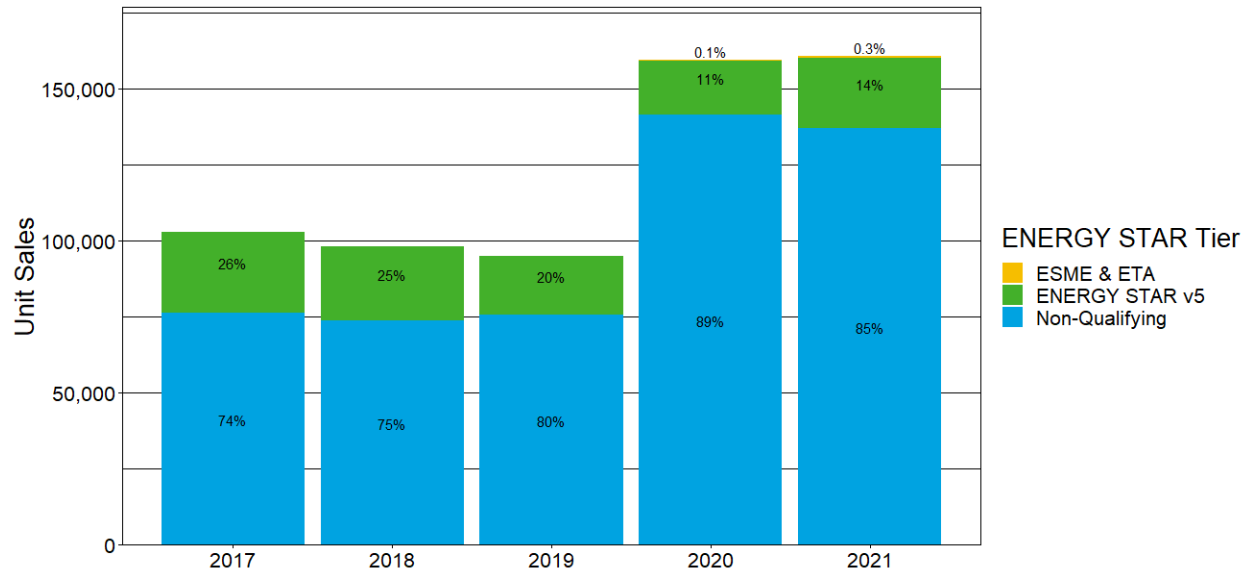
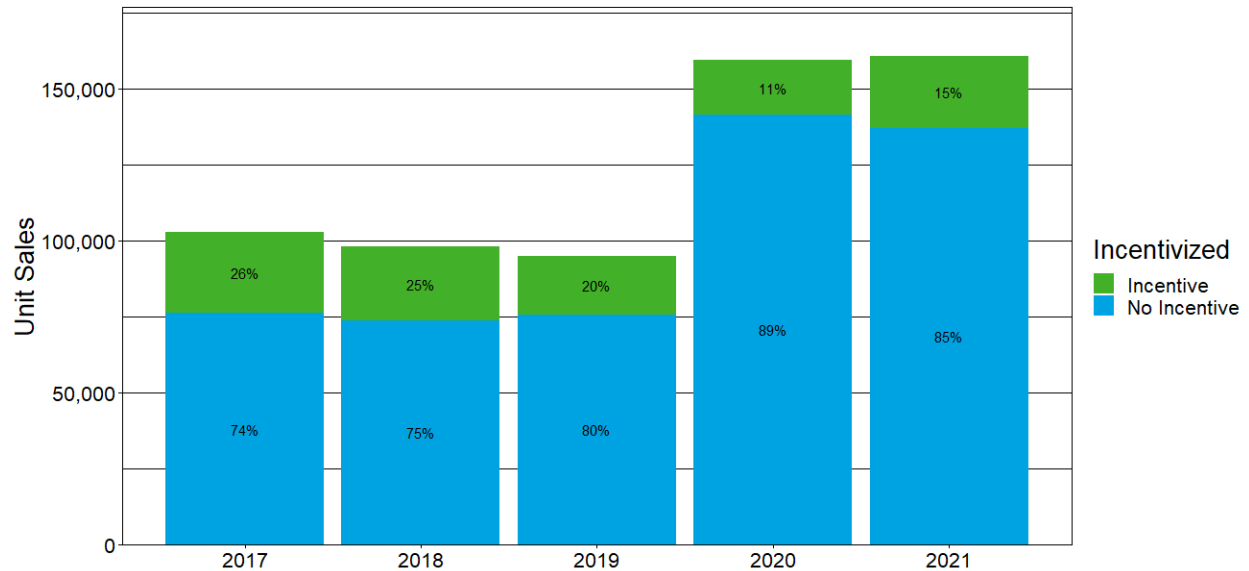


Figure 3-17. Participating Retailer Sales of Freezers by RPP Incentive 2017 – 2021



Outcomes III & IV

A third-party assessment found that NEEA and its partners influenced the adoption of an ETA for refrigerators and freezers along with an associated optional test procedure, and, further, that this work may have driven manufacturers to develop qualifying models.¹² The analysis found that discussions between NEEA and the U.S. EPA regarding opportunities and challenges associated with advanced adaptive compressors were a driving force behind ENERGY STAR

¹² Apex Analytics. Refrigerator and Freezer Influence Assessment and Baseline Review. NEEA Report #E22-447. June 28, 2022.

creating the ETA award for refrigerators and freezers. Freezers shared the same versions of ENERGY STAR-qualifying criteria as refrigerators and had the same updates.

Freezers summary

The RPP freezer market did not appear to make progress on its first MPI.

- Freezer advertisements were not featured in participating retailers' quarterly update presentations to ESRPP Program Sponsors. Further, TRC's review of participating and nonparticipating retailer websites in the Northwest did not find many varieties of freezers available for purchase.
- Market share of energy-efficient freezers did increase in 2021 from 2020 but has not recovered to its previous levels.
- NEEA contributed significantly to the ETA specification.

TRC concludes that, for freezers, the program is making limited progress on Outcome I, partial progress on Outcome II, and substantial progress on Outcomes III and IV.

3.2.7 Televisions

NEEA did not provide incentives for televisions through the ESRPP program in 2021. Instead, NEEA and its partners have invested considerable effort into developing testing procedures that better reflect real-world energy performance and more effectively differentiate efficient products.

Outcomes III & IV

A previous TRC review¹³ found that NEEA had a significant impact on the ENERGY STAR Version 9 revisions for televisions, contributing to more rigorous testing and efficiency metrics and facilitating discussion with the U.S. EPA and other stakeholders. NEEA had a lead role in developing the testing approach and efficiency metrics for the version specification. Additionally, NEEA had a supporting role in the adoption of test methods.

TRC concludes that the program is making progress in the televisions market with respect to Outcome III and Outcome IV.

¹³ TRC. Televisions: ENERGY STAR Version 9 Specification Influence Assessment and Baseline Assumptions Review. NEEA Report #E22-437. February 16, 2022.

4 Extrapolation Analysis

4.1 Background

As part of the RPP program, NEEA extrapolates the market share of program-qualified products among participating retailers to sales among nonparticipating retailers in the Northwest in order to understand the program's full impact on the appliance market. This extrapolation approach is based on the assumption that, in the short term, changes in stocking and assortment of RPP products by participating retailers will induce similar changes in stocking and assortment of RPP products among nonparticipating retailers due to competitive pressures. In the long term, the program will influence manufacturers (through retailer buying patterns) to increase production and design of energy-efficient products available to consumers, as well as introducing new standards that manufacturers must meet to sell their products and new ENERGY STAR specifications for products that manufacturers can design to in order to qualify for the label.

TRC evaluated NEEA's assumption that RPP's influence on participating retailer sales similarly impacts nonparticipating retailer sales. To do this, TRC examined economic literature around competition in retail markets to classify the type of competition faced by appliance retailers in the NEEA region and its implications for competitive pressures to drive spillover into nonparticipating retailers. To provide an empirical basis for the assessment, TRC collected online data from participating and nonparticipating retailers' websites from eight cities across the NEEA region (Idaho, Montana, Oregon, and Washington) to examine price and brand differences between the retailers. TRC evaluated the RPP program by looking for direct and indirect evidence that contradicts or disproves the assumptions made for NEEA's market extrapolation approach.

4.2 Economics Literature Review

TRC conducted a literature review to assess whether prevailing economic theory supports NEEA's extrapolation assumptions. TRC chose three sources for their relevance within the industrial organization field of economics. Industrial organization theory states that, as the quality of goods increase, consumers become less willing to settle for a product that does not meet their needs. And yet, they spend less time searching for goods because they know that all goods available meet a high standard and it is not necessary to conduct extensive research to determine which products are high quality and which are low quality. As such, firms (retailers) must compete harder for consumer attention in order to win a sale. Firms compete on selection and price of goods, so more product selection and lower prices are how they win more sales. For the literature review, TRC focused on three industrial organization papers that examine consumer choice within markets. Two, Anderson and Renault (1999)¹⁴ and Wolinsky (1986)¹⁵,

¹⁴ Anderson, Simon P., and Regis Renault. "Pricing, product diversity, and search costs: A Bertrand-Chamberlin-Diamond model." *The RAND Journal of Economics* (1999): 719-735.

¹⁵ Wolinsky, Asher. "True monopolistic competition as a result of imperfect information." *The Quarterly Journal of Economics* 101.3 (1986): 493-511.

are foundational papers in the field. The other, Moraga-González and Sun (2023)¹⁶, is a contemporary contribution from a major journal.

The market for RPP products resembles two types of markets, oligopoly and monopolistic competition. Oligopoly is when few companies exert significant control over a given market. Characteristics include few firms, high barriers to entry and exit, and that firms are price setters. Monopolistic competition is defined as having many producers competing against one another but selling products that are differentiated from one another (by factors such as branding and quality) and that are not perfect substitutes for one another. Characteristics of this market type include consumers' perception of non-price differences among competitors' products, few barriers to entry and exit, and a substantial amount spent by each company on advertising.

TRC felt that the consumer products market more closely reflects oligopoly than monopolistic competition based on the interdependence of firms. In oligopoly, firms are so large that a pricing decision made by one of the firms affects other firms' pricing decisions. In a monopolistic competition scenario, firms do not respond to other firms' pricing decisions. This difference was the deciding factor to view the market as an oligopoly.

TRC made the following assumptions in the literature review: (1) TRC associated a higher efficiency product with an increase in quality for the consumer, and (2) TRC assumed that product research costs to the consumer are minimal, since internet searches allow for immediate price and stock comparison between retailers.

Based on TRC's assumptions, TRC finds NEEA's assumption that ESRPP's influence extends beyond the participating retailers to be plausible within the prevailing economic theory. With an increase in the quality of goods, consumers arrive at a purchasing decision faster, meaning they will compare fewer goods for purchase overall. Stores must stock a higher quality of products to meet the new consumer purchasing decision demands. Participating retailers also have a significant market share of overall sales of ESRPP-incentivized products within the NEEA region. Since a consumer can compare and shop across participating and nonparticipating retailers with ease, nonparticipating stores are incentivized to hold stock and prices similar to their participating rivals. These factors incentivize nonparticipating retail stores to match pricing and availability of RPP goods to be competitive with participating retailers.

4.3 Retailer Data Characteristics & Collection Assumptions

TRC collected data from participating and nonparticipating retailers in order to assess whether pricing and product assortment were dissimilar in a manner inconsistent with NEEA's extrapolation assumption. TRC collected data through internet searches using Google® to identify retailers in the following cities: Seattle, Spokane, Portland, Bend, Boise, Idaho Falls/Pocatello, Billings, and Missoula. TRC chose cities based on their population size and distance from one another in order to examine any differences across the four Northwest states. TRC then used retailer websites to identify pricing and assortment data for ESRPP product

¹⁶ Moraga-González, José L., and Yajie Sun. 2023. "Product Quality and Consumer Search." *American Economic Journal: Microeconomics*, 15 (1): 117-41.

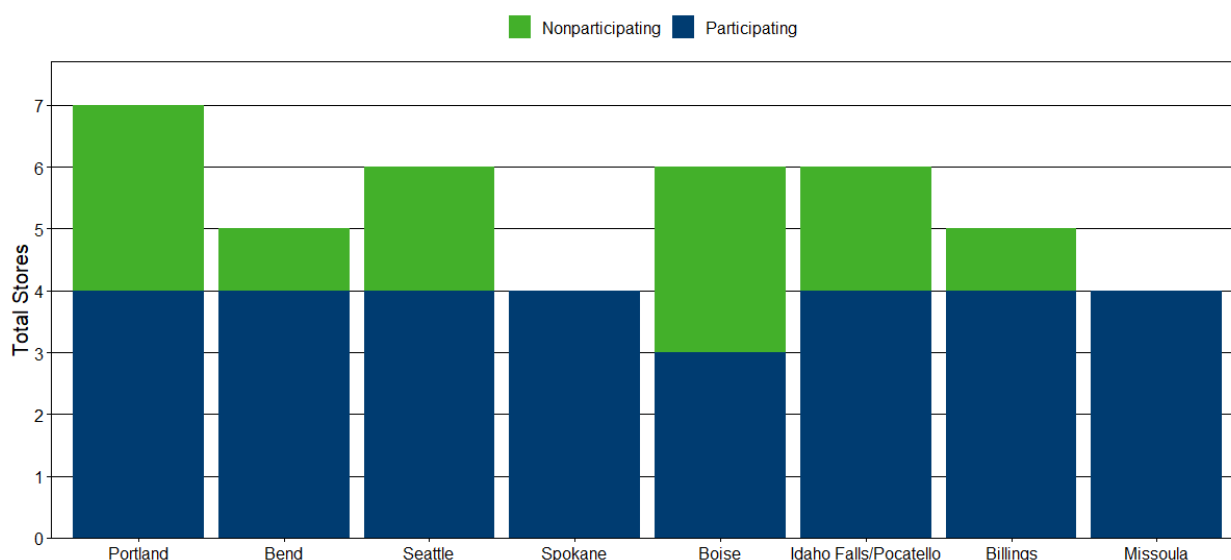
categories. TRC attempted to find at least one participating store from each company in each city and to find at least one nonparticipating retailer per city.¹⁷

Nearly all cities had at least one store from each participating retailer. All participating stores had products and price information available for inclusion in the data set. In cities with multiple participating stores from the same company, TRC only selected one store based on proximity to the city's downtown area. This was to cover the largest population likely to shop at that store.

TRC required that nonparticipating stores included in the data must sell new goods. TRC did not consider used appliance and repair shops or rent-to-own stores and only included a nonparticipating retailer if their in-store stock was available online. Most had a "buy now"-type ribbon that allowed TRC to consider it an in-store product. TRC also used a posted price as a proxy for in-store designation since websites used a "contact store for details" ribbon if a product was out of stock.

TRC examined 43 individual stores to collect retail data, as shown in Figure 4-1 below. Of these, 31 were participating stores and 12 were nonparticipating stores.

Figure 4-1. Total Retailers Sampled by City



TRC collected data from these selected retailers based on the following parameters and assumptions.

1. All products included were ENERGY STAR-qualified.
2. Products were available in-store.
3. TRC documented the listed regular price for each good, not the discounted ("on sale") price.
4. TRC selected only one participating store per participating retailer per city.

¹⁷ TRC was unable to identify a nonparticipating retailer with a website that provided both pricing and availability in Spokane and Missoula.

5. In the case of some nonparticipating retailers, it is unknown if the listed price was the manufacturer's recommended retail price or a sale price.
6. Nonparticipating stores were strictly local retailers and not other national chain stores. Local retailers were selected in order to assess the reach of the RPP program. Nonparticipating national chains would already be buying comparable products to participating retailers by the logic of the literature review.

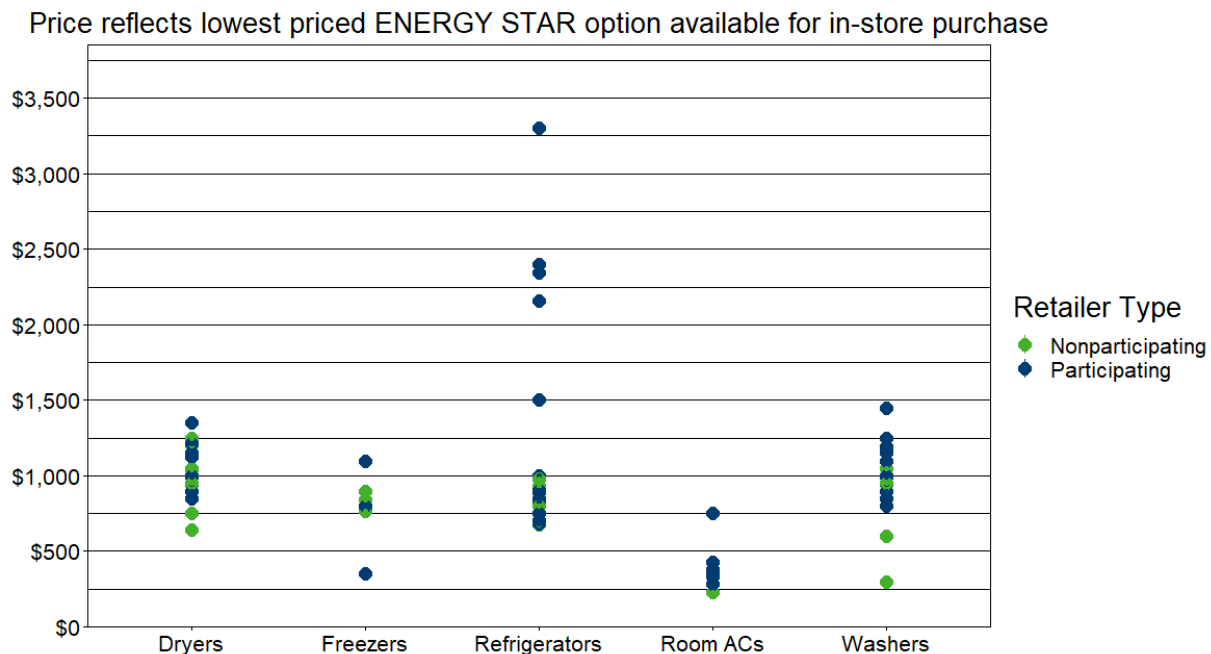
One of the limitations of these parameters was TRC did not explore whether another participating store from the same company and same city had stock available that the selected store did not. One of the participating retailers also appeared to use home delivery rather than in-store pickup in highly urbanized areas. This would introduce bias against participating stores in the data collection process, as items available for immediate pickup at a different location in the city would not count as being immediately available. For some participating retailers, ESRPP-supported product groups are not in stores but in a warehouse in the same city with same day pickup options. However, by TRC's classification, this still would not count as being available for immediate purchase. TRC only examined local retailers because nonparticipating big box retailers would already be operating similarly to participating retailers by nature of being in an oligopoly. Looking at local retailers only gives insight into how broad the market effects from the RPP program are felt. Lastly, during the data collection process, TRC used ENERGY STAR-rated products as a proxy for the RPP program. While not all ENERGY STAR products are incentivized by the RPP program, they are generally more energy-efficient than non-ENERGY STAR-qualified products.

4.4 Analysis

4.4.1 Pricing Analysis

During the data collection process, TRC documented the lowest-priced ENERGY STAR-rated good for each RPP product category for each retail store. Figure 4-2 shows the range of observed prices for each product category for participating and nonparticipating stores. The main mass of observations for the two groups coincides quite closely. If anything, the participating retailers demonstrate outliers on the high-price end. High minimum prices for nonparticipating retailers would be consistent with them not competing with participating retailers, but TRC saw no evidence of this.

Figure 4-2. Price Ranges of ENERGY STAR-Rated Goods



In addition, TRC conducted an analysis of variance (ANOVA)¹⁸ between participating and nonparticipating stores in each product category to determine if there was a statistically significant difference in prices between the two. TRC found that there was no statistically significant difference in average prices between participating and nonparticipating retail stores across all RPP categories. This supports NEEA's assumptions regarding market forces that would enable RPP influence on nonparticipating stores.

4.4.2 Brand Analysis

During the data collection process, TRC also examined brands across RPP products that were ENERGY STAR-rated and available for immediate in-store purchase. In general, TRC found that most brands overlapped between participating and nonparticipating retailers. Brands that were found entirely in either participating or nonparticipating retailers were not widespread across RPP categories. This, as with the pricing analysis, is consistent with competitive pressures between retailers and consistent with NEEA's short- and long- term extrapolation assumptions.

TRC found different levels of market participation between participating and nonparticipating retailers in the different RPP product categories. For refrigerators, clothes washers, and clothes dryers (Figure 4-3), TRC's data shows heavy participation from both participating and nonparticipating retailers with respect to total brands available by category. In other words, both stocked a wide variety of products to cater to consumer tastes.

¹⁸ ANOVA is a statistical technique to test whether the difference in average values between different groups is statistically significant based on the ratio of variation within groups to the variation within the whole sample.

For freezers and room air conditioners, TRC found that market participants were almost entirely either participating or nonparticipating retail stores, as shown in Figure 4-4. For room air conditioners, there was only one nonparticipating store that had a unit available for immediate purchase. Neither participating nor nonparticipating retailers had a freezer available for immediate in store purchase in most cities as well. The lack of competition within these RPP categories makes it difficult to validate NEEA's assumption that competitive pressures lead nonparticipating retailers to match participating retailer pricing and model assortment.

Figure 4-3. Total Dryer, Washer & Refrigerator Brands Available in Sampled Stores by City

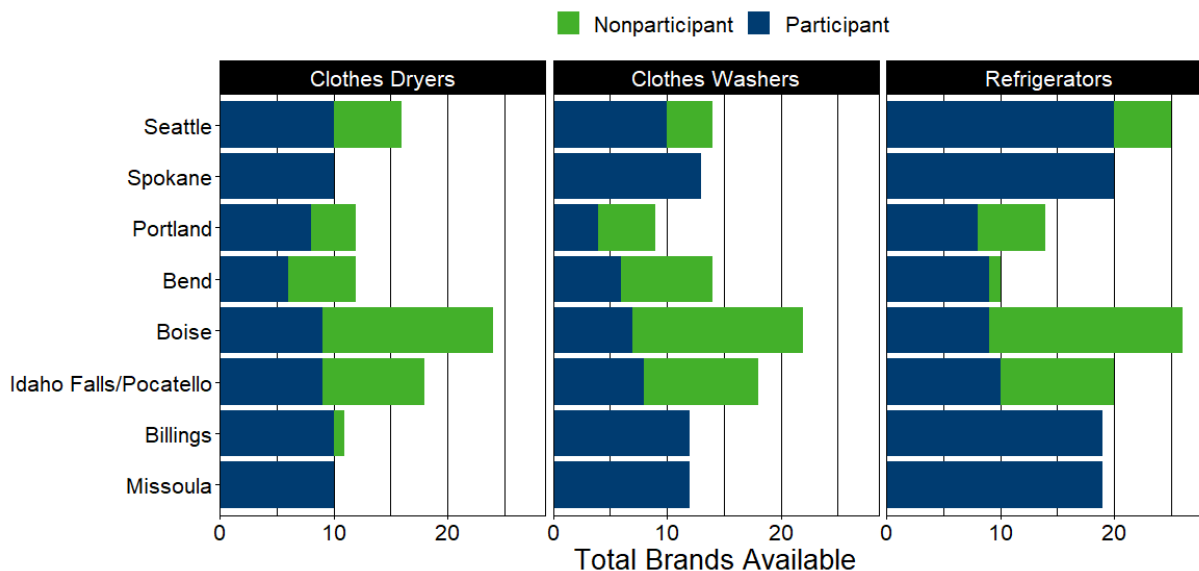
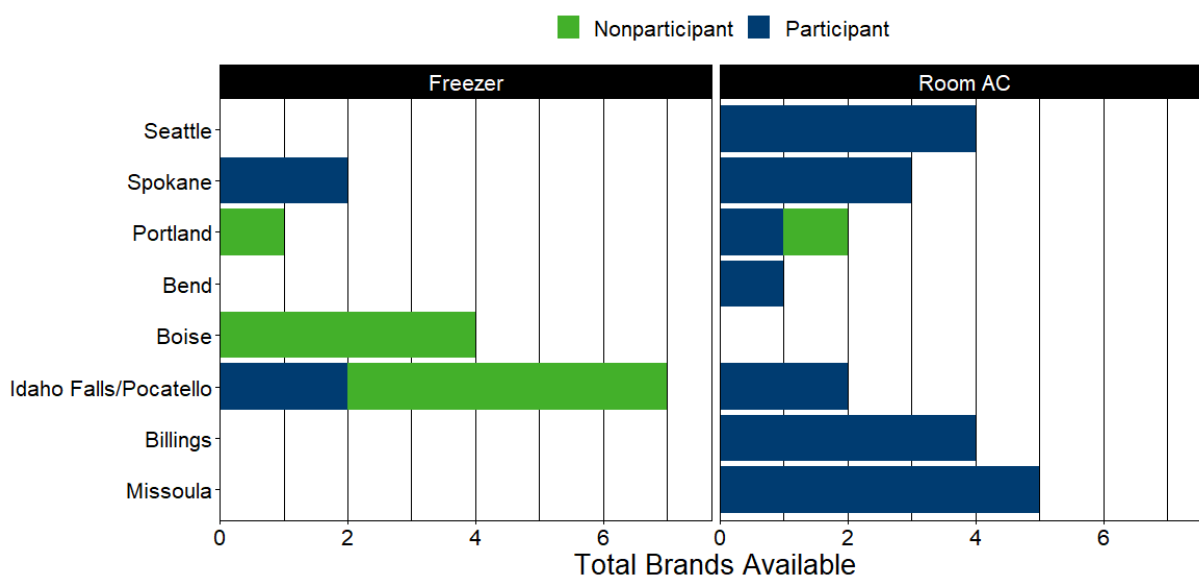


Figure 4-4. Total Freezer & Room Air Conditioner Brands Available in Sampled Stores by City



It should be noted that in the case of room air conditioners, TRC did not collect data during the spring and summer seasons when most room air conditioners are purchased. This lack of

product availability among nonparticipating retailers might actually be a reflection of the seasonality of the product rather than a lack of competition in the market. It is unclear why fewer freezer brands are represented in the data. While the market for freezers (that is, the combined number of units sold) might not be as large as that of other RPP products, the market size difference is not sufficient to explain the smaller in-store variety available to consumers.

4.5 Conclusion

TRC believes the literature review and RPP product availability and pricing data provide evidence consistent with NEEA's extrapolation assumption that competitive pressures lead nonparticipating retailers to match participating retailers' pricing and assortment of qualified product models. While TRC cannot verify that the RPP program is causing nonparticipating retailers to increase their stocking and assortment of ENERGY STAR-qualified products or causing manufacturers to offer more ENERGY STAR-qualified products across the market, TRC did not find evidence to suggest NEEA's extrapolation assumptions are invalid. Based on pricing similarities and brand availability, the refrigerator, clothes washer, and clothes dryer categories are meeting the assumption criteria. Freezers and room air conditioners do not have the same levels of market penetration of energy efficient options between participating and nonparticipating retailers. TRC concludes that NEEA's RPP program likely has some effect on nonparticipating retailers.

NEEA might also want to explore the effects of the program on manufacturers that are not primarily purchased by participating retailers. Manufacturers are also in a competitive oligopoly; by the same reasoning that retailers must purchase similar products, so must manufacturers produce them. Manufacturers whose products *are not* primarily bought by participating retailers must match product offerings that *are* produced by manufacturers selling to participating retailers, and that includes higher efficiency (quality) products along with similar pricing patterns.

5 Market Shocks Analysis

5.1 Background

Consumers and markets faced great hardship the past few years due to COVID-19, inflation, supply chain issues, and other challenges that have disrupted the global economy. In economics, these events are defined as “shocks,” or an unexpected event that has a significant impact on the economy. These shocks can have effects on consumer behavior that lead to either positive or negative changes in sales.

TRC was interested in assessing two issues related to shocks with respect to the RPP program in the Northwest: (1) TRC examined whether there were differences in sales of RPP products — coinciding with shocks— that were large enough to be observed above the typical month-to-month variation. (2) In cases where there was a shock in sales, TRC examined the shock’s effect on the market share of RPP-qualified models.

For this report, TRC examined many potential sources of shocks and was able to identify two economic shocks with potential impacts on consumer purchasing behavior (weather events and stimulus checks), detailed in the following sections.

5.2 Methodology

TRC considered the following to have potential effects on the RPP program: COVID-19 waves, COVID-19 stimulus checks, temperature variation, housing, wages, air quality, energy prices, and unemployment rates. TRC examined whether any of these were responsible for a market shock on any RPP products within the NEEA region. Data from the Bureau of Labor Statistics and the Energy Information Agency showed no sudden event changes for housing, wages, and energy prices. Since these did not appear to have any sudden events that would affect sales of RPP products over the program time period, TRC removed these sources from consideration.

The remaining variables of interest experienced at least one shock over the program period (2016 – 2021) that may have affected market sales of RPP products. TRC took the event dates of these shocks and overlapped them with NEEA’s sales data to see if any of the shocks may have affected sales of RPP products. For COVID-19 waves, TRC collected data from the Center for Disease Control and John Hopkins University; temperature and air quality data came from the National Oceanic and Atmospheric Administration; and stimulus check date issuances came from the Internal Revenue Service.

5.3 Results

Of the hypothesized shocks, one had a clear effect on a single product group in NEEA’s RPP program and another possibly had an effect. Specifically, the heat dome event in June 2021 affected room air conditioner sales. Further, the issuance of COVID-19 stimulus checks may have had an effect on refrigerator sales, in particular the first of the three rounds of federal stimulus checks. While there were jumps in sales for other product categories, none of them could be specifically attributed to the shocks that TRC researched.

5.3.1 Heat Dome Event

June 2021 saw a massive spike in temperatures for the Portland and Seattle metropolitan areas. As shown in Figure 5-1 below, temperatures reached up to 116°F over multiple days. This event led to significantly higher than normal sales of room air conditioners, as seen in Figure 5-2 below. However, market share of more efficient room air conditioners remained relatively stable over the event period. There was a slight dip in the sales of the more efficient tiers of room air conditioners, but they recovered a couple of months later once participating retailers restocked. This suggests there was sufficient stocking of efficient models for people to purchase, even in larger quantities. So, while there was a sales shock, this did not translate into a higher or lower market share for more efficient room air conditioners.

Figure 5-1. Temperature Readings 2020 – 2021

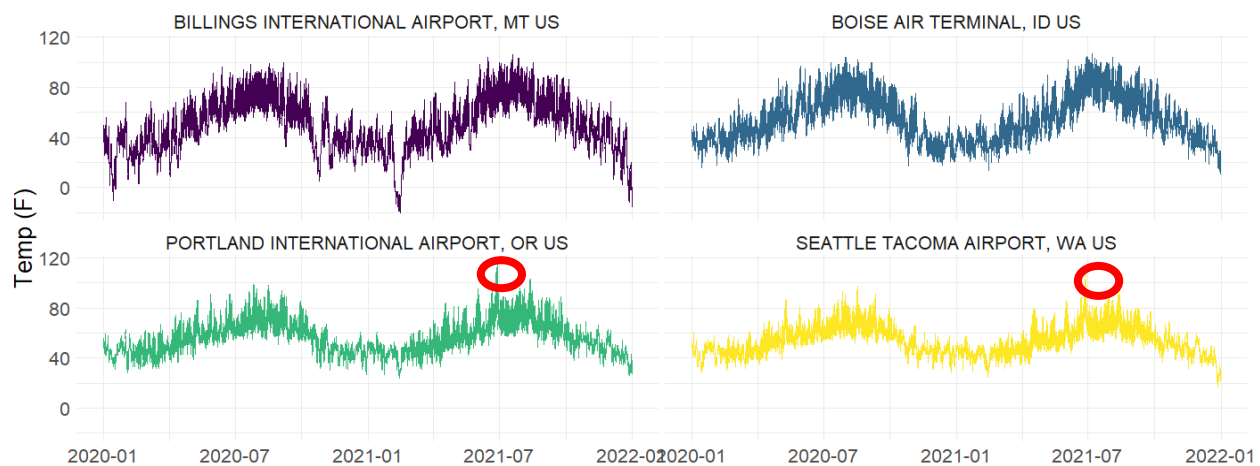
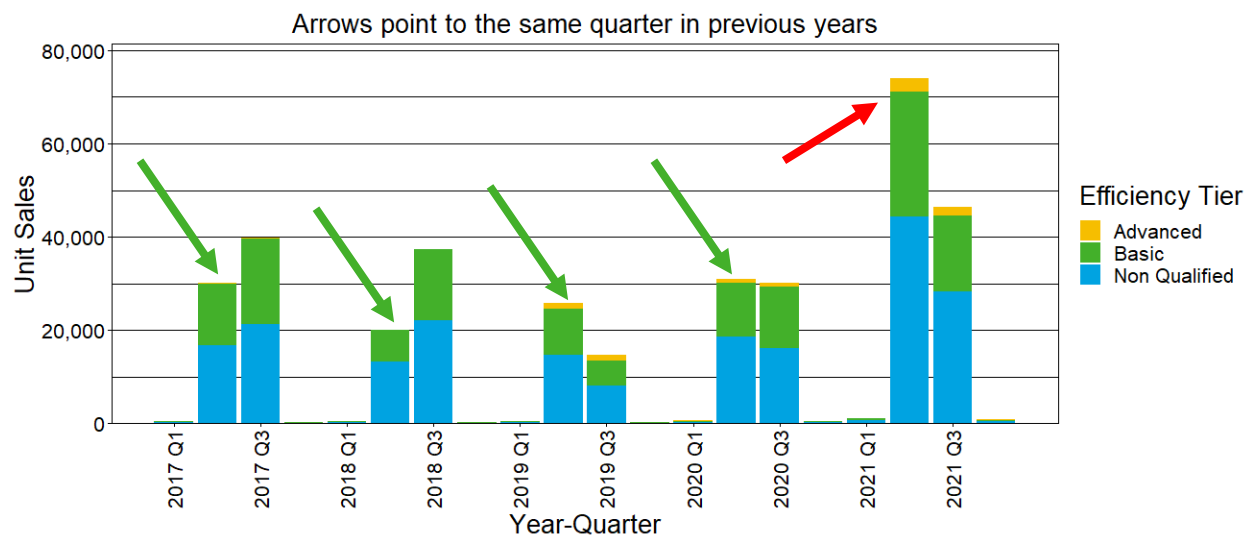


Figure 5-2. Quarterly Room Air Conditioner Sales by Efficiency Tier



5.3.2 Stimulus Checks

Stimulus checks may have affected sales of refrigerators. Stimulus checks were issued on three different occasions, April 2020, December 2020, and March 2021 for \$1,200, \$600, and \$1,200 per person, respectively. Refrigerator sales jumped concurrently with the issuance of stimulus checks, as shown in year-over-year comparisons for second quarter 2020 sales in Figure 5-3, fourth quarter 2020 sales in Figure 5-4, and first quarter 2021 sales in Figure 5-5. No other product category, including freezers, experienced a significant jump in sales. While there was variation quarter-to-quarter, the jumps for the first and second quarters with stimulus issuances were higher both compared to the previous quarter and to the same quarter the previous year. Sales of refrigerators were also higher in subsequent periods in which stimulus checks were issued when compared to the same period in previous years. However, Figure 5-6 shows the annual sales of refrigerators as a whole was already trending upward before the issuance of stimulus checks. Given the annual variation between quarters and rising sales trends for the segment overall, it is difficult to determine with certainty whether the federal stimulus was a key contributor to this difference.

Figure 5-3. Quarter 2 Participating Retailer Refrigerator Sales by Efficiency Tier

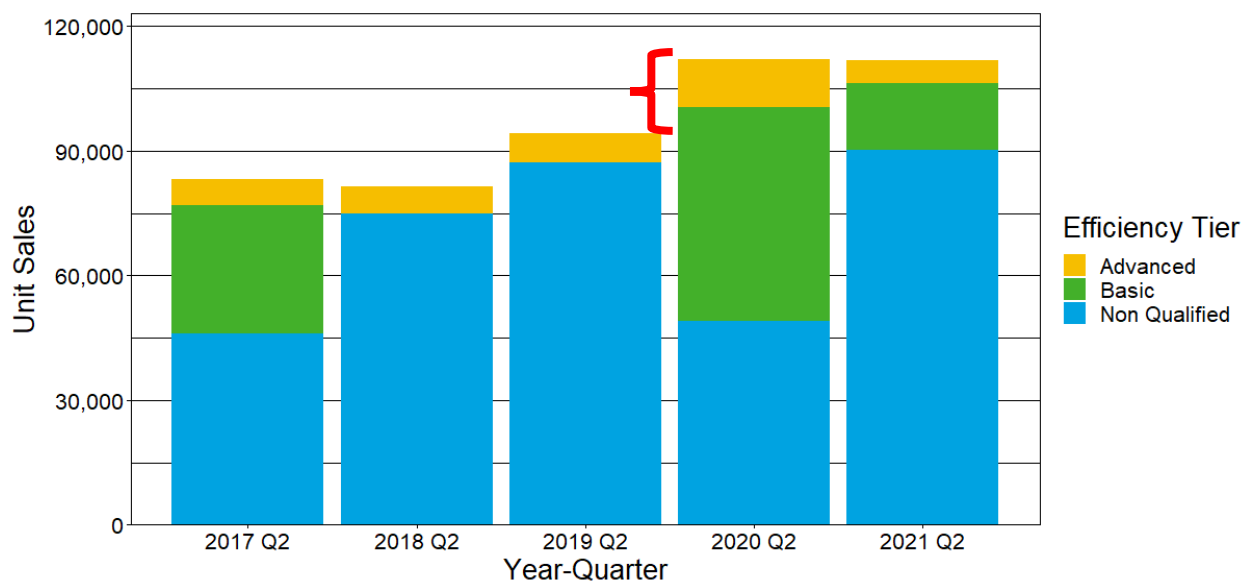


Figure 5-4. Quarter 4 Participating Retailer Refrigerator Sales by Efficiency Tier

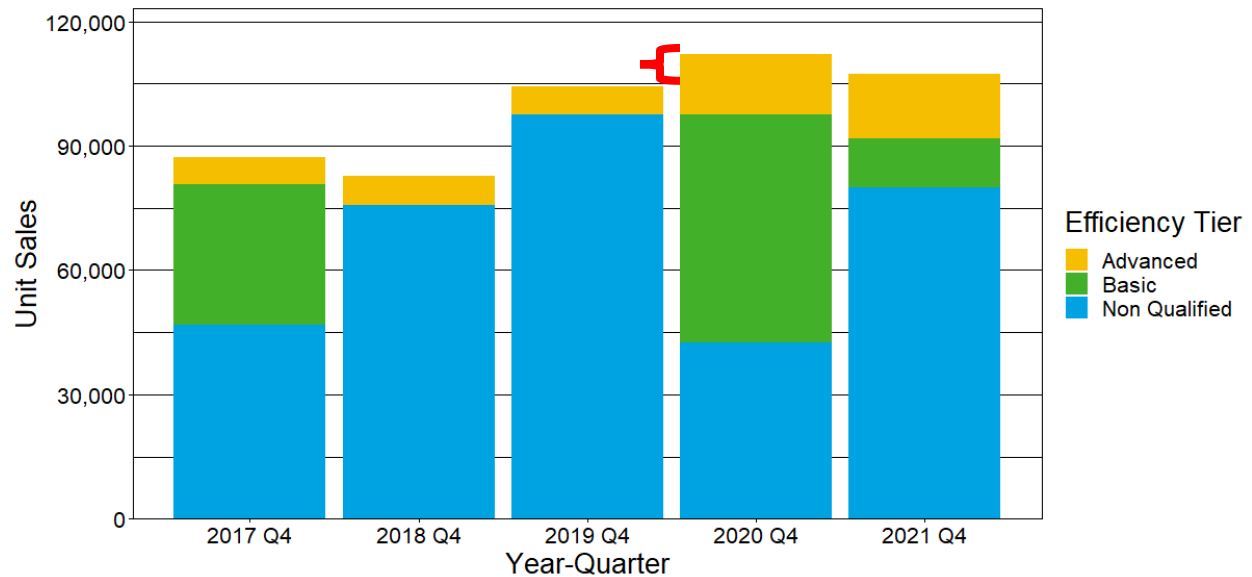


Figure 5-5. Quarter 1 Participating Retailer Refrigerator Sales by Efficiency Tier

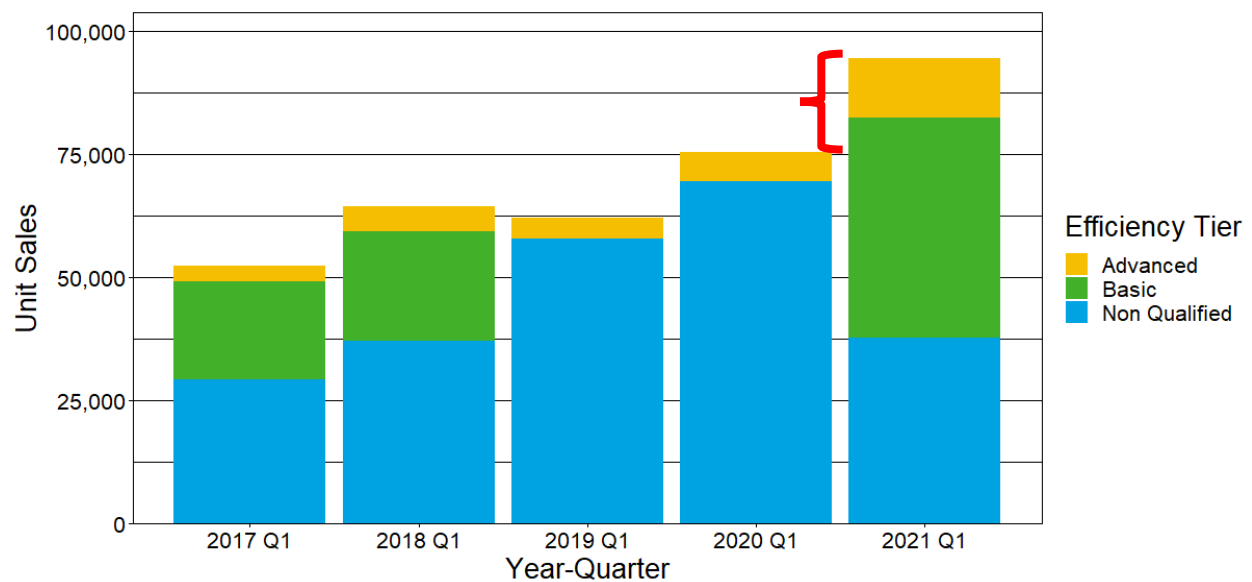
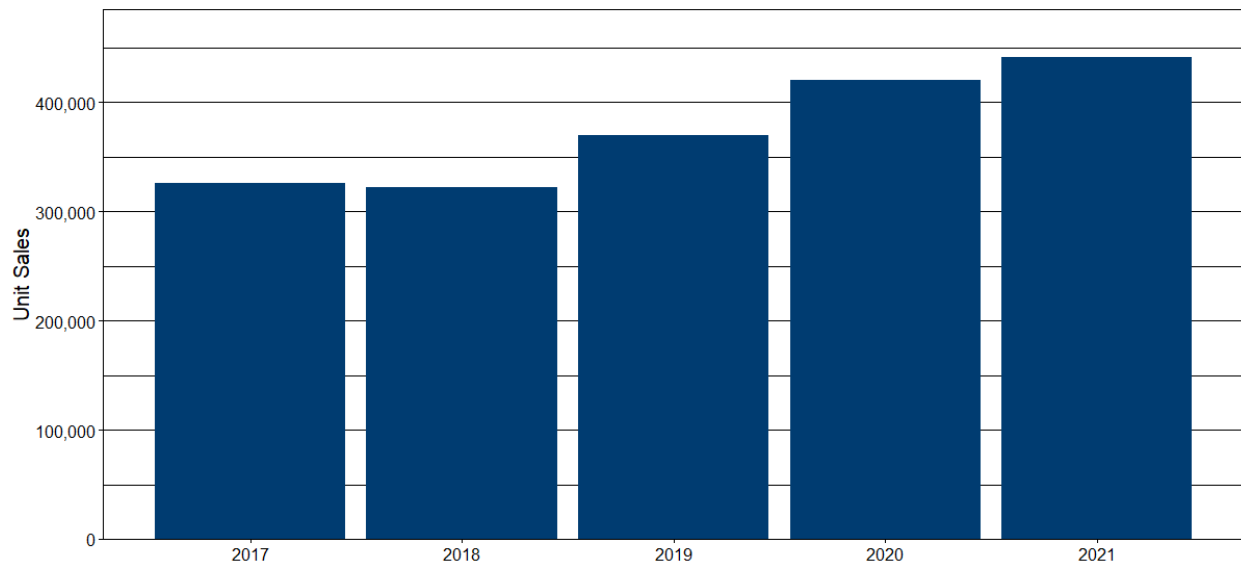


Figure 5-6 Annual Participating Retailer Refrigerator Sales – All Tiers



5.4 Conclusion

After considering many sources, TRC found potential effects on sales of products in NEEA's region from two market shocks. TRC found that sales of room air conditioners increased around the heat dome event in 2021. However, market share of more efficient products remained the same. Stimulus checks issued during the COVID-19 pandemic may have affected sales of refrigerators. TRC identified jumps in sales that were higher than in the same quarter in previous years. However, the overall sales data were quite variable and already trending upward, so it is difficult to say if the stimulus checks were responsible for the increase.

6 Conclusions & Recommendations

This section compiles the conclusions and recommendations derived from the findings of this report. Recommendations are broken out by research objective, as listed below.

This second MPER for NEEA's RPP program had four key research objectives:

1. Review the updated NEEA RPP logic model.
2. Document activities and outputs and assess progress on applicable market progress indicators (MPIs) for each product in NEEA's RPP portfolio.
3. Evaluate NEEA's methodology for extrapolating short-term savings to the full market.
4. Examine any market shocks that may have affects sales of RPP incentivized products over the program time period.

To address these research objectives, TRC reviewed documents provided by NEEA, conducted program staff interviews, analyzed sales data provided by NEEA, collected data on product pricing and availability from participating and nonparticipating retailers in the Northwest, conducted a review of relevant academic literature on product markets, and reviewed ENERGY STAR product and testing specifications.

6.1 Logic Model Review

TRC's review of the logic model identified multiple opportunities for NEEA to revise the logic model to more closely align with the actual operations of the program. The key recommendation from the review is Recommendation LM1 below.

- **Recommendation LM1:** NEEA should develop a written document that can provide more specific detail about program activities and the relationships between logic model elements that can help document the program without making the graphical logic model unduly complicated. Specific elements that could be addressed through this written document include:
 - Providing more documentation on activities that NEEA conducts, such as extra-regional coordination efforts; the work NEEA performs jointly with market actors to influence specifications, standards, and test procedures; product testing that NEEA conducts; and work with retailers to influence manufacturers (none of which are currently included in the logic model).
 - Describing the program's typical pathways of influence for the different products or product configurations in NEEA's RPP portfolio. For example, NEEA could lay out which of the logic model elements have been used by NEEA for televisions, for which NEEA's strategy has emphasized involvement with the ENERGY STAR specification process and associated test procedure but does not currently include incentives. NEEA could then contrast that with other product groups where retailer incentives are currently a key strategy (for example, refrigerators and freezers) versus the other product categories where other subsets of outcomes have been targeted.
 - Describing the typical causal relationships between outcomes and the variety of relationships that can exist. For example, NEEA staff indicated that sometimes

changes in federal standards lead to a change in ENERGY STAR specifications, rather than the other way around.

- Describing which activities are conducted as part of the five key strategies described in the Program Overview box.
- Documenting historical progress NEEA has made, including the steps taken to establish program access to full category sales data from retailers.

Recommendation LM2: NEEA should consider adding more detail to the logic model to provide more specificity regarding program activities. In particular, NEEA should consider updating the third activity to provide more detail on the work NEEA does to influence specification, standards, and test procedures. For example, “Work jointly with market actors to influence specifications, standards, and test procedures through comment letters on proceedings, conducting lab tests, providing market data, and other activities.”

Recommendation LM3: NEEA should consider adding an outcome to specifically monitor or measure changes to manufacturer practices. As manufacturer changes are the target impact of the program, having an outcome that could be monitored over time would provide NEEA with information about how that element of the market is changing.

Recommendation LM4: NEEA should consider an impact statement that focuses on *permanent changes* to the market that lead to reductions in average energy use intensity without putting one specific mechanism (manufacturer changes) as the target of the impact statement to reflect more ways that market transformation can occur.

Recommendation LM5: NEEA should consider reflecting key relationships between logic model elements where ongoing outcomes influence activities in order to better reflect the dynamic between the program and the market. Specifically, TRC recommends connecting Outcome II and Outcome III to the fifth activity and Outcome IV to the third activity. This change could be made in the graphical logic model itself, or it could be described in the accompanying written document TRC recommends NEEA develop.

Recommendation LM6: NEEA should consider differentiating outcomes further. This need not necessarily relate to the specific timeframe to achieve a given outcome, but they layout could better reflect the sequencing of the outcomes, the relevant necessary precursors, or which processes are involved. The advantage of this differentiation would be to draw more clear causal connections to outputs to understand market progress.

- While there is variation in sequencing across products, having the arrows reflect the most typical cases would make the model clearer (such as the example provided by NEEA that sometimes changes in federal minimum standards lead to changes in ENERGY STAR specifications). For example, having Outcome II come from Outcome I (but not the outputs), Outcome IV coming from the third through fifth outputs, and Outcomes III and V coming from the outputs as well as Outcome IV.
- This change could be made in the graphical logic model itself, or it could be described in the accompanying written document TRC recommends NEEA develop.

6.2 Market Progress Indicators Analysis

TRC's review of product-level market progress found that significant progress was made in the 2021 program year, but the extent varies by product, with refrigerators making the most market progress and clothes dryers the least. Notably, refrigerators show substantial progress across all relevant logic model outcomes (I – IV).

Clothes washers

For clothes washers, the market appears to be making substantial progress. High-efficiency models are featured in participating retailer advertising and are widely available, and sales of ESME models have increased in recent years. However, they have eaten into sales of ENERGY STAR Version 8 sales, rather than non-qualifying sales, and the increases seen in previous years did not extend into 2021.

Recommendation MP1: The market share of qualified top-loading clothes washers has remained the same for multiple years. NEEA should consider additional research to investigate barriers to increased adoption of qualified top-loading clothes washers to determine if alternative strategies are needed to address those barriers.

Clothes Dryers

For clothes dryers, the market appears to be making limited progress. High-efficiency models are featured in participating retailer marketing and are widely available, but market share of ENERGY STAR-qualified models is stagnant, and almost no models that receive RPP incentives were sold during at the time of this study.

Recommendation MP2: Sales of ESME clothes dryers, which are all heat pump dryers, were close to zero. NEEA should consider research to identify whether there are additional barriers to sales of these products to determine if alternative strategies are needed to address those barriers. NEEA could consider stocking surveys or questions in the annual evaluation interviews ESRPP conducts with participating retailers to understand if these products are readily available for consumers to purchase. Because the ESRPP program receives sales data, rather than assortment data, from participating retailers, the program does not currently have insight into model availability. There may also be barriers in terms of installation or other consumer barriers to purchasing heat pump-based models.

Room Air Conditioners & Freezers

Room air conditions and freezers are less prominent product groups in the program. Room air conditioners are not heavily marketed by participating retailers, but they do appear to have wide availability in the Northwest (even during off-season periods), and the market share of high-efficiency models has been gradually increasing. The freezer market is seeing limited progress. They are neither widely advertised nor widely available at all times, and market share of high-efficiency models has not been increasing, in general, though it did increase from 2020 to 2021.

Recommendation MP3: The recent increases in sales of ESME room air conditioners have come at the expense of ENERGY STAR Version 4 room air conditioners rather than non-qualified room air conditioners, and the overall market share of products receiving incentives has remained roughly constant since 2017. NEEA should consider ending incentives for ENERGY STAR Version 4 for models of at least 8000 BTU and focusing on ESME models.

Recommendation MP4: There are essentially no sales of RPP-qualified room air conditioners of less than 8000 BTU in the period covered by this report.¹⁹ There are qualified models in that category, so if more recent sales (in 2022 and 2023) continue to be negligible, NEEA should investigate why consumers are not purchasing qualified low-capacity models, such as whether pricing or other characteristics are inhibiting consumer uptake.

Recommendation MP5: Increased freezer market volume in 2020 and 2021 did not lead to an increase in sales of qualified freezer models, so the market share of qualified models dropped considerably. Further, there were essentially no sales of ESME and ETA models in 2021. If sales have not changed in 2022 and 2023, NEEA should consider conducting research into why the overall sales increase did not lead to an increase in sales of efficient models, possibly through added questions on the retailer interviews.

Televisions

Televisions are a special case as they are not a product category in other ESRPP Program Sponsors' portfolios, but they are included in NEEA's RPP program. Providing incentives is not currently part of NEEA's strategy, however. For televisions, ENERGY STAR specifications and test procedures improved by 2021, showing progress on the only two targeted outcomes.

6.3 Extrapolation Review

TRC's review of NEEA's extrapolation approach found that the operation of the market is consistent with NEEA's rationale, and TRC found no evidence that NEEA needs to change its approach. That assessment is based on a review of the academic literature with respect to market structure and its influence on product competition, as well as a review of retailers' online product availability and pricing data that indicates similar assortment and pricing between participating and nonparticipating retailers across the NEEA region.

NEEA might want to explore the effects of the program on manufacturers whose products are not primarily purchased by participating retailers. Competitive pressures between manufacturers may lead to changes in manufacturing practice even among manufacturers that do not primarily sell through participating retailers.

6.4 Shocks Analysis

TRC also assessed volatility of sales data that may result from external market shocks to identify any market insights they could provide. TRC reviewed multiple exogenous shocks to the market, and the only one with a clear impact was the high temperatures associated with the heat dome event in the Pacific Northwest in 2021, which increased sales of room air conditioners. Despite the large increase in sales, the market share of high-efficiency models remained roughly constant, indicating that the market is providing sufficient supply of high-efficiency models to meet increased demand, but that increased demand did not lead to an increased preference for high-efficiency models.

¹⁹ NEEA has stopped providing incentives for room air conditioners, but it did provide them during the period covered by this report.

The effect of stimulus checks on refrigerator purchases is less clear. There was an increase in refrigerator purchases every quarter there was a stimulus check issue. However, the increase was not as large as would be expected given the macroeconomic impact of the stimulus. The segment as a whole was already trending upward in sales, so it is difficult to tie this increase strictly to the issuance of stimulus checks.

Memorandum



January 16, 2024

TO: Meghan Bean, Sr. Market Research & Evaluation Scientist, NEEA

CC: Stephanie Quinn, Manager, Program Management; Amy Webb, Sr. Manager, Market Research & Evaluation, NEEA

FROM: Anne Brink, Program Manager, RPP, NEEA

SUBJECT: Response to RPP Market Progress Evaluation Report #2

NEEA posted its second Market Progress Evaluation Report (MPER) for the Retail Product Portfolio (RPP) program on September 14, 2023. The purpose of this memorandum is to summarize the program's response to the major findings and associated recommendations of MPER #2. Note that MPER #2 included 11 recommendations – five related to NEEA's RPP program strategy and operations and six related to the program's recently revised logic model. This response memo does not address the six recommendations made regarding the program's logic model. The team is discussing these recommendations internally. Where the MPER's recommendations imply a modification in program strategies or activities, this memo outlines the program's anticipated adaptation and timeline for doing so. NEEA programs are not required to accept every MPER recommendation. In instances where the program chooses to reject (or accept with caveats) an MPER recommendation, this memo provides a rationale.

Recommendation 1: The market share of qualified top-loading clothes washers has remained the same for multiple years. NEEA should consider additional research to investigate barriers to increased adoption of qualified top-loading clothes washers to determine if alternative strategies are needed to address those barriers.

The RPP program plans to accept this recommendation. The team will review existing research and program data, discuss potential actions with retailers, and review current web scraping research being conducted internally for NEEA's use and field laundry research that we expect to be published by first quarter 2024. The team will formulate a clothes washers strategy during the first half of 2024 and conduct additional research as needed to develop a long-term strategy for clothes washers.

Recommendation 2: Sales of ENERGY STAR® Most Efficient (ESME) clothes dryers, which are all heat pump dryers, were close to zero. NEEA should consider research to identify whether there are additional barriers to sales of these products to determine if alternative strategies are needed to address those barriers. NEEA could consider stocking surveys or questions in the annual evaluation interviews ESRPP conducts with participating retailers to understand if these products are readily available for consumers to purchase.

The RPP program accepts this recommendation with caveats. Program staff will review program data and existing research and examine the results of web-scraping research and a laundry field study currently being conducted to help determine steps forward. Barriers in this product category are well-known, including dry time, price and reliability. Currently manufacturers are introducing new combo/washer dryer units, some of which include heat pump technology that may positively influence sales in this category. Inflation Reduction Act (IRA) incentives will reduce the price barrier which will likely also have a positive influence on this category. A strategy for the clothes dryer category will be determined by Q1 of 2024.

Recommendation 3: The recent increases in sales of ESME room air conditioners have come at the expense of ENERGY STAR Version 4 room air conditioners rather than non-qualified room air conditioners, and the overall market share of products receiving incentives has remained roughly constant since 2017. NEEA should consider ending incentives for ENERGY STAR Version 4 for models of at least 8000 BTU and focusing on ESME models.

Recommendation 4: There are essentially no sales of RPP-qualified room air conditioners of less than 8000 BTU in the period covered by this report. There are qualified models in that category, so if more recent sales (in 2022 and 2023) continue to be negligible, NEEA should investigate why consumers are not purchasing qualified low-capacity models, such as whether pricing or other characteristics are inhibiting consumer uptake.

The RPP program accepts these two recommendations with caveats. The RPP program has ended incentives in the air conditioner category as of April 2023. Due to low energy savings estimates for this category, the team has determined that incentives are not warranted currently. The above recommendations will be considered should the program choose to provide incentives in the air conditioning category in the future.

Recommendation 5: Increased freezer market volume in 2020 and 2021 did not lead to an increase in sales of qualified freezer models, so the market share of qualified models dropped considerably. Further, there were essentially no sales of ESME and Emerging Tech Award (ETA) models in 2021. If sales have not changed in 2022 and 2023, NEEA should consider conducting research into why the overall sales increase did not lead to an increase in sales of efficient models, possibly through added questions on the retailer interviews.

The RPP program accepts this recommendation with caveats. The RPP program has ended incentives in the freezer category as of April 2023. Due to low energy savings estimates for this category, the team has determined that incentives are not warranted currently. The above recommendation will be considered should the program choose to provide incentives in the freezer category in the future.

The RPP program acknowledges the importance of regular evaluations as: 1) a demonstration of our fiduciary duty to our funders and other stakeholders, 2) a way to assess progress toward our market transformation goals, and 3) a tool for adaptive management of the program. We appreciate the opportunity to reflect on these evaluation results and to leverage them in the ongoing effort to improve the program and hasten progress toward our market transformation goals. If you have any questions about the RPP program's response to the findings of MPER #2, please contact me at abrink@neea.org.

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