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Retail Product Portfolio Market Progress Evaluation Report #3

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1 Executive Summary

Background

This is the third Market Progress Evaluation Report (MPER) for the Northwest Energy Efficiency Alliance's (NEEA) Retail Product Portfolio (RPP) program, which aims to increase the energy efficiency of residential consumer products by overcoming several market barriers to their adoption, including that energy efficiency is not a top consideration for corporate retail buyers, that the benefits of energy savings may be too small to impact customer choice, and that manufacturers often do not prioritize building energy efficiency into their product designs. To overcome these barriers, NEEA's RPP program team manages a portfolio of retail products and emerging technologies, applying interventions tailored for each product.

NEEA also administers the national ENERGY STAR® Retail Products Platform (ESRPP), which engages retailers as well as utility and energy efficiency organization sponsors across the United States to provide mid-stream incentives to retailers of select energy efficient products. In exchange, sponsors obtain full category sales data on relevant consumer products. NEEA's RPP team also engages in the revision processes for a) state and federal product standards, b) federal test procedures, and c) voluntary specifications. RPP team members are nimble in meeting the needs of the moment, providing test data, market analysis grounded in sales data, comment letters sharing product knowledge and insight, and coordinating discussion among diverse stakeholders to reach agreement. Together, these activities work to overcome barriers to market adoption for select retail products within the RPP program, with the ultimate goal of influencing manufactures to build energy efficiency into product designs.

This report (MPER 3) addresses program activities and outcomes from 2022 to 2024. The research objectives for this MPER were:

Research Objective 1: For each product in NEEA's RPP program, document activities and outputs and assess progress on applicable outcomes through market progress indicators (MPIs).

Research Objective 2: Explore how program activities have influenced manufacturers since the program's inception in 2019 and recommend how this influence could be assessed in consistent and cost-effective ways beyond those already listed in the logic model, if applicable.

To address these research objectives, Level 7 Market Research employed a mixed-methods approach including retailer web-scraping, full category sales data analysis, interviews with NEEA staff and contractors, and review of NEEA reports, NEEA program communications, and federal documentation.

Summary of Key Insights

Research Objective 1. Market Progress Indicator Assessment

Between 2022 and 2024, NEEA's RPP program supported several product categories, including room air conditioners, clothes washers, clothes dryers, refrigerators, and televisions. Level 7 assessed relevant MPIs for each product, based on NEEA's program strategy during the evaluation period. Table 1 provides a high-level summary of which MPIs were measured for each product category and whether there was clear progress (green plus mark) on each outcome, mixed progress (orange dashes), or if progress was stalled (red circle). Out of thirteen MPI and product combinations reviewed in this MPER, clear progress was seen in nine. Short summaries of progress on program outcomes follow the table.

Table 1. High-level overview of progress on RPP outcomes in applicable product categories.

	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 tiers) increases	Test procedures are improved	Federal and state minimum standards increase
Room air conditioners		+		+	
Clothes washers	+	0			+
Clothes dryers	+	+			+
Refrigerators	--	--		0	+
Televisions			+		

Notes: Throughout this report, whenever "clothes washers" is used without further description, this refers to top-loading product models, as only these product model types were incentivized by NEEA during the MPER 3 timeframe.

Outcome I: Retailers and merchants incorporate incentives into their assortment and marketing decision making process.
MPI I: Retailers consider ESRPP qualification in assortment and marketing decisions.
There was clear progress on Outcome I in two of the three relevant product categories (clothes washers and clothes dryers), while there was mixed progress for refrigerators. Interviews conducted with participating ESRPP retailers, presentations given to ESRPP sponsors by participating retailers, and participating retailer promotional flyer analysis provided qualitative data that supported progress on this outcome across all three product categories. Web-scraping analysis revealed that ENERGY STAR[1] products in RPP product categories were more likely to be stocked and marketed in ESRPP-participating Northwest retailers than non-participating ones in the same area for clothes dryers and clothes washers.

Outcome II: Increase in ENERGY STAR (or higher tier) market share for RPP product categories.
MPI II: Market share of RPP-qualified product tiers increases.
There was mixed progress on Outcome II across the four relevant product categories. While market share for incentivized clothes dryers showed some growth (ENERGY STAR Most Efficient (ESME) clothes dryers grew from 1% to 2% during the MPER review period) and ESME room air conditioner market share almost doubled (from 10% to 18%) after incentives were withdrawn in 2023, market share for incentivized ESME refrigerators stayed the same (at 2%) and incentivized ESME clothes washers' market share declined (from 7% to 5%).

Outcome III: Increase in ENERGY STAR (or higher tier) qualifying criteria for RPP product categories.
MPI III: ENERGY STAR (or higher tier) qualifying criteria increases.
There was clear progress on Outcome III for televisions. In 2023, manufacturers and energy efficiency organizations worked together to develop and sign an agreement on new voluntary energy efficiency specifications[2] that participating manufacturers would comply with, starting in 2026. NEEA recommended a 2-watt energy usage limit on televisions in standby-mode, supported by a NEEA developed test method that could identify this energy usage reliably (ANSI/CTA-2037-D). This specification was adopted in the Televisions Voluntary Agreement[3] (TV VA) signed in 2023.

Outcome IV: ENERGY STAR data and federal test procedures better reflect real world energy consumption.
MPI IV: Test procedures are improved.
There was mixed progress on Outcome IV across relevant product categories – air conditioners and refrigerators. For room air conditioners, NEEA engaged in the revision process for the ENERGY STAR test method to determine room air conditioner heating mode performance through attendance at webinars and submission of two comment letters providing multiple suggestions, most of which were adopted in

[1] Retailers did not reliably advertise or provide search engine filters related to the advanced tier products often incentivized through the ESRPP program, so Level 7 instead focused on broader applicable marketing terms (ENERGY STAR, energy efficiency) for its assessment of potential ESRPP-participation influence on retailers. More details on this analysis are available in the methods section and Appendix B.

[2] NEEA is considering updates to the RPP logic model to more explicitly call out participation in manufacturers' voluntary agreements to pursue increased energy efficiency specifications in their products. At the moment, the RPP team felt this activity best aligned with increases in ENERGY STAR specifications, because these are also voluntary for manufacturers.

[3] The Televisions Manufacturers Voluntary Agreement (TV VA) was signed by leading television manufacturers and non-profit energy efficiency organizations in 2023 (Consumer Technology Association, 2023) . It limits the allowed energy usage of televisions in standby mode to 2 watts and has the potential to dramatically reduce annual energy consumption (up to 10 terawatt hours) for the United States and Canada.

the final test method procedure. NEEA also engaged in the DOE test procedure revision process for refrigerators in 2021 that had a compliance date in 2022. NEEA provided ten suggestions, as well as lab test data aligned with these suggestions, which motivated the DOE to conduct additional testing on a larger sample of models. Ultimately, DOE accepted two of NEEA's recommendations but did not significantly change the test procedure for refrigerators.

Outcome V: Change in federal (and state) minimum standards for RPP categories.
MPI V: Federal and state minimum standards increase.
There was clear progress on Outcome V for relevant product categories, with advances in federal standards for clothes washers, clothes dryers, and refrigerators. NEEA participated in the 2023 Association of Home Appliance Manufacturers (AHAM) consensus agreement, which set increased energy efficiency guidelines that the DOE subsequently adopted through its 2024 Final Rules on clothes washers, clothes dryers, and refrigerators. The new standards for clothes washers and dryers are slated to take effect in 2028, while the refrigerator standard is scheduled to phase in during 2029 and 2030.

Research Objective 2. Manufacturer Influence Assessment

NEEA's RPP program engaged in the development of two manufacturers' agreements during the time frame of the current MPER that have resulted in increased energy efficiency of relevant consumer products (including televisions, clothes washers, clothes dryers, and refrigerators). Through interviews, it was also apparent that opportunity to support manufacturers' agreements is not limited to these two circumstances and may continue to arise. Supporting voluntary agreements is not currently described in NEEA's RPP logic model (see Appendix A).

Recommendations

Recommendation 1. Re-evaluate clothes washer incentivization strategy.
NEEA currently incentivizes top-loading clothes washers, which is not resulting in increased market share for this product configuration. The program should consider increasing incentives for top-loading washers or conducting research to assess the potential benefits of incentivizing front-loading machines. Providing incentives for front-loading washers could re-energize the transition toward this highly efficient segment, where sales momentum has recently stalled. Research on top- and front-loader dynamics could be used to identify the most effective incentive structures to accelerate market uptake.

Recommendation 2. Maintain ENERGY STAR® Most Efficient (ESME) clothes dryer incentives to support early market development.
Maintaining support through at least the next MPER will enable NEEA to assess whether early retailer enthusiasm and promotional activity translate into sustained consumer adoption. Furthermore, given the category's modest market share, it will be important to monitor whether early gains persist beyond initial promotional cycles. NEEA should track total sales, the share of qualifying models, and promotion activity to ensure that efficiency remains central to market growth

Recommendation 3. Re-evaluate refrigerator incentivization strategy.
NEEA should evaluate whether current incentive levels are effectively motivating retailers to stock and promote ESME refrigerators. NEEA has noted that incentives are currently the most cost-effective way to secure retailer sales data, but if current incentive levels are not achieving broader market penetration for ESME-qualifying models, increasing or pausing incentives may be warranted. Broader market dynamics may be working against sustained uptake of ESME-qualifying models, raising the question of whether

incentives are the right tool or whether complementary strategies are needed to overcome barriers to adoption.

Recommendation 4. Sustain engagement in refrigerator test method procedure revisions.
In the MPER 3 period, NEEA made progress on developing and using a refrigerator test method that more accurately reflects real world energy consumption. However, NEEA's pilot data and recommendations were not incorporated in this cycle's federal test method procedure revision. Continued engagement with the DOE will help support the uptake of recommendations in the future.

Recommendation 5. Continue to support voluntary manufacturers' agreements that increase energy efficiency and incorporate this activity formally in the RPP logic model.
NEEA should continue supporting voluntary manufacturers' agreements that promote energy efficiency in consumer products when opportunities arise and should consider incorporating this activity more formally in the RPP logic model. This may help the team plan for outreach and resourcing to effectively support agreement development, while bringing the program logic into better alignment with current strategies.

2 Introduction

This is the third Market Progress Evaluation Report (MPER) for the Northwest Energy Efficiency Alliance's (NEEA) Retail Product Portfolio (RPP) program. It documents program strategy and the status of relevant Market Progress Indicators (MPIs) in years 2022-2024.

2.1 Retail Product Portfolio Program Overview

As shown in the RPP logic model (see Appendix A), the program's long-term goal is for manufacturers to respond to market changes by increasingly building energy efficiency into product design, creating permanent changes to their processes that result in energy savings.

The program has identified several barriers to adoption of more efficient technologies that limit demand. First, energy efficiency is not a top consideration of corporate retail buyers and, second, the benefits of energy savings from emerging energy efficient technologies are often too small to impact many consumers' choices. NEEA leverages several opportunities to overcome these barriers, driving demand for more efficient products, and, ultimately, influencing manufacturers.

There are five program activities identified in the RPP logic model that are intended to overcome barriers to market adoption. The first is facilitating the ENERGY STAR® Retail Products Platform (ESRPP). In this role, NEEA recruits and engages both program sponsors (including other energy efficiency non-profit organizations and utilities), as well as large, national retailers in the ESRPP to provide incentives to participating retailers. Sponsors make decisions annually about which energy efficient product categories and at what levels they would like to incentivize participating retailers for sales and participating national retailers are provided with incentives for selling the sponsor-chosen products. Secondly, NEEA also participates in extra-regional coordination efforts with ESRPP sponsors and national retailers in order to increase the scale of the program. Thirdly, NEEA works jointly with market actors (such as product manufacturers and other energy efficiency organizations) to influence voluntary specifications, federal product standards, and test procedures. Fourth, NEEA collects full category sales data (which includes incentivized and non-incentivized products) and market intelligence for use in program design and influencing voluntary specifications and federal product standards. Finally, NEEA uses the results of its data analysis and market intelligence to establish product-specific strategies for categories within the portfolio. In this report, findings are separated out by product, and each section begins with a high-level description of the product-specific strategy enacted by NEEA during the timeframe of the MPER.

The program's activities are intended to lead to outcomes that demonstrate a reduction in the barriers to market adoption of more energy efficient consumer products. These outcomes include: 1) retailers and merchants incorporate incentives into their assortment and marketing decision making processes, 2) increase in ENERGY STAR (or higher tier) market share for RPP product categories, 3) increase in ENERGY STAR (or higher tier) qualifying criteria for RPP product categories, 4) ENERGY STAR data and federal test procedures better reflect real world energy consumption, and 5) change in federal (and state) minimum standards for RPP categories.

2.2 Research Objectives

For the RPP program's third MPER, Level 7 Market Research conducted an evaluation to address the following research objectives:

Research Objective 1: For each product in NEEA's RPP program, document activities and outputs and assess progress on applicable outcomes through market progress indicators (MPIs).

Research Objective 2: Explore how program activities have influenced manufacturers since the program's inception and recommend how this influence could be assessed in consistent and cost-effective ways beyond those already listed in the program's logic model, if applicable.

Each outcome and market progress indicator (MPI) assessed as part of Research Objective 1 is listed in Table 2, next to the relevant product categories based on the RPP program team's strategy for that product in 2022–2024.

Table 2. RPP program outcomes, MPIs, and applicable products for MPER #3.

	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 tiers) increases	Test procedures are improved	Federal and state minimum standards increase
Room air conditioners		**X**		**X**	
Clothes washers	**X**	**X**			**X**
Clothes dryers	**X**	**X**			**X**
Refrigerators	**X**	**X**		**X**	**X**
Televisions			**X**		

Notes: High-performance clothes dryers also include all-in-one washer/dryer models with heat pump dryers.

2.3 Methodology

This section provides an overview of the methodology and data used to address the research objectives, organized by program outcome and MPI. Appendix B provides a more detailed description of the research methods and Table 3 provides a summary of how methods addressed both research objectives.

Table 3. Research activities for Research Objectives 1 & 2.

		RO1					RO2
DATA SOURCE	**SUMMARY OF ACTIVITIES**	**MPI 1**	**MPI 2**	**MPI 3**	**MPI 4**	**MPI 5**	
NEEA documents	244 communications/emails 144 reports, including ESRPP retailer quarterly reports, ESRPP retailer interview reports, and relevant third-party evaluations 58 specification/comment letters & testing procedure documents	X		X	X	X	X
Interviews	8 NEEA staff interviews 2 external consultant interviews			X	X	X	X
Retailer web sites and promotional flyers	40 websites 14 flyers	X					
Sales data	2017-2024 Retailer full category sales data for RPP products sold in the Northwest[4]		X				

Research Objective 1: Market Progress Indicator Assessment

Outcome I: Retailers and merchants incorporate incentives into their assortment and marketing decision-making process.
MPI I: Retailers consider ESRPP qualification in assortment and marketing decisions.

NEEA predicts that retailers will consider ESRPP qualification in assortment and marketing decisions. In many cases, ESRPP incentivizes products at the highest levels of energy efficiency, those receiving Emerging Technology Awards (ETA) or ENERGY STAR Most Efficient (ESME) designations, but consumers may not be aware of these designations, and this information is often not included in online and physical marketing materials. Knowing that consumers are more likely to be familiar with the logo and branding of ENERGY STAR products writ large, retailers who may be influenced by the ESRPP program may choose to assort and promote energy efficient products through use of the ENERGY STAR branding (and not rely on ESME or ETA-specific branding or language) to reach consumers. So, to capture ways in which participating and non-participating retailers may be affected by their participation in the ESRPP program, Level 7 assessed their marketing and assortment relevant to broader categories, like “energy efficient” and “ENERGY STAR”, rather than the specific designations being incentivized by NEEA through the RPP program in the Northwest.

Level 7 conducted web-scraping of participating and non-participating retailers’ marketing and assortment of ENERGY STAR-certified refrigerators, clothes washers, and clothes dryers (including all-in-

[4] Throughout this report, the Northwest refers to Idaho, Montana, Oregon, and Washington states.

one laundry units) for select Northwest retailers in August 2025.[5] This included evaluating the presence of logos, filters, navigational tools, and supplemental content that could support awareness and facilitate selection of energy-efficient appliance options.

Level 7 also examined the promotional flyers published by two big box retailers over an approximate four-month period, with "prices valid" dates spanning mid-June through early October 2025. The review focused on how ENERGY STAR appliances were positioned within the selection of products featured for consumer promotion.

Level 7 also reviewed annual ESRPP retailer interview reports and ESRPP retailer quarterly reports from 2022 to 2024 to evaluate progress on this MPI. Annual retailer interviews are conducted by third-party evaluators and provide insight into the actions that retailers take in response to incentive availability. ESRPP retailer quarterly reports are delivered to program sponsors, detailing their marketing and assortment of program-supported products.

Outcome II: Increase in ENERGY STAR (or higher tier) market share for RPP product categories.
MPI II: Market share of RPP-qualified product tiers increases.

Level 7 analyzed sales data provided by NEEA to report changes in market share of incentivized products relative to full product category sales data from 2022 to 2024. In cases where full category sales data were available preceding 2022, these were reported to provide longitudinal context.

Outcome III: Increase in ENERGY STAR (or higher tier) qualifying criteria for RPP product categories.
MPI III: ENERGY STAR (or higher tier) qualifying criteria increases.

NEEA engaged in activities that align with, but go beyond, the RPP logic model by actively participating in voluntary manufacturer agreement development during the MPER 3 timeframe. These agreements may best align with Outcome and MPI III, as they describe voluntary specifications that manufacturers opt into, similar to manufacturer engagement in ENERGY STAR certifications. To assess changes in relevant voluntary specifications for televisions (as shown through voluntary manufacturers' agreements), Level 7 conducted NEEA staff and third-party consultant interviews, reviewed the Televisions Manufacturers Voluntary Agreement (TV VA),[6] and reviewed NEEA communication records.

Outcome IV: ENERGY STAR data and federal test procedures better reflect real world energy consumption.
MPI IV: Test procedures are improved.

NEEA engaged in the test method revision process for air conditioners and refrigerators between 2022 and 2024. Level 7 conducted interviews with NEEA staff and NEEA's third-party consultants, drew on third-party evaluations of NEEA's and NEEA partners' influence on test procedures, reviewed NEEA

[5] MPI I was assessed in part through 2025 data because an analysis of archived internet promotional and assortment materials would have resulted in lower quality findings for substantial additional cost.

[6] The Televisions Manufacturers Voluntary Agreement (TV VA) was signed by leading television manufacturers and non-profit energy efficiency organizations in 2023.It limits the allowed energy usage of televisions in standby mode to 2 watts and has the potential to dramatically reduce annual energy consumption (up to 10 terawatt hours) for the United States and Canada.

comment letters, and reviewed final test method descriptions in order to describe changes in the test method procedures for these two products.

Outcome V: Change in federal (and state) minimum standards for RPP categories.
MPI V: Federal and state minimum standards increase.

NEEA participated in the Association of Home Appliance Manufacturers (AHAM) agreement,[7] which set voluntary energy efficiency specifications for three products relevant to RPP (clothes washers, clothes dryers, and refrigerators). These specifications were later adopted in formal federal standard revisions. Level 7 conducted staff and third-party consultant interviews, and reviewed RPP program communication records, NEEA's comment letters, the AHAM agreement and the Department of Energy (DOE) rules for clothes dryers, clothes washers, and refrigerators to report changes in federal energy efficiency standards for clothes washers, clothes dryers, and refrigerators.

Research Objective 2: Manufacturer Influence Assessment

NEEA was interested in exploring whether the current RPP logic model and program documentation describe all of the ways that consumer product manufacturers may be influenced through the program. To assess if there were additional ways that NEEA may be influencing manufacturers, Level 7 reviewed RPP program documentation and ESRPP quarterly retailer reports and conducted interviews with NEEA staff and consultants.

3 Research Objective 1. Market Progress Indicator Assessment

3.1 Program-Wide Findings on Outcome I

Overall, analysis of the product assortment web-scraping data indicates that Northwest retailers participating in the RPP program promoted ENERGY STAR-certified models at higher rates than non-participating retailers. As shown in Table 4, participant retailers offered a greater share of ENERGY STAR models than non-participants: +4 percentage points for refrigerators, +8 percentage points for clothes washers, and +8 percentage points for clothes dryers. This consistent difference suggests that the RPP program may influence product assortment and marketing decisions in favor of energy-efficient products.

[7] The AHAM agreement was signed in 2023 by home appliance manufacturers and non-profit organizations representing consumer, climate, water efficiency and energy efficiency. It made federal standards recommendations to the DOE on numerous products, including three categories in the RPP program (clothes washers, clothes dryers, and refrigerators), which were later adopted by the DOE into federal standards.

Table 4. Comparison of sampled ESRPP-participant vs. non-participant retailers by assortment of ENERGY STAR models of RPP products available through the store websites.

	Participant Retailers		Non-Participant Retailers	
	# of Models	% of Models by ENERGY STAR Status	# of Models	% of Models by ENERGY STAR Status
Refrigerators	3,768		1,821	
ENERGY STAR-certified	2,500	66%	1,137	62%
Not certified	1,268	34%	684	38%
Clothes Washers	1,205		410	
ENERGY STAR-certified	727	60%	214	52%
Not certified	478	40%	196	48%
Clothes Dryers	1,409		479	
ENERGY STAR-certified	806	57%	234	49%
Not certified	603	43%	245	51%

Refrigerators, clothes washers, and clothes dryers appeared in two-thirds (9 out 14) of the promotional flyers analyzed by Level 7, with a total of 60 distinct appliance models promoted. Of the promoted models (see Table 5), 53% were ENERGY STAR-certified. Three-quarters of the refrigerators, half of the clothes dryers, and one in four clothes washers were ENERGY STAR rated.

Table 5. Breakdown of the distinct appliance models promoted in the flyers (n=60).

	Total # of Models	# of ENERGY STAR Models	% of ENERGY STAR Models
Refrigerators	**24**	**18**	**75%**
Clothes Dryers	**20**	**10**	**50%**
All-in-One Laundry Models	5	5	100%
Standalone Models	15	5	33%
Clothes Washers	**16**	**4**	**25%**
Totals	**60**	**32**	**53%**

3.2 Room Air Conditioners

In 2022, NEEA changed its incentive strategy for room air conditioners[8] from incentivizing both ENERGY STAR and ESME products to only incentivizing ESME products. NEEA discontinued incentivizing the product category entirely in April 2023. NEEA also contributed to the federal test procedure revision process for room air conditioners during the study's time frame by submitting comment letters that supported improved testing procedures.

Outcome II

There was clear progress on this outcome, as market share for ESME-qualified room air conditioners grew in 2022 and continued to grow in 2023 after incentives were ended, reaching 18% market share (almost double the previous year) (see Figure 1). Figure 2 shows the corresponding drop of incentivized units when ENERGY STAR-qualifying room air conditioners were no longer incentivized in 2022, and when incentives for the product category ended entirely in 2023.

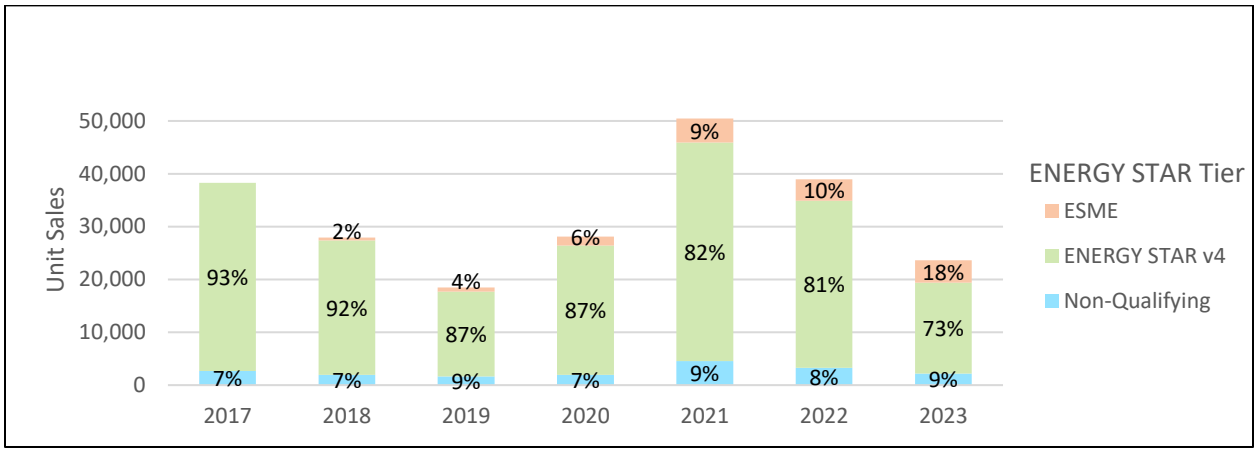

Figure 1. Participating Northwest retailers' sales of room air conditioners by energy efficiency tier by year.

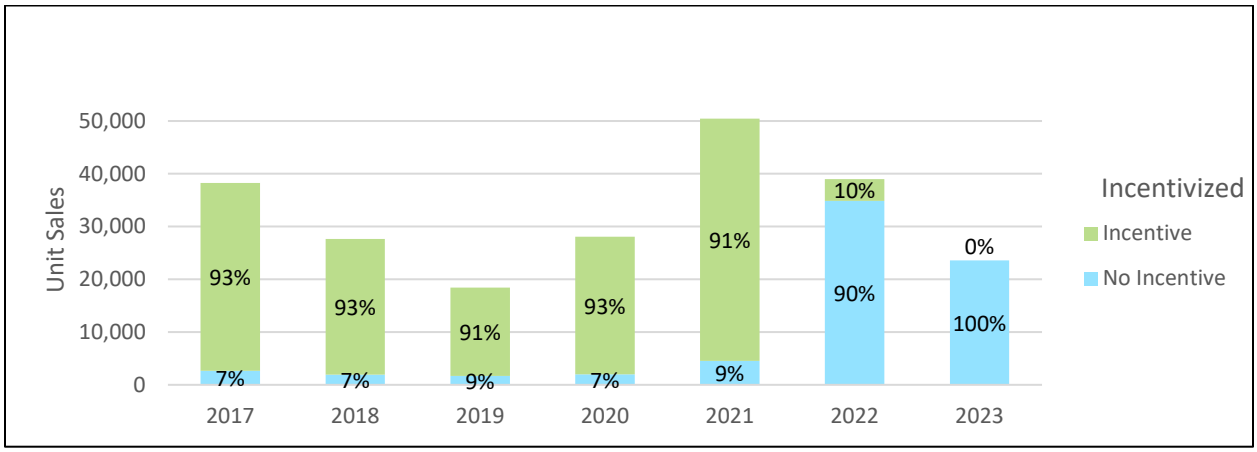

Figure 2. Participating Northwest retailers' sales of room air conditioners by RPP incentives by year

[8] In this report, a room air conditioner is defined as a machine operating at over 8,000 British Thermal Units (BTUs) – a measure of cooling power. These room air conditioners are designed to cool spaces between 300 and 350 square feet.

Outcome IV

Level 7 found that NEEA contributed to the advancement of room air conditioner test procedures through its comment letters during the test method revision process. Several NEEA suggestions were adopted in the final test method procedure adopted in November, 2024.[9] These included clarifying the resistance heat controls verification procedure, testing minimum delivered air temperatures, the addition of coldest temperature capacity and efficiency metrics, edits to the temperature settings in the nominal capacity test, classifying heat pump types, and conducting noise level testing.

3.3 Clothes Washers

During the evaluation period, NEEA incentivized top-loading clothes washers that met ENERGY STAR v8.1 and ESME specifications. NEEA also supported the AHAM agreement and federal standard revision process for clothes washers, via meeting participation, signing the voluntary agreement, and submitting comment letters to the DOE.

Outcome I

Overall, there was clear progress on Outcome I for clothes washers. A review of ESRPP quarterly reports and participating retailers' promotional flyers demonstrated that ENERGY STAR-certified clothes washers were being promoted. Advertisements often promoted washer-dryer pairs focused on energy savings, efficiency, and ENERGY STAR certification. Retailers featured ENERGY STAR-certified clothes washers in online promotions, Earth Day marketing materials, corporate blog posts, YouTube videos, and sustainability advertisements. Black Friday television spots included advanced tier clothes washer and dryer sets as part of retailers' holiday deals. Online clothes washer advertisements from three participating national retailers often featured ENERGY STAR logos prominently.

The web scraping review, as shown in Figure 3, shows that a higher percentage of ENERGY STAR clothes washer models were promoted compared with non-certified models. Overall, 60% of participating retailers' assortments were ENERGY STAR-certified clothes washers, compared to 52% among non-participating retailers as shown in Table 4. Comparison of sampled ESRPP-participant vs. non-participant retailers by assortment of ENERGY STAR models of RPP products available through the store websites..

[9] Test Method to Determine Room Air Conditioner Heating Mode Performance | ENERGY STAR

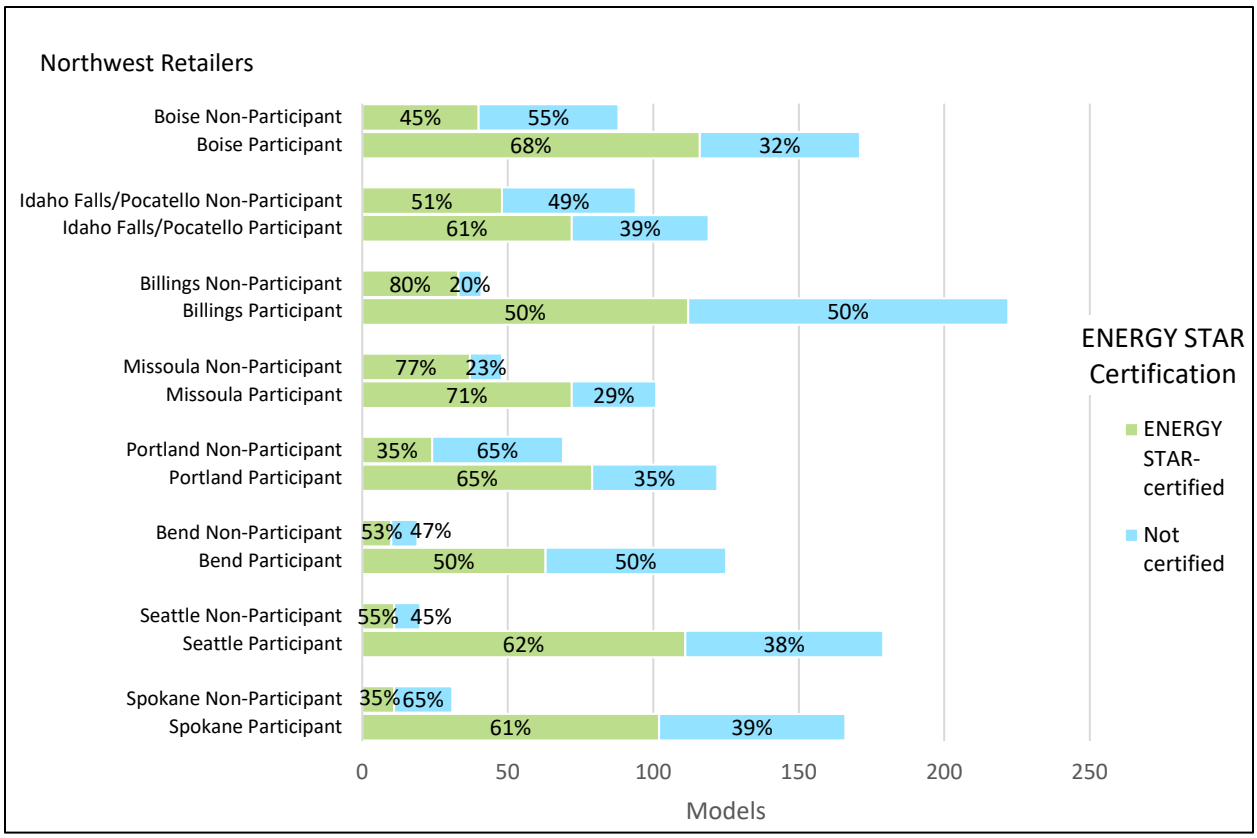

Figure 3. Comparison of sampled ESRPP-participant vs. non-participant Northwest retailers by assortment of ENERGY STAR clothes washer models available through the store websites.

Outcome II

There was a clear setback on this outcome, as market share for both ESME and ENERGY STAR-certified top-loading clothes washers decreased from 2022 to 2024 (see Figure 4). Market share for ESME top-loading clothes washers went down by two percentage points (from 7% to 5%) and ENERGY STAR v8 top-loading clothes washer market share decreased by four percent (from 31% to 27%). There was also a notable decrease in total unit sales in 2022 that persisted in 2023 and 2024.

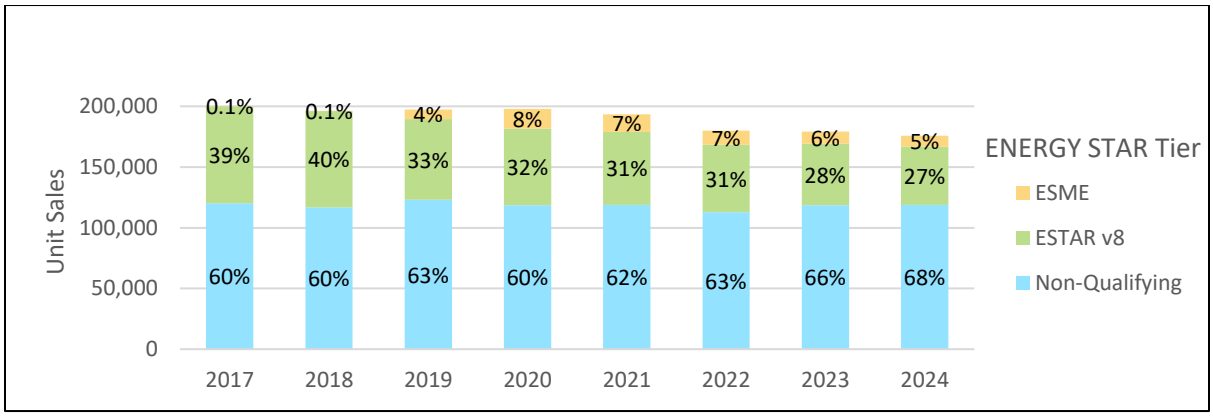

Figure 4. Participating Northwest retailers' sales of top-loading clothes washers by energy efficiency tier by year.

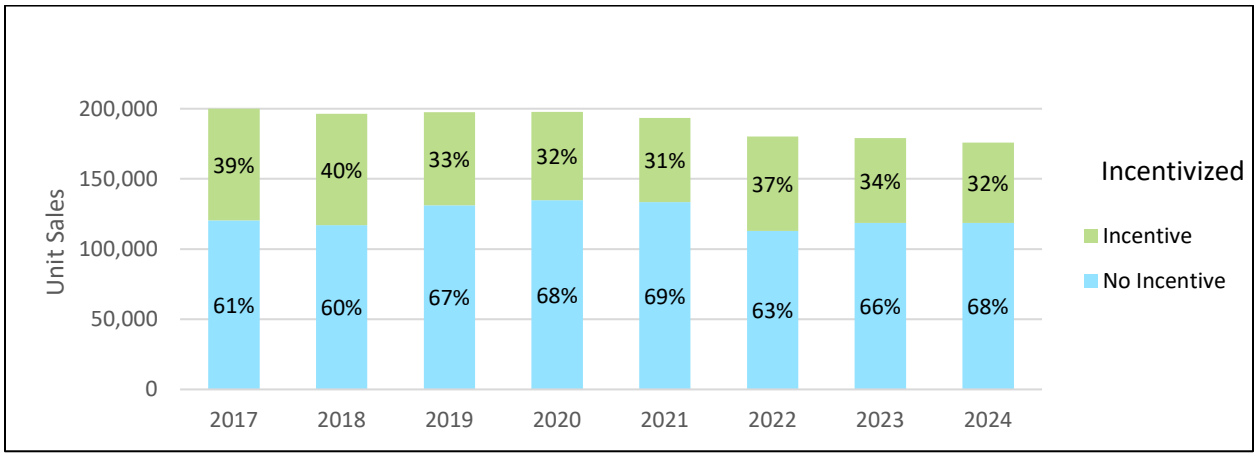

Figure 5. Participating Northwest retailers' sales of top-loading clothes washers by RPP incentives by year.

Outcome V

There was clear progress on Outcome V in the clothes washer product category with the adoption of increased energy efficiency federal standard with a compliance date of March 1st, 2028.[10]

In 2023, NEEA worked in conjunction with other energy efficiency advocates and manufacturers to develop and sign a voluntary agreement (the "AHAM agreement") that increased the energy efficiency specifications for several retail products, including clothes washers, while balancing stakeholder interests. This agreement was then used by signatories during the federal standard revision process to provide strong and detailed stakeholder support for increases in energy efficiency standard to the DOE in early 2024. Signatories of the AHAM agreement predicted the specifications agreed to by manufacturers would result in approximately 11% energy savings for top-load models, beginning in 2028.

In addition to lending support to the AHAM agreement, NEEA submitted several comment letters to the DOE during its standard revisions. Table 6 details the 17 NEEA comments – 11 that were accepted as part of the DOE's final rulemaking, five that were rejected, and one that is being considered for later adoption (Kannah Consulting 2024a).

Table 6. NEEA key comments and outcomes: EERE-2017-BT-STD-0014 standard.

	NEEA Comment	DOE Response		Outcome
1	Consider efficient technologies for clothes washers, especially lower-cost ones that remove more water during the spin cycle.	DOE identified multiple technology options to reduce remaining moisture content (RMC) but excluded ribbed drums due to the uncertainty in study findings.	✓	DOE included key hardware features that enable faster spin speeds (which include more advanced motor technologies) and longer spin duration, as suggested.

[10] Department of Energy "Energy Conservation Standards for Residential Clothes Washers" (2024).

	NEEA Comment	DOE Response		Outcome
2	Revise its top-load standard-sized residential clothes washers (RCW) cost-efficiency curves to reflect the share of stainless-steel baskets in the current market.	In the Notice of Proposed Rulemaking (NOPR), DOE maintained enameled porcelain. In the direct final rule (DFR) it developed a market share of each basket type through confidential manufacturer interviews and used those in the cost analysis.	✓	DOE initially maintained enameled porcelain as the NOPR baseline in the technical support document (TSD), but the DFR used a market-weighted average that included stainless steel.
3	Address re-emergent portable semi-automatic RCWs. Initially, NEEA suggested DOE retain current product classes. Later, NEEA supported a separate product class.	DOE did not include these semi-automatic products in the preliminary technical support document (PTSD), seemingly unaware of them.	✓	DOE added a separate semi-automatic product class and evaluated standard for these products.
4	Use a nationally representative gas water heater efficiency value and justify that typical efficiency in the TSD.	DOE clarified that the TSD value was a recovery efficiency, not an Energy Factor, making this value more representative of current water heater efficiency.	✓	The NOPR analysis used the most recent data reported for the 2022 consumer water heater rulemaking.
5	Ensure compact product class changes to include larger basket sizes do not cause backsliding.	DOE used the current standard-size front load efficiency standard as the baseline for the front-loading compact-size product class.	✓	No backsliding occurred for the compact product classes per the Energy Policy and Conservation Act (EPCA) anti-backsliding provision.
6	Support approach to translate Integrated Modified Energy Factor (IMEF) and Integrated Water Factor (IWF) to Energy Efficiency Ratio (EER) and Water Efficiency Ratio (WER). Also supported future testing with Appendix J to collect more results.	DOE retained its approach to translating Appendix J2 data to Appendix J and conducted more testing, which is detailed in the Notice of Data Availability (NODA).	✓	DOE iterated on its approach to model the translation from Appendix J to Appendix J2, including releasing a NODA with more data on RCWs tested with both procedures.
7	Efficient top load RCWs have good cleaning performance and receive high consumer ratings.	DOE confirmed satisfactory cleaning performance in a report (EERE-2017-BT-STD-0014).	✓	DOE regularly agreed that cleaning performance was maintained at recommended standard levels.
8	Support the characterization of different spin implementation types for test procedure translation and support no additional engineering cost for higher spin implementation.	DOE retained its approach of spin types (Appendix 5A of EERE-2017-BT-STD-0014-0510). DOE notes that all costs manufacturers incur are in the NOPR analysis.	✓	DOE retained its stationary spin approach to modeling the translation from Appendix J to Appendix J2.
9	Support the absence of rebound effect with more efficient RCW.	DOE agreed.	✓	DOE did not include a rebound effect in the DFR analysis.
10	Support utilizing a 13.7-year product lifetime.	DOE updated the average lifetime to 13.4 years (slightly shorter than considered in the 2023 NOPR).	✓	DOE did not identify lifetime differences associated with efficiency differences.

	NEEA Comment	DOE Response		Outcome
11	Consider an alternate fit of the learning curve model to the clothes washer data.	The model fit is based on the start year of the US Producer Price Index (PPI). DOE agreed to look at changes in the final rule analysis.	⊕	DOE explored alternative approaches in the DFR analysis, but the approach is essentially the same as the NOPR.
12	Support ENERGY STAR for standard-sized top and front load RCWs and lower levels for other product classes with four years before compliance (2028).	DOE agrees that the energy efficiency agreement (EEA) satisfies legal requirements for adopting the recommendation in a DFR.	✓	DOE adopted these levels in a 2024 NOPR analysis (TSL 2).
13	Adopt TSL 5 for RCW and require compliance three years after the final rule.	In the 2023 NOPR, DOE proposed TSL 4 levels, which were just below max tech levels for most of the market. NEEA later joined the EEA, supporting lower levels.	✗	DOE adopted the joint EEA recommendation for TSL 2 (ENERGY STAR levels).
14	Consider standard that change with drum volume.	An equations-based standard would be unfamiliar to stakeholders, alter the analysis, and potentially increase the industry's compliance burden.	✗	DOE maintained its existing approach of using a single, fixed value of IMEF and IWF (translated to EER and WER) for each product class.
15	Increase the number of RCW annual cycles or conduct a more robust field study for real-world use.	DOE responded that the Residential Building Stock Assessment (RBSA) is not representative of all US households. The 2015 Residential Energy Consumption Survey (RECS) is nationally representative.	✗	DOE used the microdata of the 2020 RECS.
16	Consider the return on investment (ROI) in its analysis.	ROI is a valuable metric for energy efficiency investments. However, current metrics better align with the EPCA language.	✗	DOE found it reasonable to continue to use established metrics.
17	Require reporting of both average cycle time and efficiency to the compliance database.	DOE reporting focuses on product characteristics required for demonstrating product compliance.	↻	DOE tentatively concluded that cycle time is not required to determine compliance, but would consider adding reported values in a future compliance rulemaking.

Notes: Adapted from Kannah Consulting's internal report for NEEA on NEEA's work towards the EERE-2017-BT-STD-0014 federal standard (2024a).

3.4 Clothes Dryers

From 2022-2024, NEEA incentivized ESME-qualified clothes dryers. In 2022 and 2023, these incentives were limited to stand alone dryer models, but in 2024, NEEA began providing incentives to ESRPP-participating retailers for all-in-one laundry combinations that met ESME qualifications. NEEA also tested heat pump clothes dryers entering the market, which was essential to the development and maintenance of the regional Qualified Products List (QPL) that enabled utilities to incentivize customer purchases of energy efficient heat pump dryers. Before the test procedure revision process was halted, NEEA also provided technical input and field research findings in comment letters to ENERGY STAR.

Finally, NEEA participated in the AHAM consensus agreement supporting increased clothes dryer efficiency specifications, as well as the DOE revision process for the clothes dryer federal standard.

Outcome I

There was clear progress on Outcome I within the clothes dryer product category, especially for heat pump dryers in all-in-one laundry configurations. ENERGY STAR washers and ENERGY STAR dryers were often paired together in marketing, which focused on energy savings, energy efficiency, and ENERGY STAR certification. Most major holiday sales highlighted by retailers in their ESRPP quarterly presentations featured these paired products.

Similar to clothes washers, participating retailers were eight percentage points more likely to offer ENERGY STAR-certified dryers than non-participating retailers (57% to 49% respectively). Figure 6 shows the comparative availability of clothes dryers in eight metro areas served by the RPP program.

ESRPP retailer interviews revealed excitement surrounding the all-in-one laundry combination segment of the dryer category. Retailers featured all-in-ones in promotional materials, in-store video loops, online banner ads, targeted email campaigns, and added sections to their websites that highlighted up-and-coming products such as all-in-ones. Imagery often focused on nature elements such as blue skies and green grass along with ENERGY STAR logos.

Of all the product categories in RPP, clothes dryers (and specifically all-in-one laundry combinations) received the most mentions in ESRPP quarterly retailer reports on marketing activities. These included Independence Day promotions focused on the product category, mentions of increased model numbers offered, and acknowledgement of increased incentive levels.

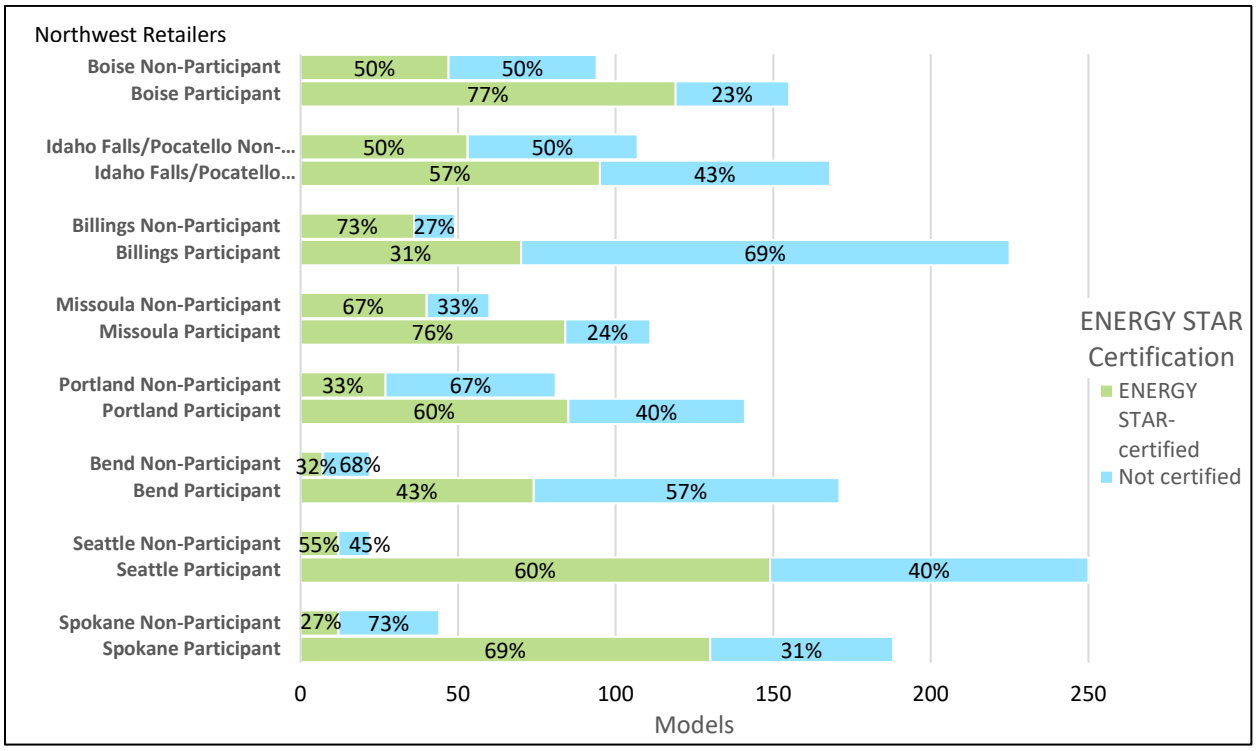

Figure 6. Comparison of sampled ESRPP-participant vs. non-participant Northwest retailers by assortment of ENERGY STAR clothes dryer models available through store websites.

Outcome II

ESME clothes dryer market share increased, demonstrating progress on Outcome II. Figure 7 shows that the market share of ESME-qualifying clothes dryers increased from 1% to 2% from 2022 to 2024, during the time that they were incentivized by NEEA (incentivized units reflected in Figure 8).

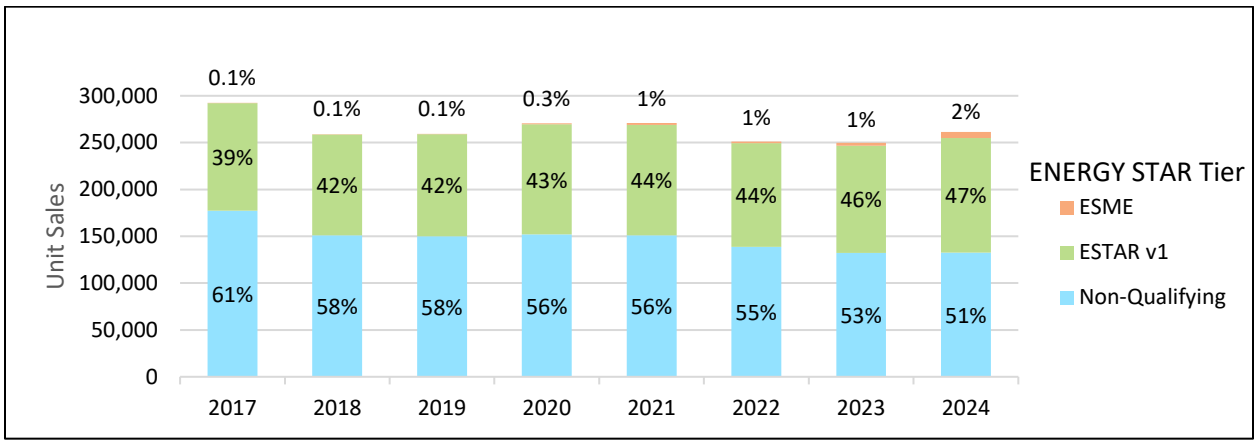

Figure 7. Participating Northwest retailers' sales of clothes dryer by energy efficiency tiers by year.

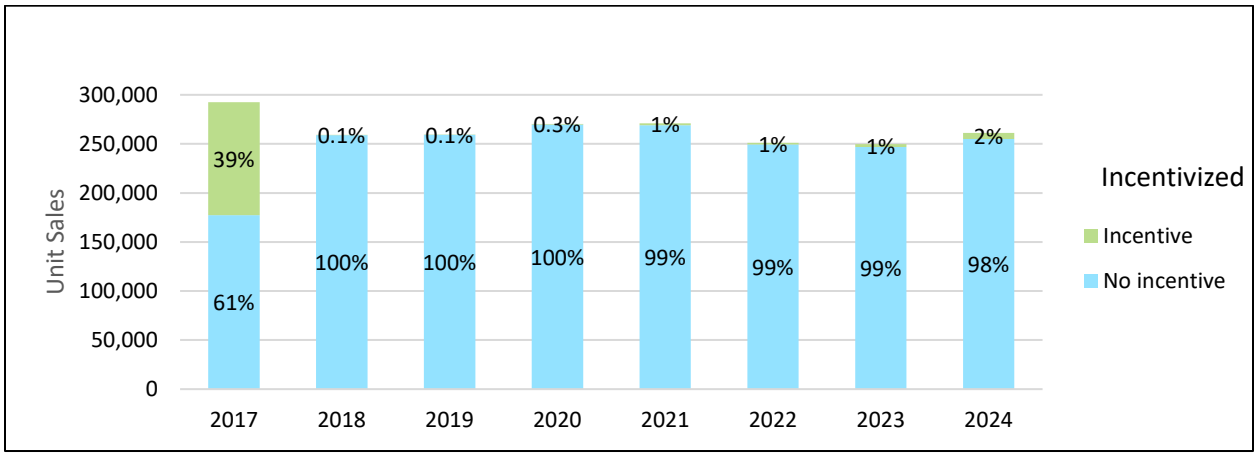

Figure 8. Participating Northwest retailers' sales of clothes dryers by RPP incentives by year.

Outcome V

Increases in the federal standard for clothes dryers demonstrate clear progress on Outcome V. NEEA supported the AHAM agreement, which delineated several improved voluntary specifications for clothes dryers that were then formally codified during the federal standard revision process. NEEA also played a significant role in influencing the new clothes dryer federal standard directly. Finalized in 2024, the federal standard sets a compliance date of 2028 and is expected to reduce energy usage by 11% and covers six product classes: gas and electric, vented and ventless, standard- and compact-sized, and combination washer-dryers (all-in-one laundry units). NEEA's provided comment letters as part of the rulemaking process. The DOE accepted nine NEEA comments and rejected six, as shown in Table 7. Two other comments were partially adopted or not directly addressed (Kannah Consulting 2024b).

Table 7. NEEA key comments and outcomes: EERE-2014-BT-STD-0058 standard.

	NEEA Comment	DOE Response	Outcome
1	Consider a range of heat pump levels in the standard analysis.	DOE stated that it will only consider heat pump dryers available in the US.	✓ DOE ultimately considered two heat pump levels in its analysis: hybrid and max tech.
2	Suggest electronic controls and firmware differences can impact efficiency with low cost.	DOE considered the cost of upgrading from electromechanical to electronic controls but did not assign a cost to algorithm upgrades.	✓ DOE did not consider the incremental cost of firmware changes.
3	Expect higher maintenance costs with more efficient technologies.	DOE used Consumer Reports maintenance cost data, increasing it along with a higher purchase price.	✓ DOE increases maintenance costs with higher purchase prices and, therefore, higher efficiency levels.
4	Support DOE's use of Appendix D2 rather than Appendix D1 for the standard analysis.	DOE continued to use Appendix D2 throughout the analysis.	✓ DOE does not reference Appendix D1 for the standard.
5	Increase the combined energy factor (CEF) electric baseline and use NEEA data to inform future analysis.	DOE appreciated the data provided, agreed with NEEA's observations, and updated the electric analysis.	✓ DOE increased the baseline CEF for electric dryers and conducted more testing to inform efficiency levels.
6	Encourage comparing electric and gas dryer CEF in engineering analysis.	DOE appreciates the data provided, agrees with NEEA's observations, and updated the gas analysis.	✓ DOE updated the gas CEF levels to more accurately compare to electric.
7	Separate classes are appropriate for ventless dryers and gas dryers, but compact and technology-specific classes should be dropped.	DOE initially agreed that separate classes were needed for ventless and gas, but then later observed all heat pumps are ventless. However, DOE retained the compact product class throughout.	+ DOE initially adopted all the suggestions except for removing the compact classes. Later, DOE collapsed the standard-sized vented and ventless into one class (NEEA supported; see 8 below).
8	Support the combined electric standard-size product class, including vented, ventless, heat pump, and conventional dryers.	DOE observes that all heat pump dryers are also ventless. DOE collapsed standard-sized ventless and vented dryers into one product class.	✓ DOE retained this standard-sized product class with all technologies and venting styles.
9	Encourage increasing the efficiency of the max tech level to heat pump dryers in the current market.	DOE's product class changes enabled the comparison of heat pump dryers with conventional electric dryers.	✓ DOE increased its heat pump dryer level substantially in the NOPR analysis.
10	Applaud the inclusion of various technologies in engineering analysis and encourage including other viable technologies.	DOE clarified that it considers many of these technologies viable, but some not yet in the market necessarily will be omitted in the engineering analysis.	✓ Combining the standard-sized vented and ventless product classes enabled a greater range of technology comparisons in the analysis.
11	Support the proposed TSL 3	DOE agrees that the EEA satisfies legal requirements for adopting the recommendation in a DFR.	✓ DOE originally proposed this adopted level.

	NEEA Comment	DOE Response	Outcome
12	Improved dryer efficiency can lengthen cycle time, but other aspects can improve utility (e.g., reduced heat damage to textiles).	DOE does not believe that any of the efficiency levels analyzed impact consumer utility, including cycle time.	✗ Did not consider any technologies that impact consumer utility or cycle time.
13	Strongly encourage requiring reporting of both cycle time and CEF using the D2 test procedure.	DOE states that ''eco mode'' that extends cycle time would not be included in the Appendix D2 test, and therefore cycle time differences are not expected.	✗ DOE declines the suggestion to report cycle time and asserts cycle time is maintained for all efficiency levels considered in the analysis.
14	Encourage issuing test procedure guidance and requiring reporting of tested settings to address possible lengthening of cycle time.	DOE did not specifically address this comment but reiterated that it does not expect longer cycle times with the standard. One manufacturer stated it expected longer cycle times.	? It does not appear that DOE intends to issue any test procedure guidance about settings reporting, but this is not definitive.
15	Clothes dryer impact on Heating, Ventilation, and Air Conditioning (HVAC) is minimal in a typical home.	Northeast Energy Efficiency Partnership (NEEP) and NEEA comments differed significantly; DOE accepted neither.	✗ DOE relied on an EU 2004 study on HVAC impacts.
16	Little to no incremental installation cost with heat pump dryers.	Heat pump dryers have larger dimensions and, therefore, take longer to install.	✗ DOE added ½ hour installation time for heat pump dryers.
17	Encourage increasing the number of cycles per year.	NEEA's RBSA study is from only three states and not representative of the US.	✗ In the final rule, DOE based its updated annual cycles on the 2020 US RECS data: 213 per year.
18	Encourage retention of the market distribution of dryer efficiency.	DOE revised the efficiency distribution based on the most recent market data.	✗ DOE declined to retain the National Impact Analysis (NIA) distribution in the PTSD.

Notes: Adapted from Kannah Consulting's internal report for NEEA on NEEA's work towards the EERE-2014-BT-STD-0058 federal standard (2024b).

3.5 Refrigerators

NEEA provided incentives for ENERGY STAR ETA refrigerators in 2022 and ESME refrigerators in 2023-2024. During the MPER time frame, NEEA also developed a new refrigerator test method procedure and collected pilot test data on six models, which they submitted to the DOE during the federal test procedure revision process. Finally, NEEA supported the AHAM agreement and participated in the federal standard revision process for refrigerators.

Outcome I

There was mixed progress on Outcome I for refrigerators, as differences between ESRPP-participating and non-participating retailers was minimal. An average of 66% of the models for sale on ESRPP-participating retailers' store websites in the Northwest were ENERGY STAR certified, compared with an average of 62% of models for non-participating retailers' websites (see Figure 9).

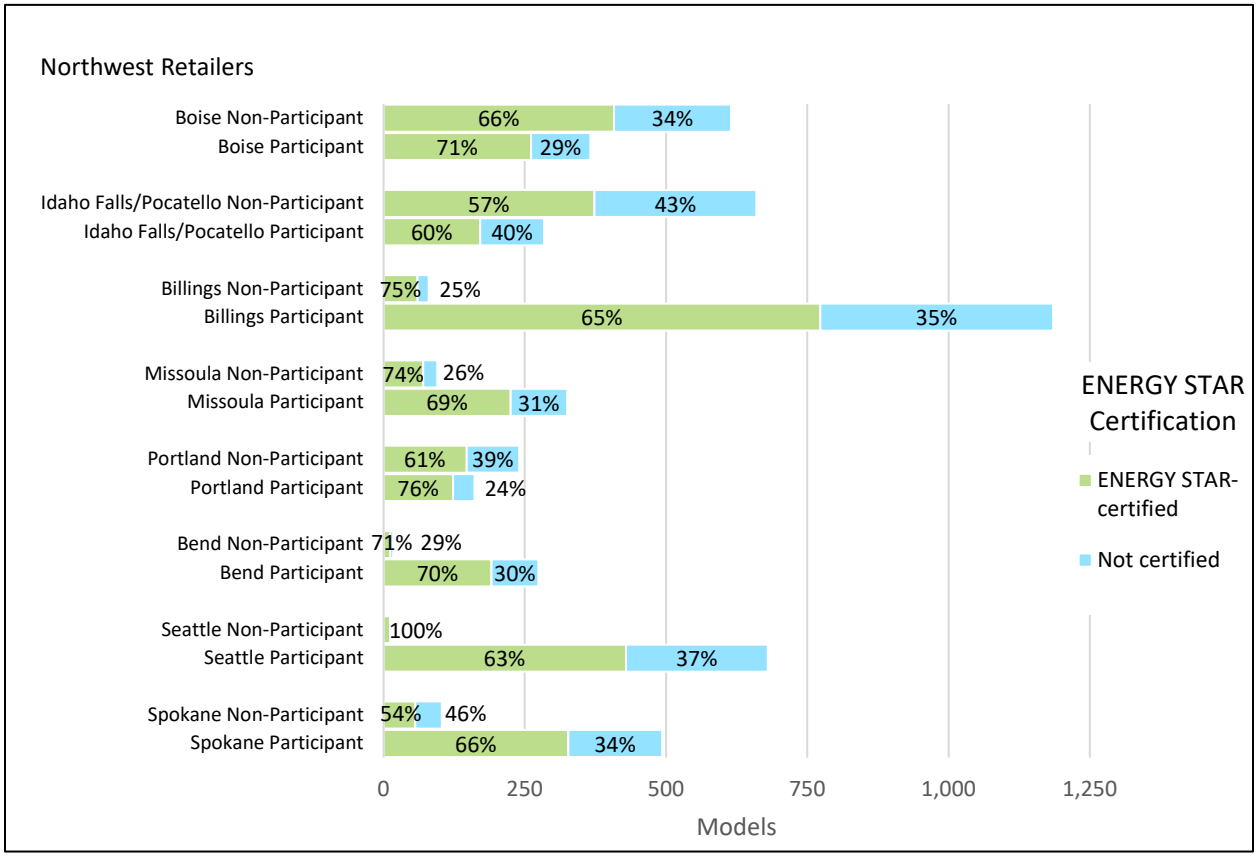

Figure 9. Comparison of sampled ESRPP-participant vs. non-participant Northwest retailers by assortment of ENERGY STAR refrigerator models available through store websites.
Notes: Seattle non-participant, non-ENERGY STAR-certified models were zero.

Outcome II

Progress on this outcome appeared to be mixed for refrigerators, as incentivized ESME models' market share stayed consistent at 2% over the two years they were incentivized. The last year NEEA incentivized ETA models (in 2022), their market share was 12%. When they were no longer incentivized, ETA market share eventually dropped to 5% in 2024 (see Figure 10). Figure 11 shows market share of incentivized refrigerator products over time.

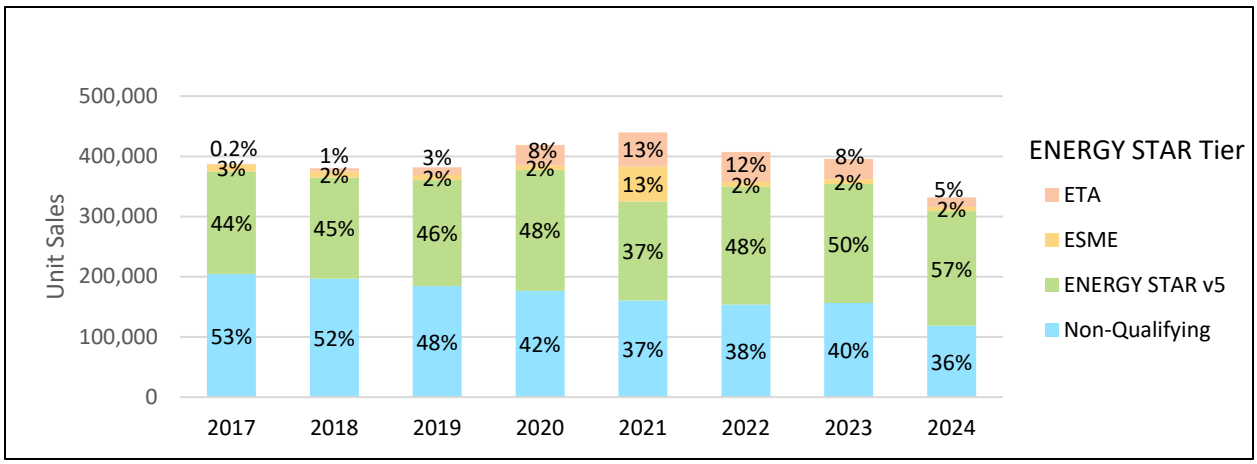

Figure 10. Participating Northwest retailers' sales of refrigerators by energy efficiency tiers by year

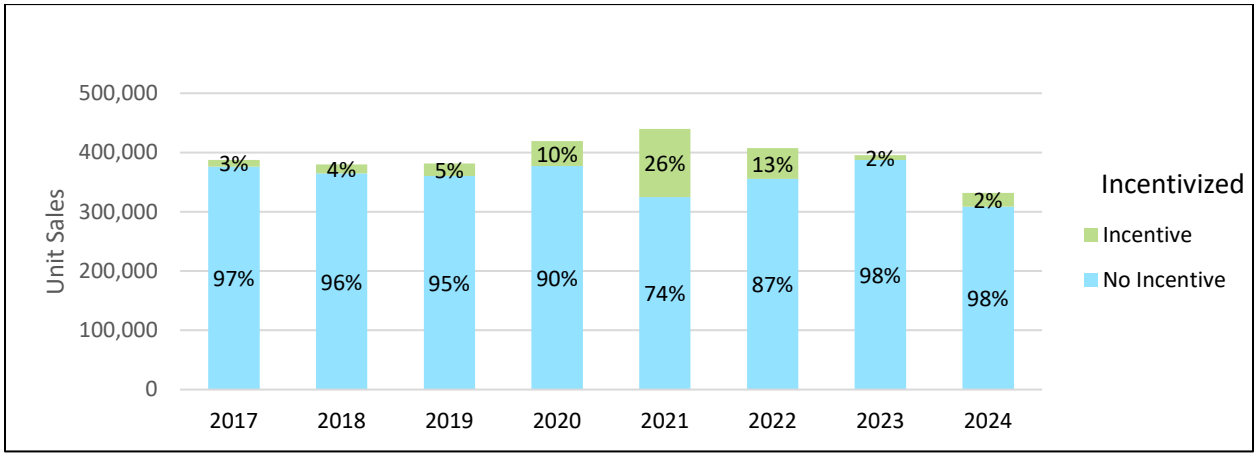

Figure 11. Participating Northwest retailers' sales of refrigerator by incentives by year

Outcome IV

Progress stalled for Outcome IV for refrigerators. NEEA worked with manufacturers and energy efficiency advocates, including ACEEE, to modernize testing approaches and played a substantive role in federal discussions about how energy use is measured in testing. NEEA provided two detailed letters to DOE, including one co-signed with other advocacy organizations, as well as test method data from six refrigerator models utilizing the suggested modifications in the test method. NEEA recommended using a second ambient test temperature to measure energy consumption – an approach used by the International Electrotechnical Commission's (IEC) 62552:2015 test procedure. The test result data that NEEA shared with the DOE spurred the organization to conduct additional testing with twelve refrigerator models using the adjusted protocol, but this approach was ultimately not adopted during the revision process. The DOE did, however, accept a NEEA recommendation to evaluate inverter compressors as an efficiency measure, which was added to the TSD evaluation for standard. Of the ten recommendations that NEEA provided, the DOE rejected eight and partially adopted two, resulting in minimal changes to the overall test procedure, which became required in 2022 (see Table 8; (Kannah Consulting 2021).

Table 8. NEEA key comments and outcomes: Refrigeration products test procedure.

	NEEA Comment	DOE Response	Outcome
1	Test refrigerators with IEC 62552:2015 to improve representativeness.	The 90 °F test condition represents 72°F with door openings. Compressor cycling is observed during this 90 °F test, and the decrease in energy use from 90 °F to 60 °F was highly similar for single and variable speed in NEEA's six and DOE's 16 refrigerators (about 50% lower energy at 60 °F).	✗ DOE determined that the existing test approach is representative and not unduly burdensome, as required under EPCA.
2	Adopt IEC 62552:2015 to create worldwide harmonization and reduce burden.	DOE recognizes that there may be benefits to international harmonization. Still, this test procedure—which references HRF–1–2019—has a long history of use in the US market, and many manufacturers support its continued use.	✗ DOE maintained the existing test approach in the final rule.
3	Consider a manufacturer-proposed optional second ambient test temperature.		✗ DOE did not provide an opportunity for an optional supplemental test.
4	Adopt an energy use metric that leverages IEC 62552:2015 and weighted ambient temperature averages.	DOE rejected IEC 62552:2015 for testing and dismissed this suggestion.	✗ DOE rejected this suggestion.
5	Door-in-door designs and energy use of door openings warrant additional investigation.	DOE does not believe that there is sufficient usage pattern data for this feature to warrant revisions.	✗ DOE did not amend the test procedure to account for door-in-door designs or door openings.
6	Employ a test to measure actual icemaker energy use.	DOE estimates an icemaker energy test would increase the testing time by 50 percent and the cost by $2,500 per test. The benefits do not outweigh the testing burden.	✗ DOE proposed to continue using the fixed adder approach with a revised value of 28 kilowatt-hour (kWh) per year.
7	New data should be considered if DOE retains the fixed adder approach for icemaker energy use.	DOE considered data and proposed an icemaker adder of 28 kWh/yr. (The prior value was 84 kWh/yr.)	+ DOE proposed an icemaker adder of 28 kWh per year.
8	Use a higher default ice maker adder of 55 kWh/yr and create an optional ice maker test procedure.	Absent any new data, DOE maintained its preliminary conclusion from the December 2019 NOPR.	✗ DOE determined that adopting an icemaker test would increase the test burden with little improvement in representativeness.
9	Amend the test procedure to capture the energy use of display screens and connected functions.	DOE stated that Wi-Fi connectivity and associated display screens are relatively new features in refrigerators and that DOE does not want to hinder innovation.	+ DOE incorporated section 5.5.2(r) of Household Refrigerating Appliances Standard 1-2019 (HRF) which specifies that the communication modules are on but not connected.
10	Built-in products should be tested in an enclosure.	DOE expects no significant difference from a freestanding test and believes an enclosure would unnecessarily increase the test burden.	✗ DOE retained the freestanding test but encouraged further comment and additional data.

Notes: Adapted from Kannah Consulting's internal report for NEEA on NEEA's work towards the federal refrigerator testing procedure (2021).

In 2024, NEEA published a rationale outlining the benefits of using aspects of the European test procedure, supported by an expert comparative analysis and NEEA's own testing of six refrigerator models. The DOE indicated openness to revising the federal test procedure during its next revision process and NEEA is planning to provide additional test data and recommendations for revision at that time.

Outcome V

There was clear progress on Outcome V due to an increased federal energy efficiency standard for refrigerators with a compliance date in 2029.[11] NEEA supported the AHAM agreement that created alignment among manufacturers and energy efficiency organizations on increases in energy efficiency (described in Outcome V sections on clothes washers above) that was submitted to the DOE, and NEEA submitted three other comment letters to DOE during its federal standard revision process. Table 9shows that of NEEA's nine comments, DOE accepted four as part of its final rule and rejected three. Two other comments were either partially adopted or not addressed (Kannah Consulting 2024c).

Table 9. NEEA key comments and outcomes: EERE-2017-BT-STD-0003 standard.

	NEEA Comment	DOE Response	Outcome
1	Amend the refrigeration product standard for all categories.	DOE used NEEA's ESRPP data to disaggregate top-mount, side-by-side, and bottom-mount refrigerator freezer shipments.	✓ DOE proceeded with a rulemaking to update standard for refrigeration products.
2	Evaluate inverter-driven compressors as an efficiency measure.	DOE noted the efficiency opportunities of inverter-driven variable speed compressors.	✓ DOE included inverter-driven compressors in the TSD evaluation for standard.
3	Adopt the proposed Trial Standard Level (TSL) 5.	DOE agrees.	+ DOE ultimately adopted the EEA recommendation.
4	Adopt a modified TSL 5 with different efficiency levels for a few product classes, an added product class, and alternate effective dates.	DOE agrees that the EEA satisfies legal requirements for adopting the recommendation in a DFR.	✓ DOE adopted the recommended levels and effective dates.
5	Support transparent and door-in-door allowance limits to mitigate energy use increases.	DOE agrees.	✓ DOE adopted transparent door allowance limits.
6	Require manufacturers to report which applicable door allowance is used to certify compliance.	No response from DOE.	? No response, but it is possible DOE could address this in a compliance rulemaking.
7	Separate product classes with and without icemakers and measure icemaker energy.	DOE considered a separate ice maker test procedure and concluded the burden did not justify the cost of testing.	✗ The icemaker adder of 28 kWh/yr used in the test procedure is representative and reasonable.

[11] Department of Energy "Energy Conservation Standard for Refrigerators" (2024)

	NEEA Comment	DOE Response	Outcome
8	Consider the network energy use on internet-connected products and incorporate this into the standard.	2021 test procedure amendments require communication devices to be on but not connected to any network when tested.	✗ DOE considers the 2021 test procedure representative and reasonable for network-connected consumer refrigeration products.
9	Add a low ambient temperature test point to better represent energy use for all technologies.	DOE finalized the test procedure without additional lower ambient testing based on DOE and manufacturer data.	✗ DOE concluded that the current test effectively considers variable speed but is open to new data in the next test procedure revision.

Notes: Adapted from Kannah Consulting's internal report for NEEA on NEEA's work towards the EERE-2017-BT-STD-0003 federal standard (2024c).

3.6 Televisions

NEEA participated in the development of a voluntary specification agreement that increased energy efficiency specifications for televisions. This Televisions Voluntary Agreement,[12] or the "TV VA", included eight television manufacturers, a major search engine, and two energy efficiency advocate organizations (including NEEA), and was signed in 2023, with a voluntary compliance date in 2026.

Outcome III

NEEA made clear progress on Outcome III for televisions through the adoption of the TV VA.[13] This agreement included the NEEA recommendation that televisions in standby mode consume 2 watts or less (see Table 10), and interviews with knowledgeable market actors suggested that the agreement's specification may not have been possible without the NEEA-developed test method that better captures standby mode energy consumption.

Table 10. NEEA influence on TV VA specification.

Test	Reason test was proposed	Specification	In current TV VA	NEEA Influence
Active standby power	• Recent testing by National Resources Defense Council and others has shown that some TV models continuously consume between 10 and 15 watts of standby power when connected to Wi-Fi and if the TV is connected to a wireless speaker like an Amazon Echo with wake by voice feature enabled and/or b) the TV's "wake by cast" feature is enabled. • Setting requirements that TVs with wake on cast or wake on voice for smart speakers be tested with those features enabled, even if these features are not shipped enabled.	When connected to WAN, and up to three devices (i.e., smart speaker, mobile device, and network traffic generator), Standby Mode Power shall be less than or equal to 2.0 watts.	Yes	Yes

[12] Voluntary Agreement for Ongoing Improvement to the Energy Efficiency of Televisions (2023).

[13] In this study, Level 7 interpreted Outcome III to include *any* kind of voluntary specification increases, like those encompassed by the TV VA.

4 Research Objective 2. Manufacturer Influence Assessment

Level 7 leveraged document review and included questions in stakeholder interviews to explore potential activities and outcomes not currently documented in the NEEA logic model (see Appendix A) through which the RPP program may influence manufacturers to increasingly build energy efficiency into their product design.

Supporting manufacturers' agreements resulted in increased energy efficiency being built into consumer products

NEEA took advantage of opportunities to engage in manufacturers' agreements, like the TV VA and the AHAM agreement described in previous sections of this report, to influence how manufacturers build energy efficiency into their consumer products.

Interview results and document review suggested that NEEA's participation in the development and signing of the AHAM agreement was part of a larger conversation between energy efficiency organizations and manufacturers that helped these parties align on a clear set of voluntary specifications that would increase the energy efficiency of several consumer products. Level 7's review also suggested that NEEA played an even more important role in the development and signing of the TV VA in 2023. The voluntary specifications on standby power usage within this agreement were supported by NEEA and were made possible to assess through the development of the "NEEA test method."

Engaging in manufacturers' agreements is not currently captured in the RPP logic model but resulted in supporting changes that increased the energy efficiency that manufacturers ultimately built into their products.

5 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

5.1 Conclusions

Research Objective 1 Conclusions. Market Progress Indicator Assessment

Level 7's review of market progress indicators found varied levels of progress across outcomes for the RPP product categories.

Outcome I: Retailers and merchants incorporate incentives into their assortment and marketing decision making process.
MPI I: Retailers consider ESRPP qualification in assortment and marketing decisions.
There was clear progress on Outcome I in two of the three relevant product categories (clothes washers and clothes dryers), while there was mixed progress for refrigerators. ESRPP retailer interviews,

retailers' quarterly presentations to ESRPP sponsors, and promotional flyer analysis provided qualitative data that supported progress on this outcome across all three product categories. Web-scraping and promotional flyer analysis revealed that ENERGY STAR clothes dryers and clothes washers were more likely to be stocked and marketed by ESRPP-participating Northwest retailers than non-participating retailers in the same areas.

Outcome II: Increase in ENERGY STAR (or higher tier) market share for RPP product categories.
MPI II: Market share of RPP-qualified product tiers increases.
There was mixed progress on Outcome II across the four relevant product categories. ESME room air conditioner market share almost doubled (from 10 to 18%) in 2023 – the year after incentives were withdrawn. There was slower growth in market share for incentivized ESME clothes dryers, which grew from 1% to 2% during the MPER review period. Incentivized ESME refrigerators stayed the same (at 2%) and incentivized ESME top-loading clothes washers' market share declined (from 7% to 5%).

Outcome III: Increase in ENERGY STAR (or higher tier) qualifying criteria for RPP product categories.
MPI III: ENERGY STAR (or higher tier) qualifying criteria increases.
There was clear progress on Outcome III for televisions. In 2023, manufacturers and energy efficiency organizations worked together to develop and sign an agreement on new voluntary energy efficiency specifications that participating manufacturers would comply with, starting in 2026. NEEA recommended a 2-watt energy usage limit on televisions in standby-mode, supported by a NEEA developed test method that could identify this energy usage reliably (ANSI/CTA-2037-D). This specification was adopted in the Televisions Voluntary Agreement[6] (TV VA) signed in 2023.

Outcome IV: ENERGY STAR data and federal test procedures better reflect real world energy consumption.
MPI IV: Test procedures are improved.
There was mixed progress on Outcome IV across relevant product categories – air conditioners and refrigerators. For room air conditioners, NEEA engaged in the revision process for the ENERGY STAR test method to determine room air conditioner heating mode performance through attendance at webinars and submission of two comment letters providing multiple suggestions, most of which were adopted in the final test method procedure. NEEA also engaged in the DOE test procedure revision process for refrigerators in 2021 that had a compliance date in 2022. NEEA provided ten suggestions, as well as lab test data aligned with these suggestions, which motivated the DOE to conduct additional testing on a larger sample of models. Ultimately DOE accepted two of NEEA's recommendations but did not significantly change the test procedure for refrigerators.

Outcome V: Change in federal (and state) minimum standards.
MPI V: Federal and state minimum standards increase.
There was clear progress on Outcome V for relevant product categories, with advances in federal standards for clothes washers, clothes dryers, and refrigerators. NEEA participated in the 2023 AHAM consensus agreement, which set increased energy efficiency guidelines that the DOE subsequently adopted through its 2024 Final Rules on clothes washers, clothes dryers, and refrigerators. The new standards for clothes washers and dryers are slated to take effect in 2028, while the refrigerator standard is scheduled to phase in during 2029 and 2030.

Research Objective 2 Conclusions. Manufacturer Influence Assessment

NEEA's RPP program is engaging in the development and signing of manufacturers' agreements that are increasing the energy efficiency of relevant consumer products (including televisions, clothes washers, clothes dryers, and refrigerators). This activity is not currently delineated in the logic model (see Appendix A), though it contributes to increased energy savings from manufacturers who choose to build products that align with the voluntary specifications within the agreements.

5.2 Recommendations

Level 7 has five recommendations that the RPP program team should consider as they move forward.

Recommendation 1. Re-evaluate clothes washer incentivization strategy
NEEA currently incentivizes top-loading clothes washers, which is not resulting in increased market share for this product configuration. The program should consider increasing incentives for top-loading washers or conducting research to assess the potential benefits of incentivizing front-loading machines. Providing incentives for front-loading washers could re-energize the transition toward this highly efficient segment, where sales momentum has recently stalled. Research on top- and front-loader dynamics could be used to identify the most effective incentive structures to accelerate market uptake.

Recommendation 2. Maintain ENERGY STAR® Most Efficient (ESME) clothes dryer incentives to support early market development
Maintaining support through at least the next MPER will allow NEEA to assess whether early retailer enthusiasm and promotional activity translate into sustained consumer adoption. Furthermore, given the category's modest market share, it will be important to monitor whether early gains persist beyond initial promotional cycles. NEEA should track total sales, the share of qualifying models, and promotion activity to ensure that efficiency remains central to market growth—not just broader adoption of the category.

Recommendation 3. Re-evaluate refrigerator incentivization strategy
NEEA should evaluate whether current incentive levels and design are effectively motivating retailers to stock and promote advanced-tier refrigerators. NEEA has noted that incentives are currently the most cost-effective way to secure retailer sales data, but if current incentive levels are not achieving broader market penetration for advanced tiers, increases may be warranted. Broader market dynamics may be working against sustained uptake of advanced-tier models, raising the question of whether incentives are the right tool or whether complementary strategies are needed to overcome barriers.

Recommendation 4. Sustain engagement in refrigerator test method procedure revisions
In the MPER 3 period, NEEA's efforts to influence test procedures were not successful. Continued engagement will help ensure emerging priorities—such as low-GWP refrigerants and advanced performance metrics—are visible in future iterations.

Recommendation 5. Continue to support voluntary manufacturer agreements that increase energy efficiency and incorporate this activity formally in the RPP logic model.
NEEA should continue supporting voluntary manufacturers' agreements that promote energy efficiency in consumer products when opportunities arise and should consider incorporating this activity more formally in the RPP logic model. This may help the team plan for outreach and resourcing to effectively support agreement development, while bringing the program logic into better alignment with current strategies.

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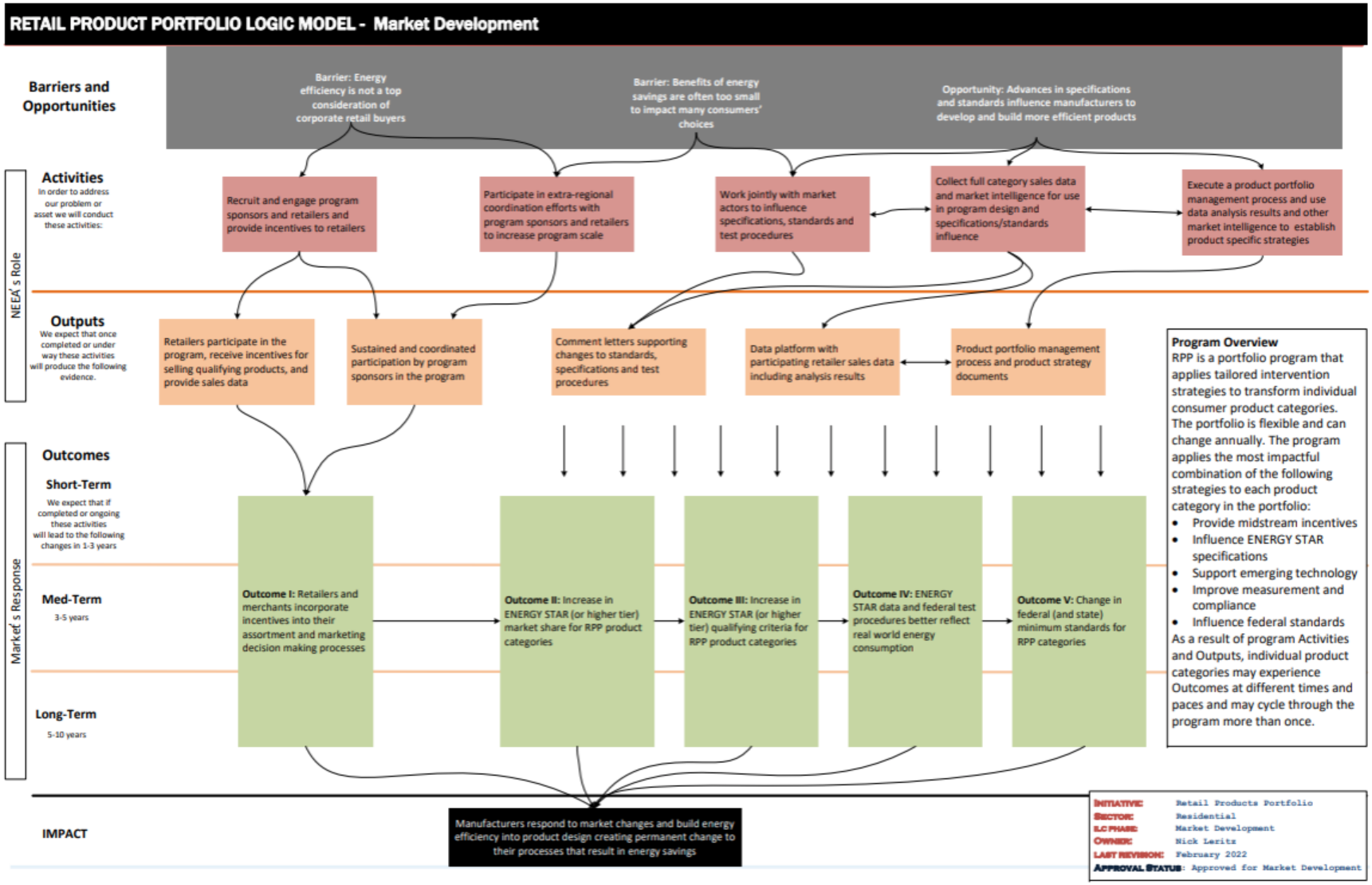
Appendix A. NEEA's Retail Product Portfolio program logic model



Appendix B. Detailed Methodology

NEEA Internal Documents

Level 7 examined communications that NEEA had with the EPA, retailers, program staff, and other external program partners to assess the impact of the program on retailers' decisions to incorporate RPP incentives into their assortment and marketing decisions (Outcome I), to increase ENERGY STAR (or higher tier) qualifying criteria for RPP product categories regarding the Television Voluntary Agreement (Outcome III), to review NEEA's recommendations to ENERGY STAR regarding qualification criteria and improving testing procedures (Outcome IV) to better reflect real world use, and to collect information on changes in federal (and state) minimum standards for RPP categories (Outcome V). Level 7 incorporated any document that provided evidence of the RPP program's impact into the evaluation of the MPIs, including memos, reports, and presentations.

NEEA Staff & External Consultant Interviews

Level 7 conducted nine interviews with NEEA staff and external consultants to: gain understanding of the RPP Program, examine retailer relationships (Outcome 1), research NEEA's influence on the Television Voluntary Agreement (Outcome III), and understand the role NEEA had in the AHAM agreement (Outcome V). Interviews took place in July and August 2025.

NEEA Sales Data

Level 7 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 participate 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 2024 for the NEEA program area (Idaho, Montana, Oregon, and Washington). The data NEEA provided is not broken down by state or retailer.

Level 7 examined market share of each RPP product on two levels. First, Level 7 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.

2025 Data and Analysis

All of the following participating and non-participating Northwest retailer data collections and analyses were conducted in 2025, because of the lack of relevant archival data in the public realm.

Assortment Assessment on Retailer Websites

Outcome I is that "retailers and merchants incorporate incentives into their assortment and marketing decision-making process." For analysis of Outcome I, Level 7 collected data from appliance retailers to assess whether participating retailers assorted and marketed ENERGY STAR-certified RPP models at a greater level than non-participating retailers did. Greater assortment and/or marketing among participants would imply that the RPP program influences retailers in this regard. ENERGY STAR-certified

appliances served as a proxy for RPP assortment. While not all ENERGY STAR models are incentivized by the RPP program, they are generally more energy-efficient than non-ENERGY STAR-certified models.

Level 7 selected eight cities to gather retailer data, two in each state that were in different regions of the state. Cities were selected based on their population size and distance from one another. The cities selected were Boise, Idaho Falls/Pocatello, Billings, Missoula, Portland, Bend, Seattle and Spokane.

Within each city, Level 7 web scraped the websites of four RPP program participating retailers: three big box retailers and one other—typically a smaller appliance store, ensuring the data reflected a range of retailer sizes beyond just big boxes. Forty individual stores were selected for web scraping.

- NEEA selected the three big box retailers, which were web scraped in all cities.
- Level 7 selected the non-big box retailers from a NEEA-provided list of Nationwide Marketing Group members, which varied by city.
- Level 7 selected the non-participating retailers, which varied by city.

To be selected, a retailer was required to offer refrigerators, clothes washers, and clothes dryers within their assortment. All-in-one units figured among the laundry product assortments at 32 of 40 retailers. While room air conditioners were assorted by all the big box retailers, the other appliance retailers were split—two of eight participating retailers and six of eight non-participating retailers sold air conditioners. Although it was desirable to select as many air conditioning sellers as possible, the finite numbers of non-big box participants and non-program participants meant this was not an existing scenario within several hundred miles from some cities.

Level 7 additionally required that selected retailers must sell new appliances and provide model level purchase availability online. Used appliance and 'scratch and dent' stores were not included. If a city had no such store, the retailer in closest proximity that did meet the criteria was selected.

Most non-participating selected retailers were small local companies: nine had just a single store, and four had three to four stores. One was a regional retailer owning 13 stores, and one was national.

To assess how merchants incorporate incentives into the "marketing decision-making process," Level 7 examined the assortment of models that the retailers selected to promote to potential buyers. For most retailers, this was a subset of their full assortment. However, there was little consistency as to how different retailers promoted products, ranging from selection of models to display in the showroom, to "available for immediate pickup"-type ribbons, to "in stock"-type search filters. Retailers with multiple stores often had different products promoted by location. In these cases, the store nearest to the downtown area was selected to cover the largest likely population of shoppers. A few smaller retailers did not promote any products. Data for these retailers was based on their available assortment.

Due to inconsistencies across retailer websites, the assessment approach varied depending on the tools each site offered. When ENERGY STAR search or filter functions were available, those were used to identify ENERGY STAR and non-ENERGY STAR products. For retailers without such tools, product-level data had to be manually cross-referenced with the NEEA sales database, which flagged ENERGY STAR SKUs.

ENERGY STAR Signaling on Retailer Websites

This analysis evaluated the extent to which retailers facilitated consumer awareness of and access to ENERGY STAR products through their digital storefronts. The review encompassed visual cues (such as

ENERGY STAR icons or product descriptions that noted ENERGY STAR certification), navigational tools (such as certification-based search filters), and supplemental content (such as informational blurbs or promotional messaging) that may have supported recognition and engagement with energy-efficient appliance options.

Assessment of ESRPP-Participating National Retailer Promotional Flyers

As another means of assessing how merchants incorporate incentives into the "marketing decision-making process," Level 7 examined the promotional flyers published by two (out of the four) ESRPP-participating national retailers. This assessment reviewed the promotional flyers intended for the Northwest consumer audience that were released over an approximate four-month period, with "prices valid" dates spanning mid-June through early October 2025. Promotional flyers targeted toward professional contractors or trade audiences were excluded from this analysis.

Appendix C. Interview Guides

Respondent #1

INTRODUCTION

- Thanks for your time…
- Level 7 is working with NEEA on MPER 3, and to help inform our work I'd like to gain an understanding of the RPP program and how it works, what changes are intended and any insights you may have regarding the influence of the program on outcomes.
- Scheduled for approx. 30 minutes
- Findings will be reported in aggregate, comments not attributable to any specific person.
- Objections to recording?
- Questions?

BACKGROUND

As part of this research, I'll be talking with people in a variety of roles at NEEA.

1. Would you mind giving me a brief description of your mission and role as program manager for the RPP team, and some of your day-to-day responsibilities?

And now, I'd like to hear a little more from you about the ESRPP and RPP programs, to help our team gain an understanding of how the two programs work together to create change in the market, as well as to support documenting some of the big areas of work that the RPP focused on in the last couple years.

ESRPP

2. Let's start off by talking a little bit about the larger ESRPP program. I understand it's a collaborative of energy efficiency sponsors, retail partners and other stakeholders and is facilitated by NEEA.
    - Can you talk a little bit about NEEA's role in ESRPP?
3. How does ESRPP decide which product categories to incentivize in a given year and which ones to stop incentivizing?
    - How does the RPP Program then make decisions about what to incentivize in the NW Region?
4. How does having a nationally scaled program, as opposed to a regionally sized program, help support the changes that you'd like to see in the market?

RPP

Now let's focus a bit more on what the RPP program has been working on in the last two and a half years. It looks like RPP is ultimately hoping to increase the energy efficiency that manufacturers build into a variety of home appliances, and that this is mostly achieved through the combined efforts of:

- incentivizing retailers,
- revising test methodologies,
- supplying sales data and test procedure information to regulatory bodies during federal and voluntary specification revisions, and
- lending vocal support to increases in energy efficiency requirements through those specifications.

5. Are any of those efforts more effective than others? Why is that?

MANUFACTURERS

Finally, I know your program is hoping to use this MPER study as a way to explore what indirect and more direct types of influence you may or may not be having on manufacturers, and how these might be measured in the future, since they are not currently measured directly through your MPIs.

6. I'm curious about how your RPP team engages with manufacturers directly - could you share a little about when or if that happens?
    - Who from RPP is most likely to have conversations with manufacturers? Under what circumstances?
    - Are there additional ways you or your team might want to engage directly with manufacturers in the future?
7. Let's take a quick look at the logic model. There are a few ways that the program is likely to influence manufacturers indirectly, through revisions to the federal and voluntary standards. Are there other ways that the ESRPP or RPP programs may be influencing manufacturers indirectly?
8. Take another look at the logic model. Aside from changes already described in the logic model, how might someone be able to tell if the program is achieving its final impact—if "manufacturers are building energy efficiency into product design and creating permanent change to their processes that result in energy savings"?
9. Beyond the ESRPP program, what other factors influence manufacturers to incorporate energy efficiency into their product lines?
    - Does anything work against this effort?

That is the extent of my questions.

- Are there any other comments you would like to make or thoughts you want to share relative to the topics we discussed?
- That wraps up our discussion. Thank You!

Respondent #2

INTRODUCTION

- Thanks for your time…
- Level 7 is working with NEEA on MPER 3, which will cover the timeframe of 2022-2024.
- Our discussion today will focus on your work on the Multi-Appliance Agreement as well as your work related to federal standards.
- Scheduled for approx. 30-45 minutes
- Findings will be reported in aggregate, comments not attributable to any specific person.
- Objections to recording?
- Questions?

MULTI-APPLIANCE AGREEMENT

1. Can you give me a brief description of your role with respect to federal standards?
2. In your experience, how does NEEA generally support the revisions of federal standards and ENERGY STAR specifications?
    - What might be effective information to provide when supporting revisions?
3. When might NEEA be involved in developing voluntary agreements between manufacturers? How does NEEA become involved in that process?
4. For the MPER 3 for RPP, we're trying to learn more about how NEEA may have influenced the AHAM agreement and what changes that may have led to in federal standards for products relevant to the RPP program. What was your role as a NEEA representative in the AHAM agreement?
5. What did your participation look like?
6. What was the value in having NEEA be present at these AHAM agreement meetings?
7. Do you think other organizations appreciated your participation? Which ones? Why is that?
8. How might your role have been different in this process; versus the more direct work you do to support federal standards revisions?

That is the extent of my questions.

- Are there any other comments you would like to make or thoughts you want to share relative to the topics we discussed?
- That wraps up our discussion. Thank You!

Respondent #3

INTRODUCTION

- Thanks for your time…
- Level 7 is working with the RPP Program team on its third MPER.
- Our discussion today will cover primarily televisions and the Voluntary TV agreement you worked on.
- Scheduled for approx. 30 minutes
- Findings will be reported in aggregate, comments not attributable to any specific person.
- Objections to recording?
- Questions?

TELEVISIONS WORK

1. I believe you were a product lead for televisions for a short while in the last few years. At that time, what opportunities for increasing energy efficiency in televisions did you focus on?
2. What did you do to support these efforts?
    - Did you play a role in working with Gregg Hardy at Pacific Crest Labs? Could you describe that work? What were you hoping to learn or to show?
    - How did you envision these results being used?
    - Has externally contracted work to support televisions wrapped up or is there still some ongoing that you are aware of?

VOLUNTARY AGREEMENT

3. How, if at all, have you been involved in the Televisions Voluntary Agreement?
4. What are important specifications to include in the agreement? Why ?
    - Why is it important for manufacturers to come to a voluntary agreement?
5. What do you think is the likelihood of the agreement being adopted?
    - Are there any areas that might cause a delay or require further discussion? Please explain.

That is the extent of my questions.

- Are there any other comments you would like to make or thoughts you want to share relative to the topics we discussed?
- That wraps up our discussion. Thank You!

Respondent #4

INTRODUCTION

- Thanks for your time…
- Level 7 is working with NEEA on the RPP program's third MPER.
- Our discussion today will focus on your participation with the televisions voluntary agreement.
- Scheduled for approx. 30-45 minutes
- Findings will be reported in aggregate, comments not attributable to any specific person.
- Objections to recording?
- Questions?

MARKET TRANSFORMATION

Thank you for agreeing to speak with me to help inform the third MPER for the RPP Program. I'm aware you're not on the program team, but I've heard that you have been involved in the conversations around the Television manufacturers' agreement that is currently underway in California.

1. First, could you describe how you have been involved in the TV voluntary agreement? When did you first become aware of it?
2. How would you describe NEEA's role in the TV voluntary agreement? Influencer? Organizer? Expert? Other?
3. Are you familiar with the specifications that NEEA is supporting in the agreement? Could you describe them?
4. Do you regularly attend any meetings with external parties in support of the televisions agreement? Could you describe these meetings and who attends?
5. Are there some specifications that manufacturers are already in alignment around? Which are facing the most debate? How do you and others come to alignment—what helps move the needle on these disagreements?
6. Why is it important for manufacturers to come to a voluntary agreement on TV specifications? What's at stake?

That is the extent of my questions.

- Are there any other comments you would like to make or thoughts you want to share relative to the topics we discussed?
- That wraps up our discussion. Thank You!

Respondent #5

INTRODUCTION

- Thanks for your time…
- Level 7 is working with NEEA on MPER 3, which will cover the timeframe of 2022-2024.
- Our discussion today will cover topics related to:
  - How retailers approach incentive programs
  - The influence of NEEA RPP program.
- Scheduled for approx. 30-45 minutes
- Findings will be reported in aggregate, comments not attributable to any specific person.
- Objections to recording?
- Questions?

BACKGROUND

As part of this research, I'll be talking with people in a variety of different roles at NEEA.

1. Would you mind giving me a quick description of your mission and role as the Market Strategy Manager with the RPP team, and some of your day-to-day responsibilities?
2. Can you share more about how you are involved in ESRPP through your role?
3. How does having a nationally scaled program, as opposed to a regionally-sized program, help support the changes that you'd like to see in the market?
4. How does incentivizing retailers change how they promote ESRPP products?
   - Do you think some strategies for promoting ESRPP products have been more successful than others?
5. Do you stay connected with retailers outside of select PGC meetings?
   - How regularly?
   - What do you talk about together?
6. Are you actively trying to grow retailer participation in ESRPP? Why do you think some large retailers choose not to participate, if they are aware of the program?

MANUFACTURERS

7. I'm curious about how the RPP team engages with manufacturers directly, if at all. Could you share a little about when or if that happens?
   - Who from RPP is most likely to have conversations with manufacturers? Under what circumstances?
   - Are there additional ways you or your team might want to engage directly with manufacturers in the future?
8. How might someone be able to tell if the RPP program is achieving its final impact—if "manufacturers are building energy efficiency into product design and creating permanent change to their processes that result in energy savings"?

TVS VOLUNTARY AGREEMENT

Finally, I'd like to ask a couple questions about the televisions voluntary agreement.

9. Are you familiar with the specifications that NEEA is supporting in the agreement? Could you describe them?
10. Do you regularly attend any meetings with external parties in support of the televisions agreement? Could you describe these meetings and who attends?
11. Are there some specifications that manufacturers are already in alignment around? Which are facing the most debate?
12. Why is it important for manufacturers to come to a voluntary agreement on TV specifications? What's at stake?

That is the extent of my questions.

- Are there any other comments you would like to make or thoughts you want to share relative to the topics we discussed?
- That wraps up our discussion. Thank You!

Respondent #6

INTRODUCTION

- Thanks for your time…
- Level 7 is working with NEEA on MPER 3, which will cover the timeframe of 2022-2024.
- Our discussion today focus on the TV Voluntary Agreement, and the work NEEA is doing around testing modes.
- Scheduled for approx. 30-45 minutes
- Findings will be reported in aggregate, comments not attributable to any specific person.
- Objections to recording?
- Questions?

BACKGROUND

As part of this research, I'll be talking with people at NEEA and beyond about the work they have been involved with recently regarding televisions.

1. Would you mind giving me a brief description of your mission and role as a NEEA representative to support the TV Voluntary Agreement, and some of your day-to-day responsibilities?
    - How did you interact with the Consumer Technology Association (CTA) to support that agreement?

TV VOLUNTARY AGREEMENT

2. When developing the framework for new test methods such as the standby mode power consumption, how does the process start? Can you walk through where it begins and where NEEA fits in?
3. Where does the input come from for the testing criteria? Is it driven by what the government (e.g., DOE) or regulating bodies (e.g., Consumer Technology Association, NYSERDA, Cal MTA) want? By what the retailers think the consumer demand is? By what the manufacturers think they can achieve?
4. How are they developed? (Probe on what the push and pull is from different parties, where the barriers exist)
5. How do you make your decisions on how the testing procedures were developed? Where do you start (probe on prior testing procedures, what changes either in technology or demand were drivers for change)?
6. In the current voluntary agreement, could you describe NEEA's/your role or influence in developing testing procedures? What types of tools or tests did you need to implement? What worked and what didn't?
7. Can you describe how you worked with the TV manufacturers regarding any specific standards or requirements? (probe on Samsung interactions for specifics)
8. What goes into the whole adoption process for the test (probe on credible tests, meeting or defining standards that work, futureproofing)? Where did you get pushback? Where did you have the most influence in the process (e.g., stand-by mode, on mode, types of TVs)

9. In your opinion, who led the development of testing process for the TV VA? If you and/or NEEA wasn't involved, do you think the new testing process would have been created/developed? Why/why not?
10. What are the next steps? What hurdles do you still need to clear?
11. Are there other ways that NEEA has influenced manufacturers or agreements with manufacturers when it comes to testing?

That is the extent of my questions.

- Are there any other comments you would like to make or thoughts you want to share relative to the topics we discussed?
- That wraps up our discussion. Thank You!

Respondent #7

INTRODUCTION

- Thanks for your time…
- Level 7 is working with NEEA on MPER 3, which will cover the timeframe of 2022-2024.
- Our discussion today focus on the TV Voluntary Agreement, and the work NEEA is doing around testing modes.
- Scheduled for approx. 30-45 minutes
- Findings will be reported in aggregate, comments not attributable to any specific person.
- Objections to recording?
- Questions?

TV VOLUNTARY AGREEMENT

As part of this research, I'll be talking with people in a variety of roles related to the Televisions Voluntary Agreement.

1. How did you first become involved with the Televisions Voluntary Agreement?
2. What was your role in the TV VA (voluntary agreement)?
3. Who were the main parties involved in the TV VA?
    - Why is each involved?
    - In your opinion, what were each of them hoping would be in the agreement? [Probe for each organization if not organically mentioned– CPUC, CEC, NEEA—as well as manufacturers in general]
4. Has a final agreement been reached?
    - [IF YES]
        - What were the main points included in the agreement?
        - Do you know if any of these were supported by NEEA?
        - Why were these included?
        - Do you know if any main points supported by NEEA did not make it into the final agreement?
        - Is there any public-facing documentation you can connect me with to learn more?
    - [IF NO]
        - Are there points on which all of the parties are agreed so far? If so, what are they? Why do you think all of the parties agree on these points?
        - What is still up for debate? Why?
        - Do you know which main points have been supported by NEEA?
        - Is there any public-facing documentation you can connect me with to learn more?
5. [If unclear from previous responses:] Has your work on the TV VA wrapped up or is it still ongoing?
6. When developing the framework for new test methods such as the standby mode power consumption, how does the process start? Can you walk through where it begins and where your role fits in?
7. In your opinion, what was driving the need for a new testing procedure? Is it driven by what the utilities want or an opportunity they see? By increased consumer demand for new technology

(e.g., 4G TVs)? By what the manufacturers think they can achieve? By associations like the CEC or even NEEA? How does the VA pick up momentum?

8. Do you ever get any pushback from manufacturers regarding any specific standards or requirements? What have you done to convince them otherwise (probe on data points that make a difference)?
9. In the same regard, do you ever get pushback from the utilities regarding any of the testing or standards the manufacturers want to apply? Where do you find agreement and how do you influence compromise?
10. What is your sense for how NEEA influences what manufacturers do with respect to energy efficiency in general? For the TV agreement, how much influence or sway did NEEA have on the outcome? Why do you say that?
11. Are there other ways that NEEA has influenced manufacturers or agreements with manufacturers?
12. Beyond the RPP program, what other factors influence manufacturers to incorporate energy efficiency into their product lines?
    - Does anything work against this effort?

That is the extent of my questions.

- Are there any other comments you would like to make or thoughts you want to share relative to the topics we discussed?
- That wraps up our discussion. Thank You!

Respondent #8

INTRODUCTION

- Thanks for your time…
- Level 7 is working with NEEA on MPER 3, which will cover the timeframe of 2022 through now.
- For our discussion today I'd like to talk about your perspective on how NEEA has influenced market transformation, as well as your experience championing televisions during program development.
- Scheduled for approx. 30 minutes
- Findings will be reported in aggregate, comments not attributable to any specific person.
- Objections to recording?
- Questions?

BACKGROUND

As part of this research, I'll be talking with people in a variety of different roles at NEEA.

1. When did you join the RPP program?
2. Would you mind giving me a brief description of your mission and role as a Market Transformation manager for the RPP program, and some of your day-to-day responsibilities?

LEARNING MORE ABOUT ESRPP AND RPP

3. Let's start off by talking a little bit about the larger ESRPP program. I understand it's a collaborative of energy efficiency sponsors, retail partners and other stakeholders and is facilitated by NEEA.
    - Can you talk a little bit about NEEA's role in ESRPP?
4. How does having a nationally-scaled program, as opposed to a regionally-sized program, help support the changes that you'd like to see in the market?
5. Thinking more specifically about the RPP program, are there any notable wins or challenges since the last MPER in 2022 that you could share more about?

TELEVISIONS

I understand you've had experience championing televisions during their program development at NEEA.

6. Can you talk a little bit about what your role has been with respect to televisions?
    - Have you played a role in contracting externally for work related to televisions?
        - If so, could you describe that work? What were you hoping to learn or to show?
        - How did you envision these results being used?
    - Has externally contracted work to support televisions wrapped up or is there still some ongoing that you are aware of?

7. Finally, I'd like to ask a couple questions about the televisions voluntary agreement.
    - Are you familiar with the specifications that NEEA is supporting in the agreement? Could you describe them?
    - What is your role in supporting these specifications in the agreement?
    - Are there some specifications that manufacturers are already in alignment around? Which are facing the most debate?
    - Why is it important for manufacturers to come to a voluntary agreement on TV specifications? What's at stake?

That is the extent of my questions.

- Are there any other comments you would like to make or thoughts you want to share relative to the topics we discussed?
- That wraps up our discussion. Thank You!

Respondent #9

INTRODUCTION

- Thanks for your time…
- Level 7 is working with NEEA on MPER 3, which will cover the timeframe of 2022 through today.
- Scheduled for approx. 30 minutes
- Findings will be reported in aggregate, comments not attributable to any specific person.
- Objections to recording?
- Questions?

BACKGROUND

As part of this research, I'll be talking with people in a variety of roles at NEEA.

1. Would you mind giving me a brief description of your mission and role as a Product Manager for the RPP team? What are some of your day-to-day responsibilities for RPP?

RPP PRODUCT WORK

2. The RPP program works with several different product categories. How does your role actively support energy efficiency improvements in these categories?
3. Are you currently working either on your own or with external contractors to explore improved energy efficiency in some of these products? If so, which products and what are you trying to learn or to show through your work?
    - Are there similar projects that you've wrapped up and haven't already talked about? If so, could you share more about these projects?
    - What products were involved and what were you trying to learn or to show through the work?

TELEVISIONS WORK

4. I believe you have also worked on television projects since you joined NEEA. Could you share a little more about that?
    - Did you play a role in working with Gregg Hardy at Pacific Crest Labs? If so, could you describe that work? What were you hoping to learn or to show?
    - How did you envision these results being used?
    - Has externally contracted work to support televisions wrapped up or is there still some ongoing that you are aware of?
5. Finally, I'd like to ask a couple questions about the televisions voluntary agreement.
    - Are you familiar with the specifications that NEEA is supporting in the agreement? Could you describe them?
    - How is NEEA supporting those specifications?

    - Are there some specifications that manufacturers are already in alignment around? Which are facing the most debate?
6. Why is it important for manufacturers to come to a voluntary agreement on TV specifications? What's at stake?

That is the extent of my questions.

- Are there any other comments you would like to make or thoughts you want to share relative to the topics we discussed?
- That wraps up our discussion. Thank You!