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Retail Product Portfolio Market Progress Evaluation Report #1

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Executive Summary

The Northwest Energy Efficiency Alliance's (NEEA) Retail Products Portfolio (RPP) program is designed to drive increased efficiency in appliances and consumer products in coordination with the national effort of the ENERGY STAR® Retail Product Platform (ESRPP) program. This element of national coordination provides the program with the scale necessary to influence decision makers at national retailers, who may not find program offerings focused on the Northwest alone compelling. National coordination also provides the program with a wider range of sales data and potential partners in efforts to support updates to ENERGY STAR specifications and efficiency standards.

This study is the first Market Progress Evaluation Report (MPER) of NEEA's RPP program. These findings provide insights into program-wide elements, the status of specific product categories, and NEEA's influence on those markets. Given the importance of national coordination to the success of the RPP program in the Northwest, this study also examined the experience of program sponsors outside the region to identify any threats to ongoing national coordination and opportunities to strengthen and expand coordination. This study's findings also document the RPP program's progress in relation to market progress indicators (MPIs) NEEA staff identified as relevant for this stage of the RPP program. Since this is the first MPER for the RPP program, this study focused on MPIs related to short- and short/mid-term outcomes.

NEEA contracted with Apex Analytics and its subcontractor Cadeo Group (the Apex team) to investigate the following research objectives:

- Document the status of MPIs identified by NEEA
- Evaluate NEEA's involvement in the national ESRPP program
- Propose a path forward for scaling the national ESRPP program
- Identify product characteristics that may impact the effectiveness of midstream incentives

To address these objectives, the Apex team reviewed internal and external documents, interviewed staff and program sponsors, and analyzed RPP sales data focused on refrigerators, freezers, and top-load clothes washers.

Key Findings

The Apex team identified three key findings.

- **NEEA has achieved MPIs related to program infrastructure**, including data availability and accuracy, an effective portfolio management process, and methods for evaluation and savings estimation. NEEA staff reported that challenges the program faced in these areas early in its implementation have largely been resolved.

- **MPIs related to scale in terms of participating program sponsors, and maintaining those sponsors' commitment to the program, have proven more challenging.** Nonetheless, new sponsors entering the program have largely offset those that have left. There is evidence of program influence on retailer decisions for some products. Other products have seen limited increases in qualified market share.

- **Program sponsors face few barriers to joining ESRPP, but evaluation challenges make it difficult to remain in the program for those without a market transformation evaluation framework.** Program sponsors recognize the benefits of ESRPP: a nationally coordinated effort, an opportunity to engage in appliance markets more cost-effectively, and a way to work with large retailers that may not engage with their programs otherwise. However, program sponsors required to report short-term energy savings from their ESRPP programs under more traditional resource acquisition program frameworks, and particularly those required to demonstrate influence on specific end-user purchase decisions, have found it difficult to continue their participation.

Conclusions and Recommendations

The Apex team draws the following conclusions and recommendations from this research.

Conclusion 1: There are multiple benefits of increasing the scale of ESRPP in terms of the share of the US residential market covered, but it is important that any increases in scale be sustainable. A key benefit of increased scale for ESRPP results from enhancing the potential for midstream incentives to influence retailer, and, ultimately, manufacturer actions. Both program staff and retailers indicated that greater scale would increase the program's access and recognition within retail organizations. Increased scale could also increase the program's credibility in specification and standard-setting processes, particularly if that increased scale increased the diversity of geographies and climates the program represents. Finally, increasing program scale could result in a virtuous cycle, as program sponsors find a growing program more appealing to join. Nonetheless, for an expansion to be

sustainable, program sponsors joining the program will need one or more of the following conditions:

- Approval to invest in market transformation efforts for which the bulk of savings may take place in the long term.
- A mechanism for claiming savings from efforts to influence appliance standards updates, and, ideally, ENERGY STAR specification revisions.
- Opportunities to recognize the value of ESRPP for more than the short-term energy savings it produces, for example the program's potential to promote emerging technologies or connected technologies that could enable future efficiency and demand response efforts.

Recommendation 1a: NEEA should develop a roadmap drawing on existing program experience to plan for the future of RPP. NEEA and other program sponsors have gained a great deal of knowledge and experience working with retailers since the program began, and the program's relationships with participating retailers have matured. Markets have also shifted with the growth of online shopping. NEEA can build on this experience to articulate a plan for the next three years that addresses the constraints and opportunities associated with each product. This could include reassessing the role of assortment decisions relative to other ways retailers could increase sales of qualified products in response to midstream incentives. While this roadmap would be a shared document with other ESRPP program sponsors, NEEA could leverage the process of developing it to reassess its own MPIs to ensure they remain appropriate as the program has matured.

Recommendation 1b: NEEA should clearly articulate and communicate the path to energy savings for each ESRPP product to other program sponsors. NEEA could do this as part of the roadmap development process recommended above. Recognizing that midstream incentives are but one path to market transformation, NEEA has defined multiple strategies for ESRPP products. A shared understanding of the path to energy savings for each product would help ESRPP program sponsors better prepare for program evaluation, potentially leading to better evaluation outcomes. A product for which specification and standards advancement presents the primary path to energy savings, for example, may not achieve a significant, short-term sales lift from midstream incentives. Evaluation efforts focused on that short-term lift may not recognize the mid- or long-term potential of specification and standards advancement and could constrain program sponsors' ability to pursue those longer-term objectives.

Conclusion 2: The previous ESRPP task force structure may not have fully represented the views of all program sponsors. Prior to 2021, when NEEA took on a

larger facilitation role, EPA staff facilitated ESRPP coordination efforts. Some program sponsors, primarily former sponsors, and particularly those with less experience with market transformation, reported that the discussion in ESRPP task force meetings did not represent their views and experience. This was a greater concern for some sponsors than for others. Program sponsor interview findings further suggest within the collaborative structure that has guided ESRPP, it has been difficult to identify a specific person or process responsible for resolving program sponsor-specific concerns.

> **Recommendation 2: In its expanded national facilitation role, NEEA should establish regular, one-on-one check-ins with ESRPP program sponsors.** These check-ins could provide NEEA with an opportunity to identify any concerns that program sponsors did not feel were adequately addressed in task force meetings and to gather questions, advice, or feedback that program sponsors did not raise in the group setting. While it may not be practical for NEEA to address every issue, monitoring program sponsors' experience in this way could help to guide broader ESRPP facilitation efforts.

1. Introduction

This report presents findings from the first Market Progress Evaluation Report (MPER) of the Northwest Energy Efficiency Alliance's (NEEA) Retail Products Portfolio (RPP), assessing the program's progress through the 2020 program year. NEEA contracted with Apex Analytics and its subcontractor the Cadeo Group (the Apex team) to assess the program's progress toward select market progress indicators and address specific research questions related to market characteristics likely to impact the effectiveness of midstream incentive approaches, and the potential for the program to increase its scale.

1.1 Program Description

NEEA's RPP program uses a midstream approach to drive market transformation toward increased efficiency of select appliance and consumer electronics products. Working in coordination with the national ENERGY STAR RPP (ESRPP) effort, NEEA engages with large, national retailers and wholesalers. In 2020, four national retailers (Best Buy, Home Depot, Lowes, and the Nationwide Marketing Group) participated in ESRPP. The program provides retailers incentives for each product they sell in the Northwest that meets program-defined efficiency specifications. Table 1 lists the products NEEA included in its RPP program in 2020, along with the associated efficiency tiers and incentive levels.

Table 1: NEEA RPP Specification and Incentive Levels, 2020

Product	Efficiency Tier		Incentive Amount
Room Air Conditioners	Basic	ENERGY STAR V4	$10
	Advanced	ENERGY STAR Most Efficient (ESME)	$50
Clothes Dryers (electric only)	Advanced	ESME	$100
Freezers	Basic	ENERGY STAR V5	$15
	Advanced	ESME	$50
Refrigerators	Advanced	ESME	$15
Clothes Washers (top load only)	Basic	ENERGY STAR V8	$10
	Advanced	ESME	$10

Retailers participating in ESRPP agree to provide program sponsors with full-category sales data (covering both qualified and non-qualified sales) for the targeted products. In addition, the program logic anticipates that the incentives will motivate retailers to increase their sales of efficient products by increasing the number of qualified products in their assortments or by increasing sales of qualified products they already offer, for example by featuring qualified products in

marketing efforts.[1] NEEA's RPP program employs a variety of additional strategies to drive market transformation for RPP products, as described in Table 2.

Table 2: NEEA RPP Market Transformation Strategies

Strategy	Definition	Rationale
Midstream Incentives	NEEA provides incentives to retailers for sales of products meeting initiative-defined efficiency criteria	Retailers favor efficient products in assortment and promotion decisions, increasing efficient market share. Manufacturers recognize increased retailer and consumer demand and develop products to meet it.
Emerging Technology	NEEA works with manufacturers, retailers, and other industry stakeholders to promote the development and availability of efficient products	Efficient technologies become more widely available and are incorporated into a wider range of products
Measurement and Compliance	NEEA engages with DOE, EPA, and others to advocate for test procedures and reporting requirements that accurately reflect real-world energy use and differentiate efficient products	Test procedures and the standards and specifications that rely on them accurately differentiate efficient products
Specification Advancement	NEEA engages with EPA and others to advocate for more stringent voluntary efficiency specifications	Product specifications recognize the most efficient products and motivate manufacturers to increase efficiency
Standards	NEEA engages in DOE and other minimum efficiency standard revision processes to advocate for more stringent standards	Stringent standards eliminate the least efficient products from the market, increasing share of efficient options

Source: Apex Analytics and Opinion Dynamics Corporation. *Northwest Energy Efficiency Alliance Retail Products Portfolio Evaluation – Final Report*. June 28, 2019. https://neea.org/img/documents/RPP-Evaluation-Final-Report.pdf

NEEA's RPP program is part of a nationally coordinated effort organized under the ENERGY STAR Retail Products Platform (ESRPP). ESRPP brings together energy efficiency program sponsors from across the country to align their retail program offerings. In 2020, there were 16 participating ESRPP program sponsors in 11 states. This national coordination benefits the program in three ways:

- By increasing the scale of the total incentives available and the number of customers served, national coordination allows the program to achieve greater influence with large retailers who operate and make decisions on a national scale.
- National coordination streamlines the program's interaction with retailers, offering a common participation agreement, a single data warehouse vendor, and a common set of efficiency requirements and tiers. This streamlined

[1] A retailer's product assortment is the set of unique models available within that product category.

participation process increases retailers' willingness to engage with the program.

- National coordination provides the program with a wider base of sales data it can use to support updates to ENERGY STAR specifications, federal standards, and test procedures, as well as a forum to build broader support for suggested changes.

NEEA was a founding participant in ESRPP and has remained active in national coordination efforts. In January 2021, NEEA took on an expanded role in ESRPP coordination efforts, adopting some of the functions that the U.S. Environmental Protection Agency (EPA) had previously facilitated through the ENERGY STAR program.

1.2 Research Objectives

NEEA has defined Market Progress Indicators (MPIs) associated with the short, medium, and long-term outcomes described in the RPP logic model.[2] NEEA identified a subset of MPIs for review in this MPER that NEEA staff anticipated would show progress at this stage in the program's lifecycle. As this is the first MPER, the targeted MPIs track progress against short-term outcomes. MPIs included both strategic, program-wide elements and elements related to the markets for specific products. Table 3 lists the MPIs NEEA identified for assessment as part of this MPER.

Table 3: MPIs Assessed in this MPER

Logic Model Outcome	Market Progress Indicator
Strategic, Program-Wide	
ESRPP program achieves sufficient scale of program sponsors, customers, and incentive budgets to influence retailer decision-making	Portion of US households in ESRPP areas and the related total value of all program sponsor incentive budgets
Data platform enables effective program operations and processes	Data access and accuracy are sufficient to support product-by-product analysis and participation in the ENERGY STAR specification process
	Speed with which incentives are paid
	Number of corrections or data errors
	Program sponsor confidence in program operations process
Reliable market share and portfolio management informs program design and evaluation	Efficient and transparent portfolio management process
	Annual savings process and evaluation are efficient and verifiable

[2] The program's logic model and a complete list of MPIs are listed in Appendix A.

Logic Model Outcome	Market Progress Indicator
ESRPP program sponsors are able to maintain long-term commitment to RPP objectives	Average tenure of ESRPP program sponsors
	# of program sponsors claiming savings for ESRPP
Product Specific	
ENERGY STAR data and federal test procedures better reflect real world energy consumption	# of test procedure issues and opportunities for improvement identified
	# of products for which ESRPP partners seek to influence test procedure
	# of products where test procedures are improved
Retailers and merchants incorporate incentives into their assortment and marketing decision making process	Retailer consideration of ESRPP qualification in assortment and marketing decisions
Increase in ENERGY STAR market share (or higher tier) for RPP product categories	Market share of RPP-qualified product tiers

The study also investigated a variety of research objectives and more specific research questions NEEA identified to assist in the ongoing management and improvement of the RPP program. Table 4 summarizes these research objectives.

Table 4: Additional Research Objectives

Objectives	Research Questions
Evaluate NEEA's involvement in the national ESRPP program	Document NEEA's role in developing the current structure of the national ESRPP program
	Document the activities NEEA staff are engaged in to support the ESRPP program
	Explore program sponsors' perceptions of NEEA's role in the program
	Recommend opportunities to increase program sponsor engagement
Propose a path forward for scaling the national ESRPP program	Assess whether reaching 25% to 30% of US households is an appropriate target for ESRPP's efforts to 1) influence retailers through incentives, and 2) advance ENERGY STAR qualifying criteria and Federal standards; propose a more appropriate target or measure if applicable.
	Document the decision-making process that occurs when prospective program sponsors consider joining ESRPP
	Document the barriers to participating in ESRPP that potential program sponsors face and the reasons former program sponsors have left the program
	Explore patterns in the types of barriers faced by potential program sponsors
Assess product characteristics conducive to program	Consider the role of availability of efficient products in midstream incentive effectiveness
	Assess the pace of model turnover and its potential impacts on midstream incentive effectiveness

Objectives	Research Questions
influence from midstream incentives	Assess the risks to midstream incentive strategies posed by sales concentration among models
	Assess the risks to midstream incentive strategies posed by sales concentration among brands

1.3 Research Approach

The Apex team addressed these objectives through a review of internal and external documents, interviews with key staff and program sponsors, and analysis of sales data related to select products. A summary of each of these activities is listed below.

1.3.1 Program Document Review

The Apex team performed a detailed review of NEEA's RPP initiative and current ESRPP efforts. The documents we reviewed included:

- RPP program logic model
- Initiative milestone documents, which NEEA staff produce as part of NEEA's stage gate program lifecycle process, describing the program, its progress to date, and ongoing efforts to refine and develop the program
- Archived correspondence
- Presentation slides and notes from quarterly presentations that ESRPP retailers deliver to program sponsors describing the steps retailers have taken to increase sales of qualified products.
- Notes from interviews with ESRPP retailers
- Existing evaluation research

1.3.2 In-Depth Interviews

1.3.2.1 Program Staff

The Apex team conducted in-depth interviews with NEEA RPP program staff, staff of NEEA's retail channel and data management contractors, and EPA ENERGY STAR staff, as summarized in Table 5. We conducted these interviews in February and March of 2021, and each interview lasted up to one hour.

Table 5: Staff Interview Respondents

Organization	Roles	Number of Respondents
NEEA	• Program management	4

	• Product management • Market strategy	
NEEA Retail and Data Contractors	• Data management • Retailer relationship management and program sponsor outreach	2
EPA	• ESRPP coordination • Product specification strategy	2

1.3.2.2 ESRPP Sponsors

The Apex team interviewed current and former ESRPP program sponsors to understand their experience with the program and any challenges they faced in offering it. In targeting program sponsors for interviews, the Apex team sought to obtain the widest possible representation of jurisdictions. When multiple sponsors within the same jurisdiction participated in ESRPP, the Apex team worked with NEEA staff to identify the most engaged sponsor in that jurisdiction. Table 6 summarizes the number of interviews completed with former and current program sponsors. The Apex team conducted program sponsor interviews between April and June of 2021, with each interview lasting up to one hour.

Table 6: ESRPP Program Sponsor Interview Respondents

Program Sponsor Group	Population	Completed Interviews
Current sponsors	7	6
Former sponsors	6	5

Programs offered through statewide, coordinated efforts (EmPOWER Maryland, Energize Connecticut) are listed as a single entity, as is one program sponsor that offered the program in multiple jurisdictions.

1.3.3 Sales Data Analysis

The Apex team analyzed sales data collected by the program to identify and assess product characteristics that might impact the success of a midstream incentive strategy, with a focus on clothes washers, refrigerators, and freezers, which NEEA staff identified as key products for this MPER. These assessments drew on ESRPP sales data, with additional model matching and product information provided by Energy Solutions, under contract to NEEA.

2. Status of Market Progress Indicators

Market transformation programs often require a significant up-front investment in both resources and time to develop the infrastructure and market conditions (for example, market actor awareness of efficient products, product availability) necessary to bring about a notable increase in uptake of efficient products. As a result, an evaluation approach focused solely on near-term sales or market share of efficient products may provide limited insight into a program's progress as it develops the market. Defining market progress indicators (MPIs) associated with short- medium- and long-term outcomes provides an opportunity to assess program progress before a significant shift in sales of qualified products would be expected.

RPP operates with a defined set of MPIs, consistent with NEEA's market transformation approach. Each MPI is associated with an outcome in NEEA's RPP logic model. MPERs require reviewing these MPIs and measuring initiative progress relative to near- mid- and long-term objectives. Because this is the first MPER for the RPP program after advancement into the market development stage of NEEA's initiative lifecycle process, the MPIs NEEA identified for review primarily focused on near- and mid-term objectives. As the program continues to influence the market, future studies may assess progress against MPIs associated with long-term outcomes, which NEEA does not anticipate the program has achieved to date.

RPP MPIs include both strategic, program-wide indicators assessing characteristics like the program's scale and data management processes, and product-specific indicators assessing characteristics like the program's progress in bringing about test procedure updates and increasing market share of qualified products. Product-specific metrics are expected to evolve to reflect changing market conditions, specification advancements, and new technologies.

For this MPER, NEEA identified a specific subset of MPIs to assess to determine the program's progress. The following sections present each MPI and the Apex team's assessment of NEEA's progress to date.

2.1 Program Sponsor, Customer, & Incentive Budget Scale

National collaboration is a key element of the ESRPP program. The retailers participating in the program operate on a national scale, and the potential for individual program sponsors to influence their decisions and actions is limited. Through national collaboration, program sponsors can increase the program's overall incentive budget and the share of a retailer's stores within program areas, both of which can increase retailers' motivation to engage with the program. Thus, participation of program sponsors around the country is important to the success of NEEA's RPP program in the Northwest.

NEEA has defined a variety of MPIs associated with program scale and the potential to maintain that scale through the ongoing commitment of other ESRPP program sponsors. Table 7 lists these MPIs and the Apex team's high-level assessment of market progress.

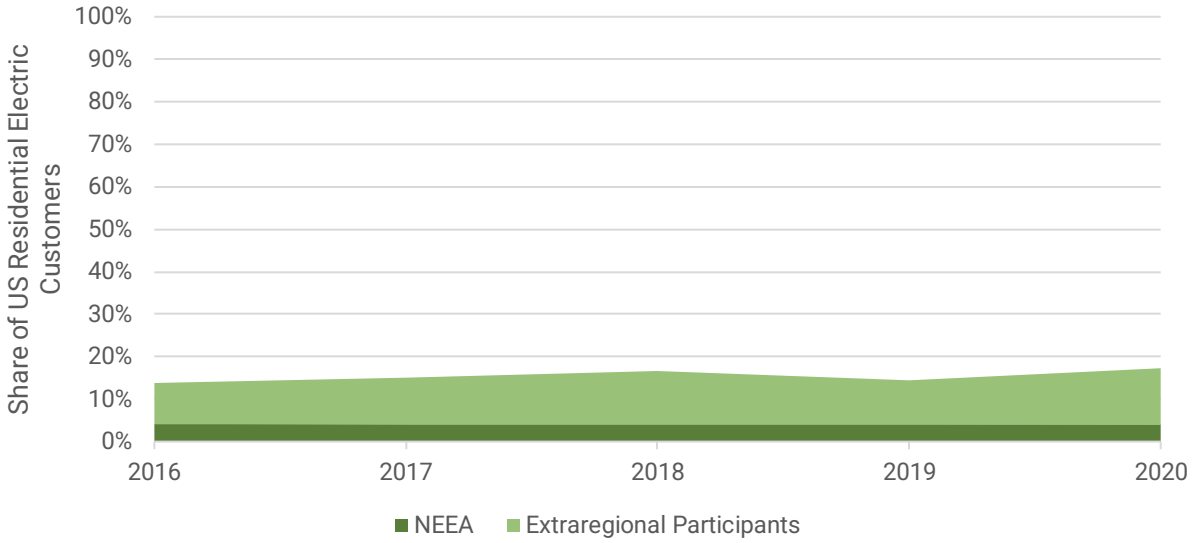
Table 7: ESRPP Program Scale MPIs

Logic Model Outcome	Market Progress Indicator	Apex Team Assessment
ESRPP program achieves sufficient scale of program sponsors, customers, and incentive budgets to influence retailer decision-making	Portion of US households in ESRPP areas and the relative total value of all program sponsor incentive budgets.	◑
ESRPP program sponsors are able to maintain long-term commitment to RPP objectives	Average tenure of ESRPP program sponsors.	◑
	Number of program sponsors claiming savings for ESRPP	◑
Key:	● Substantial progress	
	◑ Initial progress	
	○ No progress to date	

2.1.1 Program Scale

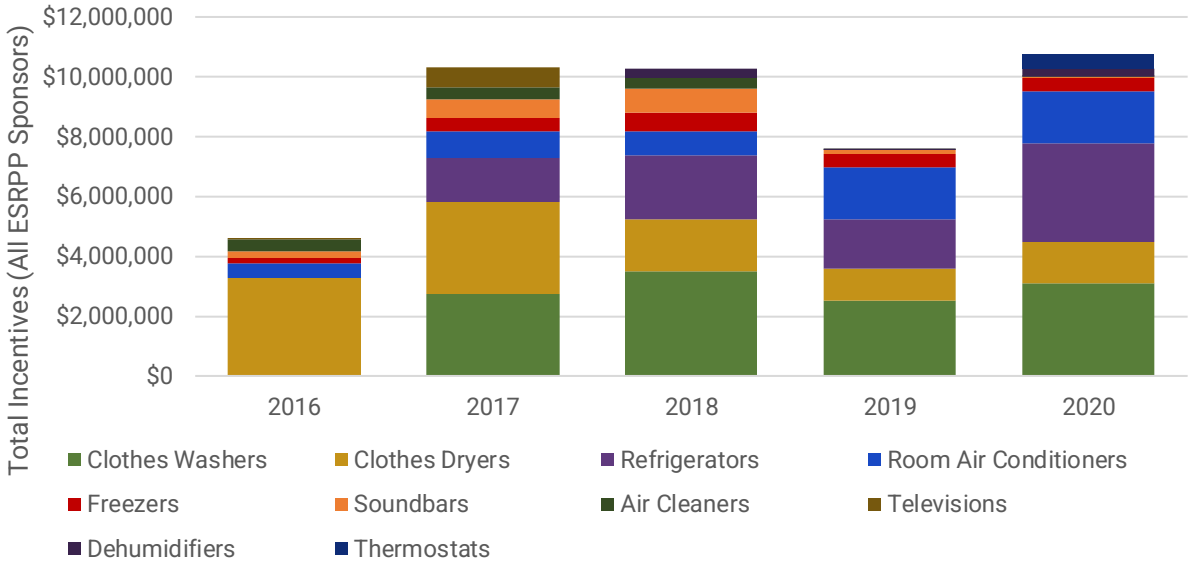
Since the ESRPP program began in 2016, some sponsors have left the program while new sponsors have entered. New sponsors entering the program have largely offset departing sponsors, thus the proportion of US households that ESRPP program sponsors serve has remained relatively steady over time, at 14-17% (Figure 1).

Figure 1: ESRPP Market Coverage 2016-2020



Total incentive payments increased notably from 2016 to 2017 with the addition of clothes washers and refrigerators to the ESRPP portfolio. Total incentives dipped in 2019, likely due to a combination of factors. Some program sponsors left the program that year, and sponsors notably reduced their support for soundbars and air cleaners. Sears also stopped participating as a retailer in 2019, after filing for bankruptcy late in 2018. Total incentives rebounded in 2020 (Figure 2).

Figure 2: Total ESRPP earned incentives by program year



2.1.2 Program Sponsor Tenure

A key element of building and maintaining the program's scale is ensuring that ESRPP program sponsors continue to participate in the program over the long term. Since the program's launch in 2016, 15 individual program sponsors have participated in ESRPP (Figure 3).[3] Of those, 10 sponsors participated in the program in 2020.[4]

Figure 3: ESRPP Program Sponsors By Year

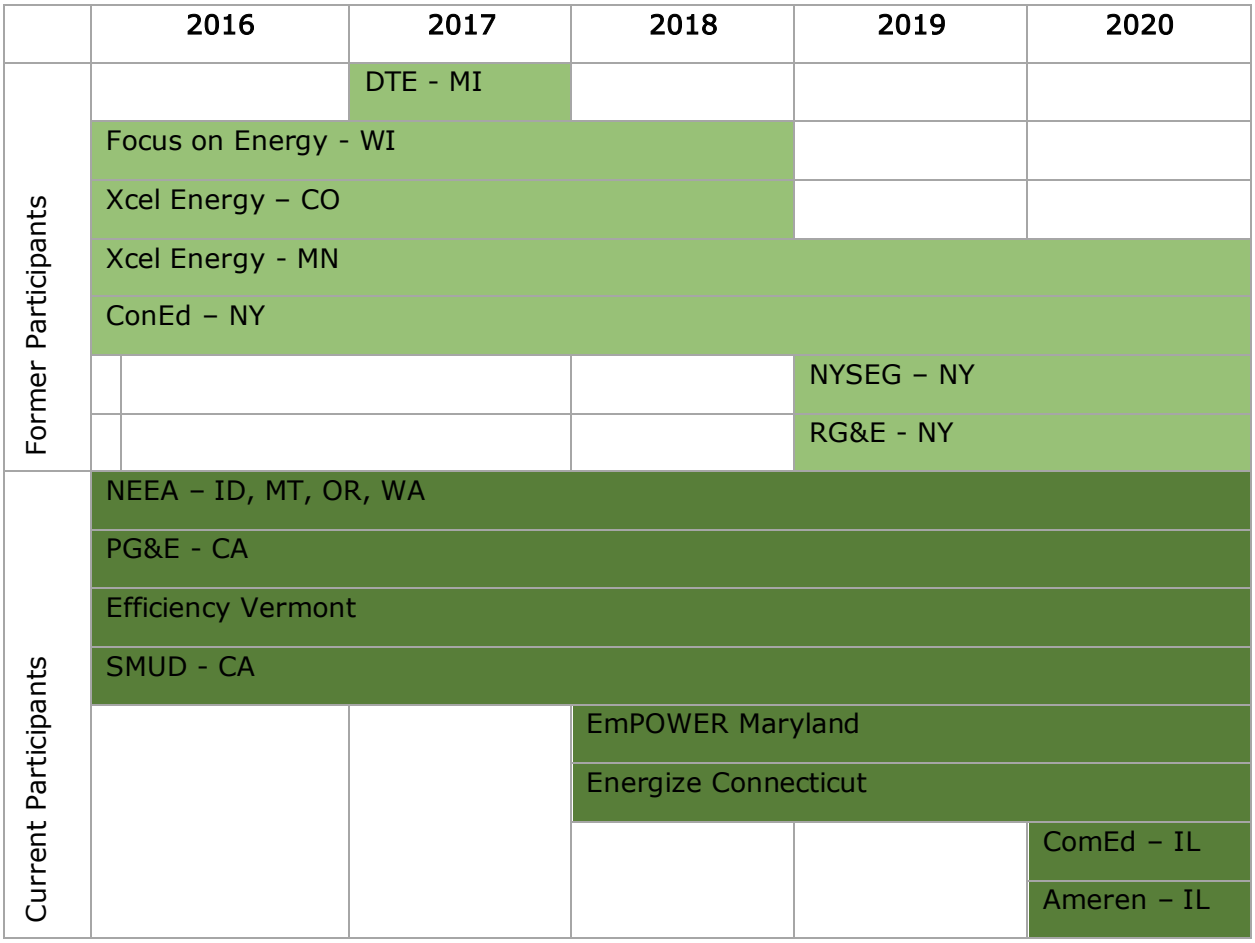


Table 8 lists the average amount of time former program sponsors remained in ESRPP, as well as the average tenure of current sponsors, as of 2021. While some former sponsors remained in the program as long as five years, most left the

[3] Two additional sponsors signed participation agreements in 2016 but either dropped their ESRPP offerings before launching the program or participated for less than a year.

[4] Eight sponsors plan to continue their ESRPP offerings into 2022.

program after one to three years of participation. A core group of four current sponsors has remained in the program since its launch in 2016.

Table 8: Average Program Sponsor Tenure in Program

Sponsor Group	Average Time in Program
Current Sponsors (n=8)	4.25 years (as of 2021)
Former Sponsors (n=7)	3 years
Total	3.67 years

2.1.3 Documenting Energy Savings

The ability to claim savings for ESRPP affects many program sponsors' ability to continue offering the program. Several program sponsors noted that ESRPP was among their first attempts to offer a market transformation program. As a result, some sponsors did not have processes in place to evaluate and claim savings for ESRPP when they joined the program.

Majorities of both current (5 of 6) and former (3 of 5) interviewed program sponsors reported claiming savings for ESRPP. The current sponsor not claiming savings has classified ESRPP under their codes and standards program, and thus could claim future savings for any codes and standards advancements attributable to ESRPP's activities. The two interviewed former sponsors that did not claim savings from ESRPP reported they did not claim savings due to a lack of accepted procedures for evaluating and estimating savings from market transformation programs in their jurisdictions.

2.2 Data Platform & Program Operations & Processes

The availability and accuracy of full category sales data is a critical input to several of the program's primary objectives. These data enable incentive tracking and payment to participating retailers and inform efforts to update ENERGY STAR specifications. Early in ESRPP's history, the program experienced significant challenges with the data platform, which resulted in delays in incentive payments. While there were some initial challenges with receiving complete data from retailers, the early data challenges primarily related to matching models to the ENERGY STAR Qualified Products List (QPL) and other databases to determine their

efficiency tiers.[5] Given these early challenges, NEEA defined a series of MPIs related to the data platform and data sufficiency. Table 9 summarizes these MPIs and the Apex team's initial assessment of the extent to which NEEA has achieved them.

Table 9: Data Platform & Program Operations & Processes MPIs

Logic Model Outcome		Market Progress Indicator	Apex Team Assessment
Data platform enables effective program operations and processes		Number of corrections or data errors.	●
		Speed with which incentives are paid.	●
		Data access and accuracy are sufficient to support product-by-product analysis and participation in the ENERGY STAR specification process.	●
		Program sponsor confidence in program operations process.	●
Key:	●	Substantial progress	
	◑	Initial progress	
	○	No progress to date	

The ESRPP data portal provides both invoiced datasets – listing the product data available at the time the data aggregator first processed the data – and adjusted datasets – with product data updated to reflect any subsequent model matching. The Apex team compared these datasets as one way to assess the number of corrections occurring over time.

Early in the program, clothes dryers and refrigerators saw the most frequent adjustments; however, since 2019, neither product has been subject to adjustments (Table 10). This is consistent with NEEA staff members' reports that there are currently few data errors or corrections. NEEA staff reported that they

[5] NEEA's 2017 Retail Products Portfolio Market Test Assessment Report, prepared by Research Into Action, Illume Advising, and Apex Analytics provides a detailed summary of these early data challenges. https://neea.org/img/uploads/rpp-market-test-assessment-report.pdf

receive final sales data for the previous month on the 20th of each month, and typically receive an invoice for the previous month's incentives around the 25th of the month. NEEA then pays incentive invoices within 30 days.

Table 10: Frequency of Adjustments to RPP Data Portal Datasets

Product Category	# of Months with Adjustments				
	2016	2017	2018	2019	2020
Room Air Conditioners	0	0	0	1	1
Clothes Dryers	10	0	0	0	0
Freezers	0	3	0	1	3
Refrigerators	12	12	12	0	0
Clothes Washers	0	0	0	0	0

The adjustments to the data sets provided in the data portal generally resulted in little change in overall qualified sales. With two notable exceptions, adjustments in sales volume were typically less than 5% of the total monthly unit sales within a given efficiency tier (Table 11). The two cases in which larger data adjustments occurred involved adjustments to advanced tier products that sell in lower volumes, where a small change in units sold will have a larger proportional impact.

Table 11: Size of Adjustments to RPP Portal Datasets

Product Category	Largest Single Month Adjustment as Share of Monthly Sales (Efficiency Tier Affected)				
	2016	2017	2018	2019	2020
Room Air Conditioners	No Adjustments			-1% (Basic)	2% (Basic)
Clothes Dryers	3% (Basic)	No Adjustments			
Freezers		1% (Non-Qualified)		200% (Advanced)	1% (Basic)
Refrigerators	1% (Non-Qualified)	-85% (Advanced)	1% (Non-Qualified)	No Adjustments	
Clothes Washers	No Adjustments				

While accurately assessing the number of qualified products sold is necessary for paying invoices, accurately determining the market share of efficient products is important for NEEA's efforts to assess progress against its baseline estimates and to influence ENERGY STAR specifications and Federal standards. Adjustments to the sales data housed in the data portal typically resulted in negligible changes to efficient market share (Table 12).

Table 12: Impact on Efficient Market Share of Data Adjustments

Product Category	Largest Monthly Absolute Difference in Market Share Due to Adjustments				
	2016	2017	2018	2019	2020
Room Air Conditioners	No Adjustments			<1%	<1%
Clothes Dryers	1%	No Adjustments			
Freezers		<1%		<1%	<1%
Refrigerators	<1%	-3%	<1%	No Adjustments	
Clothes Washers	No Adjustments				

NEEA staff interviews support this assessment, with staff reporting they have access to sufficient data, and sufficiently accurate data, to support the ENERGY STAR specification process. EPA staff further noted that ESRPP data had been helpful in specification setting processes and did not raise significant concerns about its accuracy or sufficiency, beyond acknowledging that it is limited to the retailers and regions participating in ESRPP.

In-depth interviews with current and former program sponsors probed on program sponsor concerns with the ESRPP program (see Section 3 for detailed findings). None of the interviewed program sponsors described issues around data processing and the speed with which incentives are paid as major concerns with the program.

2.3 Energy Savings Estimates & Portfolio Management

Managing the portfolio of ESRPP products and estimating annual energy savings are key activities for RPP. Table 13 lists MPIs NEEA defined to assess these program elements, as well as the Apex team's high-level assessment of these MPIs.

Table 13: Energy Savings Estimates & Portfolio Management MPIs

Logic Model Outcome		Market Progress Indicator	Apex Team Assessment
Reliable market share and portfolio management informs program design and evaluation		Efficient and transparent portfolio management process.	●
		Annual savings process and evaluation are efficient and verifiable.	●
Key:	●	Substantial progress	
	◑	Initial progress	
	○	No progress to date	

NEEA manages RPP as a portfolio of products, adjusting requirements and incentive levels to reflect market trends and efficiency opportunities. Portfolio management requires considering the status of each product and confirming the suite of products to be included in each program year. As part of the ESRPP coordination efforts, NEEA staff lead the ESRPP Products Task Force that includes all ESRPP program sponsors. This task force agrees upon adjustments to the overall portfolio.

In 2019, NEEA led the development of an *ESRPP Product Portfolio Management Process* document that defines considerations and guidelines for determining whether to include a product in the portfolio and how to set efficiency tiers. The document also outlines a timeline for portfolio management decisions. NEEA staff reported this document continues to guide the portfolio management process with minor adjustments to adapt to ENERGY STAR timelines. Staff reported that the process "has been effective and continues to be appropriate." The only portfolio management challenge identified reflected the difficulty of finalizing the coming year's portfolio by the program's target date of September.

NEEA staff reported the sales data they receive are sufficient to monitor program outcomes and develop verifiable savings estimates. With multiple products and multiple efficiency tiers to consider, the process of estimating energy savings for RPP can be labor intensive. Staff described a variety of efforts underway to increase the accuracy of savings estimates and the efficiency with which they can generate those estimates. These efforts include:

- Lab testing to develop more accurate unit savings estimates for clothes washers and televisions.
- Developing a database for sales data that will automate frequent calculations and allow NEEA greater ability to conduct custom analyses.
- Establishing a process to regularly review naturally occurring baseline estimates for RPP products.

While staff anticipate these efforts will improve the accuracy of unit energy savings estimates going forward, NEEA has been able to report savings for ESRPP products using its current processes and data.

2.4 ENERGY STAR Data and Test Procedures

The ability to accurately assess product energy consumption and differentiate efficient models from inefficient ones is central to RPP's success. To that end, NEEA staff review the test procedures used to verify that products meet efficiency standards and ENERGY STAR specifications to ensure they accurately represent the products' energy consumption. When NEEA staff identify opportunities to improve test procedures, they work with EPA and Department of Energy (DOE) staff as

appropriate to enact those changes. NEEA has defined three MPIs to assess these activities. Table 14 lists these MPIs and the Apex team's high-level assessment of progress.

Table 14: ENERGY STAR Data and Test Procedures MPIs

Logic Model Outcome	Market Progress Indicator	Count	Apex Team Assessment
ENERGY STAR data and Federal test procedures reflect real world energy consumption	Number of test procedure issues and opportunities for improvement identified.	5	●
	Number of products for which ESRPP partners seek to influence test procedures.	3	◑
	Number of products where test procedures are improved.	1	◑
Key:	●	Substantial progress	
	◑	Initial progress	
	○	No progress to date	

Through 2020, NEEA had identified opportunities to update test procedures for five products through the RPP program.[6] As Table 15 summarizes, the updated test procedure and an updated ENERGY STAR specification have been adopted for one product (air cleaners), while updates are in various stages for others. A larger number of ESRPP partners were involved in the test procedure and specification update for air cleaners than the other products as air cleaners were an active ESRPP product at the time the specification update occurred.

[6] NEEA does not currently provide RPP incentives for all of these products, although the program could resume incentives for a product if appropriate once the test procedure and specification are updated. NEEA also submitted comments for a refrigerator/freezer ENERGY STAR specification update in 2021, which falls outside the scope of this MPER.

Table 15: Test Procedure Update Status

Product	Status	ESRPP Partner Involvement
Front load clothes washers	NEEA conducted lab testing study to develop more accurate test procedure.	N/A
Clothes dryers		
Soundbars	Revisions to test procedure and specification update in progress.	PG&E
Air Cleaners	Specification revision complete, included updates to test procedure incorporating some program recommendations.	NEEP, PG&E, SMUD, ConEd
Televisions	Test procedure update and specification revision in progress.	PG&E

2.5 Incorporation of Incentives into Assortment & Marketing Decisions

RPP program logic anticipates that the availability of incentives for sales of qualified products will motivate retailers to take actions that will increase sales of efficient models. Two potential actions retailers could take include increasing the number of efficient models in their assortments and favoring efficient models in their marketing efforts. One MPI assesses these changes (Table 16).

Table 16: Assortment & Marketing Decisions MPI

Logic Model Outcome	Market Progress Indicator	Apex Team Assessment
Retailers and merchants incorporate incentives into their assortment and marketing decision making process	Retailer consideration of ESRPP qualification in assortment and marketing decisions.	◑

Key:	●	Substantial progress
	◑	Initial progress
	○	No progress to date

Retailers' assortment decisions are complex, incorporating factors such as anticipated consumer demand, manufacturer offers, and special pricing. Since these decisions are central to retailers' business strategy, retailers are reluctant to share specific details about their assortment decision-making. As a result, it is difficult to map specific changes in retailer assortment to the availability of ESRPP incentives.

Two retailers discussed potential ESRPP impacts on product assortment during the quarterly presentations provided to ESRPP program sponsors.[7] One described working with a manufacturer to offer an "exclusive" room air conditioner model that met ESRPP qualification criteria.[8] A retailer interviewed in 2021 also discussed program influence saying "I have watched our air quality merchant really embrace inverter technology and change how he has assorted, not just in RPP stores, but in other stores across the country, as a function of the RPP program."

Two other retailers reported maintaining dashboards to track progress toward their sustainability goals, including sales of ESRPP-qualified products. One of these retailers demonstrated how the dashboard estimates the benefits of ESRPP incentives at the model-level and identifies the most promising opportunities to replace non-qualified models with qualified options. According to one retailer interviewed in 2021, this type of dashboard helps call merchants' attention to products that could be replaced by ENERGY STAR or more efficient models, helping both to meet internal sustainability goals and to maximize ESRPP incentives.

Retailers also described a variety of instances in which ESRPP factored into their promotional decisions. Two retailers reported increasing their efforts to train sales staff on ENERGY STAR and energy efficiency, in part due to ESRPP. Two other retailers reported selecting ESRPP products to include in discounts since the incentives would help them offset the reduced sales price. One described a variety of examples in which they had discounted qualified products as part of regular sales (e.g. Fourth of July, Black Friday) and featured those products in advertisements.

[7] The Apex team did not collect data from retailers directly as part of this MPER. ESRPP has overseen a single set of annual retailer interviews, and Apex referenced findings from the most recent rounds of these interviews, conducted in 2019 and 2021, as well as slides and notes from quarterly retailer presentations, shared by NEEA staff.

[8] In this context, "exclusive" means the manufacturer only offers this particular model for sale through this retailer.

One retailer also reported that ESRPP incentives helped justify the cost of producing a video informing customers about ENERGY STAR that plays in their stores.

In 2021 retailer interviews, retailers also described a variety of ways they have promoted qualified products through online marketing channels, including efforts to highlight products' ENERGY STAR status and promote ENERGY STAR on their webpages. One retailer placed a link to their landing page focused on ENERGY STAR products on their global homepage. According to this retailer, doing so "is a really big deal. That's lots and lots of traffic…this placement on our homepage, it has costs associated with it, but this RPP program helps offset that cost."

2.6 Increase in ENERGY STAR or Higher Market Share

A key outcome NEEA hopes to achieve with RPP is an increase in the market share of products meeting the program's specifications. An increase in market share implies that consumers are increasingly selecting efficient options over less efficient alternatives. NEEA identified one MPI related to market share of efficient products (Table 17).

Table 17: ENERGY STAR Market Share MPI

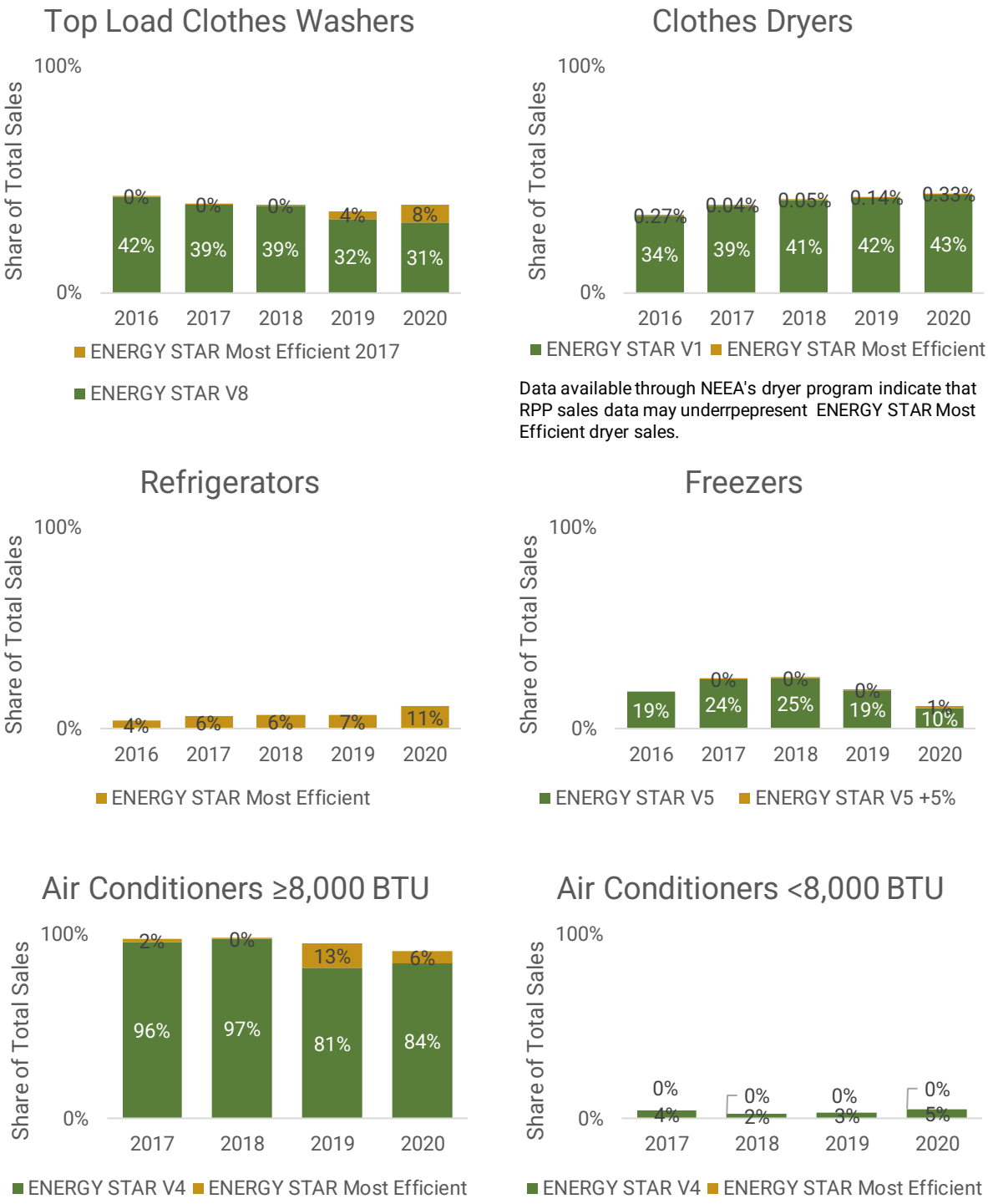
Logic Model Outcome	Market Progress Indicator	Apex Team Assessment
Increase in ENERGY STAR market share (or higher tier) for RPP product categories	Market share of RPP-qualified product tiers	◑
Key:	● Substantial progress	
	◑ Initial progress	
	○ No progress to date	

Figure 4, below, shows efficient market shares of RPP products over time. Most products show some increase in efficient market share since their inclusion in the program:

- **Top-load washers**: While overall efficient market share remained relatively steady since their inclusion in the program in 2017,[9] the share of models that met the ENERGY STAR Most Efficient 2017 specification increased in 2019 and 2020.
- **Clothes dryers:** Efficient market share of both ENERGY STAR and ENERGY STAR Most Efficient models has slowly, but steadily, increased since dryers entered the program in 2016.
- **Refrigerators:** Efficient market share was largely flat from the time refrigerators entered the program in 2017 through 2019 but increased notably in 2020.
- **Freezers:** Efficient freezer market share declined in 2019 and 2020 as some ENERGY STAR models that had sold in high volume left the market.
- **Air conditioners:** Efficient air conditioner market share is highly polarized, with large-capacity units showing very high market shares. Nonetheless, overall efficient market share of large units has declined slightly in recent years, even as ENERGY STAR Most Efficient share has grown. Small air conditioners have a much lower market share, although efficient market share has grown slowly over the 2018-2020 period.

[9] The program included washers, in general, as a product category beginning in 2017. In 2019, the program's focus shifted to top-load washers exclusively.

Figure 4: Efficient Market Share of RPP Products, 2016-2020



Data available through NEEA's dryer program indicate that RPP sales data may underrpepresent ENERGY STAR Most Efficient dryer sales.

NEEA provides equivalent incentives for small and large room air conditioners. However, a product category-wide average obscures the highly polarized distribution of efficient models. As a result, we present two figures here.

Source: ESRPP participating retailer reporting, NEEA region

3. ESRPP Program Engagement & Potential to Scale

As noted above, the scale of the ESRPP program is important to the program's potential to influence retailers and standards and specification processes. The Apex team investigated the importance of scale in influencing retailers through interviews with program staff and ESRPP retailer interviews. We also interviewed current and former ESRPP program sponsors to assess opportunities to increase the program's scale as well as barriers preventing program uptake in a wider range of jurisdictions.

3.1 Importance of Scale

Retailers are engaged with ESRPP at its current scale, but the program's influence would grow with increased market coverage and incentive budgets.

Retailer interviews (from both 2019 and 2021) indicate that the participating retailers are committed to the program at its current level of household coverage. Retailer interview findings also support quarterly retailer presentations to indicate (discussed in Section 2.5, above) that retailers are taking actions to increase sales of qualified products. Nonetheless, interviewed retail sustainability staff expressed a desire for the program's scale to increase. As one retail sustainability staff member interviewed in 2019 noted, ESRPP products "are billion-dollar categories, whereas ESRPP drives three-to-four million dollars back into the business; this is a rounding error to [merchants]. They are dealing with thousands of stores, whereas the program is only in a few hundred."

NEEA program staff acknowledge the importance of scale, and note that NEEA's TV Initiative, which preceded RPP, had a larger incentive budget than RPP and focused on a single product. As a result of those larger incentives, staff reported that the TV Initiative achieved more direct access to decision-makers within retail organizations than RPP typically achieves. According to one program staff member, "if we had something that was…materially contributing to the bottom line, the [profit and loss] of the person who owns the category, we would find easier and more regular access to more senior people within the [retail] organization."

Interview findings indicate that increased scale would likely result in incremental increases in retailer engagement; there is not a specific market coverage threshold that would result in dramatically greater influence.

The program launched with a soft target of program sponsors representing 25-30% of US households. As Figure 2 indicates, the program has remained below this target. Program staff noted that the 25-30% target came from a retailer's

presentation at the 2014 ENERGY STAR Products Partner Meeting,[10] and the retailer cited 30% market coverage as an example of a level that would be influential, rather than a threshold that would result in a concrete change in retailer engagement. None of the interviewed program staff were aware of a market coverage threshold that would result in a significant change in retailer engagement. Instead, staff anticipated that the program's influence would grow incrementally with its scale. Retailer interviews also suggested that influence would increase with program scale, and there was not a threshold that would trigger a disproportionate shift in influence.

ESRPP program sponsors can influence specification and standard setting processes at their current scale, although there would be benefits to increased geographic coverage.

EPA staff reported that, as large and prominent organizations, ESRPP program sponsor comments are influential in specification setting processes. According to one EPA staff member, "To have ESRPP weigh in [on a specification] is powerful. And usually, when ESRPP weighs in, it is really big actors that weigh in…[actors that] serve a lot of people, have a powerful voice and everybody knows them." EPA staff suggested that ESRPP comments could become still more influential by bringing in greater geographic representation across the United States, which could be more important than the total share of households served.

EPA staff reported that the ESRPP data program sponsors have shared as part of ENERGY STAR specification setting processes give them a more granular and current view of the market than they would otherwise have. This can help EPA better respond to manufacturer and trade association arguments against updated specifications. EPA staff acknowledged that ESRPP data are limited by the geographic and retailer coverage represented by the program. As a result, EPA has been reluctant to accept ESRPP data over its own Unit Shipment Data in estimating market share.

3.2 Program Sponsor Motivations and Considerations

ESRPP is appealing to program sponsors as an alternative to traditional appliance rebate programs that face increasing cost effectiveness challenges.

Program sponsors view ESRPP as a less costly opportunity to promote efficient appliances and electronics as the savings associated with those products declined, reducing the cost-effectiveness of standard downstream rebate programs.

[10] Campbell, Paul. 2014. "EE 2.0 – Next Generation Retail Programs." ENERGY STAR Products Partner Meeting. Scottsdale, AZ. https://www.energystar.gov/sites/default/files/asset/document/2%20Campbell_Energy%20Efficiency%202_102814.pdf

According to one program sponsor, ESRPP provided a "more efficient way to deliver energy efficiency projects and savings to customers…I cannot afford to run a downstream rebate." Program sponsors were also drawn to the opportunity to continue to engage with customers through point of purchase (POP) promotional materials without the cost of downstream rebates.[11] One explained that they were "hoping to get back into having some customer engagement and education, but not the full cost of a true appliance downstream program."

The opportunity to join an established market transformation program is appealing but may obscure the work needed to establish a market transformation framework.

Some program sponsors saw ESRPP as an opportunity to gain experience with market transformation programs. Four sponsors noted that, while they had not previously offered market transformation programs, their regulators or other stakeholders had expressed interest in market transformation approaches. One called ESRPP their "first deviation from a standard downstream rebate."

Despite this interest in market transformation approaches, none of the interviewed program sponsors had established procedures for evaluating market transformation programs that were distinct from the procedures they used to evaluate resource acquisition programs. Some sponsors reported efforts to establish market transformation frameworks that were at varying stages of maturity. For example, Illinois' Technical Reference Manual includes guidance for evaluating market transformation programs, but utilities in the state are still developing an evaluation approach consistent with that guidance. California is in the process of establishing a statewide Market Transformation Administrator that will oversee market transformation efforts in the state and trigger updates to evaluation protocols.

Some previous program sponsors were disappointed they were not able to draw on other sponsors' successful evaluation approaches and resources to a greater extent. One former program sponsor reported anticipating that, as an established program, there would be a widely accepted approach to estimating and evaluating energy savings, with prescriptive guidance around evaluation activities.[12] According to this program sponsor, "thinking that things that are already in place for sponsors that joined, ESRPP would be able to provide resources and tools. We did not establish, early on, the framework [for market transformation evaluation] that we should have." Similarly, another former program sponsor said that "the major drawback

[11] Note that from a total resource cost (TRC) perspective, the incentive costs are typically treated as a transfer payment and thus do not impact cost-effectiveness. However, from a utility perspective, the incentives are typically the largest component of program costs.

[12] This program sponsor reported anticipating that the SEE Action evaluation whitepaper would provide this type of prescriptive guidance and was disappointed with its more general discussion of evaluation issues.

was that when it was sold to us, it was so new people didn't know how challenging it would be to claim savings."

The opportunity to be part of a national, coordinated effort was appealing to program sponsors.

For early program sponsors momentum and an awareness that others were joining the program created a sense of optimism and opportunity. As one described, "There was a general feeling, a lot of excitement around EPA organizing. If we could get other utilities in the [region] it might have a greater impact. It was very hopeful at that time." Program sponsors noted that they rarely have an opportunity to work with partners in other states, and that they typically do not work closely with large retailers. Consistent with the initial appeal they noted in the program growing in scale, two program sponsors expressed concern at the sense that new sponsors are not joining the program at the same pace.

There are practical benefits to having multiple utilities within a state join ESRPP.

Most interviewed program sponsors did not indicate that participation by other utilities in their region was a major consideration in their decision to join ESRPP. However, program sponsors described a variety of practical benefits of coordination between multiple utilities in a single state in joining ESRPP. Interviewed program sponsors noted that coordination between utilities increased their influence with their regulators, particularly for programs that required a different approach to estimating and claiming energy savings than they had traditionally taken. Sponsors also noted that coordination was important in cases where their territory overlapped with that of another utility.

Most program sponsors did not face significant barriers to joining ESRPP.

Of the 11 program sponsors interviewed, four program sponsors reported they did not need regulatory approval to participate in ESRPP, and three additional sponsors noted that their regulators were supportive of their participation. Most interviewed sponsors reported launching ESRPP as a pilot or under a similar designation that allowed them to assess the program's effectiveness under less stringent approval and cost effectiveness standards than apply to standard programs. Three program sponsors also noted that the spending and savings on their ESRPP programs were small enough, relative to their larger portfolios, that they received limited scrutiny.

3.3 Barriers and Concerns

Evaluating ESRPP as a market transformation program was the biggest challenge former program sponsors faced in implementing the program.

Most former program sponsors operated in regulatory environments that did not allow them to wait for medium- and long-term market shifts or claim savings for

updates to ENERGY STAR specifications and equipment standards. These sponsors reported their ESRPP pilots were not cost effective based on the short-term lift in sales of qualified products their evaluations identified. These challenges were particularly significant for program sponsors in regulatory environments that required them to tie the program's influence directly to a sale and demonstrate specific program influence.

As noted above, none of the interviewed program sponsors – current or former – had experience evaluating market transformation programs using approaches that were distinct from their resource acquisition program evaluation approaches. Nonetheless, several current sponsors were able to approach energy savings assessment from a longer-term perspective or demonstrate value in their ESRPP involvement beyond short-term lift in sales of qualified products. Examples of the value current program sponsors found in ESRPP participation include:

- The potential to use ESRPP data to demonstrate market potential and growth.
- The potential to use ESRPP to advance appliance standards by increasing uptake of efficient options and demonstrating their potential.
- The opportunity to engage with retailers to support enabling, connected technologies that could be valuable in future program efforts.

Some current sponsors also reported that they were able to take a longer-term perspective in their ESRPP evaluation, not evaluating the program every year. Nonetheless, even a sponsor with a four-year planning cycle noted that the timing of ESRPP savings relative to spending could pose a challenge for their program.

Some program sponsors were uncertain of the benefits ESRPP would yield and thus were reluctant to make large investments in the program.

Four sponsors – two current and two former sponsors – expressed concern over the cost of implementing ESRPP, with some specifically expressing concern over data management costs. At smaller organizations, one noted that the cost can be more significant than it might be to sponsors with larger overall budgets.

The other sponsors tied their concern over the cost to the perceived savings risk. As with many market transformation programs, ESRPP program logic anticipates that the bulk of energy savings will occur years after the program spending that

motivates those savings.[13] Program sponsors with little or no experience conducting market transformation programs and without established frameworks for estimating market transformation savings, saw this upfront investment for future savings as a risk. They were uncertain the savings would materialize and that they would be able to claim them.

While these program sponsors recognized the potential benefits of ESRPP and were willing to pursue the program, the risks they perceived limited the amount they were willing to invest. As one former sponsor explained, "The [data] portal was quite expensive. Even though [ESRPP] was a lower cost compared to traditional rebate programs, it still had a big price tag. Can we risk such a large investment over multiple years without assurance that there will be cost effective savings?"

Some program sponsors anticipated that ESRPP would have greater influence over participating retailers.

Five program sponsors – two current and three former sponsors – expressed a desire for ESRPP to place greater demands on participating retailers. Two former sponsors hoped retailers would take more aggressive action to assort and market qualified products. According to one former sponsor, "It didn't feel like [the retailers] were bringing too much to the table in terms of what they were doing…It kind of felt like we were just allowing them to do what they wanted to do versus having more expectations with their participation." Another former sponsor expressed a similar concern, saying, "It felt like we didn't have a lot of clout with the retailers; they were going to do what they were going to do."

Two other program sponsors (one former and one current) sought additional data from retailers to support their evaluation efforts, particularly store-level sales or customer data. One former program sponsor stated, "we had 11 utilities, working with some major retailers. I might have thought that would be the first thing we negotiate. If we're going to do that, we need X many surveys per state or region, we need some metrics on marketing and stocking improvements."

Finally, one current program sponsor expressed a desire for greater collaboration with retailer marketing plans so they could provide utility marketing support to retailer efforts to promote qualified products.

[13] RPP has the potential to influence the market in a variety of ways, with program impact increasing over time. For example, incentives could motivate retailers to increase promotion of qualified products in the first year, while program-motivated assortment changes would likely take a year or more to result in a meaningful change in market share (see Section 4.2). It would also likely take manufacturers a year or more to develop additional energy efficient product offerings to meet retailer demand. Finally, ENERGY STAR specification revisions and updates to appliance standards can take several years to occur.

3.4 Participation in ESRPP Coordination Efforts

NEEA was a founding member of ESRPP, and its ongoing involvement has been important in guiding the program.

Both NEEA and Pacific Gas & Electric (PG&E) developed RPP pilots prior to the formation of ESRPP. PG&E's pilot focused on promoting efficient products through in-depth engagement with a single retailer, while NEEA worked with multiple retailers in a model that more closely resembled the current ESRPP program. Both organizations, and the retail channel contractor that they shared, recognized the importance of scale, in terms of incentive budgets and number of customers served, in influencing retailers and standard and specification processes. To achieve that scale, NEEA worked with EPA and other program sponsors to establish a nationally coordinated effort through the ENERGY STAR program and encouraged additional program administrators to implement their own ENERGY STAR RPP (ESRPP) pilots.

EPA established a series of task forces to oversee ESRPP and provide participating program sponsors with input on key program decisions. NEEA led some of these task forces and was an active participant in all of them. Program staff noted that NEEA staff are typically among the most engaged participants in ESRPP task force meetings. Table 18 summarizes the various task forces and NEEA's role in them prior to the transition to NEEA's expanded role in national coordination, adapted from a presentation dated June 2020.[14]

Table 18: ESRPP Task Force Structure

Task Force	Purpose	NEEA Role (Under EPA Coordination)
Evaluation, measurement and verification (EM&V)/Regulatory	Work to develop evaluation approaches and tools and address program sponsor questions or concerns about evaluating and claiming savings from ESRPP programs.	Participant
Data	Manage data collection process and ensure collected sales data are sufficiently accurate and complete for program sponsor needs.	Lead

[14] ENERGY STAR Retail Products Platform Pitch Deck. https://cmadmin.energystar.gov/sites/default/files/asset/document/ESRPP%20Pitch%20Deck_Draft_06-23-2020_0.pdf

Task Force	Purpose	NEEA Role (Under EPA Coordination)
Products	Monitor the products in the portfolio, including specifying efficiency levels for incentive tiers and determining when to add or remove products.	Lead
Outreach	Informing prospective program sponsors about ESRPP and encouraging them to participate.	Participant
Marketing	Develop point-of-purchase (POP) marketing materials program sponsors can implement consistent with ESRPP retailer participation agreement.	Participant
Retail & Legal	Develop and update participation agreements and work directly with retailers to inform them about the program and address any issues or concerns.	Participant

Adapted from ESRPP Pitch Deck, June 2020.
https://cmadmin.energystar.gov/sites/default/files/asset/document/ESRPP%20Pitch%20Deck_Draft_06-23-2020_0.pdf

In 2021 NEEA took on a greater role in national program facilitation, adopting some of the functions that EPA had previously led. In addition to facilitating the existing task forces, NEEA established a Program Governance Committee, made up of representatives from each participating program sponsor, to provide high-level program guidance.

Program sponsors were generally satisfied with their interactions with NEEA, although some felt NEEA did not relate to their resource acquisition-focused concerns.

Program sponsors primarily reported interacting with NEEA in two contexts: through NEEA's leadership of ESRPP task forces and through NEEA's support as they were considering joining the program. Sponsors generally reported satisfaction with their interactions with NEEA in these contexts. For example, one program sponsor noted that NEEA staff had been helpful in addressing early challenges around program data, conducting analysis to identify and investigate issues that the other sponsor did not have the capacity to pursue.

Two former sponsors reported feeling that NEEA operates in such a unique context that NEEA could not effectively identify with and address their concerns. One program sponsor said, "NEEA lived in another world where they were able to test these things…talking to us, the utilities, like 'why are you guys so stodgy?'" The other former sponsor noted, while their approaches were based on a resource acquisition focus, that was the foundation from which they needed to develop a market transformation approach.

Most interviewed program sponsors did not express strong opinions about the shift in ESRPP coordination efforts from EPA to NEEA. Three sponsors expressed positive views of the shift. One noted that NEEA may be more familiar with utility requirements than EPA given its experience coordinating with multiple utilities. Another reported that, while they viewed the shift positively, they would like the program to develop a roadmap for what it hopes to accomplish in the next three years.

Most program sponsors find their participation in ESRPP task forces valuable.

Interviewed program sponsors value the opportunity to interact directly with other participating program sponsors and retailers. Three sponsors noted it is important for them to have a voice in the overall direction of the program since different sponsors have different priorities. Two sponsors specifically stated that the products task force is effective. Interviewed program sponsors also reported that EPA-led coordination, in terms of tasks like organizing meetings, had been helpful and that EPA and EPA's contractors had been responsive.

Some program sponsors – primarily former sponsors – found it difficult to express themselves and have their concerns addressed in task force meetings.

Four sponsors – three former sponsors and one current sponsor – indicated that larger utilities or those more engaged with market transformation efforts could dominate task force meetings. According to one former sponsor, "I did not feel like I had a lot to add to those conversations…Others had more of a stake in it than we did. Rightly or wrongly, their voices took priority." One former program sponsor also noted that it was unclear who they could ultimately turn to for support in addressing their concerns, saying "it needed to be more clear whose role it was to be there for our concerns, to answer our concerns…It felt like there was a bunch of people and the loudest voices won." Two former program sponsors suggested that one-on-one or small group conversations might provide a greater opportunity for these program sponsors to express their views.

4. Assessment of Midstream Incentive Potential

NEEA asked the Apex team to assess circumstances under which midstream incentives are most likely to be effective. This assessment is intended to both

inform NEEA's consideration of product strategies and NEEA's approach in developing baseline estimates of efficient market share for products receiving midstream incentives.

NEEA's 2016 RPP pilot evaluation identified three broad categories of actions retailers might take to increase sales of qualified products in response to midstream incentives:[15]

- Changes to product **assortments** to increase the number of qualified products available or decrease the number of non-qualified products. In doing so, retailers may work with manufacturers to request qualified options where they are not already available.
- Favoring efficient products in **promotions**, defined broadly to include advertisements, sale pricing, in-store or online placement or display, and sales associate training.
- Favoring efficient products in **stocking** to increase their availability relative to non-qualified products.

The pilot evaluation (2016) found that assortment changes are a likely response to midstream incentives. An incentive can make a meaningful difference relative to a retailer's profit margin for a qualified product, making it a consideration in assortment decisions. Incentives can also be a consideration in promotional decisions, although retailers often receive support from manufacturers on large promotions on a much larger scale than RPP incentives. The pilot evaluation found that retailers generally do not use stocking as a way to promote certain products over others.

More recent findings suggest that, while assortment decisions remain an important path of influence for midstream incentives, the per unit sales incentives may influence promotion decisions to a greater extent than the pilot evaluation anticipated. In quarterly presentations to ESRPP program sponsors and retailer interviews, some retailers described promotional changes they had made. Recent interviews also suggest that, for at least one retailer, incentives may factor into stocking decisions, although this could be a result of supply chain disruptions and may not occur under more normal circumstances.[16]

Drawing on findings from the pilot evaluation and other research, NEEA's 2019 RPP evaluation described the market conditions that might lead NEEA to select various

[15] See the Retail Products Portfolio Pilot Evaluation, completed in 2016 by Research Into Action, Apex Analytics, and ILLUME Advising. https://neea.org/img/uploads/retail-products-portfolio-pilot-evaluation-final-report.pdf

[16] Faced with supply chain disruptions associated with Covid-19, one retailer noted that, with limited product availability, they will prioritize shipments of qualified products to areas where incentives are available.

intervention strategies for ESRPP products.[17] That evaluation indicated that midstream incentives would be an appropriate strategy for products in which energy efficient models were widely available, but the market share of efficient products was low or stagnant. This section builds on that analysis to consider the pace of model turnover in addition to the availability of efficient products. We have also identified two considerations – model concentration and brand concentration – that could each pose unique risks and opportunities for the program.

The following sections describe each of these considerations and how they might affect a midstream incentive strategy, propose an approach to assess each consideration using ESRPP sales data, and discuss the limitations of that assessment approach. Detailed assessments for each of the three products NEEA selected as a focus for this research are available in Appendix B.

4.1 Availability of Efficient Models

4.1.1 Rationale

The availability of efficient models is a key consideration in the likely effectiveness of midstream incentives to influence both product assortment and promotional decisions. In either case, the program anticipates that incentives will motivate retailers to favor an efficient product over a similar, inefficient alternative.

Retailers' primary objective in making assortment decisions is meeting anticipated consumer demand by offering a variety of key product characteristics like size, configuration, features, and price points. Midstream incentives have the potential to lead a retailer to select an efficient model over an inefficient alternative that they believe will be equally effective in meeting consumer demand. As a result, midstream incentives are likely to have the greatest influence on retailers' assortment and promotion decisions when the retailers are in a position to choose between efficient and inefficient models that are similar in other ways. Thus, midstream incentives are likely to have the greatest influence on assortment decisions when there are efficient options with the characteristics the retailers anticipate consumers will demand, but those options are not the default choice.

The program anticipates that midstream incentives will affect retailers' promotional decisions in a similar way to their assortment decisions, by motivating retailers to select efficient models to feature in promotions rather than inefficient alternatives. As a result, availability of efficient models is likely to have a similar impact on the potential for midstream incentives to influence retailers' promotional decisions. Retailers seek to promote products that will appeal to consumers and capture their

[17] See the Retail Product Portfolio Evaluation – Final Report, completed in 2019 by Apex Analytics. https://neea.org/img/documents/RPP-Evaluation-Final-Report.pdf

attention. Retailers will be more likely to include efficient models in their promotions if efficient products are available with the characteristics retailers anticipate consumers will demand.

4.1.2 Assessment Approach

Retailer interviews and prior research indicate that retailers seek to assort models that will meet specific segments of customer demand. For example, a retailer may determine that a certain segment of customers is interested in smaller refrigerators with top-mounted freezers and no ice maker, while another segment of customers is interested in larger refrigerators with bottom-mounted freezers and an ice dispenser in the door. The retailer then plans an assortment that includes options for both segments of customers.

Assessing the market share of efficient products within each of these granular demand segments provides some insight into the potential effectiveness of midstream incentives. A very low efficient market share within a segment – for example, below 10% – may indicate that few efficient options are available to serve that segment of customer demand. As a result, a retailer may have limited opportunity to favor efficient options in assortment or promotion decisions for those products. Likewise, incentives are likely to have limited influence if most products with a particular set of characteristics – for example efficient market shares of 50% or more – are efficient. In that case, an efficient product would likely be the default choice even without incentives.

The refrigerator demand segments described in the example above illustrate this distinction (Figure 5). NEEA provides midstream incentives for refrigerators meeting the ENERGY STAR Most Efficient (ESME) specification. ESME models account for 18% of total sales among smaller refrigerators with top-mounted freezers and no ice maker. This suggests that, while there are efficient models available, those models are not the default choice. In contrast, there were no sales of ESME models among larger refrigerators with bottom-mount freezers and through-the-door ice makers, suggesting that these models may not be available for retailers to assort or promote.

Figure 5: Refrigerator Availability Analysis Example

Smaller (<20 cu. ft.), top-mounted freezer, no ice maker			Larger (≥25 cu. ft.), bottom mounted freezer, through-the-door ice		
	*Share of total refrigerator sales*	24%		*Share of total refrigerator sales*	12%
	ESME market share	18%		*ESME market share*	0%
	Assessment:			*Assessment:*	
	Good potential for midstream incentive influence: efficient options are available but not the default choice			Limited potential for midstream incentive influence: Likely few efficient options available for retailers to assort or promote	

While this analysis seeks to examine the market share of efficient products at the most granular level the data will allow, it is also possible to aggregate the findings for product-level comparison. Apex did this by assessing the share of total sales within a product category from models in demand segments with efficient market shares that fall within the range expected to be most responsive to midstream incentives (for example, between 10% and 50%). In 2020, 38% of refrigerator sales came from demand segments that fell into this range, while the share was similar for freezers (37%) and slightly lower for top-load clothes washers (29%).

- **Finding:** The availability of efficient models, as assessed here, suggests that midstream incentives may have a greater influence on the assortment and promotion of refrigerators and freezers than top-load clothes washers.

4.1.3 Limitations and Considerations

While this analysis provides an indication of the availability of efficient products and the potential for midstream incentives to influence assortment and promotion decisions, it is limited in three important ways:

- **Available data on product features is limited:** This analysis seeks to assess efficient product availability at a level of granularity *approaching* the granularity at which retail merchants make decisions about which products to

assort and promote. However, retail merchants have considerably more information about each model than is included in the RPP sales dataset available to NEEA. Most notably, the RPP sales datasets do not include price, which is a key consideration for merchants.

- **Assortment and promotion decisions are complex:** While past research has found that meeting customer demand is a central objective of retailers' assortment and promotional decisions, there are a range of other considerations that influence those decisions. For example, manufacturers offer incentives and support to encourage retailers to assort and promote their products. This analysis cannot account for promotions or favorable terms manufacturers might offer retailers, the retailers' relationships with the manufacturers more broadly, or other retailer business considerations.
- **Growth in online shopping may shift assortment considerations:** Retailers' online product assortments are not constrained like in-store product assortments, which must fit within a limited, physical space. As a result, there may be less need for retail merchants to choose between one model and another for an online assortment. Retailer interviews suggest that the potential to offer a wider online assortment has potential to impact in-store assortments as well, as sales staff can offer models not displayed in the store.

4.2 Model Turnover

4.2.1 Rationale

Midstream incentives have the potential to influence retailers' assortment decisions when retail merchants consider the range of models available to meet a particular segment of customer demand. However, retailers are unlikely to consider replacing every model in their assortment each year. ESRPP retailer interview findings suggest that retailers actively monitor sales to identify underperforming models and replace those models on a monthly or quarterly basis. They are unlikely, however, to actively consider replacing models that meet sales expectations outside of periodic larger reviews of their assortments and product strategies more broadly. While individual retailer interview respondents have suggested these reviews take place every 18 months to two years, the timing may vary by product category.

Product categories in which retailers review and replace models more frequently provide more opportunities for midstream incentives to influence assortment decisions. As a result, incentives may lead to larger changes to the overall assortment more quickly.

4.2.2 Assessment Approach

Shifts in the models appearing in RPP sales data provide one indication of the pace of model turnover. Models appearing in the sales data that had not appeared previously indicate additions to one or more retailers' assortments.[18] For example, participating retailers reported sales of 158 unique top-load washer models in 2020, 37 of which first appeared in the sales data that year, indicating that retailers added those models to their assortments. Those 37 new models accounted for 14% of top-load washer sales in 2020.

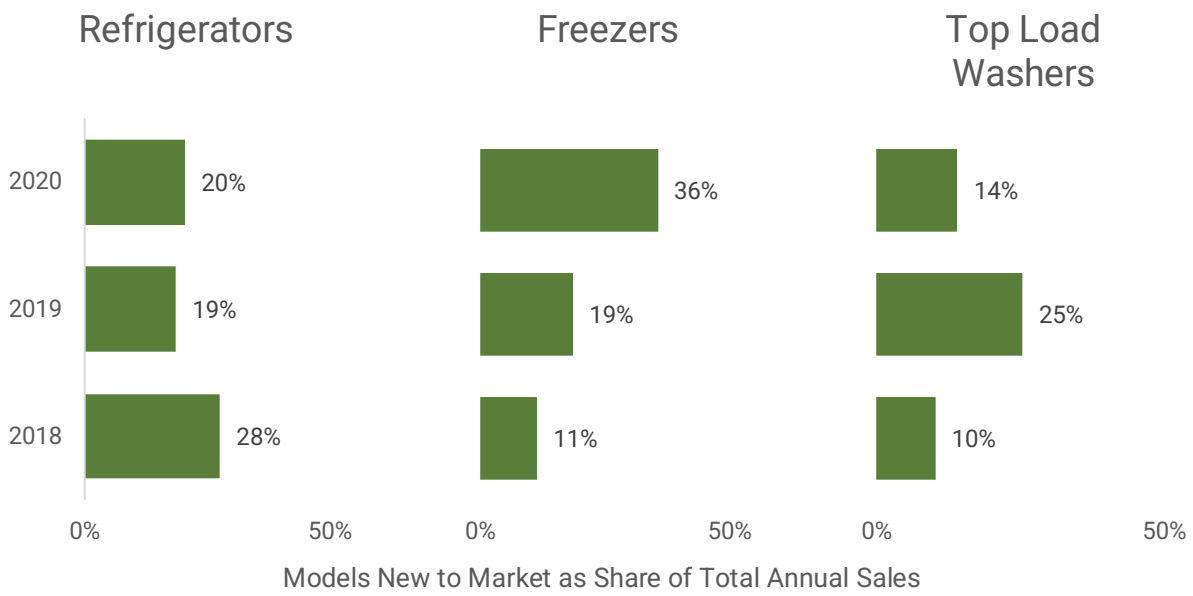
The share of sales from new washer models in 2020 was typical for appliance products. While there was some variation, potentially reflecting retailers' periodic product reviews, refrigerator, freezer, and top-load washer models entering the market each year between 2018 and 2020 accounted for between 10% and 25% of total sales in the year in which they entered the market (Figure 6).[19] Freezer sales in 2020 were an exception, with new models accounting for 36% of sales in a year in which overall sales increased by more than 50% relative to the previous year, likely as a result of the COVID-19 pandemic. [20]

[18] As discussed further below, while new models appearing in the RPP sales dataset indicate assortment changes, not all assortment changes will result in new models appearing in the dataset.

[19] The Apex team classified the year models entered the market and left the market based on sales data. We were able to identify models leaving the market from 2017 through 2019 and models entering the market from 2018 through 2020. Prior to 2017, the addition of new retailers to ESRPP made it impossible to distinguish between models new to the market and models appearing in the sales data for the first time due to the addition of new retailers.

[20] In-store freezer sales were 52% higher in 2020 than 2019, and online sales increased by 176%. Overall, freezer sales increased by 69% in 2020 relative to 2019.

Figure 6: Refrigerator, Freezer, and Washer Models Entering Market as Share of Sales



Source: ESRPP participating retailer reporting, NEEA region. Based on in-store sales only.

- **Finding:** Retailer assortment decisions – as indicated by models entering the market – appear to affect a larger share of refrigerator sales than top-load washer sales, indicating that midstream incentives might have a greater opportunity to influence sales.[21] Nonetheless, both products experienced spikes in sales of products entering the market in certain years, suggesting there may be greater opportunity for midstream incentive influence in some years than others.

4.2.3 Limitations and Considerations

Analysis of models added to RPP sales data captures only one type of assortment change retailers could make to favor efficient models. As a result, it does not provide a comprehensive estimate of potential program influence. ESRPP data limitations prevent a more complete, retailer-by-retailer assessment of assortment changes based on sales data. There are two ways retailers could alter their assortments in response to midstream incentives that this analysis does not fully address:

- **Adding qualified models already on the market:** Because full category ESRPP sales data are aggregated across retailers, we are unable to identify all instances in which a retailer adds a model to their assortment that another

[21] The trends observed in freezer sales appear to be strongly influenced by the COVID-19 pandemic. As a result, we do not draw broader conclusions about freezer sales.

retailer had previously offered. Data on sales of qualified models, which are available at the retailer level, suggest that, while this is rare, it does occur. For example, in 2020, ESRPP retailers, collectively, added 36 qualified clothes washer models to their assortments, five of which (14%) had previously been on the market.[22]

- **Removing non-qualified models without replacing them:** An analysis of models entering the market does not capture assortment decisions in which retailers choose to stop carrying a model without replacing it. Business literature suggests that this should be rare; to optimize assortment, each model in a retailer's assortment should target a specific segment of customer demand, and retailers would be unlikely to remove a model without providing an alternative for the segment of customers that model served.[23] In practice, however, retailers may assort multiple models to serve a single segment of customer demand. The total number of unique models ESRPP retailers, collectively, assorted varied from year to year for each of the three examined products. Only refrigerators showed a consistent trend, with the number of unique models appearing in sales data declining each year from 2018 to 2020.

4.3 Model Concentration

4.3.1 Rationale

In some product categories, a small number of models account for a large share of overall sales. Midstream incentives may be effective in these categories. In fact, shifts in assortment of models selling in high volumes resulting from midstream incentives could have a disproportionate impact on efficient market share. However, midstream incentives may also face greater challenges in this scenario. In categories with high model concentration, manufacturers will seek to motivate retailers to assort their products in the configurations and feature sets likely to sell in high volume. Midstream incentives will compete for retailers' attention with manufacturer promotions and favorable terms. In addition, if consumer demand is skewed toward a few models, there may be limited potential for promotional activities to draw consumers to alternative options.

[22] In 2019 and 2020, the share of qualified models added to retailers' assortments that were already on the market ranged from 6% (freezers in 2020) to 32% (refrigerators in 2019). These models accounted for between 0.5% and 12.5% of the qualified sales attributable to models added to retailers' assortments each year and less than 2% of total qualified sales.

[23] For example, see Marshall Fisher and Ramnath Vaidyanathan's November 2012 article, "Which Products Should You Stock?" in the Harvard Business Review.

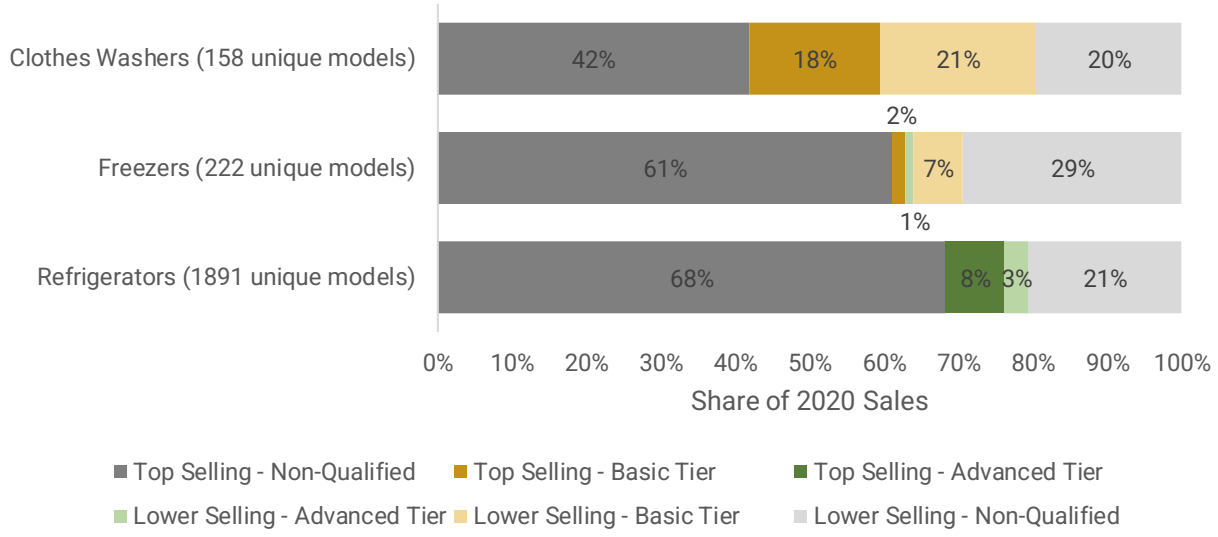
Freezers present an illustration of the effect model concentration can have on market share of efficient products. The basic tier (ENERGY STAR) market share for top selling freezers in 2020 (2%) represents a notable drop relative to the prior years (14-15% from 2017-2019). This drop reflects dramatic decreases in sales, or removal from the market altogether, of four formerly high-selling models, all produced by one manufacturer.

4.3.2 Assessment Approach

It is possible to assess the concentration of sales among models within a product category by determining the share of total sales attributable to the models selling in the highest volume. As the freezer example above illustrates, it is also valuable to identify the distribution of efficient sales between high- and low-selling models. Different intervention strategies might be appropriate if high-selling models are disproportionately inefficient than if efficient models are distributed more evenly between high- and low-selling models.

Figure 7 illustrates the model concentration and efficiency distribution of the three products examined, with darker colors representing the 10% of models selling the highest volume of units in each examined product category.

Figure 7: Model Concentration of Sales and Efficiency Distribution of Refrigerators, Freezers, & Clothes Washers, 2020



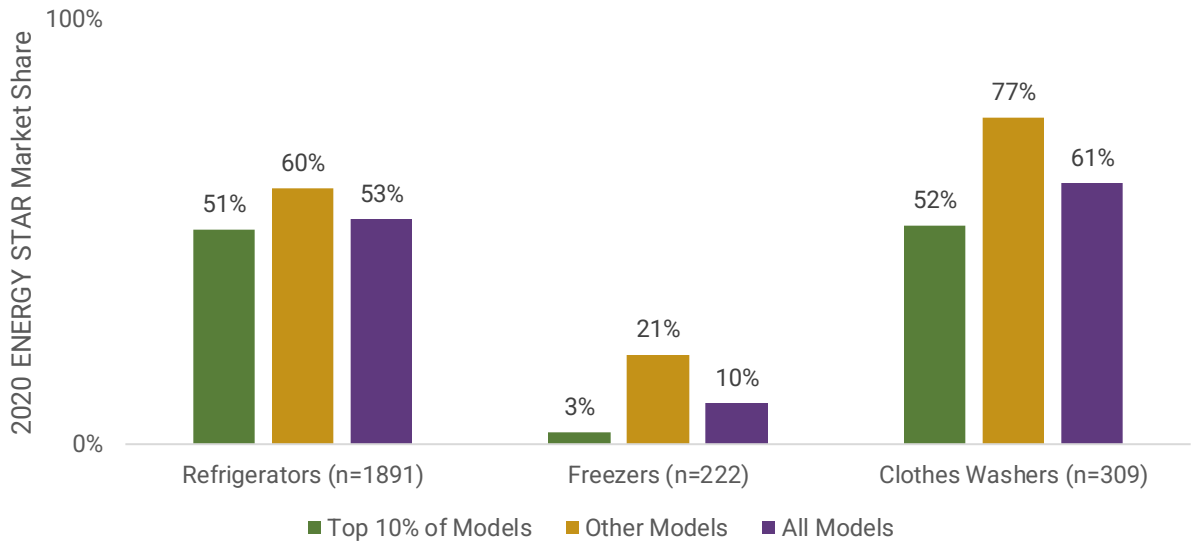
Top Selling models defined as the 10% of models selling the largest volume of units.
Source: ESRPP participating retailer reporting, NEEA region

- Refrigerators had the highest model concentration among the three products examined, with the 10% of highest selling refrigerator models accounting for 76% of all refrigerator sales.

- A majority of qualified refrigerator sales came from models selling in high volumes.
- Clothes washer qualified sales were split relatively evenly between models selling in high volumes and other models. Non-qualified sales were more concentrated among units selling in high volumes.

The top-selling models tended to be less efficient than lower-selling models for all three product categories (Figure 8). This finding likely reflects the tendency for lower-cost models to sell in high volumes. The difference in efficiency between top-selling models and other models was greatest for clothes washers. The efficient market share of top-selling freezers declined notably in 2020; in prior years, the efficient market share of top-selling freezers was closer to that of lower-selling models.

Figure 8: 2020 Efficient Market Share by Sales Volume Rank



Source: ESRPP participating retailer reporting, NEEA region

- **Finding:** Sales are concentrated among the 10% of highest-selling models in all three product categories, and those high-sales-volume models are less likely to be efficient than the category as a whole. As a result, there are substantial opportunities from increasing the efficiency of models selling in high volumes.

4.3.3 Limitations and Considerations

The number of unique models appearing in RPP sales data can vary greatly between product categories, making comparisons across products difficult. For example, more than ten times as many refrigerator models (1,891) than clothes washer

models (158) appeared in the sales data in 2020. As a result, analysis of the 10% of refrigerator models selling in the highest volume includes a much larger absolute number of models than analysis of the 10% of clothes washer models selling in the highest volume. The greater concentration of refrigerator sales among models selling in high volumes likely reflects, to some extent, the larger number of refrigerator models in the sales data, and thus the larger number of models included in the top 10%. The single top-selling refrigerator model accounted for a smaller share (3%) of total sales than the top-selling washer model (5%) in 2020.

Assessing sales share based on an absolute number of models, for example the ten models selling in the highest volume, rather than a proportion, offers an alternative approach, but faces similar challenges. Under that approach, refrigerator model concentration appears low relative to the other products, but that difference likely reflects the much smaller share of the total number of models those ten high-selling models represent.

4.4 Brand Concentration

4.4.1 Rationale

Product categories in which sales, and particularly sales of efficient models, are highly concentrated among a small number of manufacturers can pose a risk to the success of a midstream incentive strategy, and potentially pose a risk to merchants and suppliers, by increasing vulnerability associated with supply disruptions.[24] If the preferred product is a small portion of the market and predominantly one manufacturer, decisions made further up the supply chain could affect the availability of specific models.

Top-load clothes washers meeting the 2017 ESME specification provide an example of the risks of high manufacturer concentration.[25] A single manufacturer produces all of the qualified models. There were two qualified models from 2015 to 2018. The manufacturer expanded their offerings to five qualified models in 2019, one of which became a top seller. Market share of 2017 ESME models has grown from less than 1% in 2018 to 7.6% in 2020.

With only one manufacturer producing qualified models, there are risks to the sustainability of the market share of 2017 ESME top-load washers that a more diverse market might not face. For example, the manufacturer produces a wide

[24] High brand concentration may also be associated with limited availability of efficient models, discussed above, since individual manufacturers may not produce both efficient and inefficient options with similar capacities, configurations, and feature sets.

[25] The program's advanced tier for clothes washers is the 2018 ESME specification; models meeting the 2017 ESME specification would qualify for basic tier incentives along with all other ENERGY STAR models. We use the 2017 ESME tier here as an example only.

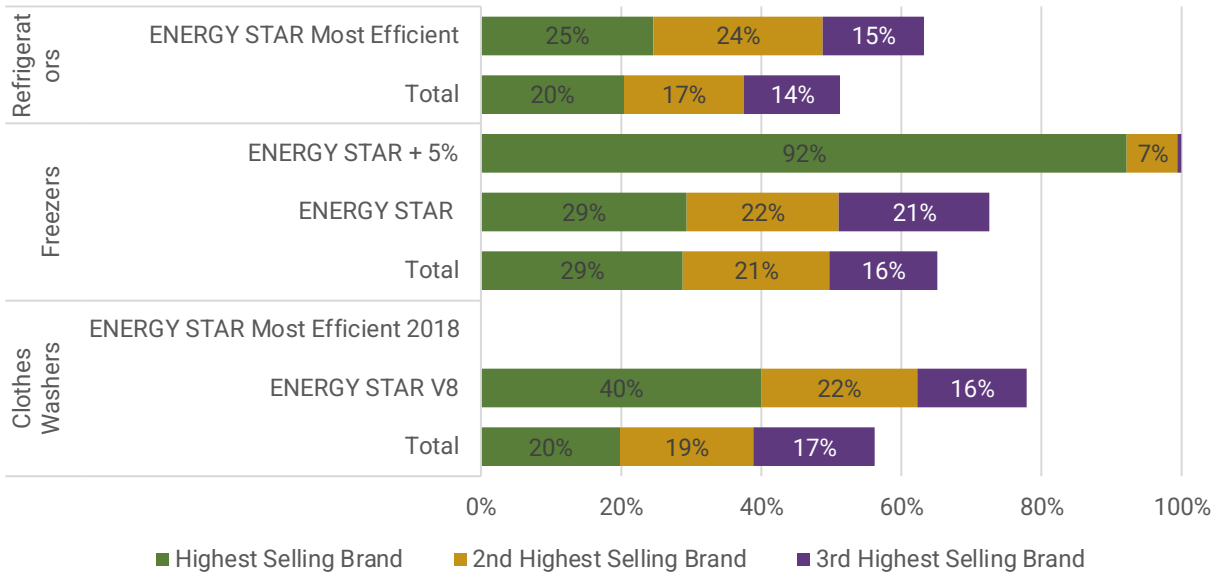
range of products beyond clothes washers, and higher-level shifts in corporate strategy could lead them to eliminate those qualified models in order to free up resources for other priorities. Alternately, if a single factory produces all qualified models, natural disasters or other disruptions affecting that facility could have a significant impact on availability of qualified products. These types of shifts would be impossible to anticipate in baseline market share estimates or forecasts of qualified sales.

Product categories with high brand concentration of efficient products may indicate an opportunity for strategic intervention by RPP, if the concentration reflects limited adoption of an emerging efficient technology. In those cases, however, the program may benefit from a more targeted emerging technology strategy layered onto a midstream incentive approach.

4.4.2 Assessment Approach

To measure brand concentration, the Apex team assessed the share of sales attributable to each of the three highest-selling brands within each product category. The top three brands made up a majority of sales for all three of the examined products in 2020 (Figure 9). Efficient product sales were more concentrated among top-selling brands than sales in the product categories as a whole. Brand concentration was particularly high among advanced tier freezers, reflecting the small number of qualified models available. Only 13 advanced tier models, from six manufacturers, appeared in sales data for 2020, and only three of those models sold more than 100 units.

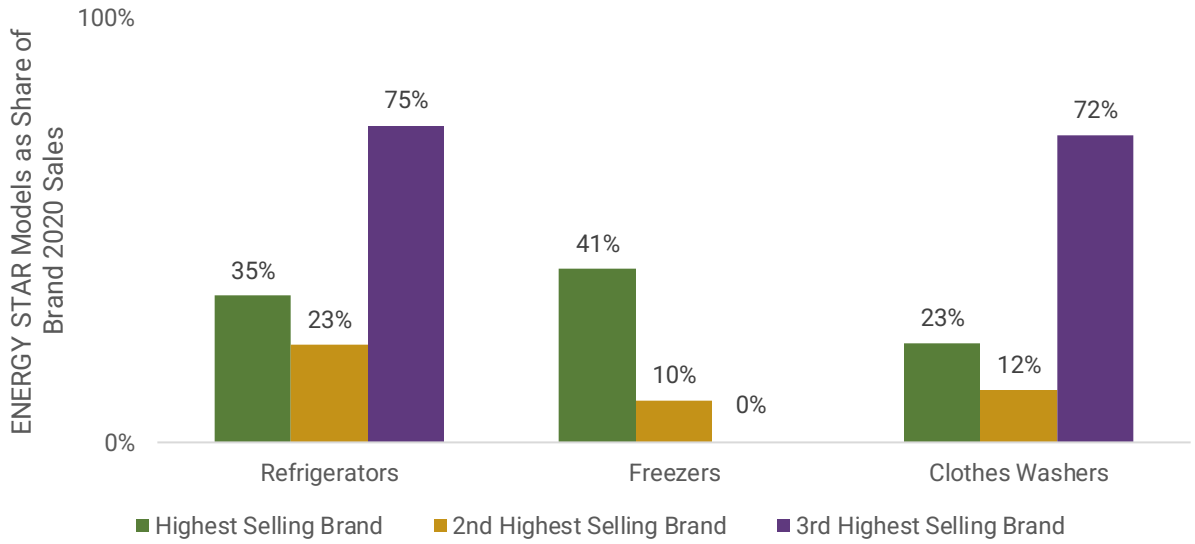
Figure 9: 2020 Market Share of Top Three Brands



Note: NEEA's advanced tier qualification level for freezers in 2020 was ENERGY STAR Most Efficient, which is slightly more stringent than the ENERGY STAR + 5% level tracked in the sales dataset Apex analyzed.
Source: ESRPP participating retailer reporting, NEEA region

There is considerable variation in ENERGY STAR market share between top brands for all three of the products examined (Figure 10). In each case, one brand produces a notably higher market share of efficient products than the other two.

Figure 10. ENERGY STAR Market Share of Top Three Brands



Source: ESRPP participating retailer reporting, NEEA region

- **Finding:** While the top three brands represent a majority of sales for all three products, the level of concentration among any single brand does not pose a significant risk to the program, with the exception of advanced tier freezers.

4.4.3 Limitations and Considerations

Two considerations are important in assessing brand concentration:

- **Number of brands:** As with model concentration, the total number of brands offering products in each category is an important consideration when comparing brand concentration across products. There is less variation in the number of brands represented in sales data between products than in the number of models. The sales data Apex reviewed included 33 unique brands each for refrigerators and freezers and 21 unique brands for top-load washers. As a result, while the combined market share of the top three brands was similar for clothes washers and refrigerators, the refrigerator market may be more concentrated than the washer market since those three brands make up a smaller share of the brands available in the market.
- **Market consolidation:** A single parent company may produce models under multiple brands. Some manufacturers use distinct brand names for products targeting different segments of the market. For example, the Whirlpool Corporation produces appliances under a variety of brand names, including Whirlpool, Maytag, Hotpoint, and Amana. It is possible to consolidate the brand names listed in sales data to their parent companies, although doing so would require close tracking of the market.

5. Conclusions & Recommendations

The Apex team draws the following conclusions and recommendations from this research.

Conclusion 1: There are multiple benefits of increasing the scale of ESRPP in terms of the share of the US residential market covered, but it is important that any increases in scale be sustainable. A key benefit of increased scale for ESRPP results from enhancing the potential for midstream incentives to influence retailer, and, ultimately, manufacturer actions. Both program staff and retailers indicated that greater scale would increase the program's access and recognition within retail organizations. Increased scale could also increase the program's credibility in specification and standard-setting processes, particularly if that increased scale increased the diversity of geographies and climates the program represents. Finally, increasing program scale could result in a virtuous cycle, as prospective program sponsors find a growing program more appealing to join. Nonetheless, for an

expansion to be sustainable, program sponsors joining the program will need one or more of the following conditions:

- Approval to invest in market transformation efforts that may not yield significant savings until years into the future.
- A mechanism for claiming savings from efforts to influence standards updates, and, ideally, ENERGY STAR specification revisions.
- Opportunities to recognize the value of ESRPP for more than the short-term energy savings it produces, for example the program's potential to promote emerging technologies or connected technologies that could enable future efficiency and demand response efforts.

Recommendation 1a: NEEA should develop a roadmap drawing on existing program experience to plan for the future of RPP. NEEA and other program sponsors have gained a great deal of knowledge and experience working with retailers since the program began, and the program's relationships with participating retailers have matured. Markets have also shifted with the growth of online shopping. NEEA can build on this experience to articulate a plan for the next three years that addresses the constraints and opportunities associated with each product. This could include reassessing the role of assortment decisions relative to other ways retailers could increase sales of qualified products in response to midstream incentives. While this roadmap would be a shared document with other ESRPP program sponsors, NEEA could leverage the process of developing it to reassess its own MPIs to ensure they remain appropriate as the program has matured.

Recommendation 1b: NEEA should clearly articulate and communicate the path to energy savings for each ESRPP product to other program sponsors. NEEA could do this as part of the roadmap development process recommended above. Recognizing that midstream incentives are but one path to market transformation, NEEA has defined multiple strategies for ESRPP products. A shared understanding of the path to energy savings for each product would help ESRPP program sponsors better prepare for program evaluation, potentially leading to better evaluation outcomes. A product for which specification and standards advancement presents the primary path to energy savings, for example, may not achieve a significant, short-term sales lift from midstream incentives. Evaluation efforts focused on that short-term lift may not recognize the mid- or long-term potential of specification and standards advancement and could constrain program sponsors' ability to pursue those longer-term objectives.

Conclusion 2: The previous ESRPP task force structure may not have fully represented the views of all program sponsors. Prior to 2021, when NEEA took on a

larger facilitation role, EPA staff facilitated ESRPP coordination efforts. Some program sponsors, primarily former sponsors, and particularly those with less experience with market transformation, reported that the discussion in ESRPP task force meetings did not represent their views and experience. This was a greater concern for some sponsors than for others. Program sponsor interview findings further suggest within the collaborative structure that has guided ESRPP, it has been difficult to identify a specific person or process responsible for resolving program sponsor-specific concerns.

> **Recommendation 2: In its expanded national facilitation role, NEEA should establish regular, one-on-one check-ins with ESRPP program sponsors.** These check-ins could provide NEEA with an opportunity to identify any concerns that program sponsors did not feel were adequately addressed in task force meetings and to gather any questions, advice, or feedback that program sponsors did not want to raise in a group setting. While it may not be practical for NEEA to address every issue, monitoring program sponsors' experience in this way could help to guide broader ESRPP facilitation efforts.

Appendix A: Program Logic Model and MPIs

Figure 11 presents NEEA's logic model for ESRPP.

Figure 11: NEEA RPP Logic Model

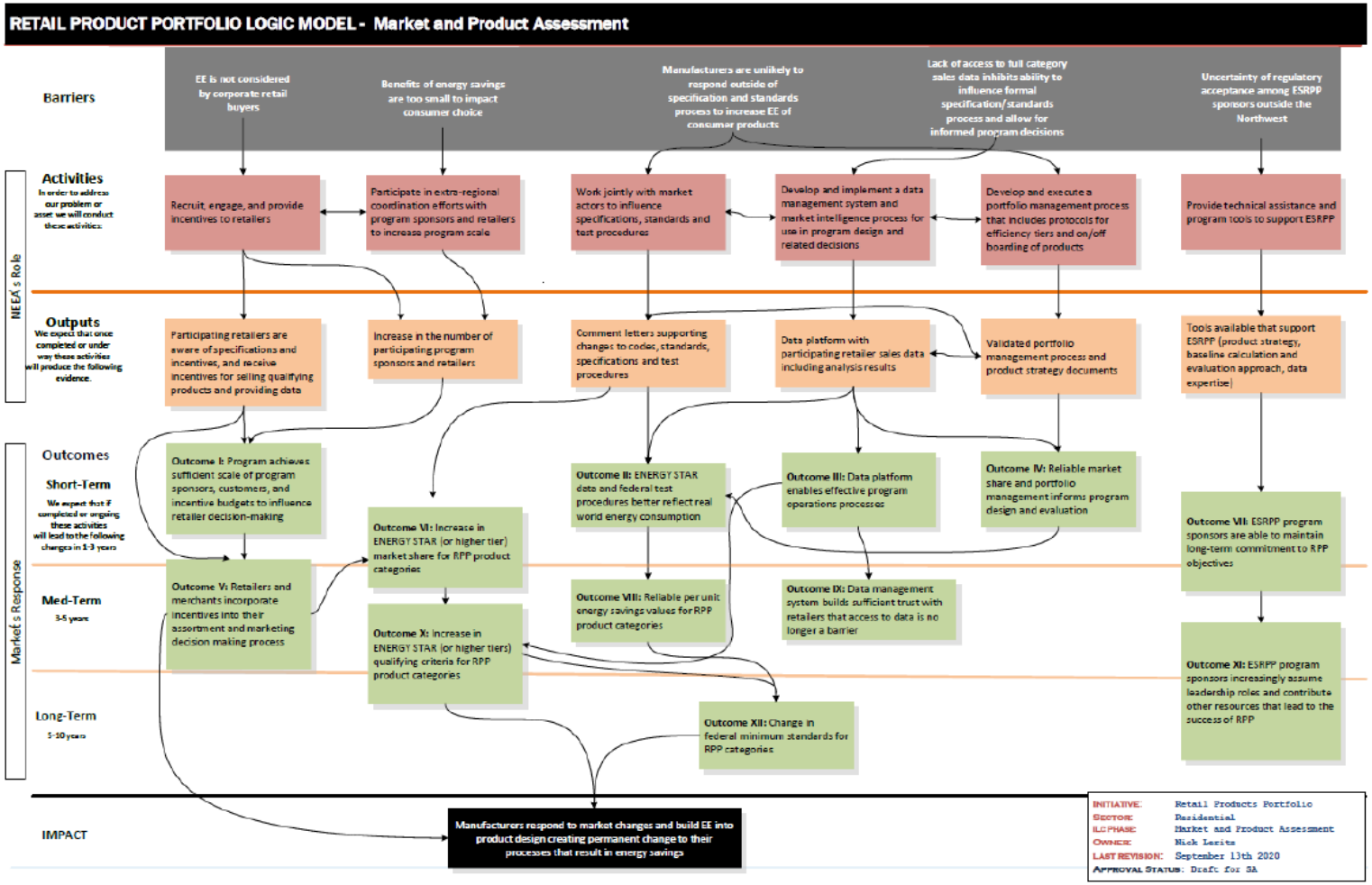


Table 19 provides a complete list of MPIs NEEA has defined for the RPP program. MPIs marked with an asterisk in the "Outcome (Timing)" column were included in this evaluation.

Table 19: RPP MPIs

Outcome (Timing)	Outcome	Market Progress Indicators	Data Sources
I (S)*	ESRPP program **achieves sufficient scale** of program sponsors, customers, and incentive budgets to influence retailer decision-making	Portion of US households in ESRPP areas and the related total value of all program sponsor incentive budgets	• EIA-861 Utility Dataset • ESRPP program documents
II (S)*	ENERGY STAR data and federal **test procedures better** reflect real world energy consumption	1. # of test procedure issues and opportunities for improvement identified 2. # of products for which ESRPP partners seek to influence test procedure 3. # of products where test procedures are improved	• EPA ENERGY STAR specification revision and DOE rulemaking documents (MPIs 1 & 3) • Longitudinal tracking of ESRPP engagement with ENERGY STAR revision processes (MPI 2)
III (S)*	Data platform enables **effective program operations and processes**	1. Data access and accuracy are sufficient to support product-by-product analysis and participation in the ENERGY STAR specification process 2. Speed with which incentives are paid 3. Number of corrections or data errors 4. Program sponsor confidence in program operations process.	• Longitudinal tracking of data quality indicators available through the data portal (MPIs 1-3) • Longitudinal tracking of RPP engagement with ENERGY STAR revision processes (MPI 1) • Qualitative evidence from ENERGY STAR stakeholder interviews (MPI 1) • Qualitative evidence from NEEA staff and program sponsors interviews (MPI 4)
IV (S)*	Reliable **market share and portfolio management** informs program design and evaluation	1. Efficient and transparent portfolio management process 2. Annual savings process and evaluation are efficient and verifiable	• Qualitative evidence from NEEA staff and program sponsor interviews (MPIs 1 & 2) • Qualitative evidence from RPP staff interviews (MPIs 1 & 2) • Evaluation results (MPI 2)
V (S/M)*	Retailers and merchants **incorporate incentives into their assortment and marketing** decision making process	Retailer consideration of ESRPP qualification in assortment and marketing decisions	• Qualitative evidence from retailer interviews • Qualitative evidence from RPP staff communication

Outcome (Timing)	Outcome	Market Progress Indicators	Data Sources
			• Quarterly presentations and information provided by retailers to ESRPP
VI (S/M)*	Increase in ENERGY STAR **market share** (or higher tier) for RPP product categories	Market share of RPP-qualified product tiers	Longitudinal tracking of market share
VII (S/M)*	ESRPP program sponsors are able to maintain **long-term commitment** to RPP objectives	1. Average tenure of ESRPP program sponsors 2. # program sponsors claiming savings for ESRPP	• ESRPP program documents (MPI 1) • Regulatory filings (MPI 2) Qualitative findings from interviews with program sponsors
VII (M)	Reliable **per unit energy savings values** for RPP product categories	Number of product categories (bins, tiers, configurations) with reliable energy savings values	Not assessed in this evaluation
IX (M)	Data management system builds sufficient **trust with retailers** that data access is no longer a barrier	1. Timeliness and completion of retailer uploads 2. Retailer confidence in data warehousing 3. Data support evaluation	Not assessed in this evaluation
X (M/L)	Increase in **ENERGY STAR qualifying criteria** (or higher tiers) for RPP product categories	1. # of opportunities to influence qualifying criteria identified 2. # of products for which there is an increase in ENERGY STAR qualifying criteria (or higher tiers) for RPP product categories	Not assessed in this evaluation
XI (M/L)	ESRPP program sponsors increasingly assume **leadership roles** and contribute other resources that lead to the success of RPP	1. ESRPP program sponsors assume leadership roles in the program 2. Mechanisms for collaboration and information sharing in place 3. # of program sponsors that engage with specification and standards processes 4. Program sponsors contribute to cost sharing for research	Not assessed in this evaluation
XII (L)	Change in **federal minimum standards** for RPP categories	ESRPP sponsors influence federal minimum standards for product categories in the portfolio	Not assessed in this evaluation

Appendix B: Detailed Product Characterization Findings

As described above, NEEA asked the Apex team to identify characteristics of ESRPP products that might impact the effectiveness of midstream incentives. In conducting this analysis, we defined effectiveness in terms of the likelihood that midstream incentives would motivate retailers to select qualified products over non-qualified alternatives in their assortment decisions and that those changes in assortment would result in an increase in the market share of qualified products.[26]

The Apex team identified two circumstances that could influence the effectiveness of midstream incentives: availability of efficient products and the pace of model turnover, and two considerations related to the potential influence of midstream incentives: model concentration and brand concentration. This Appendix presents detailed findings from Apex's characterization of refrigerators, freezers, and clothes washers across each of these circumstances and considerations.

Refrigerators

Availability of Efficient Models

Key product characteristics a merchant might consider when assorting refrigerators include the configuration of the freezer (whether it is mounted above the refrigerator (top mount), below the refrigerator (bottom mount), or side-by-side (side-mount)), whether it includes an ice maker, and the volume of the refrigerator. Apex identified four configuration and ice maker combinations that, together, made up more than 80% of refrigerator sales between 2015 and 2020. We created three bins based on the distribution of refrigerator volumes within those four categories. Table 20 shows the efficient market share of refrigerators in each configuration, ice maker, and size combination.

Table 20: Refrigerator Efficient Market Share by Configuration, Features, & Size

Refrigerator/ Freezer Configuration	Ice Maker	Total Volume (Cu. Ft.)	Total Sales 2015-2020	% of Sales 2015-2020	Share of Efficient Products		
					Advanced - ESME	Basic - ESTAR	Non-Qualifying
Bottom Mount	Ice Maker - Not Through the Door	<20	47,325	3%	0%	28%	72%
		20-24.9	128,481	7%	0%	84%	16%
		≥25	99,591	6%	3%	93%	4%
		<20	1,979	0%	1%	69%	30%
		20-24.9	161,243	9%	1%	84%	16%

[26] As discussed in Section 4, we recognize that the influence of midstream incentives is not limited to altering retailers' assortment decisions. The reasons for our focus on assortment are described in the body of the report.

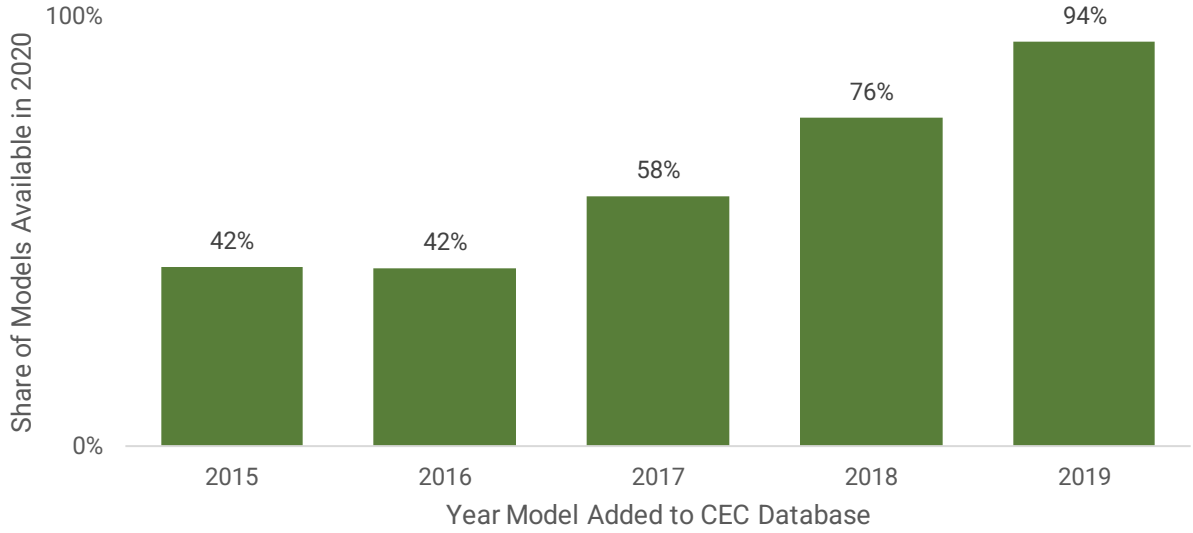
Refrigerator/ Freezer Configuration	Ice Maker	Total Volume (Cu. Ft.)	Total Sales 2015-2020	% of Sales 2015-2020	Share of Efficient Products		
					Advanced - ESME	Basic - ESTAR	Non-Qualifying
	Through the Door Ice	≥25	214,515	12%	0%	85%	14%
Top Mount	No Ice Maker	<20	421,285	24%	18%	0%	82%
		20-24.9	97,613	6%	20%	0%	80%
		≥25	1	0%	0%	0%	100%
Side Mount	Through the Door Ice	<20	918	0%	0%	0%	100%
		20-24.9	138,615	8%	0%	13%	87%
		≥25	125,632	7%	0%	15%	85%

As Table 20 demonstrates, there is considerable variation in ENERGY STAR Most Efficient market share between configuration, ice maker, and size combinations. For most top mount refrigerators, efficient models are sufficiently available to make up a notable share of sales, but most sales remain non-qualifying. As a result, there may be an opportunity for midstream incentives to influence retailers' assortment decisions for top mount refrigerators. In total, configuration, size, and feature groupings in which ENERGY STAR Most Efficient models appeared to be available (at least 10% market share) but not the likely default choice (less than 50% market share) accounted for 38% of refrigerator sales in 2020.

Model Turnover

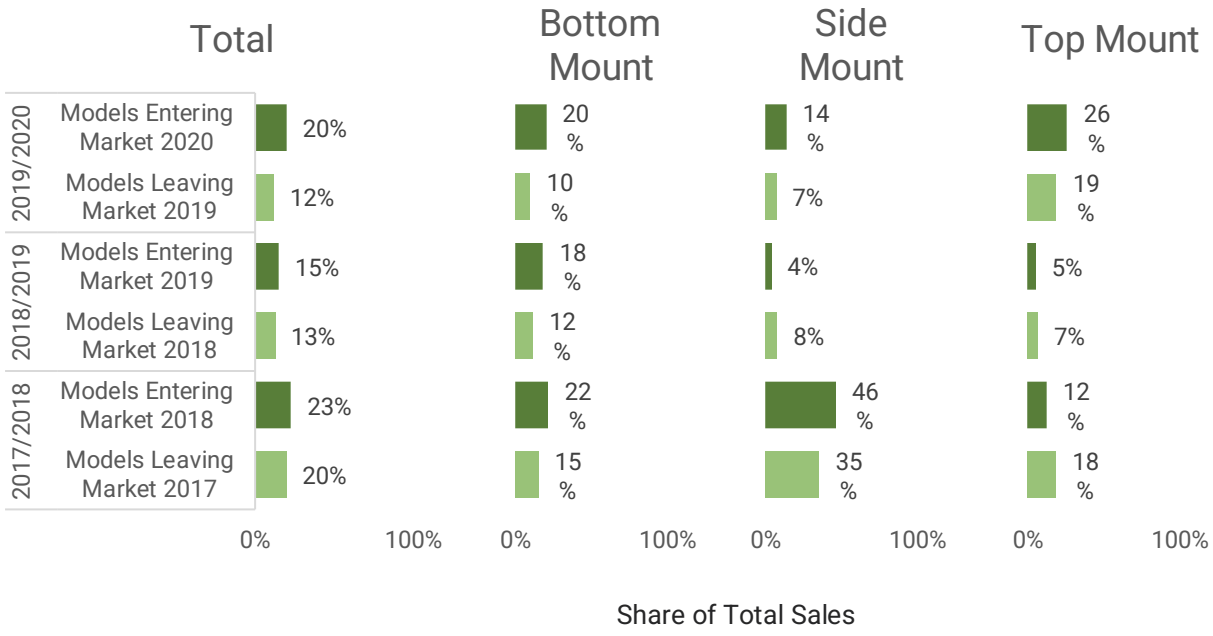
Refrigerator models generally remain on the market for at least three years, with a notable share available longer. For example, in 2020, retailers still sold more than 40% of the unique models added to the CEC database (and thus presumably entering the market) in 2015 (Figure 12).

Figure 12: Refrigerator Longevity on Market



Consistent with their longevity on the market, models entering and leaving the market each year made up a relatively small share of refrigerator sales between 2017 and 2020. With the exception of notable turnover among side-mount refrigerators in 2017 and 2018, models new to the market and the models they replace generally represent 20% of annual refrigerator sales or less (Figure 13).

Figure 13: Annual Refrigerator Model Turnover



As noted above, this analysis is unable to identify models added to retailers' assortments that other retailers previously offered. The Apex team conducted an analysis of qualified sales data, which is available at the retailer level, to assess the likely extent of assortment change involving models already on the market. As Table 21 shows, most of the qualified models retailers added to their assortments had not previously been on the market.

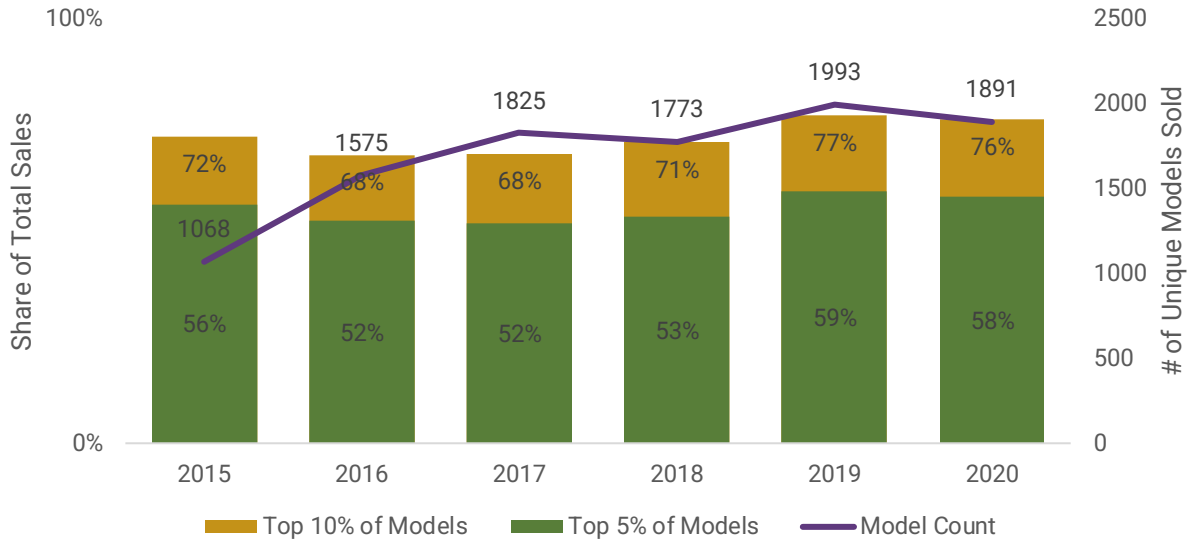
Table 21: Qualified Models Turnover Analysis

		2018	2019	2020
All Qualified Models Added to Assortment (All Retailers)	Model Count	139	68	160
	Share of Qualified Sales	4%	9%	27%
Qualified Models Previously on Market Added to Assortment (All Retailers)	Model Count	66	22	27
	Share of Qualified Sales	0.55%	0.82%	1.62%

Model Concentration

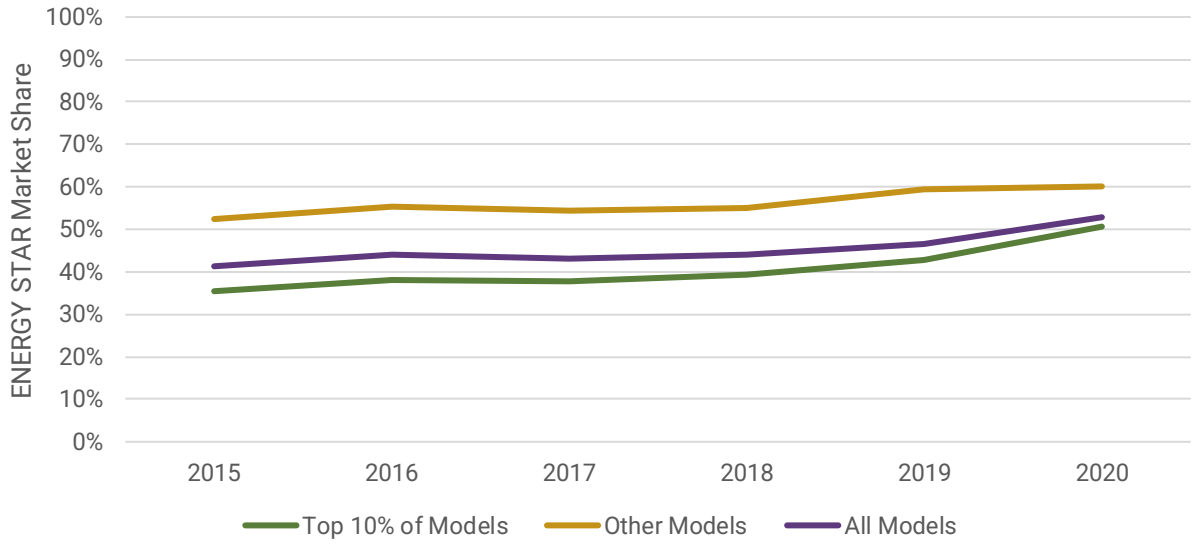
In 2020, the 10% of refrigerator models that sold in the highest volume accounted for more than 75% of all refrigerator sales and the 5% of highest-selling refrigerator models accounted for more than half of sales that year (Figure 14).

Figure 14: Concentration of Sales Among High Volume Refrigerator Models



Refrigerator models selling in the highest volumes were less efficient than models selling in lower volumes over the 2015-2020 period, although the gap in efficiency began to decline in 2020, as high-selling models became more efficient (Figure 15).

Figure 15: Refrigerator Market Share by Sales Volume Rank

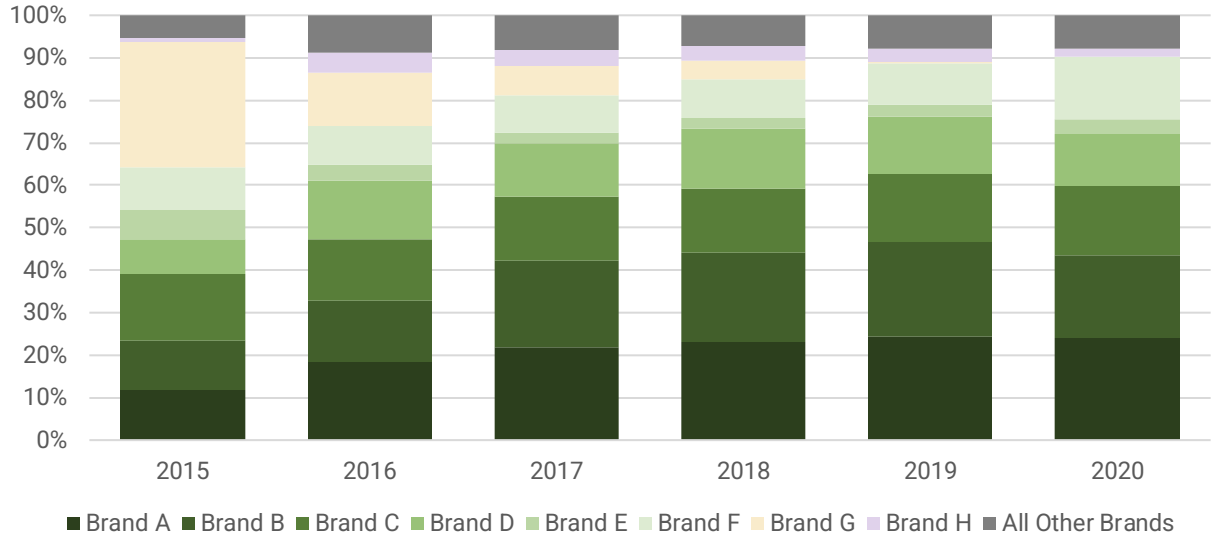


Brand Concentration

Eight major refrigerator brands accounted for more than 90% of refrigerator sales each year between 2015 and 2020. Since 2017, two brands have led the market,

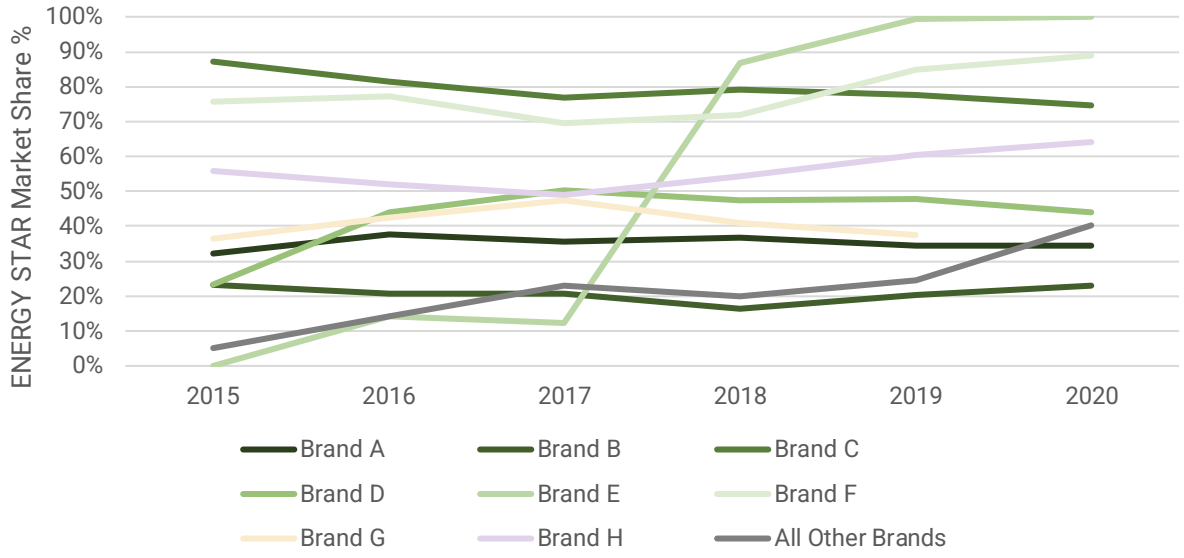
each accounting for between 20% and 25% of sales (Figure 16). One brand (Brand G), which was dominant in 2015 with 30% of sales, gradually faded from the market in the subsequent years, effectively disappearing in 2019.

Figure 16: Refrigerator Market Share by Brand



The ENERGY STAR market share of refrigerators varies by brand (Figure 17). The two brands that have led the market since 2017 (Brand A and Brand B) have lower efficient market shares than most other major brands, and their shares have largely remained steady. One brand (Brand F) saw a dramatic increase in market share from 2017 to 2018, when it replaced two non-qualified models that sold in high volumes with two ENERGY STAR models.

Figure 17: Refrigerator Efficient Market Share by Brand



Freezers

Availability of Efficient Models

Key product characteristics a merchant might consider when assorting freezers include the configuration (chest or upright), whether the freezer has an automatic defrost capability, and the size of the freezer. The Apex team identified defrost type, and configuration combinations that, together, make up more than 99% of freezer sales in the Northwest between 2015 and 2020. We created three bins for each configuration based on the distribution of freezer volumes within each configuration. Table 22 shows efficient market share of freezers in each configuration, defrost type, and volume combination.

Table 22: Freezer Efficient Market Share by Configuration, Features, and Size

Freezer Configuration	Defrost Type	Total Volume (Cu Ft.)	Total Sales	% of Sales 2015-2020	Share of Efficient Products		
					Advanced - ESTAR +5%	Basic - ESTAR	Not Qualified
Upright	Manual	<15	19,319	4%	0%	37%	63%
		15-19.9	5,717	1%	0%	0%	100%
		≥20	10,652	2%	0%	0%	100%
	Automatic	<15	40,276	8%	0%	15%	85%
		15-19.9	73,109	15%	0%	29%	71%
		≥20	50,348	10%	0%	93%	7%

Chest	Manual	<9	228,982	47%	1%	0%	99%
		9-14.9	41,291	8%	0%	15%	85%
		≥15	16,984	3%	2%	3%	94%

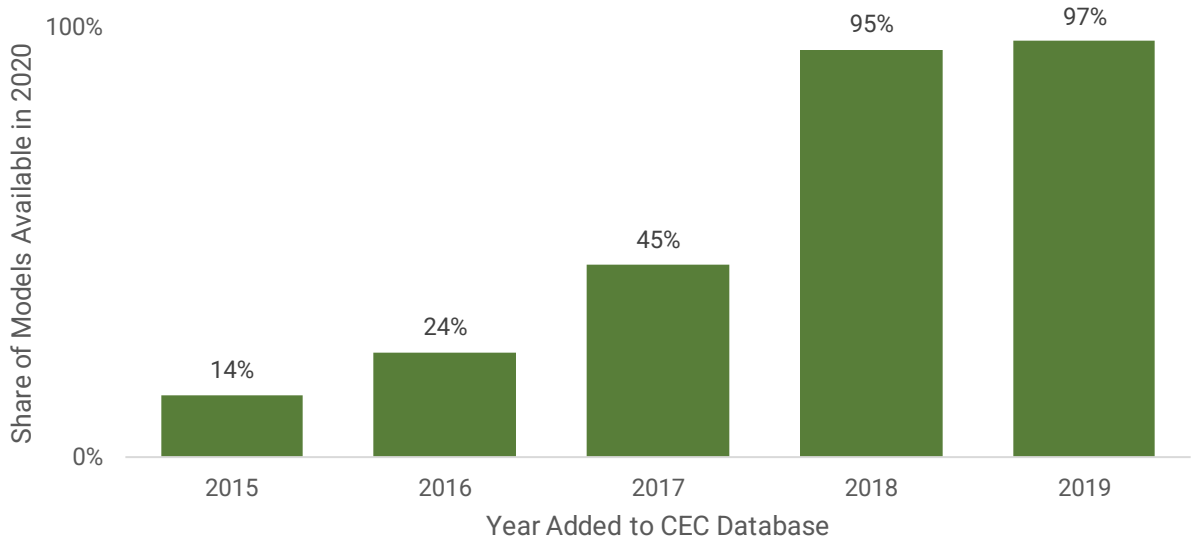
In most configuration, feature and size combinations, non-qualified freezers make up a majority of sales, and in some combinations there are few, if any, qualified sales. For example, a single configuration, feature, and size combination – smaller chest freezers with manual defrost – made up nearly half of all freezer sales between 2015 and 2020. Almost all of those models (99%) were non-qualified, suggesting there may be few efficient options with those characteristics that retailers could assort and promote as a result of ESRPP incentives. Smaller, upright freezers, in contrast, showed greater sales of ENERGY STAR models, suggesting greater availability and thus greater potential for ESRPP incentives to influence assortment decisions.

In total, configuration, size, and feature groupings in which ENERGY STAR models appeared to be available (at least 10% market share) but not the likely default choice (less than 50% market share) accounted for 37% of freezer sales in 2020.

Model Turnover

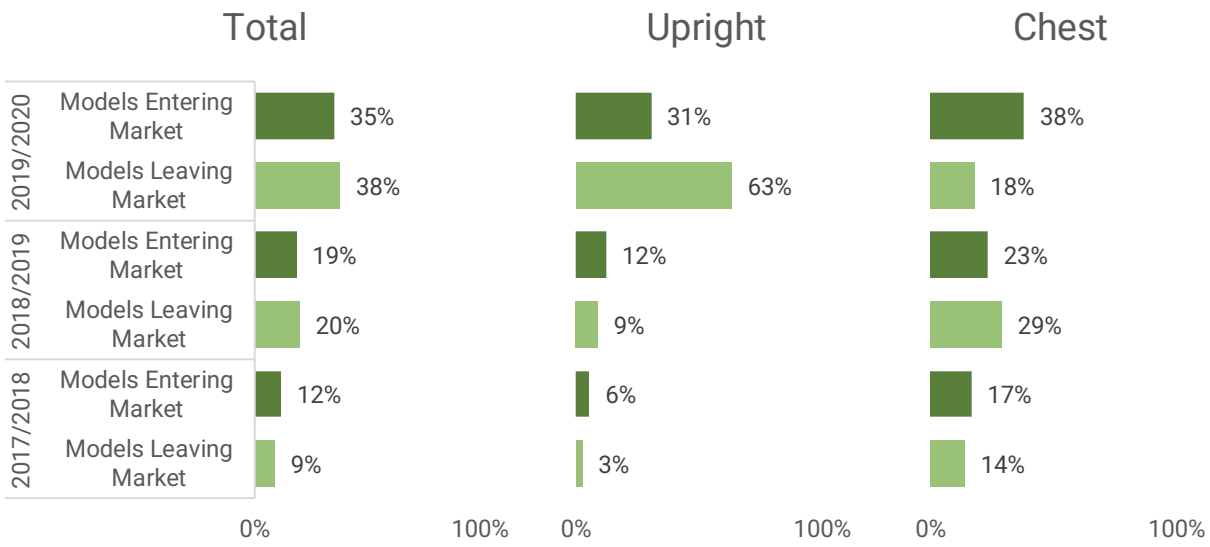
RPP sales data suggest that freezer models generally remain on the market for more than two years, based on the year freezer models were added to the CEC database. In 2020, retailers continued to sell almost all of the models added to the CEC database in 2018 and 2019 (Figure 18). The share of freezer models added in 2017 still available in 2020 was considerably lower, but still represented a notable minority of models.

Figure 18: Freezer Longevity on Market



Model turnover among freezers increased steadily over the period for which data were available. As Figure 19 shows, models leaving the market in 2017 accounted for 9% of freezer sales in that year. Retailers replaced those models with new models in 2018 that accounted for 12% of sales. By 2019, models leaving the market accounted for 38% of sales, and were replaced by models that accounted for 35% of sales in 2020. Upright freezers in particular saw notable turnover in 2019, with models leaving the market that year accounting for nearly two-thirds of sales.

Figure 19: Freezer Model Turnover 2018-2019 (In-Store Sales Only)



The cause of this increase in freezer model turnover is unclear. With only three years of data available, we are unable to determine whether the increased turnover in 2019/2020 represents typical buying cycles, or if some other dynamic is leading to freezer turnover. There was no federal standard or specification activity between 2017 and 2020 that might lead to increased model turnover.

As noted above, this analysis is unable to identify models added to retailers' assortments that other retailers previously offered. The Apex team conducted an analysis of qualified sales data, which is available at the retailer level, to assess the likely extent of assortment change involving models already on the market. As Table 21 shows, most of the qualified models retailers added to their assortments had not previously been on the market.

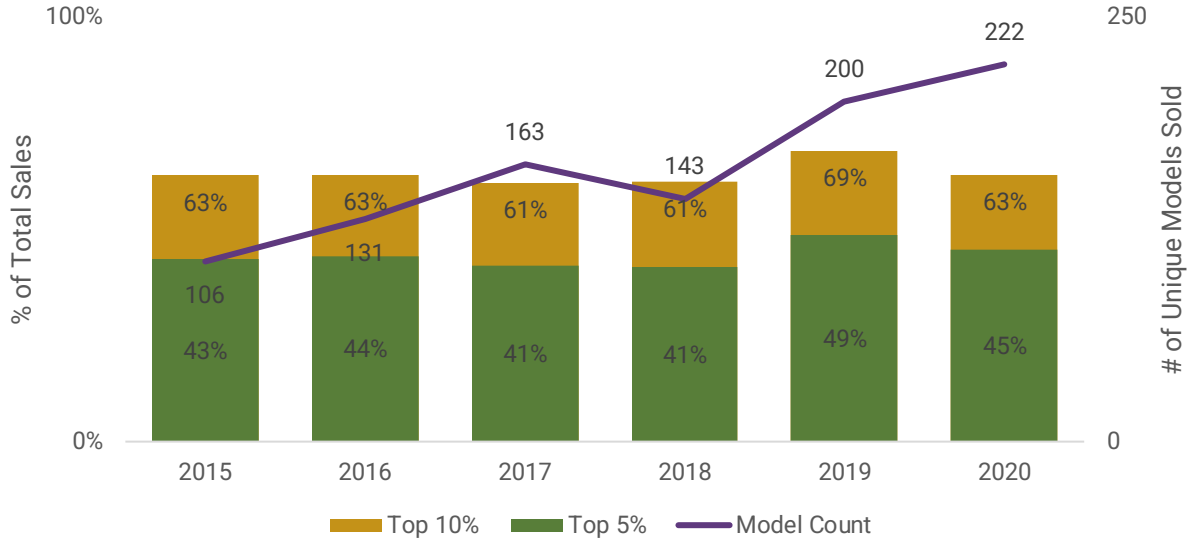
Table 23: Qualified Models Turnover Analysis

		2018	2019	2020
All Qualified Models Added to Assortment (All Retailers)	Model Count	13	13	18
	Share of Qualified Sales	6%	2%	29%
Qualified Models Previously on Market Added to Assortment (All Retailers)	Model Count	5	2	1
	Share of Qualified Sales	0.56%	0.22%	0.75%

Model Concentration

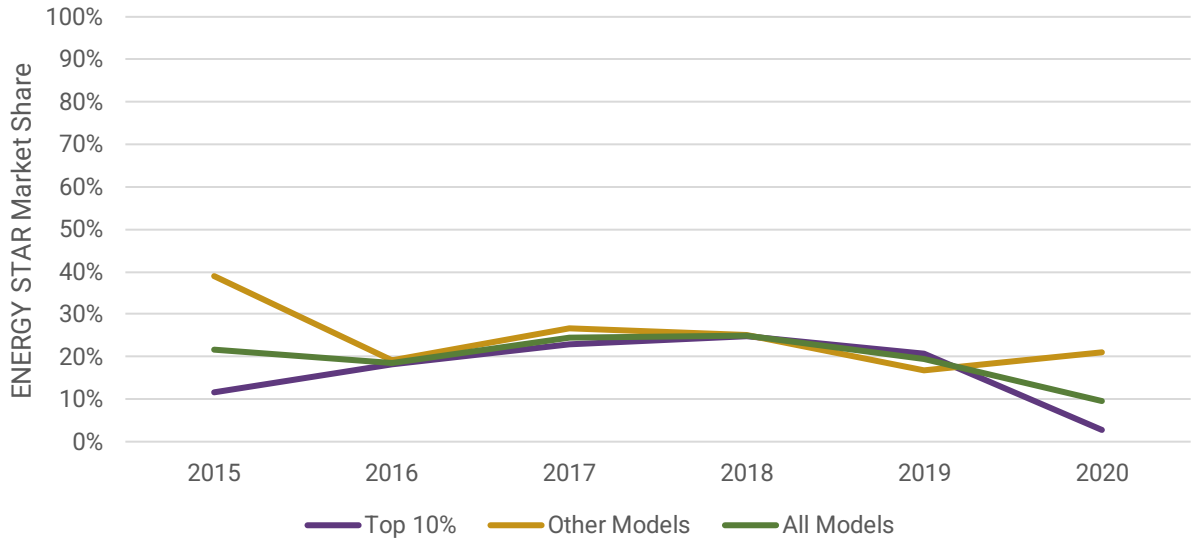
The 10% of freezer models selling in the highest volume accounted for approximately two-thirds of all freezer sales from 2015 to 2020, while the top 5% of models accounted for more than 40% of sales (Figure 20).

Figure 20: Market Share of Top-Selling Freezer Models



From 2016 to 2019, there were not notable differences in the efficient market share of the top-selling freezers relative to models that sold in lower volumes (Figure 21). In 2015 and 2020, however, the top selling models had notably lower efficient market shares than lower volume models.

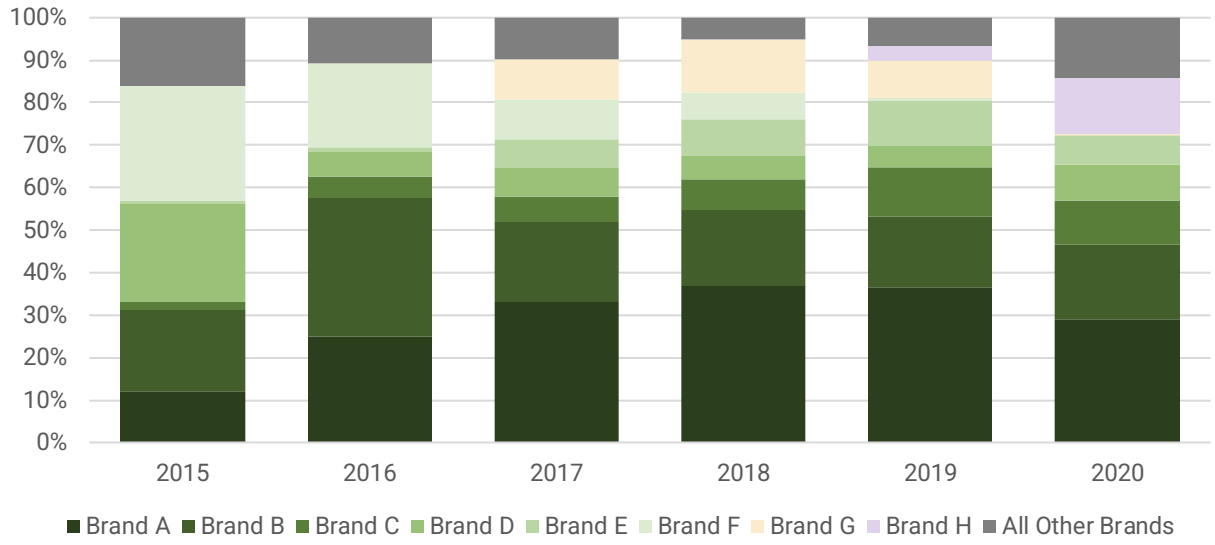
Figure 21: Freezer Market Share by Sales Volume Rank



Brand Concentration

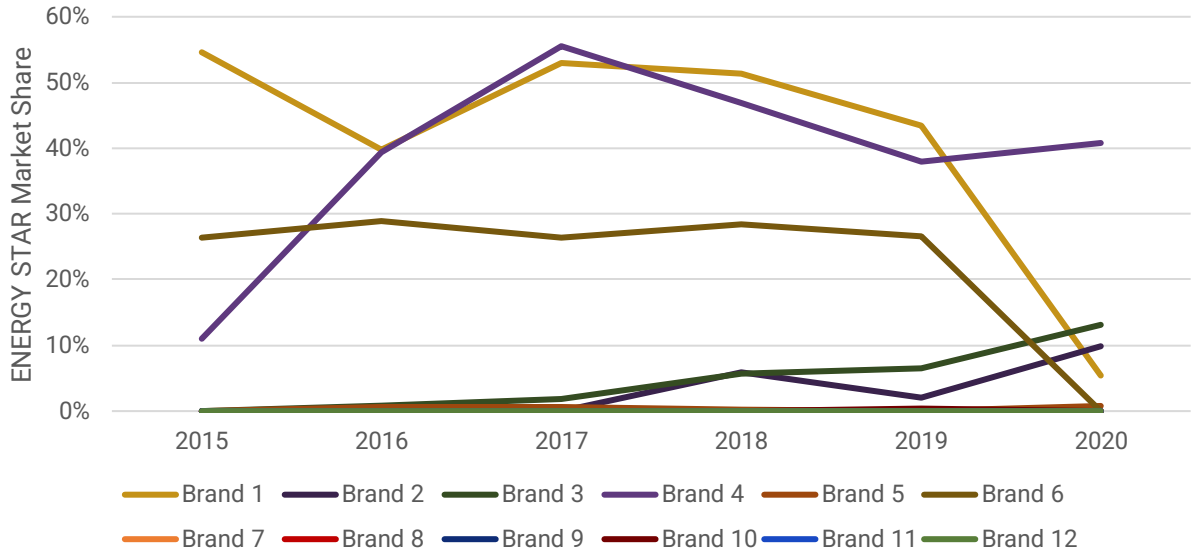
Freezer sales are relatively concentrated by brand, with the top brand typically accounting for more than a third of total sales, and the top two brands typically accounting for a majority of total sales (Figure 22).

Figure 22. Freezer Market Share by Brand



The ENERGY STAR market share of the brand that sold the largest number of freezers in the Northwest from 2017 to 2020 decreased over that period, with the most notable decrease from 2019 to 2020 (Figure 23). Two of this brand's ENERGY STAR models that had previously sold in high volumes left the market in 2020.

Figure 23. Freezer ENERGY STAR Market Share by Brand



Clothes Washers

Availability of Efficient Models

Key characteristics a merchant would consider for clothes washers include the unit's configuration (front load or top load) and its capacity.[27] Apex created five bins based on the distribution of clothes washer volumes by configuration by in the sales data. Table 24 shows the efficient market share of clothes washers in each configuration and size combination.

Table 24: Clothes Washer Market Share by Features, Configuration, and Size

Configuration	Capacity (Cu. Ft.)	Total Sales 2015-2020	% of Sales 2015-2020	Share of Efficient Products			
				ESME 2018	ESME 2017	ENERGY STAR V8	Non-Qualifying
Top Load	<3.5	31,290	3%	0%	0%	0%	100%
	3.5 to 3.9	277,920	30%	0%	0%	1%	99%
	4.0 to 4.4	186,536	20%	0%	0%	5%	95%
	4.5 to 4.9	234,435	25%	0%	0%	67%	33%
	≥5.0	208,269	22%	0%	12%	84%	4%
Front Load	>3.5	19,198	4%	32%	0%	60%	8%
	3.5 to 3.9	6,273	1%	0%	0%	0%	100%
	4.0 to 4.4	151,810	28%	28%	45%	0%	27%

[27] Merchants may consider additional clothes washer features, but NEEA's sales dataset did not track those features.

	4.5 to 4.9	325,602	60%	75%	22%	0%	2%
	≥5.0	37,915	7%	70%	23%	0%	7%

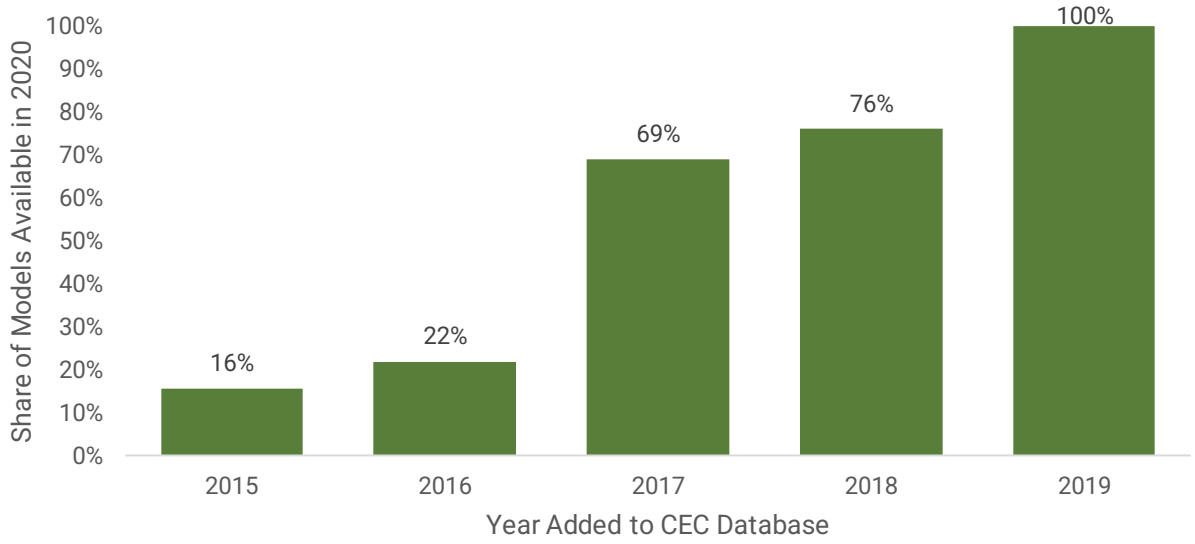
There is a distinct difference in efficient market share for top-load clothes washers smaller than 4.5 cubic feet relative to models larger than 4.5 cubic feet. Fewer than 2.5% of smaller top-load models sold are ENERGY STAR, while more than two-thirds of larger models sold are ENERGY STAR. This division in market share suggests there may be limited opportunity for midstream incentives to influence retailer assortment decisions. Few, if any, qualified products are available for retailers to and assort among smaller models, while efficient products are likely to be the default choice for larger models.

In total, configuration and size groupings in which ENERGY STAR models appeared to be available (at least 10% market share) but not the likely default choice (less than 50% market share) accounted for 29% of top-load washer sales in 2020.

Model Turnover

Sales data suggest that top-load clothes washer models typically remain on the market for more than three years. In 2020, ESRPP retailers continued to sell more than two-thirds of the models added to the CEC database in 2017. The share of 2016 models still available in 2020 was notably lower (Figure 24).

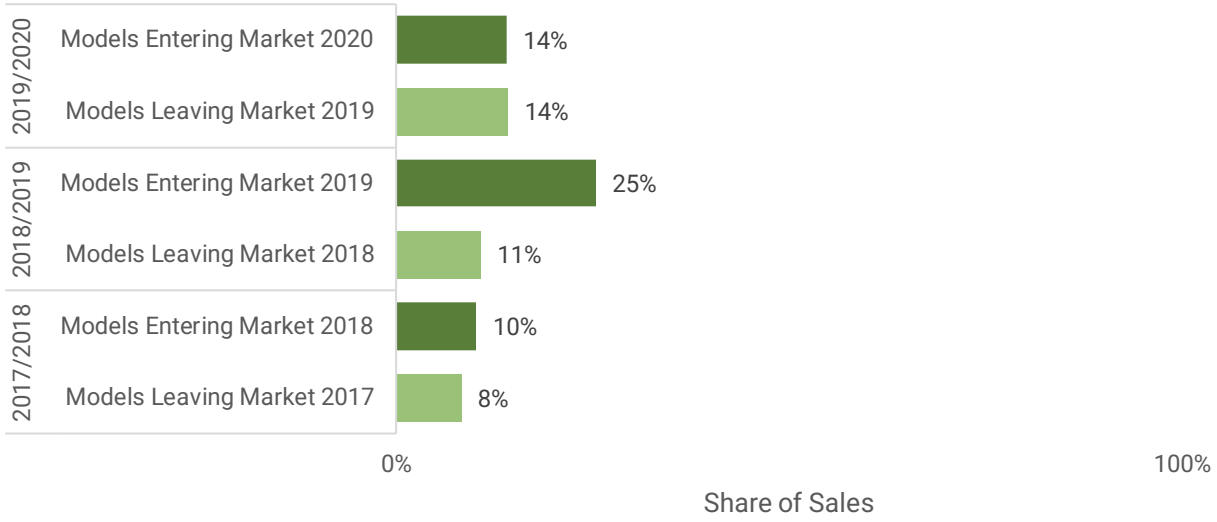
Figure 24: Top Load Washer Longevity on Market



A laundry merchant included in prior ESRPP retailer interviews indicated that clothes washer models typically remain on the market for approximately 18 months, although there could be exceptions. Analysis of model turnover between

2017 and 2020 is largely consistent with a larger turnover of models every 18 months. Sales data suggests there a larger share of models entered the market in 2019 than in either 2018 or 2020. While in 2018, models in their first year on the market accounted for 10% of top-load washer sales, in 2019, models in their first year on the market accounted for 25% of top-load washer sales (Figure 25).

Figure 25: Top-Load Washer Model Turnover (In-Store Sales Only)



As noted above, this analysis is unable to identify models added to retailers' assortments that other retailers previously offered. The Apex team conducted an analysis of qualified sales data, which is available at the retailer level, to assess the likely extent of assortment change involving models already on the market. As Table 21 shows, most of the qualified models retailers added to their assortments had not previously been on the market.

Table 25: Qualified Models Turnover Analysis

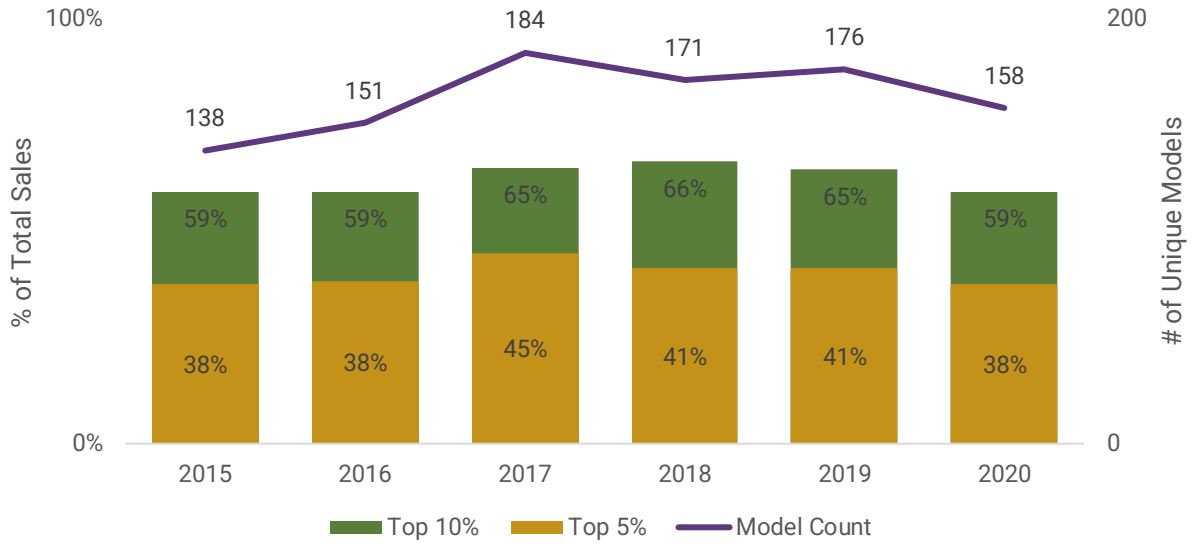
		2020
All Qualified Models Added to Assortment (All Retailers)	Model Count	36
	Share of Qualified Sales	14%
Qualified Models Previously on Market Added to Assortment (All Retailers)	Model Count	5
	Share of Qualified Sales	0.07%

Note: Due to changes in RPP qualification criteria, the sales data contain few qualified top-load washers prior to 2020.

Model Concentration

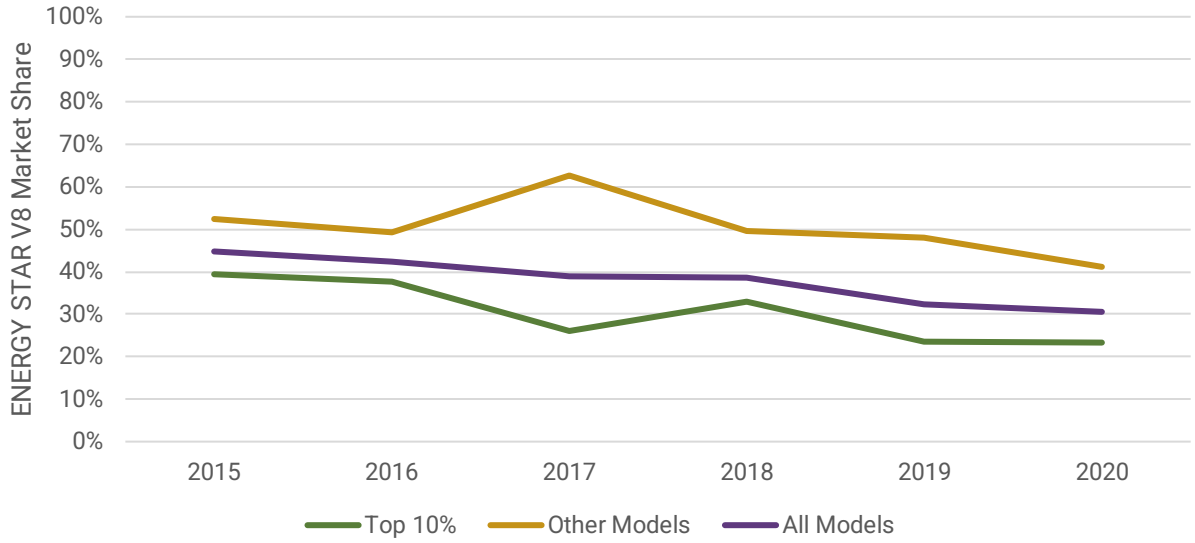
Each year from 2015 to 2020, the 10% of top-load washer models selling in the highest volume accounted for more than half of all top-load washer sales and the five highest-selling models accounted for more than a third of sales (Figure 26). Sales data included an average of 163 unique models sold each year.

Figure 26: Concentration of Sales Among High Volume Top-Load Clothes Washer Models



A decline in ENERGY STAR market share of high-volume models drove a decline in overall market share of ENERGY STAR top-load clothes washers from 2015 to 2020 (Figure 27). This trend slowed in 2019, when two ENERGY STAR V8 models new to the market that year were among the ten models selling in the highest-volume. At the same time, several ENERGY STAR models that had previously sold in moderate volumes left the market, resulting in a decline in market share of models selling in lower-volume that offset this gain in high-volume models.

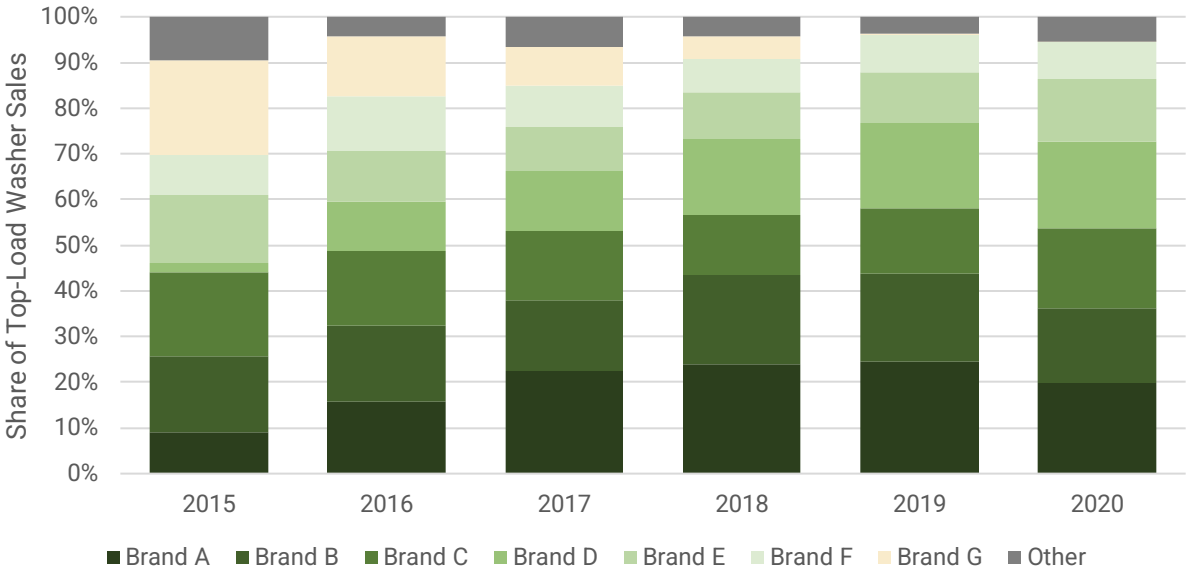
Figure 27: Top Load Washer Market Share by Sales Volume Rank



Brand Concentration

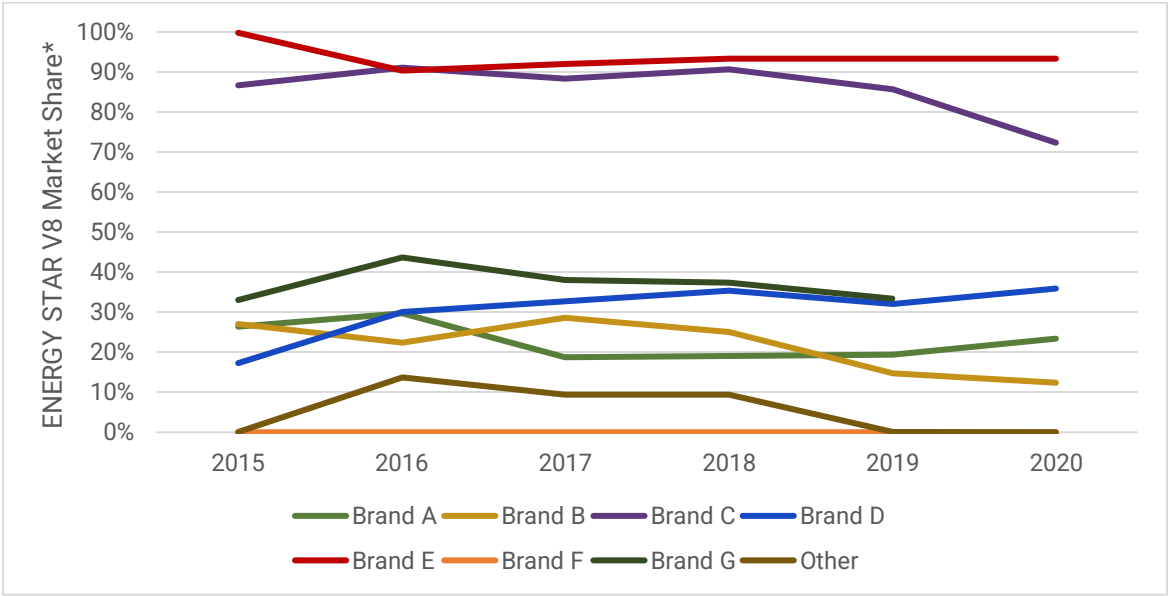
Top-load washer sales are distributed relatively evenly across several major brands. While market share shifted among brands between 2015 and 2020 (Figure 28), no single brand either gained or lost dominance to the extent that it would have a significant impact on overall market share. Brand G's sales gradually declined during the period, effectively disappearing in 2019. However, the efficient market share of Brand G models is relatively close to the market average, so this decline likely had a limited impact on overall market share.

Figure 28: Top-Load Washer Market Share by Brand



There are notable differences in ENERGY STAR V8 market share between clothes washer brands. However, with sales spread across multiple brands, these differences are unlikely to drive overall market share. As Figure 29 shows, Brand E and Brand C have notably higher market shares than other major brands. While some brands showed trends of either growing or declining market share between 2015 and 2019, these trends were generally not dramatic.

Figure 29: Top-load Washer Market Share by Brand



* Includes ESME models.

Appendix C: Program Documents Reviewed

Program Background Documents	Notes
NEEA ESRPP Evaluation	Previous NEEA ESRPP evaluation – completed in 2019
ESRPP Past Retailer Interviews and Findings	Merchants, marketing, and sustainability staff
ESRPP Communication Plan (Draft)	Presentation from the Environmental Protection Agency (EPA) about ESRPP changes and plans
ESRPP EEPS History Summary	Spreadsheet tracking program years, ESRPP earned incentives, and program sponsors with number of residential customers
ESRPP Management Process Guide	Document that provides an overview of the processes and considerations that participating program sponsors may have, remove, or revise products in the ESRPP portfolio Guide for ESRPP sponsors, partners, and the products task force
ESRPP: The Best is Yet to Come Presentation	Program overview including highlights and plans of the ESRPP program
RPP Initiative Lifecycle Milestone Document	Document that summarizes and serves as the definitive source of key information about the market transformation effort Also serves as the initiative business case for funders
RPP Product Operational Strategies	For RPP products and the regulatory background, product readiness, RPP sales analysis, risk assessment, and program recommendations
NEEA RPP Product Data and Question Spreadsheets (Clothes Dryers)	Has information including total sales, forecasts, program data, etc.
Market Share Trends by Product Configuration	Market share trends between 2016-2020 of refrigerators and washers
Analysis of Online Sales Data from ICF Memo	Analyzed sales data from April 2019-August 2020 for clothes washers/dryers, refrigerators, and freezers
ESRPP Product Sales Data Spreadsheets	RPP products with models/configurations sales data for 2015-2020
Clothes Washers Online Consumer Research Report	Report about shifting the market towards more efficient top-load washer models
Specifications/Incentives by Product/Year	Spreadsheet with RPP products, their ENERGY STAR tier, and incentive by year (2019-2021)

Retailer Presentations (Best Buy, Home Depot, Lowes, Nationwide)	Company presentations about ESRPP updates, current strategies, and plans RPP Products
RPP Retail Tracker Notebook	Notes on various retailer presentations and updates
ESRPP Past Interviews and Findings	Retailers and merchants
Commonwealth Edison (ComEd) ENERGY STAR RPP Pilot Scope of Work	Proposal that outlines key activities in support of ESRPP pilot in ComEd service territory
NEEA Email Communications	Emails addressing various comments between NEEA staff and others
Illinois Statewide Technical Reference Manual (TRM), Version 9.0, Volume 4	A protocol to outline the adjustments that should be made to account for the persistence of savings beyond the year of program delivery
Policy Document for the Illinois Statewide TRM for Energy Efficiency	A document that provides a transparent and consistent basis for calculating energy, natural gas, and capacity

Appendix D: Data Collection Instruments

Program Staff & Stakeholders

Thank you for taking the time to speak with me today. As I mentioned in my email, we are working with NEEA to evaluate the ESRPP program. We want to document the program's accomplishments and hear your perspective on where things stand now. These interviews will help inform additional research we are going to do with program sponsors.

Do you have any questions before we begin?

And do you mind if I record our conversation? The recording will just help with my notetaking. We won't share it anyone and we won't report anything in a way that would identify individual respondents.

Program Strategies and Accomplishments

Q1. [*NEEA staff:*] I want to make sure I am up to date on NEEA's strategies for each product. I'll quickly go through the strategies that were in place when we completed our last review in 2019. Please tell me if anything has changed.

a. Refrigerators: Midstream incentives as a primary strategy for Most Efficient bottom and side-mount, emerging technologies as a strategy for all. Spec advancement as a potential strategy for top mount ENERGY STAR Most Efficient.

b. Freezers: Midstream incentives and emerging technologies as strategies for all configurations.

c. Clothes washers: Midstream incentives and emerging technologies as strategies for top load, which is the focus of the program.

d. Clothes dryers: Midstream incentives and emerging technologies as strategies for Most Efficient, measurement and compliance as a strategy for all tiers.

e. Room AC: Midstream incentives and emerging technologies as strategies.

f. [*If changes:*] What drove those changes?

Q2. [*NEEA staff:*] As of our last assessment, NEEA was pursuing test procedure improvements and specification updates for air cleaners, soundbars, and UHD TVs. I know there was an update to the test procedure and specification for air cleaners. Have there been any other updates to test procedures or specifications for RPP products?

a. Have you identified any additional opportunities to improve test procedures or update specifications?

Q3. [*NEEA staff:*] We will review the Retail Tracker OneNote file and the evaluation emails tracker, but [*For others start here:*] are there any specific examples you

would point to that demonstrate retailers' consideration of ESRPP qualification in assortment and marketing decisions?

   a. How has retailers' consideration of ESRPP qualification changed over time?

Q4. Based on our assessment, it looks like the current program sponsors account for just under 15% of U.S. residential electric customers. What, if anything, do you think retailers would do differently if ESRPP had greater market coverage?

   a. How, if at all, does market coverage, in terms of the share of US households program sponsors cover, drive retailer engagement, beyond increasing the incentive pool?

   b. [*If market coverage drives retailer engagement independent of incentives:*] What level of market coverage do you think would trigger a significant increase in retailer engagement? Why do you say that?

   c. What level of overall incentive spending do you think would trigger a significant increase in retailer engagement? Why do you say that?

   d. [*If not addressed:*] What would retailers do differently if ESRPP reached that threshold?

Q5. How would ESRPP's ability to influence ENERGY STAR specification updates and federal standards change if program sponsors covered a larger share of the population?

   a. [*If not addressed:*] To what extent do the geographical limitations of ESRPP data limit their usefulness or credibility in specification or standard setting processes?

   b. Is there a threshold for program sponsor market coverage at which ESRPP would have a significantly greater ability to influence ENERGY STAR specification updates and federal standards? What is it?

ESRPP

Q6. Now I'd like to talk about ESRPP. Please tell me about NEEA's role in the evolution of ESRPP.

   a. [*If not addressed:*] How did NEEA contribute to developing the structure of ESRPP when the national program was first launched?

   b. [*If not addressed:*] How important was NEEA's involvement in recruiting program sponsors to participate in ESRPP initially?

      i. What, if anything did NEEA do to actively recruit participants?

      ii. To what extent did NEEA's involvement make ESRPP more appealing for participants early in the program? (Did NEEA's involvement increase ESRPP's credibility?)

Q7. I understand that NEEA will be taking on a larger role in ESRPP coordination going forward, and I would like to talk more about that in a moment. Prior to that shift, what do you see as the most important things NEEA did to support ESRPP?

   a. [*If not addressed:*] How, if at all, was NEEA involved beyond leading or participating in the ESRPP taskforces?

Q8. How will NEEA's role change now that it is going to take on the role of the ESRPP national program facilitator?

   a. What impact will that have on your work, specifically?

   b. What role will EPA have going forward?

Q9. What brought about the decision to shift national program facilitation from EPA to NEEA?

   a. Were other organizations considered?

   b. Why is the coordination role shifting now?

   c. Are there things NEEA will be able to do as the facilitator that EPA couldn't?

   d. Are there things that will be more difficult for ESRPP to do with NEEA as a facilitator?

Q10. I know there have been some recent changes in program sponsor participation in ESRPP. Overall, what trends do you see in program sponsor interest in ESRPP?

   a. Why do you think that is?

   b. Are there any additional sponsors you think are likely to join in the next few years? [*If yes, probe:*]

      i. Who are they?

      ii. How likely do you think it is that they will join the program?

      iii. What has prevented them from joining sooner?

   c. Are there any sponsors that you think are likely to leave the program in the next few years?

      i. Who are they?

      ii. What would drive them to leave the program?

Q11. What are the greatest benefits for program sponsors in participating in ESRPP?

Q12. What are the biggest challenges participating in ESRPP poses for program sponsors?

   a. How, if at all, are those challenges different for existing program sponsors relative to sponsors considering ESRPP?

b. How have existing sponsors been able to overcome those challenges?

Program Processes [NEEA Staff Only]

Q13. Finally, I'd like to talk about some of the program's processes, starting with data management. What level of corrections and data errors are you seeing now?

a. What are the most common reasons for those errors?

b. How much of a problem do those errors pose for the program? [*If needed:*] Are they a minor inconvenience, or do they stop you from carrying out key functions?

c. Are the data complete and up-to-date enough for NEEA to pay incentives in a timely way? [*If not, probe for specifics on what prevents timely incentive payment.*]

d. Do the data allow for the type of product-level analysis needed to inform NEEA's program strategies and contribute to specification revision processes? [*If not:*]

i. What is missing from the RPP data that would allow for this type of analysis?

ii. What has NEEA done to fill those data gaps?

Q14. Next, let's talk about the portfolio management process. Have there been any changes to the process for determining which products to include?

a. [*If so:*] What led to those changes?

b. What have been the greatest challenges or sticking points related to portfolio management?

c. How have you addressed those challenges?

Q15. Finally, do you have sufficient information to generate reliable annual energy savings estimates?

a. Is the data you need available in the timeframe you need to complete those estimates?

b. What inefficiencies or challenges with the annual savings process remain?

c. Are you able to document your energy savings estimates in a way that meets the needs of internal and external stakeholders?

d. What opportunities, if any, do you see to increase the transparency of the annual savings process?

Closing

Thank you for your time. Those are all the questions I had prepared. Is there anything we haven't discussed that you think it is important for me to know as we move forward with the evaluation?

ESRPP Program Sponsors

Thank you for taking the time to speak with me today. As I mentioned in my email, we are working with NEEA to document the progress of the ESRPP program so far. As part of our research, we wanted to hear from other ESRPP program sponsors around the country. Understanding the challenges and successes of ESRPP sponsors will inform program adjustments and help NEEA document program progress.

Do you have any questions before we begin?

I'll be taking notes as we talk, but would you mind if I also record our conversation? The recording is just to help with my notetaking. We won't share it with anyone, and we won't report anything in a way that would identify individual respondents.

Background

Q1. [*All*] What is your role at [**Program Sponsor**], broadly?

   a. [*Current & Past Sponsors*] What is/was your role related to ESRPP?

   b. [*Current & Past Sponsors*] Have you been involved with ESRPP since your organization began participating in the program?

      i. [*If not:*] When did you become involved in ESRPP?

      ii. [*If so:*] Were you involved in the decision to join ESRPP? [*If not, ask if it would be possible to follow-up with someone involved in the decision*]

Q2. [*Current & Past Sponsors*] I understand [**Program Sponsor**] began participating in ESRPP in [**Year**]. How long had you been considering ESRPP before the program launched?

Q3. [*Past Sponsors*] When did [**Program Sponsor**] stop participating in ESRPP?

Q4. [*Past Sponsors*] What led [**Program Sponsor**] to stop participating in ESRPP?

Q5. [*Prospective Sponsors*] I understand [**Program Sponsor**] has considered joining ESRPP. Please tell me a little bit about where you are in the process of considering the program.

   a. When did you begin to seriously consider joining ESRPP?

   b. What have you done to investigate the program?

   c. What else would need to happen before you joined the program?

Decision to Join ESRPP

Q6. [*Current & Past Sponsors*] What led [**Program Sponsor**] to implement ESRPP?

a. [*If not addressed:*] How important was knowing that other program sponsors were participating in your decision to join?

b. [*If not addressed:*] Were other program sponsors in your region participating? If so, how important was that in your decision to join?

Q7. [*Prospective Sponsors, probe for others if not addressed:*] What [are/were] the most appealing aspects of ESRPP?

Q8. [*All*] How [does/did/would] ESRPP fit within your portfolio of residential efficiency programs?

a. [*If not addressed:*] Does [**Program Sponsor**] have an appliance rebate program? [*If so:*] [Did/do] you anticipate that ESRPP would complement that program, or replace it? Why do you say that?

b. [*If not addressed:*] Does [**Program Sponsor**] have a codes and standards program? [*If so:*] How [did/does/could] ESRPP support those efforts? Have you, or do you plan to, use ESRPP to facilitate engagement on appliance standards efforts?

Q9. [*All*] What [are/were] your biggest concerns about joining ESRPP?

Q10. [*All*] What internal stakeholders [needed/need] to approve the decision to join ESRPP?

a. [*Probe for each group mentioned:*] When, in the process of considering the program, did you bring ESRPP to their attention?

b. [*Probe for each group mentioned:*] What [were/are] their main questions or concerns about participating in ESRPP?

Q11. [*All*] [Did/do] you need your regulators' approval to join ESRPP?

a. When did you bring ESRPP to your regulator's attention?

b. [*If so:*] What concerns, if any, [did/do] your regulators have?

Q12. [*All*] Did any other external stakeholders play a role in your decision to join ESRPP? [*If so:*] Who were they? How were they involved?

Q13. [*All*] [Is/was] there a specific, alternative program you [considered/are considering] [had you not participated/if you do not participate] in ESRPP? [*If so:*] What is it?

a. [*If so:*] What do you see as the strengths and weaknesses of that program relative to ESRPP?

Policy Environment

Q14. [*All*] [When you launched/If you were to launch] ESRPP, [was it/would it be] classified as a pilot program?

Q15. [*If pilot program:*] At [**Program Sponsor**] do pilot programs have different requirements in terms of approval, cost effectiveness, or evaluation from other programs?

a. [*If requirements differ:*] How do pilot requirements differ?

b. [*Current & Past Participants, If requirements differ:*] Is ESRPP still considered a pilot program? Why or why not?

c. [*If still a pilot program:*] What would lead you to transition ESRPP to a standard program?

d. [*If not addressed, probe:*] What limits, if any, are there on how long you can implement ESRPP as a pilot program?

Q16. [*All*] Does your organization run market transformation programs?

Q17. [*If run MT programs:*] How, if at all, does your organization treat market transformation programs differently from resource acquisition programs, from a planning and evaluation perspective?

a. [*If not addressed:*] Do the metrics you use to assess the progress of market transformation programs differ? If so, how? [*Probe for market indicators used to assess progress, beyond just rebate volume*]

b. [*If not addressed:*] Do market transformation programs operate with different cost effectiveness requirements? If so, how?

c. [*If not addressed:*] Do market transformation programs operate on a different planning horizon than resource acquisition programs?

Q18. [*All*] What challenges, if any, have you faced in implementing ESRPP within your regulatory framework?

a. [*If not addressed:*] What changes in regulatory policies would make it easier for you to implement ESRPP in your jurisdiction?

Q19. [*All, if not addressed*] Are your energy efficiency goals expressed as lifetime savings or first year savings?

a. What about cost effectiveness calculations? Do they use first year or lifetime savings?

b. Has it been challenging to fit ESRPP into your existing cost effectiveness framework? If so, how?

Q20. [*Current & Past Sponsors, if not addressed:*] Does your organization claim energy savings from ESRPP?

a. [*If not:*] Why not?

b. [*If not:*] Do you plan to claim savings in the future? [*If so:*] What needs to happen for you to begin claiming savings?

c. [*If not claiming savings:*] How long can you continue to offer the program without claiming savings?

Q21. [*Current & Past Sponsors*] Has your ESRPP program been evaluated?

a. [*If so:*] How effectively do you think the evaluation captured the program's influence?

b. [*If so:*] What challenges, if any, arose in evaluating ESRPP?

ESRPP Involvement

Q22. [*Current & Past Sponsors*] How [have you been/were you] involved with national ESRPP coordination efforts, like the various task forces?

a. Have you found your involvement in national coordination efforts valuable? Why or why not?

b. [*If not addressed:*] How important is it that [**Program Sponsor**] has a voice in national-level ESRPP decisions?

c. What, if anything, has prevented you from being more involved in national coordination efforts?

Q23. [*Current & Past Sponsors*] What types of interactions have you had with NEEA as part of your involvement with ESRPP?

a. How, if at all, has NEEA been helpful in your implementation of ESRPP?

b. What else could NEEA do that would be helpful? [*If needed, probe:*] What, if anything, did EPA do in its facilitation role that was particularly helpful?

Q24. [*Current & Prospective Sponsors*] NEEA has taken on the role of ESRPP national program facilitator. What do you see as the benefits of having NEEA act as the national program facilitator, rather than EPA?

a. What concerns do you have about NEEA acting as the national program facilitator?

General Impressions of ESRPP

Q25. [*Current & Past Sponsors*] How [did/has] your experience participating in ESRPP compared to your expectations when you joined the program?

Q26. [*Current & Past Sponsors*] What [were/have been] the greatest benefits of participating in ESRPP, from your perspective?

Q27. [*Current & Past Sponsors*] What [were/have been] the greatest challenges in participating in ESRPP?

Q28. [*Current Sponsors*] Do you anticipate [**Program Sponsor**] will continue to participate in ESRPP over the next five years?

a. [*If not:*] Why not?

What conditions would lead you to reverse that decision (i.e. stop participating for those anticipating they will continue or continue participating for those anticipating they will stop)?