Memo to:
Rhode Island Energy (RIE)
Consultant Team (C-Team)

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Date: November 8, 2023

RE: Rhode Island Commercial Food Service Equipment Industry Standard Practice Study

1 EXECUTIVE SUMMARY

This report details the findings and recommendations of an industry standard practice (ISP) kitchen equipment study undertaken because of the Rhode Island Appliance Standards[1] that went into effect on January 1, 2023. The study characterizes ISP in Rhode Island (RI) for commercial kitchen equipment by incorporating the 2023 Appliance Standards and the prevalence of used equipment in the marketplace. To develop the recommended ISP baselines and updated deemed savings and demand values, the DNV team conducted background research, interviews with market actors, and a survey of end users. The primary focus of this study was on commercial fryers, ovens, steam cookers, hot food cabinets, and dishwashers due to their relative magnitude of historical program savings[2].

Due to the relative uncertainty regarding baseline practices for the technology and the changes due to the appliance standards, kitchen equipment was flagged as a candidate for ISP research. Rhode Island appliance standards are part of the Appliance and Equipment Energy and Water Energy Efficiency standard that was adopted on June 1, 2022, and went into effect on August 29, 2022. The products include commercial dishwashers, commercial fryers, commercial hot food holding cabinets, commercial ovens, commercial steam cookers, electric vehicle supply equipment (EVSE), faucets, gas fireplaces, portable electric spas, residential fans, shower heads, spray sprinkler bodies, urinals, water closets, and water coolers. Manufacturers of products covered under Rhode Island's efficiency standards must certify compliant products starting January 1, 2023. For this study, DNV assumed 100% compliance with this statute at this time.

This study effort was intended to provide new baseline recommendations to be applied prospectively to PY2024 and beyond. The key research question for this effort was to understand the extent to which used equipment is sold in the market and should therefore be reflected in the baseline assumptions. In the absence of used equipment in the market, the minimum baseline should be equal to the 2023 Rhode Island Appliance Standards for measures subject to these standards. In cases where there is evidence of used equipment sold in the market, the baseline was adjusted to reflect lesser efficiencies and higher energy idle rates. In addition to these parameters, the study team investigated other parameters, like hours of use, that have a significant impact on savings estimates. However, the study team is not recommending any adjustments to these parameters at this time based upon insufficient evidence collected through the primary data collection activities undertaken for this study.

The results of the primary research indicated that the most common types of used equipment purchased in the marketplace were commercial fryers, ovens, dishwashers, and hot food holding cabinets. The team did not find enough evidence of used steam cookers in the market to make adjustments from the appliance standard baseline. Section 4 outlines the recommended deemed energy savings and demand savings values, and the updated baselines for each measure are listed

[1] https://energy.ri.gov/energy-efficiency/appliance-and-equipment-efficiency-standards

[2] As part of the workplan development process, the DNV team reviewed RIE commercial food service equipment tracking data and removed spray nozzles, freezers, and refrigerators from this research. Spray nozzles were removed due to low savings, while refrigerators and freezers were removed because they are not included in the RI appliance standard and may be studied later. Ice makers and griddles were initially included as part of the study scope, and were asked about in the customer survey, but were ultimately excluded from the analysis because they are also not covered by the appliance standard.

in Appendix A: Weighted Baseline Adjustments. Table 1-1 presents the summary findings of used and new equipment that was used to develop the weighted baselines for the measures.

Table 1-1. Summary findings of new and used equipment

Measure	% New Equipment	% Used Energy Star	% Used Standard
Fryer	87% Energy Star V2.0	2% Energy Star V2.0	11% Energy Star V2.0 – baseline
Oven	83% Energy Star V2.2	2% Energy Star V2.2	15% Energy Star V2.2 – baseline
Commercial dishwasher	83% Energy Star V2.0	0% N/A	17% Energy Star V2.0 – baseline
Hot food holding cabinets	86% Energy Star V2.0	0% N/A	14% Energy Star V2.0 – baseline
Steam cooker	100% Energy Star V1.2	0% N/A	0% N/A

2 METHODOLOGY

The following sections describe the objectives and approach, and summarize the total interview completes that the study achieved.

2.1 Objectives

The objective of this study was to research and understand what industry standard practice is for commercial kitchen equipment installed in replace on failure (ROF) and new construction (NC) applications. Based on proportion of savings, the focus of this study included commercial fryers, ovens, steam cookers, hot food cabinets, and dishwashers.[3] Currently, incentives are only offered through the midstream program pathway.

The DNV team leveraged primary data collected through end user web surveys and interviews with distributors to develop new baselines. This information was used to update deemed energy and demand savings for the RI Technical Reference Manual (TRM). To do so, the team updated key parameters that drive savings and are subject to the requirements of the appliance standards – equipment efficiency and idle energy rate. The new appliance standards will set a ceiling for new baselines, so the goal of the primary data collection was to determine if used equipment sales represent a significant portion of total equipment sales, which would indicate that ISP baselines should be adjusted from the appliance standards likely resulting in increased deemed savings estimates.

2.2 Approach overview

The data collection approach used in this ISP study was as follows:

1. **Secondary research and implementer engagement.** The research team first undertook secondary research on baselines and savings calculations in other jurisdictions, mainly California and Massachusetts. A similar research effort was conducted in Massachusetts, so the team designed the study approach based on that research. However, all inputs and adjustments made are Rhode Island–specific.[4] The team also requested savings calculators and details about project tracking in PA systems and reviewed program eligibility requirements with implementation vendors and evaluation staff.

2. **Savings parameter comparison and sensitivity analysis**. The key objective of this task was to understand the impact on baselines assuming the RI appliance standards were to become the new baselines. The primary area of focus for this assessment was on the assumptions that drive savings, which included cooking efficiency and idle energy rate. The DNV team requested the PY2023 and PY2024[5] food service calculators to update energy and demand savings assuming the appliance standard baseline. As part of this task, DNV also conducted a sensitivity analysis of other calculator input assumptions (i.e., hours of use or pounds of food cooker per day) to determine how much each assumption drives savings.

3. **End user survey**. The primary objective of the end user survey was to understand the extent to which used equipment is being sold in the market and to what extent it should be included in the ISP baseline. The survey captured the decision-making practices of different types of food service owners and operators. Where customers

[3] As part of the workplan development process, the DNV team reviewed RIE commercial food service equipment tracking data and removed spray nozzles, freezers, and refrigerators from this research. Spray nozzles were removed due to low savings, while refrigerators and freezers were removed because they are not included in the RI appliance standard and may be studied later. Ice makers and griddles were initially included as part of the study scope, and were asked about in the customer survey, but were ultimately excluded from the analysis because they are also not covered by the appliance standard.

[4] https://ma-eeac.org/wp-content/uploads/MA21C03-B-ISPREP-Kitchen-Equipment-ISP-FINAL-MEMO-20221031.pdf

[5] The implementation vendor updated the program qualifying standards starting in 2024 in anticipation of baseline changes due to the appliance standards. The 2024 calculator was different than the 2023 calculator both in terms of the program requirements and the assumed baselines.

indicated that used equipment accounts for a significant portion of equipment sales, the DNV team adjusted the baseline to account for this.

4. **Distributor phone interviews.** The DNV team interviewed distributors to understand the impacts of the appliance standards on the used equipment market and to serve as a check on customer survey responses. Distributors were asked how much of their sales include used equipment, type of used equipment sold, who typically buys used equipment, and the percent of used sales. DNV also asked distributors about new equipment and the extent to which customers want to purchase Energy Star equipment over standard equipment. These results were used to inform the percent mix of used equipment in the ISP baseline.

2.3 End user web survey

DNV developed a sample frame of customers that are likely to use food service equipment to target for web surveys. To develop the sample frame, DNV purchased a list of food service providers.[6] DNV also supplemented this list with contacts identified in a list of businesses with food service licenses from the RI Department of Health[7] and from ZoomInfo.[8]

DNV administered an online web survey via email to gather information on used commercial kitchen equipment. The total sample included 3,971 unique contacts. The survey was open for nine (9) days and received 94 total completed surveys for a 2.4% response rate. Some respondents purchased multiple measures and were asked about all measures leading to a total number of 239 measures represented in the 94 surveys. Appendix B includes the web survey script.

Table 2-1. Summary of survey activity

Sample Group	Sample Frame	Surveys Completed	Response Rate (web)	Total Measures Represented
RIE commercial kitchens	3,971	94	2.4%	239

2.4 Market actor interviews

DNV conducted phone surveys with distributors to better understand the market of commercial food service equipment and provide additional context to the customer responses. Since this study focuses on fryers, dishwashers, steam cookers, hot food cabinets, ice machines, and ovens, the perspectives provided are focused on those systems. Appendix C: Distributor Survey Instrument includes the interview script. A list of nine distributors was provided by Energy Solutions, the food service implementation vendor for RIE, to identify distributors who sold used food service equipment and would be eligible for the survey in RI. The team contacted all nine distributors via phone and were able to conduct interviews with all distributors. Out of the nine distributors, six confirmed that they sell used equipment.

[6] https://restaurantemaillist.com/buy-mailing-lists/rhode-island-restaurants-email-list

[7] https://health.ri.gov/lists/licensees/

[8] https://www.zoominfo.com/

3 SURVEY RESULTS

The following sections summarize the results of the primary research conducted as part of this study and the baseline adjustments that were calculated based on these results.

3.1 Used equipment mix

3.1.1 Customer responses

To understand the amount of used equipment in the marketplace, DNV conducted surveys with customers and distributors. All customer respondents were asked generally about their equipment purchasing behaviors. Across all measure types, customers indicated that about 15% of equipment purchased in the last five years was used at the time of purchase. Table 3-1 presents the number of used equipment purchases by equipment type. If a respondent did not know if their equipment was new or used, the study team assumed that the unknown status of the equipment was new. The most common used kitchen equipment purchased by respondents were ovens (17%) and dishwashers (17%). There was not enough evidence of used steam cookers to make any adjustments to the appliance standard baseline. Ice machines and griddles are not subject to the appliance standard baseline, so no adjustments were made to these measures and these measures were removed from further analysis.

Table 3-1. End user survey respondents who purchased used equipment by type

Measure	Total Respondents by Measure	Used	Don't Know	Percent Used
Fryer	45	6	0	13%
Oven	53	9	0	17%
Steam cooker*	12	1	0	8%
Commercial dishwasher	23	4	1	17%
Hot Food Holding Cabinets	22	3	2	14%
Total	***155***	***23***	***3***	***15%***

*Not enough evidence to support adjustment from appliance standard baseline

To understand the composition of efficiencies of the used equipment, the DNV team also asked customers that purchased used equipment if the used equipment that they purchased was Energy Star certified or not. Customers indicated that 9% of the equipment that they purchased was Energy Star while 27% of equipment was not Energy Star. Customers did not know if the remaining 64% of equipment was Energy Star or not. Since customers also did not provide model numbers to verify if used equipment was Energy Star, the study team assumed that the unknown status of the equipment was standard efficiency and not Energy Star. Table 3-2 shows the breakdown is used equipment purchases across efficiency levels.

Table 3-2. Total used equipment by efficiency level

Measure	Total Used	Used Standard	Used Energy Star	Used Don't Know
Fryer	6	3	1	2
Oven	9	2	1	6
Commercial dishwasher	4	1	0	3
Hot Food Holding Cabinets	3	0	0	3

To better understand what the baseline efficiencies and Energy Star efficiencies were at the time of purchase, customers were also asked in what year the equipment that they purchased was manufactured. The average year equipment was

manufactured helped determine what the efficiency level and idle energy rate should be for the used Energy Star and used standard equipment should be. For fryers, ovens, and hot food holding cabinets, the average year was 2020, and for dishwashers, the average year was 2021. Based on this, the team used the Energy Star calculator to determine the efficiencies for both used equipment categories. In all cases, the Energy Star standard at the average manufactured year is the same that is currently cited in the new appliance standards indicating the new equipment and used Energy Star efficiencies are the same. Due to this, all baseline adjustments for these measures are driven only by the percent of used non-Energy Star equipment. Section 3.2 outlines the final weighting that was applied to the baselines.

3.1.2 Distributor responses

Distributors reported a similar narrative to customers indicating that about 12% of all commercial equipment sold in Rhode Island is used (weighted by magnitude of revenue in Rhode Island). While this is slightly less than the 15% reported by customers, it does not take into account possible sales outside of the distributor sales chain like in marketplaces such as Facebook Marketplace, Craigslist, or auctions. Six of the nine distributors that DNV interviewed sell used kitchen equipment in Rhode Island. Two of the six said their sales of used kitchen equipment is limited. These distributors reported the percent of sales that are used vs. new kitchen equipment in Table 3-3. Respondent 4 was specifically a used equipment dealer but represents a small portion of total sales. The reported percent of new and used sales support the presence of used equipment in the marketplace.

Table 3-3. Percent of sales overall by distributor

Technology	Respondent 1	Respondent 2	Respondent 3	Respondent 4	Respondent 5	Respondent 6
New Equipment	95%	95%	80%	10%	92%	66%
Used Equipment	5%	5%	20%	90%	8%	33%

When asked who is purchasing used equipment, several distributors indicated that customers with limited funds do, including smaller, “mom and pop” establishments and establishments newer to the industry. Distributors noted these industry players purchase used equipment due to these limitations, but they would prefer to purchase new equipment for the benefits of a warranty. Distributors reported on the typical age of used equipment that they sell can range from 6 months to 12 years depending on the equipment type.

The following verbatims illustrate common themes from respondents who provided open-ended feedback:

- *People new to the industry don’t have business history to get financing. Their budget is tight but customers prefer new due to warranty and peace of mind.*
- *Some people prefer new because of the full factory warranty. Large restaurants and chains buy new. Mom and pops, startups, and organizations only a few years old all have cash flow issues.*
- *Most customers purchasing used equipment are looking for reconditioned equipment that is clean with OEM parts. Demographics of these customers are all over the board. For start up to renovation and replacement on failure situations, the cost for new equipment is astronomical.*

3.2 Baseline adjustments

Based upon end user survey responses in Table 3-1 corroborated through distributor interviews, DNV applied weighted baseline adjustments to fryers, ovens, commercial dishwashers, and hot food holding cabinets. No adjustments were made to steam cookers, as survey results to not indicate enough used equipment in the market to warrant an adjustment.

Table 3-4 presents each measure type broken down by percent of new, used Energy Star, and used standard equipment along with their weighted baselines.

Table 3-4. Calculated weights and efficiency levels for equipment categories

Measure	% New Equipment	% Used Energy Star	%Used Standard
Fryer	87% Energy Star V2.0	2% Energy Star V2.0	11% Energy Star V2.0 – baseline
Oven	83% Energy Star V2.2	2% Energy Star V2.2	15% Energy Star V2.2 – baseline
Commercial dishwasher	83% Energy Star V2.0	0% N/A	17% Energy Star V2.0 – baseline
Hot food holding cabinets	86% Energy Star V2.0	0% N/A	14% Energy Star V2.0 – baseline
Steam cooker	100% Energy Star V1.2	0% N/A	0% N/A

3.3 Awareness of appliance standards

To better understand any possible future changes to the market after the Rhode Island Appliance Standards take full effect, the DNV team asked respondents, both end users and distributors, about their current level of awareness regarding the appliance standards. End users were asked, on a scale from 1 to 5, with 1 being not at all familiar and 5 being extremely familiar, how familiar they are with Rhode Island's new Appliance Energy Efficiency Standards. The average response was just under 2.0 (1.9, n = 94) indicating that awareness of the standards is still low at the customer level.

Distributors indicated that they were mostly unfamiliar with the standards, with an average response of just over 2.0 (2.2, n=9). There was a near consensus from distributors that noted the qualifying equipment could by significantly more expensive than the non-Energy Star equipment. They indicated that the size of their customers would dictate if they sell new or used equipment. Smaller customers will likely not be able to take on the cost of new equipment. Bigger, more established stores and chains would not be impacted by higher costs as they are more willing spend. Overall, distributors indicated that they would sell whatever their customers needed. Changes to the market such as the absence of repair people, "throwaway" culture, and continued shrinking of individual family-owned stores will all play a role in how new vs used equipment hits the market. While these responses do not provide enough evidence to make changes to the updated baselines, they do indicate that there could be potential changes to the market over time in response to the new standards, and the percent of used equipment in the marketplace could increase in the future.

3.4 Sensitivity analysis - parameters of interest

Prior to launching the primary data collection, the DNV team also reviewed other parameters that could impact the savings. These parameters are inputs to the calculations that not only impact the baseline equipment, but also the program qualifying equipment such as pounds of food cooked per day, racks washed per day, and daily hours of operation. The sensitivity analysis indicated that the typical hours of use had the most significant impact on savings parameters across all equipment types.

Based on the significance[9] of the sensitivity analysis, the team chose to ask customers about typical hours of use because it is a key parameter that impacts calculations across all equipment types. Pounds of food cooked was only significant for fryers, and racks washed per day was only significant for dishwashers. The DNV team also considered how these questions would be answered in a survey, with the understanding that customers wouldn't consistently know the amount of food cooked or racks washed per day, so the survey focused on hours of use.

Other parameters analyzed as part of the sensitivity analysis included number of preheats per day and estimated preheat time (min). These parameters were not a driving factor in equipment savings.

[9] Equipment parameters were adjusted by 25% and 50% of their original value to understand how much savings were impacted. If the parameter variation yielded savings greater than 10% of its original value, DNV determined the parameter to be significant.

Table 3-5 lists the average stated hours of use compared to the current assumptions.

Table 3-5. Customer stated daily hours of use

Measure	Current Assumption	Survey Average	Count	Standard Deviation
Fryer	12	9.4	41	4.0
Oven	12	8.41	51	3.6
Steam cooker	9	6.18	11	4.6
Hot Food Holding Cabinets	9	6.1	21	4.1

Before making adjustments in the calculations, the DNV team reviewed recent research completed in California. That research compared stated preference results to observed results (onsite visits and metering) and found that stated preference underrepresents actual hours of use. As an example, for commercial fryers in California, the stated hours of use were 10.4 hours, which is within the 80% confidence interval of the Rhode Island responses. However, the calculated results from an impact evaluation were 11.8, matching the current assumption in Rhode Island. Based on this comparison, the DNV team is not recommending any changes to the current assumptions in Rhode Island.

4 SAVINGS RESULTS

DNV recalculated deemed electric and gas energy and demand savings for each targeted measure using the new (2024) version of the Savings Calculator for ENERGY STAR Commercial Food Service (CFS) Products. Inputs to the tool used a mix of CA DEER workpaper sources, ENERGY STAR standards, Rhode Island appliance standards, and findings from this research effort. The following sections present the specific inputs and proposed savings values for each equipment type.

Table 4-1. Updated equipment energy savings – electric and gas

Equipment Type	Equipment Size/Category	Original 2024 Vendor Tool Energy Savings	Recommended Energy Savings with Weighted Baseline	Units
Food Service-Electric Fryer	Standard Vat	2,434	2,017	kWh
	Large Vat	2,545	2,438	kWh
Food Service-Electric Oven	Full Size Convection Oven	2,465	1,796	kWh
	Combination Oven - Convection Mode - <15 pan			kWh
	Combination Oven - Convection Mode - 15-28 pan			kWh
	Combination Oven - Convection Mode - >28 pan			kWh
	Combination Oven - steam Mode - <15 pan			kWh
	Combination Oven - steam Mode - 15-28 pan			kWh
	Combination Oven - steam Mode - >28 pan	12,943	8,870	kWh
Food Service- Electric Steam Cooker	Std. size	5,306	3,082	kWh
Food Service – High Temperature Commercial Dishwasher	Under Counter	2,717	1,528	kWh
	Door Type	6,662	1,558	kWh
	Single Tank Conveyor	6,358	4,937	kWh
	Multi Tank Conveyor	16,040	8,587	kWh
	Pot, Pan and Utensil	2,093	1,159	kWh
Food Service – Low Temperature Commercial Dishwasher	Under Counter	2,684	1,650	kWh
	Door Type	9,281	2,082	kWh
	Single Tank Conveyor	10,668	5,709	kWh
	Multi Tank Conveyor	14,881	8,485	kWh
Hot food cabinet	All sizes	1,445	498	kWh
Food Service-Gas Fryer	Standard Vat	32	19	MMBTU
	Large Vat	29	23	MMBTU
Food Service-Gas Oven	Convection Oven	34	23	MMBTU
	Combination Oven - Convection Mode - <15 pan	22	30	MMBTU

Equipment Type	Equipment Size/Category	Original 2024 Vendor Tool Energy Savings	Recommended Energy Savings with Weighted Baseline	Units
	Combination Oven - Convection Mode - 15-28 pan			MMBTU
	Combination Oven - Convection Mode - >28 pan			MMBTU
	Combination Oven - steam Mode - <15 pan			MMBTU
	Combination Oven - steam Mode - 15-28 pan			MMBTU
	Combination Oven - steam Mode - >28 pan			MMBTU
	Rack Oven -Single Rack	N/A	N/A	MMBTU
	Rack Oven -Double Rack	253	33	MMBTU
Food Service-Gas Steamer	Std. size	47	24	MMBTU

Table 4-2. Updated equipment demand savings – electric only

Equipment Type	Equipment Size/Category	Original 2024 Vendor Tool Demand Savings	Recommended Demand Savings with Weighted Baseline	Units
Food Service-Electric Fryer	Standard Vat	0.56	0.46	kW
	Large Vat	0.58	0.56	kW
Food Service-Electric Oven	Full Size Convection Oven	0.56	0.41	kW
	Combination Oven - Convection Mode - <15 pan			kW
	Combination Oven - Convection Mode - 15-28 pan			kW
	Combination Oven - Convection Mode - >28 pan			kW
	Combination Oven - steam Mode - <15 pan			kW
	Combination Oven - steam Mode - 15-28 pan			kW
	Combination Oven - steam Mode - >28 pan	2.96	2.03	kW
Food Service- Electric Steam Cooker	Std. size	1.85	1.07	kW
Food Service – High Temperature Commercial Dishwasher	Under Counter	0.41	0.23	kW
	Door Type	1.01	0.24	kW
	Single Tank Conveyor	0.97	0.75	kW
	Multi Tank Conveyor	2.44	1.31	kW
	Pot, Pan and Utensil	0.32	0.18	kW
	Under Counter	0.41	0.25	kW
	Door Type	1.41	0.32	kW

Equipment Type	Equipment Size/Category	Original 2024 Vendor Tool Demand Savings	Recommended Demand Savings with Weighted Baseline	Units
Food Service – Low Temperature Commercial Dishwasher	Single Tank Conveyor	1.62	0.87	kW
	Multi Tank Conveyor	2.26	1.29	kW
Hot food cabinet	All sizes	0.44	0.15	kW

5 CONCLUSIONS, RECOMMENDATIONS, AND CONSIDERATIONS

Due to the uncertainty around ISP baselines for commercial kitchen equipment due to the RI appliance standards and the magnitude of used equipment in the market, DNV conducted primary research using end user surveys (n=94) as well as market actor kitchen equipment distributor interviews (n=9) to better understand the market. All market actor interviews were conducted with credible sources who were able to provide insights that could be used to corroborate end user surveys to formulate conclusions and recommendations for food service equipment in RI. The DNV team has the following conclusions and recommendations based on our research.

5.1 Conclusions

DNV has the following conclusions based on our primary and secondary research.

Used equipment. Based on the end user surveys as well as the market actor interviews, used equipment does play a role in the commercial food service industry. Across the market, customers and distributors independently estimated that used equipment accounts for about 15% and 12% of commercial kitchen equipment sales respectively. Exactly how much used equipment varied by equipment type, with used equipment being shown as the most prevalent for fryers, ovens, dishwashers, and hot food holding cabinets based on both end user and distributor surveys. Of the used equipment, the average age of equipment was two to three years, manufactured in 2020.

Replace on failure vs. new construction. DNV did not find any difference between commercial food service equipment installed as a replace on failure versus a true new construction project.

5.2 Recommendations

Based on our research and conclusions DNV has the following recommendations relating to commercial food service equipment.

1. **Adopt the baselines outlined in Appendix A.** The baselines outlined by equipment type use a variety of information, including the new food service equipment standards and our primary research. For fryers, ovens, commercial dishwashers, and hot food holding cabinets, we are recommending a weighted baseline that takes used equipment into account. The ISP baseline for steam cookers should be the appliance standard requirements, due to a lack of evidence of used equipment.
2. **Update TRM with new savings values.** DNV recommends adopting the updated energy savings shown in Table 4-1 and the demand savings show in Table 4-2. DNV also recommends listing all relevant savings parameters in the TRM. Currently, only the idle energy rate and efficiency level are listed in the TRM.

5.3 Considerations

Based on our research and conclusions DNV has the following considerations relating to commercial food service equipment.

1. **Continue to monitor compliance.** Based upon distributor research, RIE should consider continuing to monitor how new and used equipment is impacting the market as the appliance standard continues to take effect. This could be continually done through the use of surveys. Compliance with these standards could also impact ISP baselines.
2. **Investigate additional inputs that drive savings.** Inputs in the vendor savings calculator, like hours of use and pounds of food cooked per day, have a contributing impact on energy use. Self-reported and observed values can

differ, so a web survey is not a conclusive way to confirm these values. To accurately estimate these values, consider doing so through on-site surveys or a metering study.

6 APPENDIX A: WEIGHTED BASELINE ADJUSTMENTS

Table 6-1. Weighed RI ISP baseline for commercial convection oven – full size electric

Convection Oven Electric Full Size	Used		New	Weighted ISP Baseline
	Conventional	ENERGY STAR v2.2	ENERGY STAR v2.2	
Weighting	15%	2%	83%	
Cooking energy efficiency (%)	65%	71%	71%	70%
Idle energy rate (W)	2,000	1,600	1,600	1,660

Table 6-2. Weighed RI ISP baseline for commercial combination oven – electric

Combination Oven - Electric	Used				New ENERGY STAR v2.2		Weighted ISP Baseline	
	Conventional		ENERGY STAR v2.2					
	Convec. Mode	Steam Mode	Convec. Mode	Steam Mode	Convec. Mode	Steam Mode	Convec. Mode	Steam Mode
<15 Pan								
Weighting	15%	15%	2%	2%	83%	83%		
Cooking energy efficiency	65%	40%	76%	55%	76%	55%	74%	53%
Idle energy rate	3,000	10,000	1,700	2,640	1,700	2,640	1,895	3,744
15-28 Pan								
Weighting	15%	15%	2%	2%	83%	83%		
Cooking energy efficiency	65%	40%	76%	55%	76%	55%	74%	53%
Idle energy rate	3,750	12,500	2,200	3,500	2,200	3,500	2,433	4,850
>28 Pan								
Weighting	15%	15%	2%	2%	83%	83%		
Cooking energy efficiency	65%	40%	76%	55%	76%	55%	74%	53%
Idle energy rate (W)	5,250	18,000	2,700	4,360	2,700	4,360	3,083	6,406
Average Idle energy rate (W)							2,470	5,000

Table 6-3. Weighed RI ISP baseline for commercial convection oven – full size gas

Convection Oven Natural Gas Full Size	Used		New	Weighted ISP Baseline
	Conventional	ENERGY STAR v2.2	ENERGY STAR v2.2	
Weighting	15%	2%	83%	
Cooking energy efficiency (%)	30%	46%	46%	44%

Convection Oven Natural Gas Full Size	Used		New	Weighted ISP Baseline
	Conventional	ENERGY STAR v2.2	ENERGY STAR v2.2	
Idle energy rate (Btu/hr)	18,000	12,000	12,000	12,900

Table 6-4. Weighed RI ISP baseline for commercial combination oven – gas

	Used				New ENERGY STAR v2.2		Weighted ISP Baseline	
	Conventional		ENERGY STAR v2.2					
Combination Oven - Natural Gas	Convec. Mode	Steam Mode	Convec. Mode	Steam Mode	Convec. Mode	Steam Mode	Convec. Mode	Steam Mode
<15 Pan								
Weighting	15%	15%	2%	2%	83%	83%		
Cooking energy efficiency	35%	20%	56%	41%	56%	41%	53%	38%
Idle energy rate	15,000	45,000	7,675	9,511	7,675	9,511	8,774	14,834
15-28 Pan								
Weighting	15%	15%	2%	2%	83%	83%		
Cooking energy efficiency	35%	20%	56%	41%	56%	41%	53%	38%
Idle energy rate	20,000	60,000	8,650	10,811	8,650	10,811	10,353	18,189
>28 Pan								
Weighting	15%	15%	2%	2%	83%	83%		
Cooking energy efficiency	35%	20%	56%	41%	56%	41%	53%	38%
Idle energy rate	30,000	80,000	9,625	12,111	9,625	12,111	12,681	22,294
							10,603	18,439

Table 6-5. Weighed RI ISP baseline for commercial double rack oven – gas

Rack Oven Natural Gas Double Rack	Used		New	Weighted ISP Baseline
	Conventional	ENERGY STAR v1.2	ENERGY STAR v2.2	
Weighting	15%	2%	83%	

Rack Oven Natural Gas Double Rack	Used		New	
	Conventional	ENERGY STAR v1.2	ENERGY STAR v2.2	Weighted ISP Baseline
Cooking energy efficiency (%)	30%	52%	52%	49%
Idle energy rate (Btu/hr)	65,000	30,000	30,000	35,250

Table 6-6. Weighed RI ISP baseline for commercial hot food holding cabinets - electric

Hot food cabinet	Used		New	Weighted ISP Baseline
	Conventional	ENERGY STAR v2.0	ENERGY STAR v2.0	
Half size				
Weighting	14%	0%	86%	
Idle energy rate (W/Cu.Ft.)	40	22	22	24.1
Full size				
Weighting	14%	0%	86%	
Idle energy rate (W/Cu.Ft.)	40	12	12	16.1

Table 6-7. Weighed RI ISP baseline for low temperature commercial dishwashers - electric

Food Service – Low Temperature Commercial Dishwasher	Used		New	Weighted ISP Baseline
	Conventional	ENERGY STAR v2.0	ENERGY STAR v2.0	
Under Counter				
Weighting	17%	0%	83%	
Water consumption (Gal. per rack)	1.48	1.19	1.19	1.24
Idle energy rate (W)	500	500	500	500
Door Type				
Weighting	17%	0%	83%	
Water consumption (Gal. per rack)	1.50	1.18	1.18	1.23
Idle energy rate (W)	600	600	600	600

Food Service – Low Temperature Commercial Dishwasher	Used		New	Weighted ISP Baseline
	Conventional	ENERGY STAR v2.0	ENERGY STAR v2.0	
Single Tank Conveyor				
Weighting	17%	0%	83%	
Water consumption (Gal. per rack)	1.23	0.79	0.79	0.86
Idle energy rate (W)	1,600	1,500	1,500	1,517
Multi Tank Conveyor				
Weighting	17%	0%	83%	
Water consumption (Gal. per rack)	0.99	0.54	0.54	0.62
Idle energy rate (W)	2,000	2,000	2,000	2,000

Table 6-8. Weighed RI ISP baseline for high temperature commercial dishwashers – electric

Food Service – High Temperature Commercial Dishwasher	Used		New ENERGY STAR v2.0	Weighted ISP Baseline
	Conventional	ENERGY STAR v2.0		
Under Counter				
Weighting	17%	0%	83%	
Water consumption (Gal. per rack)	0.95	0.86	0.86	0.88
Idle energy rate (W)	760	500	500	544
Door Type				
Weighting	17%	0%	83%	
Water consumption (Gal. per rack)	1.06	0.89	0.89	0.92
Idle energy rate (W)	700	700	700	700
Single Tank Conveyor				
Weighting	17%	0%	83%	
Water consumption (Gal. per rack)	1.13	0.70	0.70	0.77
Idle energy rate (W)	1,930	1,500	1,500	1,573
Multi Tank Conveyor				
Weighting	17%	0%	83%	
Water consumption (Gal. per rack)	1.10	0.54	0.54	0.64
Idle energy rate (W)	2,590	2,250	2,250	2,308
Pot, Pan, & Utensil				
Weighting	17%	0%	83%	
Water consumption (Gal. per rack)	0.64	0.54	0.54	0.56
Idle energy rate (W)	1,200	2,250	2,250	2,072

Table 6-9. Weighed RI ISP baseline for fryer – electric

Electric Fryer	Used		New ENERGY STAR v2.0	Weighted ISP Baseline
	Conventional	ENERGY STAR v2.0		
Standard vat				
Weighting	11%	2%	87%	
Cooking energy efficiency (%)	75%	80%	80%	79%

Electric Fryer	Used		New	Weighted ISP Baseline
	Conventional	ENERGY STAR v2.0	ENERGY STAR v2.0	
Idle energy rate (W)	1,200	1,000	1,000	1,022
Large vat				
Weighting	11%	2%	87%	
Cooking energy efficiency (%)	75%	80%	80%	79%
Idle energy rate (W)	1,200	1,100	1,100	1,111

Table 6-10. Weighed RI ISP baseline for fryer – gas

Natural Gas Fryer	Used		New ENERGY STAR v2.0	Weighted ISP Baseline
	Conventional	ENERGY STAR v2.0		
Standard vat				
Weighting	11%	2%	87%	
Cooking energy efficiency (%)	35%	50%	50%	48%
Idle energy rate (Btu/hr)	17,000	9,000	9,000	9,880
Large vat				
Weighting	11%	2%	87%	
Cooking energy efficiency (%)	35%	50%	50%	48%
Idle energy rate (Btu/hr)	17,000	12,000	12,000	12,550

7 APPENDIX B: CUSTOMER SURVEY INSTRUMENT

END USER SURVEY INSTRUMENT

Industry Standard Practice: Commercial Kitchen and Food Service Equipment

Date: August 1, 2023

Email Survey Invitation Letter

The sender name will appear as “RhodeIslandEnergySurvey@qemailserver.com”.

Subject line: Rhode Island Energy needs your feedback

<RIE LOGO>

Hello,

Earn $25 by telling us about your commercial kitchen equipment purchasing decisions.

Rhode Island Energy (RIE) is conducting an assessment of commercial kitchen equipment. Your input will allow RIE to build and maintain better energy savings offerings for customers like you.

We need your help. Rhode Island Energy would like to **ask you some questions about your experience making decisions about your commercial kitchen equipment.** This survey should only take about 10-15 minutes to complete, and in appreciation of your time, we will send **a $25 Amazon electronic gift card** to the e-mail address you provide at the end of the survey.

To provide your feedback, follow this link: [INSERT LINK]

Your answers will be held in the strictest confidence. The information you provide will be combined with information from other businesses that complete the survey. Individual business data will not be published. The results are reported in summaries such as group averages, percentages, and other general statistics.

If you have any questions about the purpose of the study or its use, please feel free to contact me, Ann Clarke, at 516-513-4439.

Thank you in advance for your help with this important study.

Ann M. Clarke, CEM
Principal EM&V Analyst

Introduction

[IF SURVEY IS TAKEN ON THE PHONE]

Intro1. Hello, my name is <INTERVIEWER NAME> from DNV, calling on behalf of Rhode Island Energy’s Commercial Kitchen and Food Service Equipment Program. Today we’re conducting an important study on the energy needs and perceptions of restaurants like yours. We are specifically interested in how your company thinks about and manages their kitchen equipment purchasing. The survey should take less than 15 minutes and at no time will we try to sell you anything. Do you have time to talk for a few minutes about your purchasing decisions? If eligible and when you complete the survey, we will email you a $25 Amazon Gift Card within 7 days.

[IF NEEDED] Your input will allow Rhode Island Energy (formerly National Grid) to build and maintain better energy savings offerings for customers like you. This survey is authorized by Rhode Island Energy. The goal of the program is to empower residents, businesses, and communities to make energy efficient upgrades by offering a wide range of services, rebates, incentives, trainings, and information.

1	Yes	PERSON1
2	Make Appointment=APPT	APPT
88	Refused	Thank & Terminate

[If Intro1 = 2]

APPT.

77	Record **day** of the week, **time** of day and **date** to call back. Record phone number and contact name if needed.	Call contact and repeat intro process at designated time
88	Refused	Thank & Terminate
99	Don't know	Thank & Terminate

[IF SURVEY IS TAKEN ONLINE]

Intro1. Thank you for participating in our survey. Prior to starting, we need to ask you a few questions to determine if you are eligible to take this survey. If **eligible** and **once we receive your completed survey**, we will email you a $25 Amazon Gift Card within 7 days.

All of your responses will be confidential to the extent permitted by law, and any analyses will not identify individuals.

Click the arrow to continue.

PERSON1 [IF SURVEY IS TAKEN ON THE PHONE]

We need to speak with someone who is knowledgeable about the purchase of kitchen equipment for your restaurant or food service company. Would that be you?

1	Yes	SCRN_Part1
2	Yes, need to make an appointment	APPT
3	No, but I will give you the name	Person2
4	No one knows about the kitchen equipment	Thank and Terminate

[IF SURVEY IS TAKEN ONLINE]

We need to speak with someone who is knowledgeable about the purchasing practices of kitchen equipment for your restaurant or food service company. Would that be you?

1	Yes	SCRN_Part1
2	No, but I will give you the name and email of the person who is familiar with this purchase	Person2
3	No one knows about the purchase of new kitchen equipment	Thank and Terminate

Person2 [IF SURVEY IS TAKEN ON THE PHONE]

Who would be the person most familiar with your restaurant's kitchen equipment?

77	Record Name, as <CONTACT>	MAY_I
88	Refused	Thank & Terminate
99	Don't know	Thank & Terminate

MAY_I May I speak with him/her?

1	Yes	INTRO1
2	Yes, need to make an appointment	APPT
88	Refused	Thank & Terminate

[IF SURVEY IS TAKEN ONLINE]
Please provide the name and email for who would be the person most familiar with your restaurant's kitchen equipment.
[Enter New Contact Name and move on]

77	Record Name, as <CONTACT>	Thank & Terminate
78	Record Email, as <EMAIL>	Thank & Terminate

Screener

SCRN_Part1. What is the ownership structure of your restaurant? [Select one]
1. Chain
2. Franchise
3. Individually owned
4. Partnership
5. Cooperative
6. Other, please specify: [Record response]

SCRN_Part2. Which best describes your restaurant? [Select one]
1. Quick service (drive through, fast food, outlet within retail store, etc.)
2. Limited service (Order through cashier, no wait service)
3. Full restaurant service
4. Catering and banqueting
5. Drinking establishments (bars, pubs, etc.)
6. Commercial cafeteria
7. Other, please specify: [Record response]

SCRN_Part3. Have you purchased any of the following equipment in the past 5 years? Please select all that apply. [Select all that apply]

Article I. Fryer
Article II. Oven
Article III. Steam cooker
Article IV. Commercial dishwasher
Article V. Ice Machine
Article VI. Hot Food Holding Cabinets
Article VII. Griddle
Article VIII. None of the above [Make answer exclusive]

SCRN_Part3a.
Do you plan to purchase any of the following in the next 5 years? [Select one]
Fryer
Oven
Steam cooker
Commercial dishwasher
Ice machine
Hot food holding cabinet
Griddle
1. Yes
2. No
3. Don't know

[IF SCRN_Part3 = 8 AND SCRN_PART3a = 2, 3]
SCRN_Part3b. Thank you for your response. Unfortunately, you do not qualify to take the survey. We are only seeking input from respondents that have or are considering purchasing commercial kitchen equipment. We appreciate your willingness to participate in this study. Have a great day. [END SURVEY]

Decision Making Practices

DM_A1: Does your company or organization have any regulations or formal requirements about purchasing commercial kitchen equipment? [Select one]

1. Yes [Please explain]
2. No
3. Don't know

DM_A2: When you purchase commercial kitchen equipment, do you ever consider purchasing used equipment? [Select one]

1. Yes
2. No
3. Don't know

[IF DM_A2 = 1]

DM_A3: On a scale from 1 to 5, with 1 being not at all likely and 5 being extremely likely, when you purchase a fryer, oven, steam cooker, commercial dishwasher, ice machine, hot food holding cabinet, or griddle in the future, how likely are you to purchase used equipment?

Not at all likely 1	2	3	4	Extremely Likely 5	Don't know
❍	❍	❍	❍	❍	❍

DM_A4: On a scale from 1 to 5, with 1 being not at all familiar and 5 being extremely familiar, how familiar are you with Rhode Islands' new Appliance Energy Efficiency Standards that set energy efficiency standards for appliances, including commercial kitchen equipment, sold starting in 2023?

Not at all familiar 1	2	3	4	Extremely Familiar 5	Don't know
❍	❍	❍	❍	❍	❍

[If Scrn_Part3 = 1]

Fryer

DM_F0. You indicated that you purchased a fryer in the last five years. How many fryers did you purchase in the last five years? [Select one]

1. 1
2. 2
3. 3
4. 4
5. Five or more

[DISPLAY DMF0.1-DM_F8 ON ONE PAGE]

[ASK IF DM_F0=2-5]

DM_F0.1. You indicated that you have purchased more than one fryer in the past five years. Please answer the following questions thinking of the fryer newest to your establishment.

DM_F1 Approximately in what year did you purchase this fryer? [Select one]

1. 2023
2. 2022
3. 2021
4. 2020
5. 2019
6. Prior to 2019
7. Don't know

DM_F2. Is this an electric or gas fryer? [Select one]
1. Electric
2. Gas
3. Don't know

DM_F3. Is this fryer standard or deep vat? [Select one]
1. Standard (A fryer with a vat that measures >12 inches and < 18 inches wide, and a shortening capacity > 25 pounds and < 65 pounds)
2. Deep vat (A fryer with a vat that measures > 18 inches and < 24 inches wide, and a shortening capacity > 50 pounds)
3. Don't know

DM_F3a. On average, how many pounds of food are cooked in this fryer per day? Your best estimate is fine. [Select one]
1. <25 lbs
2. 25 – 75 lbs
3. 76 – 125 lbs
4. 126 – 275 lbs
5. >276 lbs
6. Known value, please specify: [text box]
7. Not sure

DM_F3b. How many hours of the day is this fryer on? Your best estimate is fine. [SLIDING SCALE 0-24]

DM_F4. When you purchased this current fryer, was it new or used at the time of purchase? [Select one]
1. New
2. Used
3. Don't know

DM_F5. Is this fryer Energy Star certified? [Select one]
1. Yes
2. No
3. Don't know

[IF DM_F4=1]
DM_F6. Did you receive any type of energy-efficiency rebate from Rhode Island Energy (formerly National Grid) when you purchased this equipment? [Select one]
1. Yes
2. No
3. Don't know

[IF DM_F4=1,3 THEN SKIP TO DM_O9]

[IF DM_F4=2]
DM_F7: What year was this fryer manufactured? [Select one]
1. Please specify: [Record response]
2. Don't know

[IF DM_F4=2]
DM_F8. We would like to confirm the fryer type and efficiency. To do this, please provide the manufacturer and model number of your fryer found on the equipment nameplate or manual.
1. Manufacturer: [Record brand response]
2. Model number: [Record model number response]
3. I cannot provide this information at this time

[ASK IF DM_F0=2-5]
DM_F9. You indicated that you purchased more than one fryer in the past five years. Are the other fryers you purchased new or used? [Select one]
1. New
2. Used
3. Combination
4. Don't know

[ASK IF DM_F0=2-5]
DM_F10. Is there anything else that is different about the other fryers purchased than the fryer you answered questions about? [TEXT BOX]

[If Scrn_Part3 = 2]

Oven

DM_O0. You indicated that you purchased an oven in the last five years. How many ovens did you purchase in the last five years? [Select one]

1. 1
2. 2
3. 3
4. 4
5. Five or more

[DISPLAY DM_O0.1-DM_O8 ON ONE PAGE]

[ASK IF DM_F0=2-5]
DM_O0.1. You indicated that you have purchased more than one oven in the past five years. Please answer the following questions thinking of the oven newest to your establishment.

DM_O1. Approximately in what year did you purchase this oven? [Select one]

1. 2023
2. 2022
3. 2021
4. 2020
5. 2019
6. Prior to 2019
7. Don't know

DM_O2. Is it an electric or gas oven? [Select one]

1. Electric
2. Gas
3. Don't know

DM_O3. What type of oven did you purchase? [Select one]

1. Convection Oven
2. Combination Oven
3. Rack Oven
4. Don't know

[If DM_O3 = 1]
DM_O3a. Is this convection oven full size or half size? [Select one]

1. Full size (A convection oven capable of accommodating standard full-size sheet pans measuring 18 x 26 x 1-inch)
2. Half size (A convection oven capable of accommodating half-size sheet pans measuring 18 x 13 x 1-inch)
3. Don't know
4. Other, please specify: [Record response]

[If DM_O3 = 2]
DM_O3b. Is this combination oven full size or half size? [Select one]

1. Full size (A combination oven capable of accommodating two 12.7 x 20.8 x 2.5-inch steam table pans per rack position, loaded from front-to-back or lengthwise)
2. Half size (A combination oven capable of accommodating a single 12.7x 20.8 x 2.5-inch steam table pan per rack position, loaded from front-to-back or lengthwise)
3. Don't know
4. Other, please specify: [Record response]

[If DM_O3 = 2]

DM_O3c. What is the pan capacity of this oven? [Select one]
1. Please specify: [Record response]
2. Don't know

[If DM_O3 = 3]
DM_O3d. Is this rack oven a single rack or double rack? [Select one]
1. Single Rack Oven (A floor-model rack oven that can accommodate one removable single rack of standard sheet pans measuring 18 x 26 x 1-inchSteam mode)
2. Double Rack Oven (A floor-model rack oven that can accommodate two removable single racks of standard sheet pans measuring 18 x 26 x 1-inch or one removable double-width rack)
3. Don't know
4. Other, please specify: [Record response]

DM_O3e. On average, how many pounds of food are cooked in this oven per day? Your best estimate is fine. [Select one]
1. <25 lbs
2. 25 – 75 lbs
3. 76 – 125 lbs
4. 126 – 275 lbs
5. >276 lbs
6. Known value, please specify: [text box]
7. Not sure

DM_O3f. How many hours of the day is this oven on? Your best estimate is fine. [SLIDING SCALE 0-24]

DM_O4. When you purchased this oven, was it new or used at the time of purchase? [Select one]
1. New
2. Used
3. Don't know

DM_O5. Is this oven Energy Star certified? [Select one]
1. Yes
2. No
3. Don't know

[IF DM_O4=1]
DM_O6. Did you receive any type of energy-efficiency rebate from Rhode Island Energy (formerly National Grid) when you purchased this equipment? [Select one]
1. Yes
2. No
3. Don't know

[IF DM_O4=1,3 THEN SKIP TO DM_S9]

[IF DM_O4=2]
DM_O7: What year was this oven manufactured? [Select one]
1. Please specify: [Record response]
2. Don't know

[IF DM_O4=2]
DM_O8. We would like to confirm the oven type and efficiency. To do this, please provide the manufacturer and model number of your oven found on the equipment nameplate or manual.
1. Manufacturer: [Record brand response]
2. Model number: [Record model number response]
3. I cannot provide this information at this time

[IF DM_O0=2-5]
DM_O9. You indicated that you purchased more than one oven in the past five years. Are the other ovens you purchased new or used? [Select one]
1. New
2. Used

3. Combination
4. Don't know

[ASK IF DM_O0=2-5]
DM_O10. Is there anything else that is different about the other ovens purchased than the oven you answered questions about? [TEXT BOX]

[If Scrn_Part3 = 3]

Steam Cooker

DM_S0. You indicated that you purchased a steam cooker in the last five years. How many steam cookers did you purchase in the last five years? [Select one]
1. 1
2. 2
3. 3
4. 4
5. 5 or more

[DISPLAY DM_S0.1-DM_O8 ON ONE PAGE]

[ASK IF DM_S0=2-5]
DM_S0.1. You indicated that you have purchased more than one steam cooker in the past five years. Please answer the following questions thinking of the steam cooker newest to your establishment.

DM_S1. Approximately in what year did you purchase this steam cooker? [Select one]
1. 2023
2. 2022
3. 2021
4. 2020
5. 2019
6. Prior to 2019
7. Don't know

DM_S2. Is it an electric or gas steam cooker? [Select one]
1. Electric
2. Gas
3. Don't know

DM_S2.1. What is the pan capacity of your steam cooker? [Select one]
1. Please specify: [Record response]
2. Don't know

DM_S3. How many hours of the day is this steam cooker on? Your best estimate is fine. [SLIDING SCALE 0-24]

DM_S4. When you purchased this steam cooker, was it new or used at the time of purchase? [Select one]
1. New
2. Used
3. Don't know

DM_S5. Is this steam cooker Energy Star certified? [Select one]
1. Yes
2. No
3. Don't know

[IF DM_S4=1]
DM_S6. Did you receive any type of energy-efficiency rebate from Rhode Island Energy (formerly National Grid) when you purchased this equipment? [Select one]
1. Yes

2. No
3. Don't know

[IF DM_S4=1,3 THEN SKIP TO DM_D9]

[IF DM_S4=2]
DM_S7: What year was this steam cooker manufactured? [Select one]
1. Please specify: [Record response]
2. Don't know

[IF DM_S4=2]
DM_S8. We would like to confirm the steam cooker type and efficiency. To do this, To do this, please provide the manufacturer and model number of your steam cooker found on the equipment nameplate or steam cooker manual.
1. Manufacturer: [Record brand response]
2. Model number: [Record model number response]
3. I cannot provide this information at this time

[ASK IF DM_S0=2-5]
DM_S9. You indicated that you purchased more than one steam cooker in the past five years. Are the other steam cookers you purchased new or used? [Select one]
1. New
2. Used
3. Combination
4. Don't know

[ASK IF DM_S0=2-5]
DM_S10. Is there anything else that is different about the other steam cookers purchased than the steam cooker you answered questions about? [TEXT BOX]

[If Scrn_Part3 = 4]

Commercial Dishwasher

DM_D0. You indicated that you purchased a dishwasher in the last five years. How many dishwashers did you purchase in the last five years? [Select one]
1. 1
2. 2
3. 3
4. 4
5. Five or more

[DISPLAY DM_D0.1-DM_D8 ON ONE PAGE]

[ASK IF DM_S0=2-5]
DM_D0.1. You indicated that you have purchased more than one dishwasher in the past five years. Please answer the questions thinking of the dishwasher newest to your establishment.

DM_D1. Approximately in what year did you purchase this dishwasher? [Select one]
8. 2023
9. 2022
10. 2021
11. 2020
12. 2019
13. Prior to 2019
14. Don't know

DM_D2. Is this dishwasher low temp or high temp? [Select one]
1. Low temp (A machine that applies a chemical sanitizing solution to the surfaces of dishes to achieve sanitization)
2. High temp (A machine that applies hot water to the surfaces of dishes to achieve sanitization)

3. Other, please specify: [Record response]
4. Don't know

[IF DM_D2 = 1]
DM_D2a. What type of low temp dishwasher did you purchase? [Select one]
1. Under counter (A stationary rack machine with an overall height of 38 inches or less, designed to be installed under food preparation workspaces)
2. Stationary Single Tank Door (A stationary rack machine designed to accept a standard 20 inch x 20 inch dish rack which requires the raising of a door to place the rack into the wash/rinse chamber)
3. Single Tank Conveyor (A conveyor machine that includes a tank for wash water followed by a sanitizing rinse)
4. Multi Tank Conveyor (A conveyor type machine that includes one or more tanks for wash water and one or more tanks for pumped rinse water, followed by a sanitizing rinse)
5. Other, please specify: [Record response]
6. Don't know

[IF DM_D2 = 2]
DM_D2b. What type of high temp dishwasher did you purchase? [Select one]
1. Under counter (A stationary rack machine with an overall height of 38 inches or less, designed to be installed under food preparation workspaces)
2. Stationary Single Tank Door (A stationary rack machine designed to accept a standard 20 inch x 20 inch dish rack which requires the raising of a door to place the rack into the wash/rinse chamber)
3. Pot, Pan, and Utensil (A stationary rack, door type machine designed to clean and sanitize pots, pans, and kitchen utensils)
4. Single Tank Conveyor (A conveyor machine that includes a tank for wash water followed by a sanitizing rinse)
5. Multi Tank Conveyor (A conveyor type machine that includes one or more tanks for wash water and one or more tanks for pumped rinse water, followed by a sanitizing rinse)
6. Other, please specify: [Record response]
7. Don't know

DM_D3.1. How many racks of dishes are washed per day? Your best guess is fine. [Select one]
1. Please specify: [OPEN RESPONSE]
2. Don't know

DM_D3.2. Is your buildings water heater gas or electric? [Select one]
1. Electric
2. Gas
3. Don't know

DM_D4. When you purchased this dishwasher, was it new or used at the time of purchase? [Select one]
1. New
2. Used
3. Don't know

DM_D5. Is this dishwasher Energy Star certified? [Select one]
1. Yes
2. No
3. Don't know

[IF DM_D4=1]
DM_D6. Did you receive any type of energy-efficiency rebate from Rhode Island Energy (formerly National Grid) when you purchased this equipment? [Select one]
1. Yes
2. No
3. Don't know

[IF DM_D4=1,3 THEN SKIP TO DM_I9]

[IF DM_D4=2]
DM_D7: What year was this dishwasher manufactured? [Select one]
1. Please specify: [Record response]

2. Don't know

[IF DM_D4=2]
DM_D8.
We would like to confirm the dishwasher type and efficiency. To do this, please provide the manufacturer and model number of your dishwasher found on the equipment nameplate or manual.
1. Manufacturer: [Record brand response]
2. Model number: [Record model number response]
3. I cannot provide this information at this time

[ASK IF DM_D0=2-5]
DM_D9. You indicated that you purchased more than one dishwasher in the past five years. Are the other dishwashers you purchased new or used? [Select one]
1. New
2. Used
3. Combination
4. Don't know

[ASK IF DM_D0=2-5]
DM_D10. Is there anything else that is different about the other dishwashers purchased than the dishwasher you answered questions about? [TEXT BOX]

[If Scrn_Part3 = 5]

Ice Machine

DM_I0. You indicated that you purchased an ice machine in the last five years. How many ice machines did you purchase in the last five years? [Select one]
1. 1
2. 2
3. 3
4. 4
5. Five or more

[DISPLAY DM_I0-DM_D8 ON ONE PAGE]

[ASK IF DM_I0=2-5]
DM_I0.1 You indicated that you purchased more than one ice machine in the past five years. Please answer the questions thinking of the ice machine newest to your establishment.

DM_I1. Approximately in what year did you purchase this ice machine? [Select one]
1. 2023
2. 2022
3. 2021
4. 2020
5. 2019
6. Prior to 2019
7. Don't know

DM_I2. Is this ice machine a batch-type ice machine or a continuous-type ice machine? [Select one]
1. Batch (a machine that harvest ice with alternating freezing and harvesting periods and can be used in a variety of applications, but are generally used to generate ice for use in beverages)
2. Continuous High temp (A machine that produce ice through a continuous freeze and harvest process and include flake and nugget ice makers)
3. Other, please specify: [Record response]
4. Don't know

DM_I2a. How many pounds of ice does this machine make per day? Your best estimate is fine. [RECORD RESPONSE]
1. Please specify: [OPEN RESPONSE]
2. Don't know

DM_I3. Does this ice maker have any of the following: [Select one]

1. Ice maker head
2. Remote condensing unit
3. Self contained unit
4. Don't know

DM_I4. When you purchased this ice machine, was it new or used at the time of purchase? [Select one]

1. New
2. Used
3. Don't know

DM_I5. Is this ice machine Energy Star certified? [Select one]

1. Yes
2. No
3. Don't know

[IF DM_I4=1]
DM_I6. Did you receive any type of energy-efficiency rebate from Rhode Island Energy (formerly National Grid) when you purchased this equipment? [Select one]

1. Yes
2. No
3. Don't know

[IF DM_I4=1,3 THEN SKIP TO DM_HF9]

[IF DM_I4=2]
DM_I7: What year was this ice machine manufactured? [Select one]

1. Please specify: [Record response]
2. Don't know

[IF DM_I4=2]
DM_I8.
We would like to confirm the ice machine type and efficiency. To do this, please provide the manufacturer and model number of your ice machine found on the equipment nameplate or manual.

1. Manufacturer: [Record brand response]
2. Model number: [Record model number response]
3. I cannot provide this information at this time

[ASK IF DM_I0=2-5]
DM_I9. You indicated that you purchased more than one ice machine in the past five years. Are the other ice machines you purchased new or used? [Select one]

1. New
2. Used
3. Combination
4. Don't know

[ASK IF DM_I0=2-5]
DM_I10. Is there anything else that is different about the other ice machines purchased than the ice machine you answered questions about? [TEXT BOX]

[If Scrn_Part3 = 6]

Hot food holding cabinet

DM_HF0. You indicated that you purchased an hot food holding cabinet in the last five years. How many hot food holding cabinets did you purchase in the last five years? [Select one]

1. 1
2. 2
3. 3

4. 4
5. Five or more

[DISPLAY DM_HF0-DM_HF8 ON ONE PAGE]

[ASK IF DM_I0=2-5]
DM_HF0. You indicated that you have purchased more than one hot food holding cabinet in the past five years. Please answer the following questions thinking of the hot food holding cabinet newest to your establishment.

DM_HF1. Approximately in what year did you purchase this hot food holding cabinet? [Select one]
1. 2023
2. 2022
3. 2021
4. 2020
5. 2019
6. Prior to 2019
7. Don't know

DM_HF2. How many hours of the day is this hot food holding cabinet on? Your best estimate is fine. [SLIDING SCALE 0-24]

DM_HF3. What is the input rating of this hot food holding cabinet in kW (if available)? [OPEN RESPONSE]
1. Please specify: [Record response]
2. Don't know

DM_HF4. When you purchased this hot food holding cabinet, was it new or used at the time of purchase? [Select one]
1. New
2. Used
3. Don't know

DM_HF5. Is this hot food holding cabinet Energy Star certified? [Select one]
1. Yes
2. No
3. Don't know

[IF DM_HF4=1]
DM_HF6. Did you receive any type of energy-efficiency rebate from Rhode Island Energy (formerly National Grid) when you purchased this equipment? [Select one]
Yes
1. No
2. Don't know

[IF DM_HF4=1,3 THEN SKIP TO DM_HF9]

[IF DM_HF4=2]
DM_HF7: What year was this hot food holding cabinet manufactured? [Select one]
1. Please specify: [Record response]
2. Don't know

[IF DM_HF4=2]
DM_HF8.
We would like to confirm the hot food holding cabinet type and efficiency. To do this, please provide the manufacturer and model number of your hot food holding cabinet found on the equipment nameplate or manual.
1. Manufacturer: [Record brand response]
2. Model number: [Record model number response]
3. I cannot provide this information at this time

[ASK IF DM_HF0=2-5]
DM_HF9. You indicated that you purchased more than one hot food holding cabinet in the past five years. Are the other hot food holding cabinets you purchased new or used? [Select one]
1. New

2. Used
3. Combination
4. Don't know

[ASK IF DM_HF0=2-5]
DM_I10. Is there anything else that is different about the other hot food holding cabinets purchased than the hot food holding cabinet you answered questions about? [TEXT BOX]

[If Scrn_Part3 = 7]

Griddle

DM_G0. You indicated that you purchased a griddle in the last five years. How many griddles did you purchase in the last five years? [Select one]

1. 1
2. 2
3. 3
4. 4
5. 5 or more

[ASK IF DM_I0=2-5]
DM_G0. You indicated that you have purchased more than one griddle in the past five years. Please answer the following questions thinking of the griddle newest to your establishment.

DM_G1. Approximately in what year did you purchase this griddle? [Select one]

1. 2023
2. 2022
3. 2021
4. 2020
5. 2019
6. Prior to 2019
7. Don't know

DM_G2. Is this an electric or gas griddle? [Select one]

1. Electric
2. Gas
3. Don't know

DM_G3. Is this griddle single-sided or double-sided? [Select one]

1. Singe-sided
2. Double-sided
3. Don't know

DM_G3a. How many hours of the day is this griddle on? Your best estimate is fine. [SLIDING SCALE 0-24]

DM_G4. When you purchased this griddle, was it new or used at the time of purchase? [Select one]

1. New
2. Used
3. Don't know

DM_G5. Is this griddle Energy Star certified? [Select one]

1. Yes
2. No
3. Don't know

[IF DM_G4=1]
DM_G6. Did you receive any type of energy-efficiency rebate from Rhode Island Energy (formerly National Grid) when you purchased this equipment? [Select one]

1. Yes
2. No

3. Don't know

[IF DM_G4=1,3 THEN SKIP TO DM_G9]

[IF DM_D4=2]
DM_G7: What year was this griddle manufactured? [Select one]
1. Please specify: [Record response]
2. Don't know

[IF DM_G4=2]
DM_G8. We would like to confirm the griddle type and efficiency. To do this, please provide the manufacturer and model number of your griddle found on the equipment nameplate or manual.
1. Manufacturer: [Record brand response]
2. Model number: [Record model number response]
3. I cannot provide this information at this time

[ASK IF DM_G0=2-5]
DM_G9. You indicated that you purchased more than one griddle in the past five years. Are the other griddles you purchased new or used? [Select one]
1. New
2. Used
3. Combination
4. Don't know

[ASK IF DM_G0=2-5]
DM_G10. Is there anything else that is different about the other griddles purchased than the griddle you answered questions about? [TEXT BOX]

Closing

CL1. Thank you very much for taking the time to provide your feedback! Your feedback is very valuable. If you would like a $25 gift card from Amazon.com, please enter your email address on the next page.

CL2. Please provide the email address you would like your gift card to be sent to. [OPEN-ENDED RESPONSE]

CL3. Thank you for participating and offering your feedback. Please allow up to 7 days for processing the gift card.

8 APPENDIX C: DISTRIBUTOR SURVEY INSTRUMENT

RIE KITCHEN ISP: MARKET ACTOR SURVEY GUIDE

Survey Overview

8.1 Introduction Text Prior to Question

[INTERVIEWER NOTE: THE QUESTIONS IN THIS INTERVIEW GUIDE SHOULD NOT NECESSARILY BE READ VERBATIM BUT MAY BE MODIFIED TO SUIT THE INTERVIEW]

Hi, my name is _____, and I am calling from DNV on behalf of Rhode Island Energy regarding their programs which support the sale and adoption of efficient products. We are conducting a study to learn about the market of commercial food service equipment. In this case, our conversation will focus on fryers, ovens, commercial dishwashers, hot food cabinets, ice machines and steam cookers.

We understand that you are a distributor of commercial equipment and food service equipment. I'm estimating our questions will take less than 20 minutes. Is now still a good time to talk? If not, could we schedule another time at your convenience?

It is helpful but not essential that we record the conversation for note-taking purposes. Everything you say today will be kept confidential, meaning that we won't attach your name or any other identifying information to any of our results or findings.

Contact -
Company -
Phone -
Email -
Duration -

8.2 Introduction/Screening

Q1. Do you sell commercial kitchen and food service equipment in Rhode Island?

Q1.A – What percent of your sales is to Rhode Island

Q2. Do you sell used kitchen equipment? Specifically, we are interested in fryers, ovens, dishwashers, ranges, steam cookers, ice machines, hot food cabinet.

8.3 Used Equipment

Q2. What can you tell me about the used market of commercial kitchen and food service equipment?

1. How many end-users typically purchase new vs. used commercial kitchen equipment? (Make sure to specify that we are interested in all new – not just new energy star or high efficiency equipment)

2. Who is typically buying used equipment? [PROMPT – For example office cafeterias, small retail, franchises]

3. What is the main reason someone would purchase new vs. old equipment?

Q3. Can you tell me roughly the percent of your sales that are used vs. new kitchen equipment?

Technology	Percent of Sales [If time permits]	% New	% Used
Fryers			
Ovens			
Commercial Dishwashers			
Steam cookers			
Hot Food Cabinets			
Ice Machines			
Refrigeration			
OTHER - Specify			
TOTAL			

Q4. What do you think the overall market is for used equipment versus new kitchen equipment? [INTERVIEWER NOTE: WE ARE INTERESTED IN THE TOTAL MARKET NOT JUST FOR THE ONE DISTRIBTOR]

Q5. What is the typical age of the used kitchen equipment you sell? (Probe: Number of years or average years the equipment is manufactured). Is this typical for most distributors selling used equipment?

Q6. Is the used equipment you sell typically ENERGY STAR certified?

1. If yes, what percent of your used equipment you sell is ENERGY STAR certified?

2. For equipment that is not ENERGY STAR certified, are you able to identify any information about the efficiency level of your used equipment?

Q7. What types of customers typically purchase used equipment? Is there anything fundamentally different about them compared to customers that only purchase new equipment?

Q8. Can you think of any restrictions that might be in place for different end-users to purchase new vs. used commercial kitchen equipment? [PROMPT – For example, company policy]

8.4 New Equipment

Q9. What is the key factor that influences end-users' decision to purchase specific commercial kitchen equipment models? (Probe: price point/first costs, ENERGY STAR label, reliability, operating costs, maintenance, efficiency).

Q10. How much do you think the ENERGY STAR label influences a customer's decision to purchase equipment? On a scale of importance from 0 to 10 with 0 being "not a consideration at all" and 10 being "incredibly important", how important ENERGY STAR label to most customers?

If mentioned REBATE ask again

8.5 New ENERGY STAR Appliance Standards/COVID-19

Q11. On a scale from 1 to 5, with 1 being not at all familiar and 5 being extremely familiar, how familiar are you with Rhode Island's new Appliance Energy Efficiency Standards that sets energy efficiency standards for appliances, including commercial kitchen equipment, sold starting 1/1/2023?

Q12. Did the COVID-19 pandemic have any effect on the used equipment marketplace? (Probe: staff turnover, supply chain issues)

8.6 Closing

[ASK FOR EMAIL ADDRESS FOR E-GIFT CARD]

Q13. Do you have any other comments or feedback on the market of commercial kitchen equipment that we haven't discussed?

Q14. Do you have any contacts at other companies that you think might be interested in speaking with me?