



FINAL REPORT

ISP Recommendations: Grab and Go Coolers

MA23C02-B-ISPREPOS

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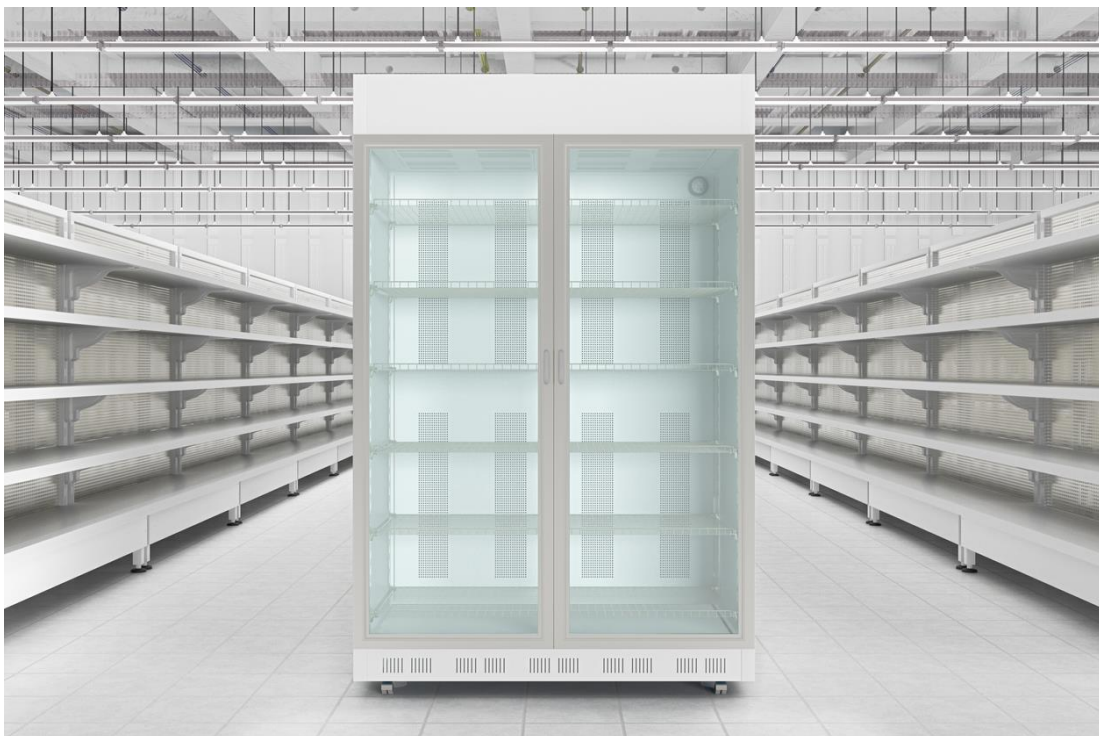




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Executive Summary

This research study investigated whether “grab and go” refrigerators (self-contained units intended for customer-accessible online order or packaged food pickups) are fundamentally different from other self-contained refrigerators in supermarkets, and whether there is a narrowly defined scenario where it is industry standard practice to install new self-contained refrigerators without doors.

The study team used a combination of secondary and primary research to explore this topic. The team reviewed technical reference manual (TRM) refrigeration measures in several jurisdictions, manufacturer literature, and spoke with program administrators and implementers about the history of the “grab and go” refrigerator measure. The team interviewed three supermarket decision-makers and three refrigerator vendors and visited 10 supermarket locations to understand typical applications and door configurations of self-contained refrigerators. The research was focused on identifying whether a specific use case exists where a baseline refrigerator without doors would be applicable instead of the code-defined baseline used in typical self-contained refrigerator applications, which assumes a baseline unit of the same door type as the installed unit.

The study team recommends using the code-defined baseline described below for all self-contained refrigerator applications. The baseline refrigerator is a code-compliant unit with the same configuration, capacity, and door type as the installed unit.

Methodology and Approach



Results/Key Findings

Measure	ISP Baseline Description
“Grab and go” refrigerators: new self-contained, reach-in refrigerators in supermarkets intended for customer pickup of online order or pre-packaged items.	Treat “grab and go” refrigerators as typical self-contained refrigerator installations. Use code-defined efficiency for a baseline unit of the same configuration, capacity, and door type as the installed unit for all self-contained refrigerators installed in supermarkets.

Conclusions/Recommendations

The key finding from this study is that there is no evidence for “grab and go” applications to follow a baseline other than a like-for-like replacement used with other self-contained refrigerators in supermarkets. The study team found that doors are widely prevalent on self-contained refrigerators, including online order pickup refrigerators, and open cases are often specialty merchandisers with a different design and intended use than reach-in refrigerators. As such, the study team recommends using a code-defined baseline for all self-contained refrigerator applications.

The MA eTRM commercial refrigerator/freezer measure (COM-FSE-REFFRE) presents deemed savings calculated using a code-defined baseline unit with the same door type as the installed unit. The study team does not recommend changing this eTRM measure because it agrees with the recommended code-defined baseline.

1 INTRODUCTION

Industry standard practice (ISP) research is a method for identifying appropriate equipment baselines and is important for two reasons. First, for measures with an applicable code or equipment efficiency standard, it allows the program to identify whether above- or below-code practices are more appropriate than the code or standard. Second, for measures that do not have an applicable code, determining the industry standard practice is the only appropriate way to determine what common practices look like and how they may be translated into baselines and savings.

According to the C&I Baseline Framework, ISP research is limited by the following:

- *It is only for measures that are not unique technology-customer applications. There must be a definable market about which common practice can be researched.*
- *A below-code ISP is only a relevant option for gross baseline evaluation if there is no PA program that seeks to increase code compliance for the relevant measure.*

Also, an above-code ISP baseline is not relevant for gross impact evaluation if there are only two efficiency options for the measure: lower (baseline) and higher (incentivized). In such cases, free-ridership research is expected to capture the effects of a higher or blended baseline. ISP research could still be important for such measures for program planning and free-ridership consideration, even if not for gross baseline determination.

This report summarizes the ISP research study and results regarding “grab and go” refrigeration cases that are installed in replace on failure and new equipment purchase applications. “Grab and go” is a program-specific term used by National Grid’s Click N Collect program which refers to standalone, vertical, medium temperature, self-contained refrigerated cases that are installed in supermarkets and provide customers easy access to refrigerated goods such as pre-purchased online orders, typically in the front of the store or at the end of the aisles (referred to in this report as “self-contained refrigerators”). This class of cases excludes the primary refrigeration in supermarkets where the cases are served by a system of remote compressors and remote condensers. Because this study is not exclusive to the Click N Collect program and to avoid limiting research based on refrigerator contents which may change over time, DNV conducted research on all standalone refrigerators in grocery stores.

1.1 Study purpose, objectives, and research questions

DNV carried out the Grab and Go Industry Standard Practice (ISP) Study (MA23C02-B-ISP/REPOS) for the Massachusetts Program Administrators (PAs) and Energy Efficiency Advisory Council (EEAC) Consultants from July to September 2023. The study’s overall purpose was to research and understand what industry standard practice is for “grab and go” refrigerated cases.

This measure has been increasing in volume over recent years with the growing popularity of online pickup shopping, which has created interest in understanding whether “grab and go” cases are fundamentally different from typical standalone cases placed in other locations throughout the store, and if these differences require a unique baseline. The Click N Collect initiative is an example of a program that incentivizes refrigerated cases using a vendor-defined ISP rather than code. The vendor-defined baseline is a standalone refrigerated case with no doors and an efficiency slightly higher than code for a unit without doors. This is different from other typical self-contained refrigerators cases installed in supermarkets, which use a code-defined standard efficiency baseline. Code defines standard efficiency for self-contained refrigerators by case type and temperature for units with or without doors but does not specify when certain types of doors are required. The code-defined baseline assumes the standard unit uses the same door type as the installed unit.¹

¹ 10 CFR 431.66, <https://www.ecfr.gov/current/title-10/chapter-II/subchapter-D/part-431/subpart-C/subject-group-ECFR8115bf7451f830f/section-431.66>



The study was designed to answer the following research questions:

1. Is it considered industry standard practice to install new self-contained refrigerators without doors?
2. What specific equipment and use-case does this baseline apply to—i.e., are self-contained refrigerators fundamentally different from the store's perspective than the self-contained refrigerators installed in other departments?

The results of this study are applicable to any program that provides incentives for equipment meeting the constraints identified in research question 2.

1.2 Organization of report

The rest of the report is organized as follows:

- Section 2: Methodology
- Section 3: Results and analysis
- Section 4: Conclusions, recommendations, and considerations
- Appendix A: Supermarket Interview Guide
- Appendix B: Vendor Interview Guide

2 STUDY METHODOLOGY

This study used a combination of primary and secondary research to gather information on self-contained refrigerated cases. The following section describes the data collection approach used in this study.

2.1 Secondary research and PA/implementer interview

The study team conducted a literature review of the following sources:

- Commercial refrigeration measures in the latest technical reference manuals (TRMs) or program savings document (PSD) in seven jurisdictions: Massachusetts TRM, New York TRM, Connecticut PSD, New Jersey TRM, Pennsylvania TRM, Mid-Atlantic TRM, and Illinois TRM.
- Manufacturer offerings for the five most common commercial refrigerator manufacturers in the Energy Star database (True Refrigeration, Beverage-Air, IDW, Turbo Air, and Delfield) as well as the manufacturer of the cases installed through two sample Click N Collect projects (Traulsen).
- Savings calculations, assumptions, and project documentation of two sample Click N Collect projects.

The study team also searched for any recent studies on commercial refrigerated cases but did not find any with relevance to the ISP in question. Researchers found that it is commonly accepted that refrigerators with doors are more efficient than refrigerators without doors due to the reduction in infiltration, and that a common concern with having doors on refrigerated cases in supermarkets is prohibiting customer access to goods. However, no literature quantified the prevalence of doors on new self-contained refrigerators in supermarkets.

Following the literature review, the study team conducted an interview with program administrators (PAs) and implementers to discuss the development of the “grab and go” measure and vendor-defined baseline. The results from secondary research are presented in Section 3.

2.2 Supermarket decision-maker interviews

The study team targeted grocery stores and supermarket owners and operators with the purpose of investigating industry standard practices for the installation of standalone refrigerated units at their facilities. Discussion topics included different locations throughout the store for standalone cases, priorities from the perspective of the store owner when selecting new refrigerated cases, and door preference for new refrigerated cases. The full survey tool is presented in APPENDIX A.

The targeted interviewees were:

- Large supermarket chains (n=2-3)
- Regional, non-national or independent supermarkets (n=1-2)

The study team identified 26 interview candidates across 14 organizations as potential interviewees for this task with the assistance of CLEARResult, the implementer of the Click N Collect program..

2.3 Vendor interviews

The study team targeted refrigeration distributors and contractors with the purpose of investigating industry standard practices for the installation of standalone refrigerated units in grocery stores and supermarkets. Discussion topics for the vendor interviews included types of cases most commonly sold (open, glass door, solid door), typical uses of standalone cases, and observed customer priorities when selecting standalone case with or without doors. The full survey tool is presented in APPENDIX B.

The targeted interviewees were:



- Refrigerated case distributors and contractors (n=2-3) selected from those making or selling similar equipment incented in the applications.

The study team identified 19 interview candidates across 17 organizations as potential interviewees for this task with the assistance of CLEARResult, the implementer of the Click N Collect program.

2.4 In-person supermarket visits

To supplement the information gathered during interviews, the study team visited 10 supermarket locations in person to visually inspect the self-contained refrigeration equipment present at the facilities and discuss refrigeration equipment with the store managers. The study team prioritized visiting multiple locations of the most prevalent grocery chain in Massachusetts, and otherwise selected targeted store locations to include a variety of geographical locations and store sizes.



3 RESULTS AND ANALYSIS

Findings of the primary and secondary research activities are highlighted below. Primary research consists of customer and vendor interviews as well as in-person visits conducted by DNV. DNV worked with CLEAResult and National Grid to coordinate outreach to vendors and customers for the interview process.

3.1 Secondary research results

The study team reviewed standalone commercial refrigeration measures in seven TRMs and made the following observations:

- All TRMs use similar methodology, based on the Energy Star Commercial Food Service Calculator. Savings are based on the difference in the baseline and efficient units rated kWh/day.
- All TRMs specify a baseline of a standard efficiency, code compliant unit of the same equipment type. Most TRMs do not specify the baseline unit door type, but only present efficiencies for units with solid or transparent doors. The New York TRM explicitly states that the baseline unit should have the same door configuration as the efficient unit, which follows code.
- No TRMs include a measure for an efficient self-contained “display case,” only self-contained reach-in refrigerators with glass or solid doors. The measures are most commonly classified as food service or appliance end uses rather than refrigeration.

The study team reviewed product offerings for six manufacturers of self-contained refrigerators and found that overall, there are more options on the market for units with doors than without doors. Notably, manufacturers distinguish between reach-in refrigerators and merchandizers. Merchandizers are either open-air or have glass doors and have a shallow shelf configuration intended to hold bottled drinks and small food items. Reach-in refrigerators always have glass or solid doors and have deeper shelves.

The study team had access to two example Click N Collect projects, which both installed self-contained reach-in refrigerators. Project documentation describes the equipment as “self-contained refrigerated medium temperature storage cases to hold kitchen-prepared food prior to customer pickup.” The study team learned during the PA/implementer interview that only self-contained refrigerators with glass doors are eligible for the Click N Collect initiative. The implementer-defined baseline of cases without doors would not be applied to self-contained refrigerators with solid doors.

3.2 Vendor interview results

The study team interviewed three refrigeration vendor representatives:

Table 3-1 Interviewee roles

Vendor	Role
Vendor 1	This vendor’s organization performs retrofits of existing refrigeration units and does not sell or install new cases. The study team proceeded with the interview because the vendor was able to offer valuable insight on supermarket trends, but this perspective should be considered when evaluating results.
Vendor 2	This vendor’s organization performs retrofits of existing refrigeration units and does not sell or install new cases. The study team proceeded with the interview because the vendor was able to offer valuable insight on supermarket trends, but this perspective should be considered when evaluating results.
Vendor 3	This vendor’s organization implements refrigeration projects (installation of new equipment and retrofits of existing equipment) and does not sell refrigeration equipment. The study team proceeded with the interview because the vendor was able to offer valuable insight on supermarket trends, but this perspective should be considered when evaluating results.



From the vendor interviews, the study team made the following observations related to the research objectives outlined in the work plan.

Locations and uses for standalone refrigerated cases. The respondents indicated that they most commonly see self-contained refrigeration units used for:

- *Online order pick-up accessed by staff only.* All three vendors stated that order pick-up is Typically only accessed by staff and brought to the customer. In their experience, these cases always have doors.
- *Beverages.* All three vendors noted that beverage cases are often self-contained. Vendor 1 described that beverage cases are often aisle endcaps, which are typically a 50/50 mix between open cases and glass doors. Vendor 3 stated that beverage cases near checkout aisles are the largest percentage of self-contained units and always have doors.
- *Produce/berries.* Vendor 3 noted that produce/berry cases are the second largest percentage of self-contained units and are typically open, horizontal merchandisers.²
- *Prepared foods access by the customer.* Vendor 1 stated that, while declining in popularity, these food options are moving from department merchandizing cases to self-contained refrigerators at the front of the store. These units typically do not have doors and have a lower load, meaning less refrigeration required because often the packaged items are intended to be purchased quickly or do not need to be as cold as highly perishable items. Vendor 2 noted that high-end multi-chain stores tend to have doors for standalone cases, but small bodegas/grocers tend to not have doors.

Customer concerns and priorities when selecting standalone cases. Vendor 1 indicated that stores will typically have specific reasoning for opting for self-contained refrigerators because the rack approach is often easier. The respondent stated that in choosing a self-contained refrigerator for an aisle end cap, the store operator is likely driven by the desire to be able to adjust the self-contained refrigerator's location and products over time. For regional and national chains, regional department heads establish a merchandizing plan that is followed at each store – typically with the goal of maximizing revenue – and, if overridden, are only overridden by portfolio-wide energy goals. Regional department managers will utilize self-contained refrigerators to experiment with how their products are displayed to meet revenue goals. Energy consumption is usually not a top concern.

Vendor 2 has heard from their customers that efficiency is of top concern due to the high operating costs faced by grocery stores. Functionality would be another high priority, and sometimes aesthetics will be important as well.

Types of cases sold and/or used (open, glass door, solid door). Vendor 1 stated that a department's products will have an influence over refrigerator types and door selections. Produce and meat will typically not have a door and are generally not a good fit for self-contained refrigerators. Beverages and dairy cases will typically have doors and have a higher propensity for self-contained cases. Refrigeration units near checkout lanes are more likely to be self-contained units than rack-based and have potential to be doorless. The self-contained units allow for flexibility of location and the doorless approach helps to drive impulse purchases close to the register; eliminating a barrier as small as a pane of glass can help boost sales. Vendor 3 agreed that the door type on new equipment purchases varies depending on the customers preferences, and would be a mix of open and glass doors. Vendor 2 rarely sees the stores they work with purchase cases without doors.

3.2.1 Vendor interview summary

Key takeaways from the vendor interviews are summarized below.

- Online order pickup areas are only used by staff, not customers, and the online order refrigerators always have doors.

- Specific use of self-contained cases varies by store, and different supermarkets will have different driving factors. The range of responses in customer concerns indicate that there is not one universal standard practice.
- Merchandise such as produce, meat, and packaged foods are more likely to be in open, horizontal refrigerators. Beverage cases are the most common application for vertical, medium-temperature refrigerators. Beverage cases often have glass doors.

3.3 Supermarket interview and inspection results

The study team collected data from supermarkets through a combination of in-person visits and phone interviews. The study team interviewed three supermarket representatives who have input as decision-makers regarding equipment, and three local store managers who provided insight on observed trends but are not responsible for equipment purchasing. The study team also visually inspected the self-contained refrigeration equipment at 10 supermarket locations. Table 3-2 summarizes the supermarket data collection approach.

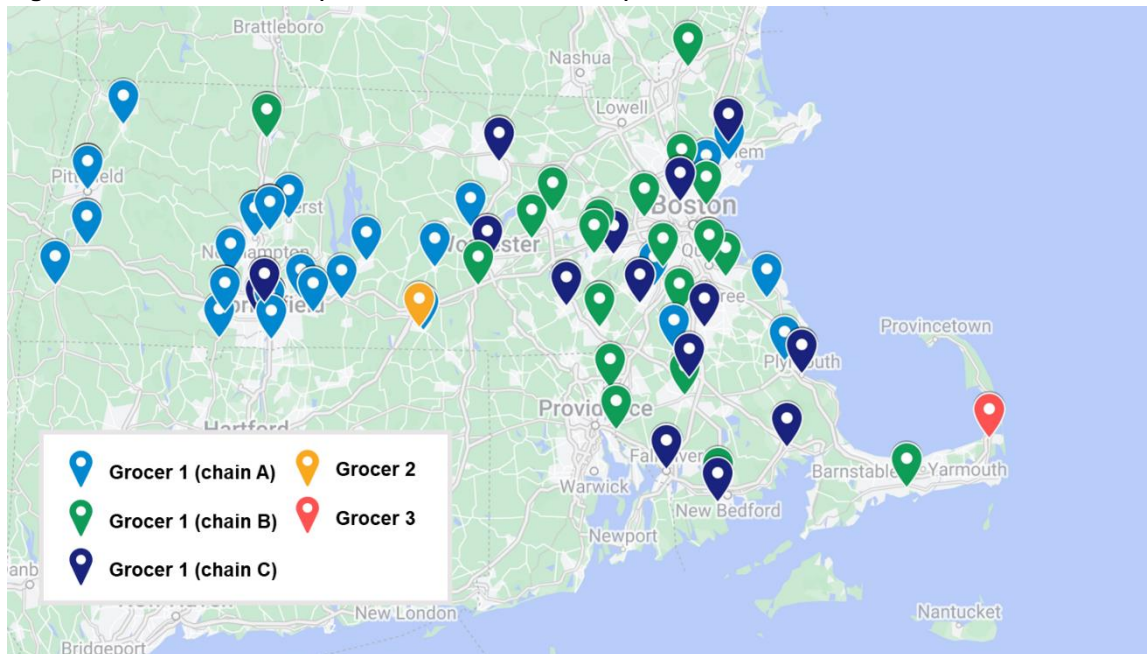
Table 3-2 Supermarket data collection summary

Grocer	Type	Interview?	Visual inspection?
Grocer 1	Multiple chains	Yes – energy representative for multiple chains (decision maker)	No (phone interview)
Grocer 2	Independent	Yes – independent store manager (decision maker)	No (phone interview)
Grocer 3	Independent	Yes – independent store manager (decision maker)	Yes (single location)
Grocer 4	Chain	Yes – local store manager (decisions made at corporate level)	Yes (2 locations)
Grocer 5	Chain	Yes – local store manager (decisions made at corporate level)	Yes (4 locations)
Grocer 6	Chain	Yes – local store manager (decisions made at corporate level)	Yes (1 location)
Grocer 7	Chain	No	Yes (1 location)
Grocer 8	Chain	No	Yes (1 location)

3.3.1 Decision-maker interviews

The study team interviewed three supermarket representatives who act as equipment purchase decision-makers, referred to as Grocers 1, 2, and 3 in Table 3-2. Grocer 1 is an energy account manager for multiple medium-to-large chain grocery stores located in New England. Grocers 2 and 3 are each store managers of independent grocery stores. Figure 3-1 below shows the approximate locations of the chains that Grocer 1 works with, as well as the approximate locations of the stores managed by Grocers 2 and 3. The following section summarizes the findings from these interviews.

Figure 3-1. Store locations (decision-maker interviews)³



Locations and uses for standalone refrigerators. The respondents indicated that they most commonly see self-contained refrigerators used for:

- *Online order pick-up accessed by staff only.* Grocer 1 stated that these units are typically located in a separate area or room in the front or back of the store, and that all online order pickup refrigerators have solid doors. The respondent added that it is common to see 4 to 6 units for a small grocer and 10 for a large grocer. Grocers 2 and 3 do not have units dedicated to online order pick-up because they do not offer this service.
- *Beverages accessed by customer.* All respondents agreed that it is typical to see one self-contained refrigerator beverage cooler at each checkout aisle, often with glass doors. Additional beverage coolers may be in other areas of the store, but also will most commonly have glass doors.
- *Back of house storage accessed by staff.* Back of house storage refers to staff-only storage areas behind closed doors to hold extra stock or food to be prepared in-house. Grocer 1 indicated that this application of self-contained refrigerators is more common with large grocers and less common with small grocers. At a typical large grocer facility, the door type will be a 50/50 mix of solid and glass.
- *Prepared food.* Grocer 1 stated that prepared food cases are typically on the refrigeration rack system at the chains they work with. Grocers 2 and 3 utilize self-contained refrigerators for prepared foods, packaged snack items, or other refrigerated “impulse buys.” Grocer 2 utilizes a mix of open and glass-door cases and Grocer 3 prefers all open cases.

Priorities and motivations for selecting refrigerated cases. Some of the top priorities listed by respondents when selecting a self-contained refrigerator are pricing, availability (i.e., lead time), size and fit, and maintenance (specifically ease of access when cleaning). Respondents stated that these priorities may vary depending on the planned location and function of the unit. If the grocer wants to expand a specific offering, they will determine where they can fit that expansion in the

³ Image generated using Google My Maps 2023 data

store. One respondent stated that efficiency is not as significant of a priority for standalone units as it is for their rack-based units, because the code efficiency requirements for self-contained refrigerators are already high.

Door preference for new self-contained refrigerators.

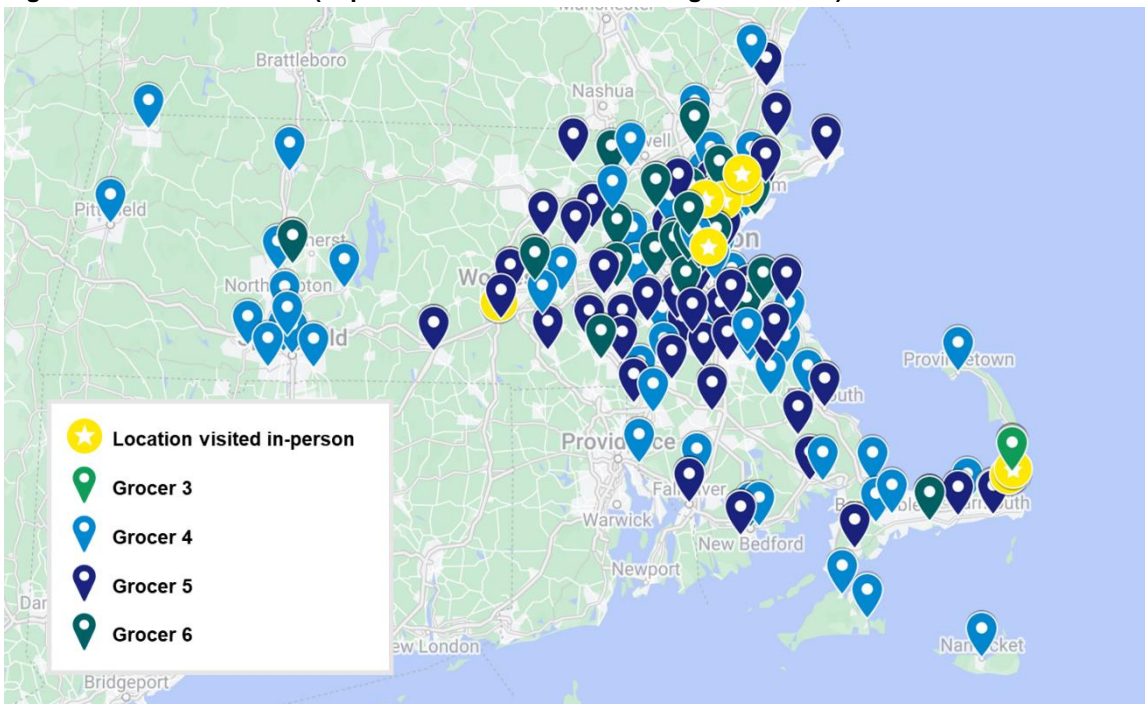
Grocers 1 and 2 stated that their desire to maintain efficiency will drive them to select a self-contained refrigerator with doors instead of one without, noting that units with doors don't have to run as hard as those without doors. This also serves as a mechanism to keep operating costs low. If the grocers were to purchase new self-contained refrigerators for online order pick-up accessed by customers, both respondents stated that they would go with glass doors so that the customers can see into the cases. Grocer 1 noted that online order pickup areas are only accessible by staff in the stores they work with, and Grocer 2 does not currently offer online order pickup.

Grocer 3 places a high priority on customer accessibility and would only consider using doors for beverage and dairy cases. They would prefer to use open merchandisers to make it easier for shoppers to make a quick impulse purchase.

3.3.2 Local store visits and non-decision-maker interviews

The study team visited 10 supermarket locations to inspect and discuss the self-contained refrigeration equipment, referred to as Grocers 3-8 in Table 3-2. The study team was unable to speak with the staff at Grocers 7 or 8. All of the local store managers at chain stores indicated that purchasing is handled centrally, and the study team observed similarities between different locations of Grocers 4 and 5. Figure 3-2 shows the approximate locations of the visited stores, as well as the approximate locations of all stores under each chain.

Figure 3-2. Store locations (in-person visits with store manager interview)⁴



The study team observed the following patterns from visual inspections and discussions with local managers.

⁴ Image generated using Google My Maps 2023 data

Online order pickup areas are only accessible by staff. At all stores with online ordering, the refrigerators used to hold orders are not accessible by customers and have glass doors. A staff member will deliver the order from the refrigerator to the customer.

Notably, two stores had separate customer-accessible refrigerators with solid doors where customers could purchase items on an app at a discounted price and pick the items up directly from the refrigerator at the front of the store. This program and the associated refrigerators are managed by a separate entity, not by the supermarket.

Open cases are often horizontal or semi-vertical merchandisers. Many supermarkets use self-contained open cases to display produce, deli items, prepared foods, or other “impulse purchase” items. The study team observed that these self-contained units were typically horizontal or semi-vertical merchandisers rather than a vertical merchandiser or reach-in refrigerator. Horizontal cases are not included in the program-specific “grab and go” definition. Open vertical cases were most common in aisle endcaps. Figure 3-3, Figure 3-4, and Figure 3-5 show examples of a horizontal open merchandiser, vertical open merchandiser, and a reach-in refrigerator with glass doors to illustrate the differences between these product designs.⁵

Figure 3-3. Horizontal merchandiser example



⁵ All photos from truemfg.com.

Figure 3-4. Vertical merchandiser example



Figure 3-5. Reach-in refrigerator example



Door preference varies by product. While the local store managers all indicated that purchasing was out of their control, they described a variety of preference and observed patterns in doors on self-contained cases. All acknowledged the trade-off between efficiency and customer accessibility and felt that doors were increasingly common throughout grocery stores. One manager noted that they would be eager to have doors on cases with highly perishable items but would not want to have doors when displaying “impulse buy” products like packaged foods or berries.

4 CONCLUSIONS, RECOMMENDATIONS, AND CONSIDERATIONS

Key findings and takeaways from this research study are summarized below.

4.1 Conclusions

The study team found that self-contained refrigerators in multiple applications in supermarkets, including customer-accessible areas mostly have unit doors and are not open cases. While there are some instances of open-air refrigerated cases, they are often horizontal merchandisers without a comparable glass-door alternative. Upright vertical cases are a mix of open and glass doors, depending on the type of product in the case and store preference. Notably, two of the interviewed decision-makers indicated that they would select a unit with glass doors if they were to purchase a new customer-facing self-contained refrigerator. One of these interviewees works with several medium-to-large chains throughout Massachusetts.

The study team found that online order pickup areas are only accessible by staff. In staff-only areas, supermarkets would default to installing refrigerators with doors. The study team found that all online order pickup refrigerators had glass doors and back-of-house storage refrigerators are typically a mix of glass and solid doors but are typically not open-air.

Overall, the study team concludes that a like-for-like comparison is an appropriate baseline for self-contained units in grocery stores. There is not enough evidence to recommend using a baseline of an open refrigerated case in instances where the store purchased a reach-in refrigerator with doors.

4.2 Recommendations

The study team recommends using the code-defined baseline for all new self-contained refrigerated cases installed in supermarkets. The code-defined baseline is a standard efficiency refrigerator of the same configuration and door type as the installed unit.

The MA eTRM commercial refrigerator/freezer measure (COM-FSE-REFFRE) presents deemed savings calculated using a code-defined baseline unit with the same door type as the installed unit. The study team does not recommend changing this eTRM measure because it agrees with the recommended code-defined baseline.

4.3 Considerations

The study team notes that a possible selling point of these self-contained cases is the ability to move the units around or change their use over time. Because of this, the study team cautions against defining different baselines for different store locations without further consideration of how to address the possibility that the location of the self-contained refrigerator will change.



APPENDIX A. SUPERMARKET INTERVIEW GUIDE

Purpose

The objective of the facility interview survey is to gather information about how grocery and supermarket customers purchase and use standalone refrigerated cases. Standalone refrigerated cases refer to units that plug-in individually and are not connected to a remote-condensing rack system. The primary goal of each interview will be to obtain the customer’s perspective on how they view standalone units as an option for their stores. The research team will also collect information about customer motivations for standalone units, locations of these units within the store, and whether these units have doors.

Table 1: Research Objectives Mapped to Questions in This Instrument

Research Objectives	Survey Questions Address the Objectives
Locations/uses for standalone refrigerated cases	Q1.2 – 1.3
Priorities/motivations for selecting refrigerated cases	Q1.4 – 1.5
Door preference for new refrigerated cases	Q1.5 – 1.6

Instrument and data collection information

Table 2: Overview of Data Collection Approach

Data Collection	Description
Population Description	Grocery store and supermarket customers (store operators)
Population Size/Sample Frame	25 customer contacts – previous Grab-N-Go participants
Type of Sampling	Census attempt
Target Sample – Survey Completion	Targeting 3-5 total completes: <ul style="list-style-type: none"> • Large supermarket chains (n=2-3) • Regional, non-national supermarkets (n=1-2)
Instrument Type Survey/Interview Length	Phone interview (email option) Approximately 15 minutes
Description of Contact Sought	DNV will: <ol style="list-style-type: none"> 1. Request contact information for Click-n-Collect customers and distributors from National Grid. We expect this to be the most effective source of potential contacts, due to the specificity of the program. 2. Request other interviewee suggestions, such as customers or vendors who have an established relationship with PAs, during PA interview. 3. Leverage Custom Electric project data for supermarket customers who have installed refrigerated cases. 4. If we cannot meet interview targets via the above sources, DNV will reach out to supermarkets and vendors directly, using publicly available contact information.



Interview script

Interviewee		Interviewer	
Interviewee Company		Interview Date	
Interviewee Phone #		Interviewee email	

Introduction

Hello, my name is ___ and I am calling from DNV on behalf of [National Grid] and Mass Save. My company is conducting research on standalone refrigeration units being used in grocery stores and supermarkets. This is not a sales call. I see that your facility received refrigeration upgrades through a [National Grid] energy efficiency program last year, and you are the primary contact. Are you familiar with the refrigeration equipment at your facility?

If no: ok, is there anyone available who is familiar? *We are looking for a facilities/operations manager, general manager, or refrigeration contractor if larger chain. Continue probing until reaching correct person, getting contact of correct person, or dead end.*

If yes: great! I'd like to ask a few questions about your standalone refrigeration equipment. Like I said, this is not a sales call and will not affect any prior or future utility incentives. All answers will be kept anonymous, and as a thank you for your time, we'll send you a \$100 virtual gift card after this call. Do you have about 15 minutes now? Are you on-site?

If yes to both: *continue to survey*

If yes to time but not on site and instead in office: *Ask if design docs are on-site or in office. If in office, continue to survey*

If no: no problem, when would be a good time to call back? Is this the best number to reach you?

May I record this call for note-taking purposes? The recording won't be shared elsewhere.

1. Standalone refrigeration unit information

- 1.1 Does your facility have standalone refrigeration units? (i.e., individual completely self-contained (plug-and-play) plug-in refrigeration units that are not connected to a remote-compressor rack system or remote condenser)
- 1.2 Where in your facility do you have packaged standalone refrigerated cases for the following applications? [Online order pickup, aisle endcaps, deli-packaged foods, etc.]

Location of units	Number of units at the location	How many have doors (specify solid doors versus transparent glass doors if possible) versus open/doorless [Total counts or percentages. Rough estimate is fine]
Online order pick-up accessed by customer		
Online order pick-up accessed by staff only		



Location of units	Number of units at the location	How many have doors (specify solid doors versus transparent glass doors if possible) versus open/doorless [Total counts or percentages. Rough estimate is fine]
Deli pick-up accessed by customer		
Aisle endcaps		
Prepared food accessed by customer		
Beverage accessed by customer		
Back of house storage accessed by staff		
Other:		
Other:		

1.3 [If they don't provide.] You didn't mention standalone refrigerated cases for online order pickup storage, why is that?
 Answers: Store does not have an on-line pick-up OR these cases are served by the rack system.

1.4 What are your top priorities when selecting a standalone refrigerated case for your store [If don't know, probe cost, efficiency, customer accessibility, durability, size]?

1.4.1 Do these priorities differ by the intended use case or the area of the store?

1.5 What would make you choose a unit with doors or without? [Probe: who drives the decision? Vendor, customer, or other?]

1.5.1 Do you have plans to change the door configuration on existing units in the future? If so, how?

1.5.2 Do you have plans to purchase additional standalone units in the future, or to rearrange the standalone units already in the store?

1.6 If you were to purchase a standalone refrigerated case for online order pickups accessible to customers, would you purchase one with glass doors, solid doors, or no doors?

1.6.1 If you were to purchase a refrigerated case for use by customers for packaged foods, such as an aisle endcap or deli, would you purchase one with glass doors, solid doors, or no doors?

Closing

Thank you for taking the time to talk with me today. [confirm first name, last name, and email for gift card]

APPENDIX B. VENDOR INTERVIEW GUIDE

Purpose

The objective of the vendor/market actor interview is to gather information about how grocery and supermarket customers purchase and use standalone refrigerated cases. Standalone refrigerated cases refer to units that plug-in individually and are not connected to a remote-condensing or compressor rack system. The primary goal of each interview will be to obtain the vendor’s perspective on how customers view standalone units as an option for their stores. The research team will also collect information about vendor motivations/concerns for standalone units, locations of these units within the store, and whether these units have doors.

Table 1: Research Objectives Mapped to Questions in This Instrument

Research Objectives	Survey Questions Address the Objectives
Locations/uses for standalone refrigerated cases	Q1.3 – 1.6
Customer concerns/priorities when selecting standalone cases	Q1.8 – 1.9
Types of cases sold (open, glass door, solid door)	Q1.7, 1.10 – 1.11

Instrument and data collection information

Table 2: Overview of Data Collection Approach

Data Collection	Description
Population Description	Grocery store and supermarket market actors (vendors)
Population Size/Sample Frame	20 vendor contacts
Type of Sampling	Census attempt
Target Sample – Survey Completion	Targeting 2-3 total completes: <ul style="list-style-type: none"> Refrigerated case manufacturers, distributors and contractors making or selling similar equipment incented on the applications
Instrument Type Survey/Interview Length	Phone interview (email option) Approximately 15 minutes
Description of Contact Sought	DNV will: <ol style="list-style-type: none"> Request contact information for Click-n-Collect customers and distributors from National Grid. We expect this to be the most effective sources of potential contacts, due to the specificity of the program. Request other interviewee suggestions, such as customers or vendors who have an established relationship with PAs, during PA interview. Leverage Custom Electric project data for supermarket customers who have installed refrigerated cases. If we cannot meet interview targets via the above sources, DNV will reach out to supermarkets and vendors directly, using publicly available contact information.



Interview script

Interviewee		Interviewer	
Interviewee Company		Interview Date	
Interviewee Phone #		Interviewee email	

Introduction

Hello, my name is ___ and I am calling from DNV on behalf of Mass Save and National Grid. My company is conducting research on standalone refrigeration units being used in grocery stores and supermarkets. This is not a sales call. As a vendor of standalone refrigeration units, we are seeking your input on trends in customer demand and how these units are used in grocery stores and supermarkets.

All answers will be kept anonymous, and as a thank you for your time, we'll send you a \$100 virtual gift card after this call.

May I record this call for note-taking purposes? The recording will not be shared elsewhere.

2. Standalone refrigeration unit information

- 1.7 Do you make/sell standalone refrigeration units to grocery stores and supermarkets in Massachusetts? (i.e., individual completely self-contained plug-in refrigeration units that are not connected to a remote-compressor rack system or remote condenser)
- 1.8 Can you tell me a little bit about your company's products and services and how these standalone units fit into your overall offering? (probe: get a sense of how standalone vs. rack-connected cases compete)
- 1.9 Of the packaged standalone refrigerated units that you make/sell, can you provide a rough estimate of the number/percentage sold by door type and their typical application.? [Online order pickup, aisle endcaps, deli-packaged foods, etc. Any differentiation between vertical and horizontal?]

Door type (glass, solid, none)	Number of Units sold (or percentage of total)	Unit typical application
Glass		
Solid		
Open case		

- 1.10 We understand from some of our interactions with other market actors that whether the unit has a door or not varies by application. Can you identify the use case for the units you sell and the status of doors? [probe: ask about differences between standalone and rack-integrated cases]



Location of units	Number (or percentage) of sold units	How many have doors (ask whether solid or transparent is more common) versus open/doorless [Total counts or percentages. Rough estimate is fine]
Online order pick-up accessed by customer		
Online order pick-up accessed by staff only		
Deli pick-up accessed by customer		
Aisle endcaps		
Prepared food accessed by customer		
Beverage accessed by customer		
Back of house storage accessed by staff		
Other:		

1.11 [If they don't provide.] You didn't mention standalone refrigerated cases for online order pickup storage, why is that?
 Answers: Store does not have an on-line pick-up OR these cases are served by the rack system.

1.12 [Review the responses for trends in the applications with/without doors and ask for further clarification, like:

1.12.1 I see that the frequency of cases with doors doesn't vary by application or location. Can you confirm that and provide any further observations?

1.12.2 I see that non-customer facing cases have solid doors. [confirm that and provide any further observations]

1.12.3 I see that... [OTHER]

1.13 In what situations are new standalone refrigerated cases installed without doors?

1.14 What are the customer's top priorities when selecting a standalone refrigerated case for their store? [Probe: who drives the decision? Vendor, customer, or other?]

1.14.1 Do these priorities differ by the intended use case or the area of the store? [cost, efficiency, customer accessibility, durability, size]

1.15 What are the customer's top concerns when selecting a standalone refrigerated case for their store?



1.15.1 Do these concerns differ by the intended use case or area of the store?

1.16 What would make a customer choose a unit with doors or without?

Possible follow-up questions depending upon earlier responses:

1.17 If a customer were to purchase a standalone refrigerated case for online order pickups accessible to customers, how likely would they be to purchase one with glass doors or solid doors instead of one with no doors?

1.17.1 If a customer were to purchase a standalone refrigerated case for online order pickups for use only by staff for online order pickups how likely would they be to purchase one with glass doors or solid doors instead of one with no doors?

1.17.2 If a customer were to purchase a standalone refrigerated case for use by customers for packaged foods, such as an aisle endcap or deli, how likely would they be to purchase one with glass doors or solid doors instead of one with no doors?

Closing

Thank you for taking the time to talk with me today. [confirm name and email for gift card]



About DNV

DNV is an independent assurance and risk management provider, operating in more than 100 countries, with the purpose of safeguarding life, property, and the environment. Whether assessing a new ship design, qualifying technology for a floating wind farm, analyzing sensor data from a gas pipeline or certifying a food company's supply chain, DNV enables its customers and their stakeholders to manage technological and regulatory complexity with confidence. As a trusted voice for many of the world's most successful organizations, we use our broad experience and deep expertise to advance safety and sustainable performance, set industry standards, and inspire and invent solutions.