

C1902a Connecticut Midstream C&I HVAC & Water Heating and Foodservice Net-to- Gross Review

FINAL REPORT

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ABSTRACT

The C1902A evaluation included measurement of Net-to-Gross (NTG) ratios for the Energize CT Commercial Midstream HVAC & Water Heating and Commercial Foodservice & Laboratory Programs. Through these programs, the Connecticut Electric and Gas Companies (the Companies) offer distributor incentives for high-efficiency electric and natural gas commercial HVAC and water heating equipment, and dealer incentives for commercial kitchen equipment, including freezers, fryers, griddles, and refrigerators. The stated objective of the midstream offerings is to influence the stocking and selling practices of distributors and dealers by offering instant discounts at the point of sale and increasing contractor and customer demand for high efficiency equipment.

The evaluation team used self-reported data obtained through interviews with distributors and surveys of HVAC & Water Heating program contractors and end-use Foodservice customers to estimate savings attributable to the Energize CT programs and determine NTG ratios to apply in the Connecticut Program Savings Document (PSD). The team also conducted a market review based on participating distributor interview responses and program tracking data, as well as a focused process review to identify program improvements to increase attributable savings. This report accompanies a broader review of Connecticut’s Energy Conscious Blueprint (ECB) Program,¹ which offers incentives for new construction, major renovation, and new (or end-of-useful-life replacement) equipment projects.

Based on the findings of the review, the team identified several recommendations to better reflect Midstream Program attributable savings and help increase attributable savings going forward. As shown in the table below, these include updated PSD values and several program improvements.

Evaluation Objective	Recommendation
Determine NTG ratios for the Midstream Programs	Update the Connecticut PSD with the NTG values from this study—specifically 68% for the HVAC & Water Heating program and 81% for the Foodservice & Laboratory program
Identify improvements to increase attributable savings	Adjust measure offerings for spray valves and furnaces to reduce free-ridership and increase attributable program savings
Identify improvements to increase attributable savings	Increase oversight of the rebate passthrough requirement
Identify participation barriers	Increase program marketing targeting end-users, including sustainability departments at large or institutional customers
Identify participation barriers	Consider streamlining pre-approvals and payment processing, particularly for large projects
Identify improvements to increase attributable savings	Consider directing certain interested customers to the downstream rebate program

¹ C1902, Energy Conscious Blueprint Baseline and Net-to-Gross Evaluation, forthcoming.



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Executive Summary

For this evaluation, the team measured net-to-gross (NTG) ratios for the Energize CT Commercial Midstream HVAC & Water Heating and Commercial Foodservice & Laboratory Programs.² The evaluation team used self-reported data obtained through interviews with distributors³ and surveys of HVAC & Water Heating contractors and end-use Foodservice customers.⁴

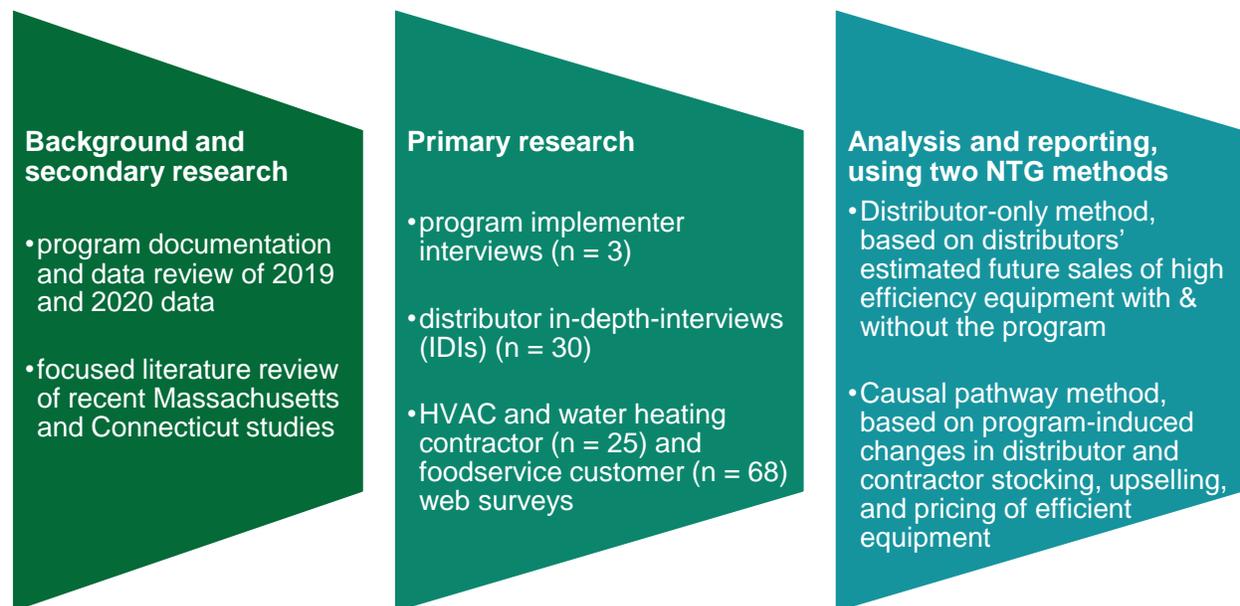
In addition, the team conducted a market review based on participating distributor interview responses and tracking data, as well as a focused process review to identify areas for program improvements to increase attributable savings.

OBJECTIVES

The primary objective of this study was to determine NTG ratios for the Midstream Programs and establish prospective ratios to be applied in the Program Savings Document (PSD) for future years. Secondary objectives include gaining insight into in-program and out-of-program sales, customer market events (e.g., replace on failure, new construction), and barriers to participation.

RESEARCH METHODOLOGY

Primary research methods and tasks were as follows:



² These programs have also been referred to as “upstream” programs. For purposes of this report, we refer to them as midstream programs, as they provide rebates to distributors, rather than manufacturers as upstream programs do.

³ The HVAC & Water Heating program uses the term distributors, while the Foodservice & Laboratory program uses the term dealers. For simplicity, we refer to distributors and dealers collectively as distributors throughout this report.

⁴ Throughout this report we refer to Foodservice end users—e.g., restaurants—also as Foodservice customers.

The report also includes a targeted process evaluation, based primarily on interview and survey results. [Section 2](#) provides additional detail on methods. This report accompanies a broader review of the Connecticut Energy Conscious Blueprint (ECB) Program,⁵ which offers incentives for new construction, major renovation, and new (or end-of-useful-life replacement) equipment projects.

RESULTS

The distributor-only and causal pathway methods yielded generally similar NTG ratios, with the Foodservice & Laboratory program showing higher levels of attribution across both methods (83% and 80%, respectively) as compared to the HVAC & Water Heating program (57% and 68%), as shown in [Table 0-1](#).

Table 0-1. NTG Results by Program and Method

Program	Distributor Only Counterfactual Method		Distributor, Contractor, & Customer Causal Pathway Method		
	Sample size (n)	NTG	Distributor sample size (n)	Contractor/ customer sample size (n)	NTG
HVAC & Water Heating	28	57%	28	27	68%
Foodservice & Laboratory	34	83%	27	74	81%

Based on these results, the C&I Midstream Programs are accelerating adoption of energy-efficient non-lighting equipment in Connecticut. Distributor interviews and contractor and customer surveys found that the program has significant net impacts through each causal pathway of influence, as follows:

- **Stocking.** By influencing the equipment distributors keep in stock, the program has a substantial impact on end-users, particularly in replace-on-failure situations when new equipment is needed as quickly as possible, so available stock influences purchase decisions.
- **Upselling.** The program influences distributors to promote or upsell high efficiency units, which has an associated impact on contractor/end-user’s purchasing decisions.
- **Pricing.** The program requires distributors to pass through 100% of the incentive amount to contractors and end-users, which results in a lower price to end users for high efficiency equipment, influencing their ultimate purchasing decision.

Interview and survey results also indicate that participating distributors, contractors, and customers are generally highly satisfied with the program. In particular, Foodservice dealers and HVAC and Water Heating contractors reported high levels of satisfaction with most elements of the program.

⁵ C1902, Energy Conscious Blueprint Baseline and Net-to-Gross Evaluation, forthcoming.

RECOMMENDATIONS AND CONSIDERATIONS

The following recommendations rest upon the findings of this study and are expected to better reflect the Midstream Programs' attributable savings and help to increase attributable savings going forward.

Recommendation. The Companies should update Appendix 3 of the Connecticut PSD with the NTG values from this study. Specifically, the team recommends applying the causal pathway values of 68% and 81% to the HVAC & Water Heating and Foodservice & Laboratory programs, respectively.⁶

Rationale: The causal pathway values are recommended rather than the distributor-only values because the causal pathway results (1) reflect the perspective of multiple market actors, and (2) are based on multiple program influence pathways—specifically, program influence on stocking, upselling, and pricing of efficient equipment.

Recommendation. The Companies should adjust measure offerings to help minimize free-ridership and increase attributable program savings. In particular, the Companies should (1) consider removing spray valves from the program⁷ and (2) increase efficiency requirements for furnaces to ensure program units are sufficiently above the efficiency levels of units otherwise stocked and installed in the market.⁸

Rationale: Both distributor-only and causal pathway results by measure found spray valves and furnaces to have the lowest NTG ratios, with spray valves in particular having very little program-attributable savings. Numerous verbatim interview and survey responses corroborated these results. In addition, commercial furnace and boiler industry standard practice baselines in Connecticut were recently found to be well above code, adding to the importance of increasing program efficiency to maintain gross unit savings.⁹

Recommendation. The Companies should increase oversight of the rebate passthrough requirement, via increased contacts with contractors or end-users to ensure they received the

⁶ Specifically, the PSD values in Table A3-2: C&I Upstream Electric Realization Rates and Table A3-3: C&I Natural Gas Realization Rates should be updated for Midstream Foodservice & Laboratory, and a new row should be added for HVAC & Water Heating.

⁷ If spray valves are removed from the calculations, causal pathway NTG results for the Foodservice & Laboratory program increase slightly from 81% to 82%, reflecting their relatively small share of overall program savings. The Companies and Energy Efficiency Board consultants may wish to apply the adjusted value if the spray valve offering is discontinued.

⁸ Prior to issuance of our draft report, the EnergizeCT online rebate form for 2022 was updated with higher program efficiency requirements for furnaces—95 AFUE, instead of the 92 AFUE requirement that had been in place from 2019 to 2021. Given this change, the furnace recommendation can be considered implemented. The team recalculated NTG for the HVAC & Water Heating program to account for this change based on program-level average NTG for all non-furnace measures. The resulting NTG ratio for the HVAC & Water Heating program increased from 68% to 70%. The Companies and Energy Efficiency Board consultants may wish to apply the adjusted value given the increased efficiency requirement.

⁹ DNV. [CT X1931-1 Com Boiler and Furnace ISP Final Memo \(energizect.com\)](#), December 10, 2021. The gross savings baseline during the period of our review was 80 AFUE based on 2021 IECC. The X1931-1 memo recommended an ISP baseline of 90 AFUE for buildings with an existing condensing furnace stack, 80 AFUE for buildings without, and 85 AFUE where it is unknown. For midstream programs, collecting project-specific information on furnace stacks is impractical and would create participation barriers, so the recommended 85 AFUE baseline is most appropriate.

rebate as a line item on their invoice. The Companies could also require more prominent identification of the rebate on invoices or via a separate receipt provided to end users.¹⁰

Rationale: The program requires distributors to pass down 100% of the program incentive to end-users via a line item on equipment invoices. However, nearly two-thirds of Foodservice end-users said that they did not know if the program discount was listed on their equipment invoice, and over half of surveyed HVAC and Water Heating contractors said that distributors did not always list the program discount on their invoice.

Recommendation. The Companies should increase program marketing targeting end-users, including sustainability departments or officers at large or institutional customers.

Rationale: Most Foodservice customer respondents (33 out of 65) were not aware of the program discount until taking our survey, and those customers who were aware prior to the survey were informed most frequently by dealers or distributors, and rarely by EnergizeCT or program marketing. HVAC and Water Heating distributors similarly suggested that the program increase end-user marketing, particularly to larger facilities or sustainability departments at institutional customers. In addition, end-user customer engagement could also help ensure that distributors and contractors abide by the rebate passthrough requirement and increase general customer engagement with the programs.¹¹

Consideration. The Companies should consider having HVAC & Water Heating distributors and contractors direct certain interested customers to the downstream rebate program.

Midstream programs are not well-suited for customer-specific incentive targeting, but participating distributors and contractors could direct certain customers to the downstream program for deeper savings, including: (1) those without existing condensing stacks who are interested in furnaces or boilers; (2) those who may be candidates for heat pumps; and (3) those who may be candidates for early replacements.

Rationale: The downstream rebate program allows for collection of customer-specific information that could enable deeper savings and larger incentives. Distributors we interviewed corroborated the X1931-1 findings that furnace projects often did not receive incentives in large part because the perceived value of the incentive was low relative to the time and effort of submitting the required paperwork. As recommended in X1931-1, the Companies could target downstream incentives and messaging to improve program participation rates and overcome barriers

¹⁰ Eversource responded to a draft of this report noting that they have regular audits to make sure distributors are including the incentive as a line item on equipment invoices, and they remove distributors from the program if they are repeatedly found to not be doing so. Distributor audits are an important oversight mechanism, but the extent of contractor and customer lack of awareness suggests that additional steps could be taken, including periodic contractor or customer outreach. For example, Eversource also noted they plan to begin sending cards to end-users to thank them for their participation in the program and are encouraging contractors to better inform end-users about the program. These steps could help address the low contractor and end-user awareness of program rebates.

¹¹ Eversource responded to a draft of this report noting that they are expanding marketing through the EnergizeCT website and on LinkedIn to better reach key decision makers such as business owners. These steps could help address the limited program awareness identified in our surveys. Eversource also noted that midstream programs are intended to use distributors and dealers for promotion and advertisement of program discounts, and that mailers sent directly to end-users have not always been productive since those emails or mailers often end up with the wrong people in an organization. Expanding marketing through the EnergizeCT website and on LinkedIn could help mitigate these challenges.

associated with venting requirements, which were cited as the single biggest barrier to installing efficient boilers and furnaces. Similarly, the Companies offer substantial heat pump incentives to help meet state goals for emissions reductions and heat pump deployment. In addition, distributor responses indicated that about a quarter of their overall sales were for replacement of working equipment; continuing to repair old but working HVAC systems was a key barrier to their replacement with energy efficient systems. These responses suggest a potential for untapped early replacement savings.

Consideration. The Companies should consider streamlining pre-approvals and payment processing, particularly for large projects. The pre-approval process is required for projects over a certain dollar threshold, and entails checking for double-dipping with other program incentives (e.g., downstream rebates) and other customer and equipment eligibility requirements. Distributors said they are under tight timelines when making sales, so they need pre-approval to occur quickly to avoid disrupting the sales process. In addition, distributors expressed doubt about the need for certain information, such as building square footage. Regarding payments, distributors said it often takes two to three months, and sometimes as long as six months, to receive payment.

Rationale: Despite high program satisfaction ratings overall, distributor satisfaction with pre-approval processes for large projects was particularly low across both programs—a finding that was corroborated by results from the most recent Massachusetts study.¹² In addition, payment processing was the most frequently cited cause of dissatisfaction with the program, particularly among HVAC and Water Heating distributors. However, streamlining of pre-approvals and payment processing should be balanced against the need for proper controls and oversight of program spending.

¹² [MA20X08-B-CIHVACNTG](#), September 2021. Pre-approvals are required for projects over a certain dollar threshold—e.g., \$5,000 for foodservice projects.

Section 1 Introduction

This report presents the results of a net-to-gross (NTG) study of the EnergizeCT Commercial and Industrial (C&I) Midstream HVAC & Hot Water and Midstream Foodservice & Laboratory programs, administered by the Connecticut Electric and Gas Companies (the Companies).¹³ The programs are implemented on a statewide basis, using common implementation vendors, incentive structures, and common statewide EnergizeCT branding.

Through these programs, the Companies offer midstream incentives for high-efficiency electric and natural gas commercial HVAC and water heating equipment, and incentives for commercial kitchen equipment, including freezers, fryers, griddles, and refrigerators. The stated objective of the midstream offering is to influence the stocking and selling practices of distributors by offering instant discounts at the point of sale and increasing contractor and customer demand for high efficiency equipment.

This report was prepared for the Energy Efficiency Board (EEB) Evaluation Committee by DNV, Inc. with support from NMR Group, Inc. and Brightline Group, Inc. (“the evaluation team”). The research was undertaken in coordination with a broader C1902 Energy Conscious Blueprint Baseline and NTG evaluation, carried out by NMR as prime contractor. This report accompanies a broader review of the Connecticut Energy Conscious Blueprint (ECB) Program,¹⁴ which offers incentives for new construction, major renovation, and new (or end-of-useful-life replacement) equipment projects. The common measure types, distributors, and customer segments, and similar replace-on-failure market events between the ECB and Midstream programs allows for leveraging research tasks between the reviews.

1.1 OBJECTIVES

The primary objective of this study was to establish prospective NTG ratios to be applied in the Program Savings Document (PSD) for future program years. Secondary objectives include gaining insight into market actor decision making, in-program and out-of-program sales, customer market events (e.g., replace on failure, new construction), and identifying barriers to participation.

1.2 BACKGROUND

1.2.1 Program background

Connecticut’s C&I Midstream HVAC & Water Heating program offers incentives to distributors for high-efficiency HVAC equipment such as air conditioning, air-source heat pumps (ASHPs), boilers, and furnaces, as well as storage and on-demand water heaters. The C&I Midstream

¹³The Electric Companies are The Connecticut Light and Power Company doing business as Eversource Energy (Eversource) and The United Illuminating Company (United Illuminating). The Natural Gas Companies are the Connecticut Natural Gas Corporation (CNG), Southern Connecticut Gas (SCG), and Yankee Gas Services Company doing business as Eversource.

¹⁴ C1902, Energy Conscious Blueprint Baseline and Net-to-Gross Evaluation, forthcoming.

Foodservice & Laboratory program offers incentives to dealers for commercial kitchen equipment, including freezers, fryers, griddles, and refrigerators, as well as ultra-low temperature freezers for use in laboratories. The Foodservice & Laboratory program grew out of the prior Commercial Kitchen program when the Companies expanded the offerings to include ultra-low temperature laboratory freezers in 2021. During the period of our review, these freezers were the only laboratory-related equipment the programs offered, although refrigerators were added in 2022 and implementers said they plan to explore other measure offerings. Figure 1-1 depicts the overall breakdown of savings by program, and Figure 1-2 shows 2019 and 2020 program savings by measure type.

Figure 1-1 Midstream Savings (MMBtu) by Program

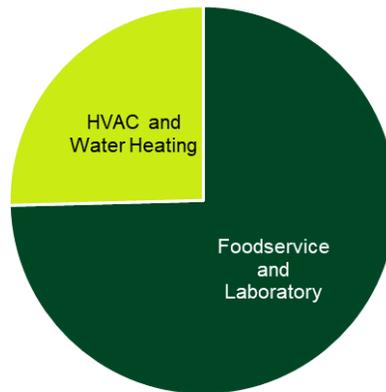
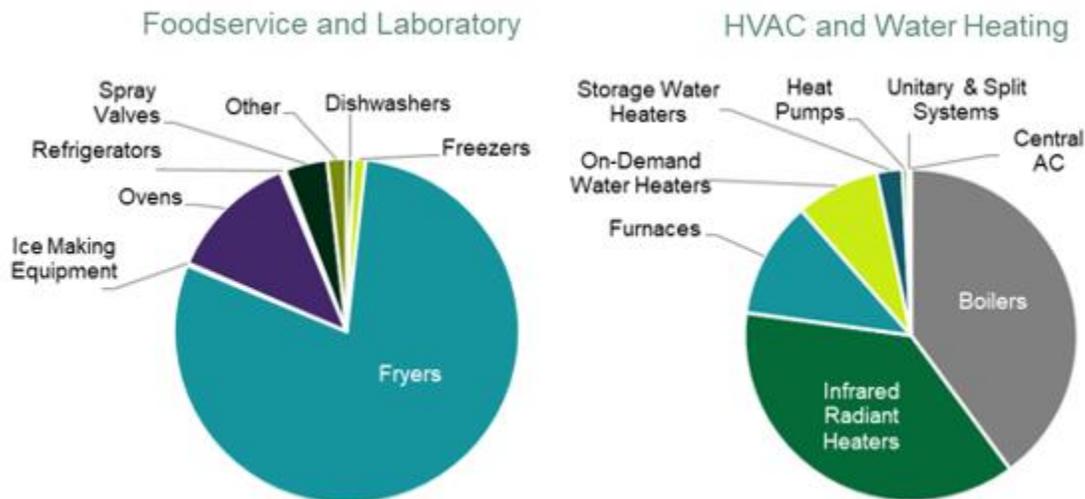


Figure 1-2. Midstream Program Savings (MMBtu) by Measure Type



The program has evolved in recent years in the equipment it offers and the market actors it targets. The Foodservice program has been primarily focused on restaurants according to the program implementer, although they said they are exploring ways to increase participation by other business segments, including universities, hospitals, and lodging. The most common

measures have been fryers and ovens, which have been “the heart of the program,” according to the implementer. More recently, the program added incentives for ultra-low temperature freezers for laboratories, around the time of development of COVID vaccines that required cold storage.

Implementers noted that electrification is an issue facing both midstream programs. The HVAC and Water Heating program implementer said they anticipate growth in electric measures including ASHPs and heat pump water heaters (HPWHs), while the Foodservice program implementer noted a potential increase in support for induction or infrared cooking measures. The Foodservice implementer also said they expect new specifications through the EnergyStar program, requiring a higher baseline and need to increase program incentives and efficiency requirements—including potentially through tiered incentive structures.

1.2.2 Related studies

The Connecticut Midstream Programs have not been previously evaluated—the PSD currently uses NTG values taken from Massachusetts.¹⁵ Connecticut’s programs offer many of the same equipment types as the Massachusetts Program, and the same implementation vendor and many of the same distributors are active in the programs in both states. There have been several recent studies of the Massachusetts Upstream HVAC & Water Heater program¹⁶ and a Connecticut HVAC market assessment,¹⁷ which included NTG results, market insights, and program process improvements. We leveraged these studies for this review, as described in section 2.3.

In addition, this report accompanies a broader C&I new construction baseline and NTG review of the Connecticut Energy Conscious Blueprint (ECB) Program,¹⁸ which offers incentives for new construction, major renovation, and tenant fit-out projects, as well as new (or end-of-useful-life replacement) equipment projects. The common measure types and potential overlap in participating customer segments and replace-on-failure market events between the ECB and Midstream programs allows for leveraging research tasks between the two reviews. In particular, distributor in-depth interviews (IDI) results will provide context for replace-on-failure (ROF) baselines for ECB measures that the sampled distributors supply.

¹⁵ Current NTG values are taken from NMR, DNV-GL, and Tetra-Tech, *Massachusetts Sponsors’ Commercial and Industrial Programs Free-ridership and Spillover Study*, Aug. 14, 2018

¹⁶ Massachusetts C&I Upstream HVAC/HP and Hot Water NTGR and Market Effects Indicator Study, Sep 2018, https://ma-eeac.org/wp-content/uploads/TXC_35_Report_5Sep2018_FINAL.pdf; Massachusetts C&I Upstream HVAC & Gas Water Heating NTG Study (MA20X08- B-CIHVACNTG), Sep 2021, https://ma-eeac.org/wp-content/uploads/MA20X08-B-CIHVACNTG_Final_Report_Clean_9.10.pdf.

¹⁷ 2019 Connecticut HVAC Market Share Assessment Final Report, Evergreen Economics, November 2020

¹⁸ C1902, Energy Conscious Blueprint Baseline and Net-to-Gross Evaluation, forthcoming.

Section 2 Methods

The evaluation team designed study activities and tasks to support the needs of both measuring NTG and identifying underlying drivers of NTG results and potential program changes to improve savings attribution going forward.

2.1 PROGRAM STAFF AND IMPLEMENTATION VENDOR INTERVIEWS

As an initial research task, the evaluation team interviewed program staff at each of the Companies, as well as staff from the two program implementation vendors: (1) EnergySolutions, who implemented the Foodservice Program, and (2) TRC, who implemented the HVAC & Water Heating Program.¹⁹ These interviews provided insight into

- the role of program partners and market actors in implementing the program.
- program processes, requirements, and available data.
- recent changes in offerings, incentives, and strategies for targeting market actors.
- measures that the program plans to further promote in future years.

2.2 PROGRAM DOCUMENTATION AND DATA REVIEW

The evaluation team received 2019 and 2020 program year tracking data in March 2021. We reviewed the data, identified gaps, and isolated savings by program and technology type.

Measure prioritization and scope refinement

The variety of measure types and shifting incentive design for C&I Midstream offerings necessitated prioritizing and refining our evaluation scope. Our initial review found measures that had been incentivized both via contractor or customer rebates as well as distributor rebates (i.e., “instant rebates”), and these strategies have changed in recent years for some measures including refrigeration and other kitchen equipment. For example, in 2020 and prior years, the Connecticut program offered both midstream instant rebates to distributors as well as direct rebates to contractors and customers for the same types of equipment. Starting in 2021, the incentive approach for some Foodservice measures shifted to a purely midstream incentive approach, although downstream rebates are now offered for most midstream program measures.

In addition, a key difference between the Midstream HVAC & Water Heating Program and the Midstream Foodservice Program is that HVAC and water heating measures are primarily sold by distributors to contractors, who then sell to end-use customers, whereas foodservice measures are typically sold directly to end-use customers by foodservice dealers. This difference informed

¹⁹ Energy Solutions implemented the Foodservice Program during the 2019 and 2020 period of review, but a new vendor began implementing the Program in 2021.

our use of two different approaches for causal pathway NTG analysis for each of the Midstream programs, detailed below.

Midstream distributor contact information

Following the approach successfully used in Massachusetts,²⁰ the team worked with the implementation vendors, Energy Solutions and TRC, to obtain contact information for participating distributors. This contact information supplemented the Companies' tracking data, which had key gaps in distributor contact information that would otherwise have limited our ability to recruit distributors for IDIs.

2.3 LITERATURE REVIEW

Given overlap in measure offerings, targeted customer segments, distributor networks, and implementation vendors between the Connecticut and Massachusetts midstream programs, the team conducted a focused review of studies of the Massachusetts C&I Midstream Program. We reviewed these studies to inform measure prioritization, research methods and survey questions, and to provide benchmarks against which to compare our results. The Massachusetts studies we reviewed are:

- Massachusetts C&I Upstream HVAC & Gas Water Heating NTG Study (MA20X08-B-CIHVACNTG), Sep 2021²¹
- Massachusetts C&I Upstream HVAC/Water Heating Process Evaluation (MA20C12-B-HVACPRO), Aug 2021²²
- Massachusetts C&I Upstream HVAC/HP and Hot Water NTG and Market Effects Indicator Study, Sep 2018²³

In addition, we reviewed a recent assessment of market shares for efficient HVAC equipment and technologies, to provide context for our market analysis and NTG results:

- 2019 Connecticut HVAC Market Share Assessment Final Report, Nov 2020²⁴

2.4 PRIMARY DATA COLLECTION

The team leveraged the primary data collection methods and instruments from the Massachusetts evaluations, with several adjustments to tailor approaches to the Connecticut program and gain further insight into attribution drivers and market events.

²⁰See Massachusetts C&I Upstream HVAC & Gas Water Heating NTG Study (MA20X08- B-CIHVACNTG), Sep 2021

²¹[C&I Upstream HVAC & Gas Water Heating NTG Study \(MA20X08-B-CIHVACNTG\) \(ma-eeac.org\)](http://www.ma-eeac.org/C&I%20Upstream%20HVAC%20&%20Gas%20Water%20Heating%20NTG%20Study%20(MA20X08-B-CIHVACNTG).pdf)

²²[Upstream HVAC/Water Heating Process Evaluation MA20C12-B-HVACPROC \(ma-eeac.org\)](http://www.ma-eeac.org/Upstream%20HVAC/Water%20Heating%20Process%20Evaluation%20(MA20C12-B-HVACPROC).pdf)

²³[TXC 35 Report 5Sep2018 FINAL.pdf \(ma-eeac.org\)](http://www.ma-eeac.org/TXC_35_Report_5Sep2018_FINAL.pdf)

²⁴Evergreen Economics,

[http://www.dpuc.state.ct.us/DEEP/Energy.nsf/c6c6d525f7cdd1168525797d0047c5bf/8525797c00471adb8525862b0063d34f/\\$FILE/Conditional%20Item%20%2313%20-%20CT%20HVAC%20Market%20Share%20Assessment%20final%20report%20November-2020.pdf](http://www.dpuc.state.ct.us/DEEP/Energy.nsf/c6c6d525f7cdd1168525797d0047c5bf/8525797c00471adb8525862b0063d34f/$FILE/Conditional%20Item%20%2313%20-%20CT%20HVAC%20Market%20Share%20Assessment%20final%20report%20November-2020.pdf)

2.4.1 Distributor In-Depth Interviews (IDI)

The team leveraged the approach used for the MA20X08-B review, which resulted in high response rates for distributor interviews. Specifically, we engaged the implementation vendor to introduce distributors to the interview team as a warm handoff. The Companies use the same foodservice implementation vendor, Energy Solutions, across states, and many of the same distributors participate in both states, which helped streamline the recruitment process. As in Massachusetts, the team provided a \$100 gift card for completed distributor IDIs.

We sampled participating distributors proportional to savings per technology. We developed a “certainty sample” for distributors identified as high priority contacts due to their large share of program savings—specifically, those with over 40,000 kWh of electric savings or over 37,000 therms of gas savings.²⁵ We targeted those distributors for recruitment and followed up a maximum of five times for full coverage. We successfully recruited and completed interviews with 14 of the 15 certainty sample distributors. [Table 2-1](#) shows the target and completes for the HVAC & Water Heating and Foodservice distributor sample.

Table 2-1. Distributor Sample and Completes

	Foodservice Dealers	HVAC/HW Distributors	Total
Total Sample	26	31	57
Target Completes	15	15	30
Email & Phone Call	21	25	46
Completes	15	15, plus 1 partial	30, plus 1 partial
Response Rate	71%	60%	65%

The team used incentive information from the tracking data to determine what technologies each distributor sold and framed the questions per technology type, for up to three technologies. The team adapted the MA20X08-B interview guides, tailoring to the Connecticut programs by providing EnergizeCT equipment-specific rebate information and efficiency requirements, adding questions about differences between the Massachusetts and Connecticut programs, and adjusting questions related to distributors passing down of the program incentive.²⁶

The IDIs were fielded from June 23 to July 28, 2021, conducted by phone by a trained DNV interviewer. The IDIs covered the topics outlined in [Table 2-2](#) below. The full distributor IDI instrument is included in [Appendix B](#).

²⁵ This study prioritized a sample that (1) directly represented a large portion of the energy savings from the program (delivered by the distributors with the largest participation), while (2) appropriately representing the distributors with smaller participation, and (3) appropriately representing both commodities (electricity and gas). The study team dedicated half the sample to half the savings for each commodity, which very closely translated into surveying the top ten distributors for each commodity. Because these two groups have overlaps, this resulted in 15 surveys dedicated to these top performing distributors with the cutoffs listed above.

²⁶ One key difference between the Connecticut and Massachusetts programs is the Connecticut requirement for distributors to pass down 100% of the incentive amount to end-users, whereas Massachusetts requires them to pass down 50% of the incentive amount.

Table 2-2. Distributor In-Depth Interview Topics

Topic	Description
Market Drivers	Obtain a high-level understanding of efficient products and sales
Stocking	Questions to understand what technologies the distributor keeps in stock and why. Questions will be an input to the causal pathway calculation. Question A is to quality check previous question responses
Upselling	Questions to determine the impact of the program on the distributor's upselling tactics. Question A is a quality check against previous responses
Pricing	Questions to determine if the program incentive impacts the final price paid by the customer, and how much of the incentive is passed on to the contractor or end-user
Counterfactuals & Prospective NTG	Questions to obtain NTG values in the traditional manner by asking the distributor about their sales of high efficiency equipment with and without the program. These are included in the survey to ensure NTG data is collected even if the causal pathway approach is not feasible
Process	Questions to obtain feedback on program satisfaction, obstacles, and suggestions

2.4.2 Contractor and End-User Customer Surveys

For HVAC & Water Heating contractors and Foodservice end-users, we used a combined survey instrument with two pathways: one for contractors and one for end-users. The team adapted the MA20X08-B survey guides, with several adjustments made to tailor the instruments to the Connecticut program and market. The team used incentive information from the tracking data to determine what technologies the contractor and end-users installed, and framed the questions per technology type, for up to two technologies.

The surveys were fielded from September 2 to October 19, 2021. They were fielded as mail-push-to-web for HVAC & Water Heater contractors and emailed web survey links for Foodservice customers. Fielding included initial emails and postcards and up to two waves of reminders for non-respondents. The team provided a \$50 gift card for completed surveys. The survey sample and completes are shown in [Table 2-3](#) below.

Table 2-3. Contractor and Customer Sample and Completes

	Foodservice Customers	HVAC & Water Heater Contractors
Total Sample	1167	192
Target Completes	70	70
Email Sent	900	44
Postcard Sent	267	148
Completes	68	25
Response Rate	5.8%	13.0%

2.4.2.1 HVAC and Water Heating Contractors

Table 2-4 shows the contractor web surveys obtained contractors’ feedback regarding the impact the Midstream program had on the contractor’s practices and, in turn, their influence on end-user decision making. The full contractor survey instrument is included in Appendix C.

Table 2-4. Contractor Web Survey Topics

Topic	Description
Market Drivers	Obtain insight into program awareness by understanding when technologies were recommended or requested and by whom
Stocking	Questions to understand whether the contractor keeps certain technologies in stock and why
Upselling	Questions to determine the impact of the program on the contractor’s upselling tactics
Pricing	Questions to determine how the program incentive impacts the final price paid by the end-user, and how much of the incentive is passed on
Counterfactuals	Obtain NTG values in the traditional manner by asking the contractor about their sales of high efficiency equipment with and without the program. These are included in the survey to ensure NTG data is collected even if the causal pathway approach is not feasible
Spillover	These questions are designed to obtain estimates of nonparticipant spillover
Process	Obtain feedback on program awareness, satisfaction, obstacles, and suggestions

2.4.2.2 HVAC Contractor Contact Information Limitations

Upon review of program data, we identified gaps in HVAC contractor contact information. For example, 76% of projects were missing email addresses, 43% were missing phone numbers, and 30% did not have a contractor name or mailing address. We submitted follow-up requests to TRC and Eversource to fill in missing contact information wherever possible. Additionally, we used ZoomInfo to review the sample list we had and attempt to match company names and addresses. Finally, to supplement remaining gaps in email contact information, we merged C&I billing data with additional email records to match addresses against known Connecticut contractors.

We adjusted the planned email outreach approach to a mail-push-to-web survey approach. We used a postcard mailing system to reach contractors and included a web address as well as a QR code that provided a link to the web survey.

2.4.2.3 Foodservice and Laboratory Customer Surveys

Table 2-5 shows the survey topics covered in the end user web survey to ascertain customer feedback and impact the Midstream program had on decision making. The full customer survey instrument can be found in Appendix C.

Table 2-5. Customer Web Survey Topics

Topic	Description
Market Drivers	Obtain a high-level understanding of whether the buyer replaced their equipment due to equipment failure or replaced it early given concerns
Stocking	Questions to understand what technologies were available to the buyer and how immediate the need was to replace the equipment. Were they impacted in their purchasing decision by what the distributor had in stock at the time?
Upselling	Questions to determine whether the distributor attempted to sell the customer on higher efficiency equipment and whether that upselling led to a purchase
Pricing	Questions to understand the buyer’s willingness to pay for higher efficiency technology
Process	Questions to better understand hurdles and opportunities to participate in the Midstream C&I HVAC, heat pump, and water heater program

2.5 NTG METHODS

This section details the methods used to interview and survey market actors about program influence and the algorithms used to calculate NTG values. [Appendix A](#) provides further detail on these methods.

2.5.1 Distributor-Only Counterfactual

The team asked distributors about total sales, program sales as a percent of all sales, and estimates of program-eligible high efficiency sales in the absence of the program. These counterfactual questions assess the Midstream program’s influence on adoption of high-efficiency equipment and were used to calculate NTG ratio estimates.

The team calculated the program influence by using distributors’ estimated share of sales of high efficiency equipment in 2022 if the program continues, compared to the estimated share of sales if the program ends in 2021. The calculations were as follows:

$$NTG = \frac{(MC3 - MC4)}{(MC2) * (MC3)}$$

Where:

- **MC2** = % of 2019-2020 HE sales that received an incentive
- **MC3** = % of 2022 sales expected to be HE if program continues
- **MC4** = % of 2022 sales expected to be HE if program ends

These questions were worded in the survey as follows:

MC2. What percentage of your company’s total unit sales of high efficiency [Measure_type] in Connecticut throughout 2019 and 2020 would you estimate received an incentive through the program?

MC3. Assuming that the program continues to offer support for [Measure_type] through 2022, including incentives, marketing, outreach, and training, what percentage of the total [Measure_type] units your company sells in Connecticut in 2022 would you expect to be high efficiency?

MC4. Next, let's assume the program is discontinued at the end of 2021. Under this scenario, what percentage of the total [Measure_type] units your company sells in CT in 2022 would you expect to be high efficiency?

2.5.2 Distributor Causal Pathway Calculations and Questions

The team also assessed the causal pathways of influence the program had on distributors, HVAC & DHW contractors, and Foodservice end-use customers. The causal pathway functions via the distributor changing their behavior in response to the initiative, and this change in behavior influencing the behavior of contractors and/or end-users. This influence manifests in several ways:

1. **Stocking:** The program influence on the equipment that distributors keep in stock, and how what was in stock influenced the contractor/end-user's decision. This can have a substantial impact on the end-user in a replace-on-failure situation, when they need to replace the equipment as quickly as possible and what is on the shelf at that moment influences their decision.
2. **Upselling:** The program influence on encouraging the distributor to promote or upsell the high efficiency units, along with the associated impact on the contractor/end-user's purchasing decision.
3. **Price:** The program influence on incentivizing the distributor to lower the price of the units, and the associated impact of that lower price on the contractor/end-user's purchase decision.

$$Stocking = \frac{ST2 - ST3}{ST2}$$

Where:

- **ST2:** Of the [Measure_type] your company keeps in stock, what percent of the units is high efficiency?
- **ST3:** If the Initiative were no longer available, what percent of all the [Measure_type] units that your company stocks would be high efficiency?

$$Upselling = \frac{U5 - U6}{U5}$$

Where:

- **U5:** What percent of the time does your company's sales staff recommend high efficiency equipment [Measure_type] to buyers?
- **U6:** What percent of the time would your staff recommend the high efficiency [Measure_type] without the program incentives, marketing, outreach, and training?

$$Pricing = P2$$

Where:

- **P2:** On average, what percentage of the [Measure_type] incentive is passed through to the buyer?

2.5.3 Contractor and End-Use Customer Causal Pathway Calculations

The team considered two approaches for sampling and calculation of causal pathway results:

- Nested, which matches contractors/customers with the selected distributors they worked with; and
- Non-nested, which incorporates responses from all contractors/customers and distributors that completed the survey.

The team decided to use the non-nested sampling approach and calculation method, due to small sample sizes and data gaps inhibiting our ability to tie distributors to contractors or customers. We calculated contractor causal pathway results using the following questions and equations:

$$\text{Stocking FR} = \text{sum} \left(ST1_a * 1 + ST1_c * \text{weighted average} + ST1_b * (ST2_d * 1 + ST2_e * 0 + ST2_f * 0.5) \right)$$

Where:

ST1: Think about instances when a customer agrees to install high efficiency [measure] equipment and you and your distributor *do not* have the preferred model and size equipment available in your inventory. In these cases, what percent of the time do your customers...

- Delay the project until the preferred model, size and efficiency is available?
- Select an alternative model that is in stock?
- Do something else? (weighted average of respondents/technology)

ST2: When the customer selects an alternative [measure] model, how often is it

- A different high efficiency model that meets Energize CT Midstream Program requirements?
- Standard efficiency?
- Something between Energize CT Midstream Program requirements and standard efficiency?

$$\text{Upselling FR} = 1 - \frac{U2}{10}$$

Where:

U2: On a scale of 0 to 10 where 0 is “not influential” and 10 is “extremely influential,” how influential are distributors’ equipment recommendations on the decision of what ultimately gets installed?

$$\text{Pricing FR} = 1 - P1$$

Where:

P1: If your distributor charged you less for a piece of equipment, how much if any of that price difference would you pass on to your customers?

Similar to the contractor causal pathway calculation, we applied the following questions and methodology to customer survey response data:

$$\text{Stocking FR} = \text{sum}(ST3_a * 1 + ST3_b * (ST4_e * 1 + ST4_f * 0 + ST4_g * 0.5) + ST3_c * (\text{weighted avg distributor FR}) + ST3_d * \text{weighted average})$$

Where:

ST3: If the efficiency level of the ENERGY STAR certified [measure] your organization purchased had not been in stock at your preferred vendor, would your organization have

- a) Waited until the unit was in stock
- b) Selected an alternative model that was in stock
- c) Contacted an alternate vendor to get the same level of efficient equipment you purchased
- d) Something else

ST4: You indicated your organization would have selected an alternative model that was in stock. Thinking back, would you most likely have selected a unit that was

- e) The same or higher efficiency as what you purchased
- f) Standard efficiency on the market at the time
- g) Something above standard efficiency on the market, but less efficiency than what you purchased

$$\text{Upselling FR} = 1 - \frac{U3}{10}$$

Where:

U3: On a scale of 0 to 10 where 0 is “not at all influential” and 10 is “extremely influential,” how influential was the vendor's recommendation on your organization's decision to purchase the specific ENERGY STAR certified [measure] you purchased?

$$\text{Pricing}^{27} \text{ FR} = 1 - \text{sum}(P3_a * 1 + P3_b * 0.75 + P3_c * 0.5 + P3_d * 0.25 + P3_e * 0)$$

²⁷ Pricing calculation here shows a standard linear score, but we ultimately used LAM scoring for pricing questions, as explained in section 2.5.5 below.

Where:

P3: If the [measure] had cost [rebate amount] more than it did, what is the likelihood you would still have purchased the same ENERGY STAR-certified [measure]?

- a) Very likely
- b) Likely
- c) 50/50 chance
- d) Unlikely
- e) Very unlikely

If a customer or contractor partially answered causal pathway questions, we used weighted averages to estimate missing responses. For example, if a contractor responded to stocking and upselling questions, but responded “don’t know” on pricing, we applied the weighted average of the completed pricing responses. The team used tracking data savings to weight each respondent that answered pricing and applied a weighted average to their responses. We used the sum of that weighted average as an estimate where the contractor did not have a response. The team applied the same methodology to gaps in upselling and stocking questions.

2.5.4 Overall Attribution and Free Ridership Calculations

Once we calculated the stocking, pricing, and upselling scores separately for distributors, contractors, and end-use customers, we combined them into an overall non-nested causal pathway NTG ratio for each measure category. We multiplied the distributor stocking attribution by the contractor or customer stocking attribution to get an overall stocking score, depending on measure type (contractors for HVAC and customers for food service). We repeated this process for overall upselling and pricing scores.

To obtain combined free ridership scores, we took the inverse of the overall stocking, upselling, and pricing NTG attribution scores. We then multiplied the overall free ridership scores for distributors, contractors, and customers calculated in sections 2.5.2 and 2.5.3. The team then calculated the overall attribution score by taking the inverse of free ridership.

$$\begin{aligned} \text{Overall FR} &= \text{Stocking FR} * \text{Upselling FR} * \text{Pricing FR} \\ \text{Overall NTG} &= 1 - \text{Overall FR} \end{aligned}$$

2.5.5 Labeled Affective Magnitude Scales

The team adapted guidance from Skumatz and D’Souza²⁸ for converting linearly scored customer and contractor causal pathway NTG questions to a Labeled Magnitude Scale (LMS)—specifically to a Labeled Affective Magnitude (LAM) scale. The use of such scales has been found to provide less biased, more defensible estimates of value-based responses than a simple linear scaling approach whereby the intervals between each value on the scale are presumed to be equal.

²⁸ Skumatz and D’Souza, *Likert Scales are Too Simplistic – Better and More Useful Alternatives in Four Applications in Energy Efficiency*, European Council for an Energy Efficient Economy, 2021

The team applied LAM scaling to three causal pathway questions:

- Customer pricing question (5-point scale): “If the measure had cost [rebate amount] more than it did, what is the likelihood you would still have purchased the same high efficiency ENERGY STAR-certified measure?”
- Contractor upselling question (11-point scale): On a scale of 0 to 10, how influential are distributors' equipment recommendations on the decision of what ultimately gets installed?
- Customer upselling question (11-point scale): On a scale of 0 to 10, how influential was the vendor's recommendation on your organization's decision to purchase the specific equipment?

Table 2-6 and Table 2-7 show the adjustments that the team applied to the scoring.

Table 2-6. Customer Pricing Question

Likelihood Scale Label	Linear Score	Adjusted LAM Score
Very likely to make purchase	0%	0%
Likely to make purchase	25%	35%
50/50 chance to make purchase	50%	50% ¹
Unlikely to make purchase	75%	89%
Very unlikely to make purchase	100%	100%

¹Due to the use of a specific value of 50% in the likelihood scale label, the team applied a score of 50% to this response option instead of the 65% identified in the guidance, which was based on a labelled midpoint response of “moderately likely.”

Table 2-7. Customer and Contractor Upselling Question

Influence Scale Label	Linear Score	Adjusted LAM Score
Extremely influential	10	10.000
	9	9.479
	8	7.813
	7	6.875
	6	5.521
	5	5.000
	4	4.531
	3	3.542
	2	2.292
	1	0.834
Not at all influential	0	0.000

The team assessed the impact of applying the adjusted LAM scoring in comparison to linearly scored scales, and found it primarily affected the Foodservice results, via the customer pricing likelihood question. The effect on the HVAC & Water Heater results was slight. The impacts are shown in [Table 2-8](#)—values in *italics* reflect scores that were impacted using LAM scales for the three questions above. The causal pathway results provided throughout this report reflect LAM scoring methods.

Table 2-8. LAM Scoring Adjustment Impacts

Program	Non-Nested Causal Pathway Method						NTG	NTG (LAM)
	Contractor/ customer sample size	Stocking Attribution	Upselling Attribution	<i>Upselling Attribution (LAM)</i>	Pricing Attribution	<i>Pricing Attribution (LAM)</i>		
HVAC & Water Heating	27	14%	54.1%	<i>54.0%</i>	61%	61%	67.9%	67.8%
Foodservice & Laboratory	34	27%	69.3%	<i>69.0%</i>	55.4%	58.3%	79.8%	81.1%

Section 3 Results

This section summarizes the NTG results from the distributor-only counterfactual method and the causal pathway method. It also includes NTG benchmarking results, as well as IDI and survey results on factors associated with program attribution and process-related findings.

3.1 DISTRIBUTOR RESULTS

This section provides the distributor IDI results on NTG, program influence and barriers, and a market analysis based on distributor responses on sales of efficient equipment.

3.1.1 Distributor-Only NTG Results

Table 3-1 and Figure 3-1 below provide the NTG results from the distributor IDIs, based on the distributor-only counterfactual method. The table includes an effective error ratio for each NTG estimate, to help refine potential future sample development efforts.

Table 3-1. Distributor-Only NTG by Program

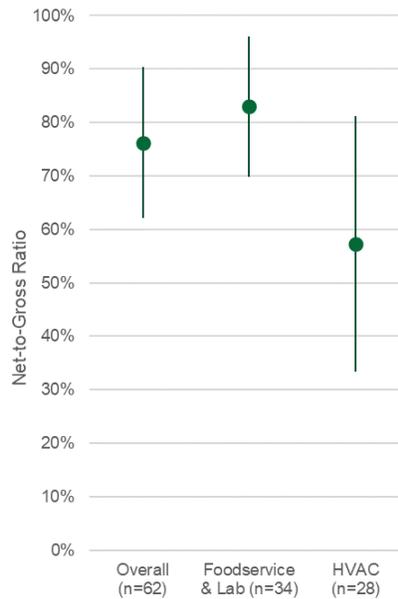
Program	n ¹	NTG	Absolute Precision ²	Error Ratio ³
HVAC & Water Heating	28	57%	24%	1.32
Foodservice & Laboratory	34	83%	13%	0.55
Overall	62	76%	14%	0.87

¹Number of distributor-measure responses. We completed 30 distributor IDIs covering up to 3 measures each.

²At 90% confidence.

³Effective error ratio = (Standard Error/NTG ratio) x \sqrt{n} .

Figure 3-1. Distributor-Only NTG by Program



Note: Lines indicate 90% confidence interval.

Table 3-2 and Figure 3-2 below provide the distributor IDI NTG results by measure type, for those measures with five or more distributor responses. As shown below, the programs have high levels of attribution for fryers, ovens, and boilers, but a limited influence on high-efficiency sales for other measure types:

- **Spray valves.** The low NTG value of 1% is corroborated by several other results from the IDIs and surveys indicating high levels of free-ridership and market saturation
- **Furnaces.** The relatively low NTG of 27% is corroborated by other survey and IDI results indicating limited program influence at current program incentive and efficiency levels.

Table 3-2. Distributor-Only NTG by Measure

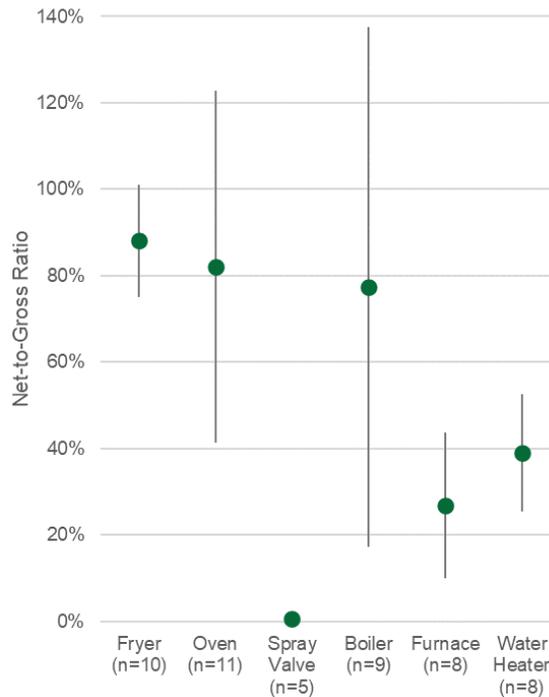
Program	Measure ¹	n	NTG	Absolute Precision ²	Error Ratio ³
HVAC & Water Heating	Boiler	9	77%	60%	1.40
	Furnace	8	27%	17%	1.06
	Water Heater	8	39%	14%	0.59
Foodservice & Laboratory	Fryer	10	88%	13%	0.28
	Oven	11	82%	41%	0.98
	Spray Valve	5	1%	1%	2.43

¹Only includes measures with n ≥ 5

²At 90% confidence

³Effective error ratio = (Standard Error/NTG ratio) x √(n).

Figure 3-2. Distributor-Only NTG by Measure



Note: Lines indicates 90% confidence interval.
Only includes measures with n ≥ 5.

3.1.2 Distributor Views on Program Influence

The team asked follow-up questions to distributors to gain insight into their counterfactual estimates of high-efficiency sales in the absence of the programs. Specifically, we asked them to explain why they estimated their sales of high efficiency equipment would have been about the same, lower, or higher in 2019 and 2020 without the program. Their verbatim responses to that question reveal the key influence pathways that form the basis for the causal pathway method, as shown in Table 3-3—which provides selected illustrative responses for measures where distributors reported high program attribution for high-efficiency sales—and Table 3-4—which provides responses for measures with low reported attribution. Several of the responses also corroborate the measure-level NTG results provided above, specifically for fryers, ovens, spray valves and furnaces.

Table 3-3. Selected High Attribution Distributor Verbatim Responses

Program	Measure Type	Distributor responses for measures with lower high-efficiency sales without the program	Influence path (inferred based on verbatim)
Foodservice & Laboratory	Oven	Without the rebate, you could get other models much cheaper. Customers are upfront cost driven.	Price
	Fryer	We did not stock high-efficiency fryers prior to the program and wouldn't have sold any.	Stocking
	Fryer	You have to educate customers into high efficiency. They come looking for the highest Btu units.	Upselling
	Fryer	Without rebates, the cost would exceed everything else we sell.	Price
	Oven	If you stop the rebates, the high efficiency sales go away due to the higher cost.	Price
HVAC & Water Heating	Water Heater	The incentives are pretty amazing. They bring the installed cost to the same as lower efficiency.	Price
	Boiler	High efficiency sales would be considerably lower without the rebate to bring down the up-front cost.	Price
	Infrared Heater	People like money. For the most part the incentive lowers the cost of the equipment.	Price
	Furnace	It's all about the money. Contractors are not going to do high efficiency unless there is a rebate.	Price
	Boiler	The rebate is a lot of money we're passing down. Without it, the decision maker might have balked.	Price
	Water Heater	Availability and what's in the inventory. Contractors will "chop and swap" instead of re-piping and venting.	Stocking

Table 3-4. Selected Low Attribution Distributor Verbatim Responses

Program	Measure Type	Distributor responses for measures with about the same high-efficiency sales without the program	Influence path (inferred based on verbatim)
Foodservice & Laboratory	Spray Valve	It's the only one we sell.	Stocking
	Spray Valve	We stock the high-efficiency spray valves. It's a popular item we would sell anyway.	Stocking
	Oven	We stock them anyway due to the price point in market.	Stocking
	Steam Cooker	High-efficiency sales go to people who are more receptive. The only change would be if I did not provide a high-efficiency option, which I always do.	Upselling
HVAC & Water Heating	Water Heater	We tend to sell high-end equipment that are high efficiency	Unclear
	Furnace	Rebates are not even a talking point on the commercial side—a drastic difference from residential.	Price
	Furnace	We still would have majority of items stocked as high efficiency units, even in 2019 and 2020.	Stocking
	Furnace	High efficiency is very common, with venting and the way the industry is going. If you have PVC venting, it will be a high-efficiency unit.	Unclear

Recent Connecticut industry standard practice (ISP) research found that furnace and boiler baselines are significantly higher than code, corroborating the above findings that the market is moving toward high-efficiency furnaces.²⁹

The team conducted additional sensitivity analysis to explore the potential impact of this shifting baseline on the NTG results. Because the ISP research had not been completed at the time of our data collection effort, we could not reference the baseline results in our survey or interview questions. However, our HVAC contractor survey included a question series on equipment stocking and customer preferences for high efficiency and standard efficiency equipment, which we were able to re-analyze to assess the extent to which our survey results could have varied based on participating contractors' definition of "standard efficiency."

Specifically, the survey asked contractors about how often their customers select alternative models when their preferred equipment models are not in stock, and what efficiency levels customers tend to select in those cases, whether (1) a different high efficiency model that meets Energize CT Midstream Program requirements; (2) standard efficiency; or (3) something between meeting Energize CT Midstream Program requirements and standard efficiency. Some

²⁹ DNV. [CT X1931-1 Com Boiler and Furnace ISP Final Memo \(energizect.com\)](https://www.energizect.com), December 10, 2021

responding contractors indicated customers would choose models meeting program-level efficiency regardless of whether it was their preferred model. For purposes of the stocking causal pathway algorithm, these customers reflect full free riders, regardless of what baseline is considered. For the remainder of customers who would choose either standard efficiency or something between standard efficiency and program requirements, the selection of these response options could have changed depending on customers’ interpretation of “standard efficiency”.

To identify the range of potential variation in NTG results, we developed scenarios based on survey responses to these questions. It is important to note that not all respondents would be affected by shifting baselines; only the portion of responses that (1) indicated customers would select an alternative model that was in stock and (2) for which that alternative would not be high (program level) efficiency. For example, as seen in [Table 3-5](#), 60% of customers would select an alternative model furnace when their preferred technology is not in stock. Of that 60%, only 6% indicated they would choose an alternative lower than program efficiency levels (ST2.2 + ST2.3). This is the subset of responses that may have been affected by changing efficiency baselines and would affect the stocking element of the causal pathway NTG algorithm.

Table 3-5 Weighted Averages of Contractor Stocking Efficiency Responses

Measure	n	ST2. When the preferred model and size equipment are unavailable, what percent of the time do your customers select an alternative model that is in stock?	When the customer selects an alternative model, how often is it:			Subset of responses affected by changing efficiency baselines (ST2*(ST2.2+ST2.3))
			ST2.1 A different high efficiency model that meets Energize CT Midstream Program requirements?	ST2.2 Standard efficiency?	ST2.3 Something between meeting Energize CT Midstream Program requirements and standard efficiency?	
Condensing Gas Boiler	11	65%	72%	8%	19%	17.6%
Condensing Gas Furnace	11	60%	94%	2%	4%	3.6%

In the first scenario, we re-allocated all ST2.2 and ST2.3 responses to the “standard efficiency” option (ST2.2). For example, if a contractor responded that customers would select standard efficiency 5% of the time (ST2.2), and something in between standard and program efficiency another 5% of the time (ST2.3), we changed this to 10% for ST2.2 and 0% for ST2.3. In the second scenario, we reversed this methodology and assumed 0% for standard efficiency (ST2.2) and 10% for something in between (ST2.3). These two scenarios created the upper and lower bounds for the potential range in contractor responses depending on their interpretation of standard efficiency. The team then recalculated NTG values for these upper and lower bound scenarios. As seen in [Table 3-6](#), the potential impact on NTG was relatively minimal for boilers (0.8%) and furnaces (0.1%).

Table 3-6 Effects of Varying Baseline Interpretations on NTG values

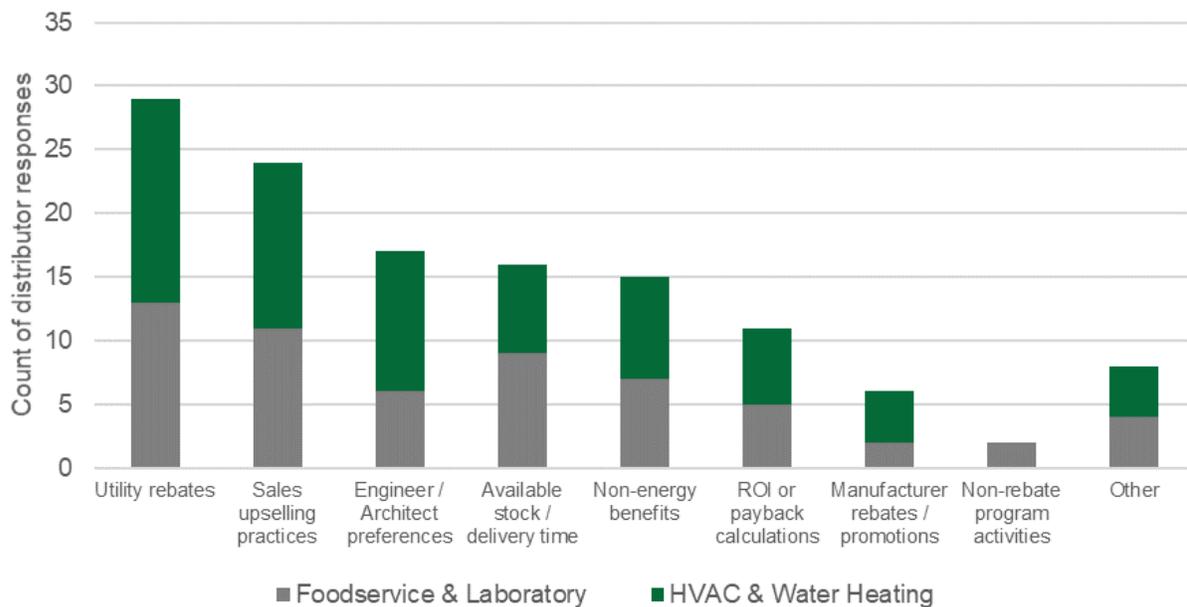
Measure	n	Original NTG	Lower Bound Scenario NTG	Upper Bound Scenario NTG
Condensing Gas Boiler	11	76.3%	76.0%	76.8%
Condensing Gas Furnace	11	56.0%	56.0%	56.1%

It is important to note that the results of this sensitivity analysis reflect the potential swing in NTG values based on the specific instruments and algorithms employed in this study. The study and the instruments were not designed to produce discrete results for different equipment-specific efficiency levels. To avoid this complication, future evaluations should provide more specific definitions of intermediate efficiency levels in efficiency attribution sequences.

3.1.3 Distributor Influences on High-Efficiency Sales

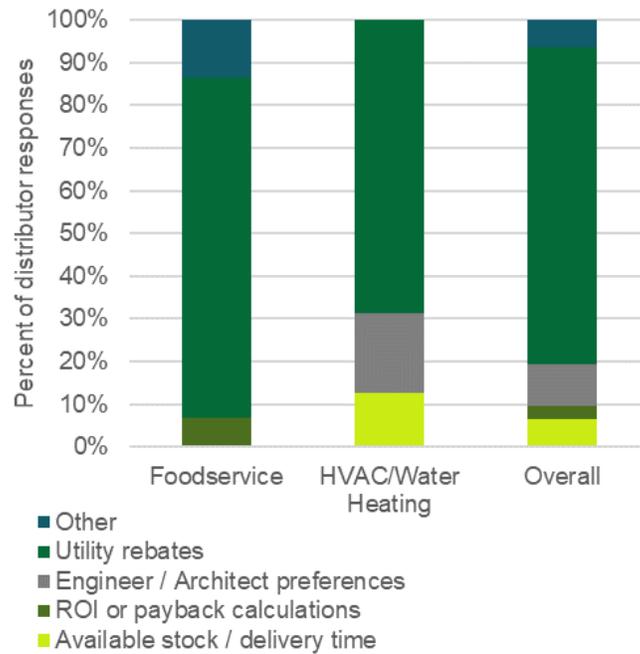
The team interviewed distributors about the factors influencing their sales of high-efficiency equipment. Distributors for both programs primarily cited utility rebates as influencing sales of high efficiency equipment, with upselling practices as a secondary driver, as shown in [Figure 3-3](#).

Figure 3-3. Factors Influencing High-Efficiency Sales



When distributors were asked which factor was the strongest driver of high-efficiency sales, utility rebates remained the most common response, although there were some differences across the two programs. Specifically, HVAC & Water Heater distributors cited engineer and architect preference and available stock as stronger drivers than Foodservice dealers, as shown in [Figure 3-4](#).

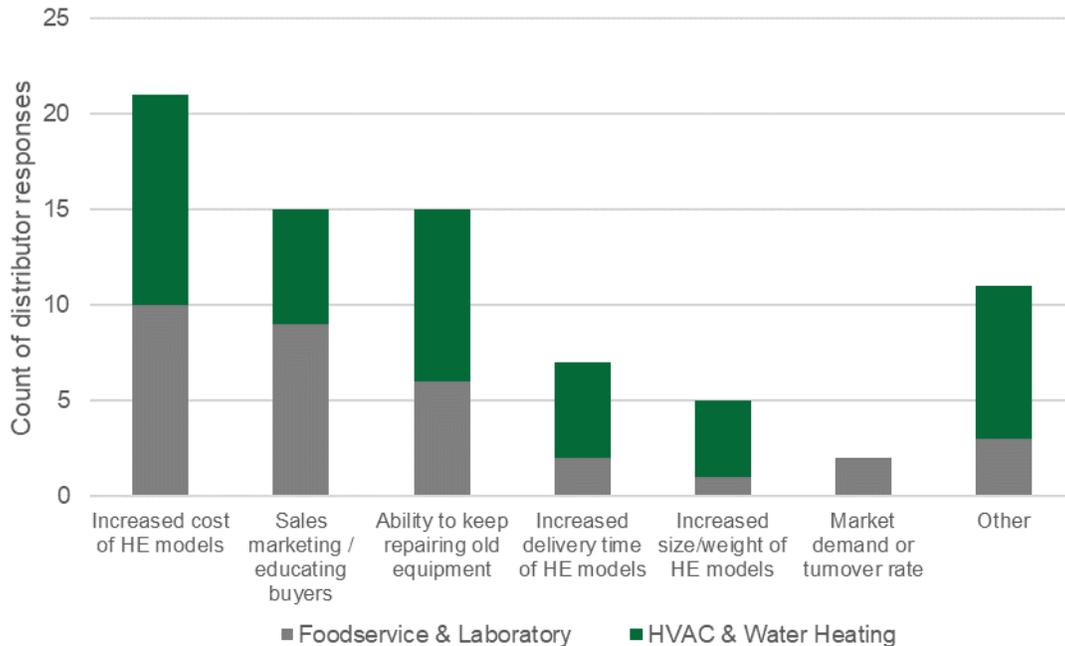
Figure 3-4. Strongest Drivers of High-Efficiency Sales



3.1.4 Distributor Barriers to High-Efficiency Sales

The team interviewed distributors about the barriers they face in selling high-efficiency equipment, and the higher up-front cost of high-efficiency models was the most frequently cited barrier across both Midstream programs, as shown in Figure 3-5 below. Among HVAC & Water Heating respondents, distributors also frequently cited the ability to keep repairing old equipment, noting that it can be lucrative for manufacturers to continue selling parts for existing equipment and customers often opt to pay for repairs rather than invest larger amounts in a new system. These responses suggest an opportunity for early replacement incentives to help overcome this barrier.

Figure 3-5. Barriers to Sales of High-Efficiency Equipment



Note: “Other” responses include technical barriers such as venting requirements or inappropriate application for high efficiency equipment, perception of increased maintenance needs, and strict efficiency requirements for rooftop units.

3.1.5 Distributor Market Analysis

Leveraging the approach used for the MA20X08-B review, the team analyzed distributor IDI results to estimate 2019 – 2020 Connecticut sales of program-qualifying and non-qualifying equipment, using EnergizeCT criteria. We estimated both in-program sales—that is, those receiving program rebates—and out-of-program or unrebated sales.

The market analysis used tracking data on program units sold by each distributor, along with distributor responses to two key interview questions:

- **MC1 (percent of sales that were high efficiency).** What percentage of your company’s total unit sales of [Measure_type] throughout 2019 and 2020 would you estimate was high efficiency, as defined by EnergizeCT requirements?
- **MC2 (percent of high-efficiency sales that received an incentive).** What percentage of your company’s total unit sales of high efficiency [Measure_type] in Connecticut throughout 2019 and 2020 would you estimate received an incentive through the program?

Table 3-7 summarizes the approach and calculations used for the Midstream Program measures. All calculations were conducted separately for each equipment type.

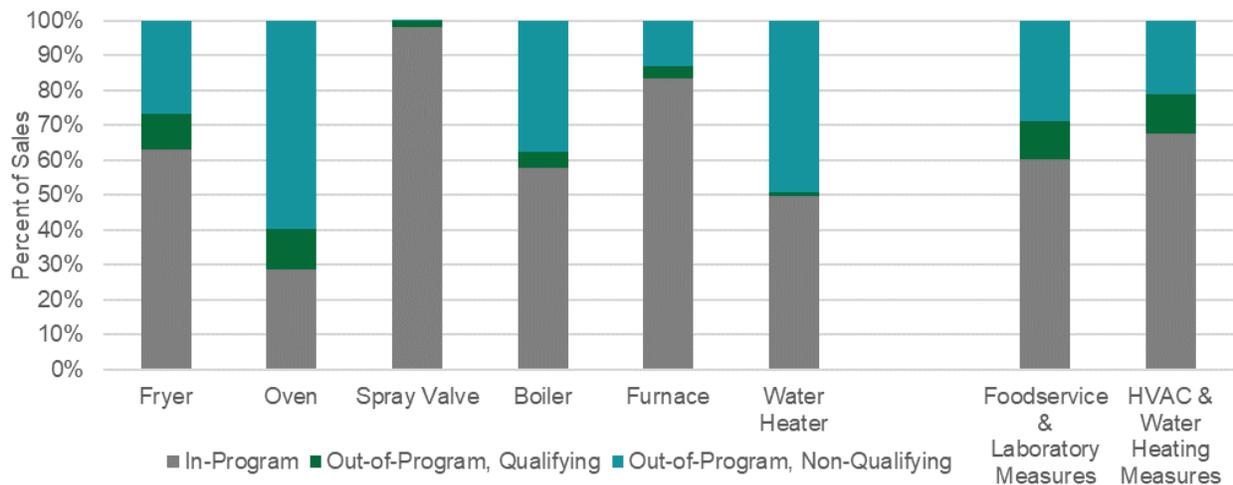
Table 3-7. Market Analysis Calculation Approach

	In-Program	Out-of-Program
Qualifying	Unit Quantities from program tracking data	Sales of High-Efficiency Units – Program Units

U	(U/MC2) – U
Non-qualifying	Total Unit Sales – Sales of High Efficiency Units (U/MC2)/MC1 – (U/MC2)

The market analysis corroborates the measure-level distributor IDI results, suggesting that the market’s movement towards program-level efficiency has largely caught up to the program for some measures, particularly spray valves and furnaces, as shown in [Figure 3-6](#).³⁰

Figure 3-6. Estimated Percent of Sales by In-Program or Out-of-Program and Qualifying or Non-Qualifying Equipment



To gain insight into the relatively small share of out-of-program sales of qualifying equipment—that is, high-efficiency equipment that was eligible for, but did not receive, program rebates—the team asked distributors why they did not receive incentives for such sales. Their responses reveal several themes.

- **Rebates were not important to decision making.** Distributors provided the following verbatim responses:
 - “Most sales go out with no fore or after thought of rebates.”
 - “In some cases, they just don't want to fill out the paperwork—10% of the time the contractor or end user couldn't be bothered.”
 - “Just forgot. We're a little bit of a smaller company, often on the road, and forget to submit [applications].”

³⁰ It is important to note that the market analysis is based on interviews with participating distributors and does not reflect out-of-program sales by non-participating distributors. However, according to program implementers, nearly all of Connecticut’s distributors are signed up to participate in the program, although some distributors are not actively participating. Any distributors with one or more program projects in 2019 or 2020 were included in our sample frame and are represented in the market analysis results.

- “Not paying attention—the employee or the customer.”
- “In some cases, people are too busy to bother with it.”
- **Distributors were dissatisfied with the program.** Distributors provided the following verbatim responses:
 - “Fear of the program.”
 - “Past experience with the program.”
- **Customers or contractors were unaware of the program or its requirements.** Distributors provided the following verbatim responses:
 - “I wasn’t here and the customer purchased without any knowledge of the program.”
 - “Because the contractor didn’t specify it was for a commercial property.”
- **Ineligible sales.** Several distributors responded that sales were outside of the utility’s service territory (but still in Connecticut), or they received downstream incentives instead.

3.2 CONTRACTOR AND END-USE CUSTOMER RESULTS

This section provides the contractor and customer survey results on NTG and program influence and barriers. The causal pathway NTG results from contractor and customer surveys are combined with distributor IDI causal pathway results. In addition, the section includes spillover results from HVAC and Water Heating contractor surveys.

3.2.1 Causal Pathway NTG Results

Table 3-8 below provides the causal pathway NTG results from the contractor and customer surveys and distributor IDIs. We assessed program influence on stocking, upselling, and pricing among distributors/dealers, contractors, and end-use customers. The causal pathway approach we used reflects the design of each program, as follows:

- HVAC & Water Heating Distributor → Contractor (*about 95% of HVAC/WH distributors said they sell to contractors*)
- Foodservice & Laboratory Dealer → Customer (*about 95% of Foodservice dealers said they sell to end-use customers*)

Table 3-8. Distributor, Contractor and Customer Causal Pathway NTG Results

Program	Distributor Weighted Attribution				Contractor (HVAC&WH) and Customer (Foodservice) Weighted Attribution				NTG
	Sample size (n)	Stocking Attribution	Upselling Attribution	Pricing Attribution	Sample size (n)	Stocking Attribution	Upselling Attribution	Pricing Attribution	
HVAC & Water Heating	28	33%	24%	100%	27	14%	54%	61%	68%*
Foodservice & Laboratory	27	72%	63%	100%	74	27%	69%	58%	81%*

*Values meeting at least 90/10 confidence and precision.

Causal pathway NTG ratios are similar to the NTG results from the Distributor-Only counterfactual method presented in Table 3-1, which found 57% NTG for HVAC & Water Heating and 83% NTG for Foodservice & Laboratory.

Examining causal pathway NTG results by measure, as shown in Table 3-9, we found low NTG ratios for spray valves and IR heaters, while fryers, ovens, and boilers with ratios above 75%. These measure-level results corroborate the distributor-only results, which found that spray valves and furnaces had relatively low program attribution, while fryers, ovens, and boilers had relatively high attribution.

Table 3-9 Distributor, Contractor and Customer Causal Pathway Measure Level NTG Results

Measure	Distributor Weighted Attribution				Contractor (HVAC&WH) and Customer (Foodservice) Weighted Attribution				NTG
	Sample size (n)	Stocking Attribution	Upselling Attribution	Pricing Attribution	Sample size (n)	Stocking Attribution	Upselling Attribution	Pricing Attribution	
HVAC and Water Heating									
Water Heater	8	48%	38%	100%	3	12%	61%	100%	72.1%*
Boiler	9	41%	35%	100%	11	12%	48%	70%	76.3%
Furnace	8	27%	19%	100%	11	5%	51%	51%	56.0%*
IR Heater	1	23%	11%	100%	1	32%	78%	25%	36.6%
Heat Pump	2	43%	10%	100%	1	38%	69%	50%	61.0%
Foodservice and Laboratory									
Freezer	2	5%	38%	100%	6	58%	81%	47%	64.4%
Fryer	9	81%	67%	100%	35	28%	71%	59%	83.3%*
Oven	8	25%	54%	100%	10	21%	68%	63%	78.1%
Spray Valve	5	0%	14%	100%	11	14%	61%	30%	36.4%*
Refrigeration	1	0%	0%	100%	10	31%	65%	43%	43.2%

*Values meeting at least 90/10 confidence and precision.

3.2.2 HVAC and Water Heating Contractor Spillover

The HVAC and water heating contractor survey included several questions to measure potential spillover occurring via participating contractors’ program-induced sales of high-efficiency equipment to non-participating customers. Based on responses to these questions, we estimate contractor spillover at **4.8%** (n=14 measures, across 12 distributors).

We calculated spillover as (1-SP2) * SP4.1, where:

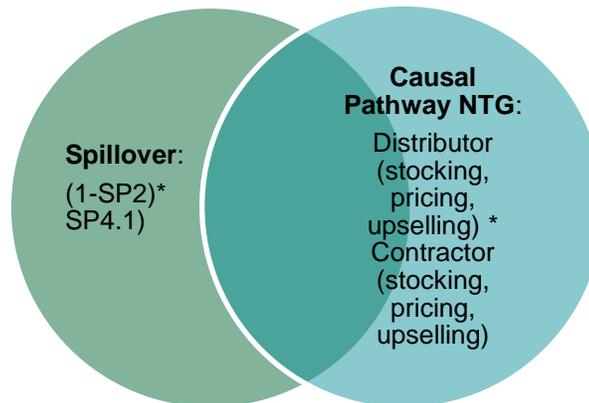
- **SP2.** What percent of your company's total unit sales of high efficiency [measure type] in 2019 and 2020 would you estimate received a rebate through the Energize CT Midstream program? *[If less than 100%, proceed to SP3]*
- **SP3.** Why didn't your company receive rebates for all the program-eligible high-efficiency [measure type] sold in 2019 and 2020?

- **SP4.1** What percent of those non-rebated sales of [measure type] do you think occurred as a side-effect of the Energize CT Midstream program existing?

These questions were included primarily to compare and check against responses from the causal pathway questions, the team’s main method for measuring NTG. The causal pathway method captures net program impacts, including spillover, *within the causal pathway* of participating distributors selling to contractors. To the extent contractors purchase high-efficiency measures from non-participating distributors, the spillover they report would reflect additional spillover occurring *outside of the causal pathway*. However, according to program staff, nearly all of Connecticut’s distributors are signed up to participate in the program, although the staff noted that some distributors are not actively participating. The program implementation vendor, TRC, also estimated that at least 75% of Connecticut distributors participate in the program.

This overlap between contractor spill over and causal pathway NTG results is depicted in [Figure 3-7](#). Given the significant share of Connecticut distributors who participate in the programs, there is likely a large degree of overlap between the spillover results and the NTG values resulting from the causal pathway analysis. As such, adding the spillover value to the causal pathway results would overstate program influence. In addition, the share of non-overlapping spillover is likely very small given the high level of distributor participation.

Figure 3-7. Contractor Spillover and Causal Pathway NTG



3.2.3 HVAC and Water Heating Program Influence

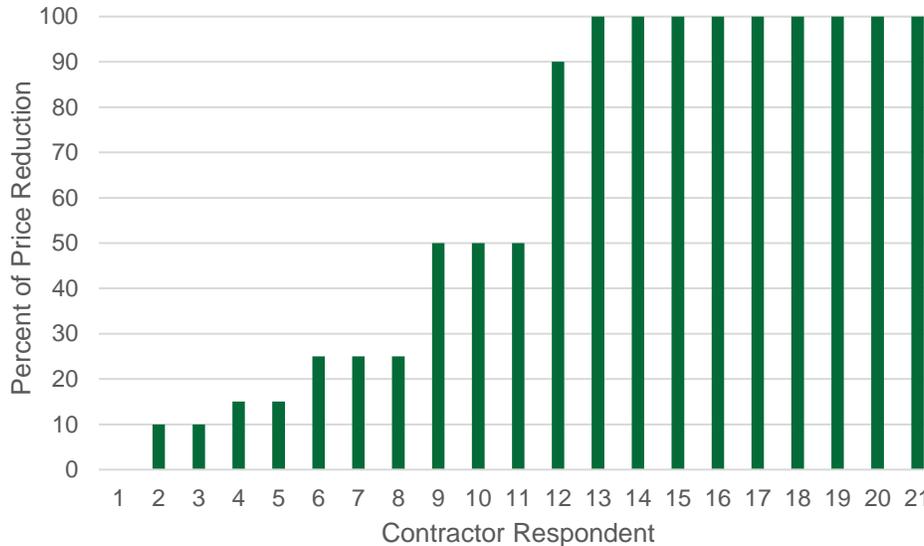
The contractor survey included several questions aimed at better understanding how the program affects high-efficiency sales through the different causal pathways of influence, as follows.

3.2.3.1 Pricing

The Connecticut program requires 100% of program incentive amounts to be passed to end-users, via a line item on equipment invoices. To better understand the influence of this requirement, we surveyed contractors on their willingness to pass down price reductions to their customers. Specifically, contractors were asked: *if your distributor charged less for a piece of equipment, how much if any of that price difference would you pass on to your customers (assuming there was no EnergizeCT requirement to do so)?* Just over half of responding contractors said they would not pass down 100% of the cost savings if the program did not require

it, as shown in Figure 3-8 below. The portion of the price reductions not otherwise passed down reflects the influence of the program requirement.

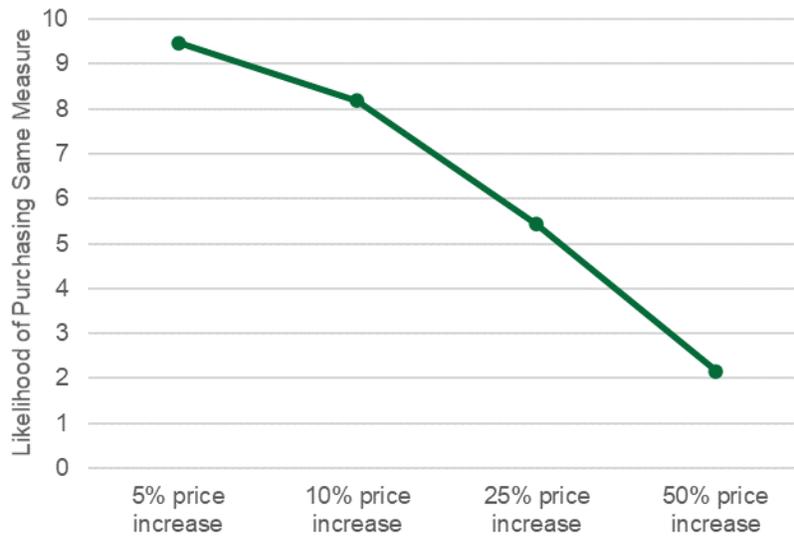
Figure 3-8. Percent of Price Reduction Contractors Would Pass on to Customers



Among the contractors who reported that they would pass down the full savings even if not required, several said that they would do so to beat competitors and to ensure they got the sale.

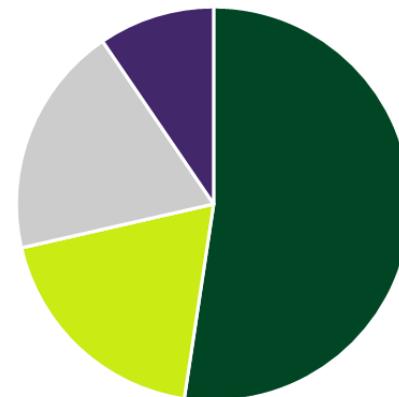
The survey also included a question on the influence of price increases on customer decisions to purchase high-efficiency equipment. Contractors were asked, *if the price of high efficiency equipment increased by 10%, 25%, or 50%, what is the likelihood a customer would still purchase the high efficiency equipment.* Responses were provided on a scale of 0 to 10 where 0 means “the customer definitely would NOT purchase the same high efficiency measure” and 10 means “the customer definitely WOULD purchase the same measure.” As shown in Figure 3-9, contractor responses indicate that price increases greater than 10% result in substantial decrease in demand for efficiency. This dynamic underscores the influence of pricing—and the importance of the incentive pass-through requirement—on customer decision-making.

Figure 3-9. Contractor-Reported Sensitivity of Customers to Price Increases



Distributors are key in spreading awareness of program discounts. Surveyed contractors indicated that distributors are their most common source of information about program discounts, followed by EnergizeCT and utility marketing, as shown in Figure 3-10 below.

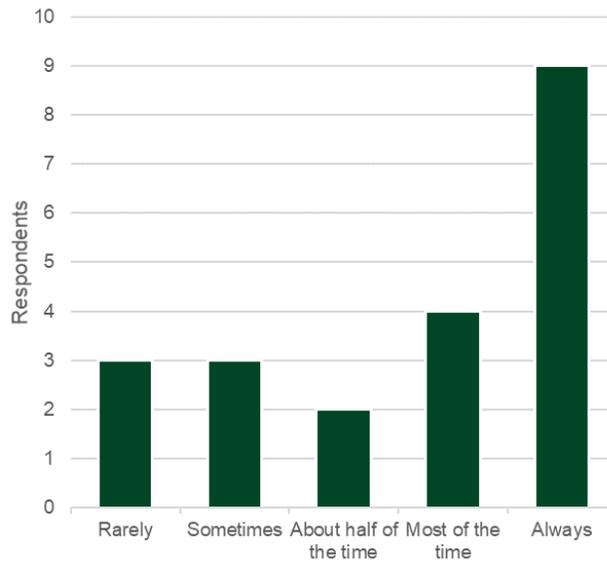
Figure 3-10. Contractor Source of Discount Awareness



- Distributor (n=11)
- Utility staff or marketing materials (n=4)
- TRC (program implementer) (n=0)
- Energize CT marketing (n=4)
- Other, Don't Know (n=2)

In line with Connecticut program rules, as noted above, all distributors reported passing down 100% of the incentive to the buyer. However less than half of surveyed contractors said that distributors always listed the dollar amount of the discount on their invoice, as shown in Figure 3-11. This result indicates a potential need for increased oversight of this program requirement.

Figure 3-11. Contractor-Reported Frequency of Distributors Listing Discounts on Invoices



3.2.3.2 Upselling

The contractor surveys included explanatory responses regarding the influence of distributors on the recommendations contractors make when selling to end use customers. In particular,

- contractors reporting high levels of distributor influence tended to recommend equipment based on supplier and manufacturer information and support.
- contractors reporting low levels of distributor influence tended to recommend equipment based on specific brands and customer needs.

Table 3-10 and Table 3-11 provide selected examples of contractors’ verbatim responses for those with high and low levels of reported distributor influence.

Table 3-10. Selected High Influence Contractor Responses

Contractor-reported influence of distributors’ recommendation ¹	Contractor response to question: “When your staff make equipment recommendations to customers, how do they determine what to recommend?”
9	“Based on information from supply houses and representatives.”
8	“Product training from manufacturers.”
8	“Supply houses present products to our equipment sales team.”
8	“Sizes and recommendations from our suppliers.”
7	“We recommend equipment [for] which our local supplier has spare parts and based on the reputation of the manufacturer.”
7	“We recommend the top brands with warranties and support from the supply house.”

¹On a scale of 0 to 10 where 0 is “not at all influential” and 10 is “extremely influential.”

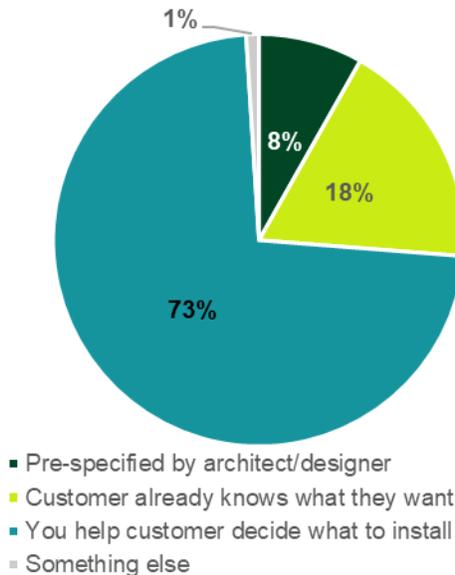
Table 3-11. Selected Low Influence Contractor Responses

Contractor-reported influence of distributors' recommendation ¹	Contractor response to question: <i>“When your staff make equipment recommendations to customers, how do they determine what to recommend?”</i>
3	<i>“We keep to one brand to keep service and quality to its highest point.”</i>
3	<i>“Brands that in our experience have the highest reliability and/or that we have a relationship with, that have capacity to meet customer needs, and best value taking into consideration rebates available.”</i>
2	<i>“We deal with two brands, American Standard and Ameristar. We just install those unless a customer wants another brand.”</i>
0	<i>“Based on the heat loss and heat gain of the home and how hard the installation would be between standard and high efficiency systems.”</i>
0	<i>“We decide what the customer needs and collectively select the equipment to propose.”</i>

¹On a scale of 0 to 10 where 0 is “not at all influential” and 10 is “extremely influential.”

Contractors also reported that most of the time—around 73% of installations—they help customers decide what to install, while in about one-quarter of cases the customer or architect/designer has already decided what type of equipment they want installed, as shown in Figure 3-12.

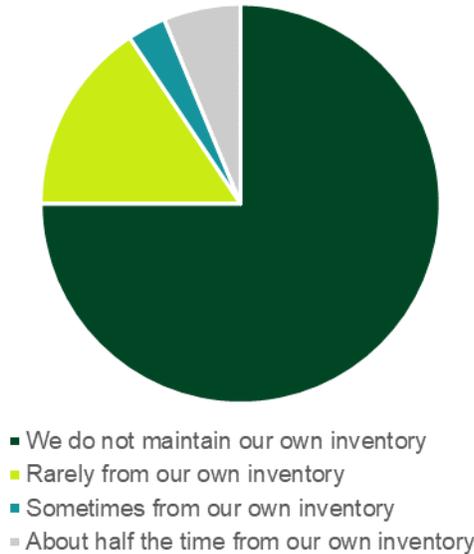
Figure 3-12. Contractor Influence on Equipment Choice



3.2.3.3 Stocking

Contractor survey responses indicated that about 75% of contractors do not maintain their own inventory of equipment, as shown in Figure 3-13. This result helps explain why contractor stocking attribution (14%) was the lowest causal pathway score.

Figure 3-13. Share of Sales Fulfilled from Contractor Inventory



3.2.4 Foodservice Customer Program Influence

The customer survey included several questions aimed at better understanding how the program affects high-efficiency sales through the different causal pathways of influence, as follows.

3.2.4.1 Pricing

Despite program requirements to include a line item for the rebate on invoices, most Foodservice customer respondents (33 out of 65) were not aware of the program discount until taking the survey, as shown in Figure 3-14. In addition, nearly two-thirds of responding customers said that they did not know if the program discount was listed on their equipment invoice, as shown in Figure 3-15. Like the contractor responses that distributor invoices did not always list the program discount amount. These results indicate a potential need for increased oversight of the program requirement to pass down 100% of the program incentive. In addition, although end user awareness is not necessary for midstream programs to influence purchasing decisions, this lack of awareness represents a missed opportunity for customer engagement.

Figure 3-14. Customer Awareness of Program Discount at the Time of Purchase

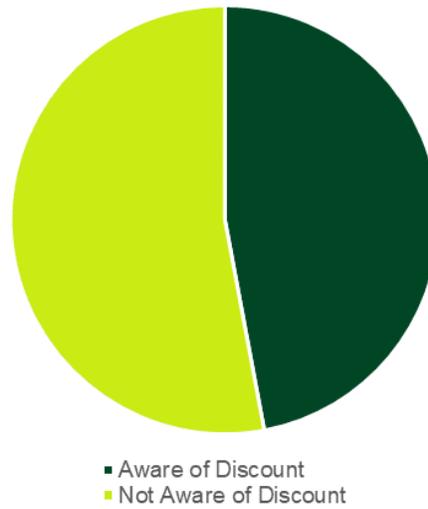
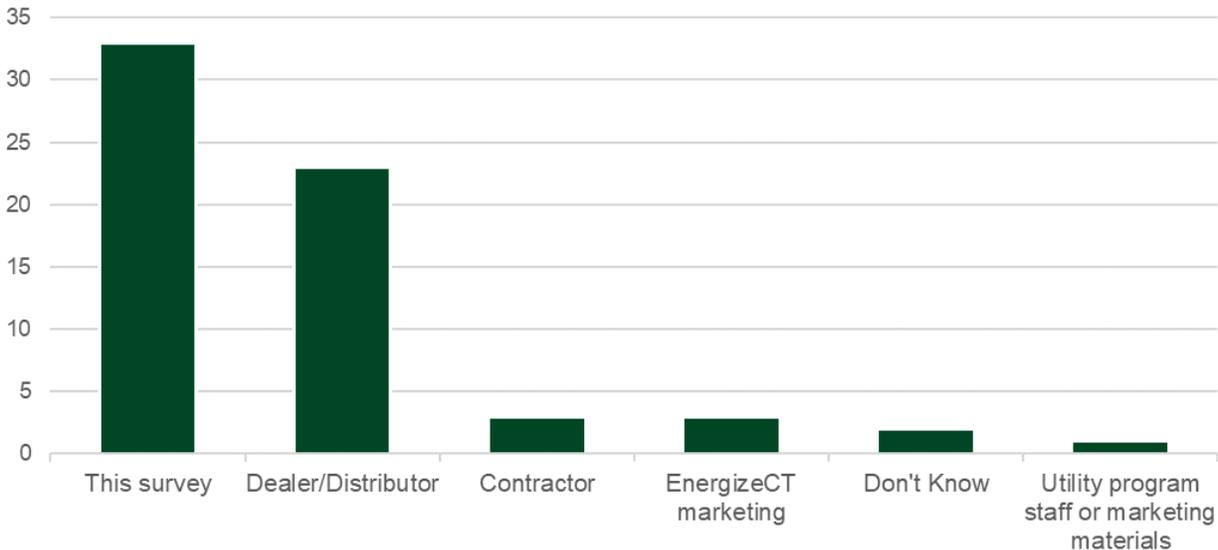


Figure 3-15. Discount Amount Included on Customer Invoice



Those customers who were aware of the program discounts prior to the survey most frequently were made aware by dealers or distributors, and rarely by EnergizeCT or program marketing, as shown in Figure 3-16. This suggests there is an opportunity for increased program marketing to improve customer awareness.

Figure 3-16. Customer Source of Discount Awareness



3.2.4.2 Upselling

The customer survey included explanatory responses regarding the influence of dealers on the customer’s purchasing decision. In particular, respondents indicating high levels of dealer influence were much more likely to reference the benefits of saving energy and money in their verbatim explanations, as shown in Table 3-12. Selected responses included the following:

- “He explained what kind of benefit I am going to get, saving energy.”
- “They explained the energy efficiency and how it would benefit us in the long run.”
- “I would save money over the life of the unit.”
- “They explained the benefits of using energy-efficient equipment, that we will save money and help the environment...The main consideration was saving on energy and the environment.”

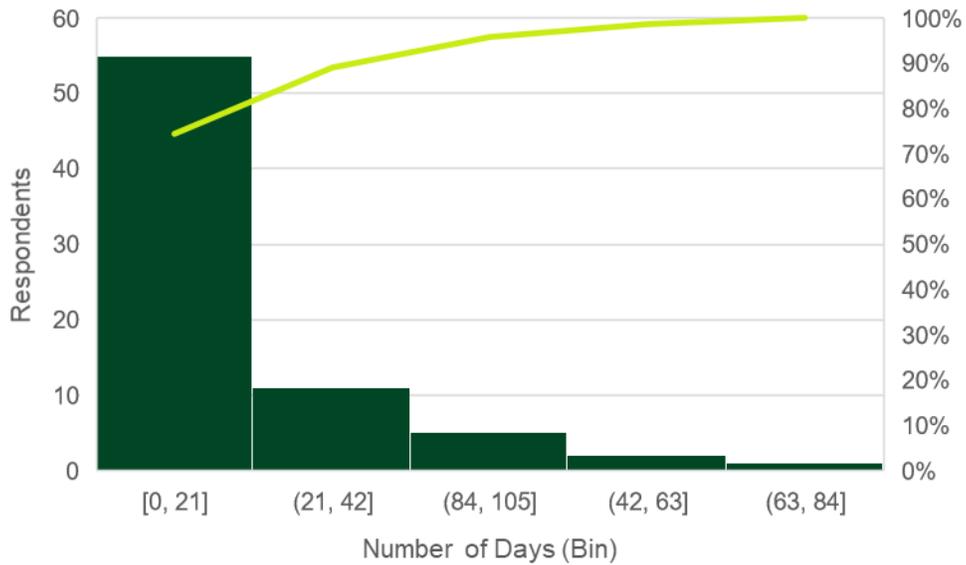
Table 3-12. Customer-reported Influence of Dealer Recommendations

Influence of dealer recommendation*	Total responses to question “In your own words, explain how the vendor influenced your organization’s purchase decision”	Responses referencing energy and cost savings
8 – 10	33	10
< 8	27	3

3.2.4.3 Stocking

Customer survey responses indicated that Foodservice dealer equipment availability is key to customers' purchasing decisions. About 75% of customers said they installed equipment within three weeks of deciding to purchase it and about 67% said they would not wait for their desired high efficiency equipment to be in stock, as shown in Figure 3-17 and Figure 3-18.

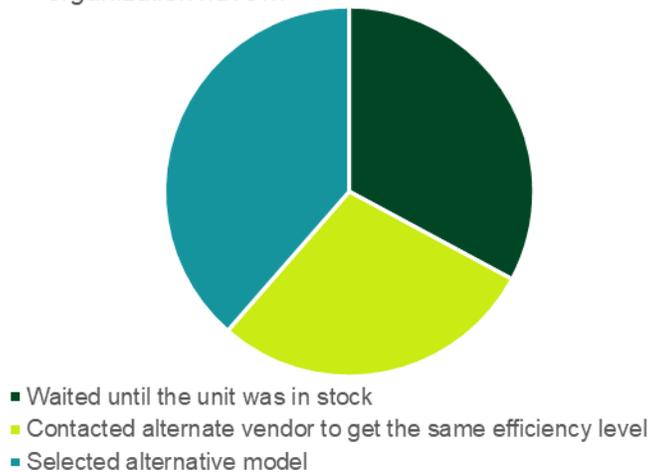
Figure 3-17. Number of Days Between Decision to Purchase and Installation



Note: The right axis corresponds to the bright green line and shows the cumulative percent of responses by bin. The left axis corresponds to the dark green columns and shows the number of respondents in each bin.

Figure 3-18. Influence of Dealer Stock on Customer Decision Making

"If the efficiency level of the equipment your organization purchased had not been in stock at your preferred vendor, would your organization have..."



3.3 NTG BENCHMARKING

The following section includes a comparison of results with the most recent Massachusetts study and with other NTG studies of similar programs elsewhere.

3.3.1 Comparison with Massachusetts NTG Results

The most recent and directly relevant NTG results for a comparison program are from the Massachusetts 2021 C&I Upstream HVAC & Gas Water Heating NTG Study.³¹ The Massachusetts program offers many of the same equipment types as the Connecticut program, and the same implementation vendor and many of the same distributors are active in the programs in both states. The top line comparison of results with this study shows consistently higher attribution for the Connecticut program, although the different pathway and customer segment for Connecticut’s Foodservice & Laboratory program somewhat limits comparability to the Massachusetts program results, which were mostly for water heating equipment.

Table 3-13. Comparison with Massachusetts 2021 NTG Results

Program / Measure	Distributor Only NTG (MC3-MC4)/(MC1*MC3)			Non-nested Distributor/Contractor/Customer Causal Pathway		
	Original Sample	Sample Size (n)	NTG Weighted	Distributor Sample Size (n)	Contractor or Customer Sample Size (n)	Attribution NTG
Connecticut HVAC & Water Heating and Foodservice & Laboratory Program						
HVAC & Water Heating	28	28	57%	28	27	68%
Foodservice & Laboratory	34	34	83%	27	74	80%
Massachusetts HVAC and Water Heating Program						
Volume WH	7	7	52%	7	13	44%
Instantaneous WH	2	1	98%	1	10	38%
VRF	4	3	10%	3	18	30%
Package	5	4	26%	4	5	55%
Storage WH	7	5	33%	6	24	29%
Indirect WH	7	6	23%	6	20	36%

3.3.2 Comparison with Other NTG Studies

Other NTG results for similar programs are shown in the table below. They reflect a similar range of NTG values as found in this Connecticut study.

There has been limited NTG research on similar upstream or midstream non-lighting programs in recent years, with results ranging from around 30% to 80%, as shown in Table 3-14 below.

³¹ MA20X08-B-CIHVACNTG, Sep 2021, https://ma-eeac.org/wp-content/uploads/MA20X08-B-CIHVACNTG_Final_Report_Clean_9.10.pdf

Table 3-14. Recent Commercial Upstream or Midstream Non-lighting NTG Results

Jurisdiction & Program	NTG ¹	Year ²	Source
Illinois ComEd Upstream Commercial Food Service Equipment Pilot	80%	2020-2021	NTG Memo: Commercial Food Service Equipment Pilot for 2020 and 2021 (ComEd)
Massachusetts C&I Upstream HVAC/HP and Hot Water	HVAC: 48% - 53% WH: 29% - 58%	2018	MATXC 35 Report 5Sep2018 FINAL.pdf (ma-eeac.org)
Wisconsin Focus on Energy Midstream Commercial Kitchen Equipment Pilot	32%	2018	Focus on Energy Calendar Year 2018 Evaluation Report: Volume II
California Upstream HVAC Programs	64%	2017	HVAC1 Upstream HVAC NTG Report Final Public.pdf (calmac.org)

¹A range of NTG values is provided where necessary to reflect measure-level results.

²The year indicates the evaluation report year.

3.4 MARKET EVENTS

The following sections include interview and survey results on the types of market events—e.g., new construction and major renovation, replace on failure, and early replacement—experienced by participating distributors, contractors, and end users.

3.4.1 Distributors

Distributors we interviewed estimated that about 20% of their overall sales were for new construction and major renovation projects, as shown in [Figure 3-19](#). Examining the NTG results for those respondents, we found that greater shares of new construction and major renovation projects was loosely correlated with lower NTG ratios, as shown in [Figure 3-20](#).

Figure 3-19. Distributor Percent of Sales for New Construction/Major Renovation

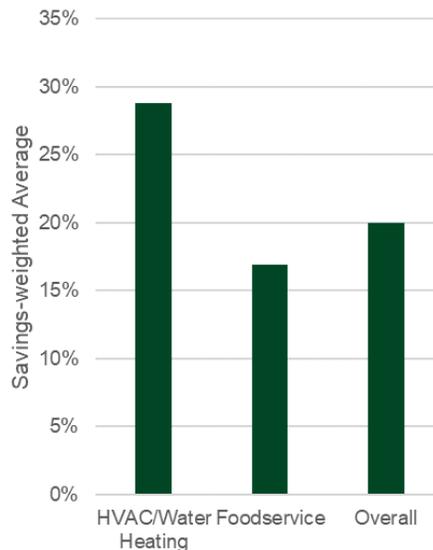
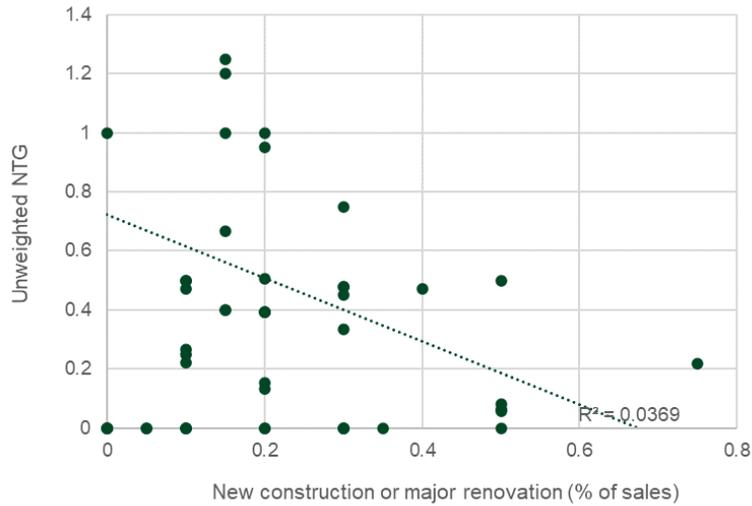


Figure 3-20. Relationship between Distributor Share of New Construction/Major Renovation Projects and NTG ratio

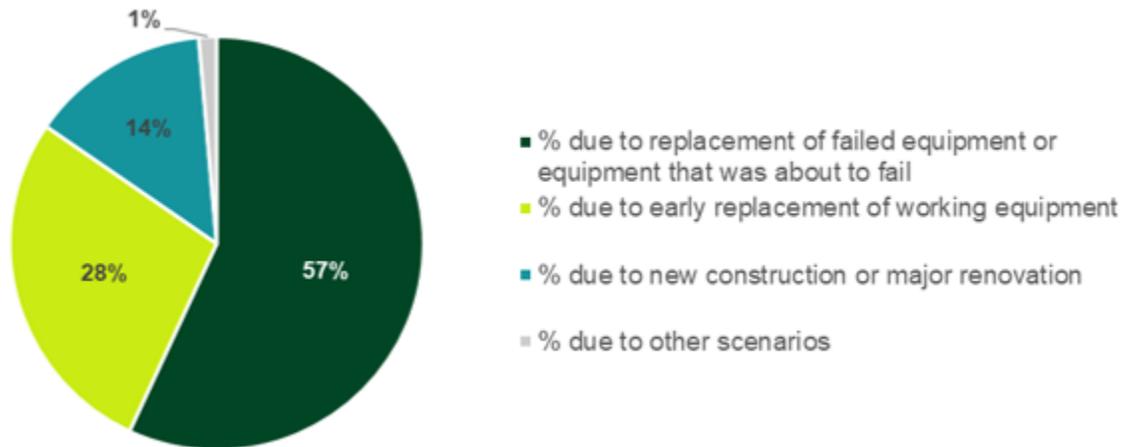


Although the correlation is relatively weak between the share of new construction/major renovation and NTG ratios in these data, the result is consistent with findings from other work that such projects are associated with lower NTG than equipment replacement projects.³²

3.4.2 HVAC and Water Heating Contractors

Surveyed contractors reported that over half of their HVAC and water heating sales were for replacement of failed equipment, and an additional 14% were for new construction/major renovation projects, as shown in Figure 3-21.

Figure 3-21. Contractor Percentage Estimate of Sales by Market Event



³² For example, see MA C&I Prescriptive and Custom Net-to-Gross Omnibus Study (MA20X07-B-CIOMNINTG), at [C&I Prescriptive & Custom Net-to-Gross Omnibus Study \(ma-eeac.org\)](http://ma-eeac.org)

3.4.3 Foodservice Customers

Surveyed foodservice customers reported a mix of market event types. Specifically, about 29% of foodservice customers purchased program equipment that was not replacing existing equipment, and among customers replacing existing equipment, 34% were replacing failed equipment and 54% were replacing equipment that they expected to last at least another year, as shown in Figure 3-22.

Figure 3-22. Customer Estimate of Remaining Useful Life on Old Equipment

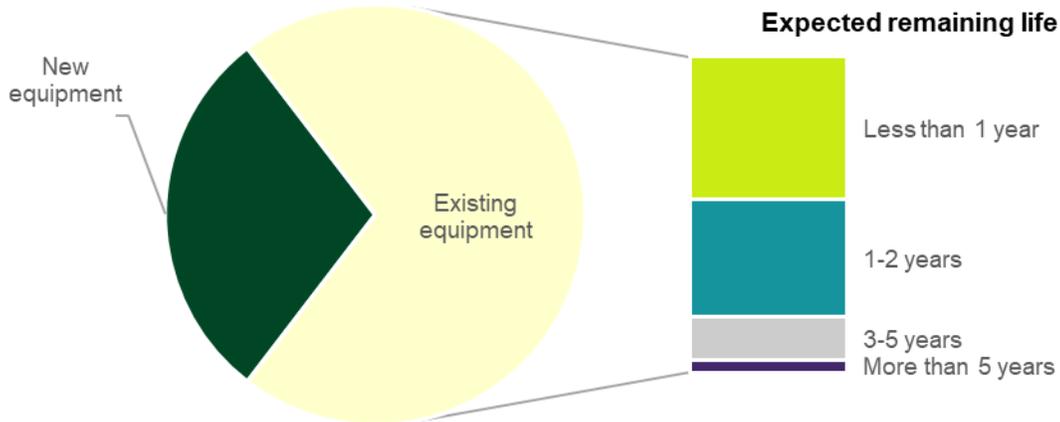
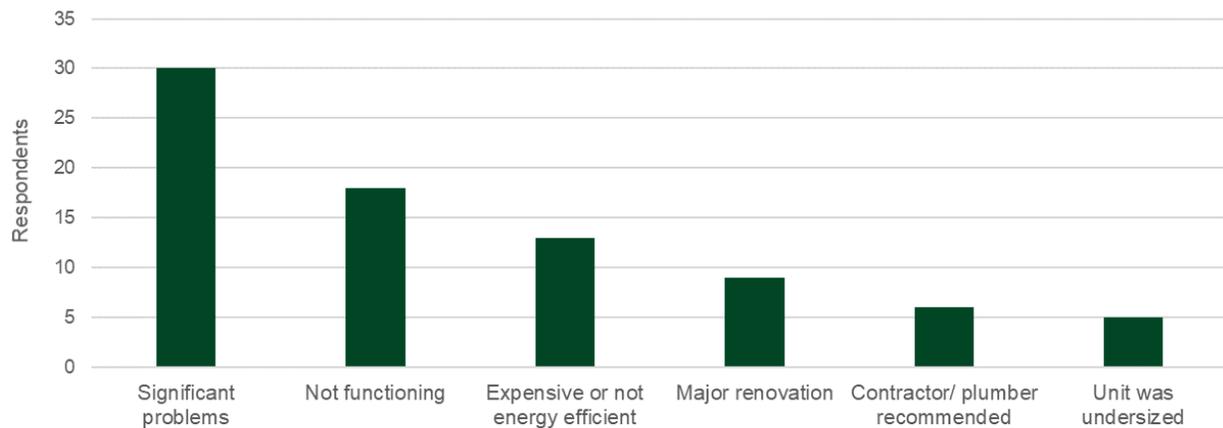


Figure 3-23. Customer Motivation for Replacing Equipment



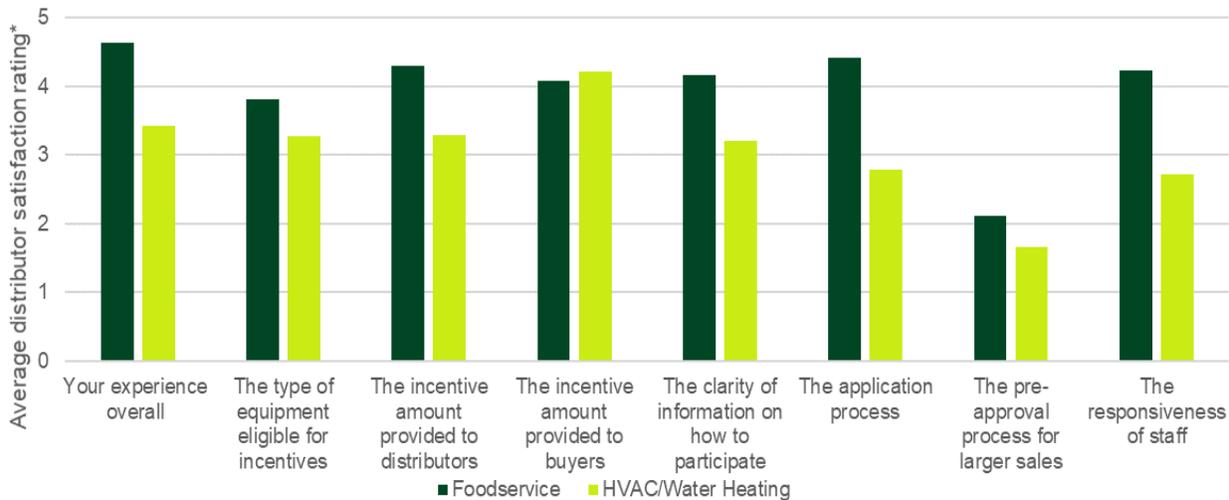
3.5 PROCESS RESULTS

The following section provides distributor, HVAC and water heating contractor, and Foodservice customer responses on program satisfaction, participation barriers and suggested improvements.

3.5.1 Distributor Program Satisfaction

Distributor program satisfaction differed between the two midstream programs, with Foodservice dealers giving consistently higher ratings than HVAC and Water Heating distributors, particularly on application process and staff responsiveness, as shown in Figure 3-24. In addition, across both midstream programs, satisfaction with the pre-approval process was notably lower than all other satisfaction ratings. The pre-approval process is required for projects over a certain dollar threshold (e.g., \$5000 for Foodservice projects), and entails checking for double-dipping with other program incentives (e.g., downstream rebates) and other customer and equipment eligibility requirements, such as ensuring the equipment is on the qualified product list. Distributors said they are under tight timelines when making sales, so they need pre-approval processes to occur quickly to avoid disrupting the sales process. In addition, distributors expressed doubt about the need for certain information, such as building square footage.

Figure 3-24. Distributor Level of Program Satisfaction



Note: Satisfaction rating of 1 is 'very dissatisfied' and 5 is 'very satisfied.'

Findings from the most recent Massachusetts study corroborate these results.³³ Specifically, distributors reported that a primary reason for high efficiency sales occurring outside of the program was that pre-approval processes were difficult to navigate and slow in Massachusetts—which as noted above, used the same implementation vendors as the Connecticut program.

Distributors were asked follow-up questions to help explain their lower satisfaction scores. Twenty-nine distributors provided verbatim responses, which revealed several recurring themes:

³³ MA20X08-B-CIHVACNTG, September 2021.

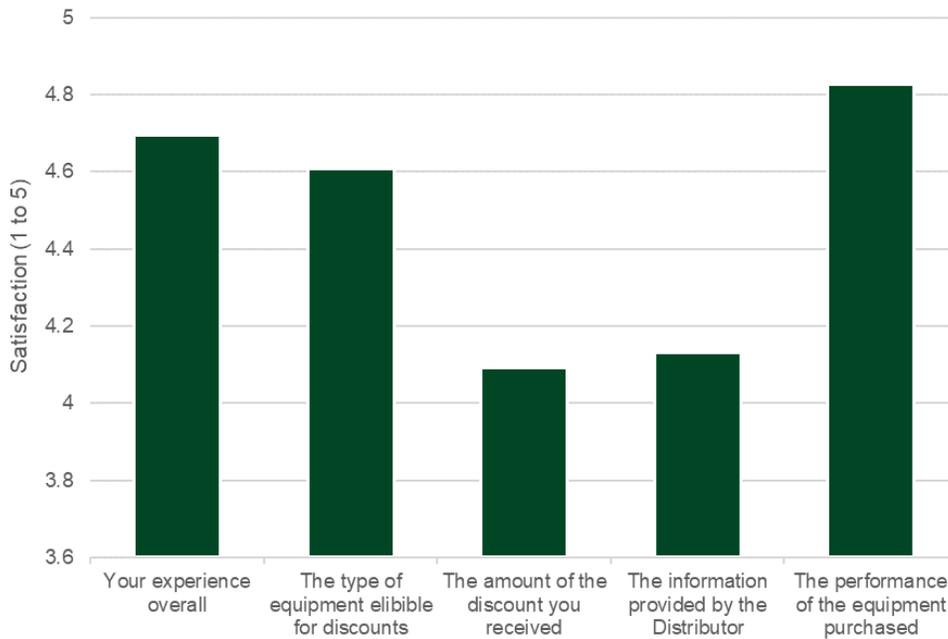
- **Payment processing** (13 responses, mostly HVAC/Water Heating). Selected verbatim responses included the following:
 - “It’s a great program but the biggest complaint is that I can’t get paid. They are supposed pay within 10 days, and every year when we close the fiscal year it’s a nightmare because they wait at least 60 days.” (HVAC/WH)
 - “Payments are horribly painfully slow, to the tune of 6 months.” (HVAC/WH)
 - “Reimbursement. I have a hellacious time signing on to the commercial website, needing to reset my password. It takes a while to get paid back.” (HVAC/WH)
- **Qualification/eligibility** (7 responses, both programs). Verbatim responses included:
 - “You have to look up qualifying products because the fact that it is Energy Star doesn’t mean it qualifies.” (Foodservice)
 - “Lack of knowing what town qualifies and what products qualify is the biggest obstacle.” (HVAC/Water Heating)
 - “Additional equipment should be available such as high intensity IR heaters, natural gas heat pumps, and gas chillers.” (HVAC/WH)
- **Implementer transition** (3 responses, Foodservice).³⁴ Verbatim responses included:
 - “[The prior implementation vendor] was phenomenal, but we haven’t heard from the new one and don’t know how to get the rebate.” (Foodservice)
 - “Historically there have been no obstacles, but with the new implementer, we don’t know what to do yet.” (Foodservice)

3.5.2 HVAC and Water Heating Contractor Satisfaction

Despite relatively low satisfaction among HVAC and Water Heating distributors (average of 3.3 out of 5), contractors gave the program high ratings overall and were particularly satisfied with equipment performance, as shown in [Figure 3-25](#).

³⁴ The Foodservice & Laboratory and HVAC & Water Heating program implementation vendors changed in July 2021.

Figure 3-25. HVAC and Water Heating Contractor Program Satisfaction



Note: Satisfaction rating of 1 is 'very dissatisfied' and 5 is 'very satisfied.'

3.5.3 Distributor Suggestions to Increase Program Attribution

We asked distributors for suggestions to help the program better encourage high-efficiency sales. Three themes emerged, as shown in [Table 3-15](#).

Table 3-15. Distributor Suggestions for Increasing Program Attribution

Theme	Suggested Improvement (verbatim responses) ¹
Streamline processes (e.g., payment processing, online system)	<p>My salesmen are out there selling—offering a rebate is a nicety for the customer but doesn't benefit the salesmen. The easier it is for the salesmen, the more likely they are to promote. For large projects...if we could submit [rebate applications] when we purchase, it would make life easier. We just did a nursing home, purchased equipment in 2019 with price protection, and completed installation in March 2021 with probably \$18,000 of rebatable items. They needed information we didn't have and couldn't get and it wasn't worth our time or effort.</p> <p>If they could make the commercial [qualified product list] include a designated amount we could program into our system, we'd be more apt to promote and take advantage of it. Going online [to look up rebates] is too long a process.</p> <p>Make it easier on the wholesaler... I had to email the form to the program staff because I couldn't figure out the website... Data entry is the first problem.... On the commercial side it's worse—why do I need know the footprint of the restaurant?</p> <p>Train salespeople on data input and how to use the computer system, what units qualify, and what towns qualify. In CT it is more difficult than in other states.</p>

Theme	Suggested Improvement (verbatim responses) ¹
Increase marketing	Increase signage.
	Inform more restaurant owners that this program exists.
	Improve the marketing materials. Now we get a flyer each year, it's too broad and doesn't give details—just average savings by equipment category.
	I had requested a quick and easy listing to see what the rebate is, and I've gotten that. It would be helpful now if my vendors were more aware too.
	More end user marketing to larger facilities would help.
Increase incentives to end users and/or sellers	Work more with sustainability departments or officers at institutional buyers to make sure they are aware of rebates. Not sure if upper-level managers are aware...Push it down from the top because some labs are not responsible for paying electric bills.
	Keeping the rebates high and SPIFF the seller (sales commissioning).
	Easiest solution is increasing the rebate. ...If it goes up another 25%, to \$10 or \$12/MMBtu, it would be tremendous, and everybody would go for high efficiency.
	Programs should size incentives to achieve a five-year payback.
	CT has lowest incentive amount for the end users. RI and MA are much higher.
	The incentive to the wholesaler—why should we do all this work for \$10?

¹Responses are lightly edited for length and clarity.

3.5.4 Program and Implementation Vendor Process Insights

Interviews with the Companies' program staff and implementation vendors for both midstream programs provide additional context on program processes, as follows.

Payment approvals for large projects: The Foodservice implementation vendor said that they randomly post-inspect a sample of projects, and post-inspect 100% of projects over a certain threshold (e.g., \$7500 in incentives). Also, HVAC and Water Heating distributors are not paid without Company approval for incentives over a certain threshold (e.g., \$7500). For large projects, which can involve rebates approaching \$100,000, the implementation vendor said that distributors essentially float the money until the project is complete and the rebate is approved and paid.

Incentive pass-through oversight: The HVAC and Water Heater implementer said that program participants typically either receive a postcard, phone call or an inspection following project installation. However, they said that they had no way of being sure that the incentives were ultimately provided to end users.

Implementer training and updates: The HVAC and Water Heating implementor said they visit distributors monthly to provide updates on the program such as rebate details and equipment qualifications. They also provide trainings to distributors, including (1) monthly in-house branch-focused trainings, and (2) manufacturer-partnered “counter day” trainings involving manufacturer literature and/or staff.

COVID impacts: Implementation vendors said that COVID had impacted the costs and timing of projects, as many distributors had to lay off staff and were still short staffed as of mid-2021. They

said there had been delays in orders, and rising costs for certain equipment on the order of 5% to 15% due, for example, to increased steel and fitting costs.

3.6 DATA SUFFICIENCY

In accordance with Connecticut evaluation guidelines, the project team reviewed the Companies' tracking data and found it to be sufficient for the purposes of our evaluation, and generally sufficient for conducting an impact evaluation of the Midstream programs.

Section 2.4.2.2 provides details on the primary data limitation we encountered—specifically, gaps in HVAC contractor contact information.³⁵ We worked to fill these gaps with information from the implementation vendor and third-party sources and were able to obtain sufficient contact information to support a survey of HVAC contractors, despite some challenges in recruiting contractors for the survey. Because end-user and distributor contact information was generally complete, this limitation in contractor information would not hamper an impact or other evaluation of the Midstream program, and so we have not included a recommendation to address it.

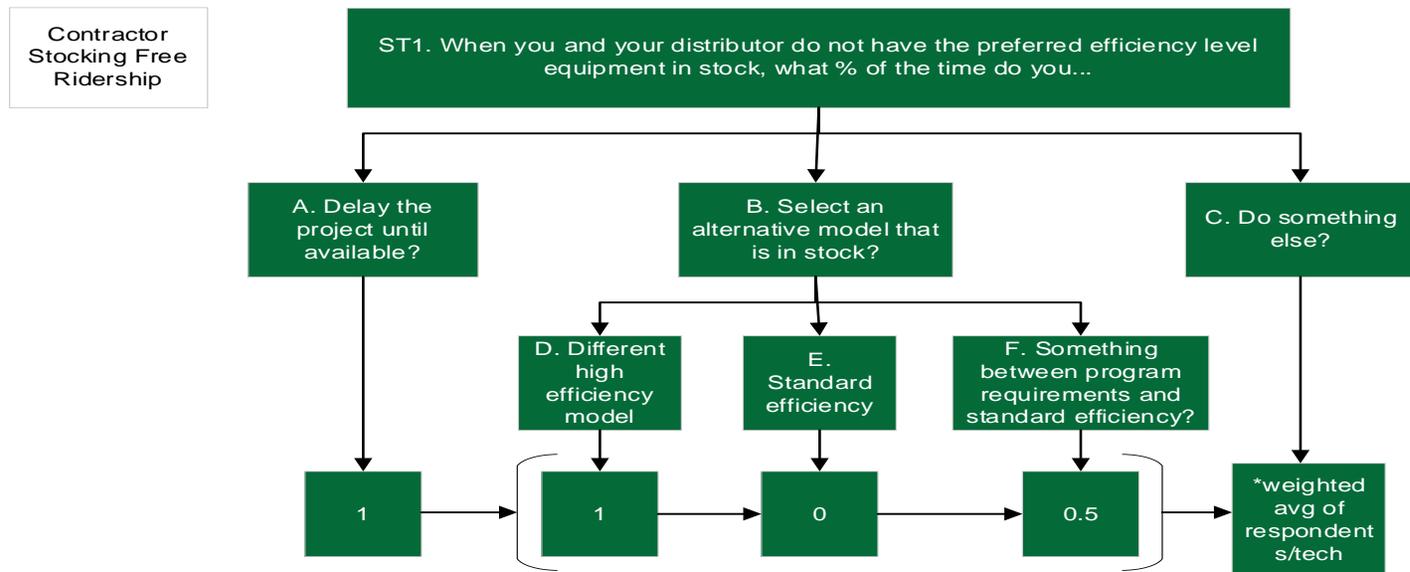
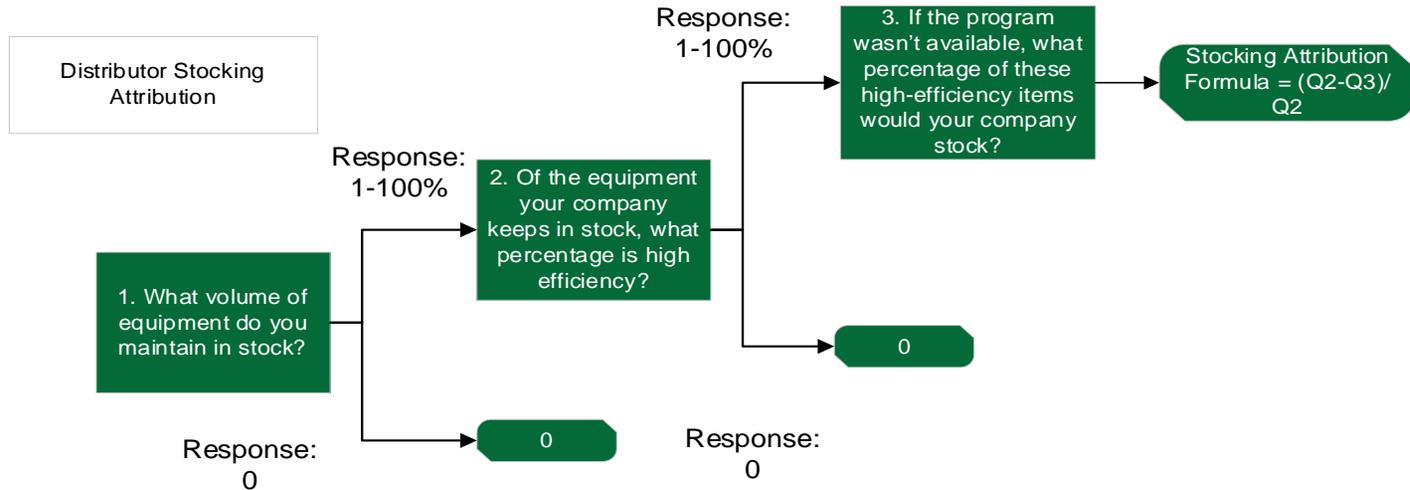
³⁵ For example, 76% of projects were missing email addresses, 43% were missing phone numbers, and 30% did not have a contractor name or mailing address.

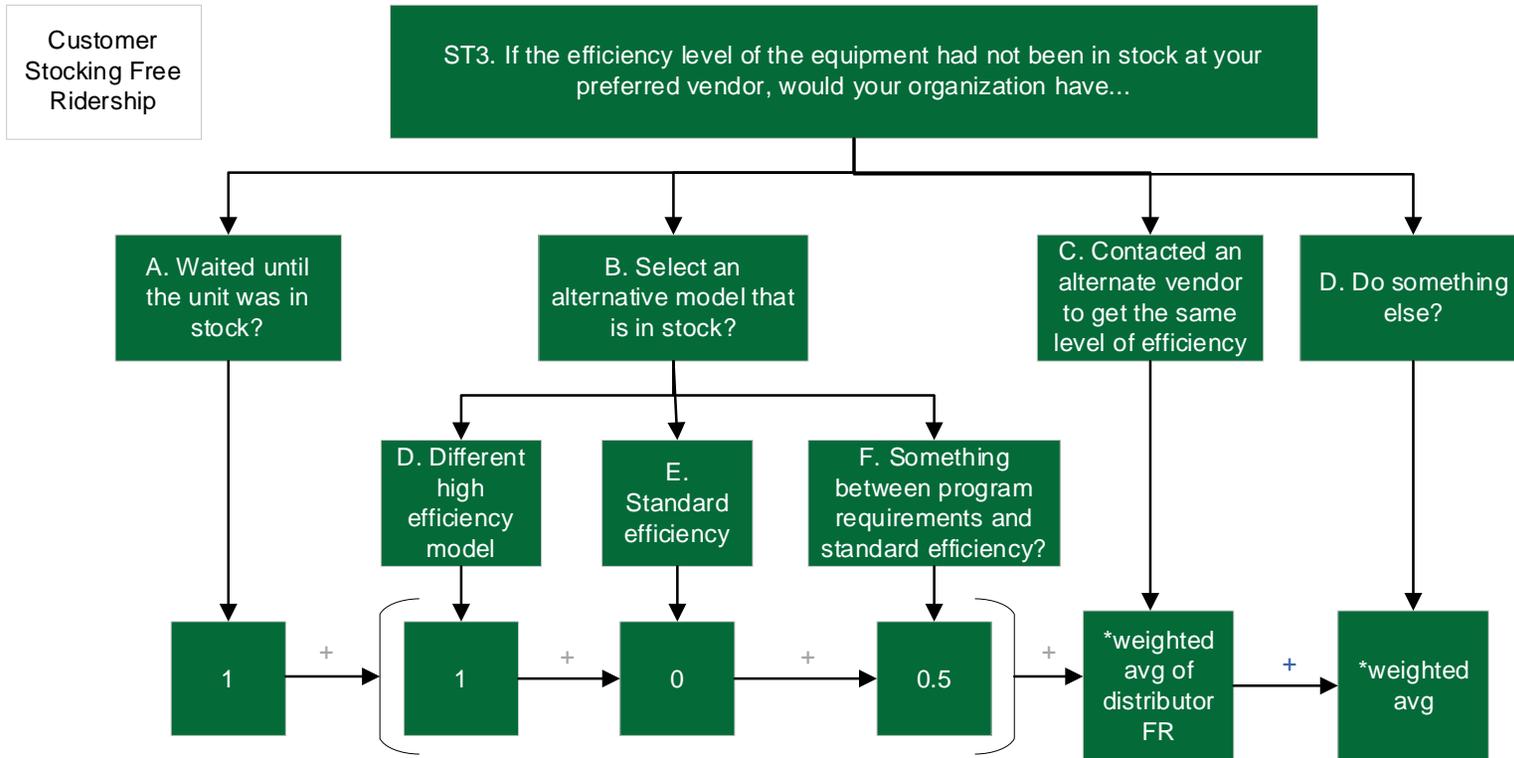
Appendix A Detailed Causal Pathway Calculations

This section contains a detailed summary of how the evaluation team calculated free-ridership and attribution for distributors, contractors, and end users using the non-nested causal pathway approach.³⁶

³⁶ The team also considered a nested approach, which matches contractors or customers directly to the distributors they worked with. However, due to small sample sizes and data limitations in the ability to match distributors with contractors or customers, we determined that this approach was not feasible.

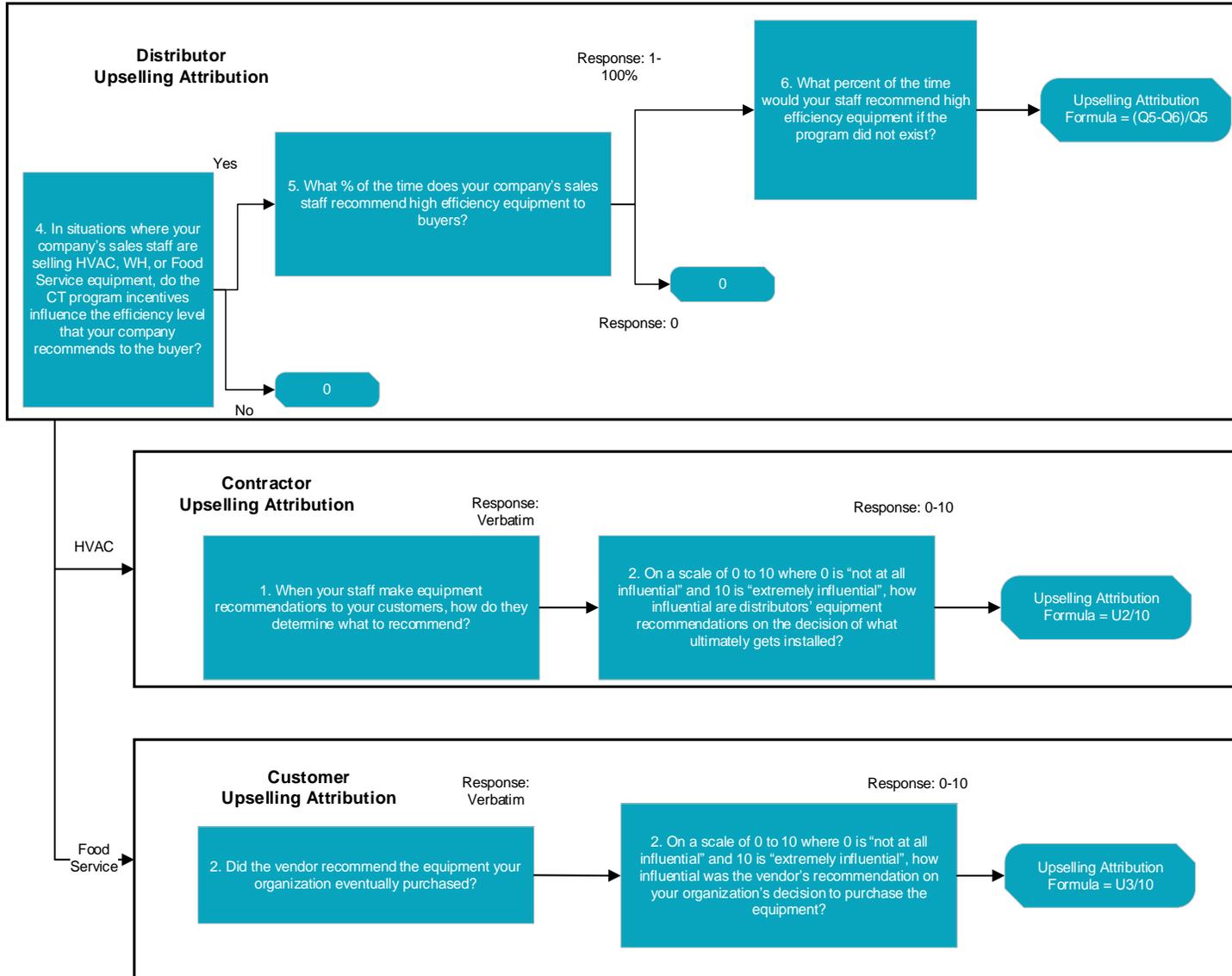
A.1 STOCKING CAUSAL PATHWAY





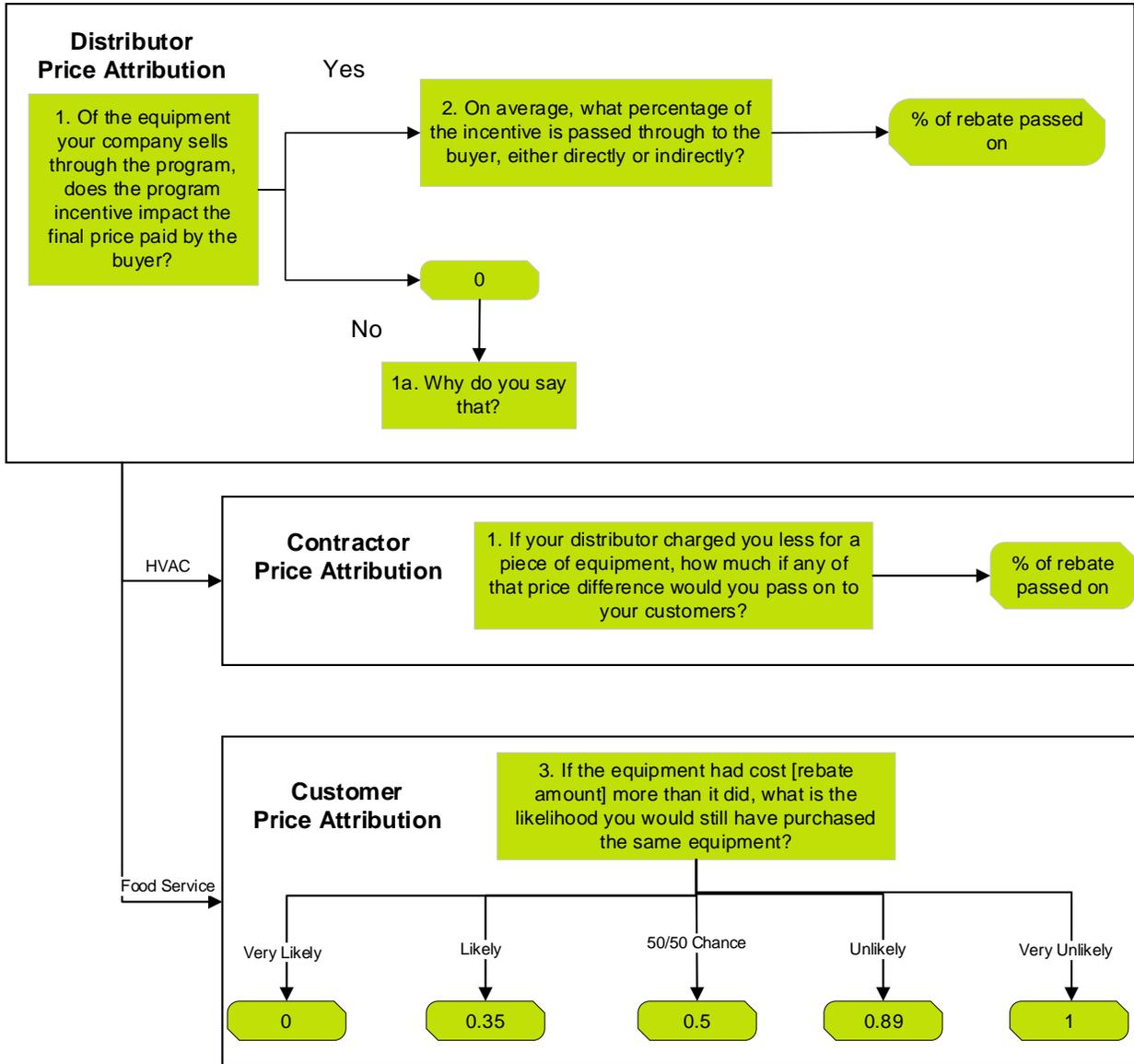
A.2 UPSELLING CAUSAL PATHWAY

The below flowchart details the calculations for the non-nested upselling causal pathway algorithm.



A.3 PRICING CAUSAL PATHWAY

The below flowchart details the calculations for the non-nested pricing causal pathway algorithm.



Appendix B Distributor Interview Guide

Section	Instrument Goal	
Screening questions	To identify the contact who is most familiar with the sales of high efficiency equipment through Energize CT	SC1, SC1a, SC2, G1
General distributor information	Get the contact to think about their business before diving into causal pathway questions	G2, MA1, MA2
Market effects	Obtain a high-level understanding of efficient products and sales	ME0, ME1, ME2, ME3, ME4,
Stocking	Questions to understand what technologies the distributor keeps in stock and why. Questions will be an input to the causal pathway calculation. Question A is to quality check previous question responses	ST1, ST2, ST3, ST3b
Upselling	Questions to determine the impact of the program on the distributor's upselling tactics. Question A is a quality check against previous responses	U4, U5, U6, U7
Pricing	Questions to determine if the program incentive impacts the final price paid by the customer, and how much of the incentive is passed on to the contractor or end-user	P1, P1a, P2
Counterfactuals & Prospective NTG	Questions to obtain NTG values in the traditional manner by asking the distributor about their sales of high efficiency equipment with and without the program. These are included in the survey to ensure NTG data is collected even if the causal pathway approach is not feasible	MC1, MC2, MC2a, R1, R1a, MC3, MC4, NC1
Process	Questions to obtain feedback on program satisfaction, obstacles, and suggestions	PR1, PR2, PR3,

Instructions For Interviewer

This document contains a set of telephone interview questions intended for distributors who sold high efficiency equipment that was claimed either through an Upstream C&I HVAC, Food Service, or Hot Water program offered by Energize CT.

1. Text in bold should be read aloud.
2. Text in brackets are notes for the interviewer

Equipment Type and Incentive Tier Levels

Equipment described as “high efficiency” is any of the products included in the Energize CT table below. or relevant questions, such as ST2, interviewer reads requirements and incentives for selected equipment types, focusing on the distributor’s most common equipment types in the tracking data table in question SC1.

EnergizeCT Commercial Foodservice Equipment Rebates, 2021

Equipment	Efficiency Requirements	Max Rebate Per Unit
Gas Fryer	ENERGY STAR Certified	\$1,000
Gas Griddle	ENERGY STAR Certified	\$500
Gas Spray Valve	ENERGY STAR Certified	\$50
Gas Ovens	ENERGY STAR Certified	\$1000 - \$4500
Gas Steamer	ENERGY STAR Certified	\$2,000
Gas Infrared Broiler	ENERGY STAR Certified	\$600 - \$3500
Gas Dishwasher	ENERGY STAR Certified	\$50 - \$250
Electric Ovens	ENERGY STAR Certified	\$400 - \$2500
Electric Dishwasher	ENERGY STAR Certified	\$50 - \$250
Electric Fryer	ENERGY STAR Certified	\$150 - \$550
Electric Griddle	ENERGY STAR Certified	\$650
Food Holding Cabinet	ENERGY STAR Certified	\$250 - \$750
Electric Ice Machine	ENERGY STAR Certified	\$50 - \$300
Gas Spray Valve	ENERGY STAR Certified	\$50
Electric Steamer	ENERGY STAR Certified	\$2,400
Refrigerator	ENERGY STAR Certified	\$150 - \$300
On-Demand Handwrapping Machine	ENERGY STAR Certified	\$125
Freezer	ENERGY STAR Certified	\$150 - \$350
Ultra-Low Temp Freezers	ENERGY STAR Certified	\$1,500

EnergizeCT HVAC and Hot Water Equipment Rebates, 2021

Equipment	Efficiency Requirements	Rebate
Air Source Heat Pump (mini splits)	≥ 16 SEER	\$250/ton
	≥ 20 SEER	\$500/ton

C1902A CONNECTICUT MIDSTREAM C&I HVAC & WATER HEATING AND FOODSERVICE NET-TO-GROSS REVIEW

Equipment	Efficiency Requirements	Rebate
Air Source Heat Pump (ductless splits)	≥ 10.5 EER	\$180 - \$225/ton
	≥ 11.5 EER	\$200 - \$250/ton
Condensing Gas Boiler	AFUE/Thermal Efficiency ≥ 92%	\$12/Input MBH
Condensing Gas Furnace	AFUE/Combustion Efficiency ≥ 92%	\$8/Input MBH
Condensing Gas Unit Heater	Thermal Efficiency ≥ 90%	\$12/Input MBH
Faucet Aerator	≤ 1.5 gpm WaterSense Certified	\$8/unit
Heat Pump Water Heater	≥ 2.0 UEF ENERGY STAR Certified	\$750/unit
Large Domestic Hot Water Boiler	> 75,000 BTUh Input; Thermal Efficiency ≥ 85%	\$5/Input MBH
Low Flow Shower Head	≤ 2 gpm WaterSense Certified	\$20/unit
Natural Gas Infrared Radiant Heater	≤ 50,000 BTUh	\$550/unit
	> 50,000 BTUh	\$600 - \$1,150/unit
Non-Condensing Gas Boiler	AFUE ≥ 85% or Thermal Efficiency ≥ 82%	\$7/Input MBH
On-Demand Domestic Hot Water	EF ≥ 0.85 or Thermal Efficiency ≥ 90%	\$6/Input MBH
Smart Thermostat	ENERGY STAR Certified	\$100/unit
Storage Type Domestic Hot Water	≥ 90% Thermal Efficiency	\$8/Input MBH
Unitary & Split HVAC Equipment	≥ 10.8 EER	\$200 - \$300/ton
VRF Air-Cooled Heat Pump	≥ 10.9 EER	\$200/ton
Water Source Heat Pump	≥ 14 EER	\$750/ton

Introduction

Hello, my name is [Interviewer_name] and my company, DNV, is calling on behalf of Energize CT, which provides rebates, financing and services to Connecticut businesses for energy efficiency improvements. Our records show that your company received rebates for high efficiency equipment through the Upstream HVAC & Water Heating [or Food Service] program in [2019/2020]. Your responses about your experience with the program and the overall market will help the program improve and maintain cost-effectiveness. Is there someone that I can speak with about the Upstream program?

[IF NECESSARY, ADD]: “We’re not selling anything, this is purely for research purposes to help understand high efficiency equipment purchases in Connecticut.”

[IF NECESSARY, ADD]: “All your responses will be kept confidential.”

[IF ASKED] “If you would like to verify the legitimacy of this research, you can reach utility program staff for Eversource at [...] and UI at [...].”

[IF ASKED WHAT ENERGIZE CT IS] “Energize CT is an initiative dedicated to empowering CT to make smart energy choices, and provides CT consumers, businesses, and communities with the resources to make it easy to save energy and build a clean energy future. The initiative partners with Eversource, UI, CT Natural Gas Corporation, and Southern CT Gas Company.”

Yes – Record name, email, and phone number	1	Skip to SC1
No	2	Thank & Terminate
Don't Know	98	
Refused	99	

Screener questions

SC1. Energize CT offers a program that provides financial incentives directly to distributors/dealers to reduce the cost of the high efficiency equipment they sell. The program records show your company received rebates. Are you familiar with your company's participation in one of these programs?

Yes	1	SC2
No	2	SC1a
Don't know	98	SC1a
Refused	99	

SC1a. Who at your company could I speak with that would be familiar with this program?

Record name, email, and phone number and ask to speak with them.	1	Introduction
No one	2	Terminate
Don't know	98	
Refused	99	

[ITERATE SC1, SC1a UNTIL YOU FIND SOMEONE KNOWLEDGABLE ABOUT HIGH EFFICIENCY SALES]

SC2. I know you're busy, so we are offering a \$100 gift card for completing this 30-minute interview. Would you be willing to participate?

[AFTER THEY AGREE, OR IF THEY ASK BEFORE AGREEING] **All survey information collected including the results to this survey will be treated confidentially and reported only in aggregate form.**

Yes	1	G1
No	2	SC1a
Don't know	98	
Refused	99	

General distributor information

G1. Today I'd like to ask you about [Measure_type1, Measure_type2, Measure_type3]. Do you have time to discuss these technologies now?

[The technologies we will survey the distributor on will be pre-filled for the interviewer]

Yes	1	G2
No	2	
Reschedule	3	Record name, number, email, date and time of follow-up
Don't know	98	G2
Refused	99	

Throughout this interview, we are defining "high efficiency" as equipment that is at or above the required efficiency level for Energize CT program rebates. For example, based on Energize CT program data, your company sold the following program-rebated high-efficiency equipment in 2019 and 2020:

[Insert tier and incentive levels from tracking data specific to each interview; interview focus on 3 selected measures]

G2. What percentage of [Measure_type] do you sell to installation contractors, and what percentage do you sell directly to end-users? End-users are defined as the final customer who owns the equipment. Your best guess is fine.

[The survey will be pre-filled to reflect only the technologies that the distributor is being interviewed about.]

Technology	Percent sold to Contractors	Percent sold to end-users	Question sequence
[Measure_type1]	%	%	ME0
[Measure_type2]	%	%	
[Measure_type3]	%	%	
Don't know	98	98	
Refused	99	99	

Market Effects

ME0. Could you describe the typical sales process for HVAC & Water Heating [or Food Service] equipment in your own words?

PROBES:

- Who are your typical customers (e.g., contractors, end-use customers)?
- How and why do customers end up coming to purchase something?
- How do customers typically decide what to buy?

Record verbatim		ME1
Don't know	98	
Refused	99	

ME1. Which, if any, of the following influence sales of high efficiency equipment—that is, equipment that meets or exceeds Energize CT efficiency requirements?

[Refer to tables starting on page 2 for definitions of high efficiency][RECORD YES/NO]

Sales upselling practices	1	ME2
Available stock / delivery time	2	
ROI or payback calculations	3	
Non-energy benefits from high efficiency equipment (e.g., improved comfort from less heat waste from foodservice equipment or HVAC equipment)	4	
Engineer / Architect preferences	5	
Manufacturer rebates / promotions	6	
Utility rebates	7	
Non-rebate program activities (e.g., quarterly sales meeting, letter of commitment, market reports)	8	
Other (Record)	50	
Don't know	98	
Refused	99	

ME2. Thinking about the same list of factors, what is the strongest driver when it comes to selling high efficiency equipment?

[PROMPT AS NEEDED WITH "YES" RESPONSES FROM ME1. RESTRICT RESPONSE TO ONE ITEM]

Sales engineers upselling practices	1	ME3
Available stock / delivery time	2	
ROI or payback calculations	3	
Non-energy benefits from high efficiency equipment (e.g., improved comfort from less heat waste from foodservice equipment or HVAC equipment)	4	
Engineer / Architect preferences	5	
Manufacturer rebates / promotions	6	
Utility rebates	7	
Non-rebate program activities (e.g., quarterly sales meeting, letter of commitment, market reports)	8	
Other (Record)	50	
Don't know	98	
Refused	99	

ME3. Which, if any, of the following are a barrier to sales of high-efficiency equipment?

[RECORD YES/NO]

Increased cost of HE models		ME4
Increased size/weight of HE models		
Increased delivery time of HE models		
Market demand or turnover rate		
Sales marketing / educating buyers		
Ability to keep repairing old equipment		
Other (Record)		
Don't know		
Refused		

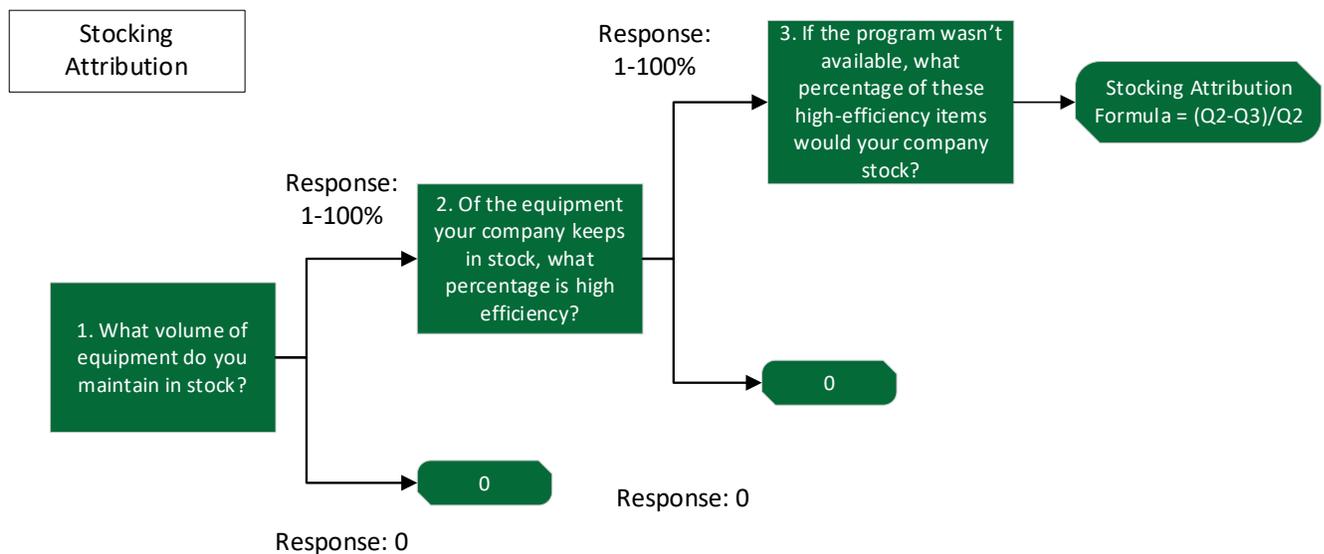
ME4. What is the largest barrier when it comes to selling high-efficiency equipment?

[PROMPT AS NEEDED WITH "YES" RESPONSES FROM ME3. RESTRICT RESPONSE TO 1 ITEM]

Increased cost of HE models	1	ST1
Increased size/weight of HE models	2	
Increased delivery time of HE models	3	
Market demand or turnover rate	4	
Sales marketing / educating buyers	5	
Ability to keep repairing old equipment	6	
Other (Record)	50	
Don't know	98	
Refused	99	

Influence of Stock

[Reviewer note: The flow chart below is the same algorithm for evaluating stocking attribution as was utilized in the TXC35 study and includes the same key questions.]



ST1. Next, I'd like to ask you about the amount of equipment you keep in stock versus have to order for a specific technology. This includes all the [Measure_type] equipment you sell, not just the high efficiency models [see page 2 for high efficiency requirements]. What percent of units of [Measure_type] equipment you sell is from the stock you maintain?

[Record results in table in question ST3. We are trying to understand what percent of the time the technology type we're asking them about (e.g., VRF) is in stock already and can be immediately sold versus having to order it to submit a customer order.]

ST2. Of the [Measure_type] your company keeps in stock, [Result_ST1], what percentage of units is high efficiency? High efficiency is defined as what the Energize CT programs supports.

[If needed refer to technology tables starting on page 2]

ST3. The Energize CT Upstream program offers marketing, outreach, and training as well as incentives for each [Measure_type] sold. I'd like you to imagine that the program had not provided your company any of these offerings, including incentives, for these high-efficiency units sold throughout 2019 and 2020. Under this hypothetical scenario, what percentage of all the [Measure_type] units that your company keeps in stock would be high efficiency?

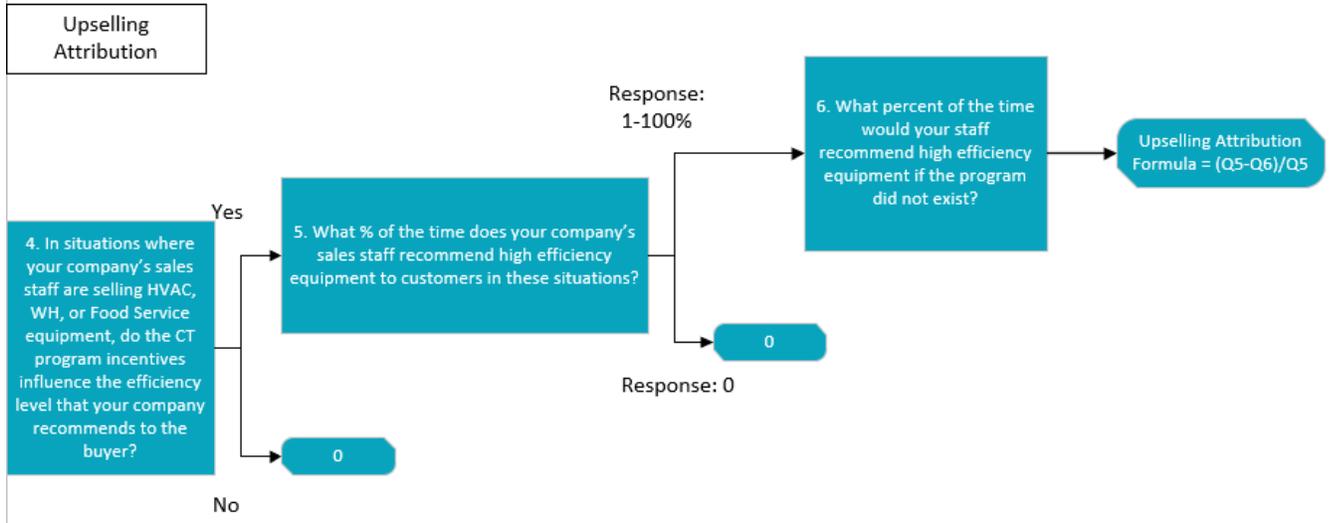
Equipment	1. % total equipment in stock	2. % of equipment in stock that is high efficiency	3. If no program, % high efficiency stocked?	
[Measure_type1]				Repeat Q ST1-ST3 for each equipment type sold
[Measure_type2]				
[Measure_type3]				

ST3b. Why do you say that?

Record verbatim		U4
Don't know	98	
Refused	99	

Influence of Upselling

[Reviewer note: The flow chart below is the same algorithm for evaluating upselling attribution as was utilized in the TXC35 study and includes the same key questions.]



[For purposes of this survey, the term “buyers” will denote both contractors and end-users (final customer)]

U4. In situations where your company’s sales staff are selling [Measure_type], do the Upstream HVAC & Water Heating [Food Service] program incentives, marketing, outreach and training influence the efficiency level that your company recommends to buyers?

Yes	1	U5
No	2	
Don't know	98	
Refused	99	

U5. What percent of the time does your company’s sales staff recommend high efficiency equipment [Measure_type] to buyers?

[Record results in table in Q U6]

U6. I’d like you to imagine that the program had not provided your company any of these offerings, including incentives, for these high-efficiency units sold throughout 2019 and 2020. Under this hypothetical scenario, what percent of the time would your staff recommend the high efficiency [Measure_type]?

Equipment / Size	5. % of time high efficiency equipment is recommended with the program	6. % of time high efficiency equipment is recommended without the program	
[Measure_type1]			

[Measure_type2]			Repeat Q U4-U6 for each equipment type sold
[Measure_type3]			

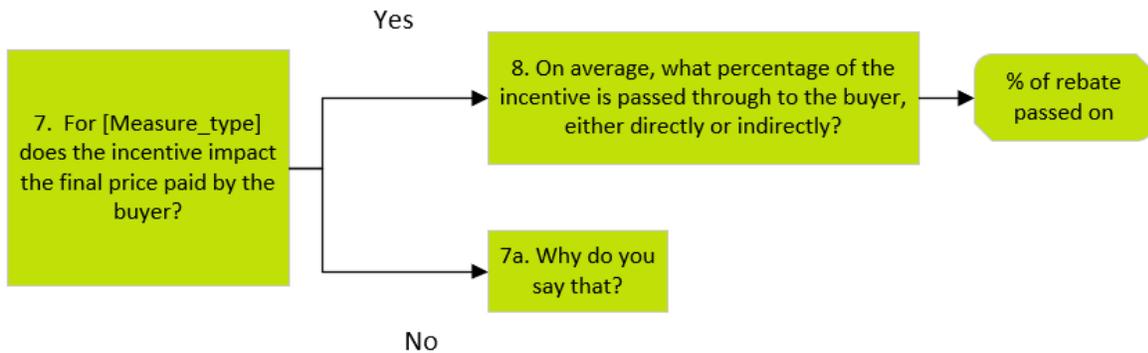
U7. Why do you say that?

Record verbatim		P1
Don't know	98	
Refused	99	

Influence of Price

[Reviewer note: The flow chart below is the same algorithm for evaluating pricing attribution as was utilized in the TXC35 study and includes the same key questions.]

Price Attribution



P1. For [Measure_type] does the incentive impact the final price paid by the buyer?

[In this setting a buyer includes a contractor or end-user/customer]

[Record results in table in Q P8]

Yes	1	P1a
No	2	
Don't know	98	
Refused	99	

P1a. [If P7 = “no”] Why do you say that?

[Record responses per measure in table in Q2]

Record verbatim		P2
Don't know	98	
Refused	99	

P2. On average, what percentage of the [Measure_type] incentive is passed through to the buyer)?

[In this setting a buyer includes a contractor or end-user/customer]

[Enter percent in table below and then restart at Q7 for each equipment type sold, then QMC1]

Equipment / Size	1. Incentive impacts buyer price? (Y/N)	1a. Why do you say that? [Record verbatim]	2.% incentive passed through to buyer	
[Measure_type1]				Repeat questions P1-P2 for each technology measure the distributor sold through the Energize CT program
[Measure_type2]				
[Measure_type3]				

Market, Counterfactuals/Prospective NTG

Now I have some questions about your company’s unit sales of equipment in Connecticut in [2019/2020].

MC1 What percentage of your company’s total unit sales of [Measure_type] throughout 2019 and 2020 would you estimate was high efficiency, which is defined as [SEE ‘EQUIPMENT SECTION’ ABOVE]?

[Input percentages of total unit sales per technology type in table for question MC4. The goal is to obtain the difference]

MC2. What percentage of your company’s total unit sales of high efficiency [Measure_type] in Connecticut throughout 2019 and 2020 would you estimate received an incentive through the Upstream C&I HVAC & Water Heating [Food Service] program?

[Input responses per technology type in table in question MC4]

[If MC1 is less than 100%, ask MC2a to get at difference]

MC2a. Why didn’t your company receive incentives for all the Program-eligible high-efficiency [Measure_type] sold in Connecticut throughout 2019 and 2020?

[Prompt as needed based on response from MC1; record all that apply]

Unaware of incentive for this equipment, size	1	Q MC3
Didn't think equipment, size qualified for incentive	2	
Missed opportunity to receive incentive/unable to request for incentive	3	
Received downstream/mid-stream rebate	4	
Not in utility/PA service territory	5	
Other reason [specify]	50	
Don't know	98	
Refused	99	

[Repeat questions in this section for each of the equipment type that respondent's company sold or distributed either from tracking data or above section Equipment Type and Size Distributed]

R1. Next, I'll ask about your company's total sales of high-efficiency [Measure_type] in Connecticut throughout 2019 and 2020—meaning all high efficiency units, whether or not they received program discounts.

During this period the Connecticut Upstream program offered marketing, outreach and training as well as incentives for each [Measure_type] unit sold. I'd like you to imagine that the program had not provided your company any of these offerings, including incentives, for these high-efficiency units sold in 2019 and 2020. Under this hypothetical scenario, do you think your sales of high efficiency [Measure_type] units sold throughout 2019 and 2020 would have been about the same, lower, or higher?

The same	1	R1a
Lower	2	
Higher	3	
Don't Know	98	MC3
Refused	99	

R1a. [FOR R1 = 1, 2, or 3] Why do you think your unit sales of high efficiency [Measure_type] would have been the [same/lower/higher] throughout 2019 and 2020 under this hypothetical scenario without the Upstream program?

Record verbatim		MC3
Don't know	98	
Refused	99	

Next, I'll ask you to predict high-efficiency equipment sales in 2022 under two different hypothetical scenarios. In the first scenario, the Connecticut Upstream C&I HVAC & Water Heating [Food Service] program continues to offer program incentives, marketing, outreach and training through 2022. In the second scenario, the program is discontinued at the end of 2021. Assume all other factors, such as manufacturer rebates, remain the same.

MC3. Assuming that the Connecticut Upstream C&I HVAC & Water Heating [Food Service] program continues to offer support for [Measure_type] through 2022, including incentives, marketing, outreach, and training, what percentage of the total [Measure_type] units your company sells in Connecticut in 2022 would you expect to be high efficiency?

[If asked about COVID impacts, respond: "assuming recent/current COVID-related trends continue".]

[Input responses per technology type in table for question MC4]

MC4. [REPEAT FOR EACH EQUIPMENT TYPE SOLD] Next, under the second hypothetical scenario, let's assume the Connecticut Upstream C&I HVAC & Water Heating [Food Service] program is discontinued at the end of 2021. Under this scenario, what percentage of the total [Measure_type] units your company sells in Connecticut in 2022 would you expect to be high efficiency?

[If asked about COVID impacts, respond: "assuming recent/current COVID-related trends continue".]

Equipment / Size	MC1. % program-incented of high efficiency unit sales	MC2. % high-efficiency of total units	MC3. % high efficiency with program	MC4. % high efficiency without program
[Measure_type1]				
[Measure_type2]				
[Measure_type3]				

[If respondent provides a percent value that is higher for MC4 than for MC3 (they believe there would be more efficient products without the program), confirm to ensure they understood the question]

MC5. [FOR MEASURES WHERE MC4 IS EQUAL TO MC3] Do you have any suggestions for improvements to help the Upstream program encourage greater sales of high efficiency [Measure_type]?

[FOR ANY MEASURES WHERE MC4 IS GREATER THAN MC3, PROBE TO ENSURE THAT RESPONDENT UNDERSTOOD QUESTION.]

Record verbatim		NC1
Don't know	98	
Refused	99	

NC1. [REPEAT FOR EACH MEASURE TYPE SOLD] We're trying to understand how common the various circumstances around equipment purchases are. What is your best estimate of the

percentage of your total sales of [Measure_type] in 2019 and 2020 that were part of a whole building new construction or major renovation project, as opposed to an equipment-specific replacement or upgrade?

Equipment / Size	NC1. % sold due to new construction/major renovation
[Measure_type1]	
[Measure_type2]	
[Measure_type3]	

Process Questions

PR1. Please rate your level of satisfaction with each of the following items related to the program using a scale of 1 to 5, where 1 is 'very dissatisfied' and 5 is 'very satisfied.'

[record satisfaction number per category in table below]

Key

- 1=Very dissatisfied
- 2=Somewhat dissatisfied
- 3=Neither satisfied nor dissatisfied
- 4=Somewhat satisfied
- 5=Very satisfied
- 98=Don't Know
- 99=Refused

Your experience overall		PR2
The type of equipment eligible for incentives		
The incentive amount provided to distributors		
The incentive amount provided to buyers		
The clarity of information provided about how to participate		

The application process to receive reimbursement		
The pre-approval process for larger sales		
The responsiveness of program staff to your questions		

PR2. [If any PR1 ratings < 3] You said you were less than satisfied with [FIRST PR1 ITEM RATED <3, SECOND PR1 ITEM RATED <3, ETC], why was that?

[Record verbatim]		PR3
Don't know	98	
Refused	99	

PR3. What obstacles do you face, if any, when participating in the program?

[Record verbatim]		MA1
Don't know	98	
Refused	99	

MA Overlap

[FLAG FOR DISTRIBUTORS WHO WERE INTERVIEWED IN MA]

MA1. In addition to Connecticut do you also work with contractors or customers in Massachusetts?

Yes	1	MA2
No	2	END
Don't Know	98	END
Refused	99	END

MA2. We have some familiarity with the Massachusetts market and are trying to get a better idea of differences in the market for efficient HVAC & water heating [foodservice] equipment between Massachusetts and Connecticut. Can you speak to any differences you see between the two states? [If needed, prompt with examples including: industry segments you work with, state or local goals or mandates, level of economic activity/growth among businesses you work with, company policy and sustainability goals, differences in codes, etc.]

Record verbatim		MA3
Don't know	98	
Refused	99	

MA3. Similarly, can you speak to key differences between the Upstream program in the two states, and how that might impact the markets differently? [If needed, prompt with examples including: the requirement to pass the full incentive amount to customers in CT, or the incentive levels, eligible measures, participating distributor or contractor network, etc.]

Record verbatim		END
Don't know	98	
Refused	99	

End. This concludes all the questions I have for you today. Unless you have any questions for me, the survey is complete. Thank you for your time. Please provide an address to mail your \$100 gift card.

[If they say they cannot accept a gift card say, **the gift card is not in your name so you are welcome to donate it to a charity of your choice or you do not have to accept it**].

Appendix C Contractor and End-User Survey

This document contains both contractor and end-user (customer) survey questions. The respondent will only answer one set of questions, depending on who they are.

Instructions for Programmer

This document contains a set of web survey questions intended for contractors who sold and installed high efficiency equipment that received rebates through the commercial Midstream HVAC & Hot Water program, or end-users who purchased high efficiency equipment from the Midstream HVAC & Hot Water program or the Midstream Foodservice program. The questions should be coded so that the respondent is only asked contractor or customer questions, depending on who they are. Similarly, where indicated by brackets showing [HVAC & Hot Water / Foodservice], the questions should be programmed to refer to one of the two programs depending on who the respondent is.

Instructions for programmer are indicated in [brackets] throughout the instrument.

Recruiting Email

[Subject Line]

Energize CT: [HVAC & Hot Water/Foodservice] Study Opportunity

[BODY]

Dear [First Name],

We are reaching out to you about an opportunity to participate in an Energize CT study on [HVAC & Hot Water / Foodservice] equipment that was recently purchased and received a rebate from Energize CT.

We are offering a \$50 gift card to participate in the study, to be paid directly to you or your company.

What we are asking you to help with: Complete a web survey about your experience and perspectives on the Energize CT Commercial Midstream [HVAC & Hot Water / Foodservice] program in Connecticut—also known as the instant rebate or upstream program. The survey will take approximately 10 to 15 minutes to complete.

Why we are reaching out to you: You have been identified as someone who recently purchased or installed high efficiency equipment that received a rebate through Energize CT. By sharing your purchasing decisions, you will help the utility sponsors of Energize CT better understand the market conditions in which the Midstream [HVAC & Hot Water / Foodservice] program operates so that they can improve the program and assess its impacts on statewide energy efficiency and climate progress.

All the information you provide will be treated as confidential, and your responses will be reported with no identifying information and grouped with the responses of your peers. If you have additional questions regarding the study, please contact:

[Eversource and UI contact name, email, and phone number here]

C.1 CONTRACTOR SURVEY

This section contains the contractor specific questions. Below is a table of the goals of the contractor survey; this does not need to be programmed and is here for reference.

Question or Section	Instrument Goal	Question mapping
Equipment Types Installed	Get a better understanding of what the contractor installed on behalf of the end-user.	S1, D1, D2
Equipment Choices	Learn more about when technologies were recommended or requested and by whom.	D3, D4, D5, D6
Stocking	Questions to understand whether the contractor keeps certain technologies in stock and why.	ST1, ST2
Upselling	Questions to determine the impact of the program on the contractor's upselling tactics. Question a is a quality check against previous responses.	U1, U2, U3
Pricing	Questions to determine how the program incentive impacts the final price paid by the end-user, and how much of the incentive is passed on.	P1, P2, P3
Counterfactuals	These questions are intended to obtain NTG values in the traditional manner by asking the contractor about their sales of high efficiency equipment with and without the program. These are included in the survey to ensure NTG data is collected even if the causal pathway approach is not feasible.	ST3, ST4, U4, U5
Spillover	These questions are designed to obtain estimates of nonparticipant spillover	SP1-SP4
Process	Obtain feedback on program awareness, satisfaction, obstacles, and suggestions.	PR1-PR9

[NOTE TO PROGRAMMER: Contractors may be surveyed about up to 2 technologies, identified in questions as [m1_tech], or [m2_tech]. All questions that include [m1_tech] should be repeated for [m2_tech]. Otherwise questions only need to be asked once—including questions such as S1 that include both [m1_tech] and [m2_tech] in the same question.

Equipment Choices

S1. According to our records, your company recently completed several installations of [m1_tech] and [m2_tech] equipment that received a rebate through the Energize CT Midstream

program. This program is also sometimes referred to as the instant rebate or upstream program but will be referred to as the Midstream program throughout this survey.

Are you personally involved in the sales and equipment selection process for that type of equipment?

If not, please provide the name and email for the person most familiar with the purchase of [m1_tech] and [m2_tech] equipment.

[Note to programmer: To allow for contractors with only one type of measure, program this question to remove the “and” between [m1_tech] and [m2_tech] where [m2_tech] is blank.]

1	Yes, I am familiar with the purchased equipment	D1
2	No [Record name and email]	Terminate
98	Don't know	
99	Refused	

D1. When your company installs [m1_tech] equipment, about what percent of the time does each of the following equipment situations apply? Is the type of equipment already pre-specified either by the customer, the architect or designer, or by someone else outside your firm?

[Percents should add up to 100%]

1	Pre-specified by architect/designer	(Enter percent _____)	D1a
2	Customer already knows what they want	(Enter percent _____)	
3	You help customer decide what to install	(Enter percent _____)	
4	Something else	(Enter percent _____)	
998	Don't Know		
999	Refused		

D1a. [IF D1_4 >=10%] Please describe what happens in the “something else” category.

Record verbatim _____ Go to D2

D2. [IF D1_3 <10%, skip] How often is your company the most influential decision maker (rather than the customer or another party) on the type of equipment that is eventually installed?

1	Rarely	D3
2	Some of the time	
3	About half the time	
4	Most of the time	
5	Almost Always	
98	Don't Know	
99	Refused	

[NOTE TO PROGRAMMER: If possible, randomize order of questions D3, D4, and D5, so they are not always presented in the same order to respondents. Also, repeat question sequence D3 through D6 for m1_tech and m2_tech.]

The next set of questions uses a scale of 1 to 5 where 1 is not important and 5 is extremely important.

D3. On a scale of 1 to 5, for projects where there are options as to the types of [m1_tech] equipment to be installed, what role does *equipment availability* play in the choices you offer to the customer?

1	Not Important	D4
2	Somewhat Important	
3	Moderately Important	
4	Very Important	
5	Extremely Important	
98	Don't know	
99	Refused	

D4. On a scale of 1 to 5, for projects where there are options as to the types of [m1_tech] equipment to be installed, what role does *equipment price* play in the choices you offer to the customer?

1	Not Important	D5
2	Somewhat Important	
3	Moderately Important	
4	Very Important	
5	Extremely Important	
98	Don't know	
99	Refused	

D5. On a scale of 1 to 5, for projects where there are options as to the types of [m1_tech] equipment to be installed, what role does *customer preference* play in the choices you offer to the customer?

1	Not Important	D6
2	Somewhat Important	
3	Moderately Important	
4	Very Important	
5	Extremely Important	
98	Don't know	
99	Refused	

D6. How often are your sales of [m1_tech] fulfilled out of your own inventory, rather than purchased from a distributor?

0	We do not maintain our own inventory	ST1
1	Rarely from our own inventory	

2	Sometimes from our own inventory
3	About half the time from our own inventory
4	Most of the time from our own inventory
5	Almost always from our own inventory
98	Don't know
99	Refused

Stocking Attribution

Throughout this survey, we define “high efficiency” as equipment that is at or above the required efficiency level for Energize CT Midstream program rebates.

For example, [m1_tech] must be [m1_efficiency] and [m2_tech] must be [m2_efficiency] to be considered high efficiency for purposes of receiving an Energize CT rebate.

[Repeat questions ST1 and ST2 in order for m1_tech and m2_tech. Continue to display the above text about equipment efficiency along with questions ST1 and ST2.]

ST1. Think about instances when a customer agrees to install high efficiency [m1_tech] equipment and you and your distributor *do not* have the preferred model and size equipment available in your inventory. In these cases, what percent of the time do your customers...

[SHOW ALL RESPONSE OPTIONS TOGETHER ON THE SCREEN, AND NOTE FOR RESPONDENT THAT SUM OF FIELDS MUST EQUAL 100%]

1	Delay the project until the preferred model, size, and efficiency is available? [SPECIFY %__]	ST2
2	Select an alternative model that is in stock? [SPECIFY %__]	
3	Do something else? [SPECIFY %__][PROVIDE OPEN-ENDED TEXT FIELD]	
998	Don't know	
999	Refused	

ST2. When the customer selects an alternative [m1_tech] model, how often is it

[SHOW ALL RESPONSE OPTIONS TOGETHER ON THE SCREEN, AND NOTE FOR RESPONDENT THAT SUM OF FIELDS MUST EQUAL 100%]

1	A different high efficiency model that meets Energize CT Midstream Program requirements [SPECIFY %__]	U1
2	Standard efficiency [SPECIFY %__]	

3	Something between meeting Energize CT Midstream Program requirements and standard efficiency [SPECIFY %__]	
998	Don't know	
999	Refused	

Influence of Upselling

U1. When your staff make equipment recommendations to your customers, how do they determine what to recommend?

1	[PROVIDE OPEN ENDED TEXT FIELD] _____	U2
98	Don't know	
99	Refused	

U2. On a scale of 0 to 10 where 0 is “not at all influential” and 10 is “extremely influential,” how influential are distributors’ equipment recommendations on the decision of what ultimately gets installed?

1	Record Level of Influence (0-10)	U3
98	Don't know	
99	Refused	

U3. Why do you say that?

1	[PROVIDE OPEN ENDED TEXT FIELD] _____	P1
98	Don't Know	
99	Refused	

Influence of Price

Note to reviewers: In this section “customer” means the final owner of the equipment installed.

P1. If your distributor charged you less for a piece of equipment, how much if any of that price difference would you pass on to your customers? For example, if the distributor charged 25% less for a high-efficiency unit, what percent of that savings would you pass on to your customer? Please provide a response from 0% to 100%. (Note: For this question, please assume there is no EnergizeCT requirement to pass program discounts on to customers.)

1	[SPECIFY %_____]	P2
998	Don't know	

999	Refused	
-----	---------	--

P2. Why do you say that?

1	[SPECIFY] _____	P3
998	Don't know	
999	Refused	

P3. For the following question, please answer on a 0 to 10 scale where 0 means “the customer definitely would NOT purchase the same high efficiency measure” and 10 means “the customer definitely WOULD purchase the same high efficiency measure.”

If the price of high efficiency equipment increased [5%, 10%, 25%, 50%], what is the likelihood a customer would still purchase the high efficiency equipment?

[PRESENT 0-10 SCALE AFTER EACH OPTION. 0 = 'THE CUSTOMER DEFINITELY WOULD NOT HAVE PURCHASED THE SAME HIGH EFFICIENCY MEASURE'. 10 = THE CUSTOMER DEFINITELY WOULD HAVE PURCHASED THE SAME HIGH EFFICIENCY MEASURE]

1	5% price increase [SPECIFY 0 - 10_____]	SP1
2	10% price increase [SPECIFY 0 - 10_____]	
3	25% price increase [SPECIFY 0 - 10_____]	
4	50% price increase [SPECIFY 0 - 10_____]	
98	Don't know	
99	Refused	

Process Questions

PR1. Prior to this survey, were you aware that Energize CT discounted the cost of [m1_tech] and [m2_tech]?

1	Yes	PR2
2	No	PR6
98	Don't know	

PR2. How did you first learn about these discounts? [Randomize order]

1	Distributor	PR3
2	Utility (Eversource or UI) staff or marketing materials	

3	TRC (the program implementation vendor)	
4	Energize CT marketing	
5	Other [specify]	
98	Don't know	

PR3. How often did the distributor list the dollar amount of the discount on your invoice?

1	Rarely	ST3
2	Sometimes	
3	About half of the time	
4	Most of the time	
5	Always	
98	Don't know	

Counterfactual Questions

Note to reviewers: The following questions will be available as alternative to the causal pathway questions, for contractors who are aware of the program. The program only targets distributors, so we do not want to assume that all contractors are aware of the Midstream Program.

The next few questions are about how the Energize CT Midstream program affects your sales. As a reminder, we define “high efficiency” as equipment that is at or above the required efficiency level for Energize CT program rebates.

For example, [m1_tech] must be [m1_efficiency] and [m2_tech] must be [m2_efficiency] to be considered high efficiency for purposes of receiving an Energize CT rebate.

[Repeat questions ST3 and ST4 in order for m1_tech and m2_tech. Continue to display the above text about equipment efficiency along with questions ST3 through U5.]

ST3. About what percent of the time does your company have high efficiency [m1_tech] in stock and available to your customers?

1	[Enter percent]	ST4
2	We do not keep any equipment in inventory	U4
998	Don't know	
999	Refused	

ST4. The Midstream program provides incentives, training, outreach and marketing on high efficiency HVAC & Water Heating equipment. If there were no program, about what percent of the time would your company have high efficiency models of [m1_tech] in stock and available to your customers? Your best guess is fine.

1	[Enter percent]	U4
---	-----------------	----

998	Don't know	
999	Refused	

[Repeat questions U4 and U5 in order for m1_tech and m2_tech.]

U4. What percent of the time does your company's sales staff recommend high efficiency equipment to buyers?

[Record results along with U5]

U5. If there were no Energize CT Midstream program (including incentives, training, outreach and marketing), about what percent of the time would your staff recommend high efficiency equipment? Your best guess is fine.

Equipment / Size	U4. % of time high efficiency equipment recommended with the program	U5. % of time high efficiency equipment recommended without the program	
[m1_tech]			SP1
[m2_tech]			

Spillover Questions

[Repeat questions SP1 through SP4 in order for m1_tech and m2_tech.]

As a reminder, we define "high efficiency" as equipment that is at or above the required efficiency level for Energize CT Midstream program rebates.

SP1. What percentage of your company's total unit sales of [m1_tech] in 2019 and 2020 would you estimate was high efficiency?

1	[Specify %_____]	SP2
998	Don't Know	
999	Refused	

SP2. What percentage of your company's total unit sales of *high efficiency* [m1_tech] in 2019 and 2020 would you estimate received a rebate through the Energize CT Midstream program?

1	[Specify %_____] [IF % = 100%, skip to PR1]	SP3
998	Don't Know	
999	Refused	

SP3. Why didn't your company receive rebates for all the program-eligible high-efficiency [m1_tech] sold in 2019 and 2020?

1	[Record Verbatim]	SP4
98	Don't Know	
99	Refused	

SP4. What percent of those *non-rebated, program-eligible* sales of [m1_tech] do you think occurred as a side-effect of the Energize CT Midstream program existing, and what percent would have occurred anyway, even if the Energize CT Midstream program did not exist?

1	Percent that occurred as a side effect of program: [Specify %_____] [Percentages entered for 1 and 2 must sum to 100%]	PR6
2	Percent that would have occurred anyway without program: [Specify %_____] [Percentages entered for 1 and 2 must sum to 100%]	
998	Don't Know	
999	Refused	

Market Event Questions

[Repeat question PR6 for m1_tech and m2_tech.]

PR6. What is your best estimate of the percentage of total sales of [m1_tech] in the past two years that is due to the following scenarios:

1	Percent due to replacement of failed equipment or equipment that was about to fail? [Specify %_____] [Percentages entered for 1 - 4 must sum to 100%]	PR7
2	Percent due to early replacement of working equipment? [Specify %_____] [Percentages entered for 1 - 4 must sum to 100%]	
3	Percent due to new construction or major renovation? [Specify %_____] [Percentages entered for 1 - 4 must sum to 100%]	
4	Percent due to other scenarios [PROVIDE OPEN-ENDED TEXT FIELD] [Specify %_____] [Percentages entered for 1 - 4 must sum to 100%]	
998	Don't know	
999	Refused	

PR9. Please rate your level of satisfaction with each of the following items related to the Midstream program using a scale of 1 to 5, where 1 is 'very dissatisfied' and 5 is 'very satisfied.'

Key

- 1=Very dissatisfied**
- 2=Somewhat dissatisfied**
- 3=Neither satisfied nor dissatisfied**
- 4=Somewhat satisfied**
- 5=Very satisfied**
- 98=Don't Know**
- 99=Refused**

a. Your experience overall		End
b. The type of equipment eligible for discounts		
c. The amount of the discount you received		
d. The information provided by the Distributor		
e. The performance of the equipment purchased		

Survey Complete; skip to Section 4 for “End” Summary to contractor/customer

C.2 END-USER (CUSTOMER) SURVEY

The table below does not need to be programmed and is for reference.

Question or Section	Instrument Goal	
Screener questions	To identify the contact’s role in the equipment purchase and attribute equipment choice	SC1-SC5
Market event	A series of questions to understand whether the buyer (contractor or end-user) replaced their equipment due to equipment failure or replaced it early given concerns it would fail; these are included in the stocking section of the survey	R1-R3,
Stocking	Questions to understand what technologies were available to the buyer and how immediate the need was to replace their equipment. Were they impacted in their purchasing decision by what the distributor had in stock at the time?	ST1-ST4
Upselling	Questions to determine whether the distributor attempted to sell the customer on higher efficiency equipment and whether that upselling led to a purchase	U1, U2, U3, U4

Pricing	Questions to understand the buyer's willingness to pay for higher efficiency technology	P1-P3
Process	Questions to better understand hurdles and opportunities to participate in the Midstream C&I HVAC, heat pump, and water heater program	PR1-PR4

SC1. According to our records, your company recently purchased [m1_tech] and [m2_tech] equipment that received a rebate through the Energize CT Midstream program. This program is also sometimes referred to as the instant rebate or upstream program but will be referred to as the Midstream program throughout this survey.

Were you involved in the selection and purchase of that equipment? If not, please provide the name and email for the person most familiar with the purchase of [m1_tech] and [m2_tech].

[Note to programmer: To allow for customers with only one type of measure, program this question to remove the "and" between [m1_tech] and [m2_tech] where [m2_tech] is blank.]

1	Yes, I am familiar with the purchased equipment	SC2
2	No [Record name and email]	Thanks & Terminate
98	Don't know	
99	Refused	

SC2. Did your organization purchase the equipment for use at your facility, at another facility owned by your organization, or for a customer at an outside organization you were supplying equipment to?

1	Your facility	SC3
2	Another facility owned by your organization	
3	For a customer outside of your organization	
98	Don't Know	Thank & Terminate
99	Refused	

Throughout this survey, we define "high efficiency" as equipment that is at or above the required efficiency level for Energize CT Midstream program rebates. All foodservice and laboratory equipment must be ENERGY STAR certified to be considered high efficiency for purposes of receiving an Energize CT rebate.

SC3. When your organization purchased the ENERGY STAR certified [m1_tech], what factors influenced the equipment choice? [MARK ALL THAT APPLY, RANDOMIZE ORDER]

1	Energy savings	SC4
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2	Lifecycle cost	
3	Equipment price	
4	Organization goals/requirements	
5	Physical size/space limitations	
6	Stretch code/LEED or other design certification	
7	Incentives/promotions	
8	Brand name/reputation	
9	Reliability	
10	Recommendation from distributor or contractor	
11	Immediate Need	
12	Non-energy benefits (e.g., improved comfort from HVAC equipment or less heat waste from foodservice equipment)	
13	Environmental factors	
50	Other reasons (describe)	
98	Don't Know	
99	Refused	

SC4. Did your organization purchase this equipment from a contractor or directly from a distributor?

1	Contractor	SC5
2	Distributor	R1
98	Don't Know	
99	Refused	

SC5. Which of the following best describes the effect of your contractor's recommendation on your decision to purchase the specific model of ENERGY STAR certified [m1_tech]?

1	The contractor's recommendation had NO EFFECT on the decision	R1
2	The contractor's recommendation had a SMALL EFFECT on the decision	
3	The contractor's recommendation had a MODERATE EFFECT on the decision	
4	The contractor's recommendation had a LARGE EFFECT on the decision	
98	Don't Know	

99	Refused	
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Market Event questions

R1. For the next set of questions, think specifically about the [m1_tech] that was installed in [m1_date]. Was the ENERGY STAR certified [m1_tech] replacing existing equipment?

[Repeat R1 – R3 in order for m1_tech and m2_tech]

1	Yes	R2
2	No	ST1
98	Don't know	
99	Refused	

R2. Why did your organization decide to replace your existing equipment?

[CHOOSE ALL THAT APPLY]

1	It was not functioning at all	R3
2	It was still functioning but with significant performance or maintenance problems	
3	It was too expensive to operate/Not energy efficient	
4	Our contractor/plumber recommended it	
5	We were doing a major renovation in our facility	
6	Older unit was undersized	
7	Older unit was oversized	
50	Other [RECORD RESPONSE]	
98	Don't know	
99	Refused	

R3. How much longer do you think your old equipment would have lasted?

1	Less than 1 year	ST1
2	1 to 2 years	
3	3 to 5 years	
4	More than 5 years	
98	Don't Know	
99	Refused	

Stocking Questions

[Repeat ST1 – ST4 in order for m1_tech and m2_tech]

ST1. About how many days elapsed between the decision to purchase the new [m1_tech] and the installation of the new [m1_tech]? Your best guess is fine.

1	[Enter # of days]	ST2
98	Don't know	
99	Refused	

ST2. Did you work with a distributor, a contractor, or both to make this purchase?

1	Distributor	ST3
2	Contractor	
3	Both distributor and contractor	
98	Don't know	
99	Refused	

ST3. If the efficiency level of the ENERGY STAR certified [m1_type] your organization purchased had not been in stock at your preferred vendor, would your organization have....

1	Waited until the unit was in stock	U1
2	Selected an alternative model that was in stock	ST4
3	Contacted an alternate vendor to get the same level of efficient equipment you purchased	U1
4	Something Else [RECORD]	
98	Don't know	
99	Refused	

ST4. You indicated your organization would have selected an alternative model that was in stock. Thinking back, would you most likely have selected a unit that was....

1	The same or higher efficiency as what you purchased	U1
2	Standard efficiency on the market at the time	
3	Something above standard efficiency on the market, but less efficient than what you purchased	
98	Don't know	
99	Refused	

Upselling questions

[Repeat U1 – U4 in order for m1_tech and m2_tech]

U1. When your organization purchased the ENERGY STAR certified [m1_tech], did the vendor discuss multiple types of equipment to choose from?

1	Yes	U2
2	No	U3
98	Don't know	
99	Refused	

U2. Did the vendor recommend the equipment your organization eventually purchased?

1	Yes	U3
2	No	
98	Don't know	
99	Refused	

U3. On a scale of 0 to 10 where 0 is “not at all influential,” and 10 is “extremely influential,” how influential was the vendor’s recommendation on your organization’s decision to purchase the specific ENERGY STAR certified [m1_tech] you purchased?

1	[Record Level of Influence (0-10)]	U4
98	Don't know	
99	Refused	

U4. In your own words, please explain how the vendor influenced your organization’s purchase decision.

1	[Record Response]	P1
98	Don't know	
99	Refused	

Pricing questions

[Repeat P1 – P3 in order for m1_tech and m2_tech]

P1. Do you remember the cost of the ENERGY STAR certified [m1_tech] you purchased?

1	Yes	P1a
2	No	P2

98	Don't know	P3
99	Refused	

P1a. How much did the ENERGY STAR certified [m1_tech] equipment cost in total (including installation)?

1	[Record Value]	P3
98	Don't know	
99	Refused	

P2. Do you remember the magnitude of the cost? For your organization was it a minor expense, a moderate expense, or a major expense?

1	Minor	P3
2	Moderate	
3	Major	
98	Don't know	
99	Refused	

P3. Our records show you received an Energize CT discount of \$[m1_rebate] for the ENERGY STAR certified [m1_tech]. If the [m1_tech] had cost \$[m1_rebate] more than it did, what is the likelihood you would still have purchased the same ENERGY STAR certified [m1_tech]?

1	Very unlikely to make purchase	PR1
2	Unlikely to make purchase	
3	50/50 chance to make purchase	
4	Likely to make purchase	
5	Very likely to make purchase	
98	Don't Know	
99	Refused	

Process questions

PR1. Prior to this survey, were you aware that Energize CT discounted the cost of the ENERGY STAR certified [m1_tech] and [m2_tech] your organization purchased?

1	Yes	PR2
2	No	End

98	Don't know	
----	------------	--

PR2. Were you aware of the discount at the time your organization purchased the equipment?

1	Yes	PR3
2	No	
98	Don't know	

PR3. How did your organization first learn about the discount? [Randomize order]

1	["Dealer" if subprogram = Foodservice; "Distributor" if subprogram = HVAC & Hot Water]	PR4
2	Contractor	
3	Utility (Eversource or UI) program staff or marketing materials	
4	["Energy Solutions" if subprogram = Foodservice; "TRC" if subprogram = HVAC & Hot Water], the program implementation vendor	
5	Energize CT marketing	
6	Other [Record Response]	
98	Don't know	

PR4. Did your invoice include a line item for the dollar amount of the discount?

1	Yes	End
2	No	
98	Don't know	

End of Survey

End. This concludes all the questions I have for you today. Unless you have any questions for me, the survey is complete. Thank you for your time. To what email address should I send your \$50 gift card?

Record Email address	
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