

Measuring What Matters: Aligning Midstream Evaluation Practice with Program Design

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ABSTRACT

Midstream energy efficiency (EE) programs have long demonstrated significant success in driving adoption of high-efficiency equipment by influencing supply chain actors such as distributors, dealers, and installers across a wide variety of technologies and sectors. However, evaluation approaches for these programs often rely on downstream methodologies that focus on end-use customers, leading to incomplete or inaccurate assessments of program influence and ineffective evaluations.

This paper examines the fundamental misalignment between midstream program design and traditional evaluation practices and proposes a set of best practices for both program implementation and evaluation. It highlights the importance of aligning evaluation methods with the primary points of market influence, emphasizing the role of supply chain actors in shaping purchasing decisions. Drawing on industry literature, program examples, and evaluator insights, the paper outlines key considerations for program design, data collection, survey targeting, and attribution methodologies. It also identifies common pitfalls—such as inappropriate reliance on customer surveys and overly burdensome data collection requirements—and provides actionable recommendations to improve the reliability, validity, and usefulness of evaluation outcomes.

By bridging the gap between program design and evaluation, this paper offers a framework for developing midstream programs that are both effective in transforming markets and capable of withstanding rigorous evaluation.

Introduction: Why Midstream?

Midstream energy efficiency programs leverage industry supply chains to significantly scale participation by allowing distributors, equipment dealers, or installers, to submit incentive claims on behalf of their customers. They apply the incentive to their sales and focus on stocking and upselling high-efficiency equipment to spur customer adoption. The midstream program delivery model shifts the burden of awareness and pursuit of energy efficiency technologies from the customer to their trusted industry partners.

Midstream programs have been around since 2008 and often result in significantly higher participation than “downstream” prescriptive energy efficiency programs. ENERGY STAR has noted program participation increases from midstream programs up to 1,000% over downstream programs (ENERGY STAR 2018a). As a result, midstream energy efficiency programs are a core component of many program administrator portfolios. Lighting has been one of the more common technology types for midstream program intervention, but midstream programs include a variety of technologies, including HVAC, water heating, foodservice, industrial, life sciences, and agricultural measures.

Energy efficiency program Evaluation, Measurement, and Verification (EM&V) are a core part of all energy efficiency programs, including midstream programs. They are used to assess the performance of energy efficiency programs. Impact evaluations are the primary tools used to assess energy and demand savings of an energy efficiency program. EM&V helps document the benefits of energy efficiency programs, identifies ways to improve programs, and supports energy demand forecasting and resource planning (SEE Action 2012). Midstream programs influence the market to stock and sell more qualified high-efficiency equipment, and evaluating a market-based program requires specific consideration of the intent and function of the program. This paper will explore how midstream programs can be designed with program evaluation in mind as well as best practices for midstream program evaluation design.

Key Aspects of Midstream Program Design and Implementation

While midstream and downstream programs have the same goal – to increase market adoption of high-efficiency technologies – they differ in their means and objectives. Generally, downstream programs focus on *demand* by targeting end-use customers, seeking to influence their demand for high-efficiency products by offering post-purchase rebates. Contrastingly, midstream programs focus on *supply* by targeting equipment distributors, dealers, or installers, seeking to influence their stock, sale, and pricing practices by offering rebates to be used by these supply chain actors in a variety of ways – to provide point-of-sale pricing discounts, to fund sales staff trainings, to fund equipment stocking practices, etc.

Midstream programs can be a great investment for program administrators, as they have been shown to deliver much greater impacts than their downstream counterparts at a lower cost (Focus on Energy 2022). While both program types utilize the same structures and systems – outreach, market incentives, educational activities, participation agreements – their design and implementation practices are very different. It can often be a steep learning curve for program administrators to adapt their systems and expectations to midstream program design and implementation practices. Program administrators, implementers, and evaluators alike often find themselves frustrated, akin to jamming a square peg into a round hole, when trying to fit midstream programs into existing processes and protocols developed for downstream or custom programs. Key, characteristics of midstream programs that differentiate them from other program types are detailed below.

Midstream programs have little to no interaction with end-use customers as program interventions occur before a purchase is made

Midstream programs seek to influence how supply chain actors stock, promote, and sell equipment to their customers. They utilize existing market structures to influence key points in the supply chain to magnify the impacts as it is much less expensive to engage dozens of HVAC distributors than the thousands or millions of customers that purchase HVAC equipment (ACEEE 2016). Program implementers enroll and work directly with the manufacturers, distributors, retailers and sometimes contractors as midstream program “participants.” Implementers deliver the program’s interventions, but rely on the participants to translate interventions into their business practices and pass along to their customers. So, by design, midstream program implementers rarely have contact with end-use customers.

While Midstream program interventions are designed to impact sales, most - such as stocking, quoting decision, sales training, etc. - occur prior to the sale. These "pre-sale"

interventions are significantly different from downstream program interventions and introduce implementation challenges, including customer and installation verification as both rely on individual sales transaction data. Sales transaction data is collected through incentive applications and program rules and agreements are signed and enforced with the midstream participants, although there are practical limits to the accuracy of the customer and equipment data they can collect. Midstream programs typically rely on deemed savings or deemed savings calculations from Technical Reference Manuals (TRMs) to reduce the burden of collecting site-specific data for each claim. Additionally, midstream programs rely on layered controls to manage and mitigate these inherent uncertainties. For example, programs utilize Program Agreements that establish contractual obligations for data collection and accuracy, defined performance standards, as well as monitoring and verification of provided data and corrective actions (Energy Solutions 2022). They also utilize randomized inspections which can be increased if there is evidence of improper equipment installations.

Midstream Programs require uniformity to facilitate volume

Midstream programs can create greater impacts than downstream programs as a single supply chain market actor typically works with a high volume of sales. To maximize these benefits, programs need to establish processes and requirements that market actors can comply with at a scale that aligns with their existing business practices. Simplicity and uniformity are key to effective midstream program designs. Uniform program processes, eligibility requirements, and rules are particularly critical for incentive-based interventions. They enable programs to reach a wide variety of market actors – from small or niche single-proprietor businesses to multinational corporations, with the same approach. Uniformity across measures and both internal and external processes also allows for automation and reduces implementation costs. With a high volume of incentives, robust quality assurance/quality control (QA/QC) processes are needed to maintain data integrity. Many programs utilize statistical sampling to verify claim data accuracy and ensure participants are complying with program rules (Guidehouse 2020).

Many midstream programs also build in assumptions of risk and losses for incentives that are paid that ultimately do not deliver savings. It is unrealistic to expect 100% accuracy or compliance due to real-world factors that inherently come up in energy efficiency programs. When this is built into the program design and budget, risk can be held to an acceptable level and errors and omissions can be handled efficiently, according to established processes.

Table 1 provides a summary of key aspects of program design and implementation, highlighting the key differences between midstream and downstream programs.

Table 1. Comparison of Downstream and Midstream Program Design

Item	Downstream	Midstream
Target	End-use customer	Supply Chain: Distributors, retailers, sales reps, manufacturers, consultants, design engineers, contractors
Program Objectives	Influence customer to buy energy-efficient products	Influence sales tactics to promote energy-efficient products

	Encourage initial adoption of an energy efficient technology Increase demand for energy-efficient products Reduce the first cost of energy-efficient products with rebates	Increase available stock of energy-efficient products Reduce/eliminate wait time for energy-efficient products in replace on burnout situations Increase demand for energy-efficient products Reduce the first cost of energy-efficient products with rebates Increase knowledge of product differentiation and features of energy-efficient products
Participant	End-use customer, contractor	Distributor, manufacturer, retailer, contractor
Outreach	Customer account managers promote multiple programs or technologies to the end-use customers, their expertise is generally in the customer segment - residential, institutional, small commercial, etc.	Core mechanism for program awareness. Trade ally account managers promote midstream program participation with full supply chain by focusing on how it adds business value, their expertise is in the target supply chain and products. Outreach targets full supply chain, not just program participant
Marketing	Core mechanism for program awareness. Direct to customer marketing via mailers and online advertising, can be driven by customer segment or energy use, in person visits from account executives	Used to support supply chain utilization of program as needed; a higher focus for point-of-sale programs that have some customer interactions. Supply chain focused marketing utilizes trade organization and industry-focused events and publications.
Ability to collect project data	High ability to collect granular install, equipment, customer, and site information	High ability to collect granular sales information, medium ability to collect granular install, customer, and site information if end-use customer is their direct customer, low ability to collect this information if installer is their direct customer
Purchase decision key drivers	Price, key motivations for product need, installer/dealer recommendation, product availability on needed timeline, etc.	Price, timeline, and models included on quote to installer or end-use customer, recommended features/models they recommend, in-store signage, warranties, speed in providing quote, etc.
Program Agreements	Incentive claim forms generally require customer signature to accept program rules, eligibility requirements, liability, requirements for inspection, etc.	Participants fill out and sign program agreements when they enroll in the program. Program agreements generally last for a few years and govern individual incentive claim submittals and include program rules, eligibility requirements, liability, requirements of participant, etc.

Incentive Claims	End-use customer submit online or paper claim forms for each individual purchase or group of purchases and include specific project and sales information. Claim forms often require proof of purchase, installation, and permitting. Contractors or program implementers may submit rebate applications on behalf of customers in some cases.	Program participants submit incentive applications via online portals in batch uploads or for each sale. Specific project and sales information is provided. Proof of sale may be required or collected at random.
Incentive Payments	Incentives are paid after equipment installation. Checks are mailed or direct deposited to customers when applications are approved and after inspections are performed (when selected for inspection). Payments are received 3-12 weeks after claim approval	Participants generally provide incentives as a deduction on equipment sales invoices and then they submit incentive claims, sometimes in bulk, for reimbursement of fronted incentives. Checks are mailed or direct deposited to participants on a rolling basis, commonly within 2–4 weeks of claim approval. Generally, payments are not held for site inspections.
Reporting and Claiming Savings	Savings are reported and claimed based on equipment installation date or by savings verification date. Downstream measure data and NTG or similar are used to determine reductions for reported savings.	Savings are reported and claimed based on equipment sales date. Midstream measure data and NTG or similar are used to determine reductions for reported savings.
Inspections	Generally simple to perform as end-use customer is aware of the program and submitted program application materials	Challenging to perform as end-use customer may be unaware of the incentive and the participant may be unaware of true installation date or appropriate customer contact

Midstream Program Best Practices to Support Evaluation

Midstream programs can support and stand up to robust evaluations by intentionally focusing on both maximizing program influence while also ensuring that the influence is well documented and measured through (1) aligning program design to the target supply chain; (2) ensuring there is a strong value proposition for program participants' business model; (3) verifying sale and document program change and influence; and (4) evolving program design, incentives, and measures as the market transforms.

Align to the Supply Chain

To influence product adoption, midstream programs must be designed in-line with the target products' supply chain. This requires ensuring the program targets the right market actor given the program's goals and constraints, collects only necessary, reliable data from the participant, and accounts for product installation timelines as part of program inspection and verification procedures.

Target the Right Market Actor – While midstream programs typically target distributors or equipment dealers, as they exert the greatest influence over purchase decisions (ENERGY STAR 2018c), other factors should also be considered. These include the characteristics of the target end-user segment (e.g., all commercial, small businesses, residential, or low-income households) as well as administrative constraints, such as budget limitations and requirements related to energy savings calculations or customer attribution.

For example, a program designed to influence HVAC sales may appropriately target distributors, given their strong influence on purchasing decisions. However, if the program also requires detailed information from the end-use customer - such as the fuel type of equipment being replaced versus installed or the quality of installation - it may be more effective to target installers instead. In such cases, targeting installers can better support the collection of granular customer data necessary to meet program requirements.

Collect Only Necessary, Reliable Data – Much of the literature on midstream program design cites minimizing data collection requirements as a general best practice. In terms of evaluation support, aligning midstream incentive application forms to the data the participant already collects in their sales systems (as much as possible) increases the reliability of that data and thus the integrity of the data used to evaluate the program (ENERGY STAR 2018b). Additionally, minimizing data fields decreases the administrative burden for participants, streamlining the claim submission process and thus their ability to focus on stock and sales and participation (NEEP 2025). Data that should not be required for Midstream program participation is summarized in Table 2.

Table 2. Data Limitations for Midstream Programs

Data Field	Benefits	Barriers and Drawbacks	Solution
Serial Number	Useful for detecting duplicates or returns and resales and if both a downstream and midstream program are available for the same products	Not all product types have serial numbers, not all manufacturers use unique serial numbers, and market actors do not always track or document serial numbers in inventory or sales transactions Superficial serial number mismatches between claims and installed product can lead to false inspection “fails”	Do not collect or make optional Provide options other than serial number collection that can uniquely identify the equipment

Customer Service Account	Provides assurance customers are eligible and precise end-user information for duplicate detection, inspections, and evaluations	Difficult for midstream participants to collect as the end-use customer is not always their customer and, when it is, most customers struggle to retrieve their service account information at the point-of-purchase. Additionally, the end-use customer's service account may not be active at the time of sale	Do not collect - have the program implementor or administrator "map" based on installation address and customer name
Customer Contact Information	Can facilitate verification and inspections of incentive claims Can be used for customer marketing and outreach	Distributors have no direct line to the customer, and their sales processes do not capture this information; distributors often confuse this with installer contact information; there is no single customer contact on large commercial sales	Do not collect or make optional

Where regulatory requirements burden midstream program data collection, program administrators can partner with regulators, participants, and implementers alike to determine what is and is not negotiable, what data is possible to collect, and what can be collected through means other than the participant. Detailed customer or installation information is so challenging to collect that participants will either decline to participate or provide fake or bad information, which becomes confusing and misleading for evaluators.

Account for installation timelines – the time between when a product is sold and when it is installed varies widely across products and sale types, ranging from days or weeks for emergency replacement of stock products to months or years for custom or new construction sales. Midstream program inspection and verification protocols should account for installation timelines relative to the sale and claim submission date. Emergency or planned replacement midstream sales should be inspected on a shorter timeline from claim submission (e.g. 30-60 days), while new construction sales are given a longer timeline (e.g. 6 to 12 months). Equipment size and volume are other considerations when designing inspection and verification protocol. Some products may be more difficult to visually inspect, or high volume of products may require alternate verification procedures than on-site inspections. These nuances are sometimes overlooked, resulting in poor or difficult to navigate verification data for evaluators and costly follow-up or re-inspection for program administrators. Program Administrators can accommodate and plan around accurate installation timelines upfront through categorizing “sale type” of incentive claims, collecting estimated installation dates from participants, and incorporating sufficient lags between sales and verification date.

Ensure Strong Value Proposition for Participants

The literature on midstream program best practices widely focuses on practices to maximize the value of program participation for market actors, including keeping participation simple, timely incentive payment, and stability and regional uniformity. These practices reduce effort and risk for participants to maximize the overall value of participation and thus ensure enrollment, sustained participation, and true market transformation.

Keep Participation Simple - If participation requirements are too complex, it will not induce change in business practice as the burden of participation will outweigh the value.

Program simplicity is achieved through:

1. incentive structures that are easy for sales staff to calculate and code into their sales platforms, and that are tailored to the product type and sector (e.g. \$/unit equipment without huge size or price range, \$/BTUh for equipment with significant size or price range) (RMI 2025).
2. Alignment of equipment eligibility requirements and qualified products list to widely used, industry standard sources like ENERGY STAR, CEE, DLC, and AHRI.
3. Customer eligibility criteria that are easy for market actors to determine (e.g. all commercial customers in a given zip code).

Program simplicity minimizes the risk that the participant will not be reimbursed for incentives spent in good faith and thus keeps midstream programs profitable for market actors. This keeps them more engaged, willing to participate, and invest in meaningful changes to transform the market (NEEP, 2025)

Timely Incentive payment – quick incentive payment is heavily cited as a midstream program best practice (RMI 2025; NEEP 2025; ENERGY STAR 2018b). From an evaluation standpoint, fast payments increase program influence on business practices. Slow payment creates too much risk for businesses to invest in meaningful organizational changes needed to increase stock and sales of high-efficiency products.

Provide Stability and Regional Uniformity – equipment sales timelines at the midstream market actor level are longer than customer purchase timelines. To accommodate this, midstream programs need to intentionally set incentive and equipment eligibility requirements to be stable for as long as possible. When changes are needed, the market should be given as much notice as possible (ideally months) and with appropriate grace periods. This reliability ensures that the midstream program model is truly influential on the market, as it gives participants the confidence to stock their inventory with high-efficiency equipment, quote incentives into jobs that may not be shipped for months and invest in sales system updates. In addition to eligible incentive and equipment stability, midstream program reliability depends on regional uniformity. Midstream programs should strive to have straightforward, uniform requirements across the regional scale where the given midstream participant operates (RMI, 2025). This looks like customer eligibility that is based simply on broad sector type (commercial or residential or both) and/or U.S. State, county or zip code (as opposed to utility provider or street level address verification).

Verify Sales and Document Program Influences and Change

Collect and Track Program Influence on Participant Business Practices - Midstream programs must document and track indicators of market influence as this provides data for evaluators to leverage at the outset and justifies claims that the program impacted or transformed the market (Vaidya, 2019). Market influence indicators could include increases in participants' high-efficiency product stock or sales, investment in installation trainings, sales training or system updates to incorporate incentives, participant pricing changes, or case studies of how incentives were used effectively to convert a sale to adoption of high-efficiency equipment. Practices that integrate market influence tracking into midstream program implementation include:

- Collect baseline data about their sales, stock, and other related business practices when participants enroll;
- Record qualitative feedback and market insights gained through ongoing participant meetings and communications; and
- Periodically collect updated data about participant sales, stock, and other related business practices. Below are target questions to solicit indications of market influence from participants.
 - Has the program caused their ratio of high-efficiency to standard-efficiency stock to increase?
 - Has the program changed the way they train sales staff?
 - Has the program changed what sales staff promote to their customers?
 - Has the program changed their pricing?
 - Have they invested in updating their sales software to incorporate incentives into pricing or prompt sales staff to upsell high-efficiency equipment?

Maintain a Program Procedure and Change Log – Midstream programs strive for stability, but long- and short-term changes to program design and offering are inevitable due to participation differing from forecast, budget changes, economic and regulatory conditions, code and standard changes, etc. Key documentation used to inform the evaluation approach and provide context for midstream program evaluations includes:

1. A program implementation procedure guide that comprehensively details program processes, requirements, and policies, including:
 - a. Customer, product, and sale eligibility requirements
 - b. Definitions of eligible participants and enrollment procedures
 - c. Incentive claim form requirements
 - d. Procedures for accepting, reviewing, approving, and paying incentive claims
 - e. Reporting requirements
 - f. Inspections and verification procedures
 - g. Participant and market engagement strategy and requirements
2. A program change log that comprehensively documents changes to program processes, requirements, policies, and offerings, including when changes were announced and took effect. This includes:
 - a. Changes to incentives or stipends offered
 - b. Changes to program design

- c. Changes to eligible program customers or territory
- d. Changes to products or measures eligible for incentives
- e. Changes to minimum product efficiency requirements
- f. Short-term or temporary promotions or marketing initiatives

Evolve the program as the market is transformed

The goal of midstream programs is ultimately to transform the market, to move more energy-efficient technologies farther along the adoption curve. A midstream program cannot be sustainably impactful unless it transforms along with the market it is influencing. Without concerted efforts to adapt, changes to appliance standards, equipment baselines, regulations, and other external factors can greatly hinder midstream program impact (Vaidya 2019). Program administrators and implementers should continually track codes and standards, equipment pricing over time, and stocking and sales practices to understand when to change incentives on a given product type, when to stop offering incentives, or when to add an emerging product type. This allows midstream programs to maintain longevity, stability, reliability, and stay focused on market transformation. Examples of evolving programs include Mass Save and Energize CT, which stopped incentivizing high-efficiency lighting products as those became standard and now only incentives lighting controls.

Midstream Program Evaluation Considerations

There are several different types of midstream program design and thus several factors unique to midstream energy efficiency program evaluations that should be considered:

1. Program design
2. Who to survey
3. Survey question design
4. Coordination between implementers and evaluators
5. Reviewing and understanding program materials
6. Calculating program influence and net to gross (NTG) ratio
7. Understanding technologies and their markets

Target Survey Participants and Survey Question Design

Some midstream program designs make customers aware of the primary mechanism of midstream intervention (e.g. through point-of-sale incentives), while others provide less visibility into program administrator intervention (e.g. by offering flexible incentives). When evaluating a midstream program and determining whether to include customer surveys, it is important to assess whether the program design provides customers with clear visibility that an incentive was offered by the program administrator (Guidehouse 2020). Program designs with visible incentives could utilize customer, contractor, and distributor surveys, whereas program designs with flexible incentives would want to focus on distributor and contractor surveys.

Midstream and downstream programs have fundamentally different program influence mechanisms. Downstream programs are meant to influence the customer's purchasing behavior and awareness of energy efficiency measures. Midstream programs target program influence at the distributor and contractor level, changing the way they stock and sell high-efficiency

equipment. Given the key differences in program logic model between downstream and midstream programs, it stands to reason that each program design should have distinct survey questions tailored to the specific program logic model. The Xcel Energy Colorado Cooling Efficiency Product 2017 Evaluation (EMI 2018) is a good example of a program evaluation of a program with both downstream and midstream components.

The downstream portion of the program was evaluated for net to gross ratio (NTGR) using the following questions targeted towards customers:

- Participant's perception of the importance of various program components in their decision to purchase the energy-efficient project
- Participant's perception of the program's influence on the decision to purchase energy-efficient equipment versus non-program factors
- Participant's commitment to the energy-efficient project without program funds
- A timing adjustment, based on the participant's perception of when they would have carried out the project in the absence of the program
- Spillover: asked participants for information about any additional energy-efficient equipment installed outside of the program

For the midstream portion of the program, the evaluator used a flexible logic model that allowed the evaluation to explore the various program influence pathways of the midstream program. Figure 1 illustrates the program logic model used in the evaluation.

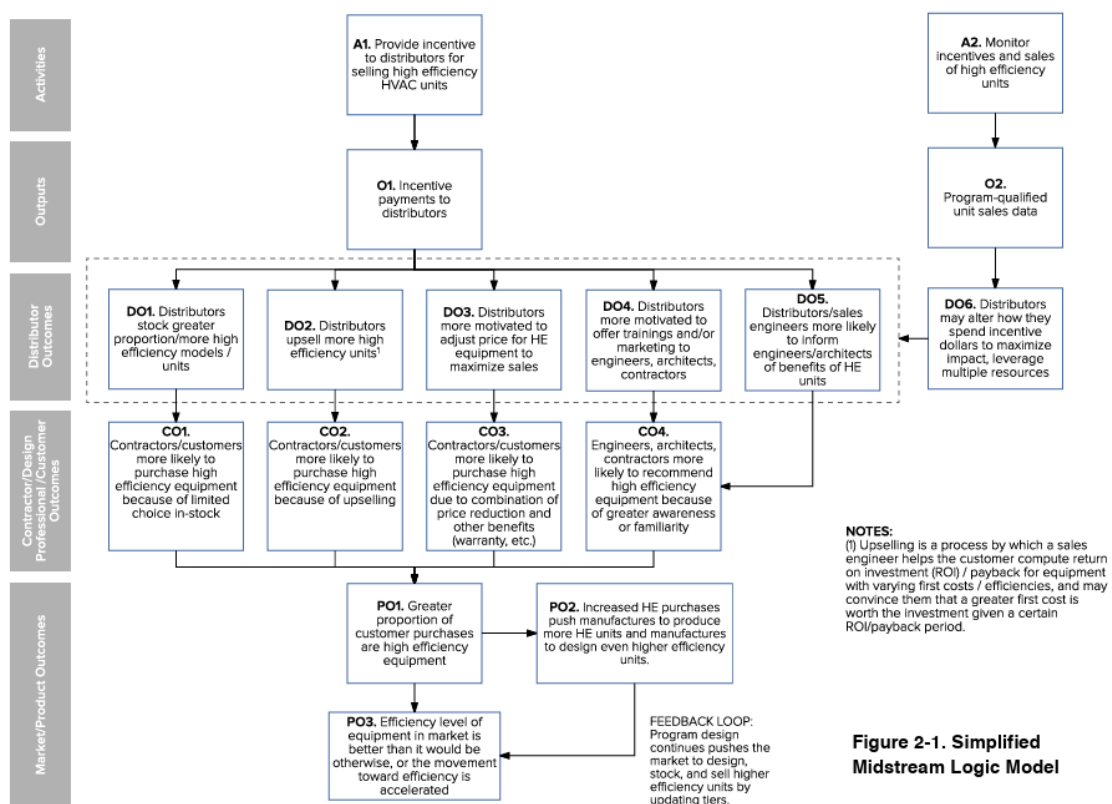


Figure 2-1. Simplified Midstream Logic Model

Figure 1. Simplified Midstream Program Logic Model from Xcel Energy Colorado Cooling Efficiency 2017 Product Evaluation. *Source:* EMI 2018.

A best practice in midstream program EM&V is to avoid applying downstream-style attribution standards. Midstream responses are meant to show helpful reasoning steps, such as how the program logic model is approaching market actor influence, not to provide fully sourced or final claims. Evaluators should judge whether the reasoning is useful and coherent, not whether every statement is grounded in evidence. This gets tricky because downstream evaluation does require attribution and correctness, and evaluators often carry those expectations into midstream programs. When that happens, they mistakenly penalize conditional thinking that is appropriate in midstream. The key is recognizing that midstream is about the quality of the process, while downstream is about the accuracy of the outcome (SEE Action 2018).

For survey question design, it is important to define terms that are utilized in interviews or surveys. Evaluation and utility program language may not be familiar to market participants, and they need to clearly understand questions and terminology to provide accurate and useful information. When a program has multiple technology types, questions should be asked specific to each technology to capture nuances of each supply chain and technology. Questions regarding program influence should include questions about what equipment would be sold in absence of the program and incentives (Illinois 2025). Where possible, it is helpful to allow open answers to questions instead of yes/no questions that may leave out important context.

Midstream Evaluation Design Best Practices

The Illinois (IL) Technical Reference Manual (TRM) has developed a specific midstream program evaluation protocol that focuses on surveying trade allies about the influence of the program on their high-efficiency sales. This development of an evaluation methodology specific to midstream programs is seen as an industry best practice, and the development of this protocol was supported by several EM&V firms, including Cadmus Group, Itron, Navigant Consulting, Opinion Dynamics, and Ridge & Associates (Illinois 2025). The IL TRM defines the following protocols for evaluating midstream pathways and protocols:

1. Spillover
2. Free ridership
3. Midstream influence pathways
4. Estimating NTG rates for midstream programs

Table 3 illustrates the midstream program activities and program influence pathways that a midstream program can have on the market as outlined in the IL TRM (Illinois 2025).

Table 3. Midstream Program Influence Pathways

Midstream Activity	Program Influence Pathway
Increase stock of high-efficiency equipment	Contractors/customers may be more likely to purchase high-efficiency units because they are in stock
Increase upselling of high-efficiency equipment	Contractors/customers may be more likely to purchase high-efficiency equipment because the distributor upsold these units
Offer incentive to reduce incremental cost of high-efficiency equipment	Contractors/customers may be more likely to purchase high-efficiency units because it is more affordable with the incentive

Midstream Activity	Program Influence Pathway
Offer training sessions or marketing campaigns aimed at engineers, architects, and contractors to increase awareness of these high-efficiency units	Design professionals and contractors may be more likely to specify or recommend high-efficiency units because they are more aware or more familiar with these options

Figure 2 illustrates the free ridership protocol defined in the IL TRM.

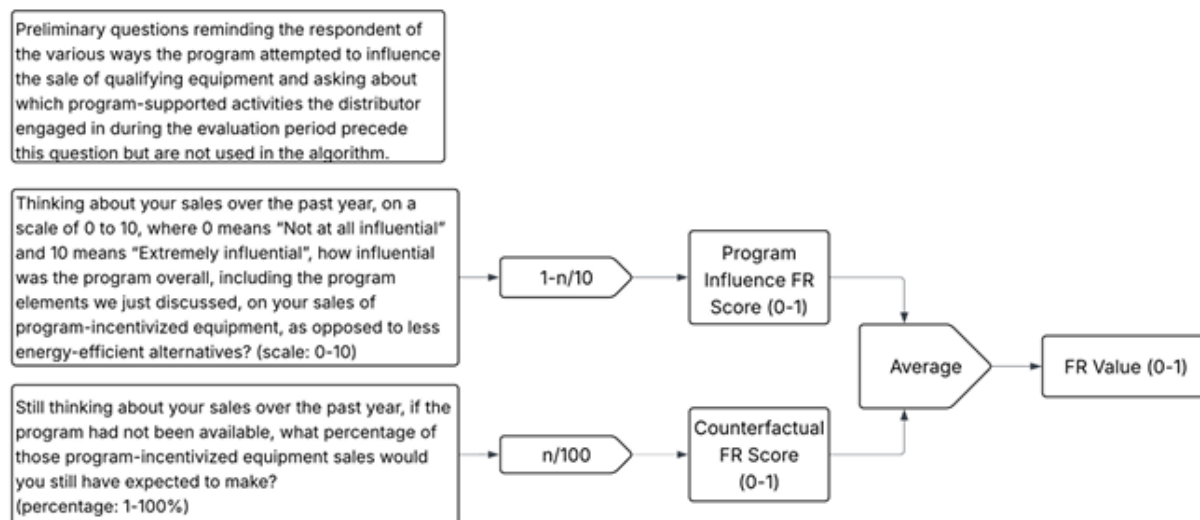


Figure 2. Distributor Free Ridership Protocol. *Source:* IL TRM V14.0 Volume 4.

The IL TRM also outlines a spillover approach specific to midstream programs that utilizes the following screening criteria (Illinois 2025):

1. The percentage of the trade ally's sales that are high-efficiency and/or the total volume of high-efficiency sales increased since the trade ally became exposed to the program.
2. The trade ally sold at least some high-efficiency equipment or products during the evaluation period that did not receive an incentive.
3. The trade ally's recommendation, marketing, or equipment stocking or placement was influential in the customers' choice of high-efficiency equipment over standard-efficiency equipment in instances where the equipment did not receive a program incentive.

There are some key highlights from the midstream program evaluation approaches outlined in the IL TRM:

1. The defining of midstream program activities and program influence pathways outlines the primary activities and outcomes of a midstream program.
2. The IL TRM then defines how to utilize the responses on the program influence pathways into a numerical free ridership value.
3. Finally, spillover protocol specific to midstream programs is defined.

Coordination Between Evaluators and Implementers

Coordination between implementers and evaluators of energy efficiency programs allows for the evaluator to fully understand the program design and provides an opportunity for the evaluator to clarify aspects of the program with the implementer (ENERGY STAR 2018b). This helps foster a shared understanding of program design and intent between the implementer and evaluator. It also ensures that the evaluator has access to all available program data and documentation that may be useful in supporting the program evaluation. Some program administrators and regulatory agencies allow for coordination between evaluators and implementers, whereas other program administrators and regulatory agencies do not allow for communication. Strong program evaluations focus on both program successes and areas for improvement. Two-way communication about successes and areas for improvement will facilitate the development of relevant action plans to continuously improve the program. Creating action plans for addressing evaluation results is considered a best practice for implementers, and some program administrators have action plan templates that can help facilitate this.

Proactive, consistent, and ongoing coordination between program implementers and program evaluators is essential because they operate two halves of the same system, which starts at program launch: implementers run the program in real time, and evaluators verify whether it worked, why it worked, and how it can improve. When these two groups are not aligned, the result is inconsistent data, unclear accountability, and findings that are either inaccurate or unusable. Implementers translate program rules into day-to-day operations, while evaluators interpret those same rules to assess performance. Without alignment, evaluators may measure something the implementers never intended to prioritize, or implementers may optimize for metrics evaluators don't consider valid.

Evaluators depend on data that implementers collect. If implementers do not understand what evaluators need or evaluators do not understand how data is generated, accuracy, completeness, and comparability suffer. This is especially important in midstream programs where data flows through multiple parties. Regulators expect programs to demonstrate both operational integrity and independent verification. Strong coordination ensures that evaluations are grounded in operational reality, implementers can defend program decisions and explain reasoning, and evaluators can defend their methods and conclusions. This protects the program's reputation and funding.

Conclusions

Midstream energy efficiency programs are a core part of energy efficiency program portfolios. They are distinct from other energy efficiency program designs in several ways, and their evaluation requires a distinct evaluation methodology. There are several examples of strong midstream program evaluations and resources to develop robust evaluations that focus on the intent of midstream program design and how it influences the market to sell more high-efficiency equipment. Below are some best practices to consider when designing EM&V plans for midstream programs:

- Utilize an EM&V methodology specific to midstream programs.
- Survey the appropriate market actor group depending on the program design.
- Allow for coordination between implementers and evaluators where possible.

- Outline the relevant midstream program influence pathways and design questions to assess the influence of each pathway.

There are also several best practices in midstream program design and implementation that can support strong program evaluation results:

- Design midstream programs with feedback from market actors that will be participating in the program to ensure the program design is aligned with the market.
- Streamline data collection requirements to information that is necessary and reliable.
- Ensure the program design provides a strong value proposition for participants.
- Document program influence and evolution over time by collecting data that supports program attribution, such as periodic collection of distributors' equipment stocking levels.
- Robust data quality protocols, such as validation checks, periodic invoice audits, and standardized templates for application uploads and program reporting.
- Evolve the program as the market transforms over time.

These resources and best practices for program design, implementation, and evaluation are critical to achieving the large impacts that midstream programs can bring to an energy efficiency portfolio and helping to drive continuous improvement to midstream program design and implementation.

References

ACEEE, 2016. "Swimming to Midstream: New Residential HVAC Program Models and Tools." https://www.aceee.org/files/proceedings/2016/data/papers/7_888.pdf

ComEd, 2020. "Incorporating an Upstream and Midstream Strategy in Energy Efficiency." <https://www.ilsag.info/wp-content/uploads/SAG-ComEd-Upstream-Strtgy-Presntn-3.6.20.pdf>

EMI Consulting, 2018. "Xcel Energy Colorado Cooling Efficiency Product 2017 Evaluation." <https://www.xcelenergy.com/staticfiles/xcel-responsive/Company/Rates%20&%20Regulations/Regulatory%20Filings/Cooling-Efficiency-Evaluation.pdf>

Energy Solutions, 2022. "Wholesale Midstream Heat Pump Water Heating Program Distributor Participation Agreement." <https://cleanheat.ny.gov/assets/pdf/heat-pump-water-heater-distributor-participation-agreement-national-grid.pdf>

ENERGY STAR, 2018a. "Astonishing Results: Examine Surges in Participation at Distributor-Focused Midstream Programs." https://www.energystar.gov/partner-resources/products_partner_resources/retailer-resources/midstream-programs/astonishing-results

- ENERGY STAR, 2018b. “Best Practices: Learn the Right Way to Run a Distributor-Focused Midstream Program.” https://www.energystar.gov/partner-resources/products_partner_resources/retailer-resources/midstream-programs/best-practices
- ENERGY STAR, 2018c. “Understanding the Fundamentals of Shifting Incentives to a CFS Dealer/Distributor.” https://www.energystar.gov/partner-resources/products_partner_resources/retailer-resources/commercial-food-service-midstream/how-midstream%20-works
- Focus on Energy, 2022. “Focus on Midstream Solutions.” https://assets.focusonenergy.com/production/inline-files/2022/MID-Utilities-Fact_Sheet.pdf
- Guidehouse, 2020. “Midstream Commercial Water Heating Program Evaluation.” <https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B8897958E-2CA6-4853-A398-95778D434879%7D&DocTitle=%20Evaluation%20Plan%20Filing>
- Illinois Energy Efficiency Stakeholder Advisory Group, 2025. 2026 Illinois Statewide Technical Reference Manual for Energy Efficiency. Version 14.0. Volume 4. https://www.ilsag.info/wp-content/uploads/IL-TRM_Effective_010126_v14.0_Vol_4_X-Cutting_Measures_and_Attach_0919025_FINAL.pdf
- NEEP, 2025. “High-Performance HVAC Midstream Program Best Practice Guide.” https://neep.org/sites/default/files/media-files/neep_high_performance_hvac_midstream_program_best_practice_guide_final.pdf
- Opinion Dynamics, 2024. “PY2022 Statewide Midstream Commercial Water Heating Program Evaluation.” https://pda.energydataweb.com/api/view/4021/PY2022%20SW%20Midstream%20Commercial%20Water%20Heating%20Program%20Impact%20Evaluation%20Report_DRAFT.pdf
- RMI, 2025. “Reforming Energy Efficiency Programs to Increase Heat Pump Adoption” <https://rmi.org/reforming-energy-efficiency-programs-to-increase-heat-pump-adoption/>
- SEE Action, 2012. “Energy Efficiency Program Impact Evaluation Guide” https://www.energy.gov/sites/default/files/2014/05/f15/emv_ee_program_impact_guide.pdf
- SEE Action, 2018. “ENERGY STAR® Retail Products Platform (RPP): Conditions and Considerations in Evaluating Market Transformation Programs and Evaluation Guidance for RPP.” <https://www.energy.gov/sites/default/files/2021-07/RPP-SEE-Action.pdf>
- Seattle City Light, 2025. “HVAC & Water Heating Equipment.” <https://www.seattle.gov/documents/Departments/CityLight/HVACProgramFS.pdf>
- Vaidya, 2019. “The Great Migration: Moving Energy Efficiency Programs to Midstream” <https://www.nmrgroupinc.com/wp-content/uploads/2019/09/The-great-migration.pdf>