

Driving Upstream Markets through Strategic Partnerships and Excellence in Supply Chain Management

*Howard Merson, Frances Huessy, Emily Levin, and Michael Russom
Vermont Energy Investment Corporation*

ABSTRACT

To drive rapid market adoption of energy-efficient products, efficiency programs must address the real and perceived business risks of their “upstream” supply chain partners: manufacturers, manufacturer representatives, and distributors. One program took an unconventional approach to transforming the HVAC market by collaborating with the supply chain, one supplier at a time, on sales, marketing, inventory, and training designed to increase distributor revenues. The results: improvements in stocking practices, fewer financial barriers for suppliers, many more products brought to market, and a compendium of best practices. This upstream program has delivered significant increases in energy savings, compared to “downstream” rebate programs for end users. Sales of the respective technologies increased 600 percent to 10,500 percent, depending on the product.

This paper describes the upstream program’s business concepts and their effect on rapid and scaled market transformation. It discusses the value proposition for supply channel partners: paying attention to a key business metric for building material distributors, *return on net assets* (RONA). Efficiency program staff showed upstream partners:

1. The extent to which supplying energy-efficient products could quickly increase gross margins and net income.
2. How they could increase inventory turns through collaborative sales, marketing, and training strategies.
3. How to set up agreements with manufacturers to extend accounts payable terms.
4. How to decrease distributors’ accounts receivable through rapid utility incentive reimbursement.
5. The crucial role of utilities in adding value to the supply chain.

Introduction

By now, mature commercial, industrial, and residential energy efficiency programs have picked off most of the low-hanging fruit—obvious energy efficiency opportunities that can be addressed with readily available efficiency measures. These programs must now seek harder-to-reach markets and players who are not yet well informed about energy efficiency.

Two years ago, an energy efficiency utility in New England, Efficiency Vermont (operated by the Vermont Energy Investment Corporation [VEIC]), shifted its emphasis away from influencing the decision-making of retail or “downstream” customers to influencing the upstream supply channel for residential, commercial, and industrial heating, ventilation, air-conditioning, and refrigeration (HVACR) equipment. This shift is a response to the failure of conventional program designs to address four persistent barriers that HVACR distributors and manufacturers face when they operate in a jurisdiction that has an energy efficiency program:

1. A lack of understanding of energy efficiency programs, including program participation requirements. This lack of understanding is typically accompanied by an unwillingness to navigate the cumbersome process of completing forms affecting retail sales and involving customer incentives for custom projects.
2. Insufficiently coordinated sales and marketing to communicate information about energy efficiency programs to end users and throughout the supply channel (primarily manufacturers, manufacturer representatives, distributors, and contractors).
3. Little to no access to energy-efficient product inventory, which can be exacerbated when purchase and installation are made under urgent circumstances. Many HVACR installations occur when the incumbent equipment has failed and is compromising adequate building operation.
4. A lack of appropriate, coordinated training throughout the supply channel on both the technical aspects of energy-efficient equipment and effective sales and marketing techniques to promote energy-efficient equipment.

Although the upstream approach is labor intensive at the outset, the results have been significant for energy savings and market transformation. They also hold promise for rapid scaling. For HVACR distributors in this state of 626,000 inhabitants, the new model has generated incremental revenue growth of an estimated \$7.1 million and gross profits of \$2.1 million. Similarly significant incremental increases have rippled throughout the HVACR supply channel to manufacturers, manufacturer representatives, and contractors. As one distributor observed:

- *The industry is going to supply circulators, water heaters, and heat pumps to consumers. The demand exists, regardless of the efficiencies.*
- *Some statistics to illustrate the impact of the upstream programs on our business:*
 - *In high-performance circulator pumps, the category was less than 1 percent of our pump business in 2013.*
 - *In 2014 that category rocketed to 39.8 percent, and in 2015, 56.7 percent of all circulators sold were high-efficiency products.*
 - *Heat pump hybrid water heaters prior to the program's inception mid-2014 represented 12 percent of the category; in 2015, 44 percent of all 50-gallon electric water heaters sold through [our company] were heat pumps!*
 - *Cold-climate heat pump sales in 2015 were 43.8 percent ahead of 2014!*
- *To bring clarity to the increased gross sales under these programs ... the average wholesale value of a 50-gallon electric water heater in 2015 was in the neighborhood of \$400 ...by contrast, the 50-gallon hybrid heat pump was on average \$1,000. A standard circulator pump \$80; a high-efficiency pump \$160. (Distributor, Senior VP)*

How did these results come about?

Background

In 2013, Efficiency Vermont sought staff ideas to rapidly increase market uptake through new program design and delivery concepts. The energy efficiency utility's HVACR Team created a program that drew loosely on a successful upstream lighting program that:

- Promoted increased availability, sales, and installation of efficient equipment.
- Influenced distributor stocking practices.
- Diminished financial barriers.
- Facilitated market transformation.

The HVACR Team launched two successive programs for high-performance circulator pumps (HPCPs), two other programs for cold-climate heat pumps (CCHPs), and a heat pump water heater (HPWH) program. The team staggered the launch of the programs across 20 months, to optimize operational efficiencies with the rest of the utility’s programming.

The HVACR Team’s Strategic Planning Manager applied his background in the building materials supply channel, which involved operations, business development, supply chain management, strategic planning, and financial management. This background included understanding the critical importance of building strategic relationships within the supply channel. The partnership building was especially relevant for HVACR supply channel players whom the new upstream programs had targeted.

Methods

The HVACR Team used a method that it continuously refined with each of the upstream program launches. The method contained a sequence of steps that might seem to run counter to the logic of a “business as usual” energy efficiency program effort. But it was a sequence that respected the business practices of the upstream supply channel:

1. Draw up a detailed program plan.
2. Determine the value proposition for supply channel partners.
3. Map the supply channel, from start to finish.
4. Decide on equipment eligibility and performance requirements.
5. Design protocols for optimal data collection at the supply channel level.
6. Conduct planning sessions with supply channel partners.
7. Invite the supply channel to collaborate on a sales, marketing, inventory, and training (SMIT) plan.
8. Establish program incentives and fees that were responsive to supply channel feedback.
9. Send memorandum of understanding (MOU) to strategic partners.
10. Draft evaluation, measurement, and verification (EM&V) plans.

Draw up a Detailed Program Plan

The HVACR Team drafted a 2-year technology roadmap for the respective targeted upstream technologies. It covered market analysis, product specification, and launch strategies for each upstream program, and each had a full program plan. The team built a Web platform for project planning to which all stakeholders could contribute. The platform:

- Offered an easy way to plan the programs’ projects
 - The platform contained milestones and tasks to organize the complex upstream projects into easily manageable units, with subtasks, recurring tasks, and dependencies associated with the tasks. Categories addressed planning topics such

- as budgets, incentives, fees, evaluation, measurement, verification, quality assurance, sales, marketing, inventory, training, and legal planning.
- Offered charts and reports, to provide insights to project participants.
 - Gantt charts for staying on track with each project’s tasks
 - Labor allocation chart, pegged to tasks
- Contained sufficient transparency to allow seamless collaboration.

Determine the Value Proposition for Supply Channel Partners

The ... rebate programs ensure that the gross dollar value of existing demand increases by converting less expensive, less-efficient products to sales of the more expensive and efficient products. Pretty simple math ... in the case of a high efficiency circulator pump, the cost to the consumer is nearly double that of a standard pump, but the upstream rebates nearly equalize the consumer’s investment between the two. The wholesaler remains “whole” on the transaction via the rebates. Bottom line ... if we sell not a single pump more than in previous periods, “satisfying that existing demand,” we double our gross profit dollars. That is a pretty compelling argument ... to convert time and money into educating our trade partners in the values of high-efficiency equipment and employing more people to handle the demands of the programs. (Distributor, Senior VP)

Efficiency Vermont researched each of the three upstream programs’ technologies to determine the likely incremental revenue impact for the supply channel. The key to unlocking the supply channel relationship lay with a common metric for distributors, return on net assets (RONA). We examined the drivers of RONA and designed a strategy for improving them.

RONA is a measure of a company’s financial performance, taking into account how assets are being used. A high-number RONA means that the company is using its assets and working capital efficiently and effectively. For HVACR wholesale distributors and the supply channel in general:

$$\text{RONA} = \frac{\text{Distributor net income}}{\text{Inventory} + \text{Accounts receivable} - \text{Accounts payable}}$$

Gross margin and gross profit are also drivers in achieving higher RONA performance. *Gross margin* is expressed as a percentage or ratio and is the difference between revenue and cost of goods sold, divided by revenue, *Gross profit* is expressed in dollar amounts. Generally, the value is calculated as the selling price of an item, minus the cost of goods sold (production or acquisition costs, essentially).

Designing a strategy for how an energy efficiency upstream program could positively affect RONA drivers was the next step. The strategy required an examination of practical considerations, as shown in **Table 1**.

Table 1. Impact on RONA drivers for the HVACR upstream program

RONA driver	Consideration
Increase gross margin (GM) and net income	<ul style="list-style-type: none"> The extent to which supplying energy-efficient products affect gross margins and net income (see Table 2) What would it take to increase gross margins?
Decrease inventory investment <i>and</i> increase inventory turns	<ul style="list-style-type: none"> Achievable through collaborative sales, marketing, and training strategies. Extent to which incentives will result in increased market demand. No manufacturer penalties to distributors for returning baseline inventory and replacing with energy-efficient inventory. Intensive product and program training between Efficiency Vermont and manufacturers / manufacturer representatives, followed by targeted training for distributors' staff and customers.
Accounts receivable (AR)	<ul style="list-style-type: none"> Reimbursement of distributors' rebate incentive at a faster rate than distributors' average term for AR from their customer base. That is, average AR collection is 50 to 55 days; our HVACR target is < 35 days
Accounts payable (AP)	<ul style="list-style-type: none"> Work with manufacturers to increase the length of the correlating inventory's AP terms between distributors and their respective suppliers. That is, average industry AP terms are 30 to 35 days; we have targeted an extension on those terms: 45 to 240 days.

Efficiency Vermont forecasted the effect of introducing an HPCP upstream program on the supply channel's gross margin and gross profit, which would affect the distributors' net income. The results of this analysis are presented in **Table 2**.

Table 2. Effect of a \$100 energy efficiency incentive per high-performance circulator pump sold

Factor	Standard pump	HPCP pump	Variance
Resale from distributor to customer	\$65.00	\$165.00	\$100.00
Distributor cost (estimate)	\$52.00	\$120.25	\$68.25
Incentives at distributor's point of sale		\$100.00	-
Resale value, with \$100 incentive to distributor's customer	\$65.00	\$65.00	-
Gross profit per circulator pump	\$13.00	\$44.75	\$31.75
Gross margin per circulator pump	20%	27%	244%*
Gross profit generated, 10,000 units / year	\$130,000	\$447,500	\$317,500

*Variance %: gross profit of standard pump vs HPCP

Map the Supply Channel, from Start to Finish

The Efficiency Vermont strategy depended on accurately mapping and understanding the supply channel. Each technology required its own roadmap. Staff surveyed manufacturers, manufacturer representatives, and distributors to determine the supply channel's industry alliances, primary and secondary suppliers, and stock versus project sales. The mapping also involved obtaining contacts and other practical information.

Decide on Eligibility and Performance Requirements and Request Process

All technologies that Efficiency Vermont supported with an HVACR upstream program had to meet one of the following requirements:

1. Efficiency Vermont specifications, “proven” by a completed Performance Information Request (PIR) from the manufacturer and an authorized representative of the manufacturer, with technical information and certification that the information was accurate.
2. Specific certification set by an industry standard, such as ENERGY STAR®.

Design Protocols for Optimal Data Collection

Data collection was a primary topic for the first HVACR upstream program. It was clear that the supply channel would not welcome extensive data collection requirements, because of:

- The time required by the supply channel to collect data from distributors.
 - The time needed to collect the data would interfere with point-of-sale interactions, particularly if sales resulted from emergency replacement or other urgent conditions.
 - Untrained supply channel staff (for example, contractors’ runners) might not have sufficient information at the point of sale to fulfill the data collection requirements.
- Obtaining the information might necessitate additional research, such that the cost of obtaining it might reach a point of diminishing returns, relative to the program’s economic benefits.

Using feedback from the supply channel, Efficiency Vermont limited the data collection to 14 data points, down from its initial request for 25 data points. Program staff also shifted the data collection objective to optimizing service that responded to supply channel partners’ interests, and the interests of utilities, regulators, and the efficiency utility itself. The approach created a “bucket” of required data and a separate bucket of optional requested data. Subsequent upstream programs followed the new method.

Required information

- For regulators to assess program performance (for example, the address of the installation site)
- For EM&V (for example, whether the installation(s) were a market opportunity or retrofit)
- For Efficiency Vermont’s internal reporting (for example, quantity of the product purchased for installation and the site address, to ensure that all submissions pertained to installations in Vermont).

Requested information

- Non-essential, but useful, information (for example, a telephone number at the installation site).

The next step was to vet the data collection proposal with the key HVACR supply channel partners. In several cases, their feedback made the difference between having and not having a prospective supply channel partner involved with the upstream program. One key supply channel partner, a large HVACR distributor, challenged our request for information about the fuel source of the equipment to be replaced. After presenting the distributor's concerns to an internal team, Efficiency Vermont re-cast the question to the satisfaction of the partner. The revisions were relatively minor for the Efficiency Vermont team, but had the vetting not occurred, the major distributor partner would not have been involved in the upstream program.

Conduct Planning Sessions with Supply Channel Partners

Efficiency Vermont hosted one-on-one meetings with manufacturers, manufacturer representatives, and in many cases, distributors, to acquaint them with the upstream program. The HVACR Strategic Planning Manager noticed a business development opportunity: The key and long-term HVACR supply channel partners had little knowledge of either Efficiency Vermont or its operator, the Vermont Energy Investment Corporation (VEIC). Conversely, the same was true of VEIC and Efficiency Vermont. Staff did not know their respective supply channel partners very well.

To remedy this condition, Efficiency Vermont required its prospective upstream supply channel partners to attend a full-day session at Efficiency Vermont—without competitors. The meetings were with a single manufacturer, manufacturer representative (if applicable), and in certain cases, the lead distributor for the respective manufacturer's technology. The agenda, covering 4 to 6 hours, involved:

- An overview from the manufacturer, manufacturer representative, or distributor.
- An overview of VEIC and Efficiency Vermont.
- A description of Efficiency Vermont HVACR programs, both upstream and downstream.
- Details of the prospective HVACR upstream program.
- An overview of the equipment eligibility requirements, the PIR form, and the 14-point data collection effort for the prospective HVACR upstream program.
- A description of Efficiency Vermont's trade ally network.
- An in-depth discussion of sales, marketing, inventory, and training needs.
- Questions, action items, and next steps.

At the outset, the supply channel mildly balked at the prospect of spending a full day at Efficiency Vermont. They initially thought it would require too much time; further, the value of what they would be receiving was not clear to them. After all, it was a distinctly different approach from what they would have expected with a typical utility program. Nevertheless, 100 percent attended the meetings, and word spread about those meetings' effectiveness. Moreover, post-meeting feedback was overwhelmingly positive. Participants said the sessions were "highly effective" and that 4 to 6 hours was not enough. The participants also agreed that the time investment resulted in deeper relationships and a greater understanding of the respective organizations. This type of encounter clearly went much further than a discussion of the prospective HVACR upstream program. Testimonials from the sessions:

You have the most comprehensive program I have seen for impacting the marketplace and we are proud to be asked to be a partner." (Distributor, VP of Residential Sales)

We, as manufacturers, look to you for guidance in what equipment to develop and bring to market. Efficiency Vermont is really a national leader on this. (Manufacturer, Regional Sales Manager for ductless split systems)

A great meeting and looking forward to working with each of you. I am reviewing the presentation and getting together the information you need. Thank you again for your time and information shared and working to get what you need by this week. (Manufacturer, Division Sales Manager)

Invite the Supply Channel to Collaborate on a SMIT Plan

In conjunction with the planning sessions, the efficiency utility issued a request for information (RFI) to all prospective HVACR upstream supply channel manufacturer and manufacturer representative partners, to obtain plans for each representative's sales, marketing, inventory, and training approach, assuming participation in the respective upstream program. Efficiency Vermont then required the supply channel partner to present its RFI response, in person, to a VEIC and Efficiency Vermont team. The Efficiency Vermont team either approved or rejected the partner's proposed plan. Rejected plans could be revised and resubmitted. Efficiency Vermont now requires all partners to revise and submit their sales, marketing, inventory, and training plans, via this RFI process, each year.

The SMIT plan had to contain descriptions of each partner's intended approach to:

- **Sales:** Strategies, communication methods, current distributor alliances, distribution channels in the state, and intended trade show participation.
- **Marketing:** Joint marketing programs, extent of leveraged core competencies, cooperative advertising, and sample marketing collateral materials.
- **Inventory:** Strategies for building up supply channel inventory to address the market demand associated with the upstream program; inventory displacement from new eligibility and innovation; no-penalty arrangements with manufacturers; and warranties.
 - *Example:* The historical volume of baseline circulator pumps was 10,000+ units. Efficiency Vermont had annually averaged approximately 50 high-performance circulator pump installations, delivered through its downstream HPCP program. A high-volume HPCP upstream program would require a much stronger HPCP inventory to meet the expected demand. Efficiency Vermont assumed the likelihood of the following risks from an inadequate supply of ready inventory:
 1. Without pre-existing, strong relationships with supply channel partners, increased market demand through an aggressively marketed HPCP upstream initiative—without good coordination with the supply channel—would likely compromise long-term relationships with the supply channel.
 2. Confidence with the upstream program of the primary targeted customer, HVAC installation contractors, could also be in jeopardy if coordination between suppliers and the program was insufficient.
 3. The targeted September 2013 launch of the HPCP program coincided with the start of Vermont's heating season HVACR tune-ups.
 - a. Between September and February, 70 percent of circulator pump sales occur.
 - b. Most purchases are prompted by decisions to replace because of equipment failure; decision making reflects the urgent need for

immediate replacement, to minimize damage or lack of functionality to the building.

- **Training:** Training approach with strategic partners, understanding Efficiency Vermont’s data collection requirements, strategies for using Efficiency Vermont’s trade ally network.

Establish Program Incentives and Fees

Efficiency Vermont based HVACR upstream incentive levels on incremental cost coverage and a \$ / MWh target, combined with the forecasted market uptake on the respective technology. Staff also cultivated trusted supply channel advisors who provided valuable information about whether incentive levels were too high or too low.

Efficiency Vermont now also offers a management / administrative fee to the distributors on every unit sold. The fee varies with each HVACR upstream program, as shown in **Table 3**.

Table 3. HVACR upstream incentives and administration / management fees

Upstream program	Current incentive / unit	Current administration / management fee / unit	Comments
Cold-climate heat pumps	\$300 single zone \$400 multi-zone	\$50	<ul style="list-style-type: none"> • Aggressive fee • Complex sale • Inventory investment
Heat pump water heaters	\$400	\$65	<ul style="list-style-type: none"> • Aggressive incentive & fee • Sales under duress (95%); Small window of upsell opportunity
High-performance circulator pumps	\$50 (<1.25 amps)	\$3	<ul style="list-style-type: none"> • Tiered fee, based on \$ / MWh
	\$200 (1.25 - < 5 amps)	\$3	
	\$600 (> 5 amps)	\$50	

With each program, Efficiency Vermont requires a minimum customer contribution, to prevent pricing deterioration in the marketplace from the HVACR upstream program. *Minimum customer contribution* is the minimum dollar amount that a distributor’s customer would be required to pay for an upstream-supported product. The premise behind the strategy is to prevent predatory pricing as a result of the incentive. With the high-performance circulator pump program, for example, if the incentive is \$100 per pump with the residential size pump, the distributor resale is approximately \$65 per pump, which is comparable to the baseline pump distributor resale pricing. The minimum customer contribution set by the efficiency utility is also \$65. Without the minimum customer contribution, a manufacturer, manufacturer representative, or distributor could “buy” market share via a loss leader strategy, with a new resale price of \$50. This would decrease the resale price and minimum customer contribution price by \$15. Competitors would therefore either have to follow the pricing strategy or risk losing market share

However, Efficiency Vermont has financed or assumed \$100 of the \$115 price decrease, or 87 percent of the total decrease. Although the end user could potentially have a short-term benefit of the predatory pricing strategy, participating distributors and manufacturers and manufacturer representatives would ultimately choose not to participate, if this was an outcome. The supply channel’s feedback to the minimum customer contribution policy has been very positive. Further, Efficiency Vermont verifies that the minimum customer contribution amount aligns with all upstream submissions. To date, the supply channel has been fully in compliance.

Send Memorandum of Understanding to Strategic Partners

With each upstream program, Efficiency Vermont executes an MOU for distributors. The MOUs are typically for one year and require authorized corporate-level signatures of the participating distributor and an authorized Efficiency Vermont signature. The agreements stipulate procedures in the event of program changes, or changes in incentives, administration, or management fees. They contain a description of the program, contact information, definitions, terms and conditions, incentives and reimbursement protocols, and methods for verifying purchase and installation. They also articulate criteria for eligible products and protocols for submitting information.

Draft EM&V Plans

With each HVACR upstream program, Efficiency Vermont creates plans to meet internal and external (regulatory) verification and quality assurance requirements.

HVACR Upstream Program Results

Figure 1 shows the sales results for the supply channel, and the benefits to the efficiency program.

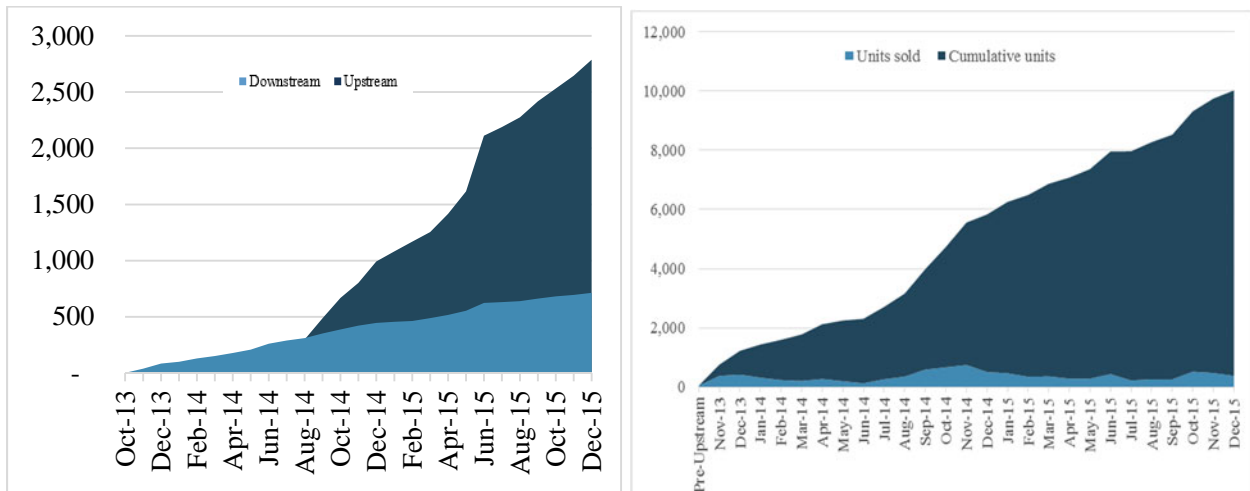


Figure 1. Sales and installation data for heat pump water heaters (left) show dramatic increases as a result of the upstream incentive program, relative to effects from the existing downstream incentive program. Sales data for high-performance circulator pumps (right) show cumulative effects of units installed during the program period.

Distributor and Supply Channel Reporting

Reporting upstream program results to supply channel partners has been a powerful tool in keeping these critical relationships intact. By sharing the reporting, strategic partners' analyses have strengthened Efficiency Vermont's concepts and ideas about further programmatic steps. Any ideas deemed to be proprietary remain proprietary to the initiator. New approaches to sales, marketing, and training have evolved from the reporting and the subsequent ideas. **Table 4** offers a sample of this partner reporting.

Table 4. Sample of distributor HVACR upstream report

Distributor "A"	HPCP November 2013 through December 2015	HPWH June 2014 through December 2015	CCHP December 2014 through December 2015
Total submissions, all distributors (units)	10,000	5,000	3,000
Distributor A Submissions (units)	1,500	2,000	1,000
Distributor percent of total submissions	15%	40%	33%
2015 program comments	After a strong June 2015 (the run-up to the incentive decrease on July 1), we're starting to stabilize	We decreased the incentive July 1, 2015, from \$550 to \$400; (27%) decrease	December 2014 - June 2015: Average units per month: 88 July – December 2015: Average units per month: 213

Comments from one HVACR distributor partners with the upstream program;

[We have a long history of pioneering products.] While exciting, [this practice] never presented a solid foundation on which a sound business model could exist. The cost of equipment was then, and is arguably still today, a [barrier] to the mass proliferation of energy-efficient products... In mid-2014, the metrics changed when Efficiency Vermont introduced the first of now several "upstream" programs...

These programs require little, if anything, of the consumer and rely on the supply chain to educate and pass on the savings...

We can replace existing demand for products with high-efficiency products when the cost delta between them is in large part mitigated through efficiency incentives. ... Our trade partners can [now] confidently introduce these products to the end users and successfully sell the gap between a standard product and a subsidized high-efficiency product.

The current programs we employ through Efficiency Vermont represent the single most effective campaign to put energy-efficient products into people's homes and reduce

the burden of electricity costs upon them that [we have] ever been involved with, and that is good for consumers, good for Vermont business, and good for the State.” (Distributor, Senior VP)

Conclusions

- Despite the dramatic results of the Efficiency Vermont Upstream program, staff needed to balance this program with the interests of the energy efficiency utility’s total portfolio, particularly guarding against overlap with downstream (retail) programs offering rebates at the customer level.
- Customers recognized the value of their ratepayer-funded efficiency utility’s involvement, which was communicated with marketing and supply channel materials.
- Efficiency Vermont faced challenges in obtaining end use customer data from distributors. Balancing the response burden of the distributors with the efficiency program’s need to obtain and report data to regulators prompted questions about “when is enough, enough?” Ideally, an electronic data platform for the supply channel should exist, with the ability to interface with the utilities.
- Achieving market transformation with large scale and high speed is a function of recognizing market opportunity as if it were a business venture opportunity, and treating participating supply channel partners as program customers.
- Successful upstream programming is not a matter of simply letting supply channel actors know about efficiency program offerings or technologies, or of simply offering large incentives.
- This program succeeded because of three factors:
 - The efficiency program understands competitive business thinking, and could bridge the knowledge gap between the energy industry and the supply channel.
 - The efficiency program’s knowledge of the most appropriate technology for meeting consumer needs and demand opened up a durable relationship with the supply channel.
 - The lack of a profit motive on the part of the efficiency program, and the intensive training sessions, created a necessary atmosphere of transparency, so that trusted relationships could be built quickly.

What does this all translate into, for the supply channel and efficiency utility? **Table 5** provides the answer. It compares the impact of technology volume annual uptake pre-Upstream program and once the Upstream was in place, using 2015 data.

Table 5. Before and after: The effect of the Efficiency Vermont upstream program, in annual units sold and installed in 2015

	HPCP	HPWH	CCHP
Pre-Upstream	50	215*	1,324*
Upstream	4,324	1,795	1,904
Increase / (decrease) in sales	8,548%	734%	44%

*Estimated from supply channel feedback