



Howard Merson Vermont Energy Investment Corp. VEIC, Consulting

Vermont Energy Investment Corporation

About VEIC

- Nonprofit; 30 years of reducing economic
 & environmental costs of energy
- Energy efficiency, renewable energy, & transportation
- Program design, planning & evaluation, policy, advocacy, and research









Examples of VEIC's Utility Clients

















































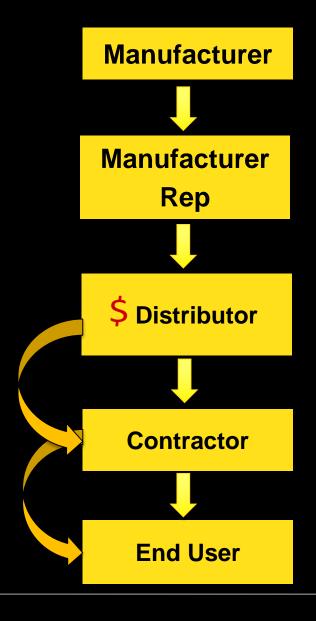






HVACR Upstream / Midstream

What is an upstream / midstream program?



Benefits of Upstream / Midstream

- 1. Promotes increased availability, sales, & installation of efficient equipment
- 2. Influences distributor stocking practices
- 3. Diminishes financial barriers
- 4. Facilitates market transformation

Participating Manufacturers



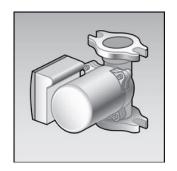




























Participating Manufacturers



















In the future...





Upstream / Midstream Distributors 16 Distributors, 48 Locations

























Appalachian Supply, Inc.









HVACR Upstream / Midstream Approach

Approach to Upsa Midstream

- Project Planning
- 2. Establish Value Proposition
- 3. Mapping the Supply Chain
- 4. Eligibility & Performance Request
- 5. Data Collection
- 6. VEIC SMIT RFI / Planning Sessions
- 7. Establish Incentive Levels
- Administration / Management Fees

Develop SMIT Plans

NDA/MOU



VEIC's Approach to Upstream / Midstream

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- 10. PDA / MOU



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Understand Supply Chain's Profit Model

Return on Net Assets (RONA) =

Net Income

Inventory + Accounts Receivable – Accounts Payable

Distributors' Profit Model

RONA driver	Consideration
Increase gross margin (GM), gross profit (GP) & net income (NI)	· Energy-efficient products affect GM, GP, & NI
Decrease inventory investment & increase turnover	 Collaborative sales & marketing Intensive product & program training Incentives increase market demand
Accounts Receivable (AR)	 Avg. AR collection 50 - 55 days; Target < 35 days
Accounts Payable (AP)	 Avg. AP terms 30 - 35 days; Target: 45 - 240 days

Distributor Value Proposition - HPCP

A strategic partnership

Factor	Standard pump	HPCP pump	Variance
Resale from distributor to customer	\$65	\$165	\$100
Distributor cost (estimate)	\$ 52	\$120.25	\$68.25

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A strategic partnership

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Resale from distributor to customer	\$65	\$165	\$100
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Incentives at distributor's point of sale		\$100	
Resale value, with \$100 incentive to distributor's customer	\$65	\$ 65	

Distributor Value Proposition - Supply Chain

High Performance Circulator Pumps - strategic partnership

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Gross profit per circulator pump	\$13	\$44.75	\$31.75
Gross margin per circulator pump	20%	27%	
Gross profit generated from 10,000 units / year	\$130,000	\$447,500	\$317,500

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Distributor Value Proposition - HPWH

	Electric Resistance	HPWH	Variance
Resale from distributor to customer	\$458	\$1054	\$596
Distributor cost (estimate)	\$376	\$850	\$474
Gross profit per water heater	\$82	\$204	\$122
Gross profit generated from 17,000 units / year	\$1,394,000	\$3,468,000	\$2,074,000

HPWH increase distributor value 150%

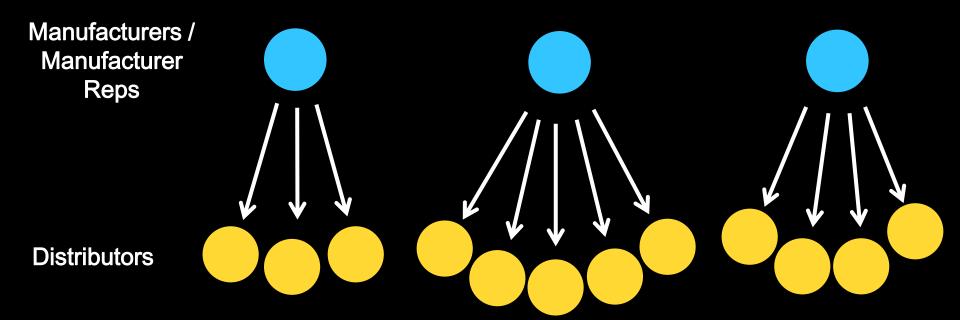


VEIC's Approach to Upstream / Midstream

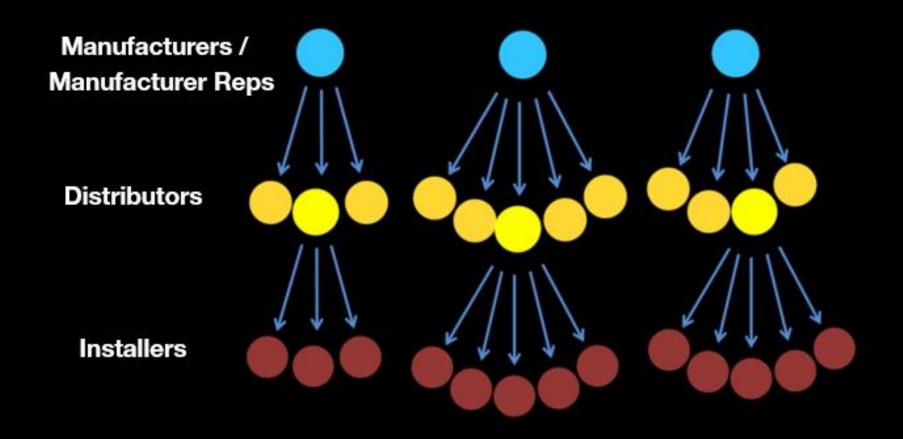
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TARGET: Use Supply Chain Approach



Leverage Supply Chain Approach to Recruit & Train Installers



Understanding the Distributor landscape

Current Regional Distributor Database: 55 Companies, 270 Branch locations

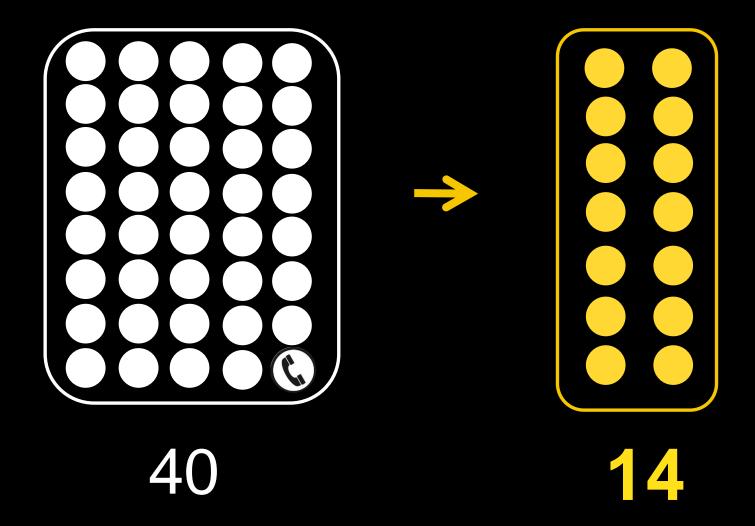
Tier	% of Companies	% of Total Branch Locations	Branches	Cumulative
Top 4	7%	55%	148	148 (55%)
Next 5	9%	19%	50	198 (74%)
Next 9	16%	11%	30	228 (85%)
Next 37	67%	15%	42	270 (100%)

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Optimize the Collection of Transactional Data



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HVACR Upstream / Midstream Incentives & Fees

Upstream program	Current incentive / unit	Current administration / management fee / unit	Comments
CCASHP	\$600 single zone \$800 multi-zone	\$50	Complex saleInventory investmentAggressive fee
HPWH	\$600	\$65	 Sales under duress (95%) Small window of upsell opportunity Aggressive incentive & fee
HPCP	\$50	\$3	
	\$200	\$3	Tiered fee: \$ / MWh
	\$600	\$50	

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SMIT:

Sales, Marketing, Inventory & Training

- Internal / external stakeholder planning meetings
- RFI (Request for information) to suppliers
- Suppliers: Develop & present SMIT plan
- SMIT strategy planning sessions

SMIT Supply Chain Feedback

"The most comprehensive program for impacting the marketplace. We are proud to be asked to be a partner."

Distributor, VP-Residential Sales

"VEIC team, I want to thank you all for a great meeting and looking forward to working with you. Thank you again for your time and information shared."

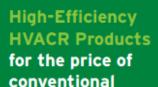
Manufacturer, Division Sales Manager

"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

SMIT Examples

SMIT Marketing Efforts



Everybody wins

Now you can provide the energy-efficient HVACR products your customers are looking for-at deep discounts.

End-use customers will enjoy greater comfort and lower bills, contractors and distributors will increase sales and customer satisfaction, and all of Vermont benefits through lower energy demand and related costs.

How does it work?

Efficiency Vermont subsidizes the cost of qualifying efficient products by paying rebates directly to distributors, who pass the savings on to installers, who then pass these savings on to end-users.

Contractors purchase qualifying products, provide end-user information, and receive in-store discount.

Efficiency Vermont

COLD-CLIMATE HEAT PUMPS

Cold-climate heat pumps heat and cool homes at

a fraction of the cost of conventional heating and cooking. By moving heat rather than generating it, heat purios typically consume much less energy than traditional electric, propane, or oil heating systems. Depending on the system they offset, heat pumps can save

for full product list, participating distributors, and more information.

HEAT PUMP WATER HEATERS



Heat pump water heaters can cost less than half as much to operate compared to traditional electric resistance water heaters, and save as much as \$4,900 over the lifetime of the unit. In addition to providing domestic hot water, heat pump water heaters also dehunicity the space around them.

Visit www.efficiencyvermont.com/ howhpartners for full product list, participating distributors, and more information,

Not available for natural gas conversions. As of January I, 2016, Efficiency Vermont will no longer provide a discount for Pump Mater Heaters that are SS gallons or larger,

HIGH-PERFORMANCE CIRCULATOR PUMPS



Circulator pumps use advanced controls and brushless motor technology to aptimize pump poeration, resulting in lower energy userup to 85% compared to conventional circulator pumps.

Visit www.efficiencyvermont.com/pumps for full product list, participating distributors. specific discounts, and more.

Customer facing marketing materials of rebate offer

Post-sale communications reinforce customer value

You just made a very smart decision

By installing a cold-climate heat pump, you'll save energy and money and be more comfortable, too.

Here are a few ways to get the most out of your heat pump:

SET IT AND FORGET IT Set your temperature preferences and don't change them unless

you're leaving for more than a week.



AVOID DUELING

on unless needed.

HEAT SOURCES

Set your back-up system 10° lower than the heat pump, so it won't kick



The tighter your home, the less energy your heat pump will need to keep you comfortable.

Your unit was purchased at a special price from a participating distributor, thanks to up to a \$400 discount from Efficiency Vermont.

Want to save even more? Keep reading ▶

www.efficiencyvermont.com/coldclimateheatpumps



www.e

SMIT Marketing Efforts



Customer facing marketing materials of rebate offer

SMIT Marketing Efforts



In-store displays at distributors & marketing materials for contractors

Messaging to communicates additional offerings

For Building Systems
Distributor Customers

Here's a partial list of Building System Products with In-Store Discounts available up to \$800:

Cold Climate Heat Pumps
Efficient Evaporator Fan Motors
Heat Pump Water Heaters
High-Performance Circulator Pumps

To receive an in-store discount, provide the following information at the time of purchase: Customer Name | Installation Address | Water Heating Fuel

Here's a partial list of Building System Products with Post-Purchase Rebates available:

Ventilation & Furnace Fans Variable Frequency Drives & Motors Furnaces & Boilers

Joint Marketing Efforts

Challenge: Communicate end-user benefits of upstream / midstream programs to contractors & customers

Solution: Visual materials







Upstream / Midstream Website

Participating Distributors

QPLs



Cold Climate Heat Pump Program

Participating Distributors

Effective 12/1/2014; Updated 3/23/2017



























Distributor Name







CCHP Manufacturer

This list will be continuously updated with additional distributors and heat pump manufacturers as they join the program.

Please check back for updates.

Air Purchases www.airpurchases.com	South Burlington	802-780-0900	Fujitsu www.fujitsugeneral.com		
Bell Simons Companies www.bellsimons.com	South Burlington	802-862-8705	Mitsubishi www.mitsubishicomfort.com		
	Pittsfield, MA	413-443-7718			
	Springfield, MA	413-781-4500			
	Montpelier	802-229-5105	Fujitsu		
	Newport	802-334-0151			
Blodgett Supply	Rutland	802-775-3342			
www.blodgettsupply.com	White River Junction	802-295-3143	www.fujitsugeneral.com		
	Williston	802-864-9831	7		
Central Supply	Lebanon, NH	603-448-5116	Fujitsu		
www.plumberssupplyco.com	Woodsville, NH	603-747-2328	www.fujitsugeneral.com		
	Barre	802-479-3373			
	Bennington	802-447-2312	Daikin <u>www.daikin.com</u>		
1	Brattleboro	802-257-4316			
THE SECOND STREET	Rutland	802-775-1922			
F.W. Webb Company www.fwwebb.com	Springfield	802-885-8127			
	St. Albans	802-527-0531			
	St Johnsbury	802-748-8101	Haier www.haier.com		
	Williston	802-863-1167			
	Keene, NH	603-357-1877	www.naier.com		
	Lebanon, NH				
Granite City Electric	Bennington	802-442-8155	Panasonic		
www.granitecityelectric.com	Brattleboro	802-254-8256	www.panasonic.com		
	Barre	802-476-6239			

Logos & hyperlinks

Participating Manufacturers:

802-658-2747





















* Eligible for Efficiency Vermont's \$600 or \$800 instant Off Invoice Rebate. Rebate offer only available to electric utility customers in Vermont; customer information required at point of purchase.

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Panasonic

named in Astinoaca		and discuss	and the second s		a ma haire ann		and the same of th	distribution.		
Manufacturer	Unit Type	Outdoor Model Number	Indoor Model Number or Unit Type	Model Name	Capacity (8tu/h)	HSPF	EER	SEER	Distributor(s)	Product Incentive
		38GRQ809	40GRQ809B	Infinity Series	9,000	10.3	15.7	30.5		
		38GRQ809	40GRQB09H		9,000	10.3	15.7	30.5	1	
1		38GRQ812	40GRQB12B		12,000	10.3	12.7	23.0		
		38GRQ812	406RQB12H		12,000	10.3	12.7	23.0		
l		38GRQ818	40GRQB18B		18,000	10.3	12.5	21.0		
	Single-Zone	38GRQ818	40GRQB18H 40MAQB098-3		18,000	10.3 11.2	12.5 14.5	21.0 25.0	ļ	\$600
Carrier		38MAQB09R3 38MAQB12R3	40MAQB098-3 40MAQB128-3		9,000	12.0	12.5	22.5		\$600
www.carrierductless.com		38MAQB18R-3	40M8CQ183		18,000	10.5	12.5	20.0	R.J. Murray	
www.comerauctiess.com		38MAQB1883	40MBOB18C3		18,000	10.5	12.5	20.0	1	
		38MAQB24R-3	40MAQB2483	Performance	24,000	10.3	13.0	20.5	1	
		38MGRQ1883	Non-Ducted	Series	18,000	10.3	12.5	22.5	1	
		38MGRQ24C3	Non-Ducted		24,000	10.0	12.5	23.0	1	
	Multi-Zone	38MGRQ30D-3	Non-Ducted	-	30,000	10.0	12.5	23.8]	
		38MGRQ36D-3	Non-Ducted		36,000	10.5	13.5	21.5		\$800
		38MGRQ48E3	Non-Ducted		48,000	10.2	12.5	22.4		
		RXG09HVJU	FTXG09HVJU	Quaternity	9,000	11.0	15.8	26.1		
		RXG12HVJU	FTXG12HVJU	quaternay	12,000	10.6	14.0	24.2	1	
		RXS09LVIU RXS12LVIU	FTXS09LVJU FTXS12LVJU		9,000	12.5	15.3	24.5	1	
					12,000	12.5	12.8	23.0		
		RXS15LVJU RXS18LVJU	FTXS15LVJU FTXS18LVJU	LV Series	15,000 18,000	11.6 11.0	14.4	20.6	-	
		RXS24LVIU	FTXS24LVJU		24,000	10.6	12.5	20.0	-	
		RX09QMVJU	FFQ09Q2VJU		9,000	11.7	13.0	20.9	†	
	Single-Zone	RX12QMVJU	FFQ12Q2VIU	Vista	12,000	11.2	12.5	20.2	1	
	Single-zone	RX15QMVJU	FFQ15Q2VJU		15,000	11.0	12.5	20.7	1	
Daikin		RXL09QMVJU	FTX09NMVJU		9,000	12.5	12.5	20.0	F.W. Webb	\$600
www.daikin.com		RXL12QMVJU	FTX12NMVJU	Enhanced Capacity	12,000	12.0	12.5	20.0	United Refrigeration	\$500
		RXL15QMVJU	FTX15NMVJU		15,000	12.5	13.0	20.0		
		RXL09QMVJU	PVXS09NVJU	Series	9,000	11.7	12.5	20.0	1	
		RXL12QMVJU	PVXS12NVJU		12,000	11.4	12.0	20.0	1	
		RXL15QMVJU	PVXS15NVJU	1	15,000	11.3	12.5	20.0	1	
		RZQ18PVJU9	FTQ18PBVJU	Sky Air	18,000	12.0	14.5	20.0	†	
		2MXL18QMVJU	Non-Ducted	Enhanced Capacity	18,000	10.3	12.7	17.0	1	
	Multi-Zone	3MXL24QMVJU	Non-Ducted	Series	24,000	12.5	12.7	17.9	1	
	Multi-Zone	2MXS18NMVJU	Non-Ducted	MXS Series	18,000	10.7	12.5	18.9	1	
		3MXS24NMVJU	Non-Ducted		24,000	12.5	12.7	17.9		
		1U09EH2VHA	AW09EH2VHA	Arctic Series	9,000	13.0	15.5	28.0		
Haier		1U12EH2VHA	AW12EH2VHA	ALLE MINE	12,000	12.0	13.0	25.0	F.W. Webb	
www.haler.com	Single-Zone	1U09ES2VHA	AW09ES2VHA	Advanced Series	9,000	12.0	14.5	23.5	Hulbert Supply	\$600
		1U12ES2VHA 1U18ES2VHA	AW12ES2VHA AW18ES2VHA		12,000	11.0 11.0	12.5 12.6	23.0 21.0		
		ADU9RLS2	AW18ESZVHA ASU9RLS2			12.5		27.2		
		AOU12RLS2	ASU12RLS2		9,000	12.0	16.1 13.8	25.0		
		AOU15RLS2	ASU12RLS2 ASU15RLS2		15,000	12.0	12.0	21.5	1	
		AOU15RLS2H	ASU15RLS2		15,000	10.3	12.0	21.5		
		AOU9RLFF	AGU9RLF	1	9,000	12.6	16.0	26.0	1	
		AOU12RLFF	AGU12RLF		12,000	11.6	13.1	22.7		
		AOU15RLFF	AGU15RLF		15,000	11.2	12.5	20.3		
		AOU9RLFFH	AGU9RLF		9,000	12.4	16.0	26.0		
		AOU12RLFFH	AGU12RLF		12,000	11.3	13.1	22.7]	
		AOU15RLFFH	AGU15RLF		15,000	11.0	12.5	20.3	Air Purchases	
	Single-Zone	AOU9RLFC	ARU9RLF	Halcyon Invertor	9,000	12.2	14.5	21.5	Blodgett Supply	
Fulltsu		AOU12RLFC	ARU12RLF		12,000	11.5	12.8	20.0	Central Supply	\$600
www.fuiltsugeneral.com		AOU9RLFC	AUU9RLF		9,000	13.0	14.5	24.0	Premier Supply Group	
WWW., I IIII SAGENET III. LUNY	I	AOU12RLFC AOU9RLS3	AUU12RLF ASU9RLS3(Y)		12,000 9,000	12.2 14.2	12.8 18.0	21.9 33.0	Sid Harvey's	
		AOU12RLS3	ASU19RLS3(Y)		12.000	14.2	15.2	29.3	RE Michel	
		AOU12RLS3	ASU12RLS3(Y) ASU15RLS3(Y)		15,000	13.4	13.9	29.3		
		AOU9RLS3H	ASU9RLS3(Y)		9,000	14.2	18.0	33.0	1	
ı		A CONTRACTOR OF THE PERSON OF	CONTRACT!		-	47.6	445.00	22.0		





















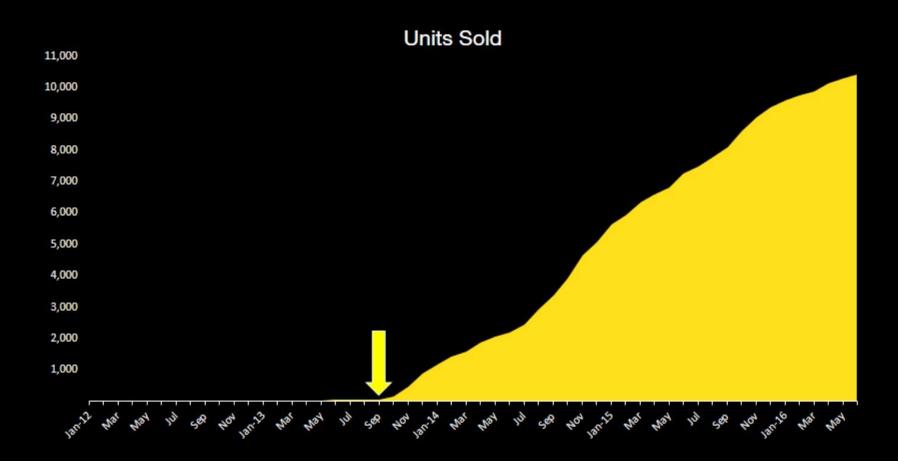
Logos & hyperlinks





HVACR Upstream / Midstream Results

Consolidated Results from Participating Vermont Distributors of High-Performance Circulator Pumps



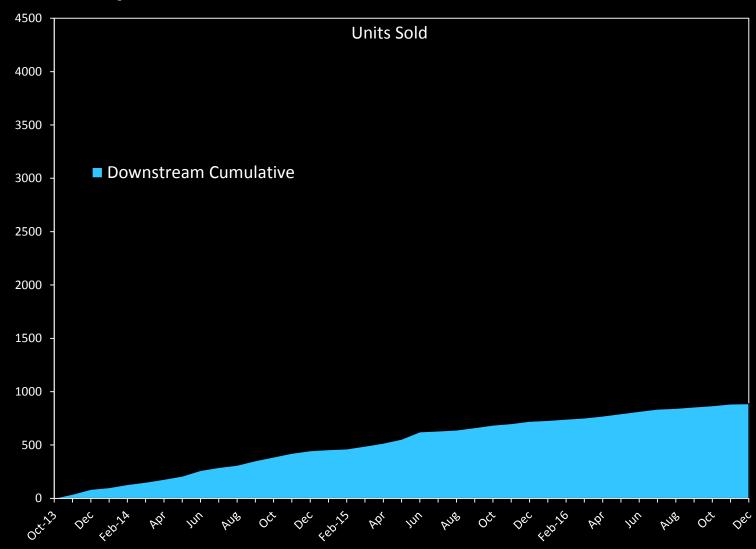
Every 2.5 Days = TOTAL ANNUAL AVERAGE before Upstream Program!!

Distributor's "Before & After" Upstream

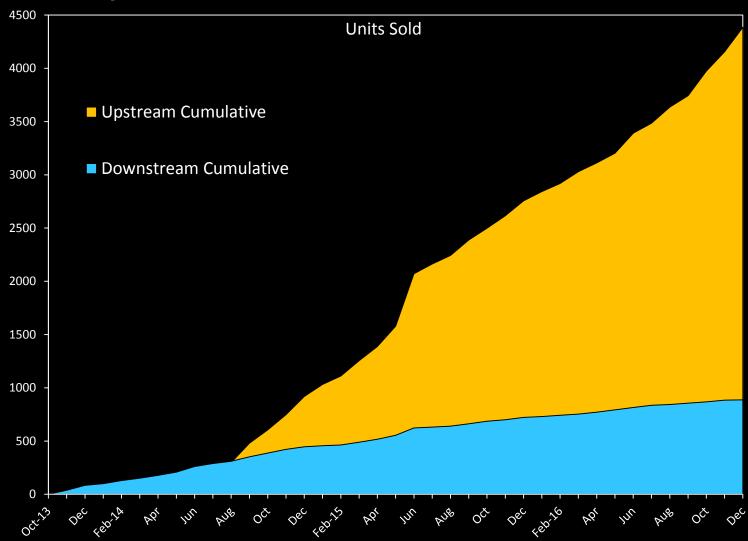




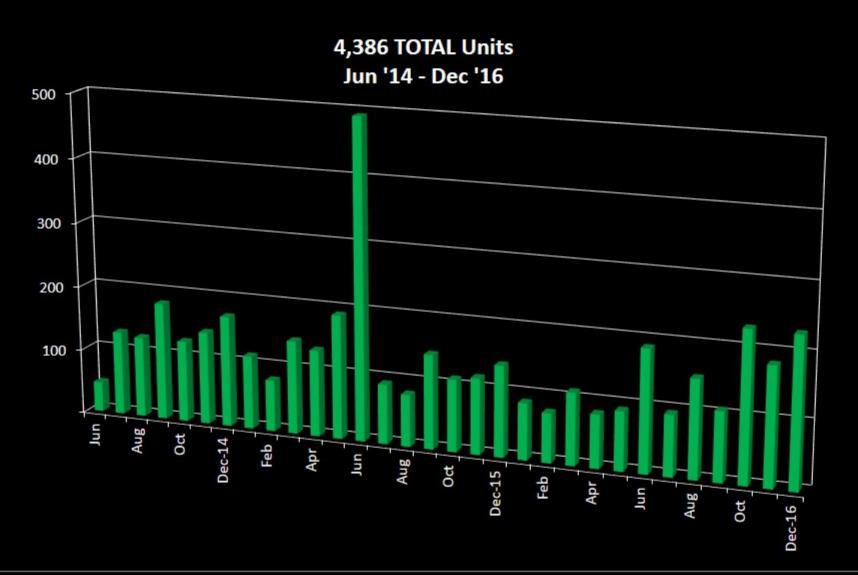
Upstream / Midstream vs. Downstream; Heat Pump Water Heaters



Upstream / Midstream vs. Downstream; Heat Pump Water Heaters



Consolidated HPWH Participating Vermont Distributors' Results



Consolidated CCHP Participating Vermont Distributors' Results



Impact of the Upstream / Midstream Program in 2016

ccASHP HPCP HPWH Increase in 8,550% +90% 750% Sales

- 1) Business model
- 2) Front loaded
- 3) Strategic partnerships thain management



The National Distributed Products Platform (NDPP)

Objectives for NDPP

- Shorten timeline and reduce complexity for utility programs nationwide to launch
- Enable utility programs to accelerate product sales based on a proven upstream / midstream approach
 - Utilities
- Susciantially increase sales of efficient products included in the Platform
 - Manufacturers, reps, distributors, & contractors
- Same energy and transform the market
 - VEIC

Standardized Tools and Processes

- A common set of tools, systems, & specifications for high-efficiency, distributed product technologies
 - Cold Climate Air Source Heat Pumps
 - Heat Pump Water Heaters
 - Unitary Pump Systems
 - Other technologies in the future
- Formal agreements w/ manufacturers, reps, distributors, and national & regional buying groups
- Proven approach to map the supply chain in a service territory

VEICs Vision for Growth of NDPP

2016: Launch

- Secure founding sponsors
- Introduce to utilities

2017: Grow

Secure5-10 utilities

2018: Grow

- Add 5-10 more utilities
- Add new technologies

2019: Sustain

- Add 5-10 more utilities
- Add new technologies

2020: Sustain

Add 5-10 more utilities

18-month start-up phase



NDPP 2017

- New York State Energy Research and Development Authority (NYSERDA)
 - New York ccASHP Upstream / Midstream Initiative
 - Sales & marketing of residential cold-climate high efficiency heat pumps in Con Edison service territory (i.e. NYC & Westchester County, NY)
 - 2000 Units with initial Pilot
- NEEA (NW Energy Efficiency Alliance)
 - ID, MT, OR, WA
 - 13.5 Million Population
 - 150 Utility Clients
 - GOAL: Grow from 6000 to 17,000 HPWH Annual Units
 - US Market = ~60,000
- EPA ENERGY STAR Products

Regional Heat Pump Market Transformation Initiative

Starts w/ CONSISTENCY, including:

- Program eligibility requirements:
 - ccASHP criteria
 - Quality installs
 - Contractor training requirements
- Upstream / Midstream incentive approach:
 - Instant discount through participating distributors
 - Best practice incentive design
- Inventory: Consistent terms to elevate supply & increase turns;
- Accounts receivables & accounts payables
 - Incentive payment timeline
- Supply Chain engagement:
 - Sales, Marketing, Inventory, Training (SMIT) approach
 - Streamlined communications w/ manufacturers, manufacturer reps, and Northeast Distributors

Regional Heat Pump Market Transformation Initiative

Next Steps

- VEIC: proposing to develop a regional initiative in collaboration w/ NEEP
- 2. Leverage VEICs SMIT approach
- 3. Supply Chain engagement
 - Manufacturers / Manufacturer Representatives
 - Distributors
- 4. Explore funding options through '18 programs
- 5. We can work w/ existing program implementers as needed
- 6. By working together, we can achieve economies of scale & increase our impact
- 7. Utilities & programs that are interested in a regional initiative should contact Dave Lis or Howard Merson

Thank you!

Howard Merson
Vermont Energy Investment Corp
Supply Chain Specialist/
National Distributed Products Platform

hmerson@veic.org

p. (802) 540-7821

c. (802) 310-8447



QUESTIONS?



