MARKET POWER

Leveraging Supply Chain Strategies To Achieve Dynamic Program Goals

April 28, 2020

Energy Solutions

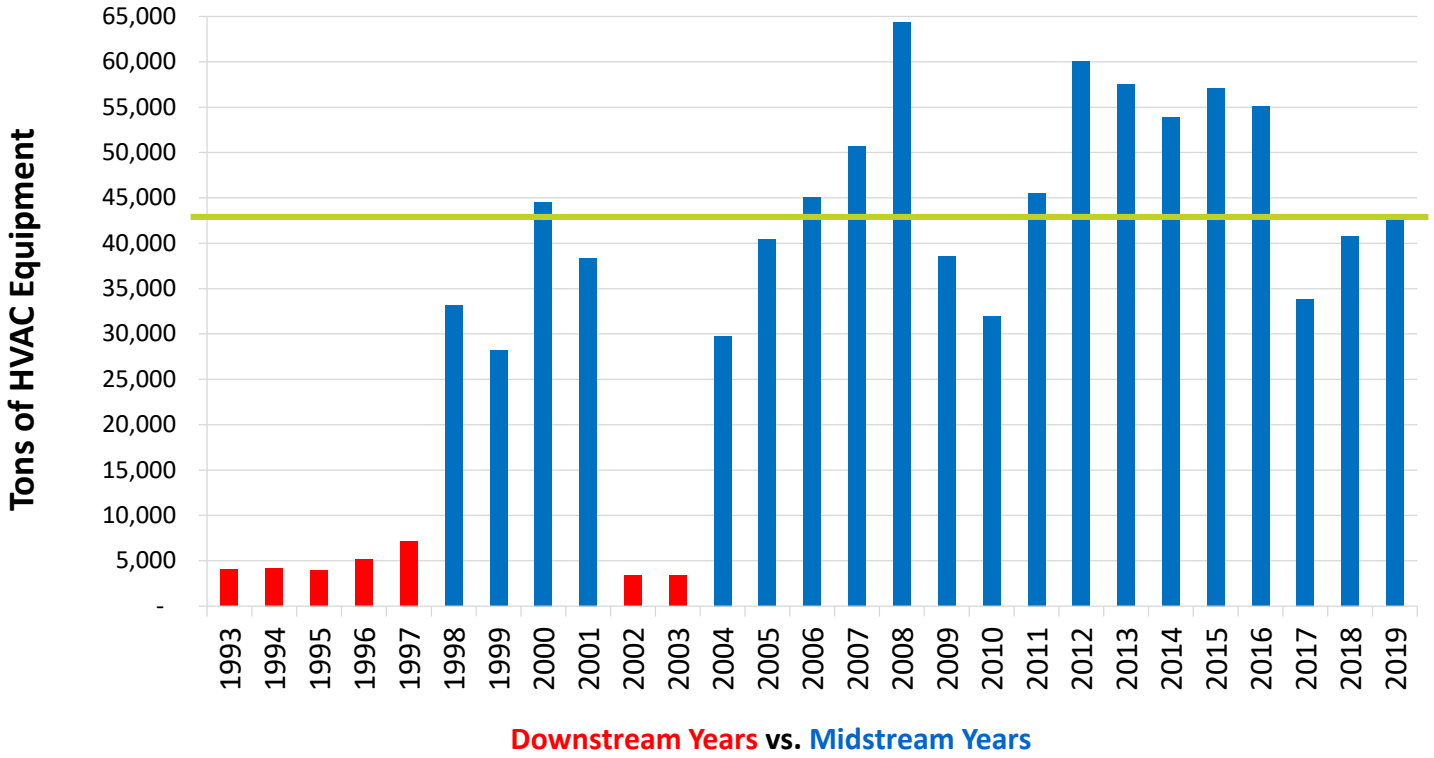
VEIC

What can be expected from Midstream programs?

900% MORE….

- Program participation
- Energy impacts
- Customer benefits
- Customer touchpoints

900% better results!



††PG&E Commercial HVAC

AGENDA

1 History of Midstream Programs

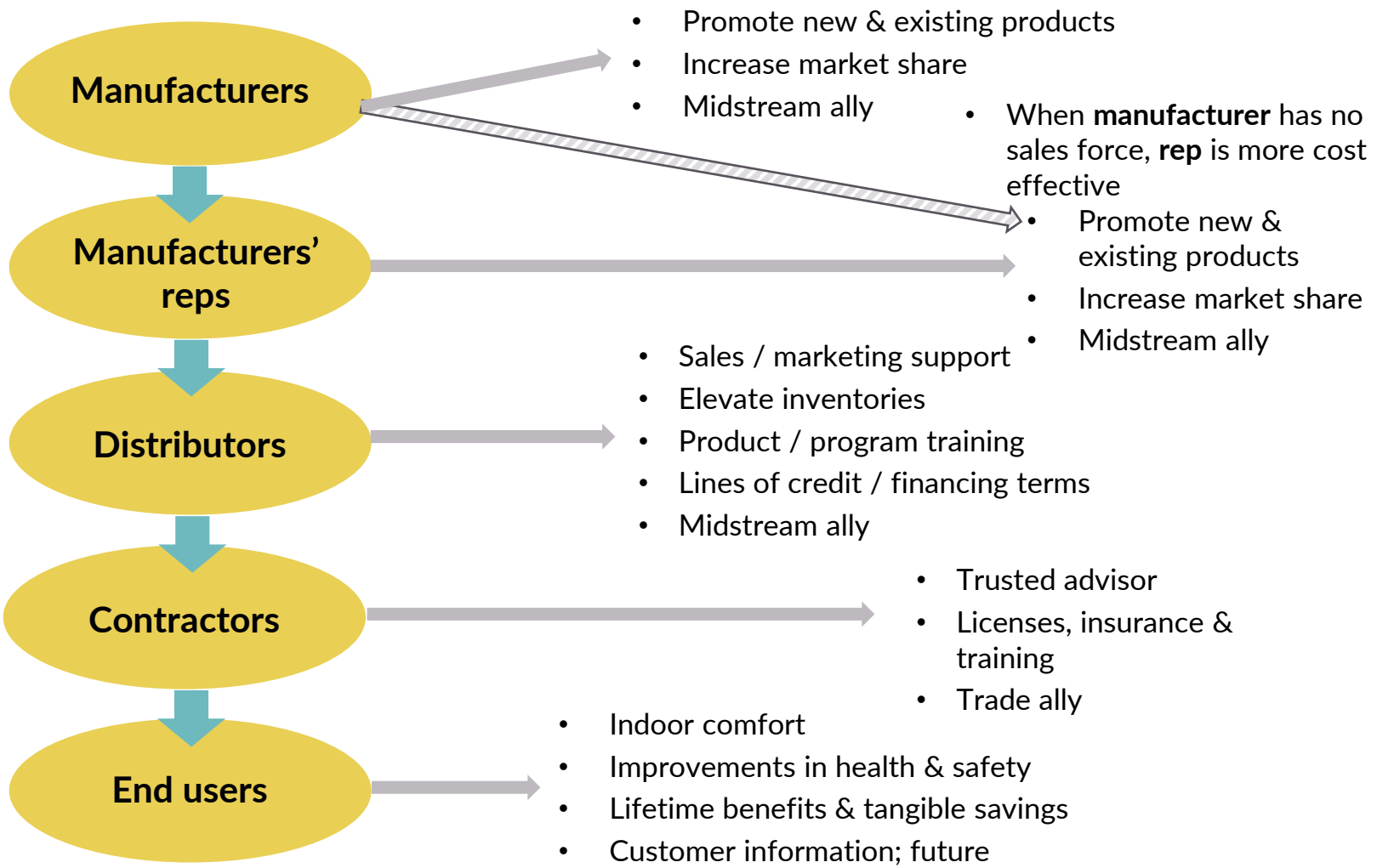
2 Applicability to Illinois (even during COVID-19)

3 Midstream Program Results

4 Challenges & Lessons Learned

5 Recommendations for Illinois

Supply Chain Overview



For the purposes of this presentation, using consistent terminology as March 6, 2020 Midstream-Upstream Working Group Presentations

- "Upstream" are incentives paid to manufacturers
- "Midstream" are incentives paid to distributors or dealers

History of Midstream Programs

The real story of how midstream programs came to be

History of Midstream Programs

- In 1998 PG&E launched a Distributor HVAC and Motors Program, with Energy Solutions support
- Distributors received rebates, but had to provide end-use customer installation addresses
- Why midstream was considered
- Challenges to launching
  - Market actors: CEOs
  - Internal utility concerns: paperless applications, loss of customer touch point, no wet signatures
  - Regulatory barriers: free markets work best
  - Public Utility Commission: closing and reopening commercial midstream HVAC program, later mandating residential midstream HVAC program

Applying Midstream Programs to Illinois

Are midstream programs designs from other regions, climate zones, fuels, and service territories applicable to Illinois?

Do midstream programs work during the COVID-19 pandemic?

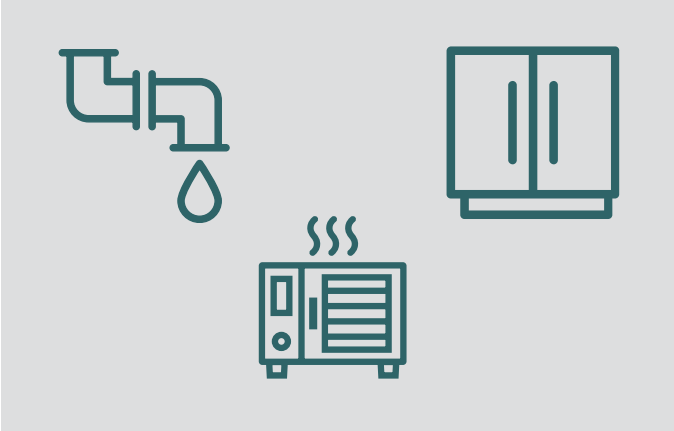
Short Answer: Yes, midstream programs are applicable in IL, but your goals will dictate design

- Are energy savings your number one goal?
- Are customer touch points a primary concern?
- Are there regulatory goals that need to be met?

Depending on your goals, there are solutions that can benefit IL customers, stakeholders, and utilities, but midstream programs aren't a silver bullet on their own.

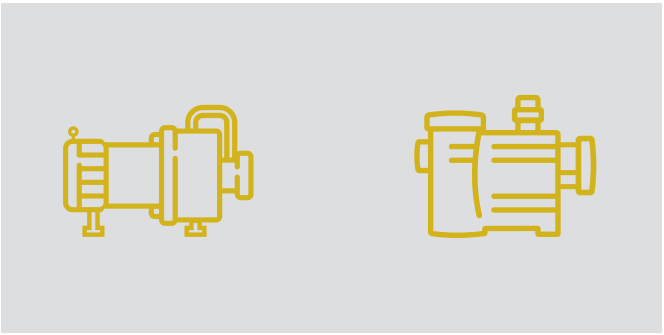
Plumbing, foodservice & refrigeration supply chains applicable in IL

- Hot water (plumbing) and restaurant designs and their usage are similar across states
- Technology from plumbing, foodservice, and refrigeration don't depend on weather, but scale of the market



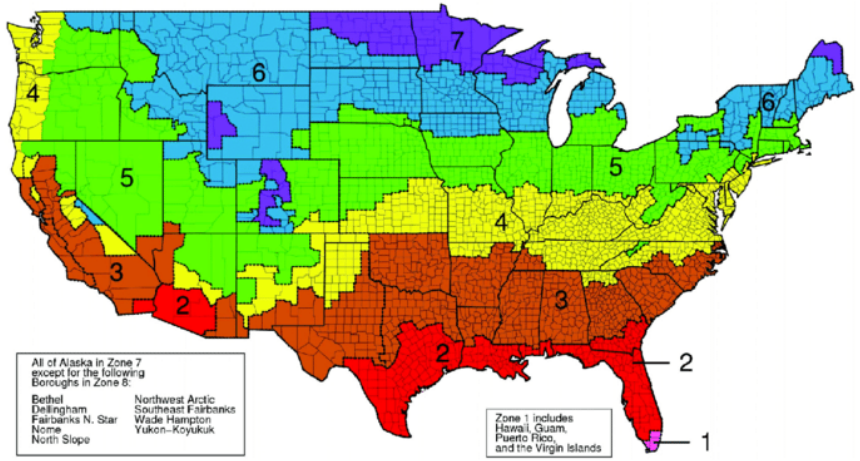
Circulator pump supply chains also applicable in IL

- Hydronic heating applications in winter
  - Water heating year round
  - Applies to both residential & commercial
- The market exists, but do the energy savings justify inclusion of midstream programs for these technologies in your portfolio?



HVAC Applicable to IL, but have to compare weather & market size

- ASHRAE climate zones are a good proxy
- Looking at climate zones 4 & 5, the weather is similar to Illinois
- Compare populations to existing midstream HVAC programs in CO, WA, MI, MA, RI, NH, VT as a proxy to an IL program
- * States with asterisks are not statewide



POPULATION (2019)

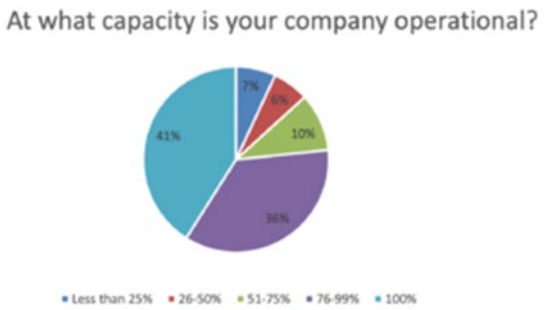
IL = 12.67 M
CO* = 5.7 M
WA* = 7.6 M
MA = 6.9 M
RI = 1 M
NH = 1.3 M
VT = 0.6 M

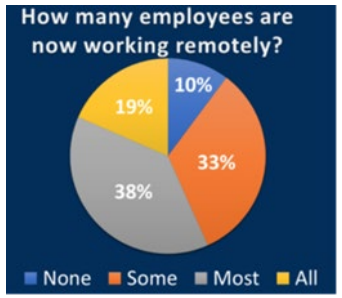
Midstream Programs during COVID-19

- All implemented midstream programs continue to operate
  - Mechanical, refrigeration, and electrical supply chains are considered essential businesses
  - Remote outreach continues to influence majority of sales through distributors rather than individuals or select contractors
- New midstream programs launched in April 2020 in WA, WI, and NY
  - Technologies included HVAC, Plumbing, and Foodservice (gas and electric)
  - HVAC and Plumbing are considered essential services in these states
- Launch with pay-for-performance contracts to minimize risk
- Product availability update
- End-Of-Year forecasts decreased by 15% to 30% depending on technology

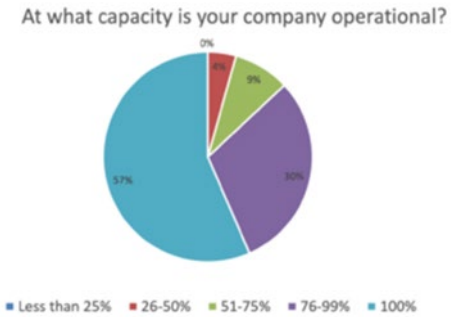
Electric Association of Chicago Releases COVID-19 Survey Results

157 companies responded; all are still operating, with 110 operating at better than 75% capacity. 41% of responding companies are still working at 100% capacity; only 13% were less than 50% operational.

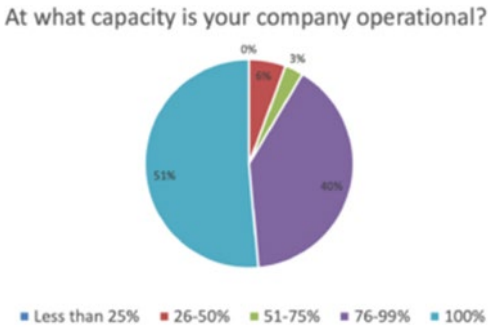


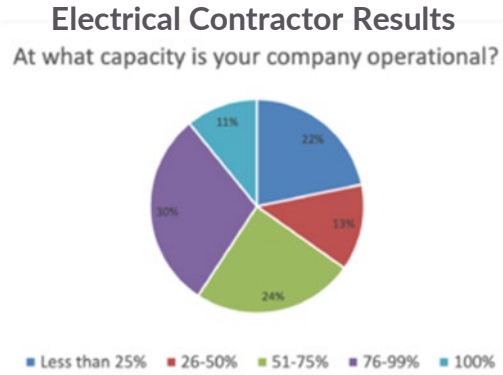


Chicago area electrical distributors remain busy. The survey shows 87% of the distributors who responded are working at nearly full capacity. Just 4% say they are below half capacity right now.



Electrical manufacturers in the Chicago area are telling a similar story. More than 90% says they are more than 75% operational; just 6% say they are working at less than 50% capacity.



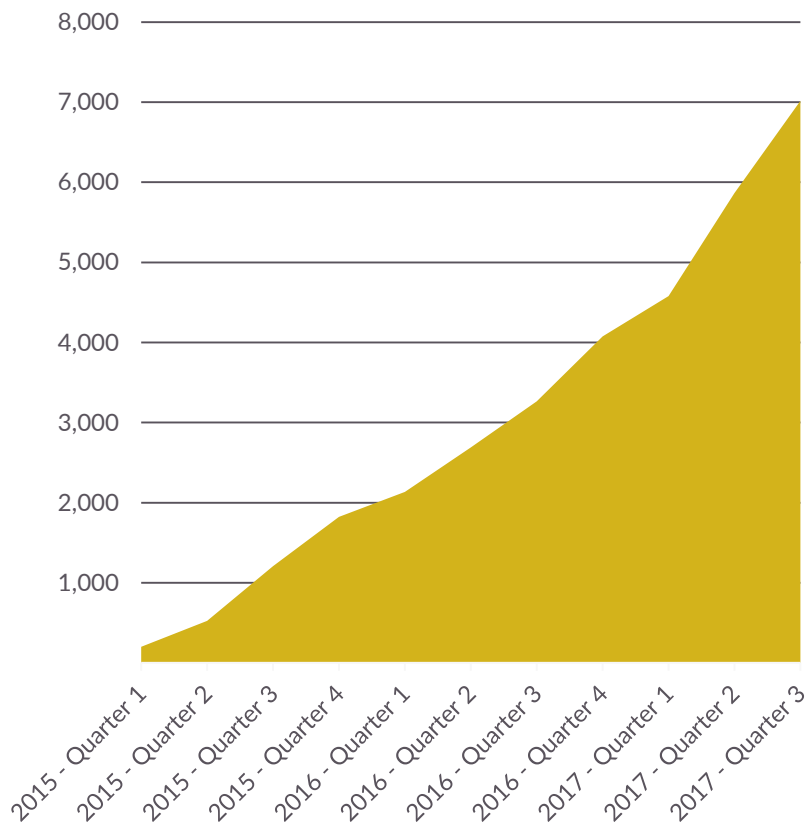


Results

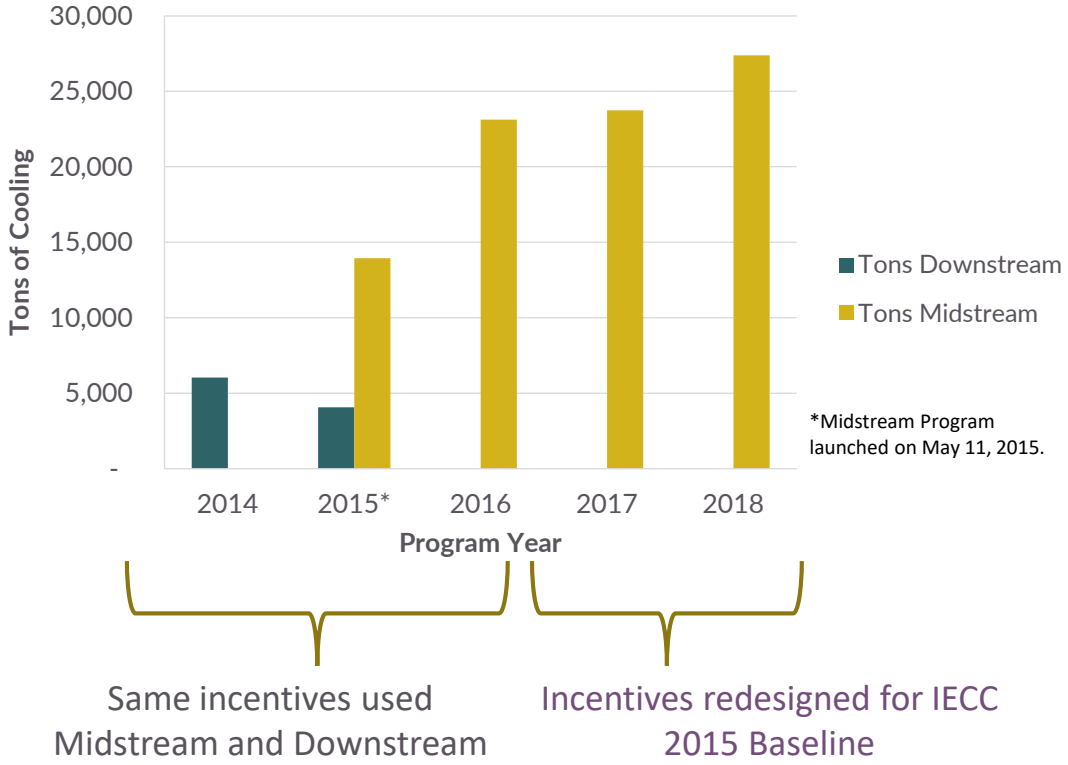
Applicability to gas and electric program administrators and to various program administrator sizes in HVAC, plumbing, and foodservice.

HVAC Results

VT ASHP Cumulative Volume

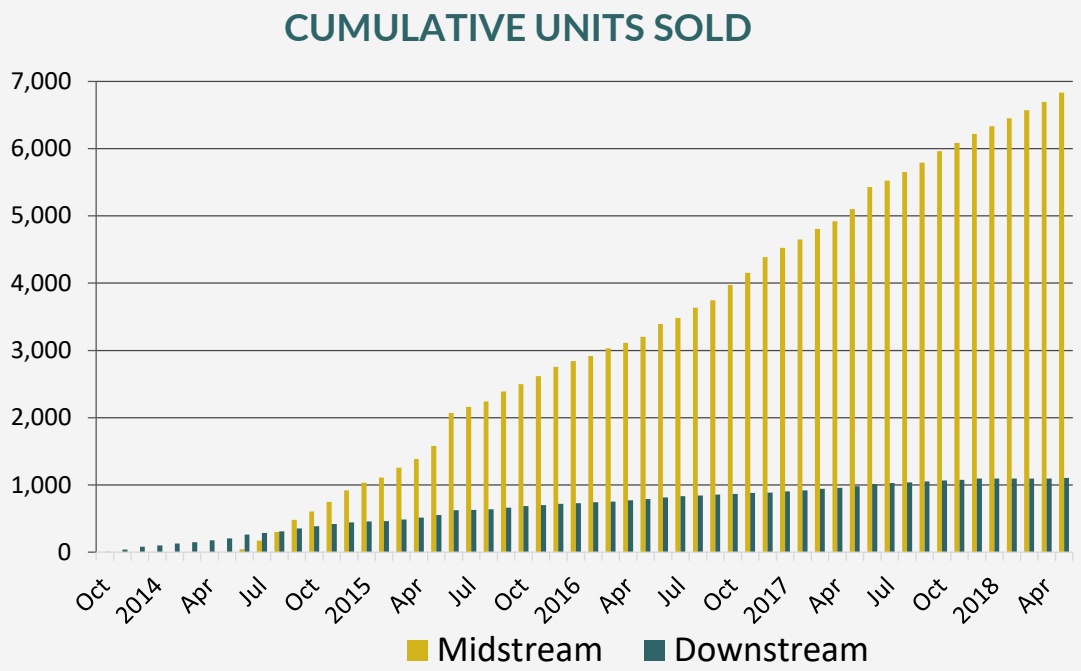


Xcel CO Midstream vs. Downstream Participation by Installation Date



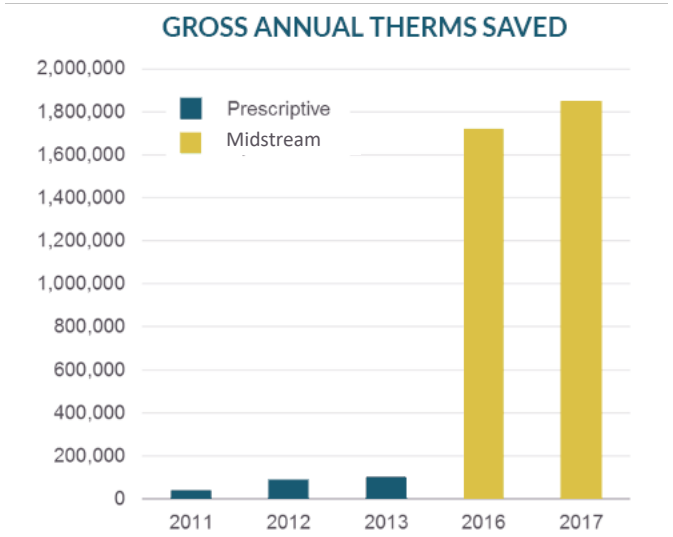
Plumbing Results

Vermont Heat Pump Water Heaters

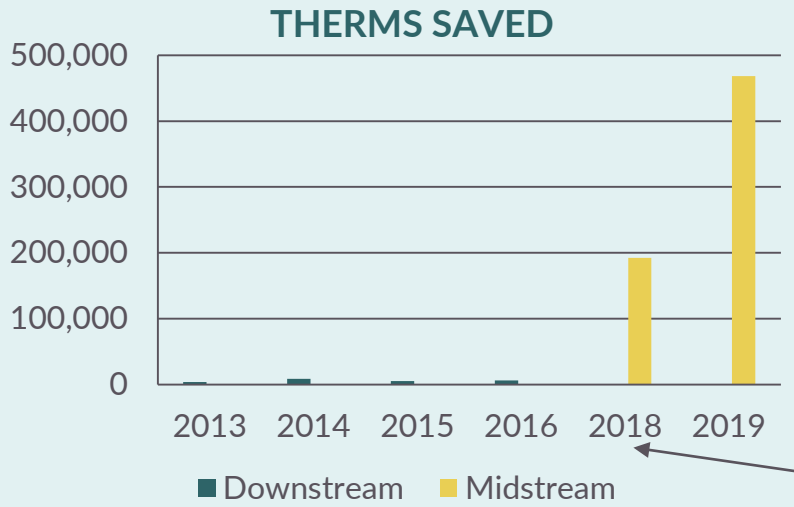


Massachusetts

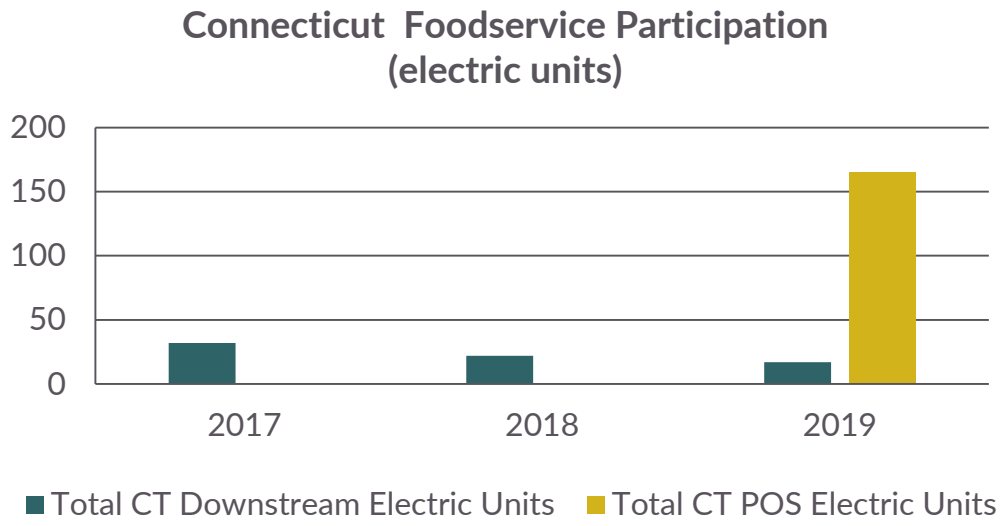
C&I Water Heaters: Midstream vs Prescriptive

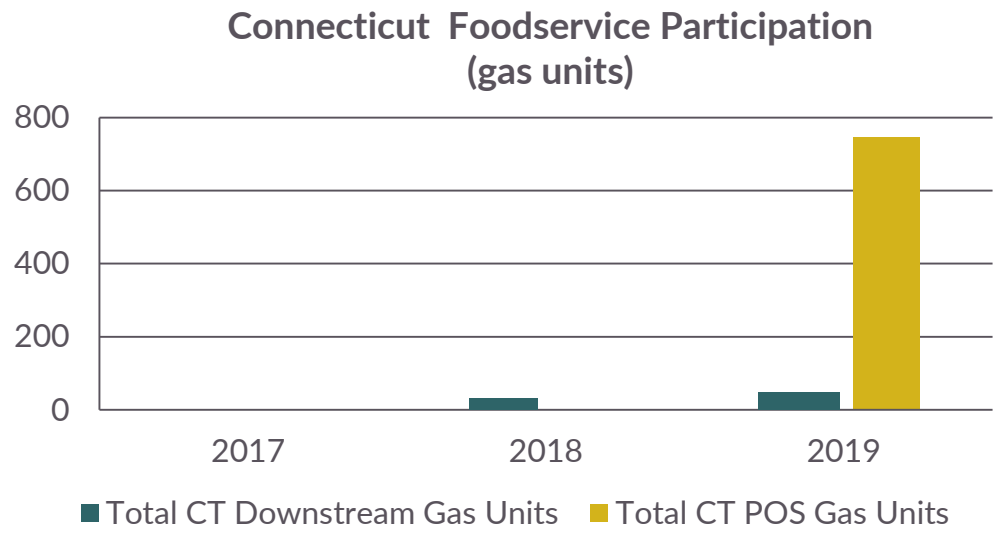


Puget Sound Energy

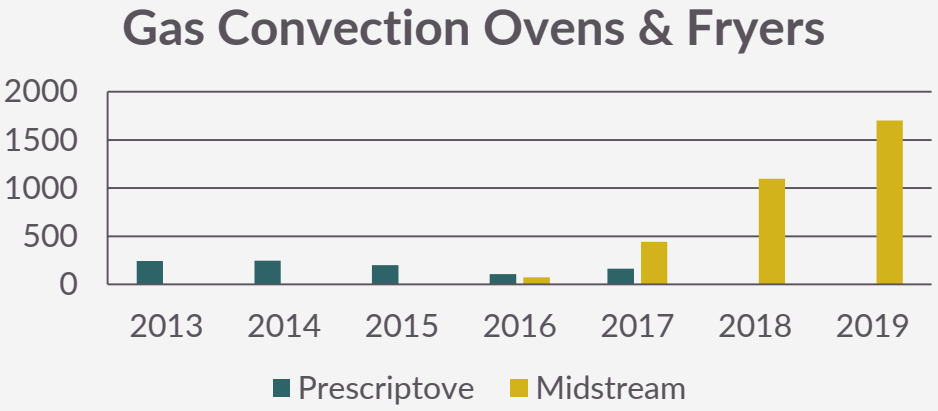


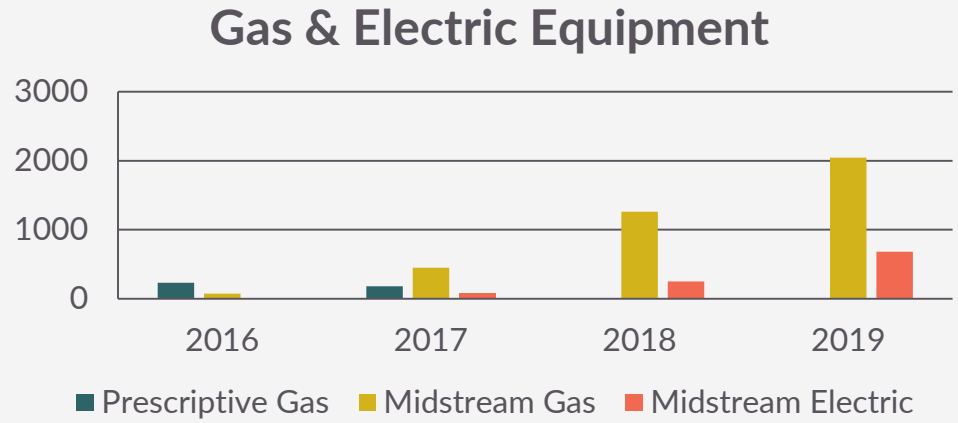
Foodservice Results



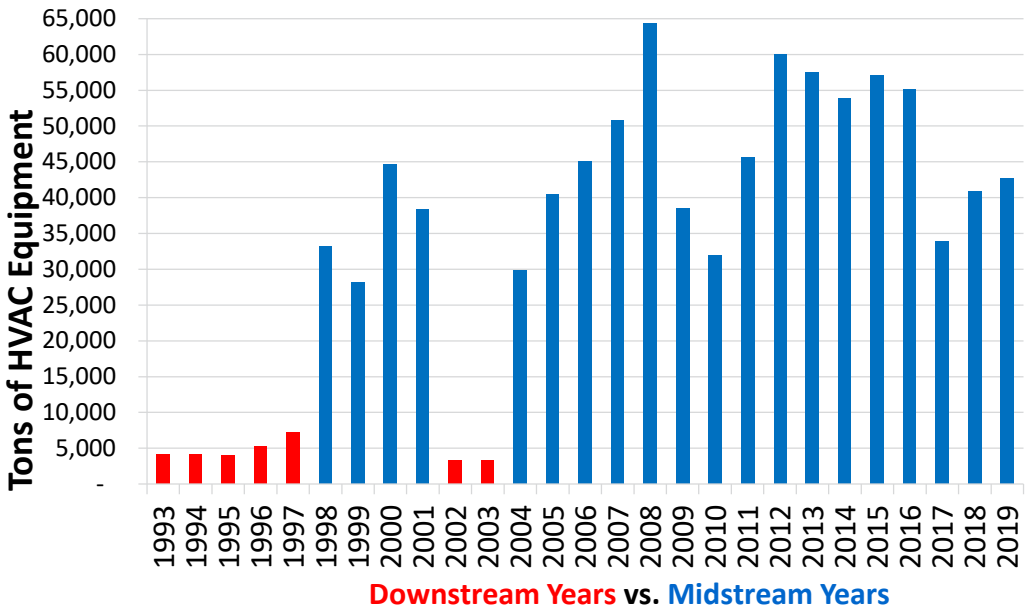


Massachusetts Foodservice Programs





What if these savings don't fit in your portfolio?



††PG&E Commercial HVAC

Portfolio Manager

But That Would Be My Whole Portfolio Budget!

Budget for full program volume.

Fund most cost-effective measures.

Pilot with selected market actors or products.

Partner with market to forecast volume.

Communicate status in real-time on program budgets. Avoid stop/start.

Challenges and Lessons Learned

Questions from SAG Stakeholders

1. How do you influence a decision-maker for a larger region when you are representing one utility service territory?

- Consider a large, continuous, robust consistent program offering
- Create a business case that resonates with the market
- Long-standing and effective market actor relationships built on trust allows pre-enrollment
- Scale makes a difference
- Recognize that many distributors are regional and divided into branches

EXAMPLES

* Restaurant Depot, Carrier, Grundfos, Daikin

"In order for utility programs to attract companies like TriMark, participation needs to be easy, inexpensive to integrate into our current systems, and cover a lot of the country."

–Jason DeGraw, TriMark, #1 Foodservice Dealer in the country

2. How do you make the process easy to minimize administrative burden on distributors?

ELIMINATE MARKET BARRIERS WITH AUTOMATION AND INSIGHTS TO REDUCE RISK

- Simplified Application Data Fields
- Automated Customer & Product Verifications
- Status Tracking (similar to FedEx)
- Timely Payment Fulfillment
- Self-Service Data Export and Reporting Wizard
- Data Integrity to Auto Resolve Data Irregularities
- Site Inspections Interface
- **Cybersecurity.** SOC-2 Protocols and Auditing

Pay FAST + BE RELIABLE

3. What is the viability of co-existence of a midstream model and a downstream model? Are there policy considerations from other jurisdictions?

Plan for overlap in program design

Deduct from upstream claims

- or -

Discontinue downstream

Midstream is ~10x Downstream

Overlap is Small

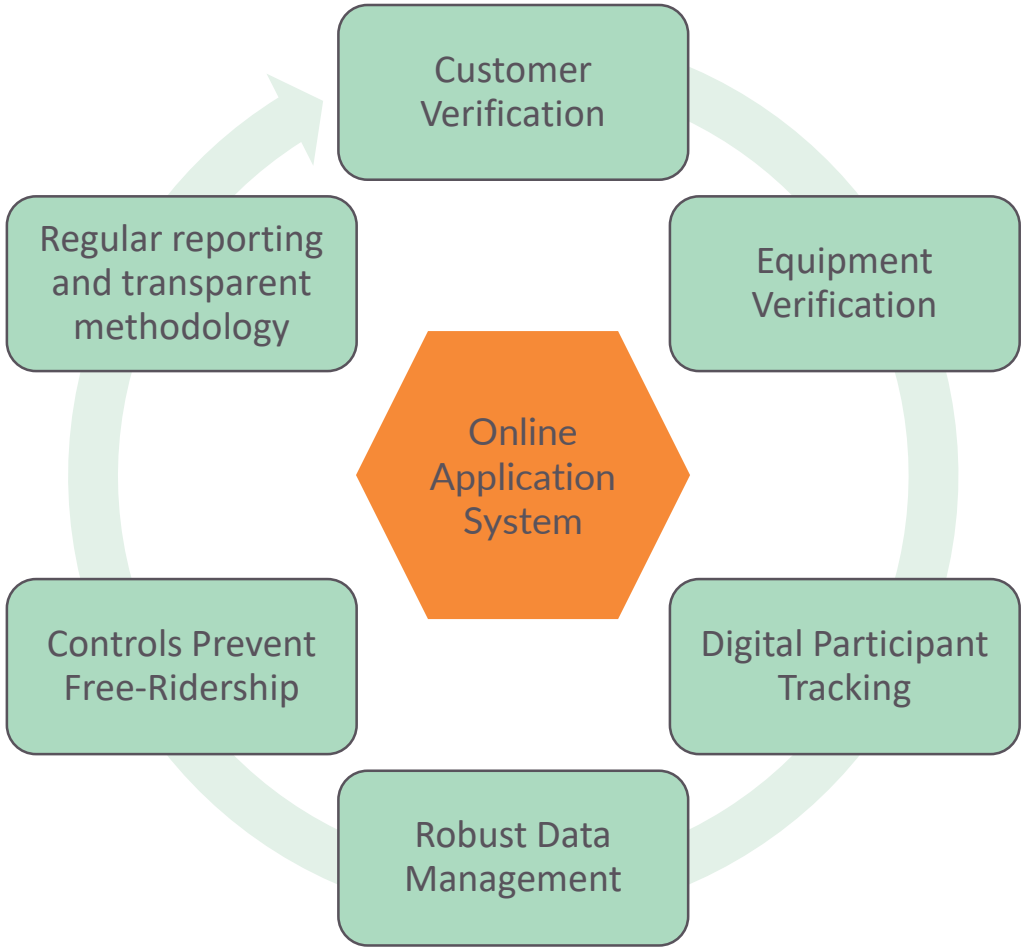
Utility	Program	Approach
DTE	Midstream HVAC	Shutdown downstream Program
Xcel Energy	Midstream Cooling	Shut down downstream program Pay Twice, Claim Once New Construction
PG&E	Midstream HVAC	Measure Exact Overlap and Exclude from Upstream
Southern California Edison An Edison International Company	Midstream Chillers	Statistically Calculate Estimated Overlap
Duke Energy	Midstream Lighting	Distributor and Customer can apply. Incentive on invoice.

4. Have midstream programs survived independent evaluations? NTG, in-service rates and leakage expectations?

- Most non-lighting midstream programs require installation addresses
- In many cases, midstream NTG can be better than downstream measure NTG
- CA has the longest history of midstream HVAC implementation & most publicly available documentation
  - NTG ranging from 0.65 to 0.85 from 2013 to 2020, with an average NTG of 0.78
- MA Program Administrators recently performed a midstream HVAC and Water Heating evaluation
  - NTG 0.50-0.60
- Xcel Colorado has performed a midstream HVAC evaluation
  - NTG 0.89
- Programs above require installation addresses, thus in-service rates greater than 95%
- This significantly reduces leakage

EM&V Considerations

- Midstream ≠ Downstream!
- Partner with EM&V firms early on
- Communicate program logic to EM&V
- Interview midstream participants
- Ensure field measurements are statistically accurate across measures & building types
- Consider seasonality
- Review and resolve inspection failures
- Audit the survey instrument
- Weigh responses based on distributors size

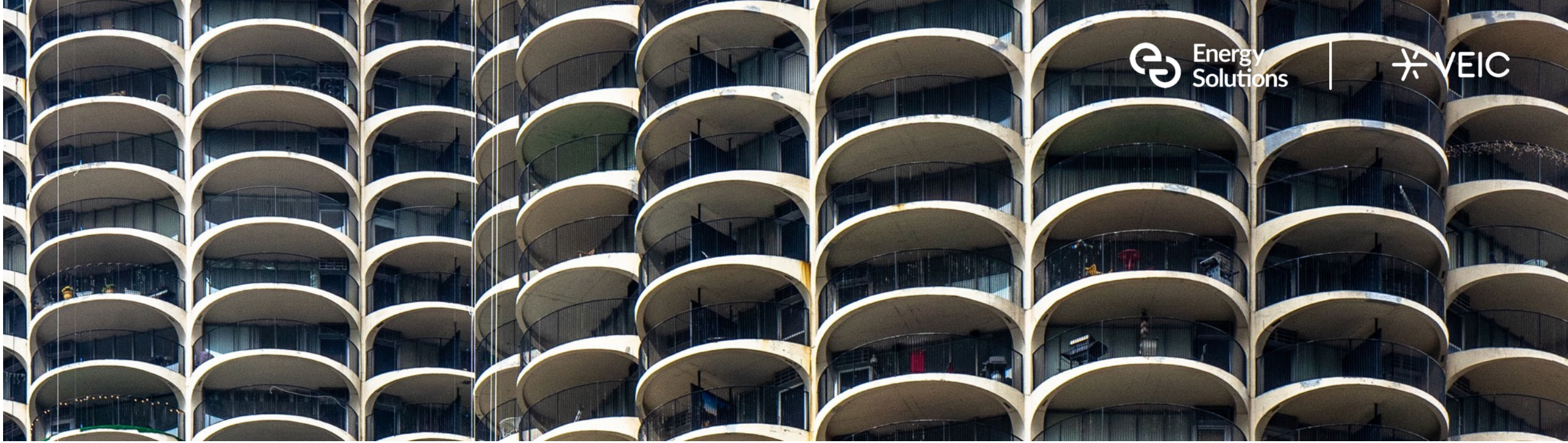


5. What are the expectations for improved cost performance?

- Don't compare apples and oranges
- Downstream prescriptive costs for all measures are hard to compare against, for example, one midstream HVAC program
- With the same incentive downstream as midstream, expect “significantly” more participation midstream
- Traditionally, the biggest midstream costs are the incentives
  - Without a high enough incentive, you won’t get midstream participation
  - Too low of an incentive is more likely to be free ridership, and thus impact evaluation results
  - Having a higher incentive means first year $/savings cost effectiveness are worse, but expect participation to increase
    - However, for TRC cost effectiveness, incentives are a cost and a benefit so it's a wash

So what can I expect from midstream program cost effectiveness?

- Gas water heating and foodservice midstream programs can have comparable first year $/therm savings as commercial gas portfolios
  - Not as cost effective as industrial programs, but still very attractive for gas program portfolios
- Electric HVAC program should have comparable $ per lifetime savings comparable lighting programs given long effective useful life of HVAC systems
- Energy savings from HVAC will not be the same amount as lighting
- Codes and standards changes and eventual diminishing returns from adding new measures will make cost effectiveness worse over time



Recommendations for Illinois

What we recommend for IL

Approach to the Supply Chain

1. Project planning
2. **Establish value proposition**
3. **Map supply chain**
4. Eligibility & performance request
5. Data collection
6. SMIT RFI / planning sessions
7. Establish incentive levels
8. Administration / management fees
9. Execute SMIT plans
10. Supply chain Account Manager
11. MOU / PDA

Supply Chain's Profit Model

$$RONA = \frac{NI}{Inv + AR - AP}$$

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 < 30 days; Leverage Program automation
Accounts Payable (AP)	Avg. AP terms 30 - 35 days; Target: 45 - 240 days

Distributor Value Proposition

Strategic Partnerships

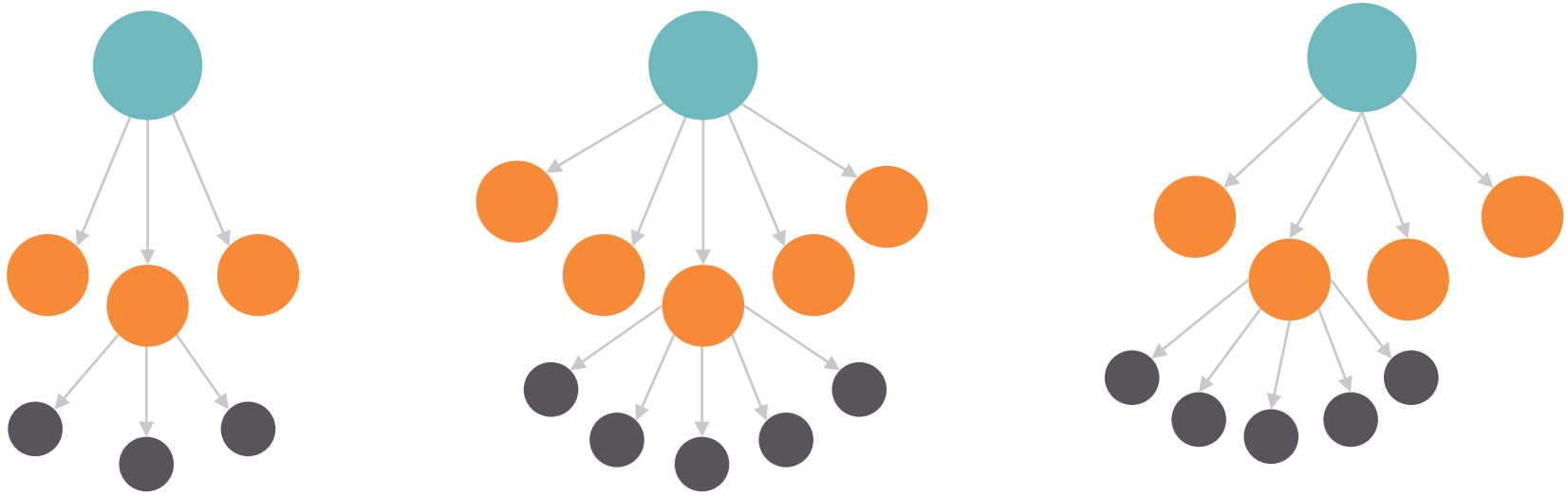
Factor	Standard pump	HPCP pump	Variance
Resale from distributor to customer	$65	$165	$100
Distributor cost (estimate)	$52	$120.25	$68.25
Incentives at distributor's point of sale		$100	
Resale value, with $100 incentive to distributor's customer	$65	$65	**244%**
Gross profit $s per circulator pump	$13	**$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**

Map Supply Chain / Market Assessments

Manufacturers / manufacturer reps

Distributors

Installers



55 companies / 270 locations				
Tier	Percent of companies	Percent of total branch locations	Branches	Cumulative
Top 4	7%	55%	148	148 (55%)
Next 5 (9)	9% (16%)	19%	50	198 (74%)
Next 9 (18)	16% (32%)	11%	30	228 (85%)
Next 37 (55)	68% (100%)	15%	42	270 (100%)

Create a Value Proposition for Everyone

DISTRIBUTORS

PRODUCTS
Midstream

SERVICE PROVIDERS

SERVICES
Downstream

But What About Customer Engagement?

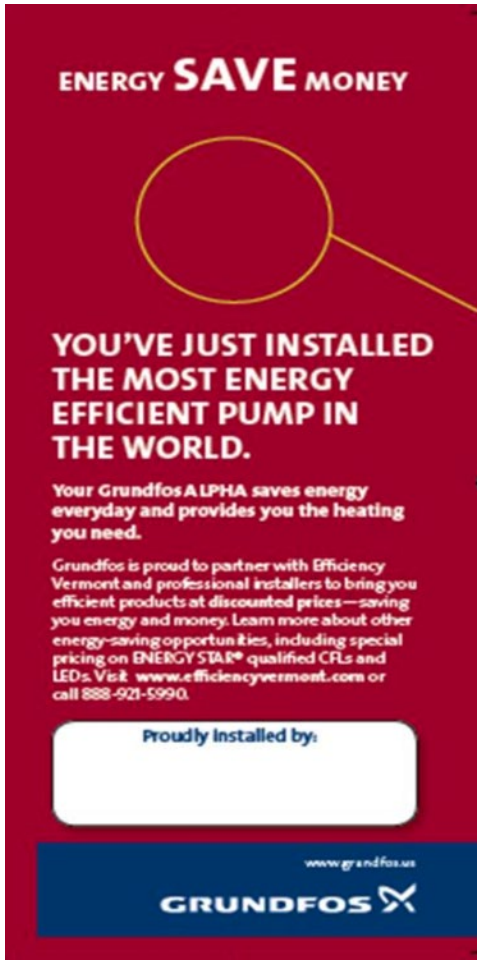
Define Profit Model for Distributors

Create Program Offerings for Installers

Recruit Installer Trade Allies

Introduce/Refer Trade Allies to Customers

Customer Engagement



Engage 900% more of your customers

Leverage Distributor/Installer-Retailer Relationships to Create Installer Network

Installers/Retailers provide "good news" to customer:

- POS/Instant Rebate
- In Stock
- Lifetime Benefits

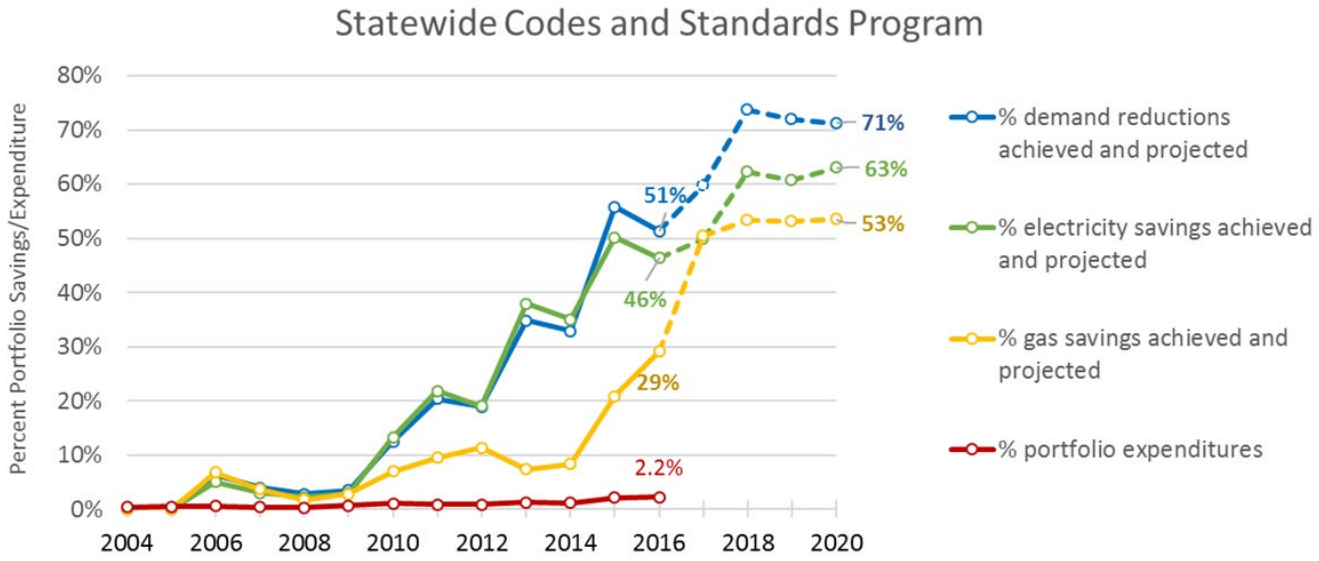
Installers introduce service measures

Send customer engagement materials after sale or installation occurs

Market Transformation: Couple Codes & Standards w/ Midstream

- Codes & Standards are the most cost-effective solution
- Codes require scaled uptake of high efficiency products in the market, and general acceptance
- Midstream program support uptake the best
- Current savings claim structures disincentivize integration between codes and programs because codes undercut savings potential
- However, removing programs would limit high efficiency product adoption

- **Solution**: Create a program to Codes & Standards pathway where program can claim savings by preparing the market



- 2005 = started getting savings attribution for **state** activities.
- 2010 = started getting savings attribution for **federal** advocacy
- 2016 = ~$23M total C&S budget

Recommendations for all Utilities (gas or electric)

SHORT TERM

- Determine your goals then design midstream accordingly
- Make a plan
- During COVID, look to launch pilots, but if only one measure, make sure it will attract enough supply chain attention
- Market assessments are an alternative to pilots

MEDIUM TERM

- Have a large, robust, consistent statewide midstream program offering
- Diversify portfolio beyond downstream and contractor programs to hedge against COVID
- Adopt codes and standards practices coupled w/ midstream

Additional Specific Recommendations for Gas Utilities

- Launch plumbing midstream programs or pilots
  - Works during COVID
  - Measures can include storage and tankless water heaters, volume water heaters, and boilers
- Launch point-of-sale (POS) foodservice programs/pilots to help communities during COVID, but participation is affected more than with plumbing programs
  - Additional foodservice sales channels include design-build, manufacturer direct, and online
- POS foodservice gas programs offer:
  - High visibility potential for commercial end use customers
  - A complementary program to existing downstream gas foodservice programs
  - Significant therm savings potential
  - An important customer base for gas utilities given foodservice growth

Additional Specific Recommendations for Electric Utilities

- Launch HVAC midstream programs or pilots
  - Works during COVID
  - Commercial measures need to include at least AC roof-top units (RTUs) as that measure will interest a majority of the market
    - Other measures include water source heat pumps, air and water cooled chillers, variable refrigerant flows units, or mini splits
  - Residential measures can include both unitary ducted air conditioners and heat pumps as well as mini & multi-splits
- Refrigeration becomes a subset of HVACR distributors supporting existing HVAC technologies and other refrigeration specialty distributors, some that support heat pump related technology

Recommendation for Gas & Electric Utilities

- Illinois has a unique opportunity to work with the supply chain
  - Many distributors sell gas and electric equipment
- A combination of water heating and HVAC pilot/program will entice most of the plumbing, HVAC and refrigeration supply chain
- Depending on how quickly you want to ramp up as you could:
  - Offer RTUs, water heaters, circulator pumps, PEI pumps and have both gas and electric savings
  - Just focus on one fuel source
- Maximize the supply chain

Summary of Midstream Programs

1. Can be applied to Illinois
2. Offset the current challenges with COVID-19
3. Meet your organization's goals
4. Facilitate market transformation

Energy Solutions

Experienced
20 years of upstream program design & implementation

Results-Oriented
Market-based, cost-effective energy, carbon, water management solutions

Mission-Driven
Founded in 1995, we work to create large-scale environmental impacts

Geographically Diverse
Offices in CA, MA, MI, OR, WA, and growing. Upstream programs in 22 states.

Clients received 13 national midstream program awards, including ACEEE, AESP, and DOE

VEIC

- Nonprofit with 30 years of reducing economic and environmental costs of energy
- Offices in VT, DC, OH, NY, WI
- 9 years midstream / upstream experience
- Comprehensive focus and results
- Energy efficiency, renewable energy, and transportation
- Program design, planning and evaluation, policy, advocacy, and research

Efficiency Vermont

EFFICIENCY$MART

DC SUSTAINABLE ENERGY UTILITY

Thank you

CHRIS BURMESTER, PhD
Executive Vice President,
Products & Services

JEFF JOHNSTON
Director, Trade Ally Strategy

JIM HANNA
Senior Technical Director, HVAC

JAKE AHRENS
Technical Energy Analyst, EM&V

CASSANDRA SQUIERS
Senior Project Manager

Energy Solutions | VEIC

Additional Questions

DANIEL CORNEJO

MANAGING DIRECTOR

dcornejo@energy-solution.com

HOWARD MERSON

SENIOR CONSULTANT / BUSINESS LEAD

hmerson@veic.org

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