ACEEE Hot Water Forum

Creative Work Arounds to the NAECA 3 Large Tank HPWH requirement

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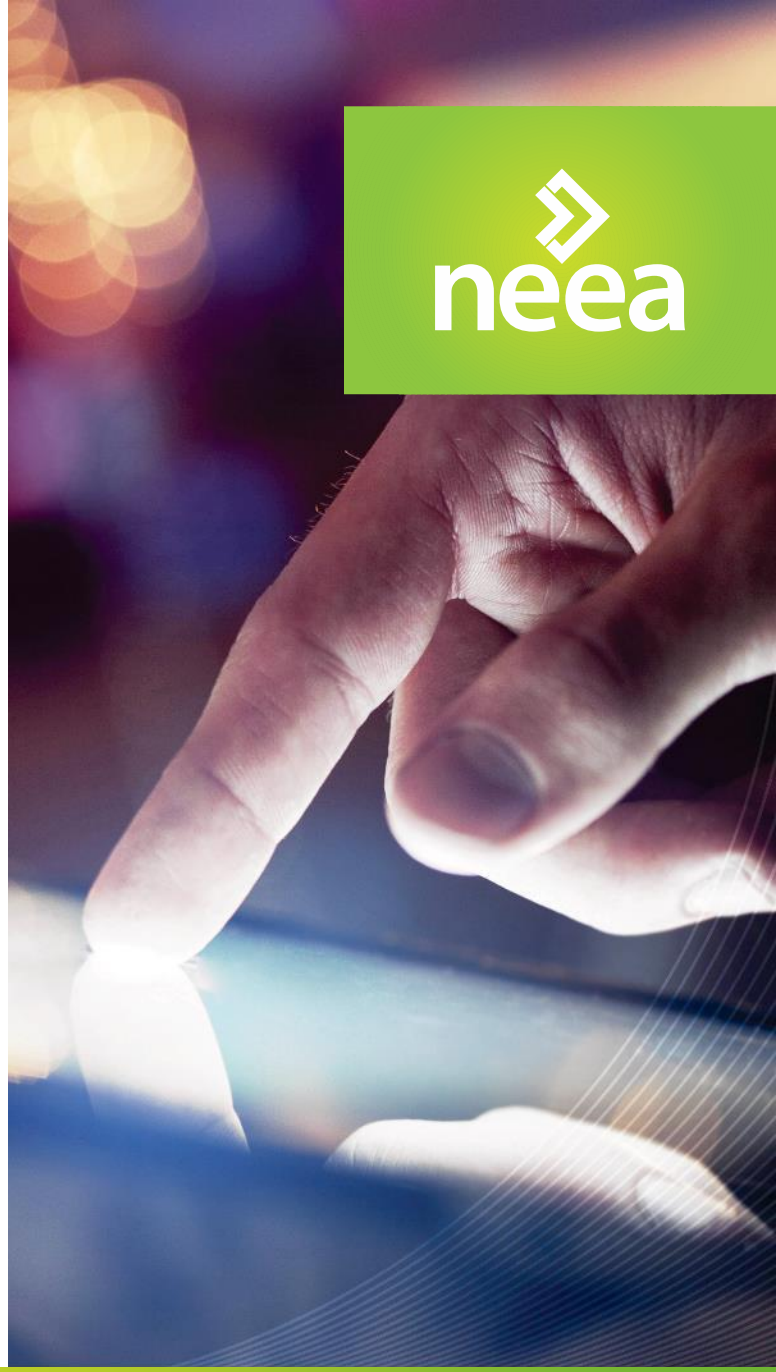


Overview

- What is NAECA 3?
- Creative solutions by the market
- What happened?
- Study findings
- Lessons learned

NAECA 3

National Appliance Energy Conservation Act

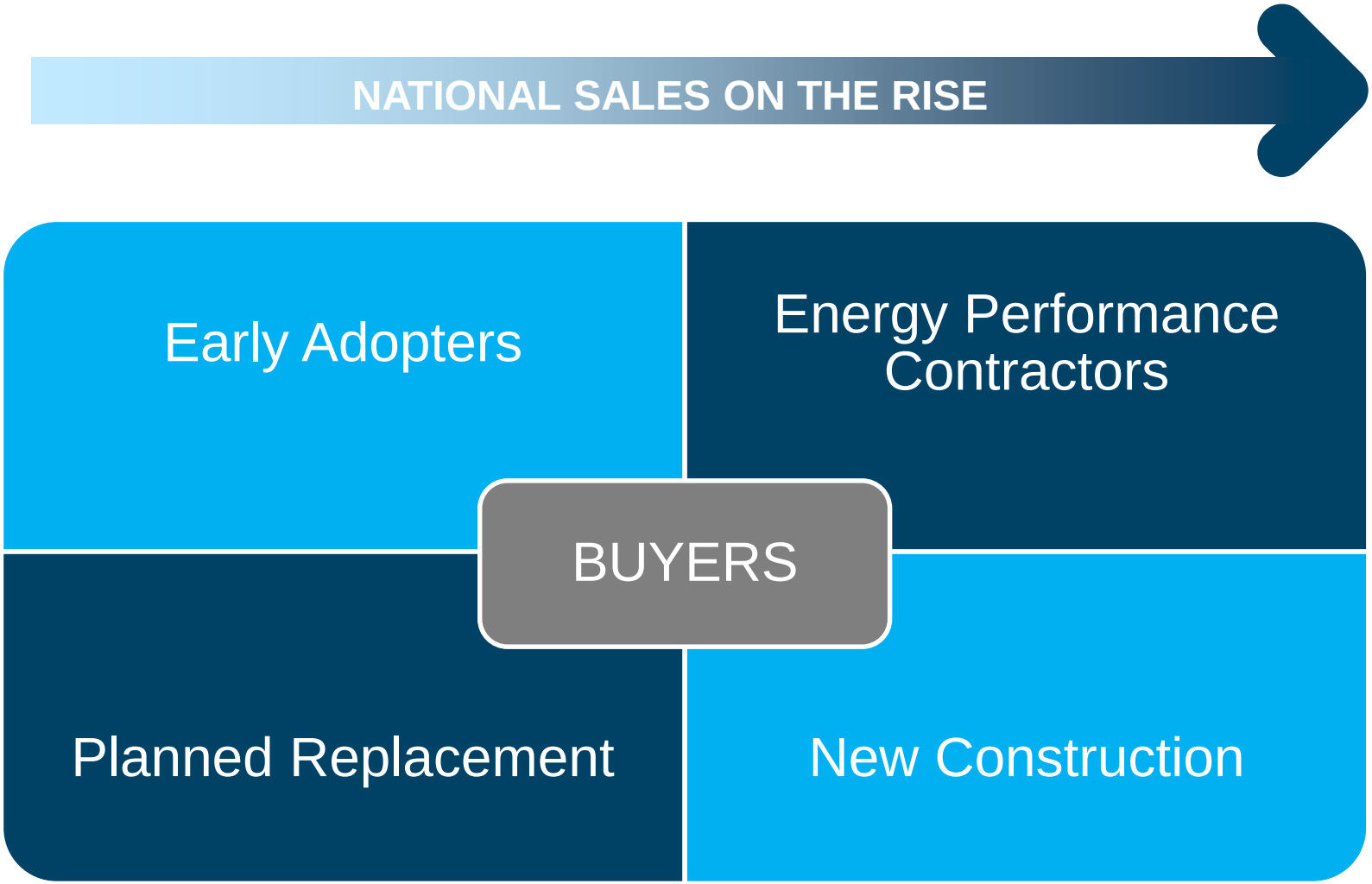
Effective date April 16th, 2015

- Driven by Department of Energy
- Higher performance standards
- Impacted sizes 20-120 gallons gas and electric
- Electric > 55 gallons leveraged Heat Pump tech
- More insulation Impacted the foot print of all tanks
- Extensive outreach by OEMs and supply channel as early as 2009

Market Response

- Recommend reducing tank size & raise temperature
- Install mixing valve and or Booster tank
- Install two 40 gallon tanks
- Install on-demand water heater
- Buy used and or repair failed parts
- Build inventory- use inventory until exhausted
- Purchase Commercial or demand response ready water HPWH

Move to HPWH Technology



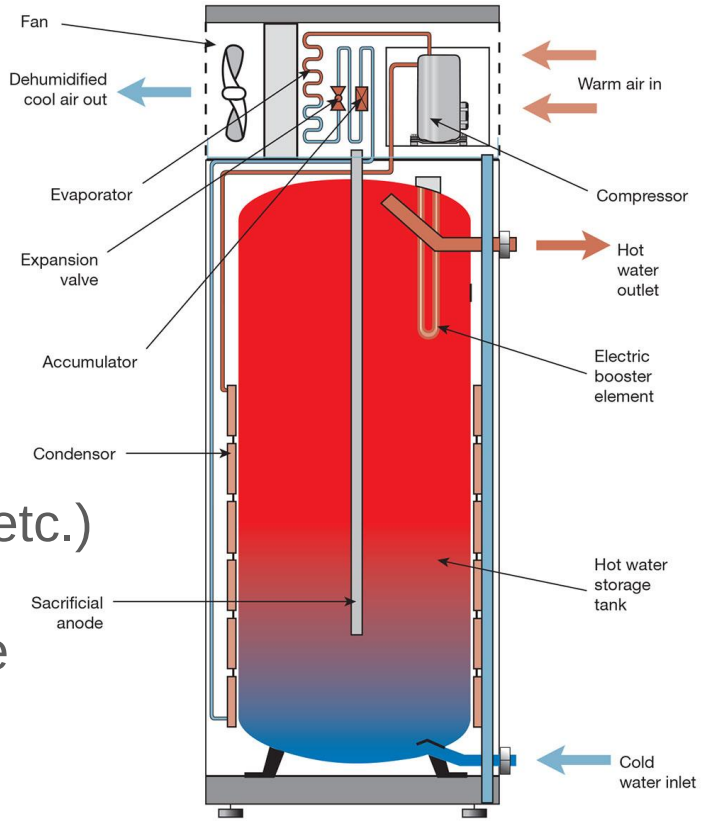
Move to HPWH Technology

Pros

- ❑ Decreased total cost of ownership
- ❑ Increased revenues to contractors
- ❑ Strong incentives and tax credits

Cons

- ❑ Installation limitations (Venting, size, etc.)
- ❑ Increase first cost to customer
- ❑ Contractor may not be as comfortable

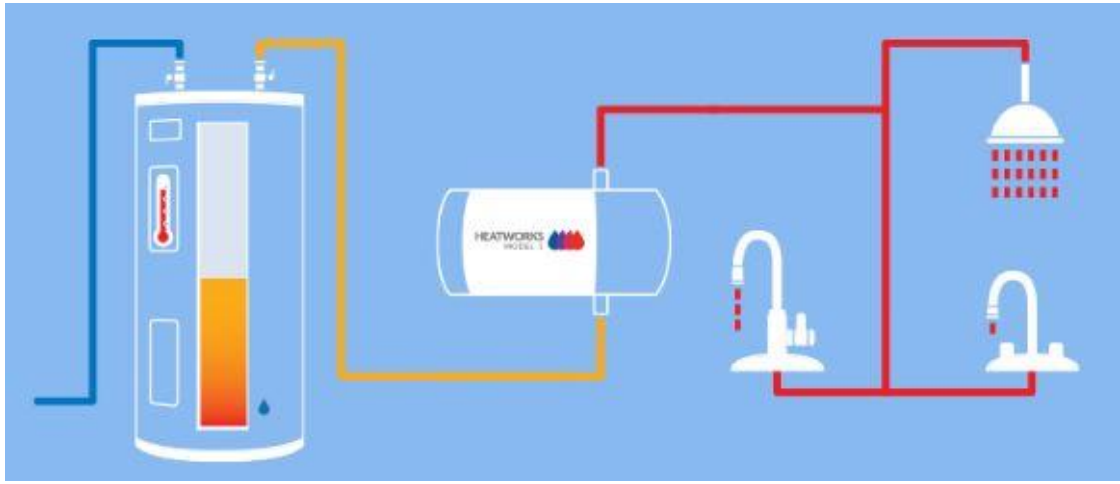


Smaller Tank w/ Mixing Valve or Booster Tanks

Install smaller electric resistance → raise tank temperature

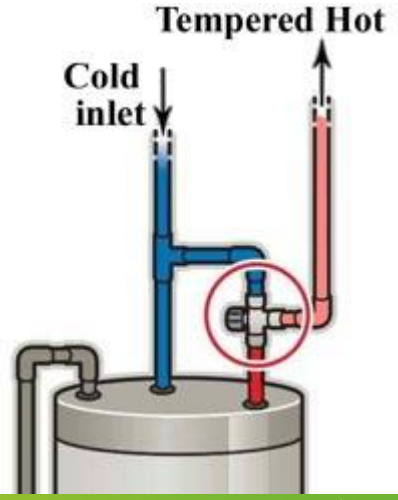
Pros

- ❑ Same electrical connection
- ❑ Increased installation ticket sales
- ❑ Proven technologies



Cons

- ❑ Higher total cost of ownership



Install Multiple Tanks

Two electric or gas water heaters

Pros

- ❑ More revenue for contractor
- ❑ More hot water available
- ❑ Possibly shorter runs to point of use if split

Cons

- ❑ Higher total cost of ownership
- ❑ Increased complexity
- ❑ Increased standby losses
- ❑ Space constraints or more space needed
- ❑ Additional electrical circuits or gas piping

Buy Used and Repair Failed Parts

Customer calls contractor to fix and/or replace parts to keep water heater functioning

Pros

- ❑ Could be very low cost to customer
- ❑ Increased labor revenue to contractors
- ❑ Builds relationship with customer
- ❑ No impact on foot print and connections

Cons

- ❑ Total cost of ownership is high
- ❑ Not a long term solution (lower reliability)

Install on demand water heater

Remove storage tank system and replace with on demand system

Pros

- ❑ Continuous hot water- unlimited supply
- ❑ More revenue for contractor

Cons

- ❑ Higher total cost of ownership
- ❑ Potentially more maintenance
- ❑ May need additional electrical and/or gas piping

Build Inventory – Draw from Stock

Leverage pre-NAECA 3 technology inventory

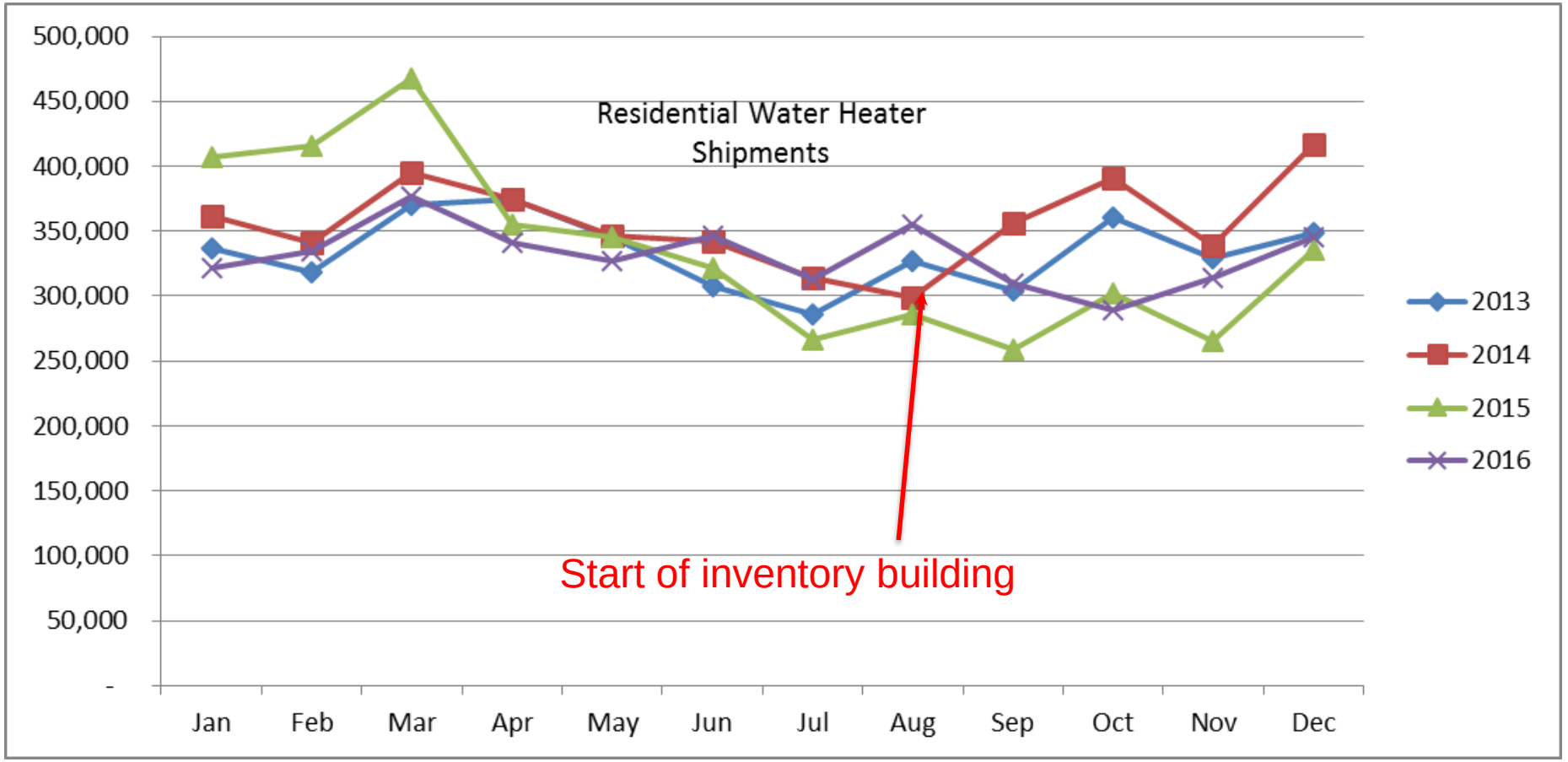
Pros

- ❑ Same footprint
- ❑ Easy installation
- ❑ Known technologies
- ❑ Known margins to the contractor

Cons

- ❑ Increased total cost of ownership
- ❑ Increased inventory carrying costs

Building Inventory



Source: http://www.ahrinet.org/site/498/Resources/Statistics/Monthly-Shipments

Install Commercial and/or Demand Response Water Heater

Install commercial water heater in lieu residential

Install demand response (DR) ready water heater

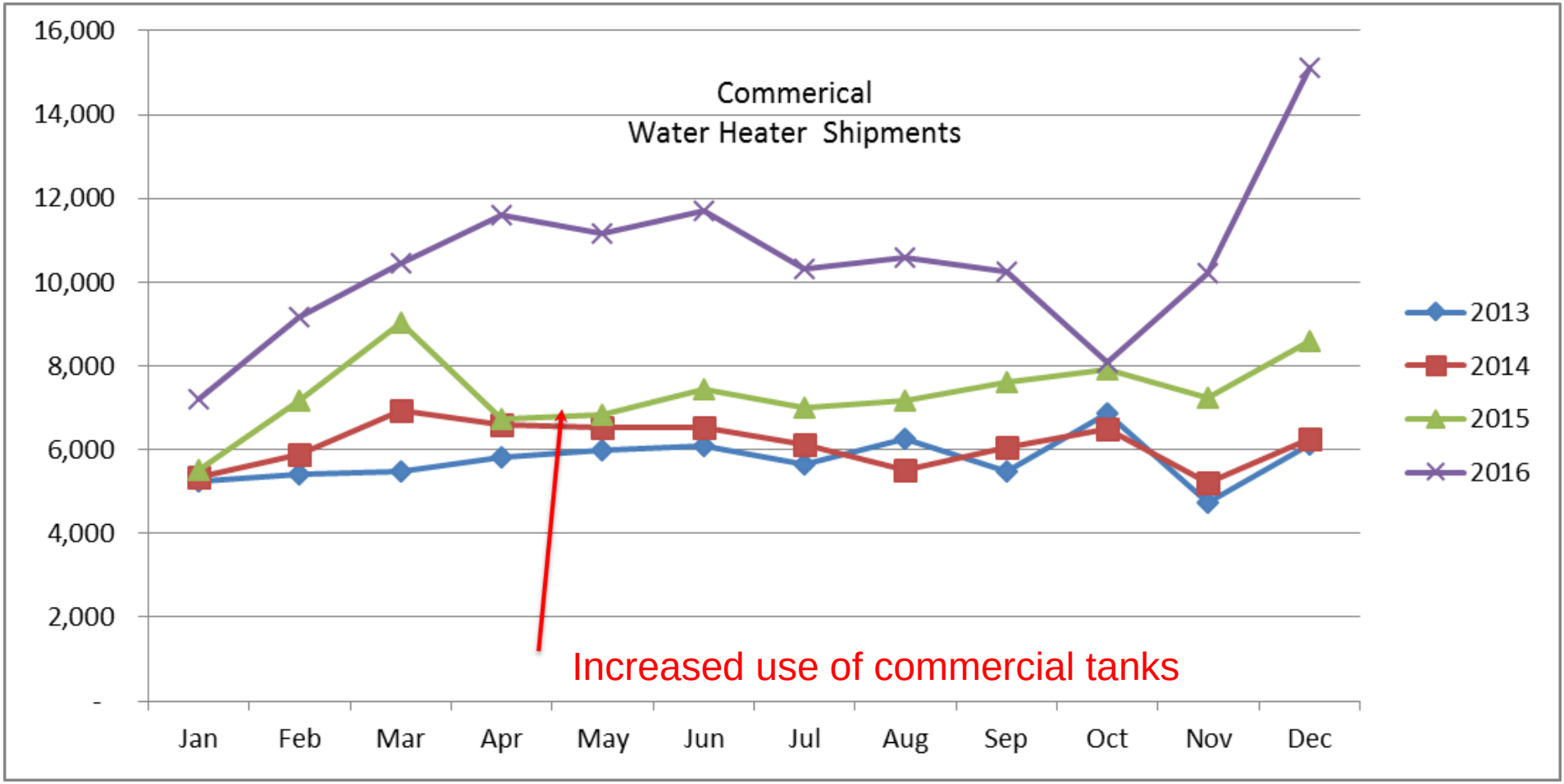
Pros

- ❑ Units are available for larger sizes
- ❑ Known product and performance
- ❑ Potentially more revenue for contractor

Cons

- ❑ Increased total cost of ownership
- ❑ Violation of the sprit of the law
- ❑ Not all utility programs offer DR programs

Use Commercial Water Heaters



Source: http://www.ahrinet.org/site/498/Resources/Statistics/Monthly-Shipments

So…What Do We Do Next Time?

- Ensure tech is ready & fully vetted
- Introduce a tiered and/or road map for efficiency to allow manufacturers to gear up
- Listen to the market → get out of D.C.

- Engage contractors and installers earlier and often
- Provide contractors with personal experience of the new tech.
- Continue to incent the larger HPWHs to bridge the learning curve

- Ask manufacturers not to recommend work arounds
- Clearly articulate code interpretations to prevent work arounds

Study Overview by Evergreen Economics

Study conducted parallel to Market Progress Evaluation #2

WHAT DID WE DO?

- ❑ Refined research questions w/NEEA
- ❑ Developed quick-strike interview guide
- ❑ In-depth interviews with 4 water heater distributors, and 4 water heater installers
- ❑ Summary memorandum of findings

Key Findings

What is the remaining stock of ERWH greater than 55 gallons in volume?

VERY FEW remain, if any remain unsold

What are installers asking for when they are replacing a large volume ERWH?

1. One smaller tank with a mixing valve
2. (and higher temperature setting)
3. HPWHs
4. Tankless / On-demand
5. Summary memorandum of findings

Key Findings, cont…

Did the price of ERWH increase since April 2015 as stock was exhausted?

Not much, if at all

Is there evidence of fuel switching instead of purchasing a HPWH?

1. Yes, limited evidence in certain areas
2. More frequent when incentivized by a utility
3. Also associated with switch to on-demand, as on-demand gas water heaters are superior

Key Findings, cont…

Are consumers waiting to replace their rundown water heaters because of the "sticker shock" of HPWHs?

No, however…*w**e did not talk to retailers***

Are "large tank questions" (customers') walking away with "small tank solutions"?

1. Yes, in many cases
2. Mostly one small tank, mixing valve

Thank-you for your time

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