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# PTCS Program Redesign Draft Recommendations

*Amy Burke, BPA  
November 21, 2019*

# Hello!

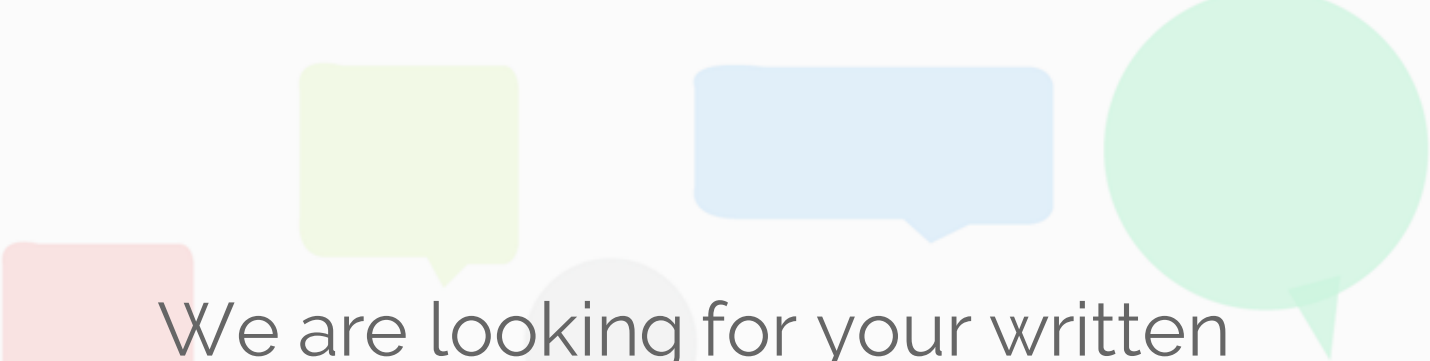
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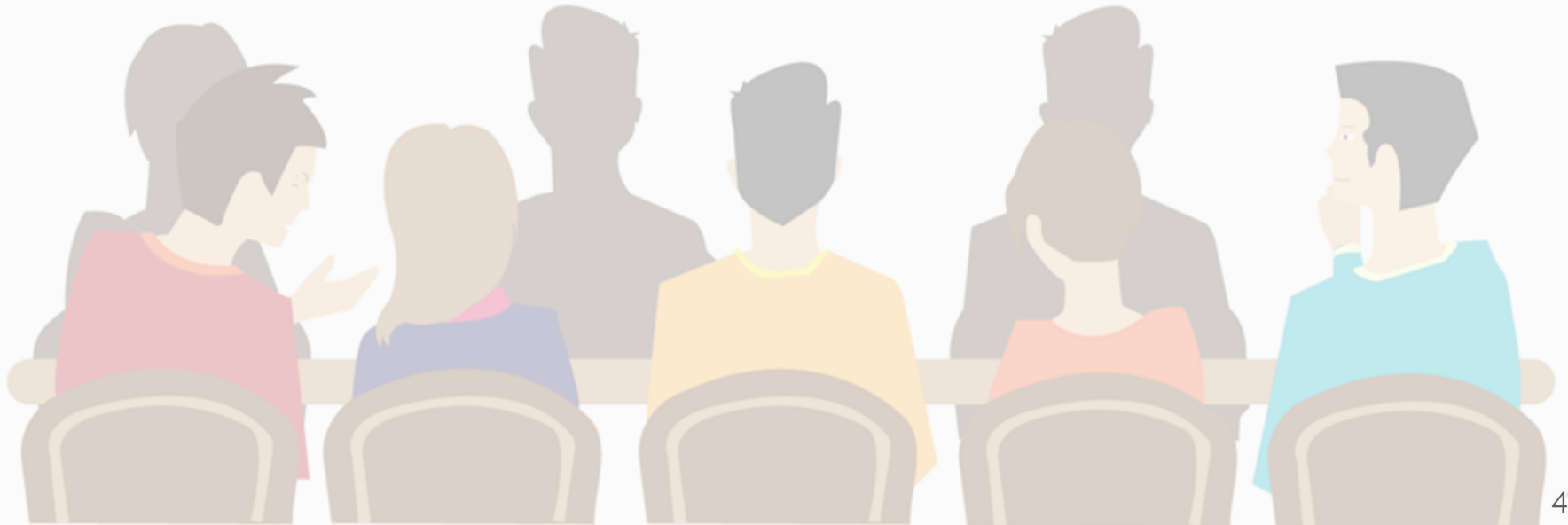
# The Agenda

- Current Snapshot
- The Process
- What We Heard
- Two Optional Paths
- Draft Recommendations
- Feedback and Next Steps





We are looking for your written feedback following this presentation.



# Current Program Snapshot

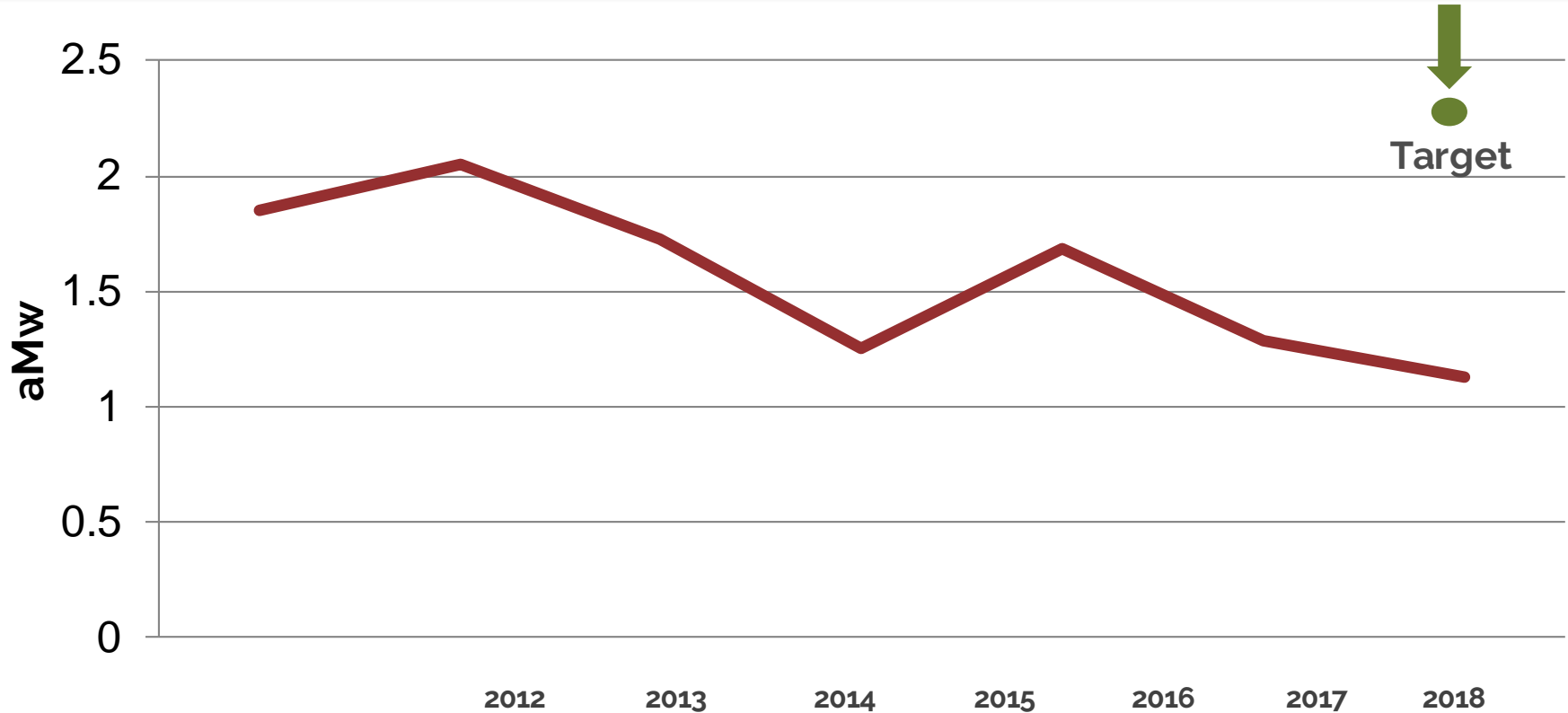
- ✓ Utility participation is around 40% and decreasing
- ✓ Participating technicians slightly decreasing
- ✓ Claims for most PTCS measures slightly decreasing
- ✓ Non-variable speed heat pumps slightly decreasing
- ✓ Variable speed heat pumps increasing!



Significantly more market opportunity for efficient heat pumps.



# Current Program Snapshot



# Two Main Camps of Utilities

A high-altitude mountain landscape with snow-capped peaks and a camp of yellow tents in the foreground. The sky is blue with some clouds. The mountain is rocky and has patches of snow. The camp is on a rocky, sparsely vegetated slope.

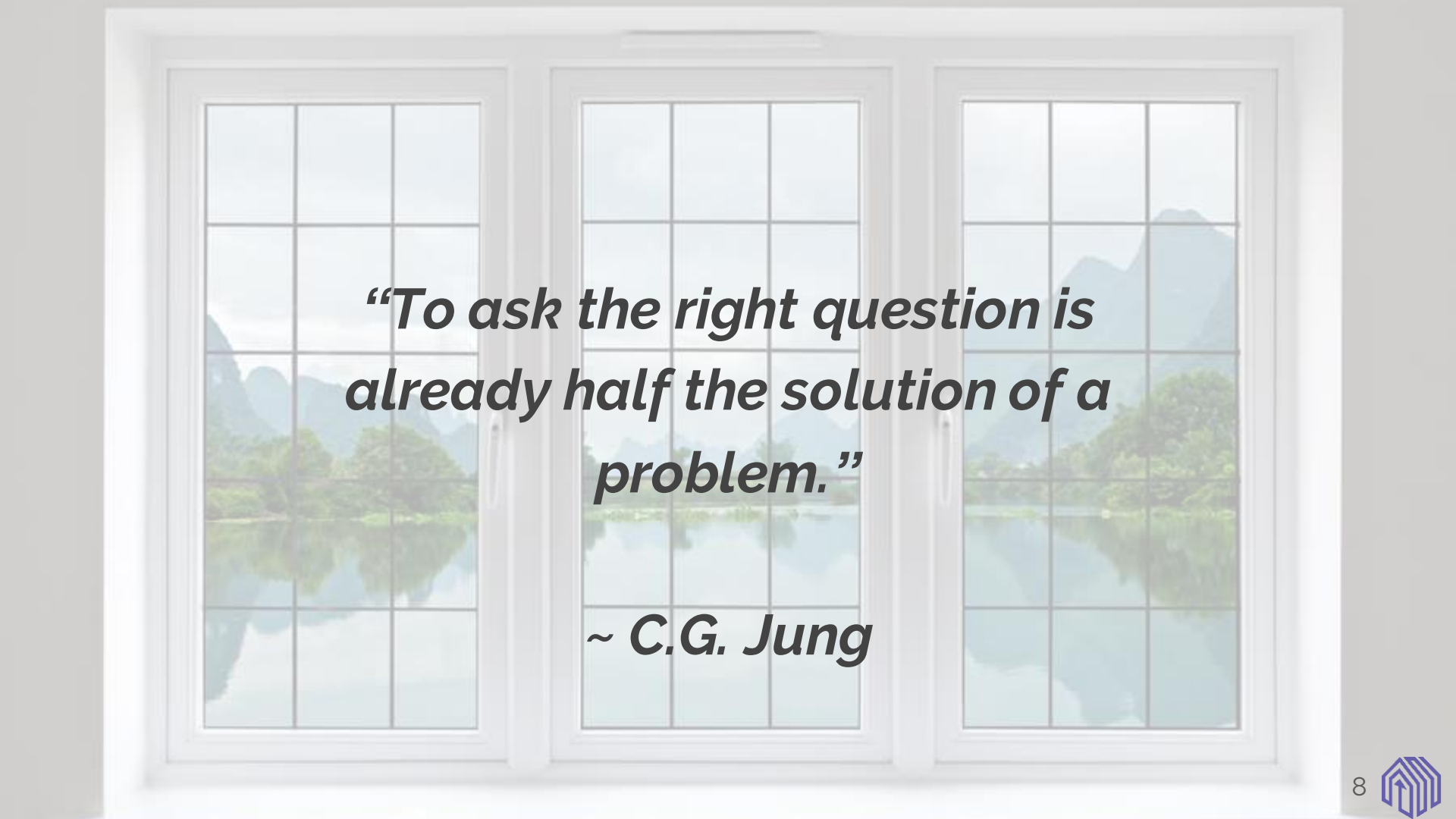
## Very supportive

- Have resources to implement
- Trained technicians in their territory and participating

## Too difficult

- No or few resources to implement
- No trained technicians available or aren't participating





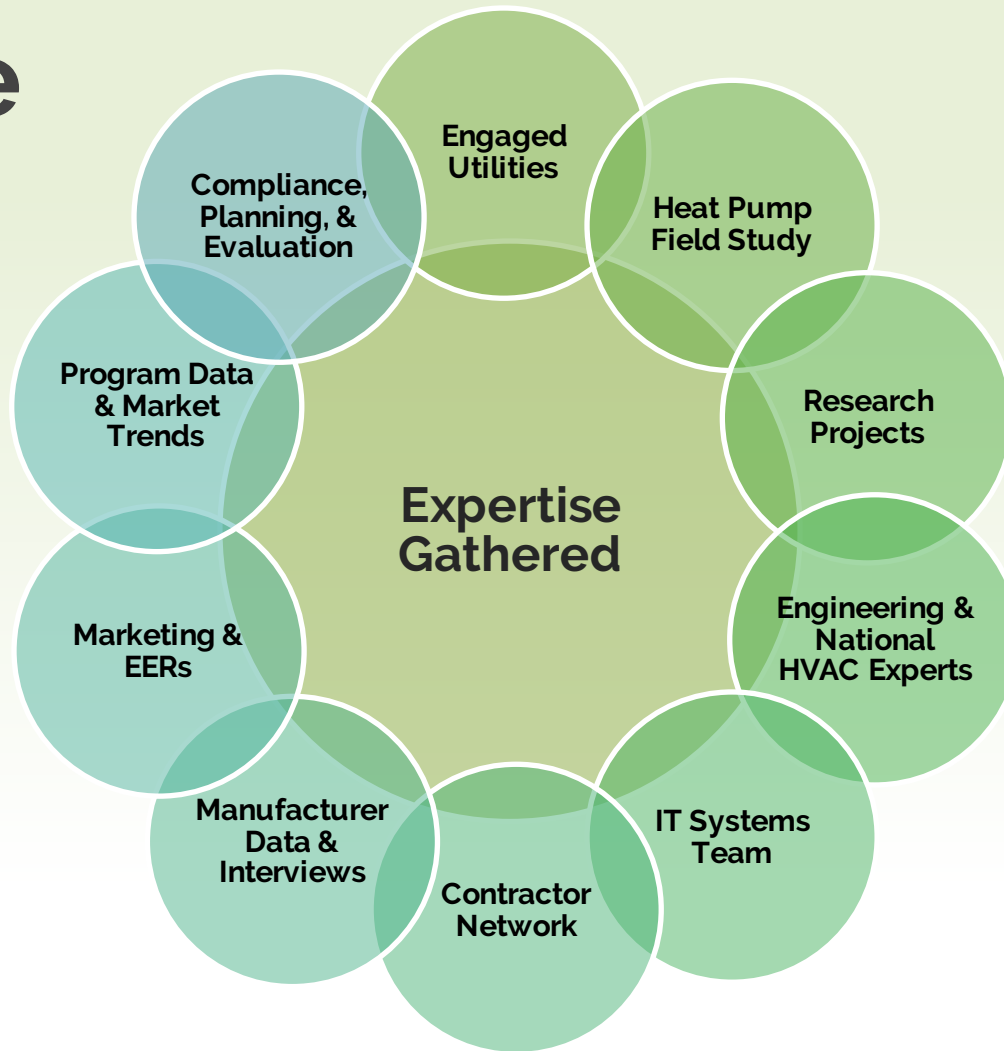
***“To ask the right question is  
already half the solution of a  
problem.”***

***~ C.G. Jung***





# Who We Talked To



# Utility Workgroup

## Thank you, participants!

**Alicia Harmanson,**  
Lewis County PUD

**Jim Maunder,**  
Ravalli Electric

**Michael Currie,**  
Clallam PUD

**Ryan Perry,**  
Tillamook PUD

**Anita Clever,**  
Klickitat PUD

**Jody Howe,**  
Central Electric Co-Op

**Michelle Ehrlich,**  
Cowlitz PUD

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**Brandy Neff,**  
PNGC

**Joe Hull,**  
Midstate Electric

**Nancy Phillip,**  
Benton PUD

**Scott Mayfield,**  
Kootenai Electric

**Charles Schifferdecker,**  
Eugene Water & Electric

**Kevin Watier,**  
Snohomish PUD

**Pat Didion,**  
Milton-Freewater

**Todd Williams,**  
Inland Power

**DuWayne Dunham,**  
Clark PUD

**Lindsey Hobbs,**  
Inland Power

**Penny Brambrink,**  
Flathead Electric

**Wid Ritchie,**  
Idaho Falls Power

**Eric Miller,**  
Benton REA

**Mattias Jarvegren,**  
Clallam PUD

**Ryan Davies,**  
Central Electric Co-Op



# Utilities: What We Heard

- Stringency increases installation cost
- Call-backs are an issue
- Inspections valued but challenging
- Training valued but challenging
- Documentation and reporting are frustrating
- Difficult for small utilities to implement
- Technical complexity is out-of-date and adds cost
- Keep the high standard and just change implementation
- Many new testing tools available



# Primary Goals

- ✓ Lower installation cost
- ✓ Reduce callbacks
- ✓ Update specs to reflect current technology
- ✓ Simplify reporting
- ✓ Improve quality of work from installers
- ✓ Decrease barriers to entry
- ✓ Streamline training & continuing education
- ✓ Decrease burdens for smaller utilities
- ✓ Improve oversight
- ✓ Increase uptake!



# Primary Challenges

- ✓ Technical rigor and complexity adds cost for homeowners, technicians, and utilities
- ✓ How to modify the program specs and implementation without significantly impacting savings
- ✓ How to find balance between equipment cost, installation cost, quality installation, savings, comfort, customer service, a changing market, and verification requirements to satisfy both camps of utilities

# Areas We Focused On

- Specifications research with focus primarily on heat pumps
- Training Process
- Documentation Requirements
- Registry Reporting System
- Quality Assurance Process
- Engagement



# Two Optional Paths

## Option A:

### Gold Star Energy Savings

- **Heat Pump airflow test:** Allow external static pressure lookup in addition to TrueFlow test without the required correction factor
- Increase focus on proper sizing
- Keep the Registry requirement with many added features
- Likely keep installation costs high
- Adopt all other program changes

## Option B:

### Contractor Friendly

- **Heat Pump airflow test:** Remove this test entirely
- Increase focus on proper sizing
- Lean up the Registry verification requirements but add streamlining features
- Likely reduce homeowner installation costs
- Adopt all other program changes



**Draft**



**Recommendations**



# Take Note

- These are draft recommendations
- All recommendations are pending utility feedback, RTF review, and IT approval
- All changes will be piloted and tested extensively



# Technical Specifications

## Goals:

- Reduce installation time, cost, and complexity
- Identify any specifications that could be updated or removed without significantly impacting savings
- Update to reflect current technology

## Resources:

- Regional Heat Pump Field Study
- National expert, utility, and manufacturer interviews
- National literature review
- Engineering expertise
- Quality assurance inspection data
- Independent research results



ASHP Specs	Expert Recommendation	Expert Reasoning	Savings Impact	HPFS Results	Heat Pump Field Study Details	Redesign Workgroup Feedback	Overall Feeling	Independent Research Analysis	PTCS QA Failure Rate (CY2018)	PTCS QA Pass Rate (CY2018)
Sizing	Keep	This might have a high impact on savings. This is however a difficult spec to enforce.	High	PTCS Benefit Questionable	More non-PTCS were right-sized than PTCS, but more non-PTCS were also undersized than PTCS.	Contractors manipulate sizing for the equipment they want to install; not a big driver of savings; duct work must be changed to get a BP of 30F	Not a big driver of savings; nearly impossible to fix after-the-fact	High Impact on savings. Keep at 30F. Moving from 30F to 35F balance point could decrease savings between 20-25%.	2.0%	98.0%
Airflow	Keep	Airflow that is too low reduces capacity and efficiency. Airflow that is too high is inefficient and may reduce the ability to dehumidify in cooling mode and provide adequate comfort.	High	PTCS Irrelevant	No measurable difference between PTCS and non-PTCS	Bad airflow could shorten equipment life; proper airflow makes the home more comfortable; customers would prefer to keep this to maintain the gold-star standard and utilities that can't meet this should use the non-PTCS measure	Keep		6.5%	93.5%
External Static Pressure	Keep	External static pressure is a measure of the restrictiveness of a duct system and is directly connected to airflow and efficiency.	High	PTCS Irrelevant	No measurable difference between PTCS and non-PTCS	Good to make the compressor and blower motor last; an example of a HP that had an out-of-control static pressure failed after 6 yrs.	Keep		4.7%	95.3%
Refrigerant Charge	Keep/Modify	Remove the temp split option and rely solely on measuring subcooling.	High	PTCS Irrelevant	No measurable difference between PTCS and non-PTCS	Spec for subcooling not clear; temp split is very accurate and helpful in the winter	Keep		6.3%	93.7%
Compressor Lockout	Remove	This is an outdated spec that should be removed.	No specific technical findings about what impact controls has on savings.	PTCS Made a Difference	Measurable difference between PTCS and non-PTCS	No real preference			5.3%	94.7%
Strip Heat Lockout	Keep with additional research suggested	But didn't find much concrete evidence that this was a big driver of savings.	No specific technical findings about what impact controls has on savings.	PTCS Made a Difference	Measurable difference between PTCS and non-PTCS	Utilities prioritizes lockout. Important spec.	Keep		13.8%	86.2%

*Limited quantifiable savings data*

# Technical Specifications

## Option A:

### Gold Star Energy Savings

- **Heat Pump airflow test:** Allow technicians to estimate the airflow based on the External Static Pressure and the manufacturer look-up tables
- Increase focus and training on proper heat pump sizing and incorporate real-time inspections
- Continue supporting the TrueFlow test and remove the correction factor requirement

## Option B:

### Contractor Friendly

- **Heat Pump airflow test:** Remove this test entirely
- Increase focus and training on proper heat pump sizing and incorporate real-time inspections
- Significantly reduces time, cost, and overall implementation of airflow requirement alone



# Summary of Spec Recommendations

Specification	Recommendation	
HSPF/SEER	Keep: No Change	
Balance Point Sizing	Keep Spec & Modify Implementation	
Airflow	<b>Option A)</b> Allow ESP Estimate and TrueFlow	<b>Option B)</b> Remove airflow test entirely
External Static Pressure	Keep: No Change	
Refrigerant Charge	Keep & Modify Language	
Compressor Low Ambient Lockout	<b>Remove</b>	
Auxiliary (Strip) Heat Lockout	Keep & Improve Implementation	
Duct Sealing (PTCS & Prescriptive)	Minor clean-up	
Ground Source Heat Pumps	Combine open and closed loop specs into one and align with ASHP spec changes	



# Training Process

**Goals:** Increase availability and decrease cost

**Recommendations:** Pilot a remote training program and topic-specific training. All new techs would have their first project inspected and have a test proctored. In-person training would still be an option for interested utilities.

**Benefits:**

- Reduces administrative time
- Reduces contractor's loss of work
- Reduces barriers for technicians to participate
- Makes training more accessible in rural areas
- Improves technician education and real-time support

# Documentation Requirements

**Goal:** Reduce documentation required by BPA to be in the customer file

**Recommendations:** Remove the heat load/heat loss and balance point (ASHPs and GSHPs) and loop design (GSHPs) documentation requirements

**Benefits:**

- Reduces contractor administrative time
- Reduces utility administrative time
- Reduces barriers for utilities, COTRs during oversight, and QA inspectors

**Utilities can still request any additional documentation**



# Registry Reporting Requirements

**Drawbacks:** Burdensome administrative requirement adding staff time and cost

**Benefits:** Automates review of a rigorous specification and provides insight into poor performance

## 9 scenarios to answer the questions:

- *Who would bear the burden of verification without a central system?*
- *How do we streamline the central reporting process but maintain accuracy?*





# Registry Reporting Requirements

**Recommendations:** If the specification remains rigorous, maintain the automated verification system, but reduce the touch points to the bare minimum with the following added features:

- Offline entry
- Entering a project without a sign-in requirement
- Document upload feature
- Automatically email documents and all measure details to utility
- Automatically email utility if measure details are edited
- Suggest appropriate RefNo(s)
- Improve process for reconciliation with IS2.0 data



# Registry Reporting Requirements

## Benefits:

- Reduces administrative time
- Reduces time on site
- Improves customer service to homeowner
- Improves technician education and accountability
- Reduces barriers for utilities and COTRs during oversight

**Time and cost estimates completed for all options**, but final approval to being development pending

# Quality Assurance Inspections

**Goal:** Reduce contractor call-backs

**Recommendation:** Pilot a remote inspection program with real-time inspection results and allow more utilities to self-inspect

**Benefits:**

- Allows techs to troubleshoot on site with real-time results
- Reduces time
- Reduces inspection call-backs
- Reduces cost to contractor
- Improves customer service to homeowner
- Improves technician education and accountability



# Two Optional Paths

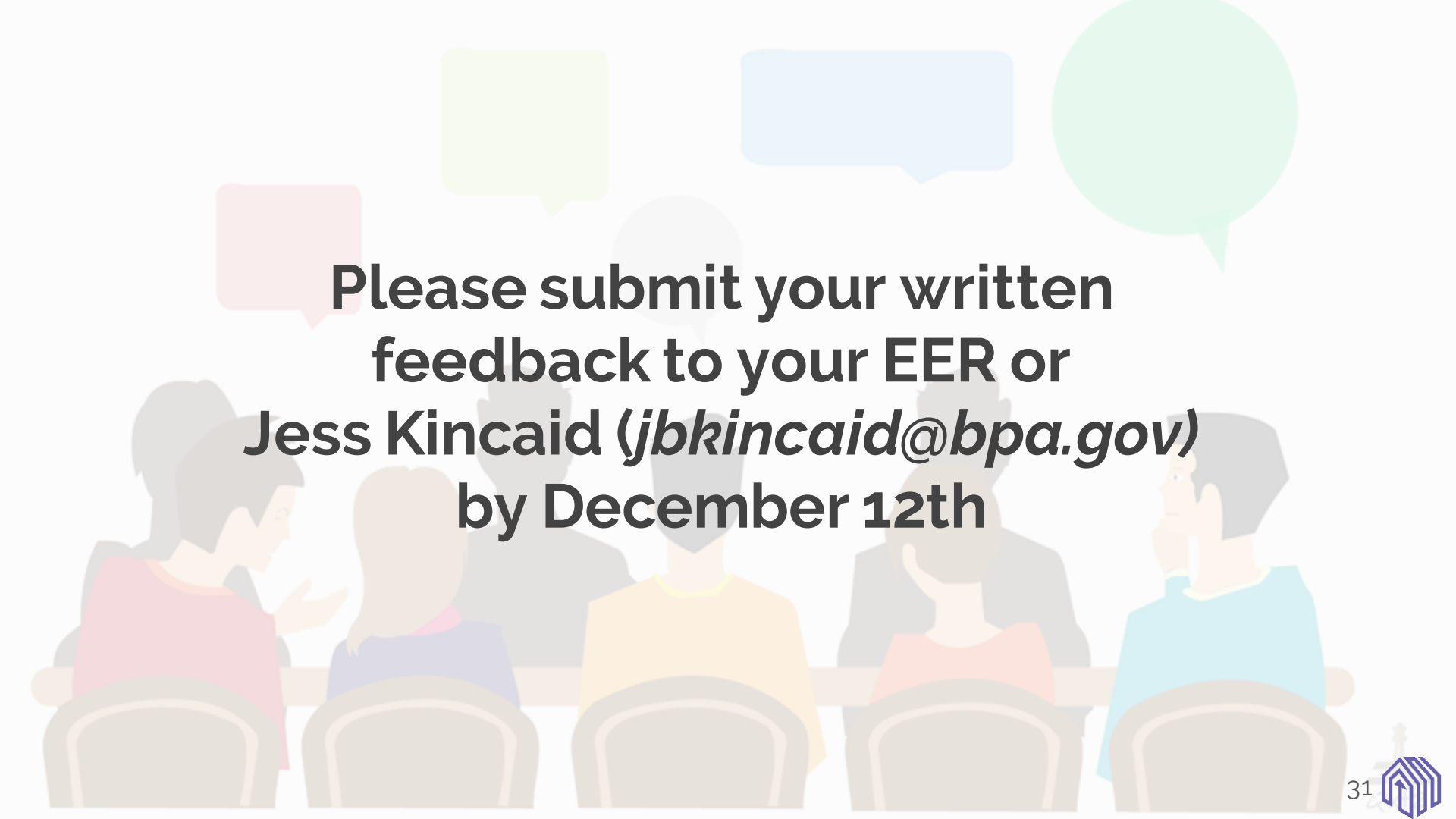
	Option A: Gold Star Energy Savings	Option B: Contractor Friendly
Summary	Allowing an easier heat pump airflow test, removing TrueFlow correction factor, and adopting all other updates	Removing heat pump airflow test, further simplifying reporting, and adopting all other updates
Specifications	<b>Heat Pump Airflow:</b> Allow ESP lookup and TrueFlow tests and increase focus on sizing	<b>Heat Pump:</b> Remove airflow test entirely and increase focus on sizing
Training	Remote with hands-on support	Remote with hands-on support
Documentation	Limited changes	Limited changes
Reporting	Keep the Registry and add new features	Keep the Registry but reduce data verification and add new features
QA Inspections	Remote and on-site	Remote and on-site



Primary Challenges	Proposed Solutions
<b>Laborious Documentation and Reporting</b>	<ul style="list-style-type: none"> <li>✓ Offline registry access</li> <li>✓ Automatically emailing data to utility</li> <li>✓ Document upload feature for quick utility, contractor, and COTR access</li> <li>✓ New reporting features to limit the amount of registry interaction</li> </ul>
<b>High Cost</b>	<ul style="list-style-type: none"> <li>✓ (Pending discussion) Leaning up on airflow specification, reducing equipment cost</li> <li>✓ Less time off of work with remote training</li> <li>✓ Less unpaid time necessary to remediate with real-time inspections</li> <li>✓ Reduced call-backs</li> </ul>
<b>Lengthy Training Process</b>	<ul style="list-style-type: none"> <li>✓ Remote training</li> <li>✓ On-demand resources and videos</li> <li>✓ Automated participation application process</li> <li>✓ In-person field visit to inspect new technician's first project</li> </ul>
<b>Time Consuming</b>	<ul style="list-style-type: none"> <li>✓ Less time in the registry</li> <li>✓ Less administrative time reporting project data</li> <li>✓ Less testing time in the field</li> <li>✓ Less time tracking documentation</li> </ul>



**Feedback**



**Please submit your written  
feedback to your EER or  
Jess Kincaid ([jbkincaid@bpa.gov](mailto:jbkincaid@bpa.gov))  
by December 12th**

# Non-participating utilities:

What did you hear today that **might help you participate?**

What barriers we talked about removing **won't help you participate?**







**All utilities:**

Do you feel these changes will **help you all and technicians to increase uptake?**

Do you have any **concerns or questions** about any recommendations?

# Participating utilities:

Which would you prefer: Option A) **Gold Star Standard** or Option B) **Contractor Friendly**?

Why?

What feedback do you have about changing the **airflow testing specification**?



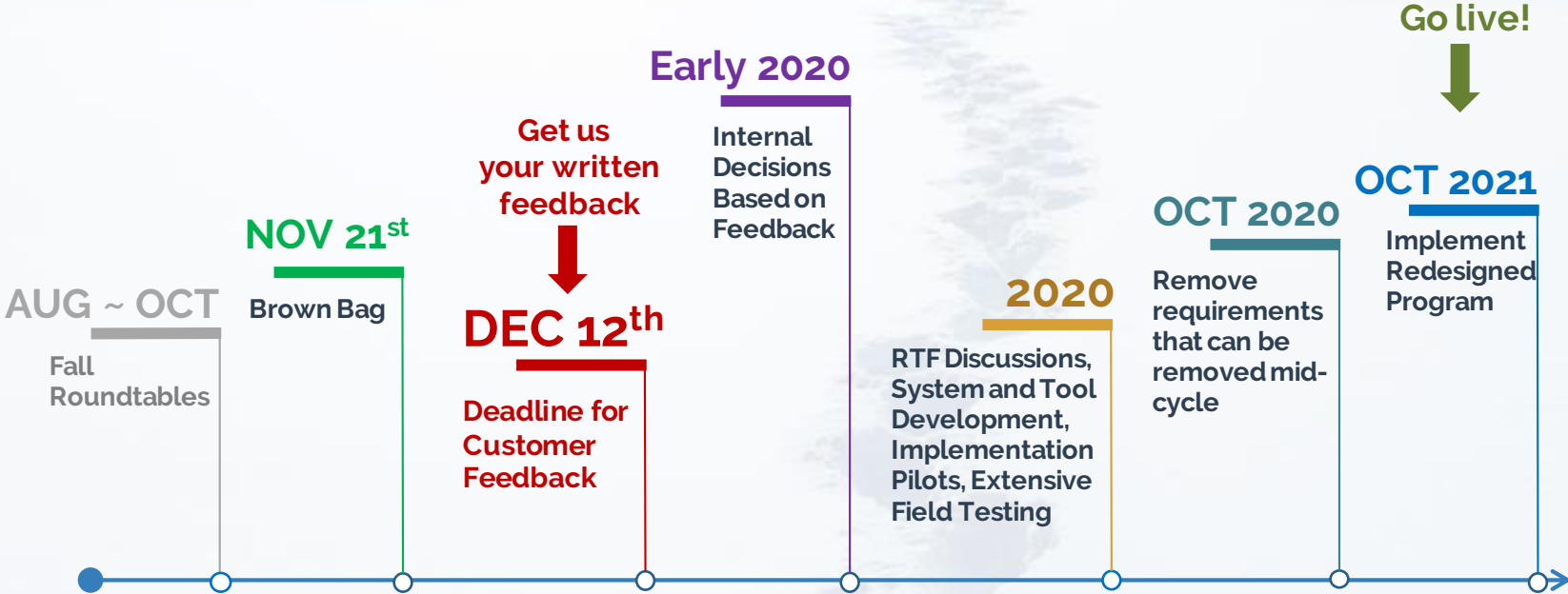
# Participating utilities:

Do you have any concerns about more **focus on remote implementation?**

Would any of these recommendations **help reduce the installation cost?**



# Next Steps





***Please contact your EER or Jess Kincaid ([jbkincaid@bpa.gov](mailto:jbkincaid@bpa.gov)) with any written feedback or questions.***

***These slides and an additional handout will be available on the BPA events page by tomorrow.***