Products Coordinating Committee Meeting

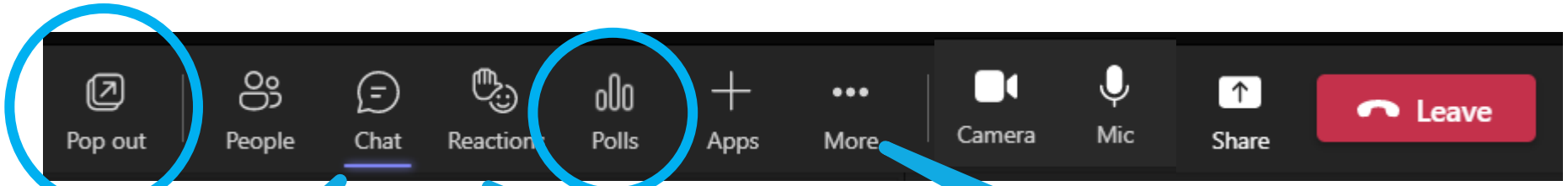
Q2 2023 - Day 2

June 7, 2023

9:00am – 12:00pm Pacific Time

This meeting will be recorded and transcribed

Tools for Today: Engaging on Teams

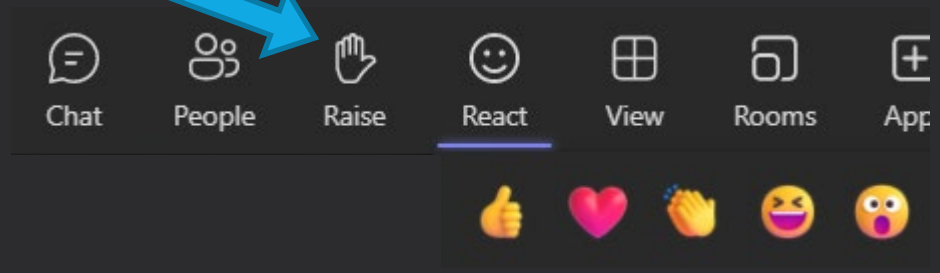


The chat is not captured in the recording.

Do you have any accessibility challenges with this technology today?

Comments/Questions?

Please raise your virtual hand or chime in Chat & reactions also welcome



"…" More includes:

- ✓ Settings: mic & video
- ✓ Background effects

Chat Storm!

Heads up:

“Spotlighting” Speakers

Agenda

All times Pacific

9:00-9:15	**Welcome, Agenda Review, Packet Reminders**
9:15-10:00	REGIONAL PRIORITY TOPIC: **Distinguishing Circulator Barriers for Res + Comm ECM Markets**
10:00-10:20	**Housekeeping**
(15 min)	**BREAK**
10:35-11:55	**Regional Roundtable (3-4 min/pp max please)** Specific committee member highlights to consider: – Questions/thoughts on NEEA program activity reports – Program, organizational updates – What did you learn today?
11:55-12:00	**Recap, Next Steps, Adjourn**

PCC Committee Purpose

- Identifying implementation challenges & conflicting activities
- Leveraging opportunities to drive market influence
- Sharing knowledge, expertise & resources to improve regional programs
- Providing a regional forum for info exchange & collaboration

Ask of You:

LISTEN FOR,OR SHARE, ANY COORDINATING OR LEVERAGING OPPORTUNITIES

Topic Development

REFERENCE ONLY: Snip from 2023 Annual Planning board for this topic.

Topic Development Notes

WHAT: Diff market actors selling in the res ECM circ (<30HP) ; how can this program influence these market actors and specifically work with plumbers, eg. circ in in-floor heating applications; potentially look at education/ training/ having confidence in product/ comm benefit story (longevity & eff of syst, being prone to catastrophic failure if over pump through syst); also look at plumber survey; support region in outbounding comm and amplifying message

WHY: To address potential market barriers in res ECM circ market, in res & MF buildings

WHO: EJ/SCL, NEEA

Distinguishing the market barriers in the residential ECM circulator markets vs commercial (EJ, SCL)

TOPIC B: Distinguishing circulator barriers for Res + Comm ECM markets

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Motors: Distinguishing Circulator Barriers for Res + Comm ECM Markets

Warren Fish

Program Manager, NEEA

June 7, 2023

Agenda

1. Goals for today
2. Circulator Overview & Applications
3. Energy Saving Mechanisms
4. ER Label & Calculator Tool
5. Market Barriers
6. Codes & Standards
7. Circulator Opportunities
8. XMP Program
9. Collaboration Opportunities

Goals

- **Increase understanding and awareness of ECM circulators**
- **Discuss barriers and challenges to ECM circulator adoption**
- **Consider how to accelerate & broaden market adoption of ECM circulators**

Circulator Overview & Applications

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Overview of Circulators

- Primary purpose = move water for heating / domestic water
- Small, generally less than 1hp
  - Most common size is 1/25 hp
- Sold as a complete assembly via wholesale distribution
- Not yet regulated by DOE

- From US DOE Definition of Circulator Pumps:

Single-stage, overhung, in-line style rotodynamic pumps

Can be wet-rotor or dry-rotor

Supported in-line by the system piping

- *Rotating assemblies that must be horizontally mounted*
- *Motor shaft power that shall not exceed 3.75 kW (5 hp)*

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Sectors & Applications

Sectors

- Commercial
- Residential

Applications

- HVAC hydronic heating (HH) system distribution - moves hot water in a radiant system
- Domestic Hot Water (DHW) recirculation - maintains hot water at the tap

Installation Details

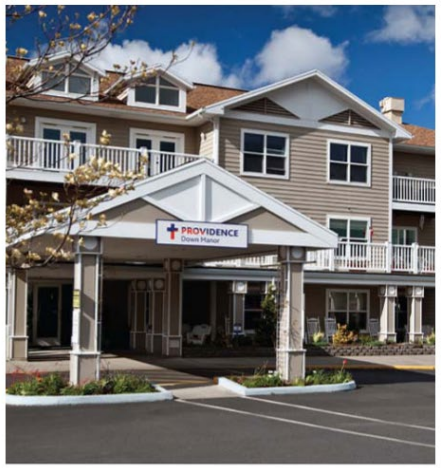
	Hydronic Heating (HH)	Domestic Hot Water (DHW) Recirculation
Use		
Size		
Installer (typically)		
Materials		
Energy Savings		

Circulator Case Studies

- XMP-Case-Study-Providence.pdf (betterbricks.com)

SMART PUMPS HELP KEEP COSTS DOWN AT PROVIDENCE DOWN MANOR

Upgrading to efficient circulators provides performance and savings



The Problem and Opportunity:

Providence Down Manor is the only independent retirement community in Hood River, OR. Down Manor provides comfortable living for independent and active seniors, without any of the burden or worries of homeownership. With amenities like personal gardens, exercise classes and a quarter-mile walking path around the premises, Down Manor creates a healthy, vibrant and relaxed environment for its 115 residents.

Large, multi-unit buildings like Down Manor and the neighboring Providence Brookside Manor use circulators to ensure that every apartment gets hot water quickly, so residents don't have to wait while the tap runs. With long runs of plumbing to connect centralized water heaters with apartments at the end of the building, running the tap to draw a hot shower can waste considerable time and water. Hot water circulation solves the inconvenience, but it can also waste energy. When hot water is moved up multiple floors and along hundreds of feet of pipe, heat leaks out of the system. Plus, it requires the use of a pump that is continually running, and the return water must be reheated constantly.

- XMP-Case-Study-Bellwether.pdf (betterbricks.com)

SMART CIRCULATORS PROVIDE CONVENIENCE AND SAVINGS FOR BELLWETHER HOUSING

The Problem and Opportunity:

Bellwether Housing is the largest nonprofit affordable housing provider in Seattle, Washington. With locations near businesses, job opportunities, schools and daycares, Bellwether strives to bring stability and opportunity within reach of its 3,200+ tenants. Affordable housing options promote a more vibrant and equitable city by supporting many of Seattle's community members including independent seniors, immigrants seeking opportunity, families exiting homelessness, preschool teachers, social workers and young people just starting out.

Bellwether manages 2,100 units across the city in buildings that range from new construction to century-old apartments. This diversity can pose a challenge for the maintenance team — in the past, it has led Bellwether to participate in weatherization programs like Seattle City

Energy Saving Mechanisms

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How Do Circulators Save Energy?

EFFICIENT MOTORS

Application: HVAC and DHW

Efficient Electronically Commutated Motors (EC Motors or ECMs) require less power to do the same work, saving ~20% compared to traditional induction motors. They do not change the circulator's speed or operating hours

SPEED CONTROL

Application: HVAC

HVAC systems are designed for peak load days, but rarely require the full heating capacity. Advanced speed controls match the circulator's rotation to the load, reducing the motor power consumption significantly. A 25% reduction in rotating speed reduces power draw by ~50%.

REDUCE OPERATING TIME

Application: DHW

Like turning off a light when you leave a room, occupants don't need hot water available at the tap 24/7. Automatic controls limit operating time, saving energy both in the motor and at the water heater.

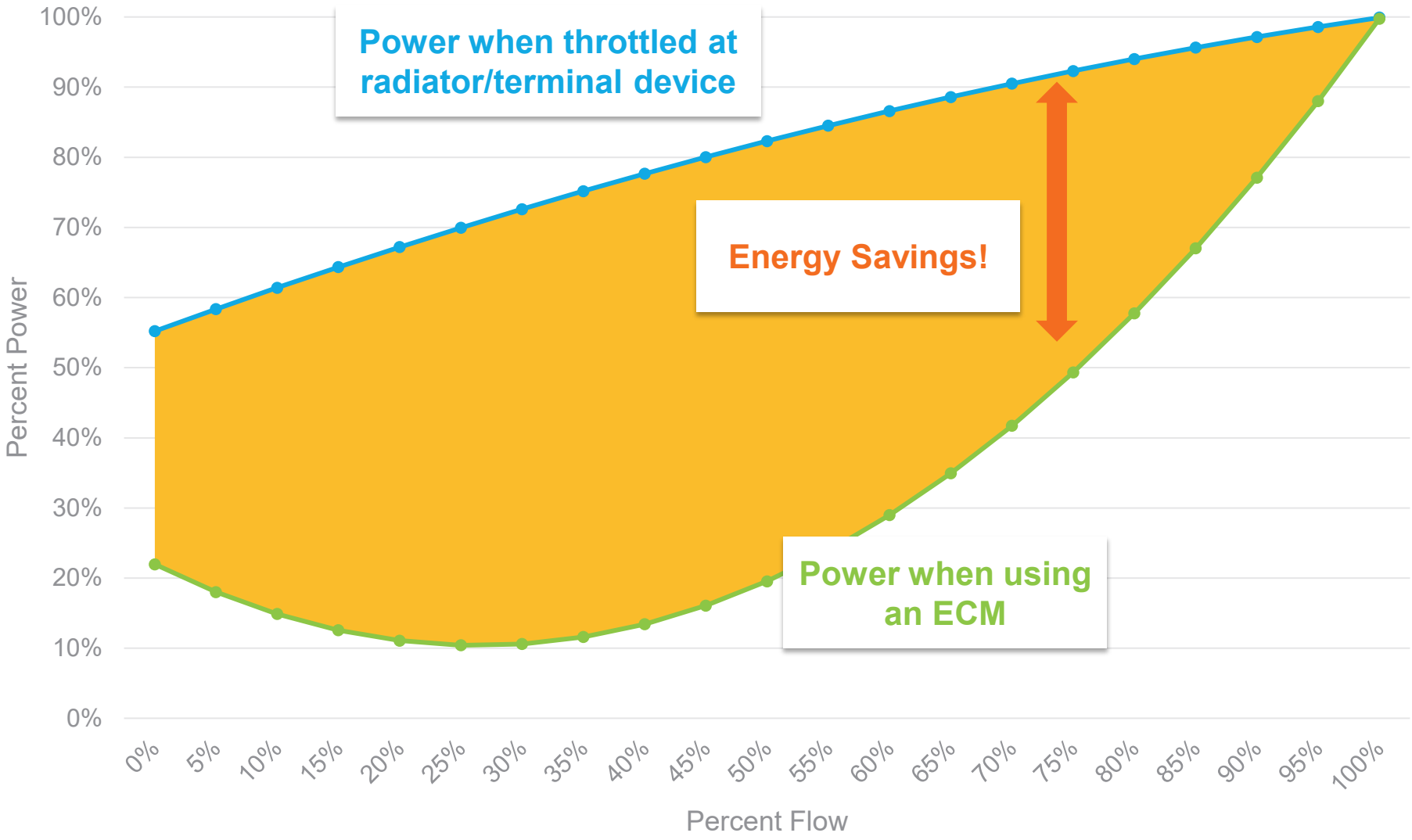
Electronically Commutated Motors

Benefits of ECMs:

- Highest efficiency, even at variable load conditions
- Brushless DC motors – quieter, less friction, less prone to noise/vibration, less energy wasted as heat
- Extended product life due to low operating temperature

Speed Controls for Hydronic Heating Systems

At 75% flow, 43% input power reduction



Run-hour Controls for DHW

AQUASTAT

Temperature control automatically turns pump off based on temperature in hot water distribution piping

ON-DEMAND CONTROL

- Initiates water circulator based on receiving a signal from the action of a user [of a fixture or appliance] or sensing the presence of a user of a fixture and cannot initiate water circulation based on other inputs, such as water temperature or a pre-set schedule.
- Automatically terminates water circulation once hot water has reached the pump or desired fixture.

LEARNING CONTROL

- Develops schedule of operation based on actual use patterns
- Determined based on sensing the presence of a user at a fixture

ER Label

ER Label Components

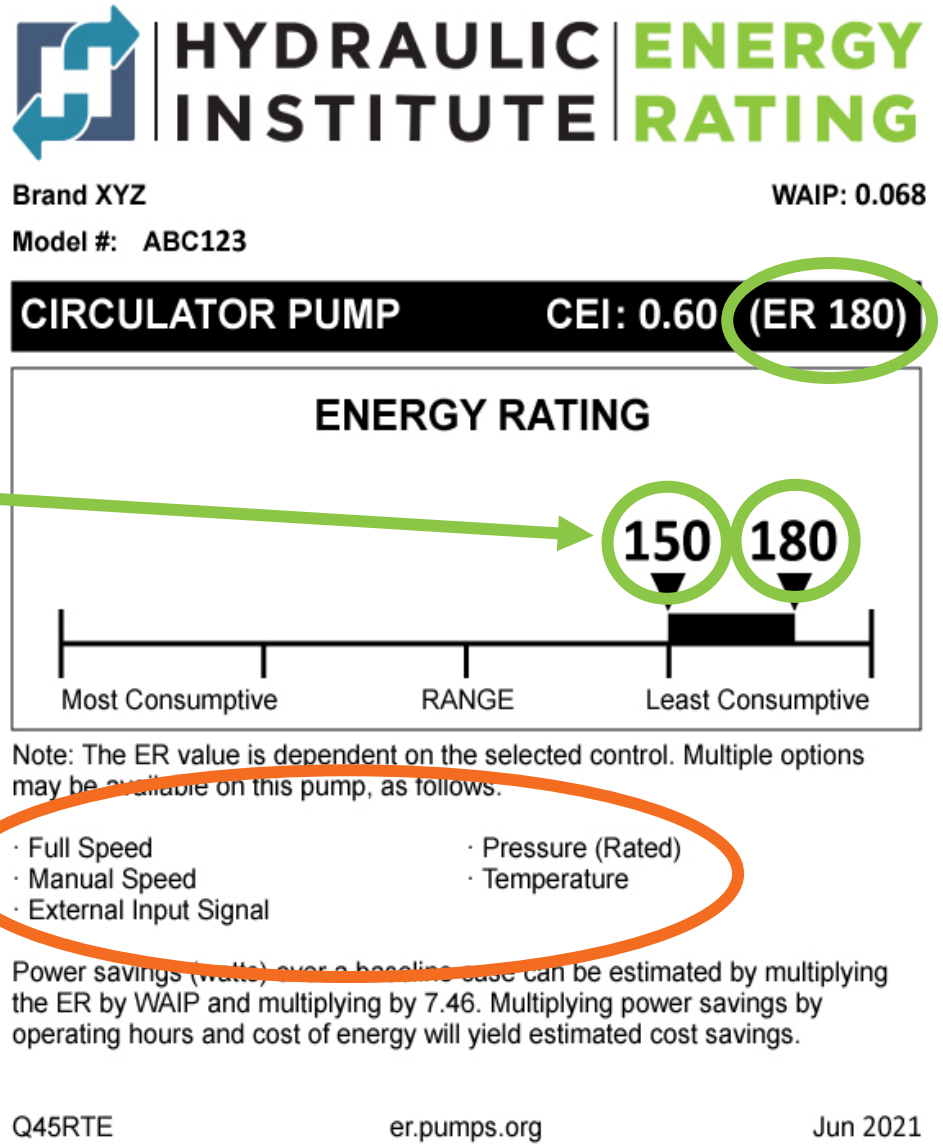
ER Range

Energy Rating min and max

- Higher is better!
- Lab tested performance

Speed Control Options

Range of options provide different ER ratings



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Hydraulic Institute Circulator Calculator

Life Cycle Cost Calculator

A tool for users to learn about the potential energy savings and financial payback from the selection of efficient circulators.

Input

Output

Enter information here:

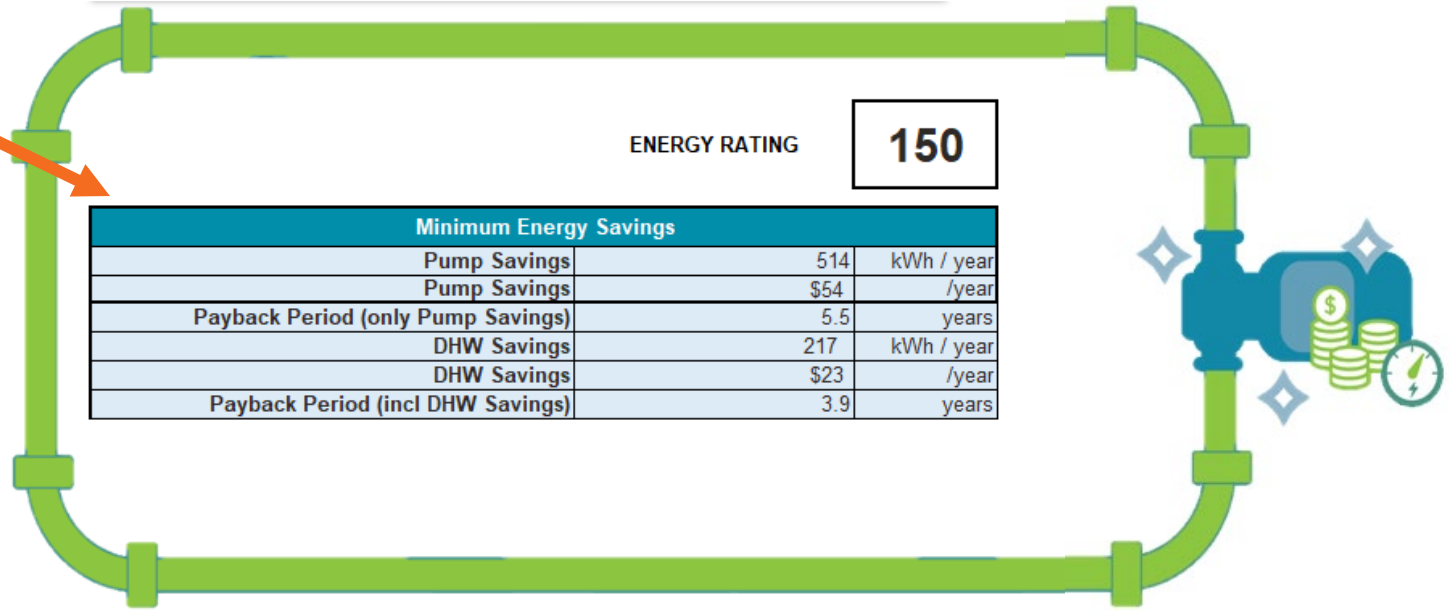
Do you have an ER label?	Yes
Application	Domestic Hot Water
Sector	Commercial

I have an ER Label

Minimum ER from label	150
Maximum ER from label	180
Weighted Average Input Power "WAIP"	0.068
CEI	0.60

ENERGY RATING **150**

Minimum Energy Savings		
Pump Savings	514	kWh / year
Pump Savings	$54	/year
Payback Period (only Pump Savings)	5.5	years
DHW Savings	217	kWh / year
DHW Savings	$23	/year
Payback Period (incl DHW Savings)	3.9	years



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Barriers to Adoption

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Commercial Barriers

What might be preventing commercial installers from using ECM Circulators?

Barriers

Controls: hesitancy to connect circulator to BMS

- Don't see the added value
- Cost of connection to BMS is higher than cost of circulator

Callbacks: concern about customer satisfaction

- If DHW timers are not programmed correctly, wait time for hot water at tap may increase leading to user frustration

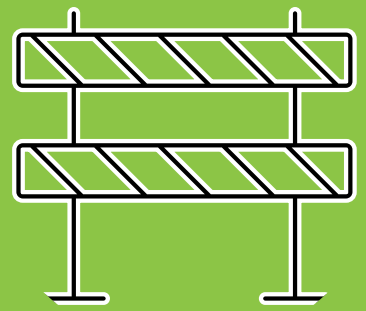
Opportunities

Design Intent: commercial systems most often designed vs installed at replacement

- Integrated self-sensing controls avoid installation costs

Education: Commercial contractors more likely to receive regular training & education

- Highlight the benefit of integrated controls



Residential Barriers

What might be preventing residential installers from using ECM Circulators?

Barriers

Awareness: low product familiarity/education

Purchasing Decisions
Contractors tend to purchase familiar items

- May purchase bulk supply stock for fleet of trucks
- Higher cost

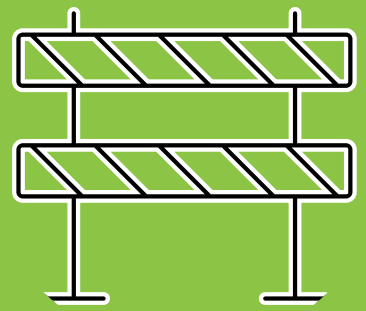
Opportunities

Education: Controls are typically easy to program

Incentives: Reduce incremental costs and get more people using the product

Warranty

- Over-pumping concerns
- PEX pipe warranties may be invalidated if circulator is not controlled properly



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Discussion

- *Do these barriers resonate with your experience?*
- *What other barriers may exist?*
- *Any service territory-specific nuances or challenges?*

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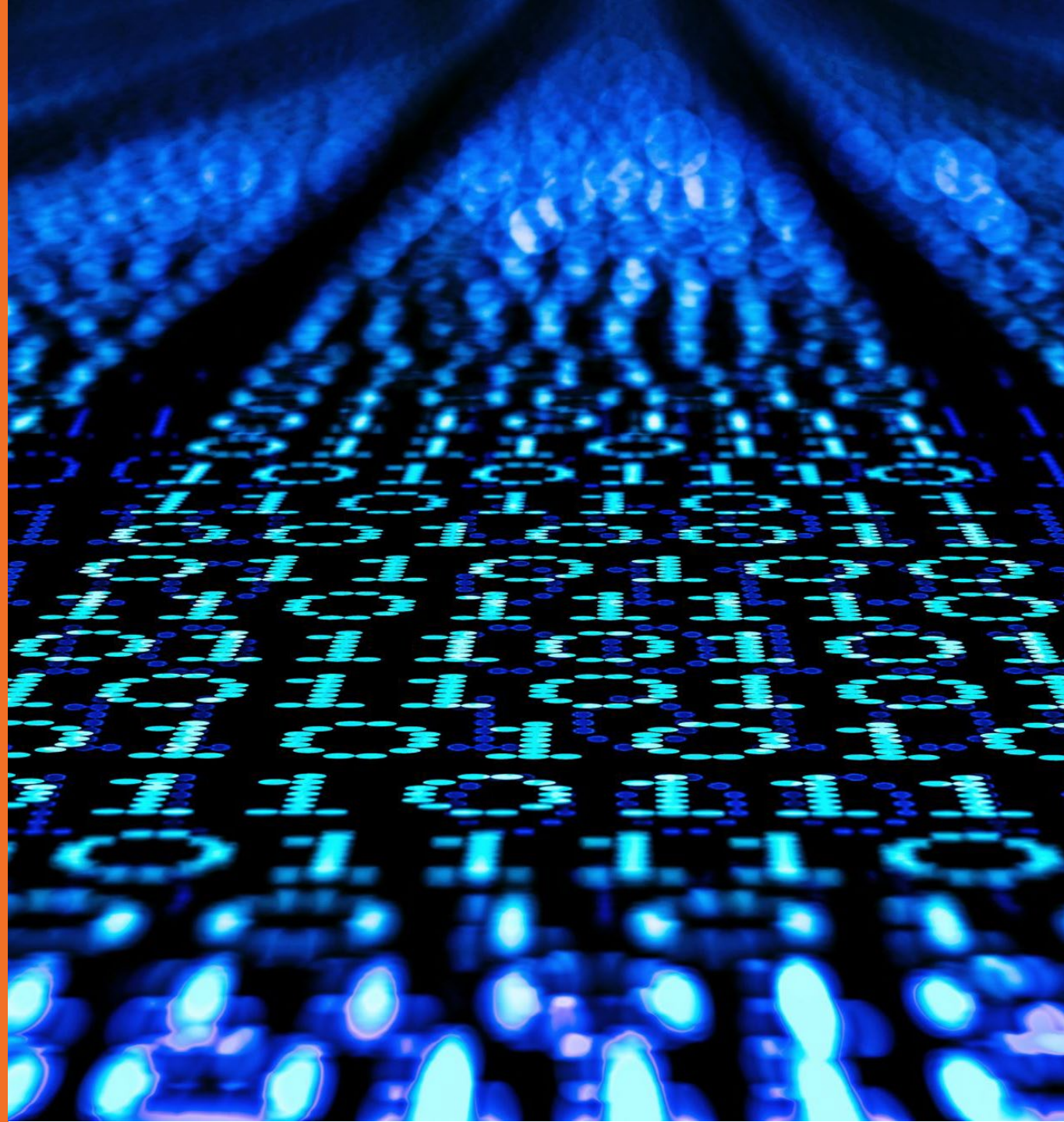
Codes & Standards



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Code Requirements

Federal Standards

- Currently no standards in place
- **DOE is finalizing a federal standard which we expect will go into effect in late 2025**
- **Will require ECMs on all circulator equipment**

State Codes

- Codes may require on-demand for commercial new construction DHW

Circulator Opportunities

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Extended Motor Products (XMP)

Accelerating the adoption of more efficient motor-driven products

- Raising awareness through hands-on training
- Driving change in sales/inventory through manufacturers representatives

Selling the value of ECM circulators with qualified controls thru Manufacturers' Reps

Motivating large-scale changes in regional inventory practices and in the sales mix by working midstream

Enhancing regional training of contractors and wholesale counter staff through hands-on learning

https://neea.org/our-work/programs/xmp

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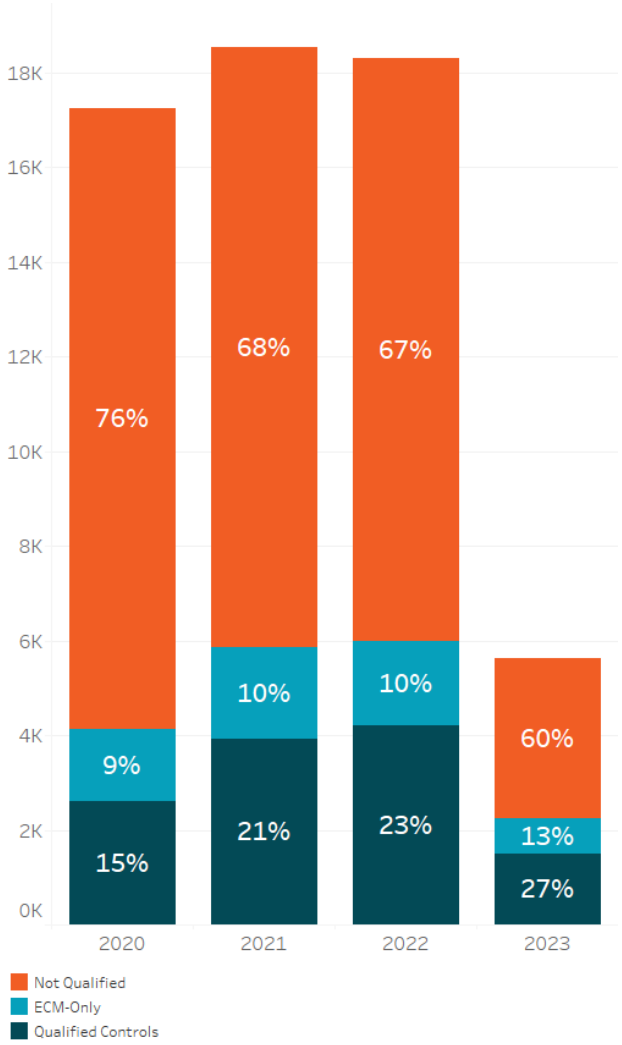
Circulator Market Trends



Potential

- ~20,000 annual circulator sales in the Northwest (~25% qualify currently)
- Total savings potential of current sales mix ~ 2 aMW

*2023 values for the first 4 months

Collaboration Opportunities

- What is your organization doing so far on circulators?
- What are the big challenges for downstream programs?
- Can the ER label, savings calculator, or other training resources better support the circulator decision makers in your local service territory?
- How can we work together as a region to further accelerate?

Goals Recap
Feedback
Next Steps

- **Increase understanding and awareness of ECM circulators**
- **Discuss barriers and challenges to ECM circulator adoption**
- **Consider how to accelerate & broaden market adoption of ECM circulators**

Warren Fish

Program Manager, NEEA

506.688.5402, WFish@neea.org

On a scale of 1-4 lightbulbs…

Quick Topic Poll - How was it?

Add to the chat:

What was one thing you took away from this topic/topic theme?

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Agenda

All times Pacific

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Housekeeping & Looking Ahead

- RPAC Related:
  - Heads up! Q3 RPAC Vote for Variable Speed Heat Pumps (August 29)
  - RPAC Federal Funding Work Group Update
- Business Planning Update
- Reminder: PCC Co-Chair opportunity
- Recap: Efficiency Exchange (EFX) May 2-3
- Upcoming
  - NEEA Meetings
  - Other events or announcements?

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(Northwest) Federal Funding Coordination Work Group

Kickoff Meeting (5/4)

Share-out of activities, priorities, questions

Near-term Priorities:
- Workforce
- Marketing/Communication
- Tribal Engagement

Next Steps

Interim deep-dives on near-term priorities

Q3 Meeting aligned with (planned) Home Rebates Guidance

For more info, contact Jonathan Belais: JBelais@neea.org

Business Plan Milestones - 2023

Date	Business Plan Milestone
March	Draft Business Plan Outline Review
May	First Draft Strategic + Business Plan Review
June	Second Strategic + Business Plan Review
July/August	**Regional Outreach:** • 1-2 Regional Webinars; • Targeted presentations/ outreach to NWEC, NWPCC, PNUCC, State Energy Offices, Commissions • Email outreach through NEEA channels/neea.org
September	Summary of regional outreach, implications for plan, any final edits
November	Final Draft Strategic + Business Plan Review
December	Final Business Plan Approval

PCC Co-Chair Opportunity

Thank you, Matt Babbitts (Q1 2020 - Q1 2023)!

- Co-Chair Role & Time Investment:
  - ✓ Meet in advance to review quarterly agenda
  - ✓ Contribute to topic prep, if have expertise
  - ✓ Promote committee engagement during meetings
  - ✓ Support Annual Planning Sessions
  - ✓ Time Investment: 4-6hrs/quarter

Efficiency Exchange Conference

[Check out 2023 photos here!]

Save the Date: May 14-15, 2024

Coeur d'Alene, Idaho

neea.org/EFX

Upcoming NEEA Meetings

AC = Advisory Committee
CC = Coordinating Committee

June

- June 13-14 → Q2 NEEA Board (Hybrid, Montana)

August

- August 14 → Q3 Integrated Systems CC
- August 17 → Q3 Products CC
- August 24 → Q3 Cost Effectiveness & Eval AC
- August 29 → Q3 Regional Portfolio AC

virtual

September

- September 21 → Q3 Regional Emerging Tech AC

Any Other Upcoming Events? Announcements?


Break!

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Regional Roundtable

(3-4 min max/pp, please)

Raise your virtual hand to get in the queue

Who:

- ✓ ***Committee Members***
- ✓ ***NEEA PMs***

Focus:

- ✓ ***Organizational & program highlights since February***
- ✓ ***Questions/follow up on Program Activity Reports***
- ✓ ***What did you learn this quarter?***

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Let’s wrap it up!

Action Items

Let's hear it!

Add to the chat:

What's one key takeaway for you this quarter?

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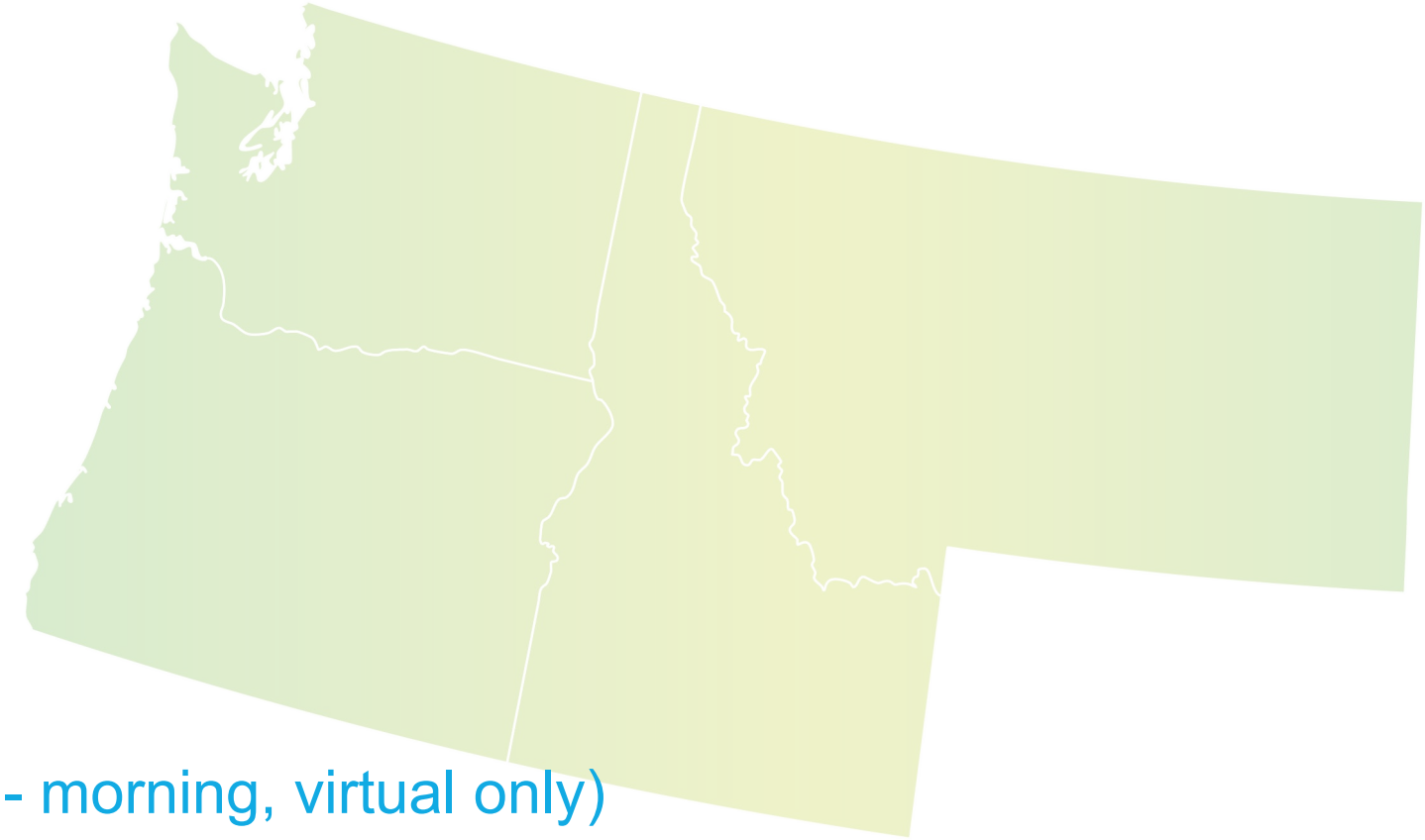
Public Comment?

Thank you, PCC!



Next Meeting:

Q3: August 17, 2023 (1/2 day - morning, virtual only)