



Commercial & Industrial Coordinating Committee

Q1 2025 Meeting – Day 2

Thursday February 27, 2025

9:30 am, Pacific Time





Good Morning!



AGENDA

(All times Pacific)

9:30 – 9:40	Welcome
9:40 – 11:10	Regional Priority Topic ○ Extended Motor Products - <i>Utility Custom Projects for Pump Energy Efficiency</i>
11:10 – 11:20	BREAK
11:20 – 11:30	Housekeeping ○ Announcements & Upcoming Meetings/Events
11:30 – 11:55	Ad hoc Topic ○ Fluorescent/Mercury Ban (OR-HB2531/WA-HB1185) & Impacts to LLLC Baseline
11:55 – 12:00	Recap, Next Steps, Adjourn



XMP Pumps

Warren Fish

Sr. Program Manager, NEEA

February 27, 2025





Why Should I Care About Pumps?

- **Impact:** Pumps use 10% of motor electricity in U.S. commercial buildings (Rao et al., 2021)
- **Energy Savings Potential:**
 - 246 aMW Technical Potential in the 2021 Power Plan for pumps
 - 30 to 55 aMW of 20-year savings potential in the current XMP program scope ACE Model
- **Local regulations emphasize efficiency**
 - Oregon & Washington: Building Performance Standards (20,000+ sq ft)

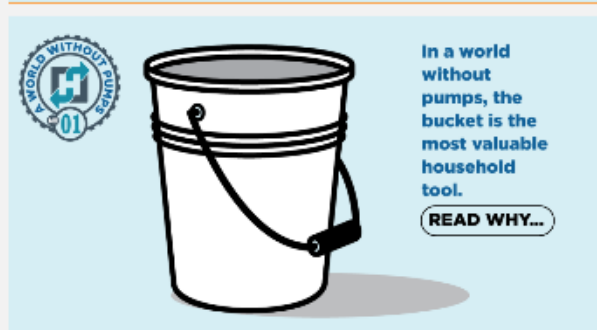
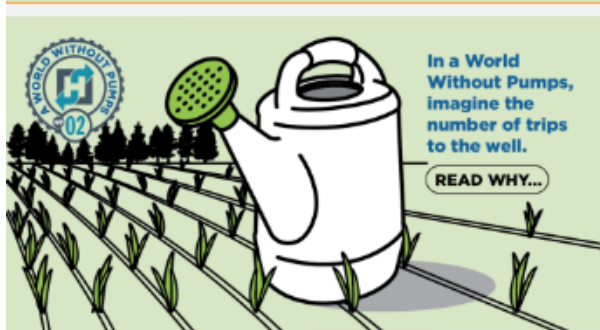
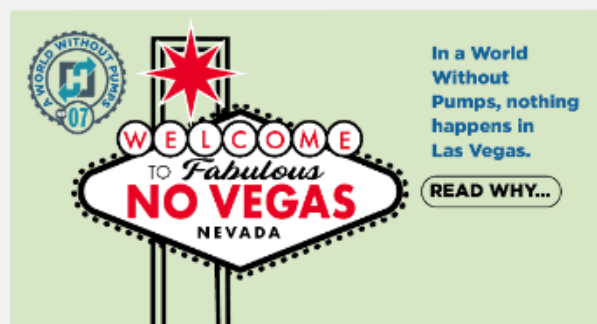
- **Pumps cause headaches if not managed properly**
 - VFD failures/overrides
 - Leaky seals
 - Bearing failures
 - Loud

What Kinds of Pumps?



SelfSensing Series
with ProBalance





Imagine a world without pumps



Puget Sound Energy

Jeff Peterson

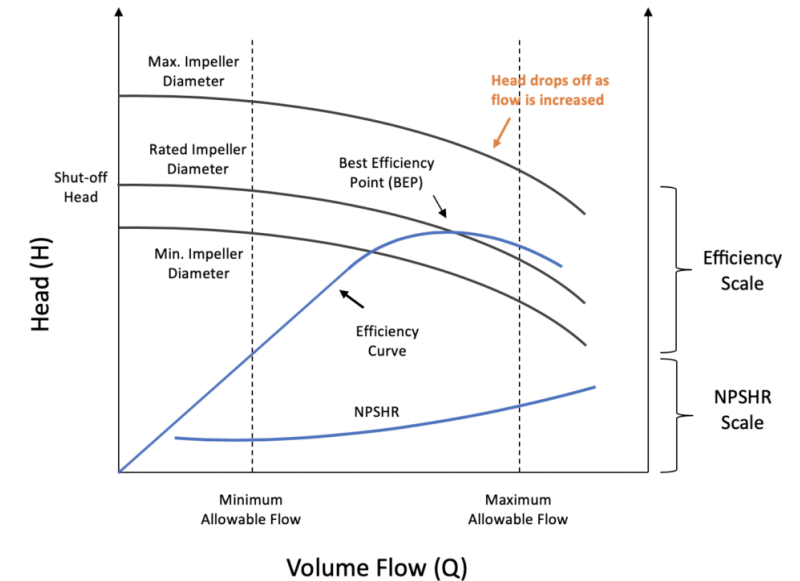
Energy Management Engineer

Jeffrey.Petersen@pse.com



Completed Pump Projects

- Completed project time window - 7 years (2017 – 2024)
 - Total project quantity – 16
 - Total savings – 837,000 kWh's/yr
 - Largest project savings 194,000 kWh/yr - Raw water pump station
- Most projects are application specific to unique businesses
 - Ice arena
 - Public utilities
 - Wastewater
 - Refineries
- Few commercial building applications
 - Chilled water pumps
 - Condenser water pumps
 - No water circulator projects



Pump Projects – What can be done?

More Midstream Engagement

- Most pumps are replaced on failure or repaired in place
- High efficiency alternatives on-hand could increase uptake

Information sharing with utilities

- Potential incentives after installation
- Possible spiffs for customer information
- Could possibly wrap pump incentives into a larger system-wide project

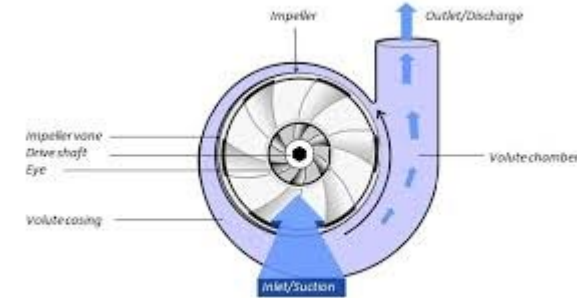


Figure 2. Volute case design



We would like more:

More interaction with vendors, suppliers and contractors

- Possibility to incentivize projects post-installation
- Additional PSE outreach to those entities could create follow-on projects
- Share Midstream information with partner utilities
- NEEA shareout of actions taken with this specific technology
- Idea of NEEA priority in this technology sector
 - High, Medium, Low?



Thank You!





Avista Utilities

Andy Paul

Energy Solutions C/I Engineer

Andy.paul@avistacorp.com





Pump Efficiency: Custom (Site-Specific Projects Examples)

AVISTA Site-Site Specific Projects, cont'd

- Project must meet our SPB requirements (currently between 0 and 15 years).
- Potential (electric) incentive is \$0.26/kWh saved up to 70% of the eligible project cost (\$0.23/kWh in ID).
- Most projects must follow a strict evaluation, measurement, and verification (EM&V) protocol. Details and requirements may vary among projects, most will involve IPMVP Option B.
- New construction/end-of-life (incremental cost) or full retrofit.

Site-Specific Project Examples (partial)

- Overall Efficiency/Efficacy Improvement
- Net HP(kW) reduction
- Bolt-on VFD (use a 2.6 affinity exponent). Be very careful on high-static head applications!
- Etc.

Project Examples:

EEM	Project Description	Cost	kWh Savings	kW Reduction	kWh Cost Savings/yr	Incentive \$	SPB (yrs, after incentive)
Booster Pump VFD	Bolt-on VFD (150HP)	\$26,706	50771.4	11.4	\$3,547	\$10,154	4.7
Booster Stn 4 VFDs	675HP Booster Stn	\$60,000	373291	317	\$24,611	\$29,798	1.2
Pipe Size Modification + VFD	22in to 48in Pipe size incr on a 2200HP well stn, add VFD to one 500HP	\$138,316	658080	720	\$43,387	\$69,158	1.6
Hydrostat to VFD	ASD Upgrade	\$112,535	151706	15	\$9,936	\$30,141	8.3

Project Examples: Efficiency/Efficacy Improvement

- Baseline g/kWh vs EEM g/kWh
- Performance (kWh Reduction) : gal pumped/(Baseline gal/kWh) – gal pumped/(EEM gal/kWh)

The annual energy savings is calculated to be:

$$\begin{aligned} \text{ES} = & [2,200,000 \text{ kgal of water pumped} \\ & / \text{Pre-project STN_1 efficacy (463 gal / kWh)} \\ & + 2,000,000 \text{ kgal of water pumped/ Pre-project STN_2 efficacy (611 gal / kWh)}] - \\ & 4,200,000 \text{ kgal of water pumped/ Post-project COMBINED efficacy (740 g/kWh)} \end{aligned}$$

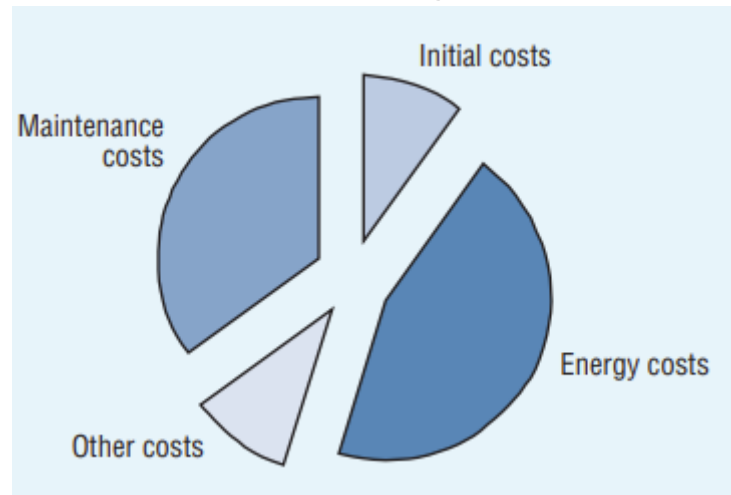
This yields an estimated annual energy savings of **2,349,000 kWh**.

Project Examples: Misc.

- Water/Wastewater Treatment Facilities
- HVAC Circulators
- Industrial Process
- Pool pumps
- Etc.

How can we improve?

- Communication/Outreach (including vendors/installers)!
- Communicate with an emphasis on lifecycle costs.



- Make it more straightforward to program and modify/optimize set points (Smart pumps?).

QUESTIONS?



THANK YOU!!!

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- linkedin.com/in/apaul87



Discussion

Discussion Questions:

- What trends in custom project completions are you seeing at your organization? What have you tried (or not tried yet) to generate more of these projects?
- Do pump savings get accounted for in multi-measure upgrades, and is that part of why specific custom projects are hard to observe?
- What could regional organizations do to expand the reach of custom project incentives for pumps? What percentage of projects would you like to reach?
- What is going on at your organization with regard to deemed measures for pumps?
- Have you heard of the Energy Rating label for pumps?

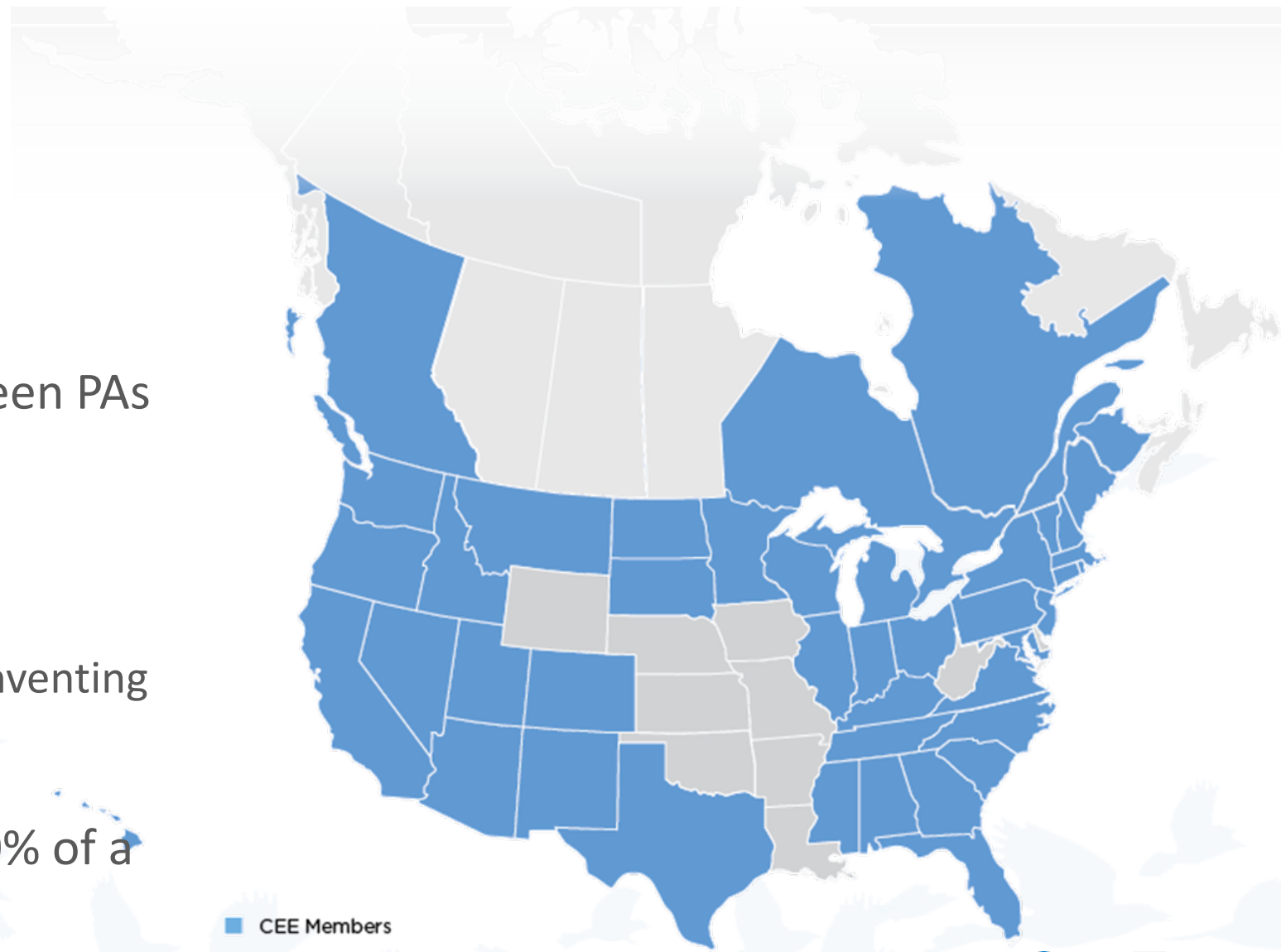
CEE PUMP SYSTEMS INITIATIVE

Supporting Voluntary Energy Efficiency Programs to
Promote Highly Efficient Pumps in Commercial and
Industrial Applications

Charlie Burdett
Program Assistant
January 15th, 2025

THE CONSORTIUM: WHAT IS CEE?

- Energy efficiency non-profit
- 20-25 employees
- 4 provinces, 39 states + D.C.
- Facilitating collaboration between PAs in US and Canada
- Consensus-based strategies
- Learn from each other, avoid reinventing the wheel
- CEE Members direct around 70% of a \$9 billion industry



CEE MEMBERS WORKING TOGETHER



Program Administrators

Ameren Illinois	Énergir
Avista	Energy Trust of Oregon
Avangrid	Eversource
Berkshire Gas	FortisBC
Connecticut Natural Gas	Hawaii Energy
New York State Gas & Electric	Hydro-Québec
Rochester Gas & Electric	Idaho Power
Southern Connecticut Gas	IESO
United Illuminating	Los Angeles Department of
Baltimore Gas & Electric Company	Water and Power
BC Hydro	National Grid
Cape Light Compact	New Jersey Natural Gas
Commonwealth Edison Company	New Mexico Gas Company
Consolidated Edison Company	New York Power Authority
Consumers Energy	New York State Energy
DC Sustainable Energy Utility	Research and
Dominion Energy–Utah	Development Authority
DTE Energy	Nicor Gas
Duke Energy	Northern California Power Agency
Efficiency Maine	Oncor
Efficiency Vermont	Orlando Utilities Commission
Elizabethtown Gas	Pacific Gas and Electric
Enbridge Gas	Company

Peoples Gas
PNM
PSEG Long Island
Public Service Electric & Gas
Puget Sound Energy
Sacramento Municipal
Utility District
Seattle City Light
Snohomish County PUD
South Jersey Gas
Southern California Edison
SoCalGas
Southern Minnesota Municipal
Power Agency
Southwest Gas
Tacoma Power
Tampa Energy
Tennessee Valley Authority
Unitil
Vectren Corporation–Ohio
Vermont Gas
Wisconsin Focus on Energy
Xcel Energy

Efficiency Organizations & National Laboratories

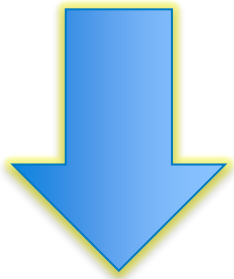
American Council for an Energy-Efficient Economy
California Energy Commission
California Institute for Energy
and Environment
Fraunhofer Center for
Sustainable Energy Systems
GTI Energy
Lawrence Berkeley National Laboratory
Midwest Energy Efficiency Alliance
National Renewable Energy Laboratory
Natural Resources Defense Council
Northwest Energy Efficiency Alliance
Oak Ridge National Laboratory
Pacific Northwest National Laboratory
Southeast Energy Efficiency Alliance
Southwest Energy Efficiency Project

Federal Advisors

Natural Resources Canada
US DOE
US EPA

WHAT DOES CEE DO TO INNOVATE?

CEE exists in the **voluntary** space.



We **connect** key stakeholders.



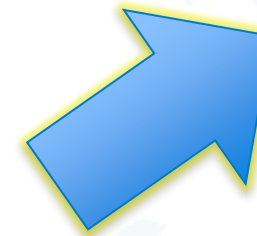
We hold **dialogues**.



We send **market signals**.



Consensus is reached on industry developments.



THE CURRENT CEE PORTFOLIO



Residential

Integrated Home
Space Heating and Cooling
New Construction
Existing Homes
Water Heating
Plug Loads



Commercial

Dynamic Energy Management
Air-conditioning and Heat Pumps
Water Heating
Gas Boiler Systems
Kitchens
Lighting



Industrial

Strategic Energy Management
Compressed Air Systems
Pump Systems
Motor Systems
Industrial Heat Pumps

Sponsored Projects

Integrated Home Competition
Heat Pump Installation Education and Guidance
Emerging Technologies Collaborative
Center for Equity and Energy Behavior

Cross Cutting

Evaluation
Research

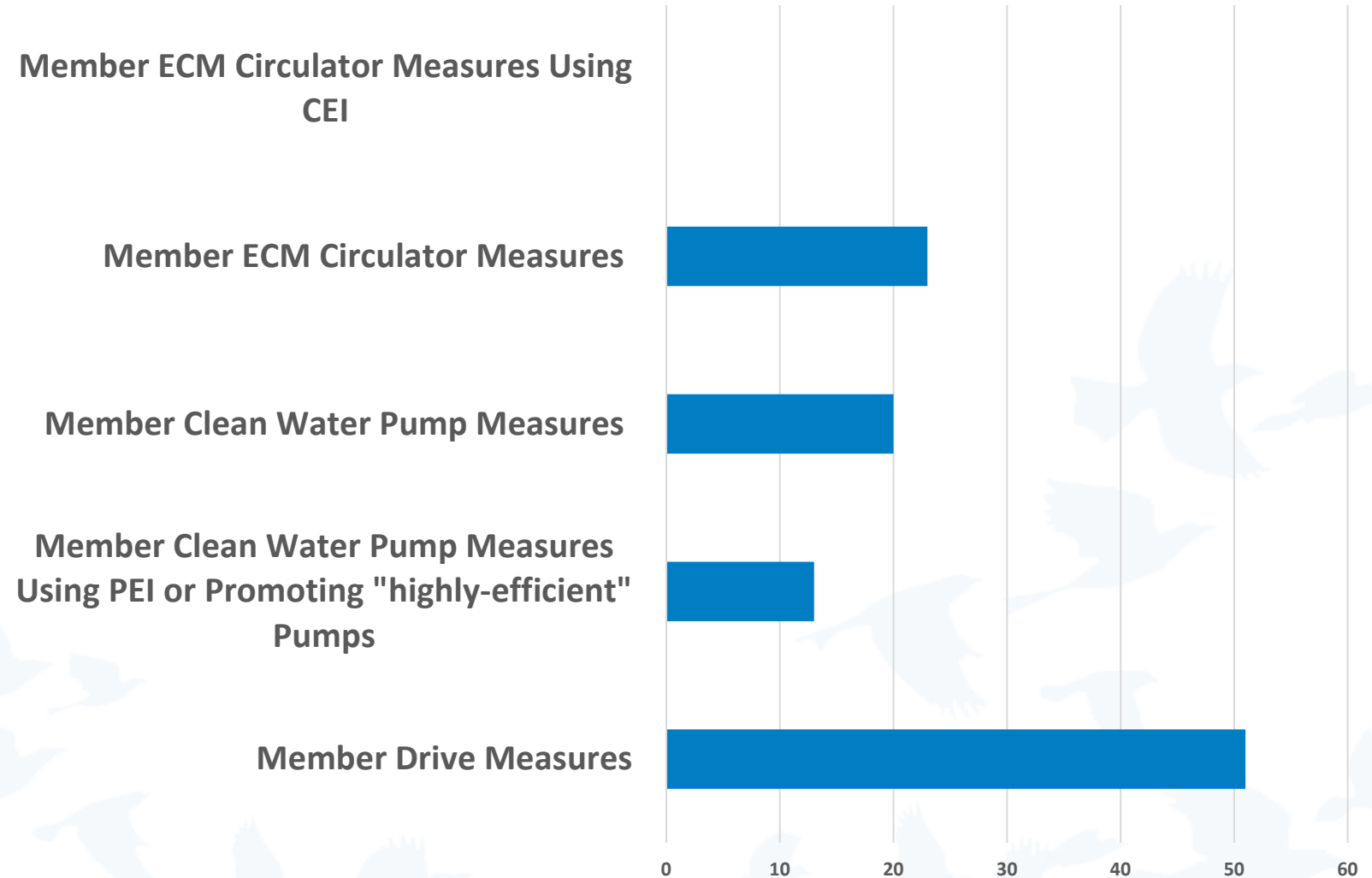
Behavior
Equity

Natural Gas Strategy
Federal Agency Engagement

RELEVANT CURRENT MEMBER PUMP SYSTEM MEASURES



- Member participation in the Initiative through the use of the specifications' PEI/CEI levels in member pump measures will send consistent market signals to manufacturers.



REVISIONS MADE TO THE *CEE COMMERCIAL AND INDUSTRIAL PUMP SYSTEMS INITIATIVE*



- Scope of equipment covered under DOE Test Procedure for Clean Water Pumps and Circulator Pumps (pump types newly covered under recent regulations in red):
 - End-suction frame-mounted/own bearings
 - End-suction close-coupled (ESCC)
 - In-line (IL)
 - Radially-split, multi-stage, vertical, in-line diffuser casing (RSV)
 - Submersible turbine (ST)
 - Radially split, multi-stage, horizontal in-line diffuser casing (RSHIL)
 - Radially split, multi-stage, horizontal, end-suction diffuser casing (RSHES)
 - Small vertical in-line (SVIL)
 - Vertical Turbine (VT)
 - Circulator Pumps

Expanded scope of equipment covered under CEE
(pump types covered under *CEE C&I Pump Systems Initiative* in blue):

- End-suction frame-mounted/own bearings
- End-suction close-coupled (ESCC)
- In-line (IL)
- Radially-split, multi-stage, vertical, in-line diffuser casing (RSV)
- Submersible turbine (ST)
- Circulator Pumps

CEE PUMPS COMMITTEE DRAFT VOLUNTARY CIRCULATOR PUMP SPECIFICATION

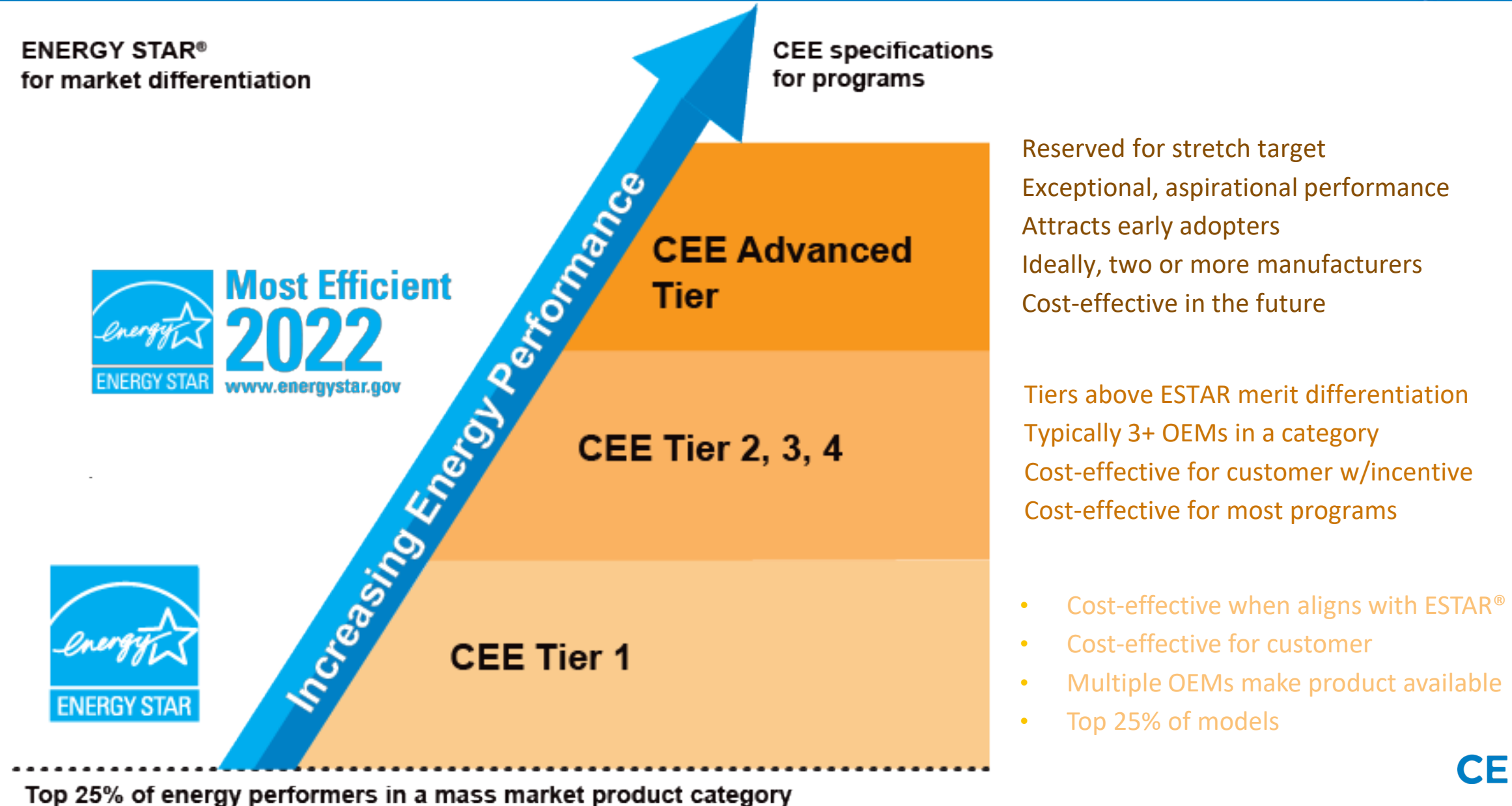


CEE Tier	Watts	DOE CEI	HI ER
Reference		2.5-1.75	0
Tier 1	0-349	1.0	38
	350+	1.1	38
Tier 2	0-499	0.7	105
	500+	0.75	105

DOE Efficiency Level	Equipment Equivalents
EL 0	Constant Speed w/ PSC
EL 2	Constant Speed w/ ECM
EL 2	
EL 4	Variable Speed ECM w/ automatic differential temperature control
EL 4	



EXAMPLE: CEE TIERS



CEE PUMPS COMMITTEE DRAFT VOLUNTARY CLEAN WATER PUMP SPECIFICATION



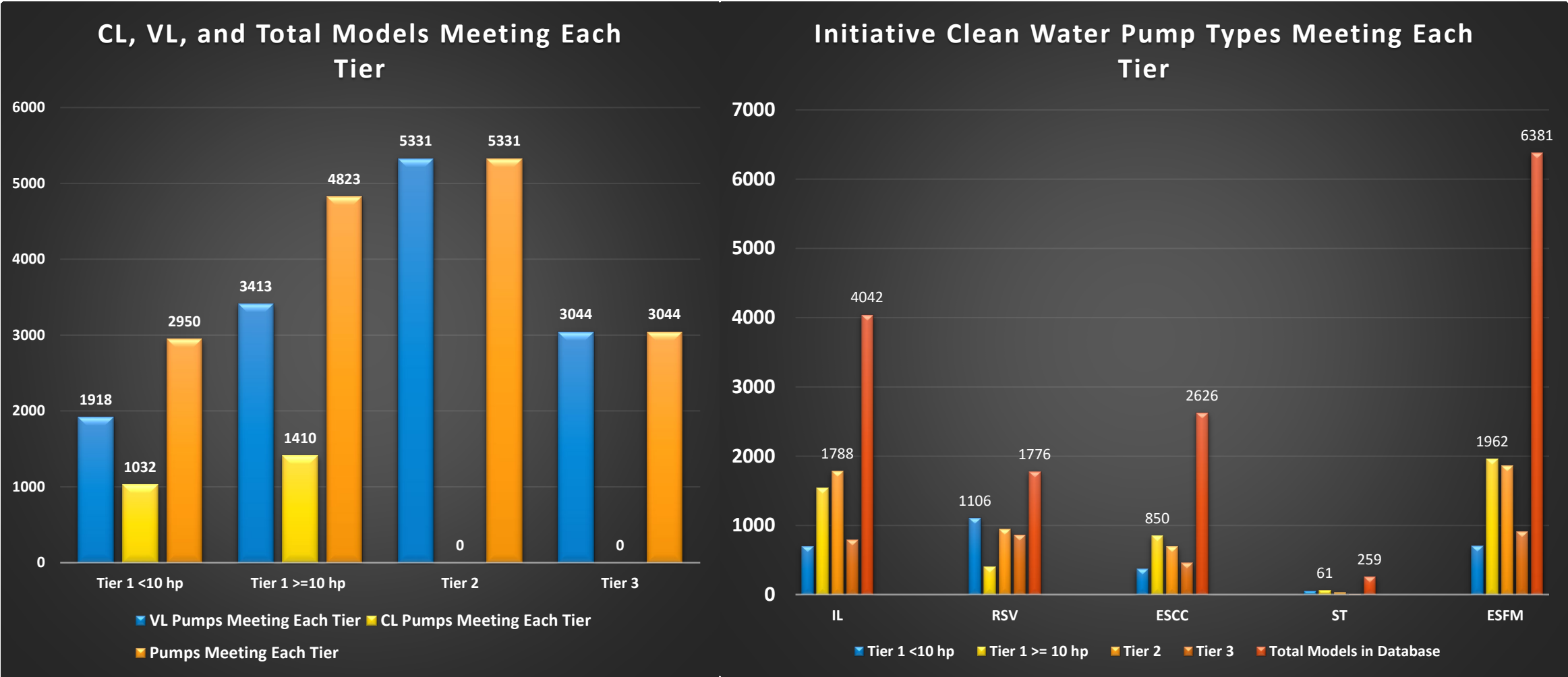
HP		
	PEI	ER
Tier 1 <10	0.88	12
Tier 1 >=10	0.91	9
Tier 2	0.69	31
Tier 3	0.48	52

CLEAN WATER PUMP MODEL MARKET AVAILABILITY



CEE Tier	# of Models Meeting Each Tier	# of Manufacturers with Qualifying Models	Total Models Available	% of Models Meeting Each Tier
Tier 1 <10 HP	2,950	8	5,029	59%
Tier 1 ≥10 HP	4,823	9	10,055	48%
Tier 2	5,331	6	15,084	35%
Tier 3	3,044	6	15,084	20%

CLEAN WATER PUMP MODEL MARKET AVAILABILITY





- Industry comment period ends February 21st
- CEE C&I Pumps Committee will review and respond to comments
 - Pump Systems Committee Call for CEE members in early March
- CEE staff will bring final Initiative to CEE Board for approval
- Once launched, CEE staff will reach out and seek member participation
- CEE staff will coordinate with HI and other pump industry partners to ensure supporting resources including a QPL

QUESTIONS?



CONTACT

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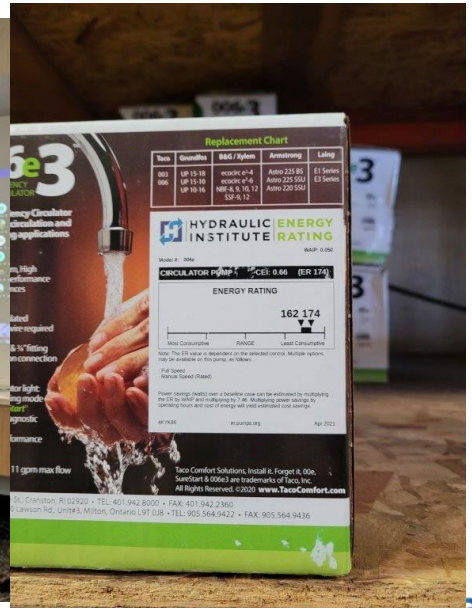
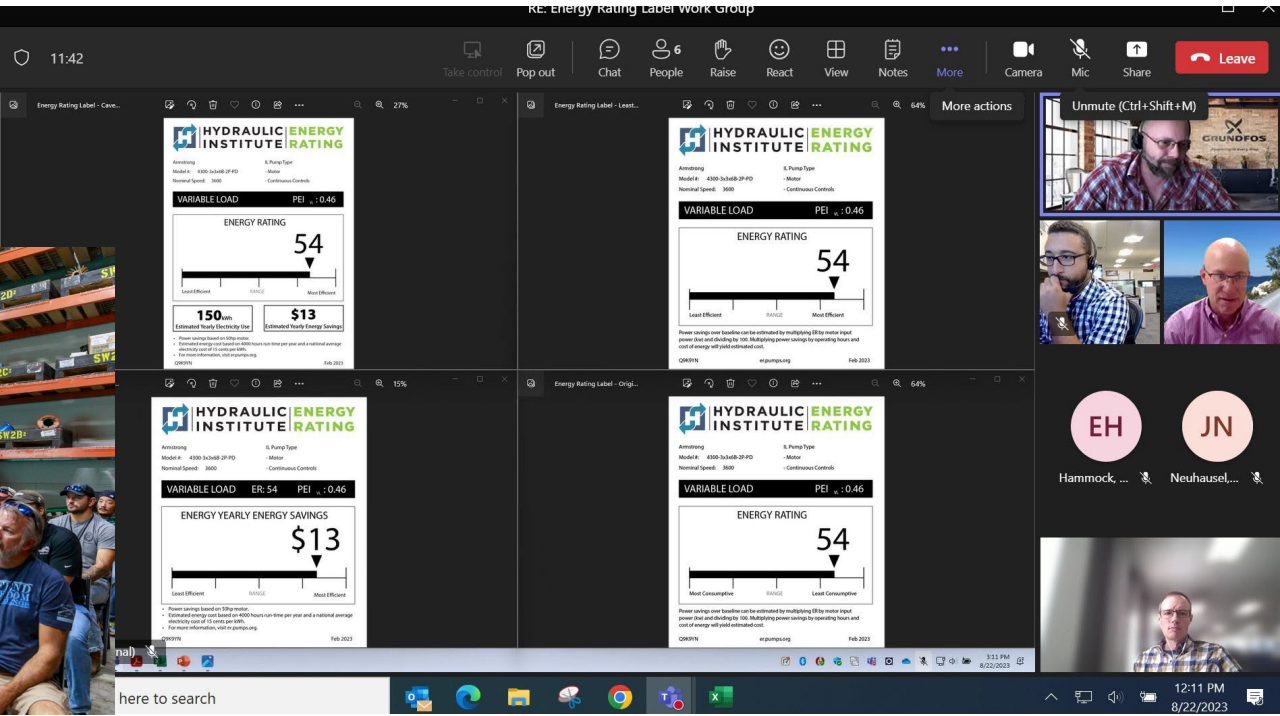
NEEA XMP Pumps Program: Market Transformation Theory

- Engage with manufacturers, distributors and trade associations to increase adoption of energy efficient pumps and circulators.
 - Raise awareness to enable product differentiation
 - Utilize mid-stream incentives to motivate distributors to stock and sell efficient products
 - Gather and analyze full category sales data to inform program strategy, measure progress, and participate in standards processes
- Ultimate impact is through influence on more effective Federal Standards, which affects manufacturing of entire product category.

Key Activities

- Motivate participating manufacturer' representative firms to preferentially stock and increase sales of smart pumps and smart circulators.
- Raise awareness of the value of efficient pump products, the use of the ER label and smart pumps
- Accelerate program participation by growing the number of participating manufacturers' representative firms, and by expanding the program scope into additional markets.







Case Study: Smart pump booster skid for 20-story office building in Bellevue, WA

87%
savings



BEFORE

- (3) 20hp pumps
- On/off controls
- Loud & continuous maintenance



AFTER

- (4) 5hp ECM powered smart pumps
- Built-in controls

“I know all of the parts work together right from the start. I don’t have to trouble shoot failed sensors, rebuild pumps, or respond to noise complaints. That peace of mind is worth a lot.”

- Kidron Cobb,
Facility Manager



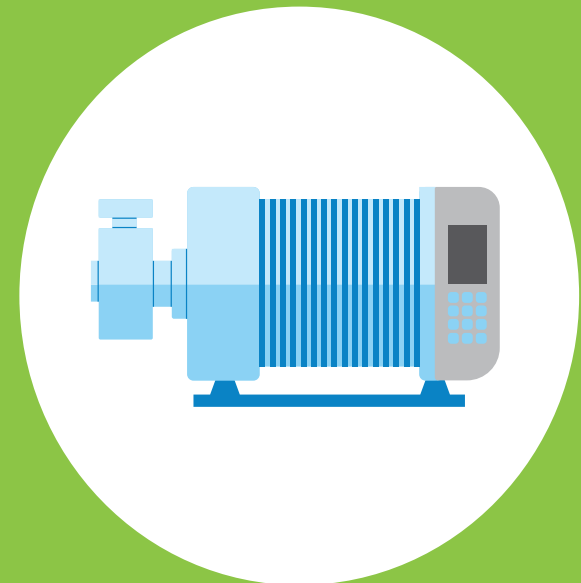
Smart Pumps:

Energy Benefits

- Pump with **integrated** motor & variable speed controls; most often with an EC motor (ECM)
- Pump-specific performance maps optimize operation
- Adaptive control capabilities (some models)

Installation Benefits

- Less reliance on controls contractors
- Quicker install: reduced wiring, conduit, and mounting
- **Electronic balancing** simplifies startup
- **Reduced space requirements**





Questions
Feedback
Next Steps

Thank you!

Warren Fish

Sr. Program Manager, NEEA

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BREAK!



AGENDA

(All times Pacific)

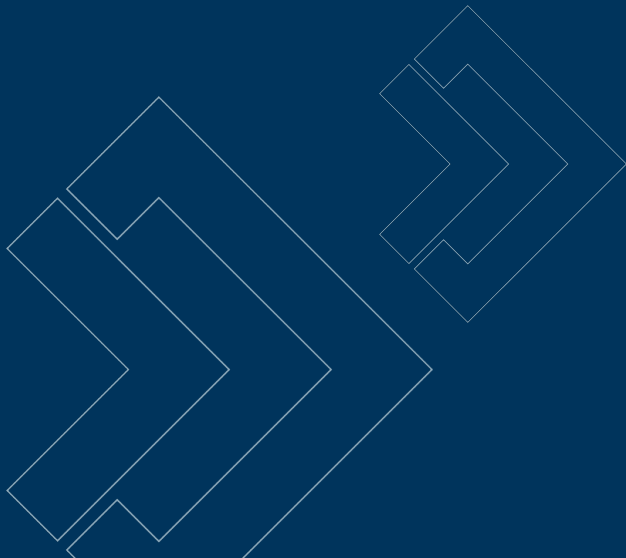
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HOUSEKEEPING

Housekeeping

- NEEA Reports Audit/Feedback Survey
- Looking Ahead
 - Upcoming Meetings & Events



Feedback Requested on NEEA Reports

- Assessing value/content of various NEEA reports
- **REQUEST:** Take survey by Fri Mar 14
- May lead to streamlining materials and/or communication channels

Efficiency Exchange 2025

Early Bird Registration

February 18 – April 25

neea.org/EFX

EFX25 Hybrid Conference

May 20-21 in Portland

In-person + Virtual



2025 CICC Meetings

Q1

- Wednesday, February
- Thursday, February 27

HYBRID @
NEEA

Q2

- Tuesday, May 13

Q4

- Tuesday, November 4
- Wednesday, November 5



***Other regional /
industry events or
announcements?***



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Ad hoc topic Discussion time.....

- Committee members share-out
- Recap from Q4's conversation
 - Washington State the law doesn't go into effect until 2029
 - BPA, treating any project where they have existing fluorescence as a new construction lighting project and evaluating the efficiency

A piece of brown paper with a string tied in a bow. The string is a light brown, twisted cord. It is tied in a bow that is centered horizontally and slightly above the vertical center. The bow has two loops on the right side and two loose ends hanging down. The background is a solid, textured brown paper.

Let's wrap it up!

Action Items| Any Final Qs?

- Action Items



Public Comment?
Action Items?
Closing Remarks?

Thank You!



See you all in May!

Next meeting – May 13th

