

3<sup>rd</sup> Quarter, 2017

# *Regional Emerging Technology Advisory Committee*

July 12, 2017



# Name, Organization, and one thing on your “bucket list”



# *Meeting Goals*

- Review status of the regional Emerging Technology (ET) portfolio and NEEA's ET activities
- Based on our own regional **data** and out of region research, identify product and project priorities for 2018

# Agenda

- 10:00 - Welcome and Agenda Review
- 10:15 - RETAC 2.0 Database Portfolio Update
- 11:15 - Product Gap Analysis
- 12:15 - Lunch
- 12:45 - Scope of Emerging Technology
- 2:30 - Break
- 2:45 - 2018 Regional Product/Project Prioritization Discussion
- 3:45 – Recap
- 4:00 - Adjourn

# ***RETAC 2.0 DB Update***

# *Reminder: Why RETAC 2.0?*

- Response to Council's request (MCS-4) for increased ET coordination across region
- Goals are to
  - **Align** investments of RETAC members in ET
  - **Generate** insights and opportunities for collaboration
  - **Proactively** manage pipeline
  - **Avoid** duplication

# *Open Questions*

- Definition ET – What belongs in our pipeline?
- Custom programs – could these provide clues about potential technologies?
- Inclusion - What about national labs? Other research orgs?
- Annual cadence for RETAC meetings
  - i.e. Q3 planning for next year
- Process to review product readiness levels

# ***RETAC 2.0 DB Update***

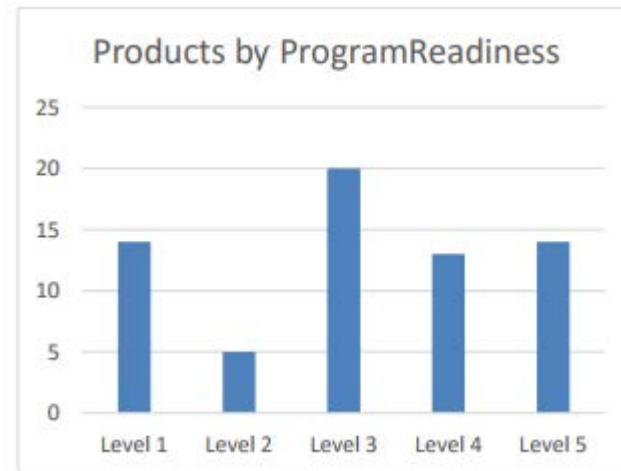
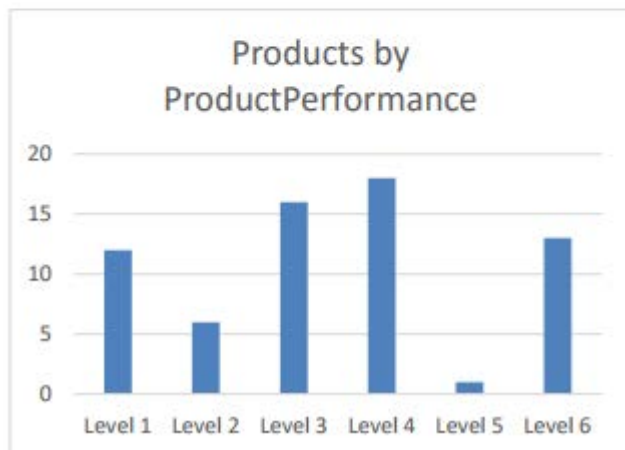
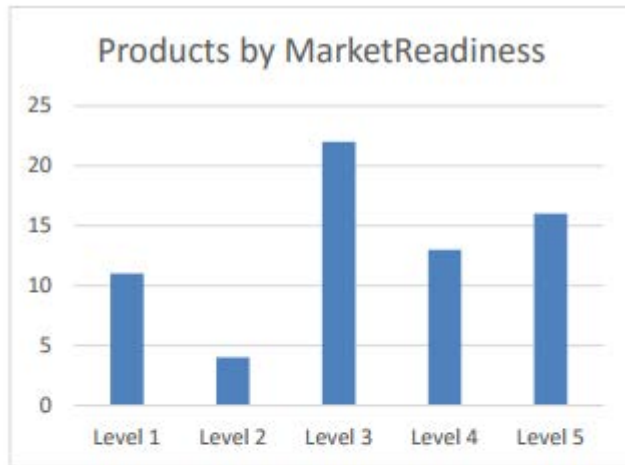
- As of 7/6/17: 77 Products, 105 Projects
- Recent enhancement allows for capture of products/projects with electric-only, gas-only, or electric and gas savings
- Review **Product and Projects Report (6/19)**
- Additions since 6/19 report



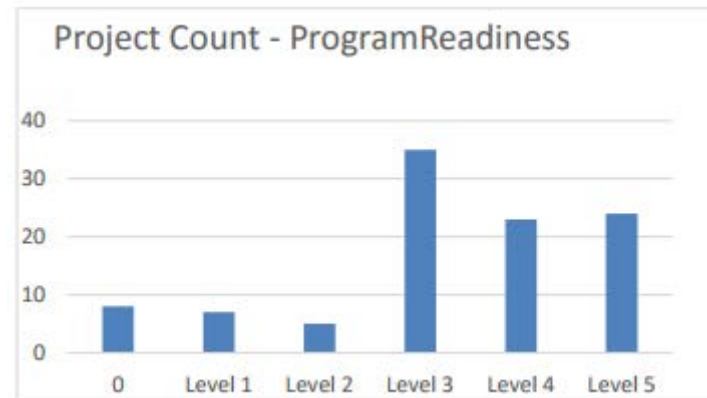
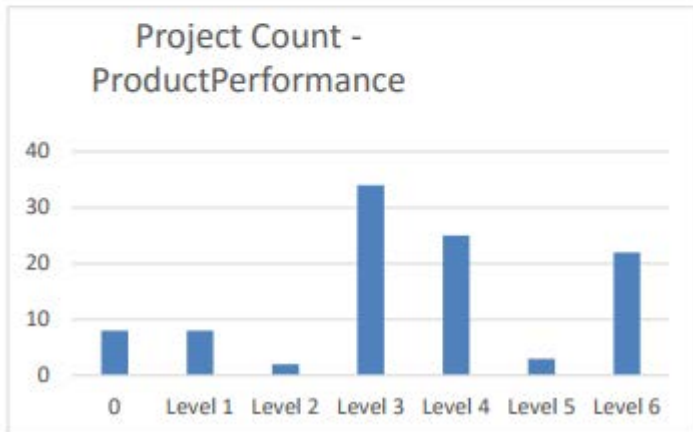
# *Product & Project Report (Packet)*

- Product Readiness Level Histogram –  
Balanced pipeline
- Project Histogram by product readiness –  
balanced investment
- Project and product lists

# Products by Readiness Levels



# Projects by Readiness Levels



# ***Brief Review/Discussion on Products and Projects in Packet Report***

**Product and Projects Report (6/19)**

# *Additions since 6/19*

- Ocean Source CO2 Heat Pumps
  - Hope Works Station – Snohomish PUD
  - Waterfront Place Apartments- Snohomish PUD
- Electric Vehicle Charger (7<sup>th</sup> PP)
- Data Centers (7<sup>th</sup> PP)
- Pump System Assessment
- Super Efficient Dryers Field and Lab Testing
- ASU Savings Validation
- Savings validation for “planned” UES’s

# *Additions (Gas)*

- Modulating valve retro-fit fryers
- Drain heat recovery heat exchanger
- Turbopots
- Kitchen exhaust heat recovery
- Commercial dryer moisture ‘sensor’
- Through-the-wall condensing heat, MF
- Integrated air and water RTU
- Gas water heater; non-electric ignition
- Zoning technologies
- Add-on non-condensing boiler economizers

# *Discussion & Actions*

- Early thoughts on 2018 priorities based on this data.
- Was this the right level of detail for quarterly meetings?
- Are there other views and reports?
- Review list and identify missing information
  - » Call Dave – WWDD
- Look for call to participate in Readiness Level review teams!

# *Gap Analysis*



# Gap Analysis

- **Mission Critical**
  - 7<sup>th</sup> PP
- What can we learn from others? (Omissions and complimentary priorities)
  - CEE
  - E3T
  - EPRI

# 7<sup>th</sup> PP New Measures (> 20aMW)

## Commercial

- Interior Lighting 391
- Data Centers 261 (newly added to RETAC DB)
- Exterior Building Lighting 142
- Advanced Rooftop Controller 119
- Variable Refrigerant Flow 92
- Ductless Heat Pumps 60
- Smart Plug Power Strips 47
- Secondary Glazing Systems 40
- Lighting Controls Interior 37

# 7<sup>th</sup> PP Continued

## Residential

- Lighting 462
- Advanced Power Strips 262
- DHP Ducted 158
- ASHP 122
- Clothes Dryer 53
- Behavior 45
- Lighting PPA 42

## Industrial

- Lighting 38

# *7<sup>th</sup> Plan Gaps*

- Data Centers – Missing
- Lighting – Under invested?

# *Other ET Research*

- CEE
- E3T
- EPRI
- ?

# Commercial Comparison

End Use	7 <sup>th</sup> Plan	RETAC	CEE
Interior Lighting	391	✓	3+ projects
Data Centers	261		2 projects
Exterior Building Lighting	142	✓	
RTU Controller	119		1+ projects
VRF	92	✓	1+ projects
DHP	60	✓	
Power Strips	47	✓	2 projects
Secondary Glazing	40	✓	
Lighting Controls Interior	37	✓	3+ projects
Appliances		✓	2 dryer, 3 cooking. +3 water heating
Motor Systems – Circulator pumps		✓	2 projects
Energy Management & Whole Building			3 projects 2 thermostat 10+ whole building
Storage			3 projects
Building Shell			2 projects
Refrigeration			2 projects

# Residential Comparison

End Use	7 <sup>th</sup> Plan	RETAC	CEE
Lighting	462	✓	1 project
Power Strips	262	✓	4 projects
DHP Ducted	158	✓	1 project
ASHP	122	✓	1 project
Clothes Dryers	53	✓	3 projects
Behavior	45	✓	8 home automation 6 thermostat projects 5 whole home
Lighting PPA	42	✓	1 project
Appliances / Plug Loads		✓	2 – washers
Water Heating		✓	11 projects
Transportation			2 projects (bikes and charging)

# Industrial / Ag Comparison

End Use	7 <sup>th</sup> Plan	RETAC	CEE
Lighting	38	✓	2 projects (cannabis)
HVAC			2 projects (cannabis)
Pumps / Motor Systems		✓	2 projects (irrigation)
Process			4 projects (waste water and irrigation)
Energy Management			2 projects



# *Discussion*

- Additional thoughts on 2018 priorities based on this data.
- Who else should we bring in to share their research plans? (PNNL, other labs, ...)

***Lunch***

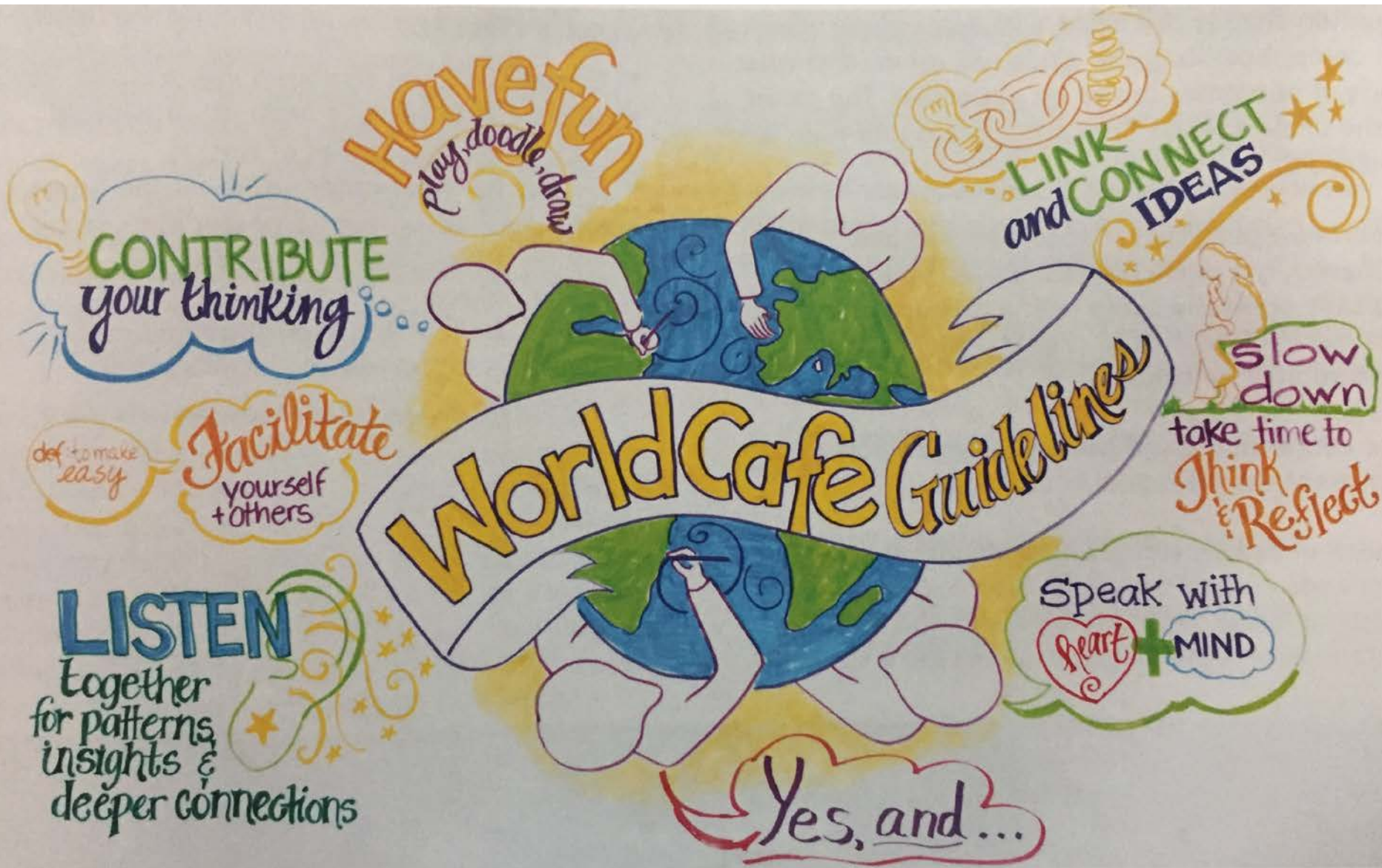
# ***Emerging Technology Definition***

# *Background*

- Regional pipeline broadens scope
  - Technologies, products, measure applications
- ET definitions have evolved
  - Market Share
  - Program lifecycle
- Shortened Product Improvement Cycles

# *Proposed Approach*

- Today
  - Facilitated Brainstorming
- Next RETAC meeting
  - Refinement and agreement



World Cafe poster used by Olympia, Washington Art of Hosting Team.

***Break***

# ***Product Prioritization***



# Goals

- Guide each organization's 2018 priorities
- Maintain individual control of funds
- Operate as a unified entity

# *Review Comments*

# *Regional Consumer Products Market Strategy Recommendation*

- Heat Pump Water Heaters
  - Higher tiers of performance – 4, 5
  - Split systems
  - Advanced refrigerants
  - Demand Response
- Advance Thermostats
  - Regional workshop coming in October, 2017

# ***Steering Team Recommendation - Potential Priority Area***

- **Advanced Network Lighting Controls**
  - Significant savings potential
  - Rapid product changes
  - Seems like more research is needed

# ***Lighting-related Products and Projects in RETAC DB***

Products/ Technologies	Description	Readiness	TP aMW
Advanced, Networked Lighting Controls for General Interior Lighting	Related Projects: Luminaire Level Control (LLC) Pilot Study for Advanced Lighting Controls for Commercial Buildings Testing of Easily-commissioned Lighting Controls Phase 2	Performance: 4 Market: 3 Program: 3	700
Downlight LED Porch Light w/ Built-In Dimming Control	Related Projects: Advanced Exterior Lighting and Controls	Performance: 1 Market: 1 Program: 3	
Light Emitting Capacitor (LEC) Exit Sign	Upgrade to new Light Emitting Capacitor (LEC) exit sign from LED exit sign.	Performance: 3 Market: 3 Program: 4	16 aMW
LED Exterior Lighting and Controls	Related Projects: LED Exterior Lighting Controls: Going Beyond Code (TIP 391) Demonstration of Outdoor Lighting for Maximizing Perceptions of Safety and Security (TIP 329)	Performance: 6 Market: 5 Program: 5	1000
LED Lamps and Fixtures	Related Projects: Development of a Predictive Reliability Test Method for Solid-state Luminaires, Light Engines, and Integral Lamps (TIP 322) Demonstration of LED Retrofit Lamps: Bonneville Power Administration Headquarters in Portland, Oregon LED Mogul Base Lamps Study Phase 3 Waterfront Place Apartments	Performance: 6 Market: 5 Program: 5	1000

# *2018 Priorities Discussion*

- Question 1: Focused or diverse investment?
- Question 2: Top focus area?
- Question 3: Who is interested in developing work plan? / Leader?



*Thank You!*

*TOGETHER We Are Transforming the Northwest*

