

Memorandum

April 27, 2017



TO: Industrial Advisory Committee (IAC)
FROM: Eugene Rosolie, Stakeholder Relations Manager
SUBJECT: Packet for Q2 2017

PACKET APPROACH

This packet continues the “tiered” approach:

- Tier-1 memo for items on the agenda;
- Tier-2 memos for informational updates on items not requiring agenda time
- Tier-3 materials provided as additional detail for those interested.

INFORMATIONAL UPDATES

Enclosed please find **Tier-2** informational updates on the following:

- Page 2-3: RETA CRES
- Page 4: C&I SEM
- Page 5: C&I Lighting Regional Market Strategy
- Page 6-11: Emerging Technology Report

ADDITIONAL DETAILS (Tier 3)

Tier-3 materials related to the agenda items and informational updates listed above will be accessible through links in those memos. Additional Tier-3 details are available here:

- February 7, 2017 [RPAC](#) meeting notes

Memorandum – Informational (Tier 2)

April 24, 2017

TO: Industrial Advisory Committee (IAC)
FROM: Warren Fish
SUBJECT: RETA CRES Initiative Update – 2017 Q2



CRES @ RETA:

Making sure RETA has the necessary tools and data in place to achieve ANSI accreditation for CRES is our high-level shared goal for 2017. NEEA is supporting RETA in this through the following activities:

- CRES Calculator Tools (completed Q1-17)
- CRES Practice Exam (draft delivered, Q2-17)
- CRES Activity Cards (in development, target completion date Q2-17)
- CRES Educational Material Update (in development, target completion date Q2-17)
- 140+ have taken CRES exam nationally (on track for completion by Q4-17)

CRES By The Numbers:

19 people are CRES Certified nationally, up 4 from our January update.

10 people are CRES Certified in the Northwest, up 1 from our January update.

Our stretch goal for 2017 is to achieve 20 CRES Certified individuals in the Northwest by 2017. While we do have a good number of people in the pipeline already, we know that to achieve this ambitious goal we will need your help. Please talk to me if you have individuals or target company customers who you want help with getting CRES certified. NEEA is standing by and ready to assist you with technical support, outreach, and whatever else you need, custom-tailored to meet your specific needs. Increasing the number of CRES-certified individuals in the northwest will bolster our chances of having CRES become ANSI-certified by Q1 2018.

CRES in 2018 and Beyond:

NEEA's support for CRES implementation is expected to end at year-end 2017. NW utilities have additional opportunities to support CRES after that time. CRES Review Courses are a great way to do that. NEEA can help you set up a CRES Review Course for your customers and provide you with targeted marketing materials. You may also be able to advocate for CRES Review Course opportunities to be offered through the Industrial Technical Training channel in 2018 and beyond.

CRES Review Courses:

We have a three-day CRES Review Course happening in [Kennewick](#), Washington, hosted by Benton PUD, on May 3rd, 4th and 5th 2017. We are also planning two CRES Review Courses in September 2017, one in [Boise](#) hosted by Idaho Power and one in [Tacoma](#) hosted by Tacoma Power.

Partnerships with Trade Organizations: We are continuing to partner with RETA to promote CRES through marketing channels and events offered by other refrigeration trade associations, including the Global Cold Chain Alliance (GCCA). We are tailoring our messages to create demand and demonstrate the value proposition for CRES among refrigeration managers and owners. We are working with GCCA on a possible educational session for their Global Expo event this June in Chicago, discussing their Energy Excellence Program with them, and are supporting them with CRES marketing material for their website and Cold Connections blog. We have also submitted a presentation for consideration in their education track at the expo.

Other CRES Support:

We are developing activity cards for CRES exam passers to help them get started thinking about low-cost and no-cost activities right out of the gate. We are making presentations about CRES to regional RETA chapters, including the Tri-Cities and Boise Chapters in Q1-17. In addition, we are working with interested utilities on targeted marketing materials and other necessary resources to help support CRES after NEEA's programmatic support ends, and we plan to host several breakfast sessions in Idaho Power territory to target the CRES message to specific utility-identified customers.

Memorandum – Informational (Tier 2)



April 24th, 2017

TO: Industrial Advisory Committee (IAC)
FROM: Warren Fish, Program Manager
SUBJECT: Commercial and Industrial SEM Infrastructure – 2017 Q2

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SEM Hub: The [SEM Hub](#) website launched in December 2016. We continue to optimize the site based on user experience feedback, and update its content based on user contributions. With a few months of optimization complete and the site functioning smoothly, we are now stepping up our awareness-raising efforts. We are pleased that our US DOE grant-funded upgrade to the Online SEM Learning Modules will be complete by April 30th. The project enabled us to completely redesigned and updated the look of the modules, upgrade them to play on HTML5 instead of the outdated Adobe Flash, and integrate the 17 Online SEM modules with the SEM Hub on the Docebo platform. Docebo is a modern Learning Management System interface that NEEA now has access to organization-wide and the integration enables us to customize an Online SEM portal and experience for each utility SEM program in the Northwest, should they desire one. You or your implementation contractor can choose just the modules you/they desire to complement your in-person training and coaching, choose your own look and content to include on the site, and monitor your customer’s progress through the learning modules in real time. Please let us know if you’d like more information about the Online SEM Course in Docebo.

NW SEM Collaborative: In Q12017, the NW SEM Collaborative Leadership Team successfully prioritized 2017 work teams and found leaders for each of them. The priority work teams include Ongoing SEM Challenges and Opportunities, M&V, and SEM Wikipedia page. Two in-person work group meetings will occur in Portland at NEEA’s offices the afternoon before Efficiency Exchange (May 8th). In addition, we are working with peers at other Regional Energy Efficiency Organizations (REEOs) to plan a day-before ACEEE Industrial Summer Study event on August 15th in Denver. We also plan to hold our annual Fall Workshop in Portland on October 24th, 2017. Also note, the Leadership Team is managing some personnel transitions in 2017 and currently has two openings, one for an industry representative, for which we are now accepting letters of interest, and one for a program administrator, which we are holding for Energy Trust of Oregon until year-end 2017 while they adapt to staff changes.

Northwest Industrial Energy Efficiency Summit: On April 11th, 2017 numerous IAC members and regional stakeholders gathered at the 9th annual NW Industrial EE Summit. I chaired the Event Planning Committee this year, which some of you were also on, and MC’d the event. This year’s summit had to be rescheduled from the original January 11th date because of a major Portland snow storm. The survey results from attendees show quite positive marks overall, especially for the opening SEM panel and the closing panel of high school energy management interns. Many people also commented that they liked the adjusted timing of holding this in spring instead of January and change of event venue. NEEA’s support for this event has come from our C&I SEM Infrastructure budget line for the past few years, and we are now reviewing our sponsorship level for 2018.

Toolbox Talk Cards: A reprint of both the Industrial and Commercial Toolbox Talk Cards is underway now and due to be completed by May 15th. Idaho Power, Energy Trust of Oregon and Bonneville Power Administration have all requested additional copies of one or both versions. If you would like additional copies for your energy management customers, please let us know.

Memorandum – *Informational (Tier 2)*



April 18, 2017

TO: Industrial Advisory Committee (CAC)
FROM: Debbie Driscoll, Strategic Market Manager, NEEA
SUBJECT: C+I Lighting Regional Market Strategy Update – 2017 Q2

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This memo provides an update on the Commercial and Industrial Lighting Regional Strategic Market Plan (Plan) and includes an:

- 1) Overview of 2017 revisions to the Plan
- 2) Update on current activities and next steps

Regional Plan Updated for 2017

The [2017 C+I Lighting Regional Strategic Market Plan](#) refocuses on the needs of the region and the long term value of our collective actions. The Steering Committee and leaders from throughout the region identified shared needs that could benefit from regional alignment, improved coordination, and greater efficiency - the objectives of regional strategic market planning.

In developing the [2017 Implementation Plans](#), the Steering Committee aimed to be responsive to feedback and learnings from the first year of implementation, focusing on 'lighter lift' implementation, clarifying where existing initiatives and activities can be leveraged, and noting the longer-term strategic value of the actions.

This continues to be a voluntary effort, reliant on interested utilities to opt to participate. For each action, the desired outcomes will be achieved only with sustained engagement regionally or sub-regionally.

The Lighting Program Manager Work Group recently received an [overview of opportunities to engage in implementation](#), ranging from providing existing information to participating in the development of new resources. If you see an opportunity for your organization to benefit from one or more of the 2017 actions, please discuss with your RPAC member and lighting program team by the end of April, the date by which Lighting PM Work Group members are asked to indicate their organization's preferences for implementation participation. Engagement will help ensure that the results of regional activities directly benefit your organization.

Implementation Underway

Our [Q2 Newsletter](#) provides updates on current activities and next steps. One of our first activities will be developing a presentation for Summer Summit on the lighting supply chain, which will include trends in where and how lamps are sold, how the supply chain is evolving for general lighting and IoT, and the impact of various types of interventions.

Contact Debbie Driscoll at DDriscoll@neea.org or 503-688-5487 with any questions or comments.

NEEA Emerging Technology Report – Q2 – 2017

Emerging Technology Project List						
Technologies	Description	Sector	Product Manager	Readiness	TP aMW	Updates
Advanced HVAC Solution and Roof Top Units (RTU)	NEEA staff is scanning for efficient alternatives to existing roof top units. Past research has explored evaporative cooling and advanced controls. Currently we are testing a systems approach to separating ventilation control from building heating and cooling. The approach includes an efficient Heat Recovery Ventilation (HRV) system for Dedicated Outside Air and a hydronic or variable refrigerant flow (VRF) for building heating and cooling.	Commercial	John Jennings / Charlie Stephens	Readiness (0-4) Product – 2 Market – 1 Program – 2 MT Program 2018	85	In the first quarter, the Trapper Creek project was completed and commissioned, with post-conversion blower door and final commissioning adjustments made for this project and the Flathead Electric Libby District Office project. The installation was completed and turned on at the King County International Airport (KCIA, or Boeing Field). This one will be commissioned at the beginning of the second quarter. The Verde Cocina restaurant project in NW Portland was awarded its Energy Trust of Oregon incentives and will be installed in April. The Portland State University project is being modeled with project scope, specifications and estimated energy savings completed before the end of the month. The Ventacity lab in Corvallis is being set up (NEEA is collaborating) for testing a new ventilation zoning system, with early testing expected to be completed by mid-May. Case study updates are being completed for each project with winter data through the end of January.
Dynamic Glass	Dynamic glass is glazing that adapts to changing natural light to lower glare and solar gain. Most are also double pane providing high insulation benefits.	Commercial	Rob Curry	Readiness (0-4) Product – 2 Market – 2 Program – 1 MT Program 2019 or later	40	Seattle Integrated Design Lab is conducting a one-year evaluation study of a 90,000 SF six story UNICO office building in Seattle with electrochromic primary window replacement manufactured by VIEW. This (successful) study is now complete. A draft case study is being reviewed and will be published in Q2.
Extended Products for Motor Driven Systems	Integrated motor systems with optimized performance to a system curve. Includes motor, controller, and fan / pump / compressor combinations.	Commercial / Industrial	Geoff Wickes	Readiness (0-4) Product – 4 Market – 2 Program – 3 MT Program 2017	150	Circulator water pumping systems received unanimous approval on March 21 for provisional energy savings from the Regional Technical Form (RTF). NEEA staff is continuing to participate actively with the American Council for the Energy Efficient Economy (ACEEE) and industry market actors to expand this approach to compressors and fans. NEEA staff are also preparing to request a new program be formed to support market transformation efforts with motor systems. The request will likely be submitted to the Regional Portfolio Advisory Committee (RPAC) in Q3.

Emerging Technology Project List

Technologies	Description	Sector	Product Manager	Readiness	TP aMW	Updates
Pump Operator Certification	Certification for pump operators who demonstrate mastery of efficiency.	Industrial	Geoff Wickes	Readiness (0-4) Product – 0 Market – 2 Program – 0	20	Hydraulic Institute (HI) has completed Pump System Assessment training course and certificate was released September 2016. Since that time 10 certificates have been issued for pump system assessment. NEEA staff is exploring ways to test if a link between a Pumps System Assessment Profession (PSAP) and energy savings exists.
Compressed Air Saving Unit	This is an add-on product to compressed air systems. It reduces air consumption by interrupting air flow through engineered air nozzles.	Industrial	Geoff Wickes	Readiness (0-4) Product – 2 Market – 2 Program – 2 MT Program 2017	8	Based on the result of an early assessment of the Air Saver Unit by Parker Hannifin, NEEA staff is preparing to request that a new program be started to support market transformation efforts for this product. NEEA staff expect to request this from the Regional Portfolio Advisory Committee in Q3.
Combo Hot Water & Space Heating – Ductless Heat Pump (DHP) Includes Carbon Dioxide (CO2) heat pumps	Leverage inverter-driven heat pump technology for space conditioning and domestic hot water.	Residential	Dave Kresta / Charlie Stephens	Readiness (0-4) Product – 1 Market – 1 Program – 2	194	Mitsubishi combo product has been delayed due to Rheem exiting the partnership. No timeline for commercialization as of March 2017, and NEEA staff has heard that the product is on hold while a new team takes over the product category. BPA/ Washington State University (WSU) field- and lab-testing of a new Sanden “EcoRuno” combo system from Japan is underway.
Advanced Water Heater systems	Water heaters that don’t fit the integral product covered by the federal standard. Includes split systems.	Residential	Dave Kresta/ Geoff Wickes	Readiness (0-4) Product – 1 Market – 1 Program – 3 MT Program 2017	354	Product is available in the Northwest and North America in general. RTF issued a “Planning” status on the Tier 4 Sanden product but it is currently challenged by the cost effectiveness. NEEA staff plan to publish the Advanced Water Heater Specification qualified products list after the working group has a chance to review the reports. NEEA staff is preparing a proposal, that split system water heaters to be included into NEEA’s portfolio as a part of the heat pump water heater program, for the Regional Portfolio Advisory Committee (RPAC) that will be reviewed in 2017. The Sanden split system CO2 water heater is now listed on the Advanced Water Heater qualified products list.
Window Attachments	Automated Cellular Shades and permanently installed operable Low-e high performance storm windows	Residential	Rob Curry	Readiness (0-4) Product – 3 Market – 4	100	NEEA staff is preparing a proposal, that residential window attachments to be included into NEEA’s portfolio as a part of the commercial window attachment program, for the

Emerging Technology Project List						
Technologies	Description	Sector	Product Manager	Readiness	TP aMW	Updates
				Program – 3 MT Program 2017		Regional Portfolio Advisory Committee (RPAC) that will be reviewed in 201 Both products are focused on national energy ratings developed and maintained by the Attachment Energy Rating Council.
Next Generation/UHD TVs	4K Ultra High Definition (UHD) TVs with various forms of High Dynamic Range (HDR), wide color gamut, smart features are quickly gaining consumer market share. The current US Department of Energy (DOE) test method contains gaps and loop holes and does not adequately test the next generation technologies. Several new display technologies unique from LED back lit LCDs are emerging.	Residential	Nick Leritz	Readiness (0-4) Product – 2 Market – 4 Program – 4 (in Retail Product Portfolio)	57	DOE has issued a pre-publication Federal Register advance notice of proposed rulemaking (ANOPR) pertaining to the test procedure for television sets (January 19, 2017). DOE is seeking to determine if the existing TVs test procedure needs to be amended to ensure that a TV is configured for testing during a representative use cycle or period of use. ENERGY STAR Version 8 development process is being finalized in May 2017 to go into effect in 2018.
Connected Thermostats	Residential thermostats that control various heating and cooling equipment, utilize weather and occupancy data to better manage the systems, and engage homeowner to more closely manage energy use and comfort.	Residential	Dave Kresta	Readiness (0-4) Product – 3 Market – 4 Program – 4	226	No updates. RETAC will be convening a group to discuss collaboration around tstats, and the Consumer Products Regional Market Strategy has identified it as a priority product.
Ductless Heat Pump Product Innovations and Channel Developments	Quick connect ductless heat pumps (DHP) are common in other parts of the world. They enable end users or contractors to install a DHP without having a refrigerant license. Exploration of new market channels direct to General Contractors and Electricians.	Residential	Geoff Wickes	Readiness (0-4) Product – 2 Market – 3 Program – 3	100	Four test units have been installed in the Portland Metro. Initial results look very promising. Leak tightness testing will continue for one year with regular check ins to verify performance. 75 day leak test completed with no leaks detected.
Pivot Commissioning	Pumping energy is used to compensate for poorly maintained pivot systems. NEEA staff are exploring ways for growers to monitor pivot performance to achieve maximum efficiency of current equipment.	Agricultural	Geoff Wickes	TBD	10	The Project is still on hold pending the release of the BPA Market Characteristic Study and the updated Scientific Irrigation Scheduling (SIS) analysis. NEEA staff will start working with the new BPA Lead David Lee as soon as he gets up to speed after Jennifer Eskil's retirement.

Emerging Technology Project List

Technologies	Description	Sector	Product Manager	Readiness	TP aMW	Updates
Inverter Driven Packaged Terminal Heat Pumps (PTHP), Package Terminal Air Conditioners (PTAC)	PTACs and PTHPs that used the same inverter driven compression cycles that DHPs use. Potentially quieter and capable of operating at lower outdoor air temperatures (OAT)s than current options.	Residential, small commercial	Christopher Dymond	Readiness (0-4) Product – 1 Market – 3 Program – 2	TBD	Preliminary investigation of current equipment manufacturers, and distributors. Only a few 9,000-15,000 Btuh options currently available – cost roughly \$1.1k @. Potential do-it-yourself system with that uses 120V source could be great option for motels, manufactured homes and apartment buildings.

TP – Technical potential – maximum possible savings over 20 years

MS – Market Share

Emerging Technology Strategic Activities

Strategies	Description	Sector	Product Manager	Next Milestone	Notes
Automated Measurement and Verification (M&V) (Used to be Low Cost Whole Building Energy Metering); also incorporates industrial, commercial and residential energy management information systems (EMIS)	Exploring how low cost sensors and / or improved analytics can be used to reduce the cost of measurement and verification of savings	All	Nick Leritz John Jennings	Completion of three-year study of Bullitt foundation building's use of an advanced energy management system. 2018	The energy efficiency power purchase agreement between Seattle City Lighting and the Bullitt building in Seattle reached its first year milestone. EnergyRM's DeltaMeter demonstrated promising performance against an independent model and actual energy use. An explanation of the project can be found here. http://www.meetscoalition.org/pilot-projects/ . An independent evaluation requested by Seattle City Light of NEEA's Validation process used at Bullitt was completed in December. Data collection and validation work continues into 2017.

Unsolicited Proposals – Received in the last quarter.

Date Received	Title	Sector/Description	Decision	Explanation of Decision
1/2/2017	Minimize Loss in electrical power distribution network without any investment	This proposal was for power distribution systems to reduce losses and to integrate renewables.	Not a fit for NEEA	This technology is for limiting losses in distribution networks which is out of scope for NEEA. Forwarded to BPA for consideration
2/15/2017	Space Solar Power	Developing power in space and transferring to Earth	Not a fit for NEEA	Electric generation is out of scope for NEEA.

Technologies / Projects - Moved from Scanning or incorporated into another project					
Title	Description	Sector	Product Manager	Technical Potential for Savings	Status
Clothes Washers	Field data revealed washers test procedure does not adequately estimate the remaining moisture (and consequently drying energy needed). We can improve the test procedure and pursue greater savings.	Residential	Christopher Dymond	36	Removed from active scanning. No clear research plan at this point.

Readiness Levels						
Market/Commercial Readiness	Level 1	Level 2	Level 3	Level 4	Level 5	
<i>supply chain maturity/product availability</i>	Not commercially available or limited, pre-commercial availability	Commercially available outside of NW; Requires special order in NW	Commercially available in NW from 1 manufacturer through standard channels.	Commercially available in NW from at least two manufacturers; Stocked throughout region	Commercially available from 2+ manufacturers, well developed supply chain; Widely and easily available	
<i>presence of market failures/ lack of market maturity</i>		Existing market not ready, but similar to other successfully transformed markets warranting further efforts; Limited market awareness	Limited market research suggest market failures/barriers and opportunities to intervene; Growing market interest	Market characterization provides details on barriers and opportunities, some barriers already being addressed; Growing desire for product	Market is starting to function well and appears on path to sustainable, financial viability	
Product Performance (based on BPA's Measure Readiness Levels)	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
<i>Energy savings viability</i>	Concept not validated	Concept validated	Limited Assessment	Extensive Assessment	Comprehensive Analysis	Approved (by whom? RTF?)

<i>Fitness for use</i>	Claims of energy savings may not be credible due to lack of documentation or validation by unbiased experts.	An unbiased expert has validated efficiency concepts through technical review and calculations based on engineering principles.	An unbiased expert has measured technology characteristics and factors of energy use through one or more tests in typical applications with a clear baseline.	Additional testing in relevant applications and environments has increased knowledge of performance across a broad range of products, applications, and system conditions.	Results of lab and field tests have been used to develop methods for reliable prediction of performance across the range of intended applications.	Protocols are established and approved (by reaching RTF "approved" level?)
<i>RTF measure status(if applicable)</i>		Planning	Planning	Provisional	Provisional	Proven
Program Readiness	Level 1	Level 2	Level 3	Level 4	Level 5	
<i>Cost effectiveness</i>	N/A	Not cost effective, but preliminary analysis shows a pathway to CE	Not cost effective but shows pathway to CE with higher volumes, more competition, improved technology	Marginally at cost effective levels	Cost effective	
<i>Program delivery/interventions</i>	No program design	Limited program design	Preliminary program design, small scale pilots	Program design complete, larger scale pilots underway	Ready for full-scale programs.	
<i>Risk Assessment (Technical, Market, Program, Regulatory)</i>	No risk assessment	Limited risk assessment	Preliminary risk assessment complete - major categories of risk understood	Well developed risk assessment - no major unresolved risks	Periodic risk assessment process in place.	