### Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00am</td>
<td>Welcome/Agenda Review</td>
</tr>
<tr>
<td>10:10</td>
<td>CEAC Roundtable</td>
</tr>
<tr>
<td>10:45</td>
<td>Key Assumptions Update</td>
</tr>
<tr>
<td>11:15</td>
<td>Break</td>
</tr>
<tr>
<td>11:30</td>
<td>Key Assumptions Update (continued)</td>
</tr>
<tr>
<td>12:00pm</td>
<td>Break for Lunch</td>
</tr>
<tr>
<td>1:00</td>
<td>Annual Reporting Overview</td>
</tr>
<tr>
<td>1:45</td>
<td>Market Research and Evaluation Newsletter Review</td>
</tr>
<tr>
<td>2:00</td>
<td>Break</td>
</tr>
<tr>
<td>2:15</td>
<td>CEAC Streamlining Discussion</td>
</tr>
<tr>
<td>3:15-3:30</td>
<td>Wrap up and Feedback</td>
</tr>
</tbody>
</table>
CEAC Roundtable Discussion: COVID Impacts

- Name
- Organization
- How has COVID 19 affected planning, research, and/or evaluation work at your organization?

- Energy efficiency efforts are shutting down due to COVID-19, threatening jobs and savings
- Maryland efforts for low-income energy efficiency target stalled by COVID-19
- Utilities beginning to see the load impacts of COVID-19 as economic shutdown widens
Updates & Announcements

• Cancelled: Efficiency Exchange 2020
• Funder Portals
• From the group?
Funder Portal Resources Include:

- Regional Key Assumptions
- Data Sources
- Code Evaluations
- Standards Evaluations
- Standards Models
- Cost Effectiveness Policies
- Packet Materials
- Program/Product Methodologies
1. Introduction
This document summarizes the methodology and assumptions used to calculate the change in per-square foot energy consumption of commercial new construction resulting from Idaho’s adoption of 2015 IECC (International Energy Conservation Code). NEEA applies these values to the state’s annual commercial new construction square footage when to report energy savings.

2. Methodology
2015 IECC for Commercial buildings became effective January 1, 2018 for the state of Idaho. NEEA leveraged Pacific Northwest National Laboratory (PNNL)’s energy savings analysis of the 2012 IECC and 2015 IECC for Commercial Buildings to calculate the change in per-square foot energy consumption of commercial new construction in the state of Idaho.

2.1 Energy Consumption by Prototype Building Model
PNNL assessed the energy performance of new buildings constructed to the commercial energy efficiency provisions of the 2012 and 2015 editions of the IECC by conducting whole-building energy simulations in a suite of 16 prototype building models covering all 15 climate zones in the United States. The resulting energy use from the simulation runs is available on US DOE’s Building Energy Codes Program website.

2.2 Calculation
Idaho is primarily comprised of IECC building climate zones 5B and 6B. For each of the two climate zones, NEEA gathered the following information from the PNNL’s 2012 and 2015 IECC simulation runs by building prototype:
- Electricity use
- Natural gas use
- Total building area

NEEA then calculated the difference in the energy use per square foot of building between 2012 IECC and 2015 IECC buildings, as summarized in Table 1.

- Updated methodology
- Updated assumptions
- Updated calculation approaches
- Program analysis
Funder Portal Access

Go to NEEA.org & Click “Portal Login”
Create Log-In

Click on “Create An Account”

If you have a log-in, you can enter your email and password to sign-in

If you are having trouble logging in, please email:

kbilleci@neea.org
Once Logged In

You will find key sections linked in the header
Responsibilities of CEAC (Cost Effectiveness Advisory Committee)

From CEAC Charter

1. Review and advise regarding NEEA cost-effectiveness and savings information to inform annual reporting.
2. Review and advise regarding market transformation cost and savings measurement and estimation methods.
3. Work with your organization to provide NEEA staff with relevant incentive data for regional tracking and reporting purposes.
4. Review and advise regarding market research and evaluation methodologies.

Link to last revision of CEAC Charter
Key Assumptions Update

CEAC Responsibilities

2. Review and advise regarding market transformation cost and savings measurement and estimation methods.

CEAC Responsibilities

1. Review and advise regarding NEEA cost-effectiveness and savings information to inform annual reporting.
2019 Annual Reporting and Portfolio Recap

Stephanie Rider
Christina Steinhoff
NEEA Data, Planning and Analytics
April 20, 2020

PUBLIC DOCUMENT
NEEA’s review process

**Develop Key Assumptions**
NEEA staff develops Key Assumptions in alignment with the region through:
- Internal analysis,
- External studies,
- Regional Technical Forum

**Validate Key Assumptions**
NEEA staff commissions 3rd party evaluations for new Key Assumptions and for changes to Key Assumptions used in the reporting of savings.

**Reporting Key Assumptions**
NEEA staff reviews new and updated Key Assumptions with the CEAC every quarter. Additionally, NEEA staff will highlight any Key Assumptions that may warrant updating, and solicit input from the committee for better data to inform a Key Assumption.
CEAC Timeline

**Q4 2019**
- Review recent key assumption updates

**Q1 2020**
- **Open Webinar on Market Transformation Savings Accounting and Reporting**
- Review updates to key assumptions for annual savings reporting
- Share preliminary results where available

**Q2 2020**
- Review final set of updates to key assumptions for annual savings reporting
- Review resulting Energy Savings estimates for the NEEA portfolio
- Review cost effectiveness assessment
- Review key market trends and new findings
- Discuss adjustments to savings forecast and progress to Business Cycle goals
Annual Reporting Wrap-up

**Electric Portfolio**
- Final Assumptions Review
- Looking forward to Cycle 6 (2020-2024)

**Gas Portfolio**
- 2019 Reporting – first year!
- Looking forward to Cycle 6 (2020-2024)
Quarterly Report Reminder

- Emailed as part of CEAC packet each Quarter
- Summary of key assumption changes determined for the given Quarter
- Contact information for the Analyst associated with that program
- Link to full set of key assumptions used in Market transformation reporting and in Power Plan reporting

https://neea.org/portal/savings-reports/q2-2020-market-planning-quarterly-report
Key Assumption Review: Estimation for Total Sales
### Estimating Total Sales in the Northwest

#### Share of 2019 Sales Extrapolated

<table>
<thead>
<tr>
<th></th>
<th>Sales Tracked through Program</th>
<th>Sales Extrapolated</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DRYERS (GAS &amp; ELECTRIC)</strong></td>
<td>68%</td>
<td>32%</td>
</tr>
<tr>
<td><strong>WASHERS</strong></td>
<td>64%</td>
<td>36%</td>
</tr>
<tr>
<td><strong>FREEZERS</strong></td>
<td>77%</td>
<td>23%</td>
</tr>
<tr>
<td><strong>REFRIGERATORS</strong></td>
<td>70%</td>
<td>30%</td>
</tr>
</tbody>
</table>

Retailer Partners: Home Depot, Best Buy, Lowes, Nationwide Marketing Group
Background

Savings Calculation

Regional Savings = EE Market Share × Regional Sales × Unit Energy Savings
National Approach

Estimate of NW Sales

National Sales

NW % of HH

NW % of Product Saturation

Data Source
- Association of Home Appliance Manufacturers (AHAM)
- American Community Survey (Census)
- Residential Building Stock Assessment
- Residential Energy Consumption Survey (EIA)

Notes
- Shipments, includes non-retail sales and online sales
- Estimate of NW HH/National HH
  - The American Community Survey is not regularly updated
- Estimate of NW Saturation by Product/National Saturation
Northwest Stock Approach

- **Estimate of NW Sales**
- **Stock**
- **New Construction**
- **NW Penetration**
- **Turnover Rate**

**Data Source**
- Residential Building Stock Assessment
- HUD Permits by State
- Regional Technical Forum

**Notes**
- NEEA lags the permits 6 months to account for construction
- NEEA calculates the saturation values by housing type (single-family, multifamily, and manufactured homes)
- NEEA adjusted the Dryers End of Useful Life assumption based on the sales ratio to clothes washers using program data
2019 Extrapolation Results

**National Approach**
- Clothes Washers
- Clothes Dryers
- Refrigerators

**Stock Approach**
- Freezers

<table>
<thead>
<tr>
<th></th>
<th>National Approach</th>
<th>Stock Approach</th>
<th>Tracked through Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refrigerators</td>
<td>469,000</td>
<td>331,000</td>
<td></td>
</tr>
<tr>
<td>Freezers</td>
<td>62,000</td>
<td>107,000</td>
<td></td>
</tr>
<tr>
<td>Washers</td>
<td>438,000</td>
<td>281,000</td>
<td></td>
</tr>
<tr>
<td>Dryers (Gas &amp; Electric)</td>
<td>352,000</td>
<td>360,000</td>
<td>240,000</td>
</tr>
</tbody>
</table>
Key Assumption Review: NEEA Baseline Updates*

*Updates were reviewed by Apex Analytics
# Retail Products Portfolio Strategies

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Strategy Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midstream Incentives</td>
<td>Provide incentives to influence product assortment and affect market share for the efficient version; obtain sales data to inform long-term strategies and support market analyses</td>
</tr>
<tr>
<td>Emerging Technology</td>
<td>Capitalize on cases where an innovation is expected that could affect the overall efficiency of a product</td>
</tr>
<tr>
<td>Measurement &amp; Compliance</td>
<td>Address flaws in the specification itself through adjustments to test procedures or metrics that guide ENERGY STAR labeling</td>
</tr>
<tr>
<td>Specification Advancement</td>
<td>Inform ENERGY STAR when data indicate a product has a high market share and the specification should be adjusted; leverage data to influence specification revision process</td>
</tr>
<tr>
<td>Standards</td>
<td>(For products with Federal standards) this strategy acknowledges the need to be prepared to engage in rulemakings and other processes associated with adjustments to Federal standards</td>
</tr>
</tbody>
</table>
Strategy by Product Category

Midstream Incentives

Measurement and Compliance & Standards Development

Emerging Technology

Room Air Conditioners

Air Cleaners

Television

Sound bars

Forecast
Baseline Approach by Strategy

Forward-looking

Midstream Incentives & Emerging Technology

Retrospective

Standards Development & Measurement as Compliance, Specification Advancement
Ductless Heat Pump Updates*

RTF Single-Family Zonal Savings Rates

- Decreased by 26% on average
- Now including units outside primary living space to align with rates
  - 2,280 additional in 2019

Climate Zone Weighting

- Utilize weighting by funder territory for local programs
- RBSA weights used for non-incented
- Minimal impact on rates

Extrapolation from distributor data sample

- NEEA HVAC Distributor data used to estimate total installs
  - 2016-2018
  - 5 distributors
  - 30-40% coverage
- Use historical data to estimate current coverage and trends
  - 2007-2016
  - 9 distributors
  - 80-95% coverage

*All items reviewed by Ecotope in Feb 2020
Ductless Heat Pump Updates

Total NW Region DHP Sales

- Prior Data Collection
- Extrapolated from current data sample

**BOC(E) – Total Active Certified Operators**

**Active Certified Operators BOC + BOCE**

<table>
<thead>
<tr>
<th>Year</th>
<th>OR</th>
<th>WA</th>
<th>ID</th>
<th>MT</th>
<th>Total</th>
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<tbody>
<tr>
<td>1997</td>
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<td></td>
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<tr>
<td>1999</td>
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<td>2015</td>
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<tr>
<td>2017</td>
<td></td>
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<tr>
<td>2019</td>
<td></td>
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</tr>
</tbody>
</table>

**Number of Active Operators by State (Share of Regional Total)**

<table>
<thead>
<tr>
<th>State</th>
<th>ID</th>
<th>MT</th>
<th>OR</th>
<th>WA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12%</td>
<td>11%</td>
<td>22%</td>
<td>55%</td>
</tr>
</tbody>
</table>

**Commercial Building Stock (Share of Regional Floor Area)**

<table>
<thead>
<tr>
<th></th>
<th>ID</th>
<th>MT</th>
<th>OR</th>
<th>WA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9%</td>
<td>8%</td>
<td>30%</td>
<td>53%</td>
</tr>
</tbody>
</table>
BOC(E) – Newly Certified Building Operators

- New certifications generally grew from initiative start until 2015, but have since declined
- Oregon certifications have remained steady
2019 and Cycle 5 Electric Portfolio Recap
### Regional Electric Market Transformation Portfolio

**Active Investments: Status as of Dec. 2019**

<table>
<thead>
<tr>
<th>Scanning/Concept Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commodity LEDs</td>
</tr>
<tr>
<td>Extended Motor Products / Fans</td>
</tr>
<tr>
<td>Commercial Heat Pump Water Heaters</td>
</tr>
<tr>
<td>Residential Variable Capacity Heat Pump HVAC</td>
</tr>
<tr>
<td>Thin Triple Windows</td>
</tr>
<tr>
<td>Efficient Rooftop Units</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Program Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Super Efficient Dryer</td>
</tr>
<tr>
<td>Next Step Home</td>
</tr>
<tr>
<td>Window Attachments</td>
</tr>
<tr>
<td>High Performance Commercial HVAC</td>
</tr>
<tr>
<td>Extended Motor Products / Pumps</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Market Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Pump Water Heater</td>
</tr>
<tr>
<td>Ductless Heat Pump</td>
</tr>
<tr>
<td>Luminaire Level Lighting Control</td>
</tr>
<tr>
<td>Retail Product Portfolio</td>
</tr>
<tr>
<td>Manufactured Home</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Codes &amp; Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential &amp; Commercial Codes</td>
</tr>
<tr>
<td>Residential &amp; Non-Residential Standards</td>
</tr>
</tbody>
</table>

**Level of Program Maturity**

Active Investments:
First year savings of active investments in current cycle, 2015-2019
# Regional Electric Market Transformation Portfolio

## Previous Investments: Status as of Dec. 2019

<table>
<thead>
<tr>
<th>Long-term Monitoring and Tracking</th>
<th>Codes and Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced Wattage Lamp Replacement</td>
<td>Residential &amp; Commercial Codes</td>
</tr>
<tr>
<td>Efficient Homes</td>
<td>Residential &amp; Non-Residential Standards</td>
</tr>
<tr>
<td>RETA CRES Refrigeration Operator Certification</td>
<td></td>
</tr>
<tr>
<td>Drive Power</td>
<td></td>
</tr>
<tr>
<td>Commissioning</td>
<td></td>
</tr>
<tr>
<td>80 Plus Computer Power Supply</td>
<td></td>
</tr>
</tbody>
</table>

### Savings in Power Plan Only:
- Residential Lighting
- Building Operator Certification & Expansion

- Investments concluded prior to 2015.
- First year savings above baseline still occurring in market.
Electric Portfolio Advancements

**Advanced 5 Programs into Full Market Development**
- Retail Product Portfolio
- Luminaire Level Lighting Control
- Manufactured Home
- RETA CRES
- Commercial Code Enhancement

**Introduced 3 new Emerging Technologies into Program Development**
- Window Attachment
- High Performance Commercial HVAC
- Extended Motor Products - Pumps

Strong pipeline of efficiency opportunities

New programs have longer ramp before we see savings
Cycle 5 View: Active Market Transformation Investments

Trend of Co-Created Energy Savings from Alliance Portfolio

Total for Cycle 5

67 aMW Co-Created savings

Achieved 89% of target

Take-off of LED products and incentives
## Market Advancements

<table>
<thead>
<tr>
<th>PROGRAM</th>
<th>MARKET TRANSFORMATION GOAL</th>
<th>MAJOR MARKET ACHIEVEMENTS IN CYCLE 5</th>
<th>INCREMENTAL EFFICIENT UNITS AND MARKET PENETRATION¹</th>
<th>2015-2019 CO-CREATED SAVINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPWH</td>
<td>Federal Standard, 2026</td>
<td>All major manufacturers referencing NEEA’s product specifications in product development and producing Tier 3 product Tier 3 represents a 43% increase in efficiency over Tier 1 NEEA has led development of product capabilities including: - Cold climate performance measurement and improvement - Inclusion of Demand response in the category - National standard and Code-compliance option - Recognized solution for carbon emissions reduction</td>
<td>5,900 15,200 54,000 6.0 aMW</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.1% market share of electric WH installs</td>
<td>8.1% market share of electric WH installs</td>
</tr>
<tr>
<td>DHP</td>
<td>Displacement of electric zonal heating systems</td>
<td>NEEA expanded market to include Forced Air Furnace heated homes NEEA leveraging relationships to obtain full category HVAC data</td>
<td>12,800 20,400 81,500 11.3 aMW</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5.7% market penetration</td>
<td>12.5% market penetration</td>
</tr>
</tbody>
</table>

¹ For purposes of this table NEEA is using the following definitions:

Market Share: the efficient measure as a share of a single year’s annual sales total for the target market

Market Penetration: the cumulative total penetration into the installed stock for the target market
Cycle 5 View: Total Market Transformation Investments

Trend of Co-Created Energy Savings from Alliance Portfolio

- Total for Cycle 5
  - 219 aMW Co-Created savings
  - Achieved 146% of target

Uptick in SEM programs across utilities

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## 2015-2019 Co-Created Savings* by Portfolio Phase

<table>
<thead>
<tr>
<th>Phase</th>
<th>0 aMW</th>
<th>14 aMW</th>
<th>53 aMW</th>
<th>152 aMW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept Development</td>
<td>Concept Development</td>
<td>Program Development</td>
<td>Market Development</td>
<td>Long-term Monitoring and Tracking</td>
</tr>
</tbody>
</table>

### 0 aMW
- Commodity LEDs
- Extended Motor Products / Fans
- Commercial Heat Pump Water Heaters
- Residential Variable Capacity Heat Pump HVAC
- Thin Triple Windows
- Efficient Rooftop Units

### 14 aMW
- Super Efficient Dryer
- Next Step Home
- Window Attachments
- High Performance Commercial HVAC
- Extended Motor Products / Pumps

### 53 aMW
- Other Codes & Standards
- Ductless Heat Pump
- Heat Pump Water Heater
- Luminaire Level Lighting Control
- Manufactured Home
- Retail Product Portfolio

### 152 aMW
- Other Codes & Standards
- Building Operator Cert. & Expansion
- Certified Refrigeration Energy Specialist Commissioning
- Desktop Power Supplies
- Drive Power
- Efficient Homes
- Reduced Wattage Lamp Replacement
- Residential Lighting
- Strategic Energy Management
- Televisions

*Savings in Power Plan Only: Residential Lighting (LEDs)

*Electric Portfolio. The savings are based on NEEA’s funding cycle allocations, whereas, the programs are grouped by their current lifecycle phase as of cycle end. Programs can contribute savings to more than one funding cycle.
Portfolio Metrics

1. Cost Effectiveness
2. Carbon Savings
3. Peak Savings
Focus is on Programs in Market Development

**PRODUCTS**
- Consumer Products
  - Retail Products Portfolio
  - Super-Efficient Dryers*
- Motor-Driven Products
  - Extended Motors Products
- Water Heating Products
  - Heat Pump Water Heaters
  - Efficient Gas Water Heating (natural gas)

**INTEGRATED SYSTEMS**
- HVAC Products
  - High Performance HVAC
- Lighting Products
  - Luminaire Level Lighting Controls
- Building Envelope
  - Window Attachments
- Ductless Heat Pumps
  - Condensing Rooftop Units (natural gas)

**OTHER/INFRASTRUCTURE**
- Strategic Energy Management
- Top-Tier Trade Ally
- Distributor Platform

**NEW CONSTR.**
- New Construction
  - Commercial Code Enhancement
  - Manufactured Homes
  - Next Step Homes (gas+electric)

*Super-Efficient Dryers is pending Market Development.
NEEA measures the performance of its portfolio

- **Concept Development**
  - SCANNING & CONCEPT IDENTIFICATION
  - CONCEPT OPPORTUNITY ASSESSMENT

- **Program Development**
  - MARKET & PRODUCT ASSESSMENT
  - STRATEGY TESTING & FINALIZATION

- **Market Deployment**
  - MARKET DEVELOPMENT
  - LONG-TERM MONITORING

Only benefits from Market Development programs

All NEEA costs included (admin, stock assessments, research, etc.)
Portfolio Benefit-Cost Ratio is 1.3

- 20-year stream of benefits and costs to the region from programs in Market Development
- Based on current assumptions from the Regional Technical Forum
- Includes all of NEEA Cycle 5 Budget.
2019 Co-Created **Carbon Savings** is **24,000 Tons** ($1 million)

- **Greenhouse Gas Emissions from**
  - 21,457 passenger vehicles per year

- **CO2 Emissions from**
  - 11,461 homes energy use per year

- **Carbon Sequestered by**
  - 672 acres of US forests persevered from conversion to cropland in one year
2019 Co-Created Winter Peak Savings is 15.4 MW

Total Peak Savings
- Winter: 15.4 MW
- Summer: 4.4 MW
Looking forward:
What to expect for Cycle 6 (2020-2024)
Cycle 6 Savings “Expected” by Portfolio Phase

0 aMW
- Concept Development
  - Commodity LEDs
  - Extended Motor Products / Fans
  - Commercial Heat Pump Water Heaters
  - Residential Variable Capacity Heat Pump HVAC
  - Thin Triple Windows
  - Efficient Rooftop Units

0-3 aMW
- Program Development
  - Window Attachments
  - High Performance Commercial HVAC
  - Extended Motor Products / Pumps

40-59 aMW
- Market Development
  - Other Codes & Standards
  - Super Efficient Dryer
  - Next Step Home
  - Heat Pump Water Heater
  - Luminaire Level Lighting Control
  - Manufactured Home
  - Retail Product Portfolio

75-90 aMW
- Long-term Monitoring and Tracking
  - Other Codes & Standards
  - Ductless Heat Pump
  - Desktop Power Supplies
  - Strategic Energy Management
  - Reduced Wattage Lamp Replacement

*Electric Portfolio. The savings are based on NEEA’s funding cycle allocations; whereas, the programs are grouped by their current lifecycle phase as of cycle end. Programs can contribute savings to more than one funding cycle.
Known: Many prior investment programs winding down. Majority of savings from codes and standards from Cycle 5

75-90 aMW

Long-term Monitoring and Tracking

Ductless Heat Pump
Desktop Power Supplies
Strategic Energy Management
Reduced Wattage Lamp Replacement
Codes and Standards
Known: Many prior investment programs winding down.

75-90 aMW

Long-term Monitoring and Tracking

| Ductless Heat Pump | Desktop Power Supplies | Strategic Energy Management | Reduced Wattage Lamp Replacement | Codes and Standards |

LTMT Programs & Co-Created Energy Savings Forecast

<table>
<thead>
<tr>
<th>RETA CRES</th>
<th>Building Operator Certification/Exp.</th>
<th>Drive Power</th>
<th>Commissioning Buildings</th>
<th>Reduced Wattage Lamp Replacement</th>
<th>Desktop Power Supplies</th>
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<tbody>
<tr>
<td></td>
<td>2019</td>
<td>2020</td>
<td>2021</td>
<td>2022</td>
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</tbody>
</table>
Active Investment Portfolio: impacts to unfold, forecast on hold

Short term impacts are unknown:
• Shifts in consumer spending
• Focus of major partners may need to shift away from EE temporarily
• Risk of trade allies shutting down or changing course
• Slow down of codes and standards

Long term benefits of EE are known:
• Competitive differentiation and growth
• Job creation, economic expansion
• Support for environment and related policy
Known: Energy savings forecasted from active investments are concentrated in 3 programs

<table>
<thead>
<tr>
<th>Program Development</th>
<th>Market Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Window Attachments</td>
<td>Other Codes &amp; Standards</td>
</tr>
<tr>
<td>High Performance Commercial HVAC</td>
<td>Super Efficient Dryer</td>
</tr>
<tr>
<td>Extended Motor Products / Pumps</td>
<td>Next Step Home</td>
</tr>
<tr>
<td></td>
<td>Heat Pump Water Heater</td>
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<tr>
<td></td>
<td>Luminaire Level</td>
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<td></td>
<td>Lighting Control</td>
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<td></td>
<td>Manufactured Home</td>
</tr>
<tr>
<td></td>
<td>Retail Product Portfolio</td>
</tr>
</tbody>
</table>

Portfolio diversity is low, and HPWH barriers are challenging

Recent positive activity in DOE rule-making and ES specs

*Forecast does not include DHP savings*
Cycle Portfolio Benefit-Cost Ratio is 1.5

• Risk & Opportunities:
  - Update to the 2021 Plan
  - New Cycle 6 programs
  - Variability with the incremental cost for Consumer Products
  - Value of quantifying Non-energy benefits
Known: Long ramp to savings for many new programs entering portfolio

<table>
<thead>
<tr>
<th>0 aMW</th>
<th>0-3 a MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concepts in Development</td>
<td>Program Development</td>
</tr>
<tr>
<td>- Variable Capacity Residential HP HVAC</td>
<td>- Extended Motor Products, Pumps</td>
</tr>
<tr>
<td>- Extended Motor Products, Fans</td>
<td>- High Performance Commercial HVAC</td>
</tr>
<tr>
<td>- Thin Triple Windows</td>
<td>- Window Attachments</td>
</tr>
<tr>
<td>- Commodity LEDs</td>
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<tr>
<td>- Commercial Water Heating</td>
<td></td>
</tr>
<tr>
<td>- Efficient Rooftop Units</td>
<td></td>
</tr>
</tbody>
</table>

Savings not expected until 2023+

& even then, it will be a slow adoption pattern in market
Natural Gas Portfolio
## 2019 Natural Gas Savings

### Regional 2019 Savings (Annual Therms)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Program</th>
<th>Products</th>
<th>Gas Program Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>Efficient Gas Water Heater</td>
<td>EGWH</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Next Step Homes</td>
<td>Codes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Voluntary</td>
<td></td>
</tr>
<tr>
<td>Commercial</td>
<td>Condensing Gas Rooftop Units</td>
<td>C-RTUs</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>275,809</td>
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<tr>
<td></td>
<td>Total Savings</td>
<td></td>
<td>279,880</td>
</tr>
</tbody>
</table>
Next Step Homes

• Savings from Performance Path and other voluntary home certification programs

• Gas savings from code changes will be reported once new codes are effective
Condensing Rooftop Units

• Units (13 total):
  - 8 total field demonstration installs during 2015-2019 cycle
    - Followup evaluation by Energy 350 to confirm efficiency and operational status, 1 unit removed
  - 2 known additional units installed by field demonstration site manager
  - 4 custom building projects reported by NEEA funders

• Savings rate (452 therms/yr)
  - Analysis of field demonstration sites
  - Calculated compared to a minimally compliant replacement system
## Natural Gas Savings Outlook

### 2019 Co-Created Savings (Annual Therms)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Program</th>
<th>Products</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>Efficient Gas Water Heater</td>
<td>EGWH</td>
<td></td>
<td></td>
<td>(883 - 2,355)</td>
</tr>
<tr>
<td>Next Step Homes</td>
<td>Codes</td>
<td></td>
<td>275,809</td>
<td>(205,382 - 270,342)</td>
<td>(251,418 - 330,938)</td>
</tr>
<tr>
<td></td>
<td>Voluntary</td>
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</tr>
<tr>
<td>Commercial</td>
<td>Condensing Gas Rooftop Units</td>
<td>C-RTUs</td>
<td>4,071</td>
<td>(1,357 - 2,081)</td>
<td>(1,357 - 2,081)</td>
</tr>
<tr>
<td>Total Savings</td>
<td></td>
<td></td>
<td>279,880</td>
<td>(206,739 - 272,423)</td>
<td>(1,739,394 - 2,283,384)</td>
</tr>
</tbody>
</table>
# Natural Gas Portfolio

## Milestones

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</tr>
</thead>
<tbody>
<tr>
<td>Condensing Rooftop Units</td>
<td>6%</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td><strong>Current State:</strong> C-RTU opportunity targeted to high-load applications; CSA P.8 Test Procedure allows for better differentiation of use</td>
<td>60 MM Annual Therms</td>
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<td></td>
<td><strong>Barrier:</strong> Condensate management, first cost, narrow target market for C-RTUs</td>
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<td></td>
<td><strong>Opportunity:</strong> Utilize CSA P.8 to expand to a mix of potential EE solutions</td>
<td></td>
</tr>
<tr>
<td>Efficient Gas Water Heating</td>
<td>21%</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td><strong>Current State:</strong> No commercialized GHPWH product</td>
<td>100+ MM Annual Therms</td>
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<td></td>
<td></td>
<td><strong>Barrier:</strong> High manufacturing costs and first cost to consumer early; Supply chain resistance to change</td>
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<td><strong>Opportunity:</strong> Position GHPWH as carbon emissions reduction solution; Incorporate as federal standard by 2032</td>
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</tr>
<tr>
<td>Next Step Homes (Above Code Building)</td>
<td>12%</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td><strong>Current State:</strong> AXIS database allows insight into regional home certification programs</td>
<td>30 MM Annual Therms</td>
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<td></td>
<td><strong>Barrier:</strong></td>
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<td></td>
<td></td>
<td><strong>Opportunity:</strong> Greater adoption of performance path programs</td>
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</tr>
<tr>
<td>Next Step Homes (At Code)</td>
<td>61%</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td><strong>Current State:</strong></td>
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<td><strong>Barrier:</strong></td>
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<td></td>
<td></td>
<td><strong>Opportunity:</strong></td>
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</tbody>
</table>

## Risk & Opportunity (2020-2024)

- **Current State:**
  - C-RTU opportunity targeted to high-load applications; CSA P.8 Test Procedure allows for better differentiation of use
- **Barrier:** Condensate management, first cost, narrow target market for C-RTUs
- **Opportunity:** Utilize CSA P.8 to expand to a mix of potential EE solutions

- **Current State:**
  - No commercialized GHPWH product
- **Barrier:** High manufacturing costs and first cost to consumer early; Supply chain resistance to change
- **Opportunity:** Position GHPWH as carbon emissions reduction solution; Incorporate as federal standard by 2032

- **Current State:**
  - AXIS database allows insight into regional home certification programs
- **Barrier:**
- **Opportunity:** Greater adoption of performance path programs

## NEEA Achievable Potential

- 60 MM Annual Therms
- 100+ MM Annual Therms
- 30 MM Annual Therms
MRE Newsletter
Orientation/Q&A

CEAC Responsibilities

4. Review and advise regarding market research and evaluation methodologies.
What’s New!
Hello everyone. I trust you’re all adjusting to the dramatic changes that have swept over us in the past few days. The greeting I originally penned for this quarter’s newsletter preceded by about a week Oregon’s school closures, NEEA’s decision to close its offices for the next few weeks, and the many other changes to daily life that rapidly followed. So now at press time, my newsletter introduction that referenced springtime and cherry blossoms seemed tone deaf. I’m appending this quick update just prior to the release of the newsletter to let you know that although NEEA’s Market Research & Evaluation team is working diligently to keep our research and evaluation projects on track, we are already hearing of schedule delays for some of our studies. We are making plans to adapt where possible and will do our best to keep you updated regarding any changes that might have regional impacts. Please reach out if you have any questions or concerns.

Enclosed is our newsletter for the second quarter. These short reports provide a high-level overview of what we have coming up in April through June. The second quarter is often a time that the MRE team can regroup and start planning. Many of our larger evaluations have just wrapped up, and we will begin scoping our next round of studies in the third quarter. This is reflected in the shorter-than-usual newsletter updates, where you may note that several studies have concluded their field research stages, but a report has not yet posted. During this quarter, MRE project managers are working with their third-party contractors to review and finalize reports, and they are coordinating with their Internal Initiative teams to gather and prioritize the research and evaluation questions for the upcoming studies. Another focus of our time these days is planning for the “reconvening” of the Northwest Research Group. Our first meeting of 2020, planned for March 11th, will have taken place by the time you read this. I hope it went well! We’ll look forward to seeing you (or hearing you on the phone) at one of the quarterly meetings of the NWRG. Stay tuned for more details and let me know if there are folks I should be including in the NWRG communications.

Hoping all is well with you and yours.

Warm Regards, Amy Webb
### At a Glance

#### MARKET RESEARCH & EVALUATION PROJECTS AND ENERGY USE STUDIES

<table>
<thead>
<tr>
<th>Integrated Systems</th>
<th>PLANNING</th>
<th>FIELDING</th>
<th>REPORTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ductless Heat Pumps: Heating Zone 3 Installer Research</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Very High Efficiency Dedicated Outdoor Air System: HVAC/DOAS Specifier Focus Groups</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HVAC Product Group: HVAC Market Actor Profile</td>
<td>✓</td>
<td></td>
<td></td>
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<tr>
<td>Non-Residential Lighting Data Collection: 2019 Data Collection</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very High Efficiency Dedicated Outdoor Air System: HVAC/DOAS Specifier Interviews</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Commercial Window Attachments: Market Characterization Study</td>
<td>✓</td>
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<tr>
<td>Reduced Wattage Lamp Replacement: 2019 Long-Term Monitoring and Tracking</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential Lighting: 2019 Long-Term Monitoring and Tracking</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial Building Commissioning: 2019 Long-Term Monitoring and Tracking</td>
<td>✓</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail Products Portfolio: Air Cleaners Baseline and Technical Assumptions Evaluation</td>
</tr>
<tr>
<td>Green Motor Rewinds: 2019 Long-Term Monitoring and Tracking</td>
</tr>
<tr>
<td><strong>Gas Water Heaters: Tankless Water Heater Market Research</strong></td>
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</tbody>
</table>

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<thead>
<tr>
<th>Codes, Standards, New Construction</th>
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</thead>
<tbody>
<tr>
<td><strong>Codes: Washington Commercial Code Evaluation</strong></td>
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<tr>
<td><strong>Codes: Washington Residential New Construction</strong></td>
</tr>
<tr>
<td><strong>Codes: Oregon Residential New Construction</strong></td>
</tr>
<tr>
<td>Next Step Homes: New Homes Rater Focus Group</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Energy Use Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northwest End Use Load Research: Home Energy Metering</td>
</tr>
<tr>
<td>Northwest End Use Load Research: Commercial Energy Metering</td>
</tr>
<tr>
<td>Commercial Building Stock Assessment</td>
</tr>
</tbody>
</table>
MRE Update: Commercial Windows

CEAC Responsibilities

4. Review and advise regarding market research and evaluation methodologies.
CEAC Streamlining Discussion
Context Reminder

• Background

• Purpose
  - Communication channels
  - Committee makeup
  - Fit with other committees

• Expectations for CEAC Engagement
### NEEA Governance/ Management/ Advisory Roles and Responsibilities

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibilities</th>
</tr>
</thead>
</table>
| **NEEA Board**                            | • All corporate governance and fiduciary duties, including ensuring the system of rules, practices and processes by which NEEA is directed to balance the interests of the alliance’s stakeholders, to support the achievement of the organization’s purpose  
• Strategic and Business Plan development and approval  
• Operations Plan and budget approval |
| **NEEA Executive Director**               | • Manage the business of NEEA according to Strategic, Business and Operations Plans, set forth by Board  
• Oversee business operations and staff |
| **Regional Portfolio Advisory Committee (RPAC)** | • Advise NEEA’s Executive Director on portfolio performance and program advancement; “challenge flag” process; RPAC+ downstream marketing elections  
• Monitor developments from other advisory committees with regard to regional coordination, market progress, and emerging technology |
| **Coordinating Committees (CCs)**         | • Collaborate with NEEA Staff and report to RPAC on coordination and optimization of NEEA programs and related activities, to identify and manage through potential implementation challenges between NEEA and local utility activities, and seize opportunities for amplified market influence |
| **Cost Effectiveness and Evaluation Advisory Committee (CEAC)** | • ### (TBD following streamlining process) |
| **Regional Emerging Technology Advisory Committee (RETAC)** | • ### (TBD following streamlining process) |
| **Natural Gas Advisory Committee (NGAC)** | • ### (TBD following streamlining process) |
| **Work Groups**                           | • Formed by RPAC on an as-needed basis and staffed with as-needed expertise, for a limited term and specific purpose that is distinct from that of RPAC, the CCs, and other Advisory Committees or Work Groups |

Don’t hurt your eyes. Look in your packet (pg 42)
What do you want from CEAC?

- Stakeholder understanding of NEEA approach to savings and cost-effectiveness
- Stakeholder confidence in NEEA metrics
- NEEA staff knowledge and understanding of stakeholder concerns
- And…
Current (Revised) Charter Review

Committee Charter Components

- Purpose
- Responsibilities
- Membership
- Open Meetings and Closed Sessions

- Meeting Schedule
- Shared Commitment
- Review Schedule
Purpose

The purpose of this committee is to review and advise Northwest Energy Efficiency Alliance (NEEA) staff on methods, data sources, and inputs for use in NEEA’s cost-effectiveness analysis and savings reporting. This work is done on behalf of both NEEA’s electric and natural gas market transformation portfolios. The Committee, composed of NEEA funders and additional regional stakeholders, will also track and review components of planned and completed market research and evaluation work.

This committee is a management advisory committee, providing support to the work of NEEA managers and other staff in its program development and implementation responsibilities. As such, it ultimately reports to NEEA’s Executive Director.
Responsibilities

1. Review and advise regarding NEEA cost-benefit and savings information to inform annual reporting.

2. Review and advise regarding market transformation cost and savings measurement and estimation methods.

3. Review evaluation findings that affect cost and savings information to inform annual reporting.

4. Work with your organization to provide NEEA staff with relevant incentive data for regional tracking and reporting purposes.

5. Review and advise regarding new market research and evaluation methodologies.
Membership

The Executive Director will delegate the option to appoint a member to any Advisory Committee to each direct funder of both NEEA’s electric and natural gas portfolios. In addition, the Executive Director may appoint member(s), such as Northwest Power and Conservation Council staff, public utility commission staff and state energy office staff.
Open Meetings Closed Schedule

All Advisory Committee meetings shall be open to in-person participation by members of the public. With the exception of sensitive information not appropriate for public dissemination, meeting materials (including but not limited to meeting packets, slide presentations and summary notes) will be posted for public access. A closed session for part or all of any committee meeting may be called at any time to discuss sensitive information such as competitive or proprietary information that should not be publicly shared. Any member of the Committee can request a closed session.
Meeting Schedule

This advisory committee will meet on a quarterly basis and conduct additional meetings and/or webinars as needed. Meeting agendas will be clearly delineated between electric-only, dual-fuel, and gas-only portions to allow committee members the ability to participate only in the items that are relevant to their organization.
Shared Commitment

Advisory Committee members and NEEA Staff share a commitment to communicate and coordinate with the intent of operating with no surprises.
The Board will review this charter during the first year of the funding cycle, or at other times as needed.
Next Steps

• Recommended changes reviewed by NEEA leadership

• Proposed charter shared with RPAC and advanced for Board level approval

• Review by Governance and Executive Committees before Board of Director’s approval

• Goal: Board approval by Q4 2020
Meeting Wrap-up
How was your experience?

Meeting Wrap-up

- Public Comment?
- Next Meeting: September 10
- Feedback:
  - Overall
  - Agenda
  - Packet Materials
  - What went well?
  - What needs work?