Cost-effectiveness & Evaluation Advisory Committee Meeting

Northwest Energy Efficiency Alliance

April 30, 2024

CLASSIFICATION LEVEL: PUBLIC

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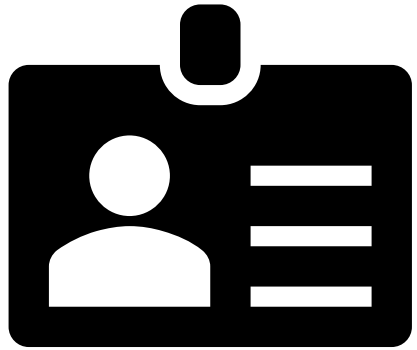
Introductions & Ice Breaker



- Name
- Organization
- Question(s) for today?
- In what non-Pacific-Northwest state would you choose to live?



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Agenda

8:30am	Welcome/Agenda Review
8:45	Key Inputs and Assumption Updates
9:15	Market Research and Evaluation (MRE) Update
9:30	BREAK
9:40	Market Transformation Framework
10:10	Market Transformation Savings
10:55	Market Transformation Costs and Benefits
11:30	LUNCH
12:30pm	2023 Market Progress and Portfolio Overview
2:00	BREAK
2:15	Estimating State Energy Code Savings
3:00	Alternative Approaches for Evaluating NEEA's Influence on State Energy Codes
4:00	Wrap up

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Efficiency Exchange 2024

Spokane, WA | May 14-15

Find agenda, registration and hotel information at ***neea.org/efx***



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Why are we here again?

CEAC Charter

Responsibilities

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. 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.

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Annual Reporting Process – wrapping up in Q2

Q4 2023

- Review recent key assumption updates

Q1 2024

- Review updates to key assumptions for annual savings reporting

Q2 2024

- Market Transformation Savings and Benefit-Cost Accounting and Reporting
- Review resulting Energy Savings estimates for the NEEA portfolio
- Review cost effectiveness assessment, peak savings and avoided carbon emissions
- Share key market trends and new findings

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Key Inputs and Assumption Updates

Objectives

- Provide visibility to updates made in key assumptions for 2023 reporting of energy savings
- Answer any questions on updates to NEEA's key assumptions

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Key Assumption Development and 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.



Report Key Assumptions

NEEA staff reviews new and updated Key Assumptions with 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.



Post Key Assumptions

Full set of regional key assumptions used for reporting is made available on NEEA Funder Portal

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System of Documentation Available

Funder Portal
neea.org
Updated in April

Data Sources
List of data sources NEEA uses to estimate savings & cost effectiveness and explanation of approach
Cost Effectiveness Table
ProCost Inputs for programs in Market Development
Methodology Documentation
Report on energy consumption calculations, data sources and technical assumptions
Operational Guidelines
Overview on energy savings & cost effectiveness calcs

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Supporting Documentation on neea.org

Documentation is available at:

https://neea.org/portal/sign-in

→ Login

→ Savings Reports



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Q2 2023 Key Assumptions Updates



Dedicated agenda time:

- Ductless Heat Pumps
- Retail Products Portfolio
- Residential and Commercial New Construction (Electric and Natural Gas)

In the meeting packet:

- Luminaire Level Lighting Controls
- Extended Motor Products, Pumps
- Products: Standards

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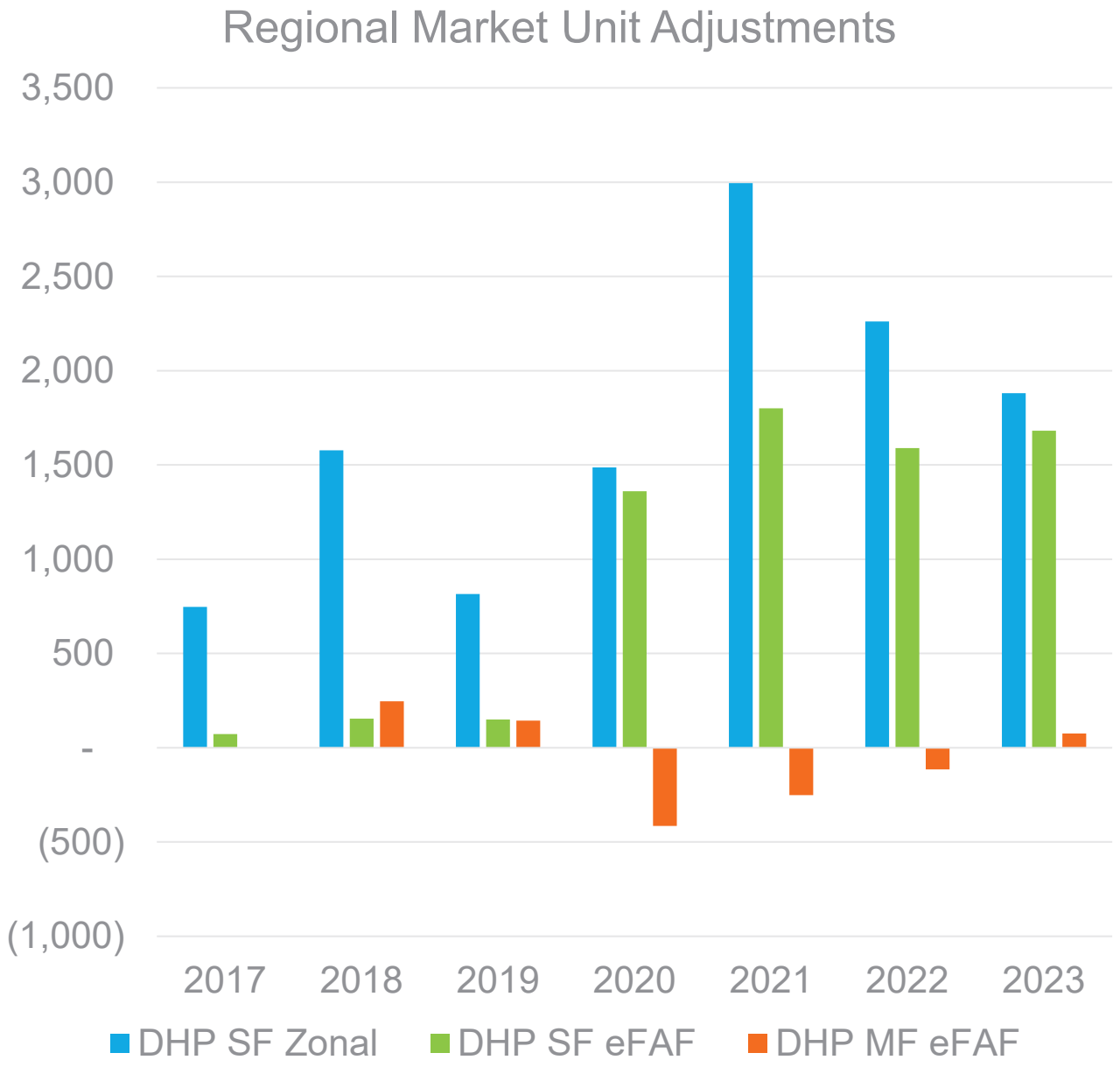
Ductless Heat Pumps

- Update: Market Size
  - New market intelligence determined that NEEAs HVAC distributor data now represents 80% of Ductless Heat Pumps sold in the region
  - A historical update was made to unit estimates for years 2017-2022 to account for an increase in estimated unit sales.



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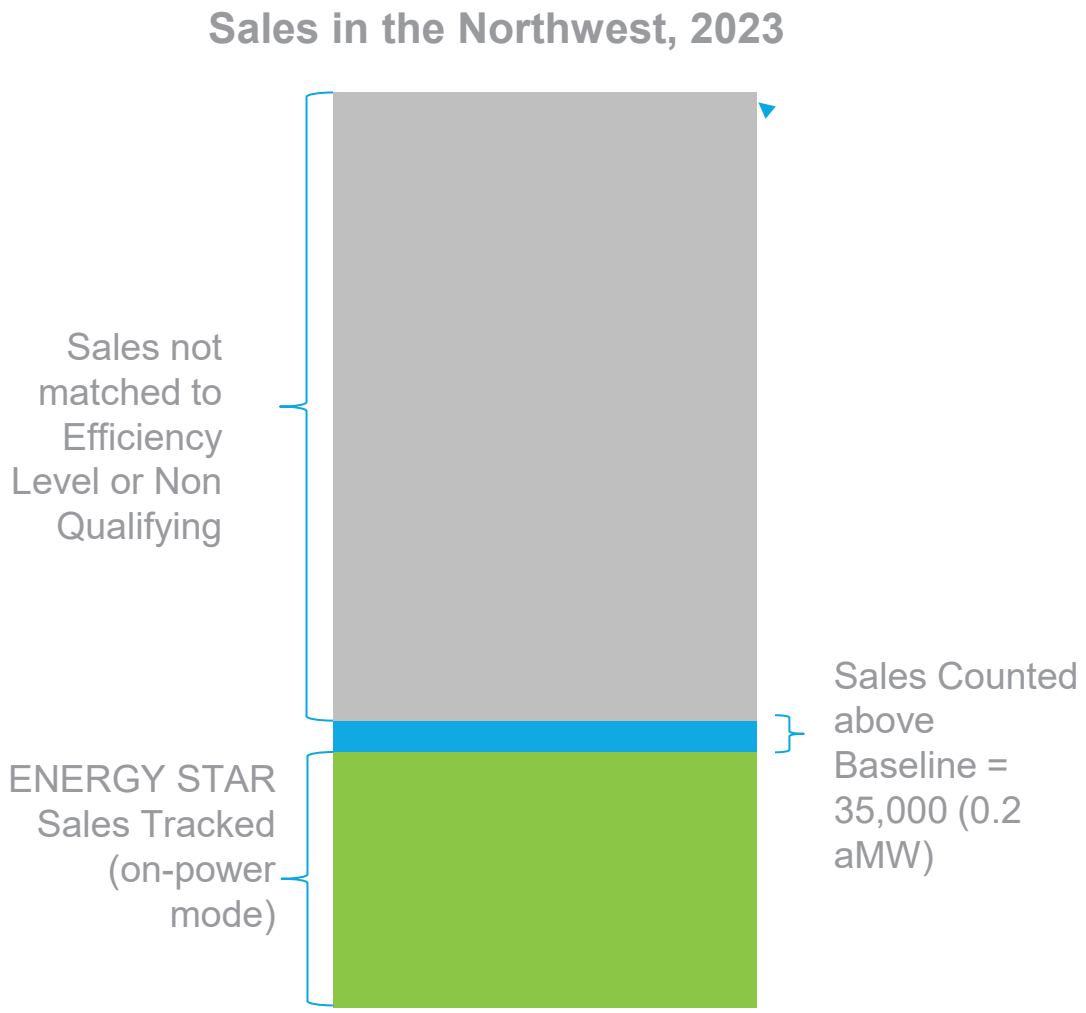
ENERGY STAR Ultra-high-definition (UHD) Televisions

Update: Data Source

- NEEA is reporting savings from sales of models with publicly available test data (approx. 38% of the market)
- NEEA expects the share of models with available test data to increase
- NEEA is working to continuously improve model matching process



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Residential New Construction (Idaho)

Update: Compliance & Fuel Mix

NEEA completed a Residential Code Compliance Evaluation for IECC 2018 with Idaho amendments.

The study will be published on neea.org later this quarter.

Idaho Code Compliance Evaluation

Source	Compliance to Statewide Code	% Natural Gas Space Heating (Single-family)
Previous Study (Pacific Northwest National Laboratory. 2019. Idaho and Montana Residential Energy Code Field Studies.)	97.3%	96.0%
Updated Study (Industrial Economics, Inc. (IEc), Resource Refocus LLC. 2024. Idaho Residential Code Compliance Evaluation.)	97.8%	95.7%

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Residential New Construction (Idaho)

Update: Savings Rate for Prior Code

NEEA updated the electric savings rate for **IECC 2015 amended**

- Removed additional savings from unamended jurisdictions to avoid over counting savings with Idaho's amended IECC 2018, which was measured against the amended version of prior code.

Idaho's IECC 2015 Savings Rate Estimates

Years	Prior kWh/Home	Current kWh/Home	Change in Co-Created Savings (aMW)
Pre 2021	215	215	0.00
2021	215	142	-0.13
2022	215	102	-0.18
2023	N/A	102	N/A

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Market Research and Evaluation (MRE) Update

Objectives

- Committee awareness of market research and evaluation activities

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2024 Q1 Market Research & Evaluation Quarterly Newsletter

WHAT'S NEW:



Hello there!

The Northwest Energy Efficiency Alliance's (NEEA) Market Research & Evaluation (MRE) team jumped headfirst into the new year by kicking off several new studies in the first quarter. These include the first Market Progress and Evaluation Report (MPER) for the Extended Motor Products Market Transformation program, a market research effort to assess consumers' use and attitudes toward connected consumer products, market research with home energy raters in the Northwest, and Residential Code Compliance Evaluations for both Montana and Oregon. This list provides a great snapshot of the all the types of research and evaluation that NEEA's MRE team scopes, manages and delivers to support NEEA's Market Transformation programs. Together, these different types of research and evaluation studies serve two outcomes: they support the continuous improvement of NEEA's Market Transformation programs, and they provide unbiased, third-party assessments of new program concepts and current programs' successes and opportunities for improvement.

We hope you find the newsletter informative, and we look forward to hearing from you. Please feel free to reach out anytime with questions or suggestions.

Wishing you a happy springtime!

~ **Amy Webb**, Sr. Manager, Market Research & Evaluation ~

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At a Glance

MARKET RESEARCH & EVALUATION PROJECTS

		PLANNING*	FIELDING*	REPORTING*
Integrated Systems	Efficient Rooftop Units: *Market Progress Evaluation Report #1*		✓	
	High-Performance HVAC: *Market Progress Evaluation Report #1*		✓	
	High-Performance Windows: *Residential Market Share Study*			✓
	BetterBricks: *Commercial Building Market Research*			✓
	Extended Motor Products: *Agricultural Pumps Market Research*	✓		
	Extended Motor Products: *Market Progress Evaluation Report #1*		✓	
	Efficient Fans: *Fan System Market Characterization*			✓
	Luminaire Level Lighting Controls: *Key Assumptions Review*			✓
	Luminaire Level Lighting Controls: *Market Sizing for Exterior Parking Lot Applications*			✓
Products	Efficient Gas Water Heaters: *Condensing Gas Water Heater Qualitative Market Research*	✓		
	Efficient Gas Water Heaters: *Existing Water Heaters in Select Commercial Buildings Market Research*	✓		
	Heat Pump Water Heaters: *Cold Climate Demonstration Installation & Water Heater Installer Focus Group*			✓
	Retail Product Portfolio: *Connected Consumer Products Market Research*		✓	
	Retail Product Portfolio: *Retailer and Manufacturer Sustainability Goal Literature Review*			✓

DUAL FUEL (Electric & Natural Gas) PROJECTS:

NATURAL GAS PROJECTS:

***PLANNING:** MRE projects from inception through proposal selection

***FIELDING:** MRE projects from kick-off through the completion of field work

***REPORTING:** MRE projects in the analysis/synthesis stage through report posting

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At a Glance

MARKET RESEARCH & EVALUATION PROJECTS

Codes, Standards, New Construction

	PLANNING*	FIELDING*	REPORTING*
Codes: *Market Progress Evaluation Report #2*			✓
Codes: *Home Energy Raters Market Research*		✓	
Residential Codes: *Idaho Residential Code Compliance Evaluation*			✓
Residential Codes: *Montana Residential Code Compliance Evaluation*		✓	
Residential Codes: *Oregon Residential Code Compliance Evaluation*		✓	
Commercial Codes: *Idaho Commercial New Construction Code Compliance Evaluation*		✓	
Commercial Codes: *Montana Commercial New Construction Code Compliance Evaluation*		✓	
Standards: *Battery Chargers Standard Evaluation*		✓	
Standards: *Non-Weatherized Gas Furnaces and Mobile Home Furnaces Standard Evaluation*			✓
Manufactured Homes: *Transition Market Progress Evaluation Report*			✓
New Construction: *Energy-Efficient Technology in Cold Weather - Bridger View On-Site Research*			✓

DUAL FUEL (Electric & Natural Gas) PROJECTS:

NATURAL GAS PROJECTS:

***PLANNING:** MRE projects from inception through proposal selection

***FIELDING:** MRE projects from kick-off through the completion of field work

***REPORTING:** MRE projects in the analysis/synthesis stage through report posting

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Break

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Market Transformation Framework

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Questions to answer today

- **What** is market transformation?
- **Why** do market transformation?
- **Where** does market transformation take place?
- **How** is market transformation achieved in the Northwest?

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***What** is market transformation?*

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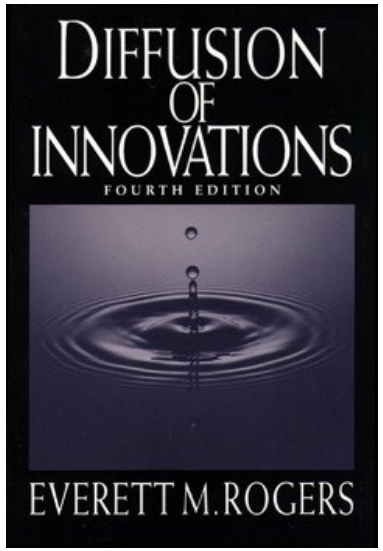
What is Market Transformation?

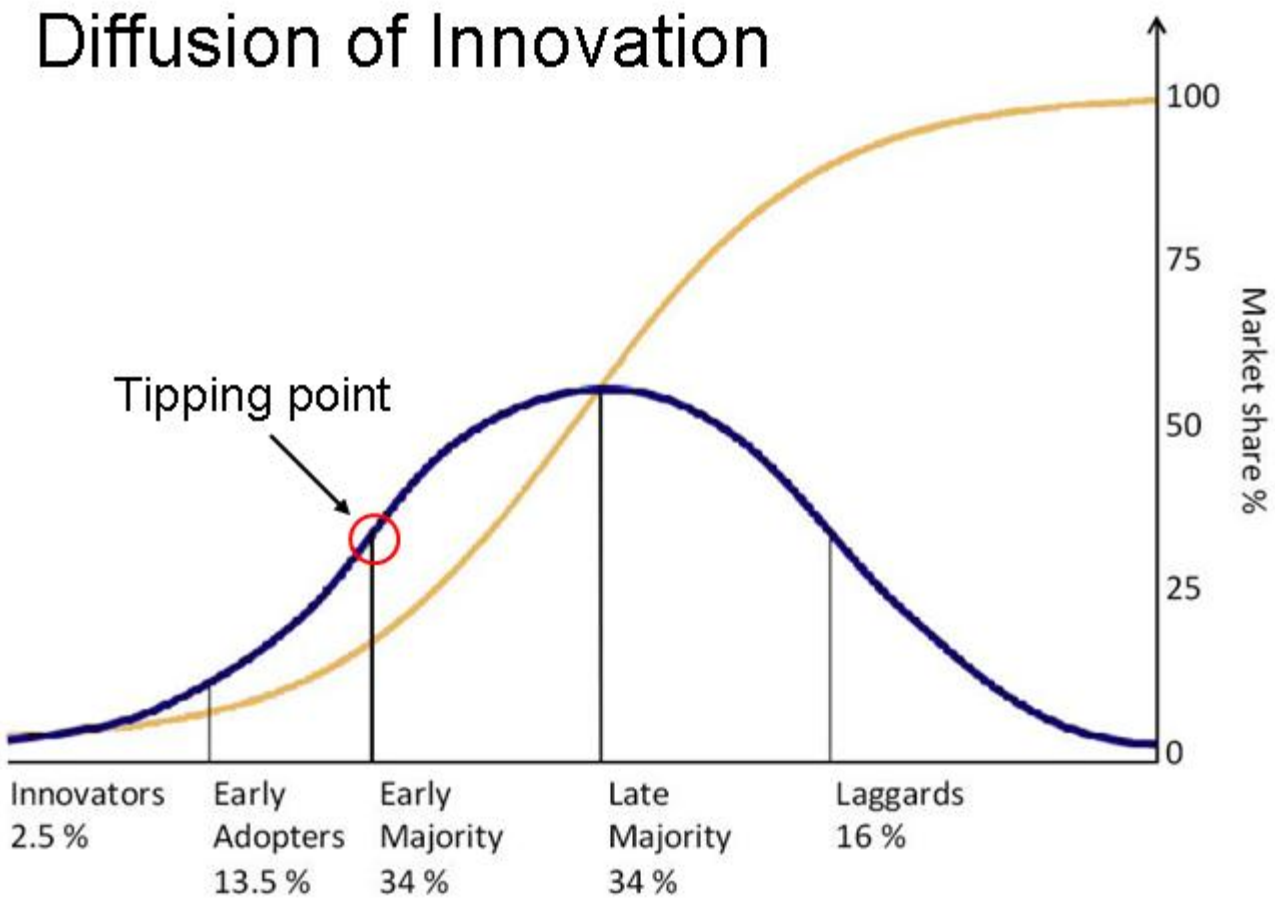
*The **strategic process** of **intervening in a market** to create **lasting change***

What is Market Transformation?

*The **strategic process** of **intervening in a market** to create **lasting change** in **market behavior** by **removing identified barriers** and/or **exploiting opportunities** to **accelerate the adoption** of **all** cost-effective energy efficiency as a matter of **standard practice**.*

Market Transformation and Diffusion of Innovation





Why *do market transformation?*

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NEEA Purpose

NEEA is an alliance of utilities that pool resources and share risks to transform the market for energy efficiency to the benefit of consumers in the Northwest.



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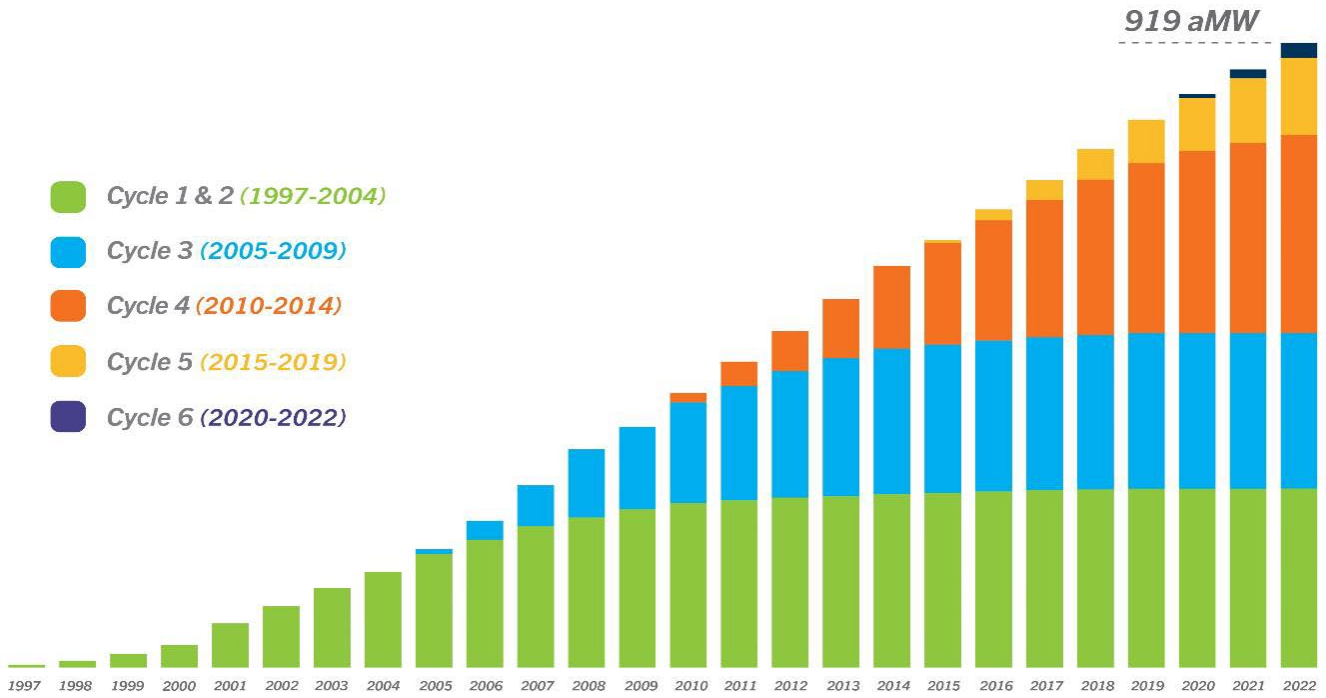
Market Transformation Delivers Permanent Change

Co-created Savings 1997 – 2022



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Where *does market transformation take place?*

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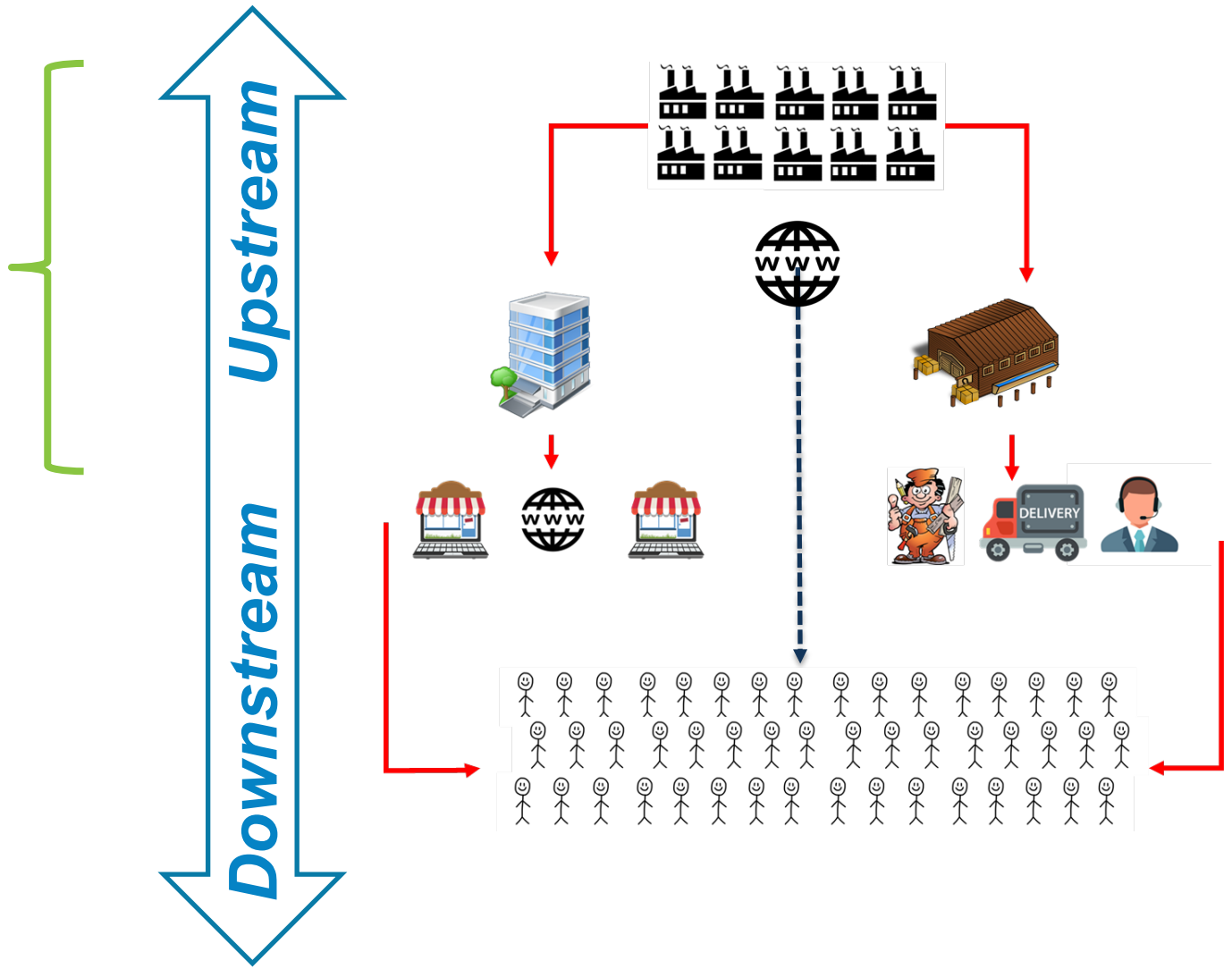
Mostly up here



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***How** is market transformation achieved in the Northwest?*

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Implementing Market Transformation Step by Step

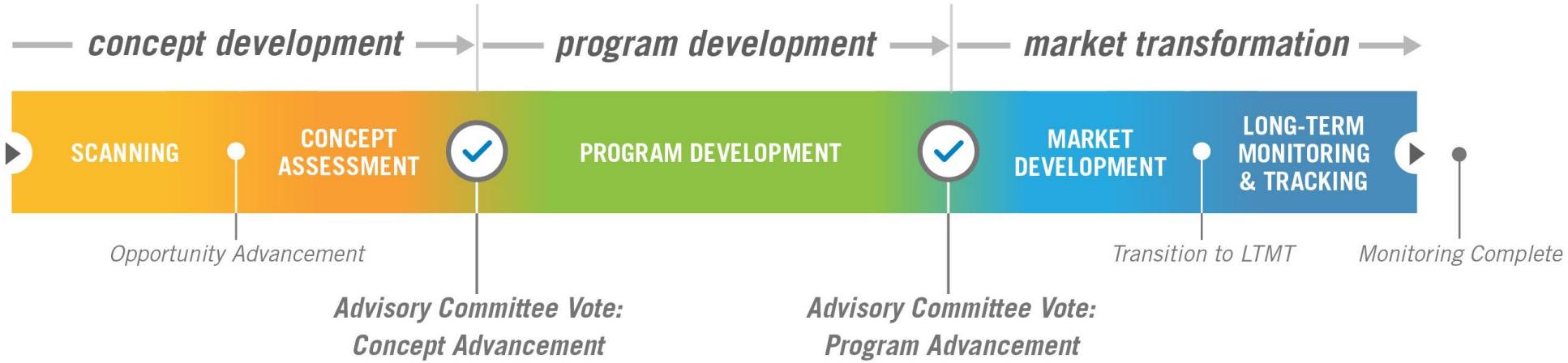
Step Zero:
Market Characterization & Baseline

Step One:
Barriers and Opportunities

Step Two:
Design Interventions / Establish Metrics

Step Three:
Implementation, Evaluation, and Adaptive Management

Initiative Lifecycle



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Step Zero:

Market Characterization & Baseline

Step One:

Barriers and Opportunities

Step Two:

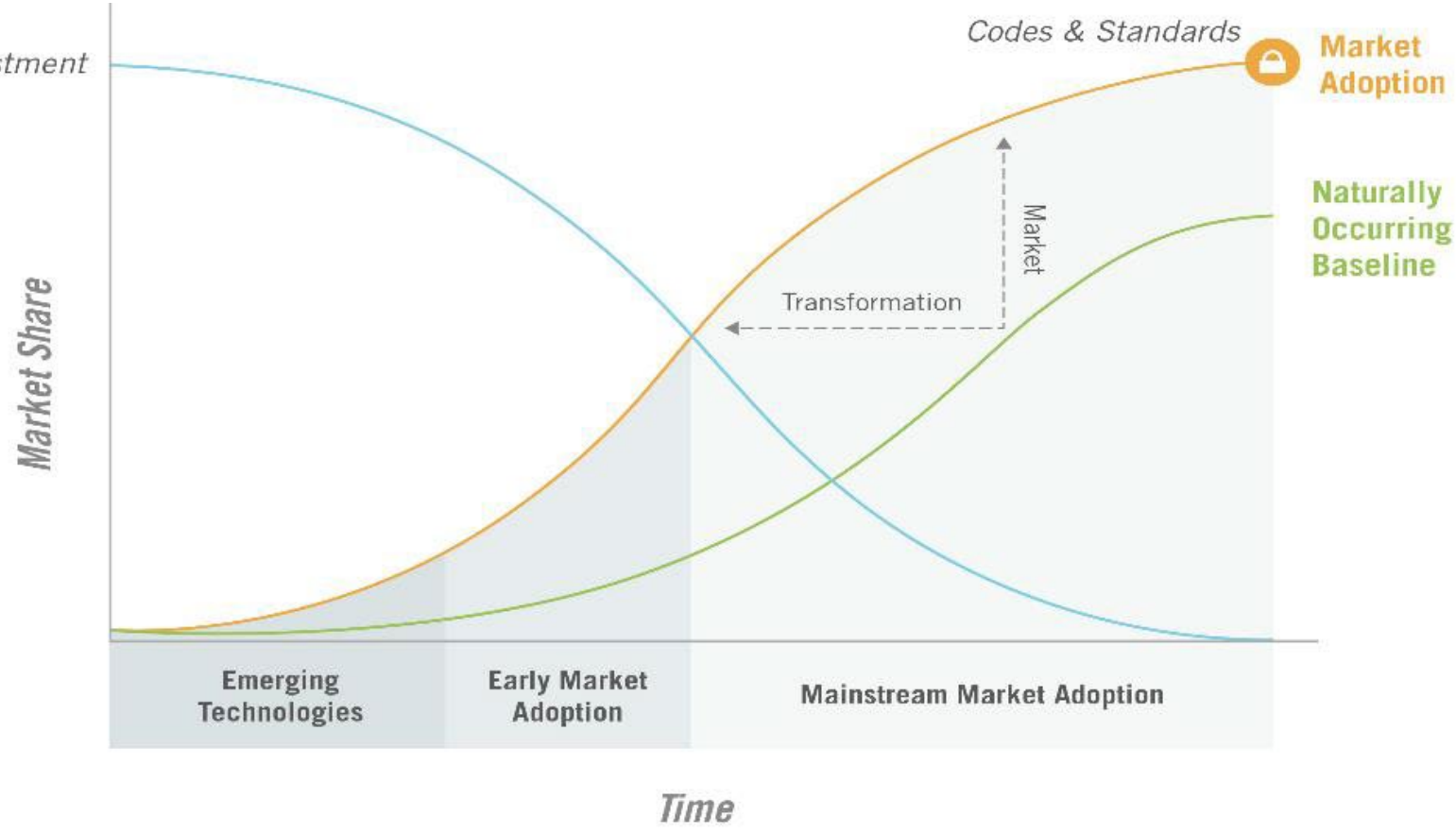
Design Interventions / Establish Metrics

Step Three:

Implementation, Evaluation, and Adaptive Management

Key Objectives

- Market Characterization
- Baseline Development:
  - Pre-intervention Market Conditions
  - Forecast



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Step Zero:

Market Characterization & Baseline

Step One:

Barriers and Opportunities

Step Two:

Design Interventions / Establish Metrics

Step Three:

Implementation, Evaluation, and Adaptive Management



Availability?

Supply chain?

Awareness?

Confusion?

Price?



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Step Zero:

Market Characterization & Baseline

Step One:

Barriers and Opportunities

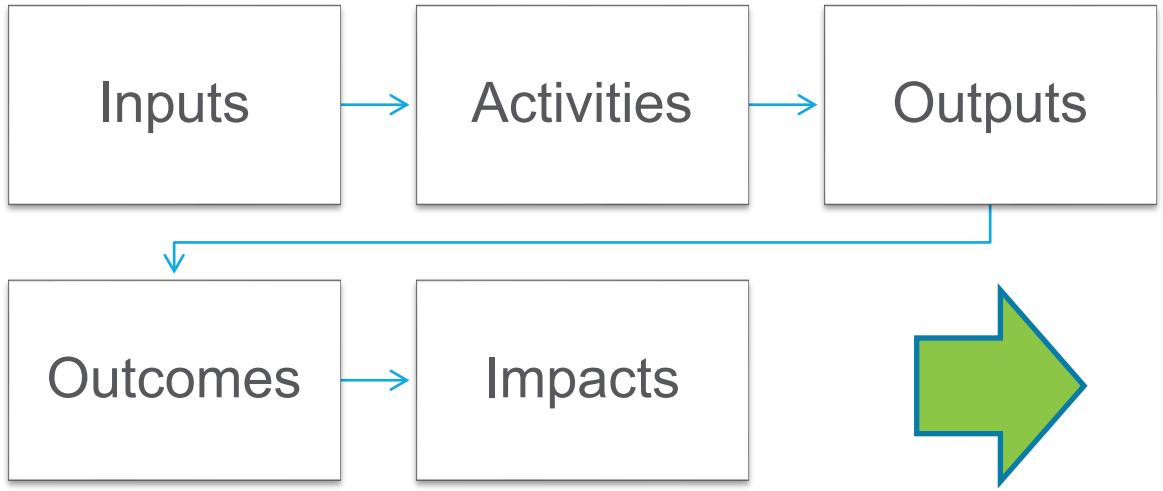
Step Two:

Design Interventions / Establish Metrics

Step Three:

Implementation, Evaluation, and Adaptive Management

Logic Model



Market Progress Indicators



Key Objectives

- Develop Market Progress Indicators

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Examples: Outcome → MPI

Logic Model Outcome	Installers choose the efficient approach	Manufacturers have commercialized products available in the market	ENERGY STAR adopts the specification
Market Progress Indicator (MPI)	• Trained installers report installing more of the efficient product than in previous years. • The general population of installers install the efficient product more than in previous years. • Distributor sales of the efficient product increases year-over-year	• The number of manufacturers that have commercially available products increases or does not decline year over year. • Categorizing manufacturers by market share into low, medium and high, the number of high-volume manufacturers that offer the product increases, or does not decline, year over year	• ENERGY STAR adopts the specification

Step Zero:

Market Characterization & Baseline

Step One:

Barriers and Opportunities

Step Two:

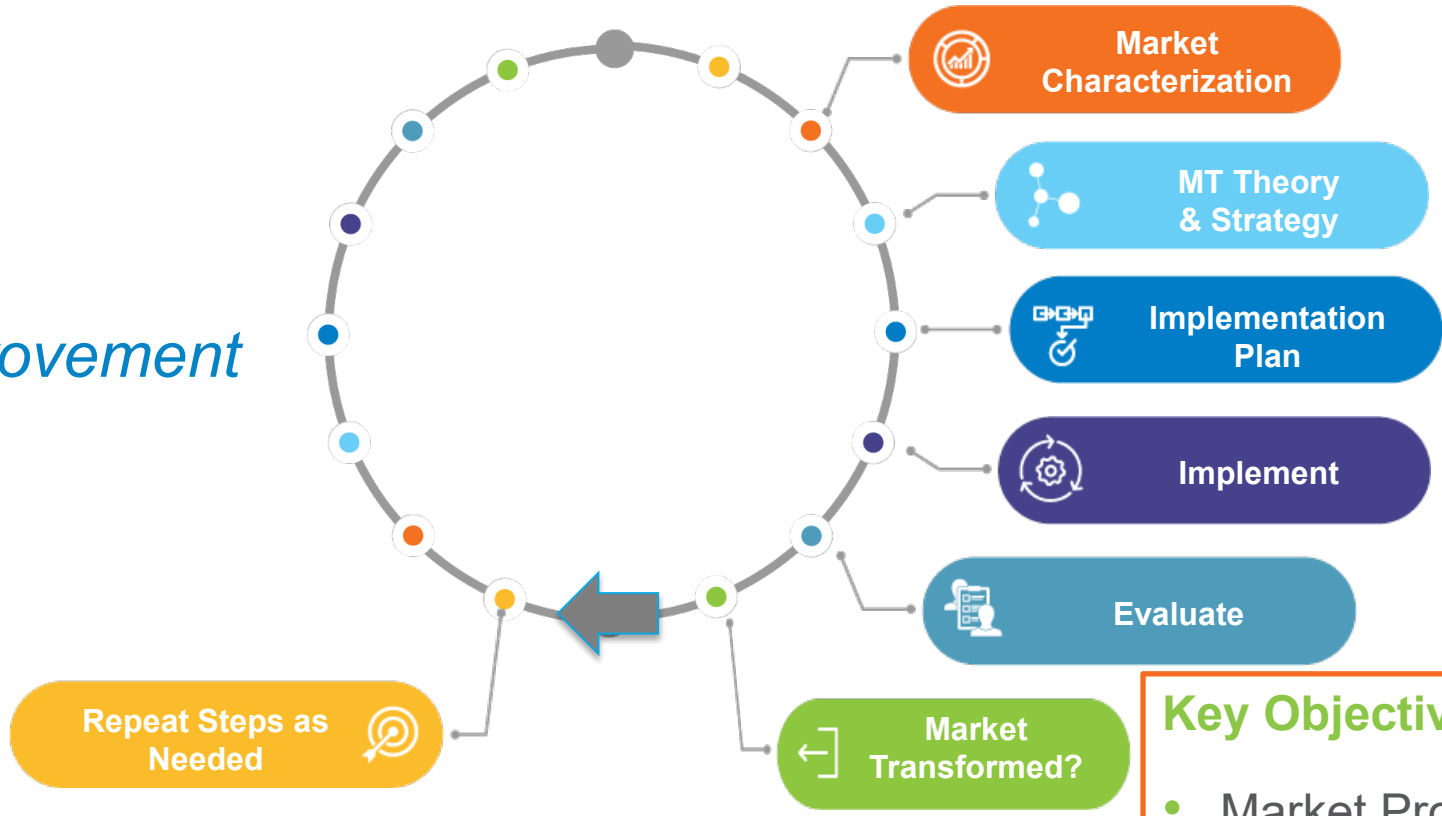
Design Interventions / Establish Metrics

Step Three:

Implementation, Evaluation, and Adaptive Management

Implementation:

A continuous improvement process



Key Objectives

- Market Progress Evaluations
- Long-term Monitoring and Tracking Reports

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Questions?

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Market Transformation Savings

Objectives

- Provide background context for committee members to understand the values they will see in funder savings reports as well as NEEA's corporate-level savings reporting.

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Evaluation Supports Savings Reporting

Savings are important, but not how progress is measured

Progress is measured through evaluation of logic model

Evaluation enables savings reporting at the market level

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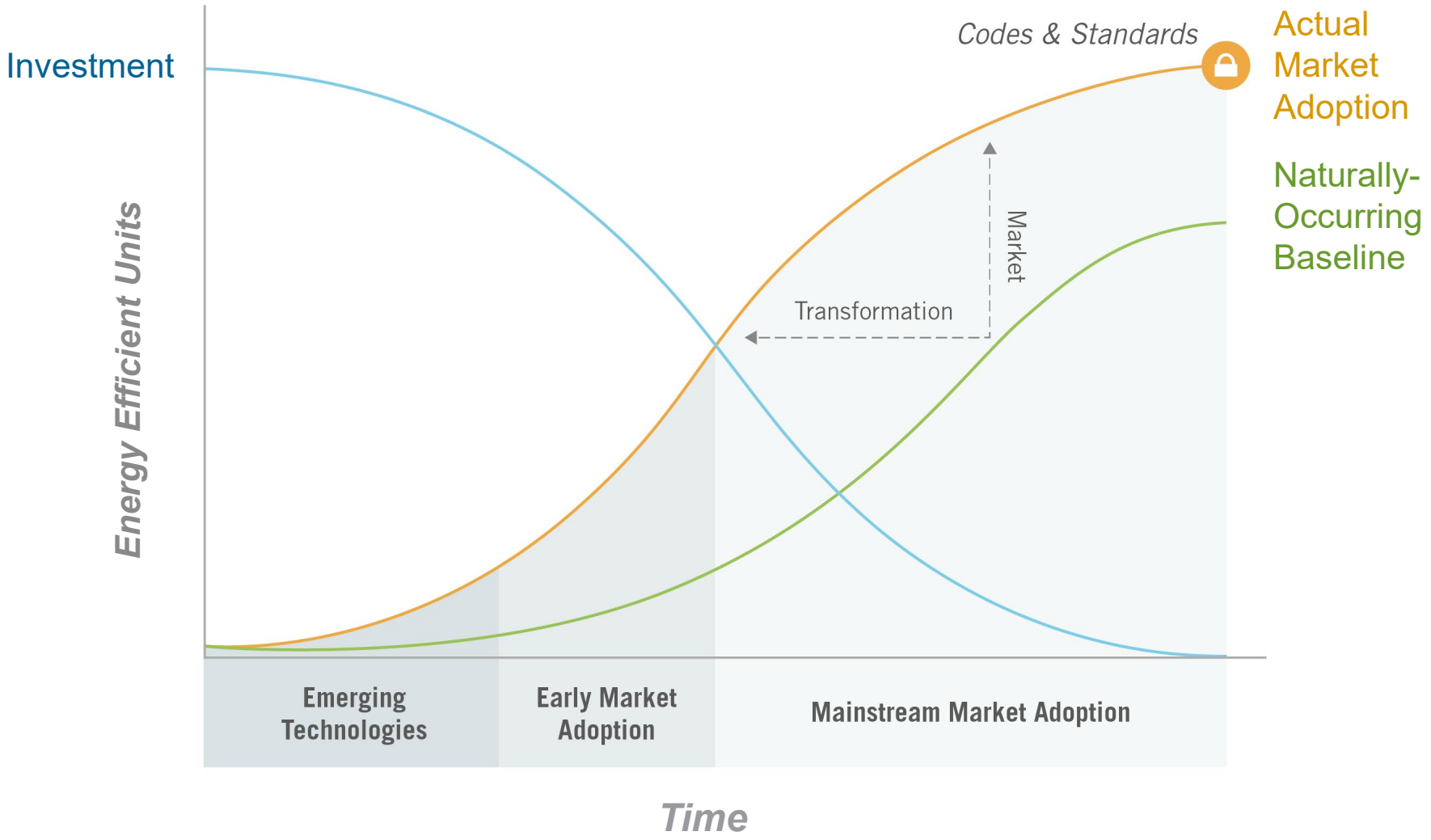
Market Transformation



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Market Transformation Baseline

Definition	• Market adoption and/or energy use forecast without market intervention
Purpose and Importance	• To track the progress of Market Transformation efforts
Development	• Rationale developed internally • Based on program logic • Third party reviewed/verified

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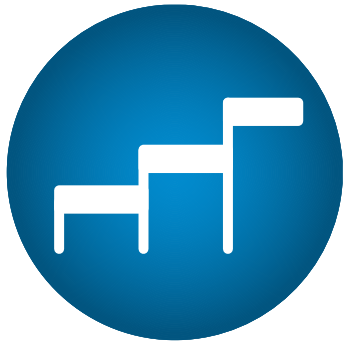
How Does NEEA Report Savings?

Two different baseline methodologies:



MARKET TRANSFORMATION APPROACH

Uses the Naturally Occurring Baseline



POWER PLAN APPROACH

Uses a Frozen Efficiency Baseline

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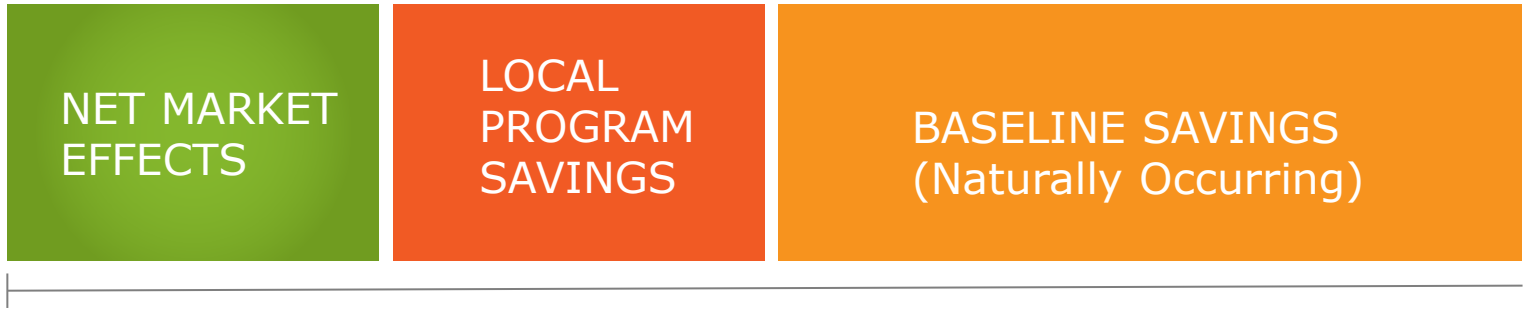
How Does NEEA Calculate Savings?

Fundamental approach:



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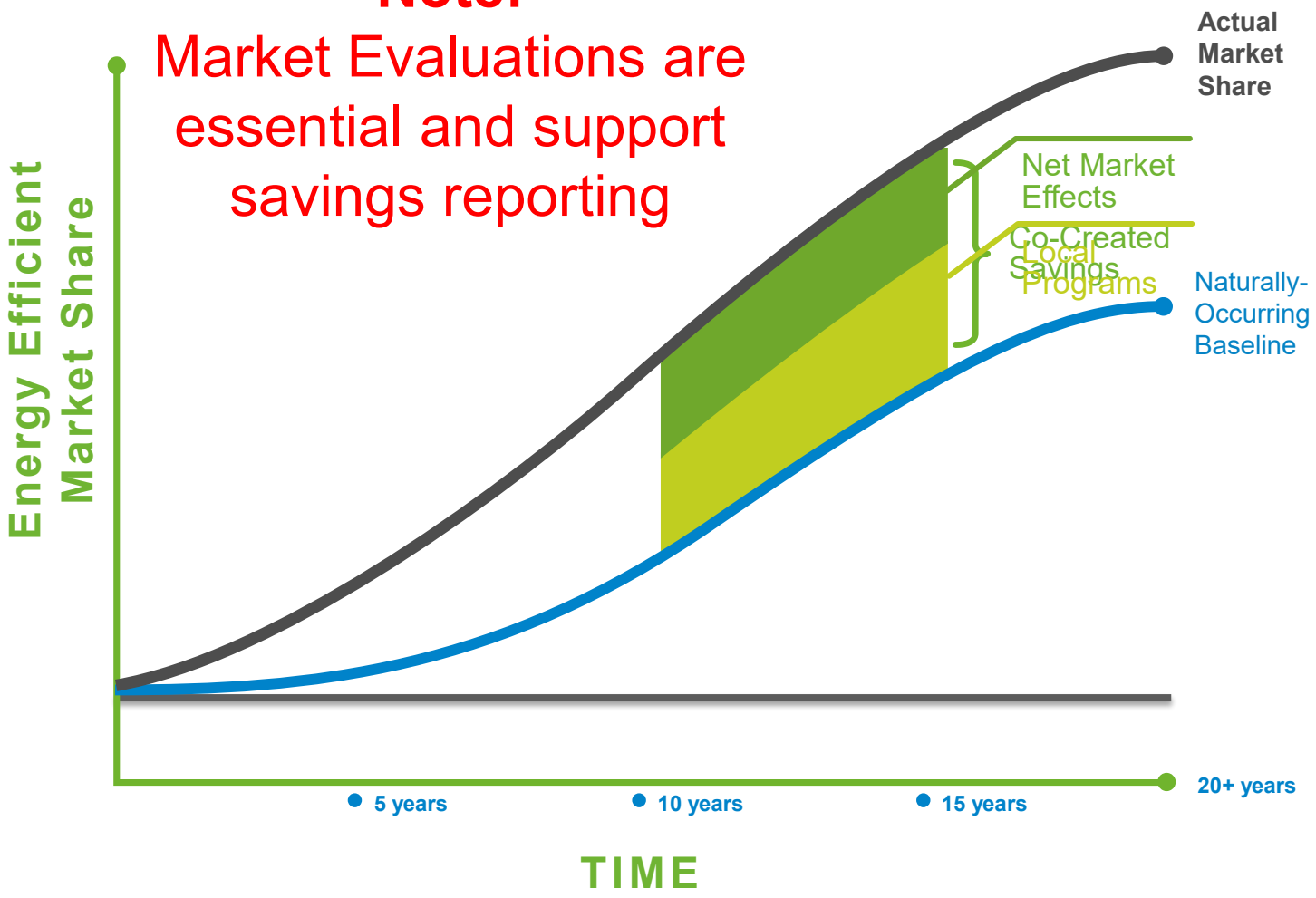
Market Transformation Approach

Note:
Market Evaluations are essential and support savings reporting



Purpose:
Report savings associated with market transformation

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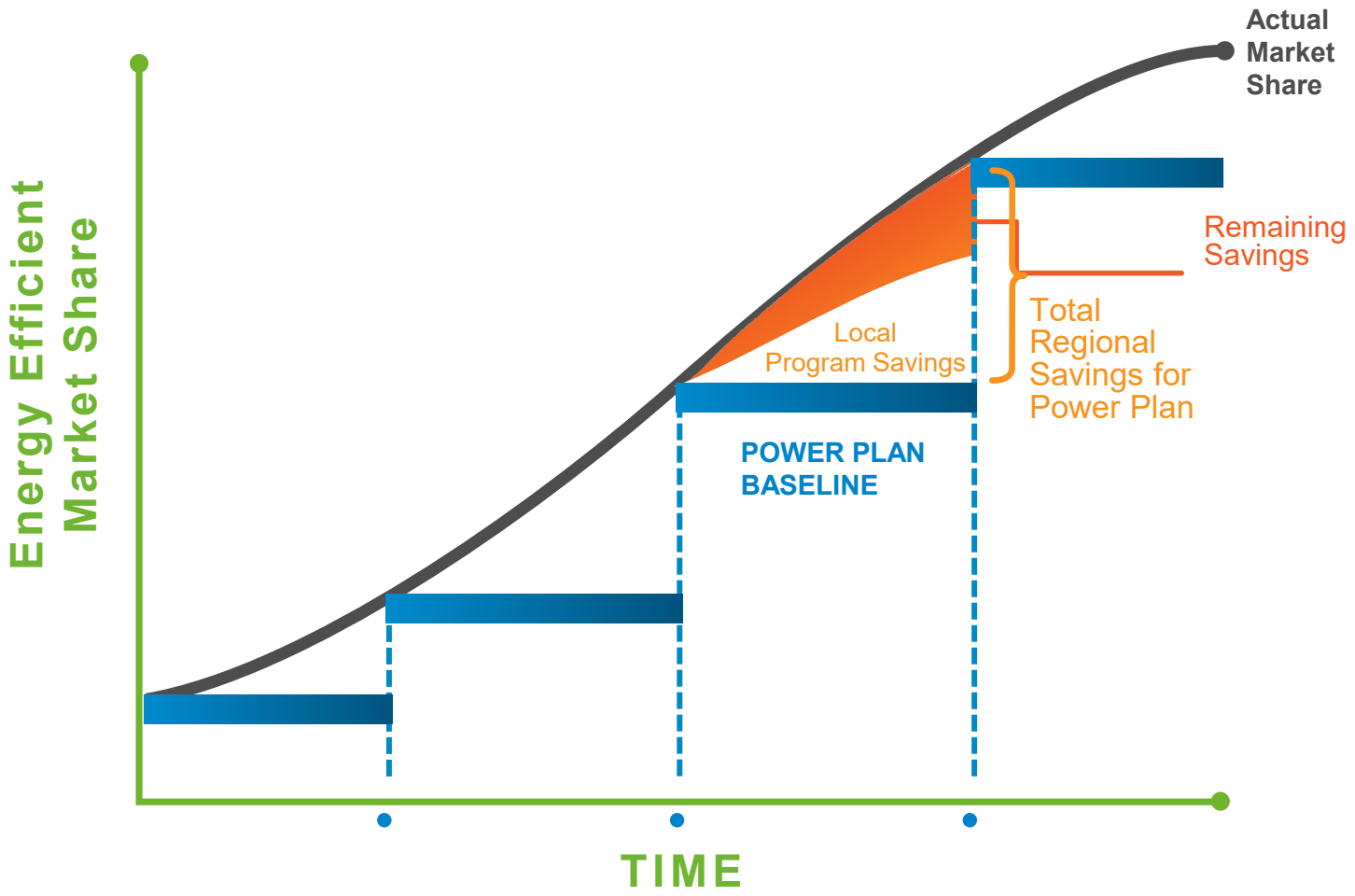
Power Plan Baseline



Purpose:
Report savings against Power Plan baseline

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Key Takeaways

- Evaluation process enables Market Transformation savings reporting
- NEEA takes a regional perspective
- Market baseline tells the story of transformation
- Market Transformation and Power Plan methods not comparable
- We work with each funder to suit their reporting needs where possible

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How did we do?

Objectives

- Provide background context for committee members to understand the values they will see in funder savings reports as well as NEEA's corporate-level savings reporting.

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Market Transformation Costs and Benefits

Objectives

- ❑ Committee feels informed on NEEA's approach and has opportunity to ask questions.

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Metrics NEEA Calculates

Benefit/Cost Ratio	• *"Do benefits outweigh the costs?"*
Levelized cost	• *"How does the cost compare to alternatives?"*

Cost Effectiveness at Different Levels

Measure level	Single measure view Informs program strategy
Program level	Aggregate across measures based on program forecasts Advancement decisions within portfolio
Portfolio level	Aggregate across programs Market Transformation investment from societal perspective

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Core Principles

- Alignment with NW Power and Conservation Council
- Regional-level analysis
- Market transformation approach
- Full supply chain scope
- Symmetry of costs and benefits
- Transparency
- Hard-to-quantify impacts

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The Tool

Northwest Power and Conservation Council

Regional Technical Forum

ProCost

- Council's tool
  - Regional perspective
  - Life-cycle view of costs and benefits
- ProCost computes
  - Regional cost-effectiveness
  - Levelized cost of savings ($/kWh)
  - Many additional cost, savings, and carbon parameters

ProCost | Regional Technical Forum (nwcouncil.org)

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Perspective

- Total Resource Cost
- Regional
- 20-year horizon



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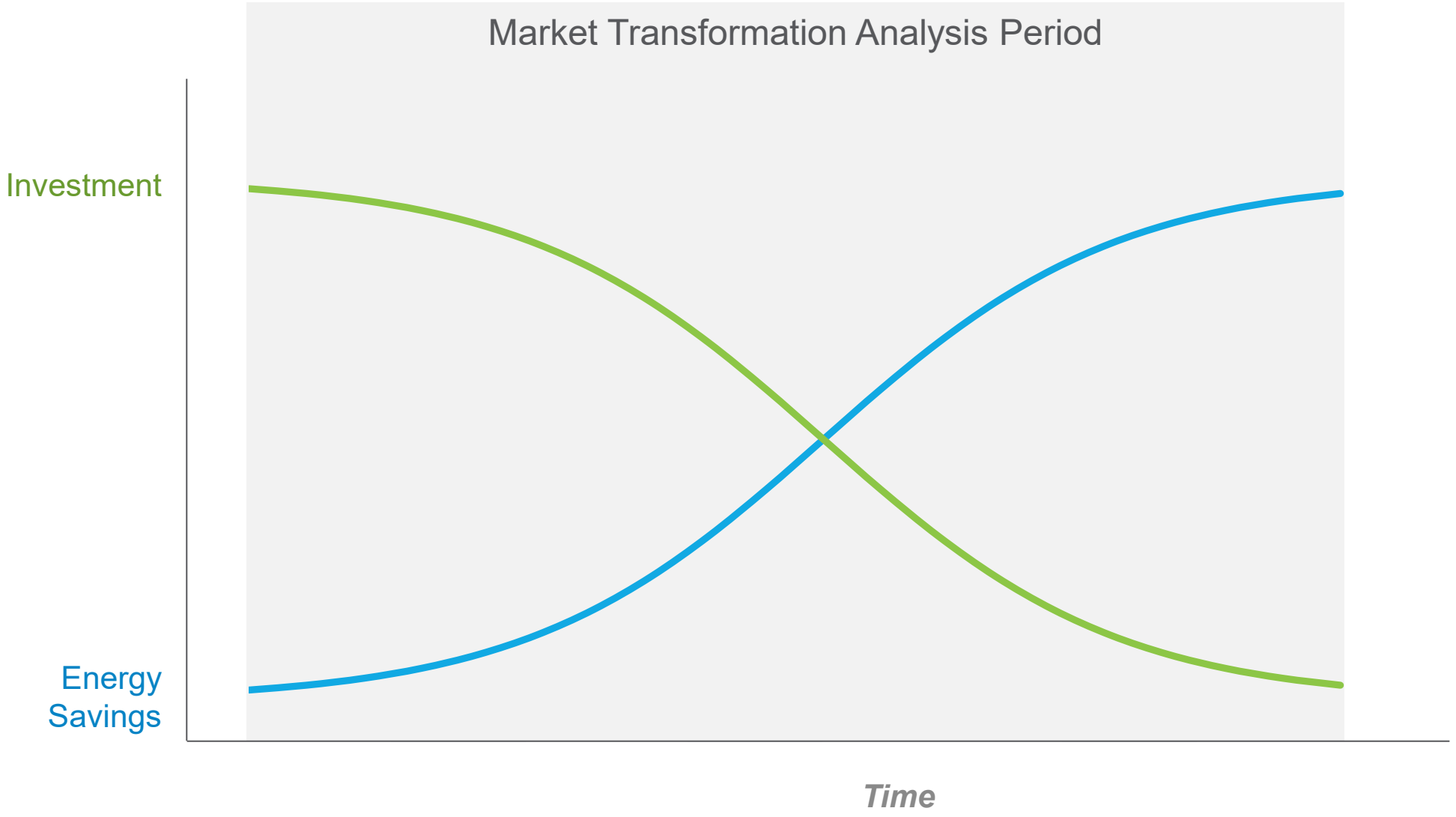
Purpose of 20 year time-frame



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Inputs - Benefits

Regional Benefit		Source	
		Electricity	Natural Gas
Energy Benefit	Commodity price of resource	Power Plan	Power Plan
	Risk mitigation regarding supply adequacy		Weighted average of utility values
	Deferred transmission, distribution, and generation capacity costs		Weighted average of utility values
Avoided Greenhouse Gas emissions			Power Plan
Production, storage, transmission and distribution loss			Avoided cost filings, IRPs and discussions with utility staff
Conservation of other fuels		Measure dependent	
Quantified non-energy impacts			
Regional Act Credit		NW Power Act	



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Inputs - Costs

Regional Cost	Source	
	Electricity	Natural Gas
First Cost	Measure dependent	
Operations & maintenance costs		
Replacement Cost		
NEEA direct costs	NEEA finance system	
NEEA administrative costs	20% of direct program spending	
Local Program administrative costs	20% of estimated total rebate dollars	
Other costs associated with market change	Measure dependent	



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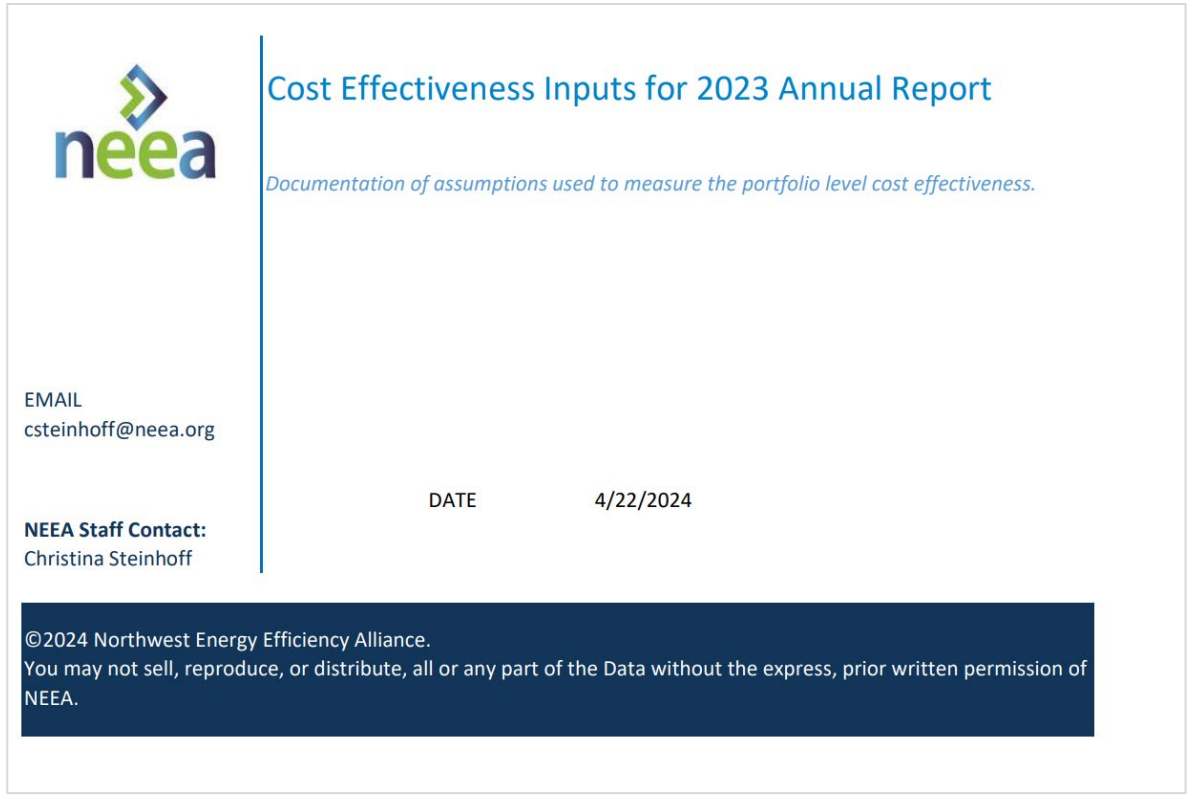
Measure Level Calculation Inputs Available on neea.org

- https://neea.org/portal/savings-reports/2023-annual-report-cost-effectiveness-inputs-electric-and-natural-gas



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Cost Effectiveness Inputs for 2023 Annual Report

Documentation of assumptions used to measure the portfolio level cost effectiveness.

EMAIL
csteinhoff@neea.org

NEEA Staff Contact:
Christina Steinhoff

DATE 4/22/2024

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Clothes Washers (Retail Products Portfolio)

NEEA's Retail Product Portfolio (RPP) Program is working with extra-regional program administrators, national retailers and the EPA ENERGY STAR Program to utilize mid-stream incentives to influence corporate retail buyer's purchase decisions and give RPP access to full category sales data. The incentives encourage retailers to purchase, stock and promote higher-efficiency products. RPP analyzes the full category sales data to identify the most promising energy efficiency opportunities, and leverages the insights gained from the data analysis to influence increased stringency of ENERGY STAR specifications and federal standards. These actions result in permanent change to the manufacturing processes across entire product categories, resulting in energy savings for years to come.

Savings Rate	The savings rates are calculated using NEEA program data. NEEA matches sales data from its program to ENERGY STAR, Department of Energy (DOE) and California Energy Commission databases to develop energy use estimates. NEEA calculates a savings rate for each DOE configuration and aggregates the results. NEEA follows the RTF approach to estimate energy consumption with a few exceptions: • NEEA considers top and front-loading machines two different markets, whereas the RTF combines the two in its baseline. NEEA also uses a single regression approach to estimate remaining moisture content. • NEEA uses the "implied" DOE gallons per cycle to estimate hot water energy. Methodology documentation is available upon request. • NEEA uses a more recent dataset and continues to update it with new information. These exceptions allow NEEA to estimate energy savings within the top-loading configuration, which is the main focus of the program.
	Unit Energy Consumption Estimates. Energy Solutions matches the sales data from the ICF Portal to an efficiency level using current and prior California Energy Commissioning, DOE and ENERGY STAR databases. Energy Solutions also backcasts online sales for years prior to 2019. *Energy Solutions. 2023. Retail Products Portfolio Sales Data (Cleaned). Analysis*
Incremental Cost	Hedonic Pricing Model. *Energy Solutions. 2019. Incremental Measure Costs of ENERGY STAR Clothes Washers. Analysis*
Measure Life	*Regional Technical Forum. 2021. UES Measures. ResClothesWashers_v7_2.xlsm. Analysis*
Non-Energy Benefits	The RTF estimates the value of water savings by computing the water consumption per year and multiplying by the residential water rate, net of the value of the embedded water energy. *Regional Technical Forum. 2021. UES Measures. ResClothesWashers_v7_2.xlsm. Analysis*

ProCost Inputs

Measure Application	Savings Component	Electric Inputs			Gas Inputs			Measure Life		Costs				Non Electric/ Gas Benefits		Sector
		Electric Savings, Period 1 (kwh/yr)	Electric Savings, Period 2 (kwh/yr)	Electric Savings Shape	Gas Savings, Period 1 (therms/yr)	Gas Savings, Period 2 (therms/yr)	Gas Savings Shape	Measure Life (yrs)	Length of Period 1 (yrs)	Initial Measure Cost ($)	Base Case Cost at Start of Period 2 ($)	Annual O&M Cost Period 1 ($/yr)	Annual O&M Cost Period 2 ($/yr)	Non-Electric, Non-Gas Benefit, Period 1 ($/yr)	Non-Electric, Non-Gas Benefit, Period 2 ($/yr)	
Clothes Washers, Standard-size Top-loading, Non-ENERGY STAR	Washing	-32.338		R-All-WH-Cwash-All-All-R	-0.403738296		R-All-WH-Cwash-All-All-R	14.2		0	0	0	0	0	0	Residential
Clothes Washers, Standard-size Top-loading, Non-ENERGY STAR	Wastewater	-3.300309163		C-WWW-Proc-All-All-All-U				14.2		88.61368831	0	0	0	0	0	Residential
Clothes Washers, Standard-size Top-loading, ENERGY STAR v7 (IMEF 2.09)	Washing	55.062		R-All-WH-Cwash-All-All-R	0.555938928		R-All-WH-Cwash-All-All-R	14.2		160.1452198	0	0	0	0	0	Residential
Clothes Washers, Standard-size Top-loading, ENERGY STAR v7 (IMEF 2.09)	Wastewater	5.619445331		C-WWW-Proc-All-All-All-U				14.2		0	0	0	0	0	0	Residential
Clothes Washers, Standard-size Top-Loading, Electric, ENERGY STAR v8 Most Efficient (CEE Tier 1. IMEF 2.76)	Washing	80.4		R-All-WH-Cwash-All-All-R	0.76321313		R-All-WH-Cwash-All-All-R	14.2		62.2786966	0	0	0	0	0	Residential
Clothes Washers, Standard-size Top-Loading, Electric, ENERGY STAR v8 Most Efficient (CEE Tier 1, IMEF 2.76)	Wastewater	1.904172217		C-WWW-Proc-All-All-All-U				14.2		51.06853121	0	0	0	0	0	Residential

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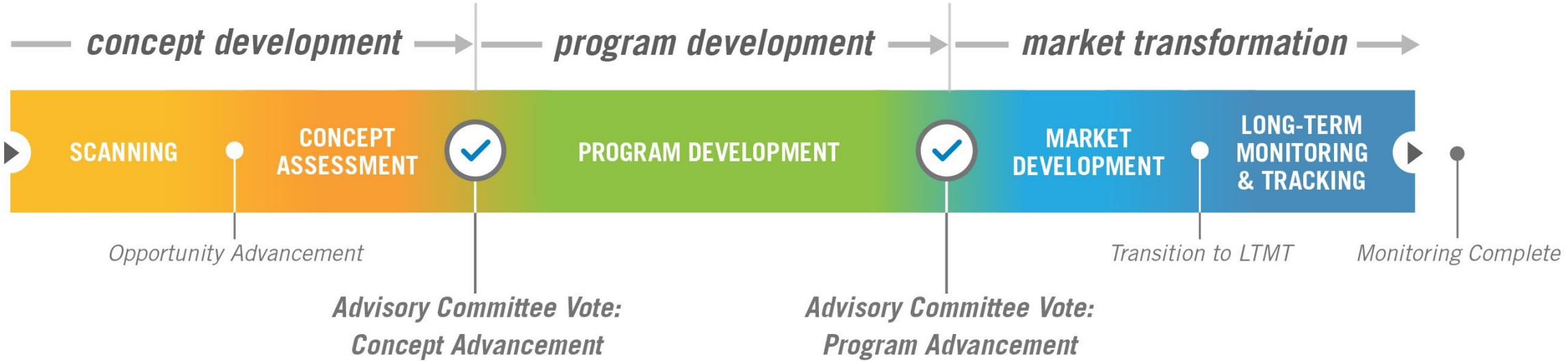
Aggregating Results to the Portfolio



Benefits

All NEEA costs included (admin, stock assessments, research, etc.)

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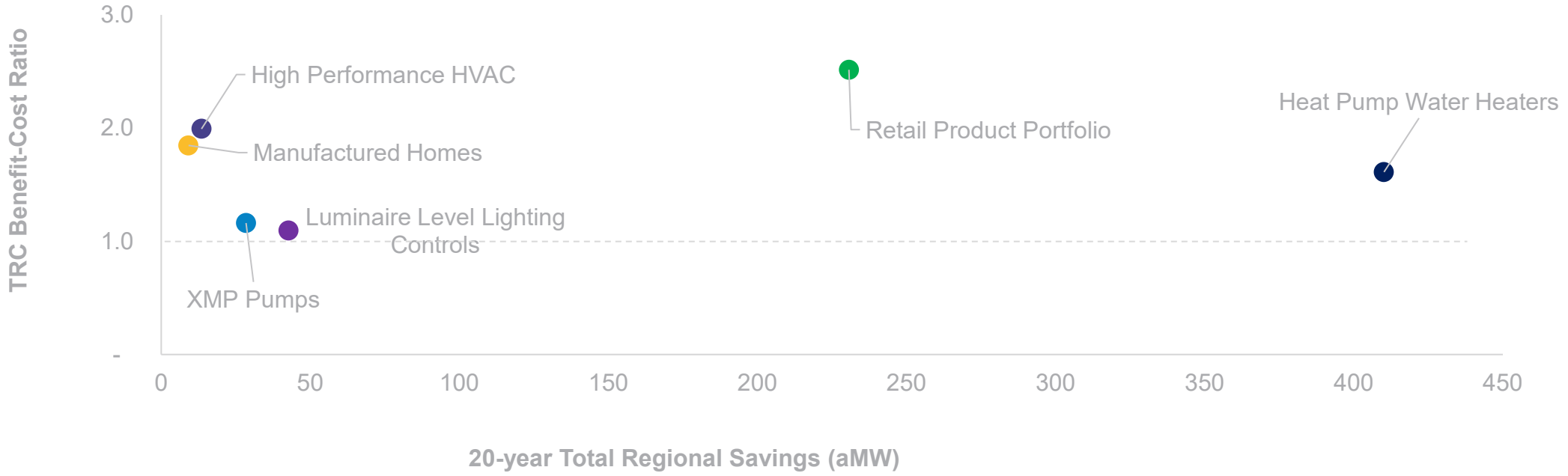
Electric Portfolio Benefit-Cost Ratio is 1.99



- *20-year stream of benefits and costs to the region from programs in Market Development*
- *Includes all of NEEA Cycle 6 Budget.*

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Gas portfolio

- NEEA's gas portfolio is still in development
- The ERTU program has a Benefit-Cost Ratio of 1.2

Total Program BCR: 1.2

	Component	BCR
Tier	Tier 1	1.1
	Tier 2 (CGF / ERV)	1.2
Modeled Building Type	Grocery	1.2
	Retail	1.0
	Strip Mall	1.5
	1 Floor Medium Office	1.3
Heating Zone	Heating Zone 1	1.1
	Heating Zone 2	1.5
	Heating Zone 3	1.9

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How Did We Do?

Objectives

- ❑ Committee feels informed on NEEA's approach and has opportunity to ask questions.

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LUNCH

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2023 Market Progress and Portfolio Overview

Objectives

- ❑ Inform and address committee questions regarding NEEA's 2023 annual reporting on savings and other key metrics
- ❑ Share emergent themes, management focus areas and outlook for the electric and natural gas market transformation portfolios

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Executive Summary

	Cycle 6 forecast vs BP target
Electric	Above target
Gas	Below target

- Electric portfolio in strong position despite reduction
  - First year of saving for televisions
  - New construction slowdown seen in recent years
- Natural Gas portfolio is realizing foundational work
  - Advanced Commercial Gas Water Heaters program in development
  - Efficient Rooftop Units program actively executing program strategies
  - Exploring additional concepts for advancement

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Electric Savings Portfolio Update

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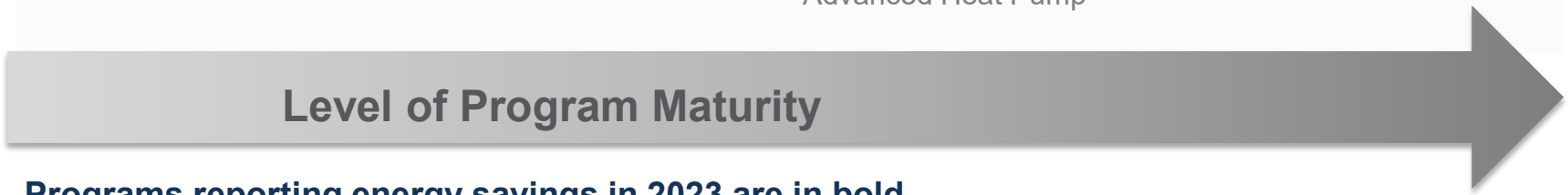
Electric Market Transformation Portfolio

Active Investments

Scanning/ Concept Development	Program Development	Market Development	Codes & Standards
	Extended Motor Products / Fans	**Heat Pump Water Heater**	**New Construction: Residential & Commercial Codes**
	High Performance Windows	**Luminaire Level Lighting Control**	**Products: Residential & Non-Residential Standards**
		Retail Product Portfolio	
		Manufactured Home	
		Extended Motor Products / Pumps	
		High Performance HVAC	
		Advanced Heat Pump	



Programs reporting energy savings in 2023 are in bold

Active Investments:

Programs NEEA is currently investing in during the current cycle, 2020-2024

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Electric Market Transformation Portfolio

Previous Investments:

Long-term Monitoring and Tracking	Codes and Standards
Reduced Wattage Lamp Replacement Ductless Heat Pumps Efficient Homes Strategic Energy Management	New Construction: Residential & Commercial Codes Products: Residential & Non-Residential Standards

Previous Investments

No longer directly intervening in the market

First year savings above baseline still occurring in market.

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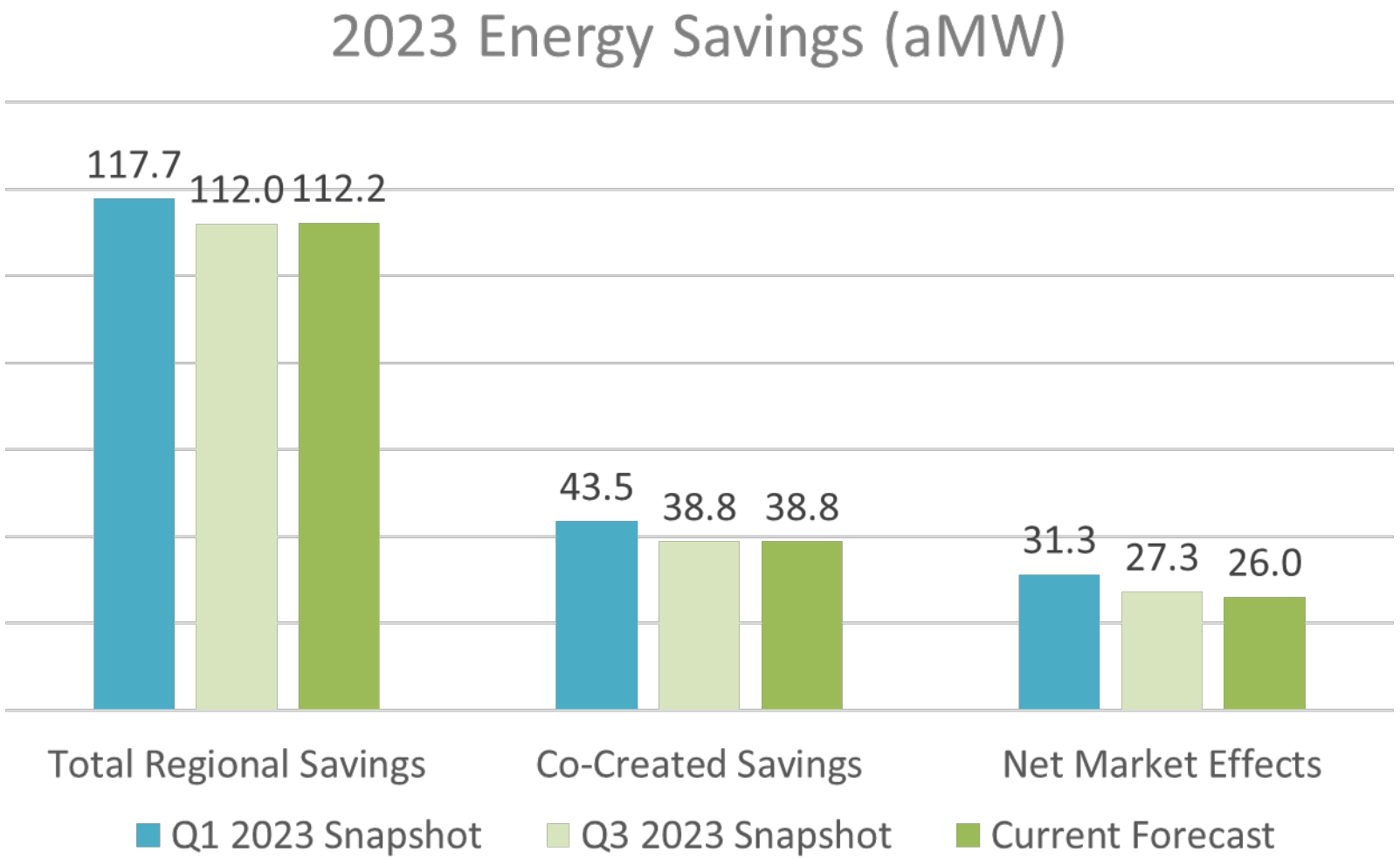
Electric Portfolio generated 38.8 aMW of Co-Created Savings in 2023



Strategic Energy Management and Ductless Heat Pumps increased for previous investments, offsetting decrease from Televisions

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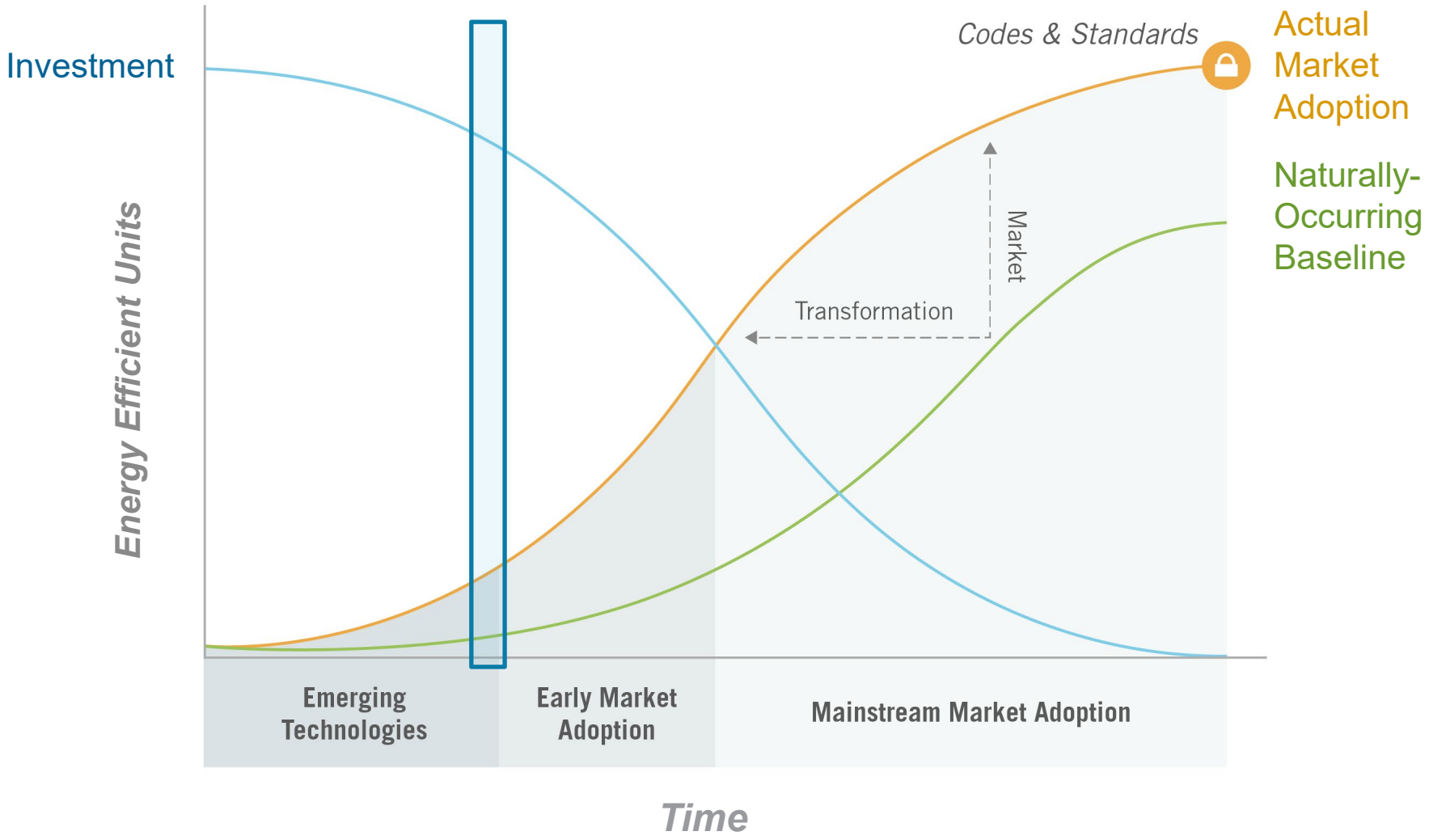
Annual Savings is a slice of results of a 20-year market transformation lifecycle



Creating sustainable, long-term conditions through transformative mechanisms:

- Product Specifications
- Improved Test Procedures
- Code
- Standards
- Supply chain commitments
- Market infrastructure and capabilities

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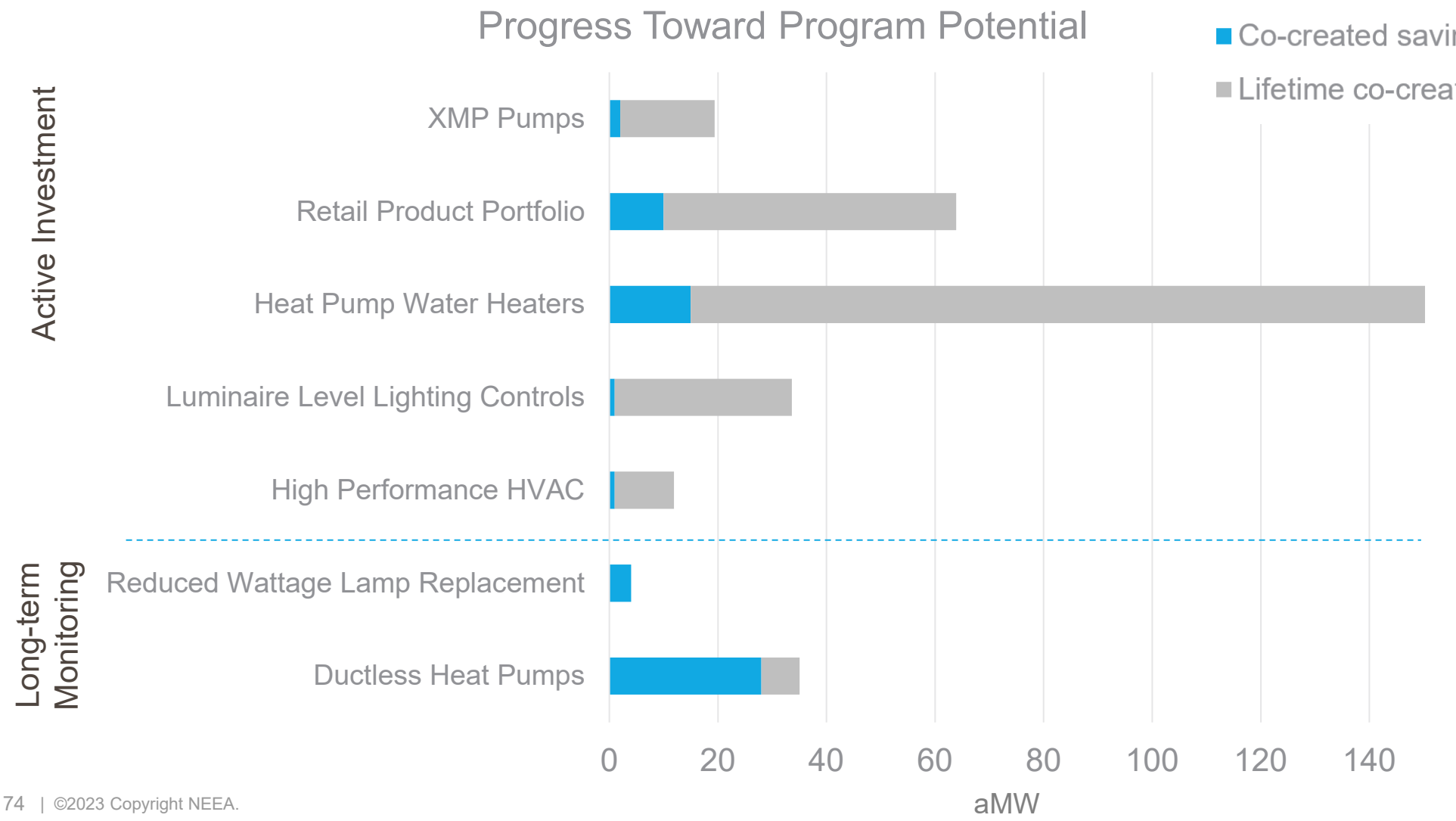
Programs are just beginning to tap into the potential



- >400 aMW of total lifetime co-created savings forecasted
- 62 aMW savings achieved to date (<15%)

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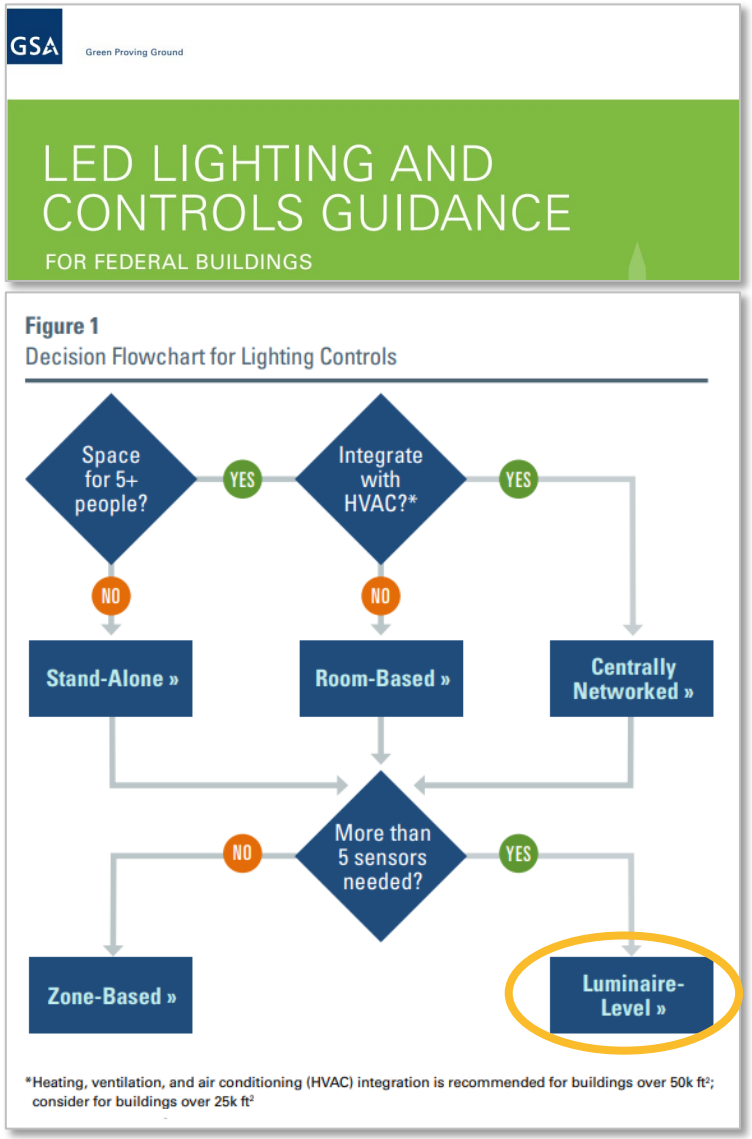
Luminaire Level Lighting Controls (LLLC)

MT Theory: Incorporate specification development, market awareness building, training, utility program support, supply chain interventions, and integration with energy codes to transform the market so that LLLC systems become standard practice for commercial buildings.

Highlights

- LLLC called out in General Services Administration's LED Lighting and Controls Guidance
- LLLC included in Illuminating Engineering Society's updated lighting practice standards (to be published 2024)
  - **Recommended Practice:** Office Spaces and Libraries
  - **Lighting Practice:** Lighting Controls Systems



https://www.gsa.gov/system/files/LED%20and%20Controls%20Guidance%20for%20GSA-PDF-01-31-24.pdf

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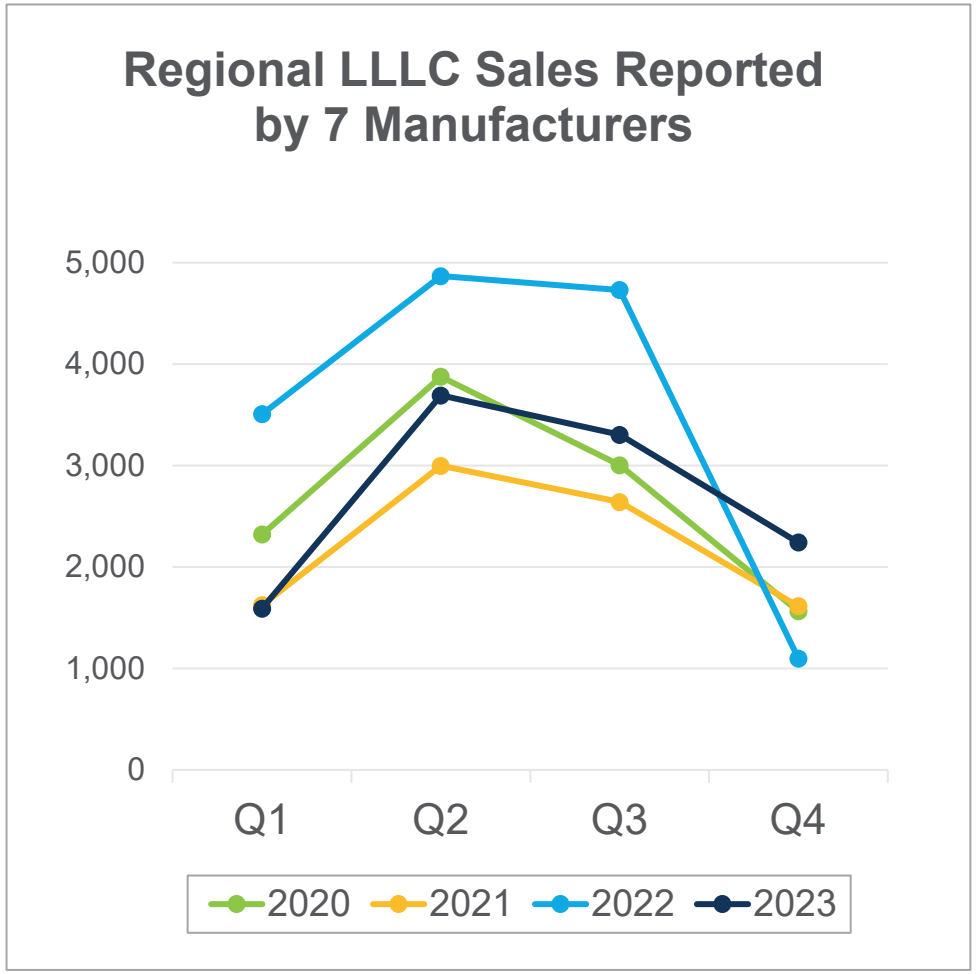
Luminaire Level Lighting Controls (LLLC)



- Possible reasons for 2023 sales lower than anticipated:
  - Reduced demand for office space
  - High inflation & high interest rates
  - Fewer large projects compared to prior years
- Outlook
  - Vacancy rate in central business districts continues to climb
  - May be past “peak remote”
  - Distributors anticipate LLLC sales to grow, due utility rebates make them affordable

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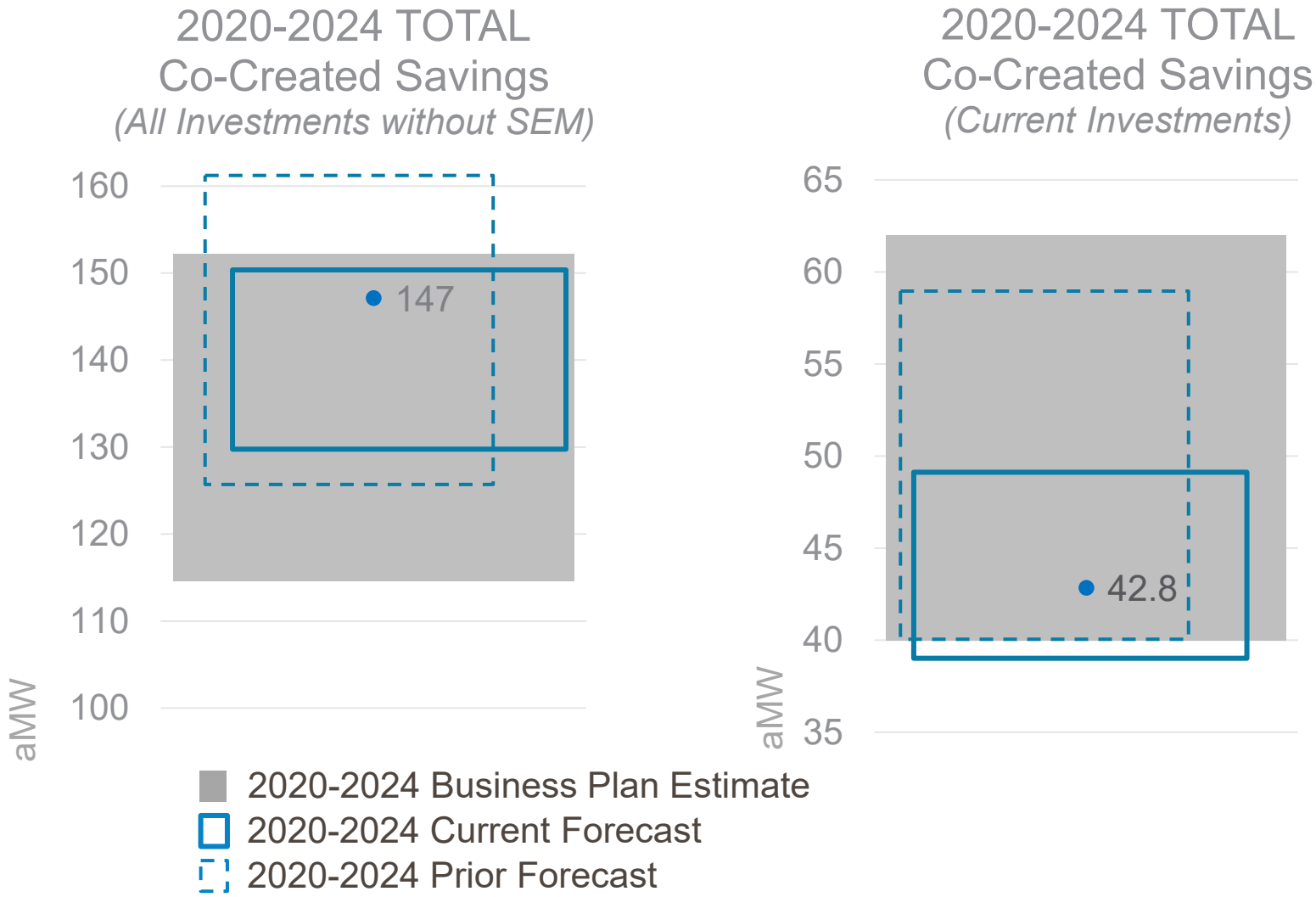
Electric Portfolio Co-Created Energy Savings forecast within Business Plan expectations



Current estimate lower due to conservative TVs reforecast and slowing New Construction rates

HVAC Supplier data expansion led to additional trackable Ductless Heat Pump savings (+3.6 aMW for cycle)

HPWHs ended year with slight unit growth over 2022

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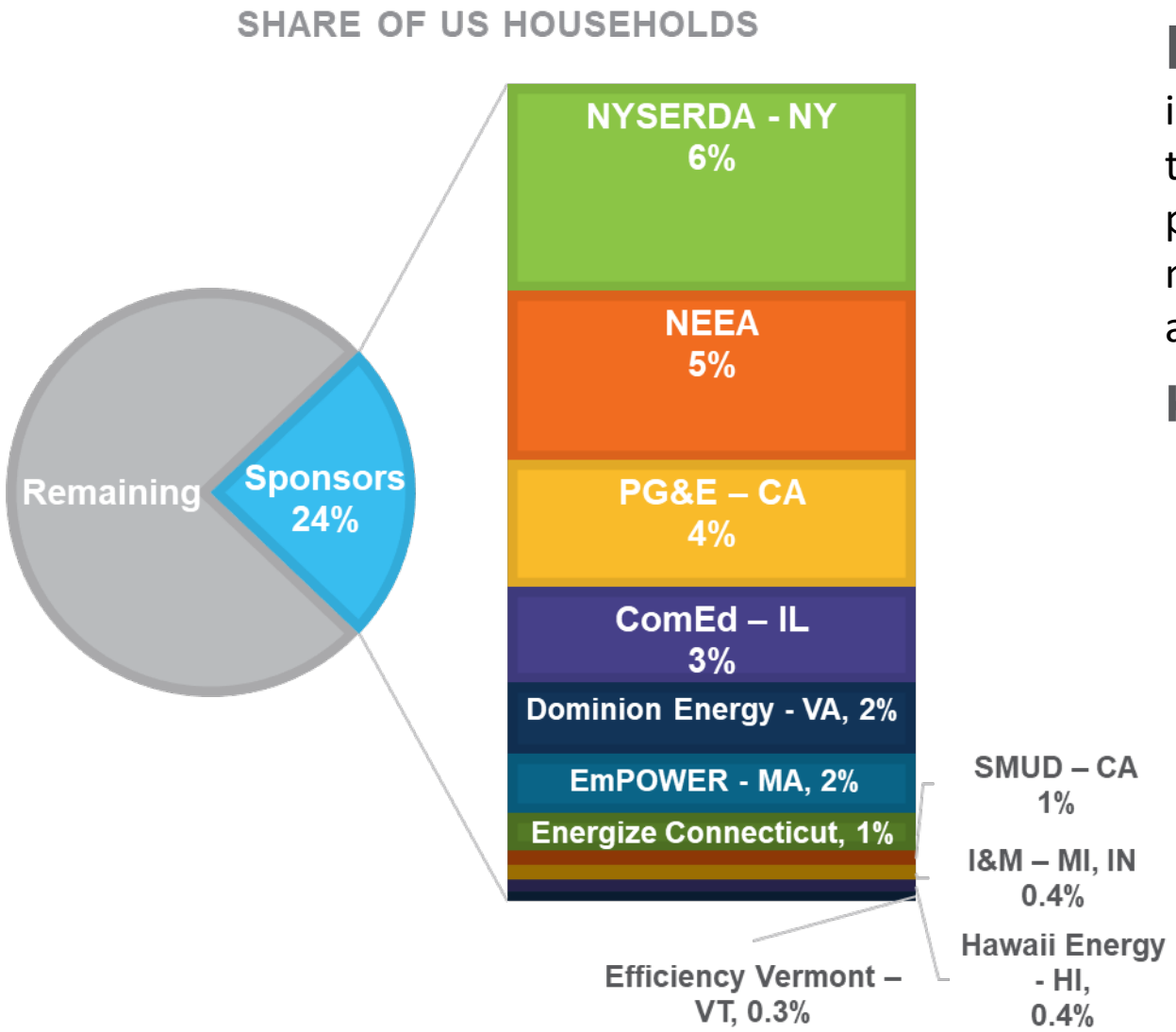
Retail Products Portfolio



MT Theory: RPP utilizes midstream incentives to influence retail buyer's purchase decisions and gain access to full-category sales data. NEEA identifies the most promising energy efficiency opportunities to encourage market adoption, influence ENERGY STAR specifications and advance federal standards.

Key Takeaways

- Three new utility sponsors joined the ENERGY STAR RPP program, bringing the share of US households up to 24.2%.
- Combination washer/dryer units that utilize heat pump drying technology are on the market and gaining popularity.
- Multi-product agreement reached for federal standards.
- Adoption of ENERGY STAR of top-loading clothes washers is stagnant.
- Television Manufacturers engaged in a Voluntary Agreement on minimum efficiency levels.

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Retail Products Portfolio Strategy Overview

Product	Midstream Incentives	Emerging Tech	Measurement & Compliance	Specification Advancement	Standards Updates
Refrigerators	ENERGY STAR Most Efficient	New insulation tech	Alternative test for advanced adaptive compressors	Prepping for 2024 development process	Multi-product agreement in 2023 for future standard levels
Clothes Washers	ENERGY STAR, Top-loading	All-in-one laundry with heat pump drying	All-in-one test procedure development		
Clothes Dryers	ENERGY STAR Most Efficient			Prepping for 2024 development process	
Televisions	Considering for 2025		NEEA-developed Test Procedure	ENERGY STAR v9 acceptance	Voluntary Agreement with Manufacturers
Monitors and Displays		Considering as addition to portfolio			

Note: NEEA is also monitoring and tracking room air conditioners, air cleaners, and sound bars.

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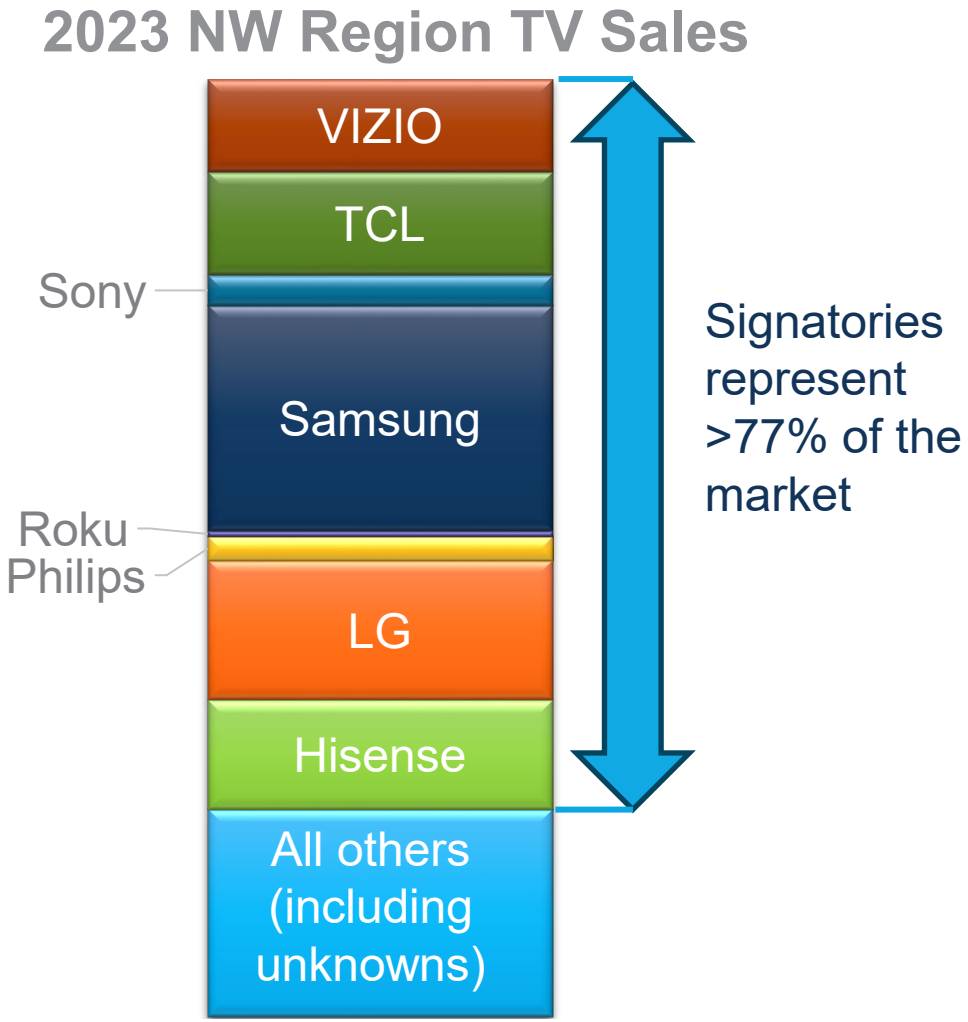
Voluntary Agreement Includes Major TV Manufacturers



- Provided test data and NEEA providing analysis support
- 2-watt standby mode limit, on-mode power limits in development
- 90% of products sold would voluntarily meet these limits

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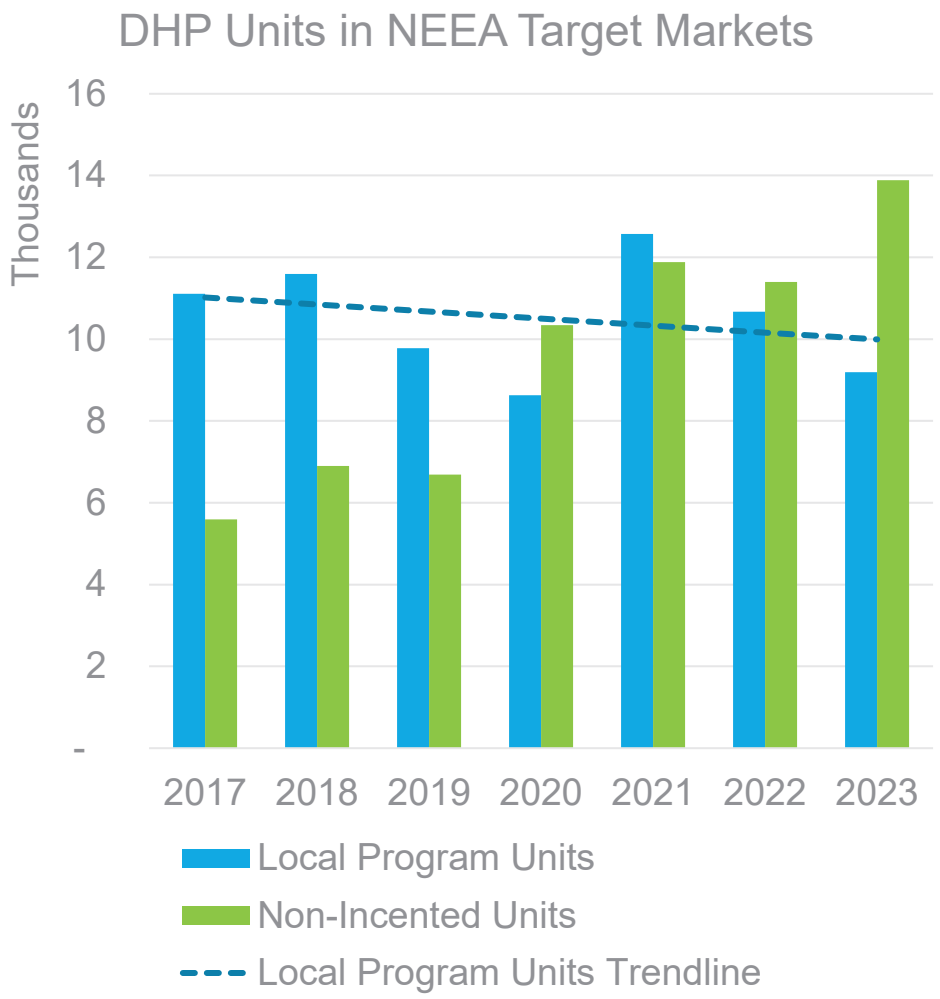
Ductless Heat Pumps



MT Theory: Accelerate adoption and market acceptance of ductless heat pumps in electrically heated homes.

Key takeaways

- New applications emerging for Mini-split systems in hybrid ducted/ductless configurations
- Local program unit share continues to decline, but target markets maintain high volumes
- Counties within the region with access to DHP installers continues to increase

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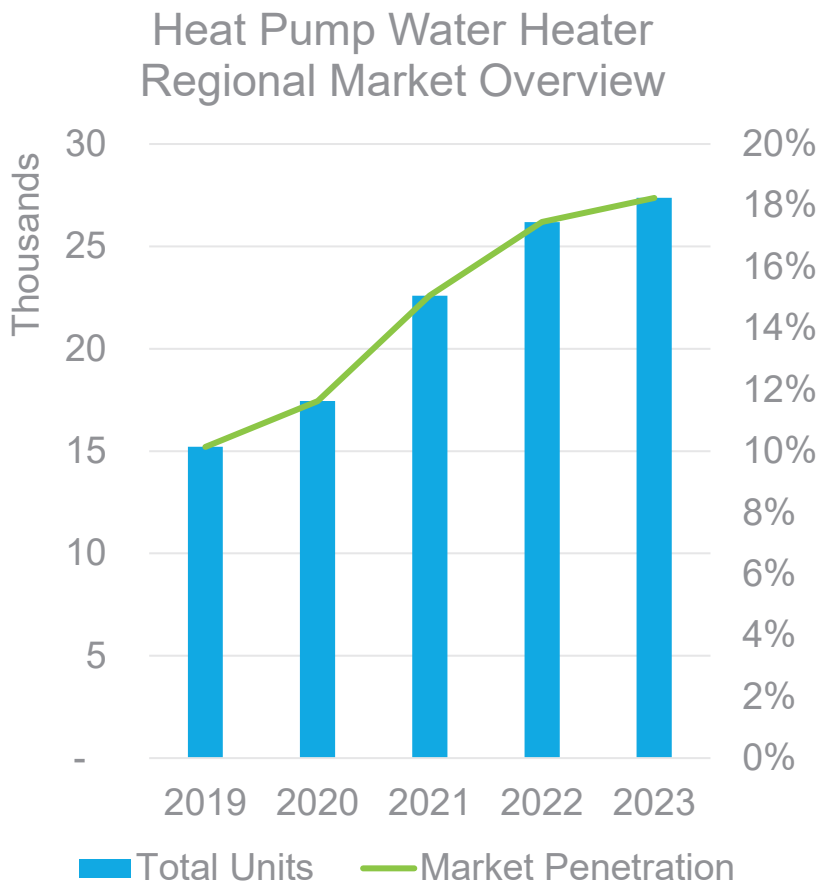
Heat Pump Water Heaters



MT Theory: Increase awareness and demand for heat pump water heaters such that they are the dominant and accepted technology for residential electric water heating. Influence passage of federal standard for heat pump water heaters.

Key Takeaways

- Small amount of market growth for 2023; above expectations of flat growth based on low early 2023 sales
- Early observations of material market penetration into low-rise multifamily market segment. Follow-up analysis to be done this year to assess impact
- Ruling on federal standard for heat pump water is currently pending

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Additional Value Metrics

1. Peak Savings
2. Avoided Carbon Emissions

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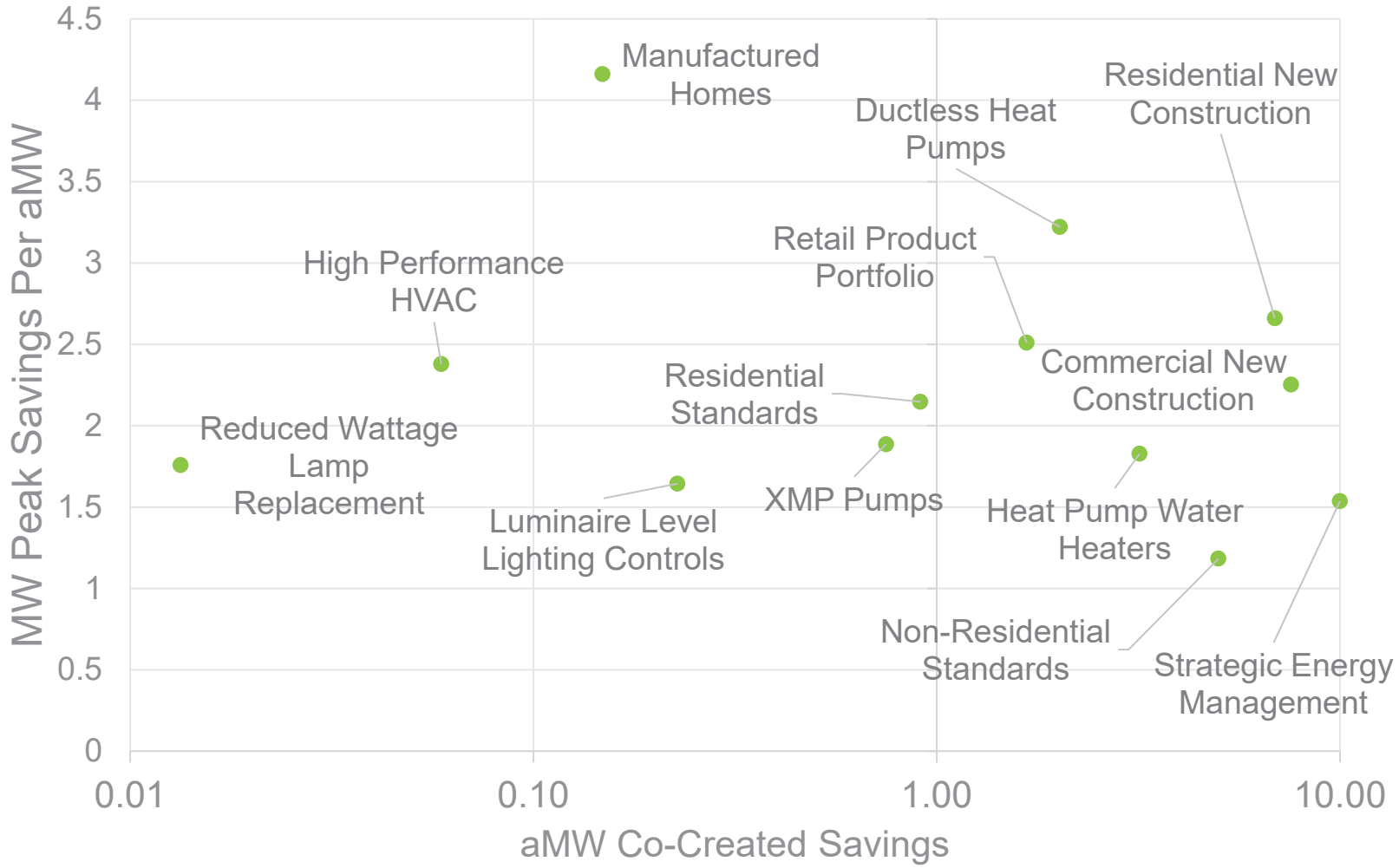
2023 Co-Created Regional Winter Peak Savings is 79 MW



Total Peak Savings

- Winter: 79 MW
- Summer: 60 MW

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2023 Co-Created Avoided Carbon Emission is 175,000 Tons

($12 million)



Greenhouse Gas Emissions from 35,264 passenger vehicles per year



CO2 Emissions from 19,972 homes energy use per year



Carbon Sequestered by 1,051 acres of US forests preserved from conversion to cropland in one year

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Gas Savings Portfolio Update

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Regional Market Transformation Portfolio

Gas Investments

Scanning/ Concept Development	Program Development	Market Development	Codes & Standards
Efficient Gas Water Heaters	High Performance Windows – dual fuel	**Efficient Rooftop Units** – natural gas	**Residential & Commercial Codes** – dual fuel
Dual-Fuel HVAC	Advanced Commercial Gas Water Heaters		**Residential & Non-Residential Standards** – dual fuel
Additional Emerging Market and Technology Opportunities			

Level of Program Maturity

Programs reporting energy savings in 2023 are in bold

Gas portfolio diversifying with more programs in development

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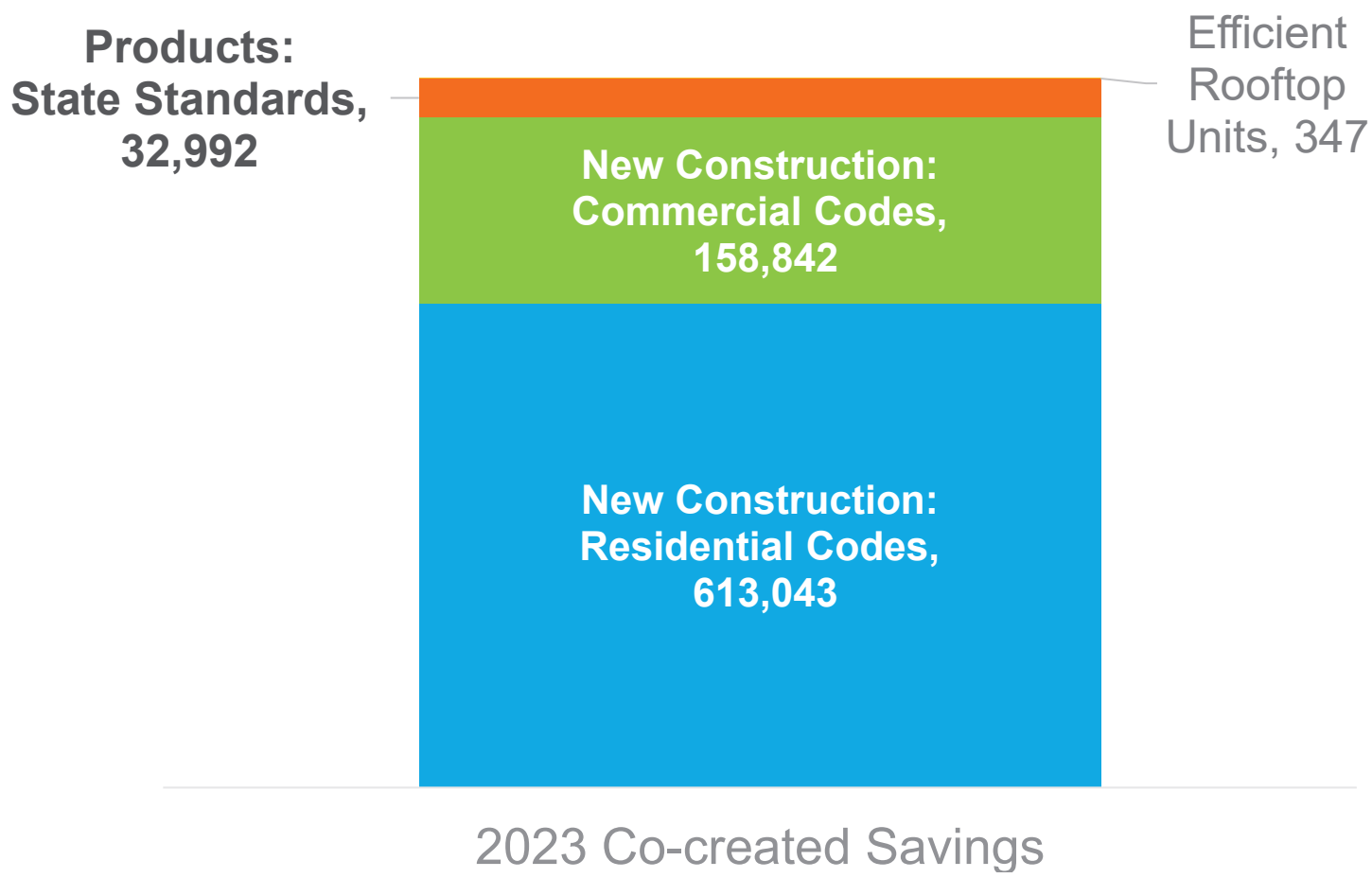
Gas 2023 Co-Created Therm Savings



Portfolio is maturing, however codes and standards remain the bulk of reportable savings

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Efficient Rooftop Units (ERTUs)



MT Theory: Accelerate the adoption of efficient gas rooftop units in the like-for-like replacement market while working to influence the adoption of improved test procedures and more stringent federal standards that require at least 20% more efficient RTUs than the 2020 market average.

Highlights

- Worked with a major commodity RTU manufacturer to bring to market (expected in 2024) a bolt-on ERV for their RTUs
- Extra-regional collaboration with key EE partners to work towards alignment on ERTUs
- Continued building relationships with regional distributors and manufacturer's reps to refine market intervention strategies and improve NEEA's visibility to efficient unit sales

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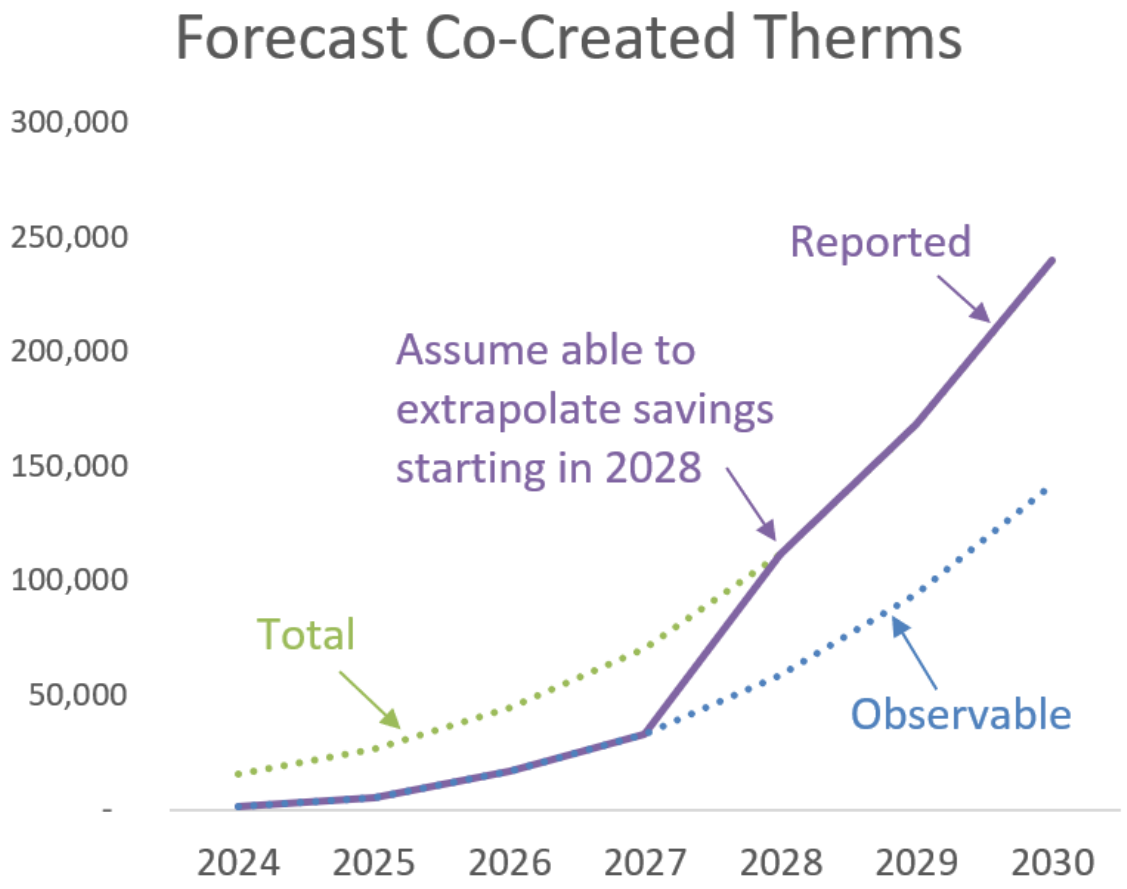
Efficient RTUs – Looking Forward



Key program efforts in next 2-3 years:

- Leverage introduction of commodity bolt-on ERV
- Perform expanded energy modeling to influence national market
- Continue to build an aligned coalition around RTU efficiency

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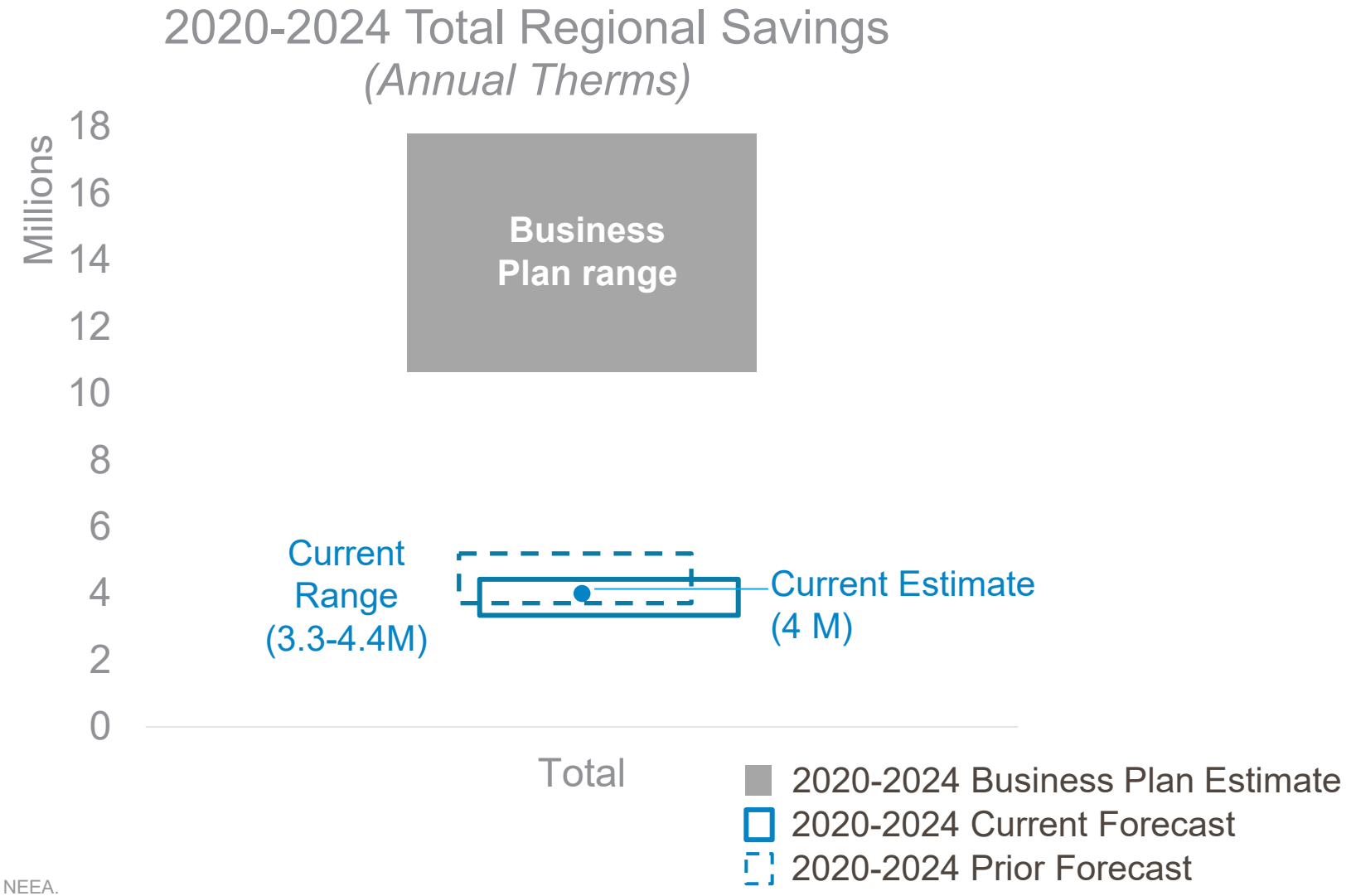
Gas Cycle 6 Expectations



Avoided Carbon Emissions:

16,675 – 21,310 tons

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New Construction Programs

Codes adopted since 2020

State	Sector	Code	Adoption Date	Approximate % Savings (Gas & Electric)
WA	Residential	2021 Washington State Energy Code	2023	19%*
	Commercial	2021 Washington State Energy Code	2023	24%*
OR	Residential	2021 Oregon Residential Specialty Code	2021	0%
	Commercial	2021 Oregon Energy Efficiency Specialty Code	2021	5%
	Residential	2023 Oregon Residential Specialty Code	2023	12%*
ID	Residential	2018 IECC with Idaho amendments	2020	12%
	Commercial	2018 IECC with Idaho amendments	2020	4%
MT	Residential	2018 IECC with Montana amendments	2021	2%
	Commercial	2018 IECC with Montana amendments	2021	5%
	Residential	2021 IECC with Montana amendments	2022	9%*
	Commercial	2021 IECC with Montana amendments	2022	11%

Note: Percent savings is relative to the previous code and is an approximation based on building type and fuel selection assumptions. For residential, NEEA is showing results for single-family homes.

** Forecast, modeling is planned for 2024/2025.*

MT Theory: Uses codes to set the floor for efficiency, driving the motivation for innovation of new products NEEA can support through its market transformation initiatives and its emerging technology work.

Highlights

- Significant activity in the past three years.
- NEEA is analyzing the results.
  - Market Progress Evaluation
  - Compliances Evaluations
  - Savings analysis

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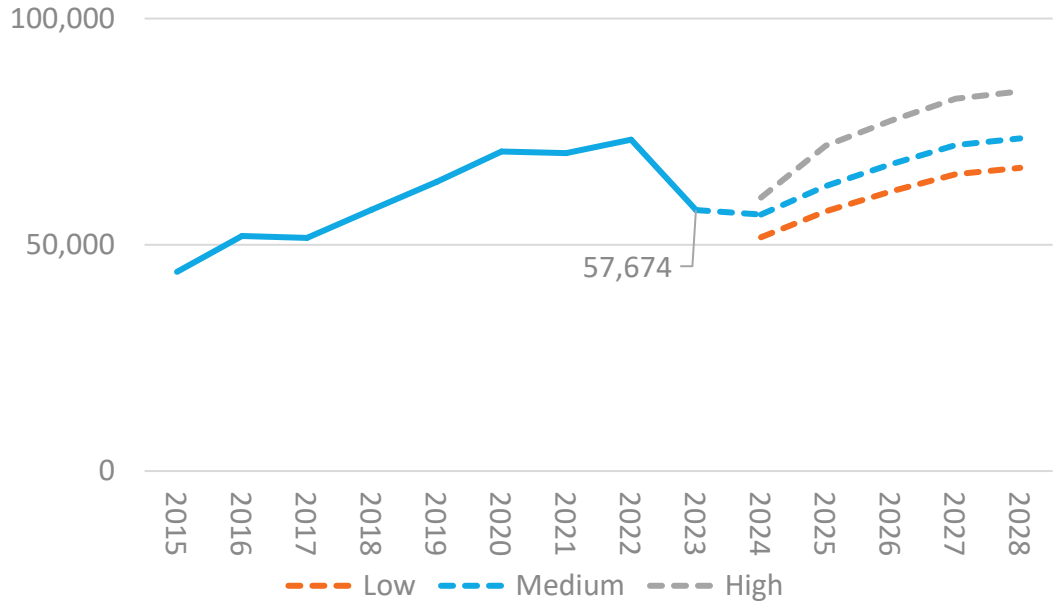
New Construction

Residential

1) New construction in 2023 was more than 20% lower than expectations.

2) Industry forecast show expectations of growth after 2024.

New Single-family & Low-rise Multifamily Homes



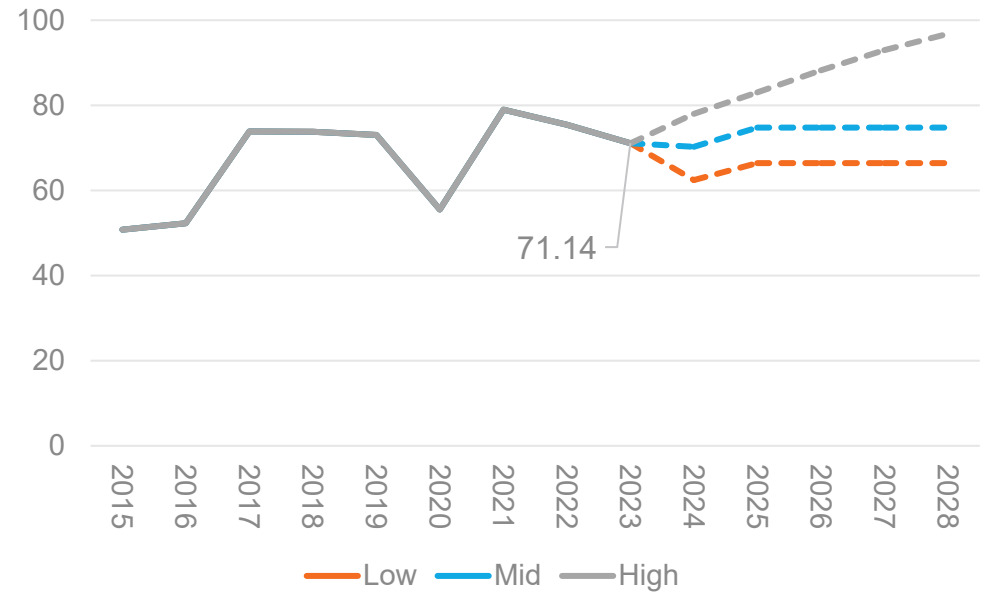
The forecast is based on trends forecasted by Dodge Analytics in Q4 2023.

Commercial

1) Historical trend continues through 2024, returning to 2017-2019 level

2) Multiple data sources, including Colliers (a Real Estate Consulting company), expect the vacancy rate to continue to rise.

MM Sq. Ft.



The forecast in 2020 was based on 2019 construction actuals and regional economic outlook available.

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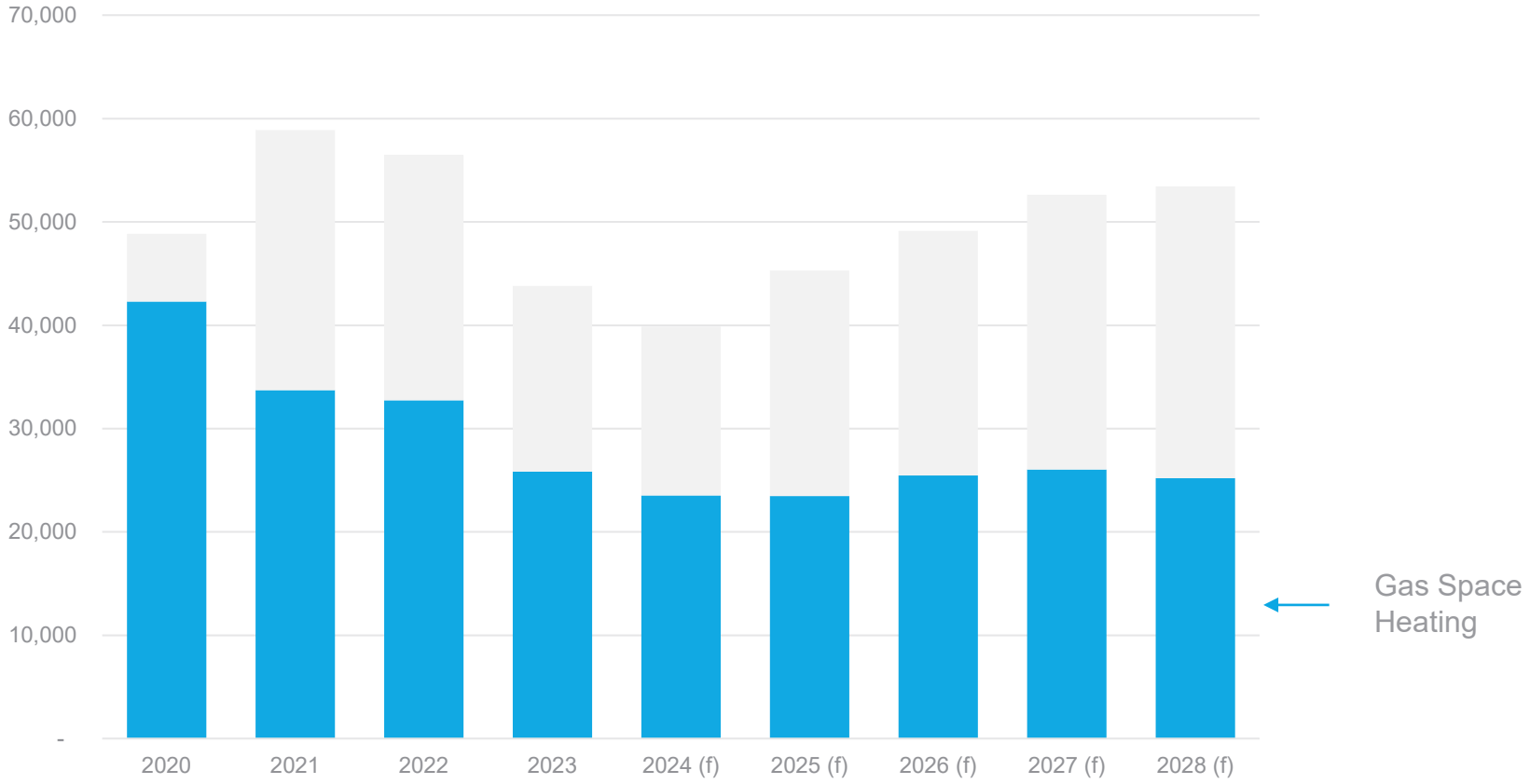
New Construction

The share of buildings using natural gas homes is expected to decline in anticipation of decarbonization goals.

Example Single-family Homes by Fuel Selection



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New Construction

Natural Gas Savings are expected to decline in 2024 with anticipation of Washington's new code.

NEEA is focusing on the future

- Dual-fuel products
  - Gas Heat Pump Technology
- More Efficient Products
  - Efficient Rooftop Units
- Research
- Code Development
  - Efficient Gas Water Heaters
- Education & Training
  - High Performance Windows

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Expectations for Timing of Savings Reporting

Program	Products	Year Expected for Reporting
New Construction: Commercial Code	Specific proposals advanced in WA 2018 Specific proposals advanced in 2021 OEESC Working on future code development in ID	2021 2021 **TBD**
New Construction: Residential Code	Residential Codes WA 2018 IECC 2018 with Idaho amendments Or. Specialty Code 2023	2021 2021 **2024**
Efficient Rooftop Units	Efficient Rooftop Units	2023
Products: State and Federal Standards	Commercial Kitchen Equipment (WA) Commercial Kitchen Equipment (OR) Commercial Boilers (Federal) Gas Furnaces	2021 2022 2023 **2027**
High-Performance Windows	Windows	**2024/2025**
Efficient Gas Water Heater	Gas Heat Pump Water Heaters	**TBD**
Commercial Gas Water Heaters	TBD	**TBD**
Other concepts under consideration for 2025-2029	Dual-fuel HVAC High-Efficiency Dedicated Outdoor Air System Efficient Commercial Gas Dryers	**TBD – pending advancement**

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BREAK

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NEEA's savings accounting method for Building Energy Codes and Appliance Standards

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Goals

The Committee Understands:

- Why NEEA reports energy savings from codes and standards.
- What NEEA is accounting as savings (Total Regional Savings & Co-Created Savings).
- How NEEA estimates the savings.

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Why NEEA Reports Codes & Standards Savings

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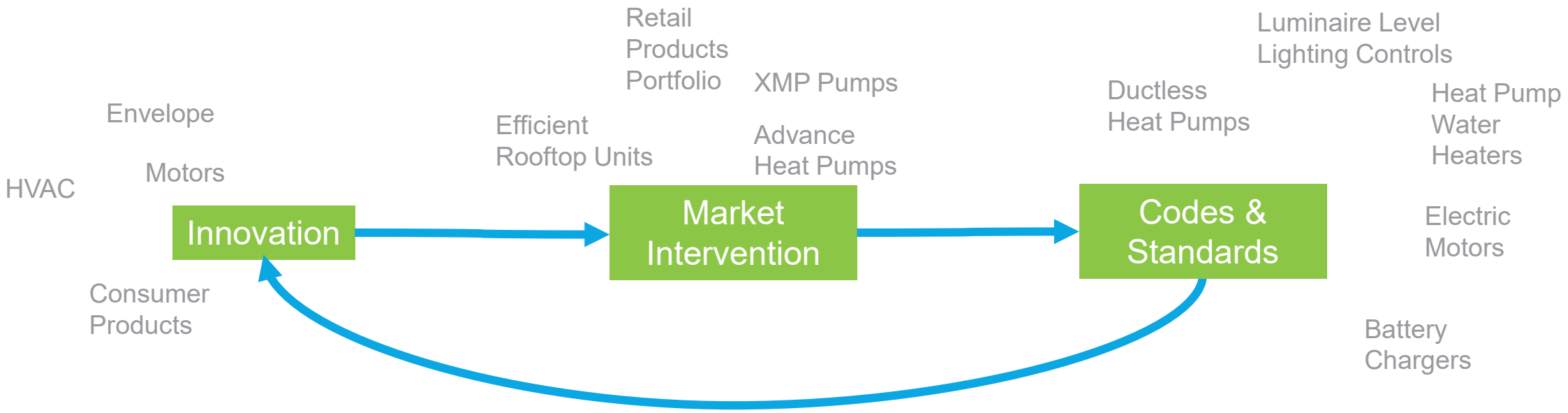
Code & standards represent a Market Transformation goal



Encourage Innovation

Codes & Standards set the floor for efficiency, driving the motivation for innovation NEEA supports through Market Transformation work.

Create Long-term Change

Codes & Standards represent permanent market change, making them a focus of many Market Transformation programs.

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NEEA plays a role in codes & standards development

Emerging Tech/ Programs	Increasing adoption of products that lock in savings through a code or standard
Collaboration	Working with regional, extra-regional, and industry partners
Participation	Providing comments, proposals, and data during the rule-making process
Research	Developing new test procedures, analysis and data
Compliance	Providing education and training

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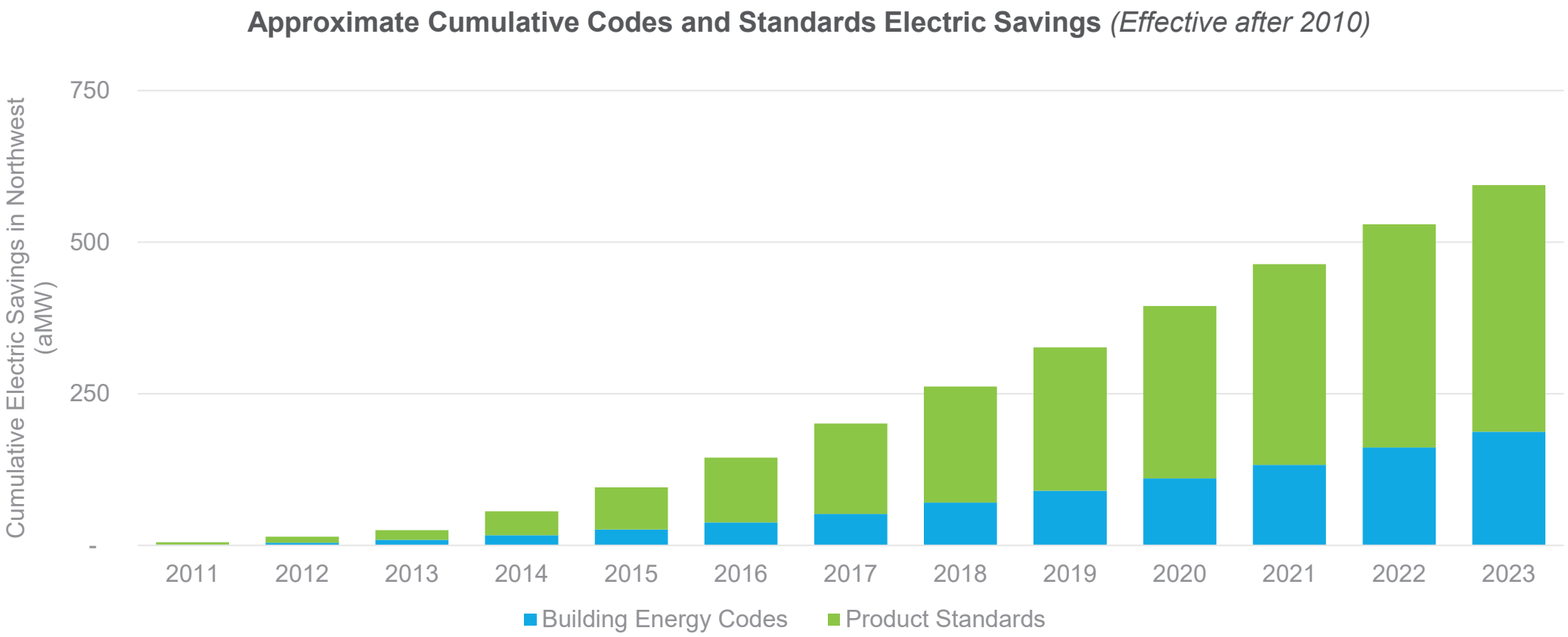
Codes & standards provide significant savings



*The cumulative gas savings since 2020 when NEEA started reporting is 1.3 MM therms.

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What NEEA is Accounting

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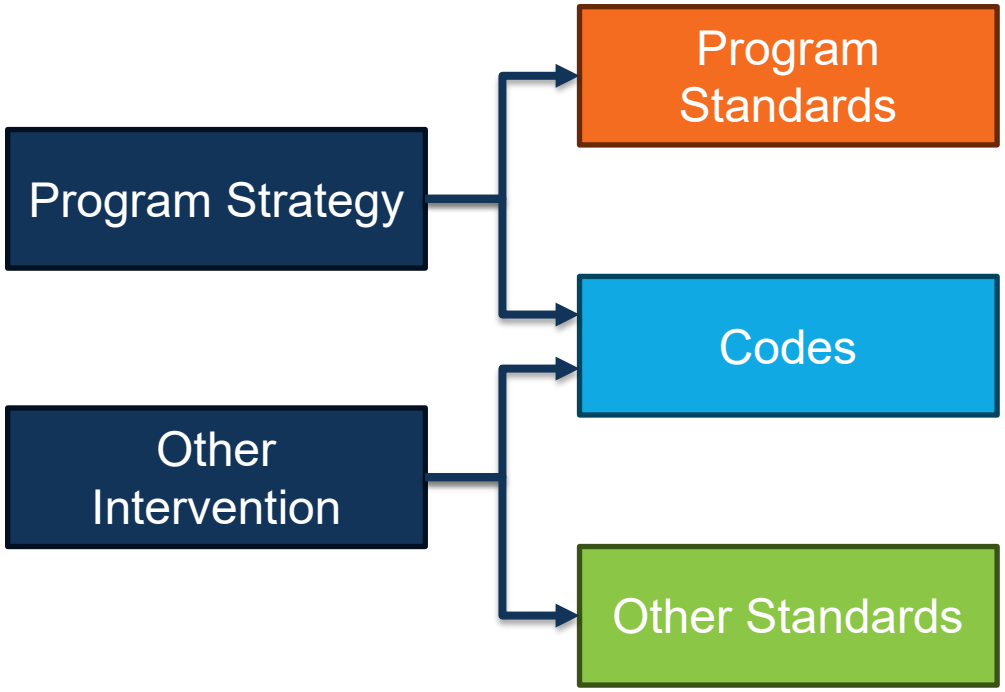
NEEA has 3 approaches to estimate codes & standards savings



- ✓ Program goal/outcome (long term),
- ✓ Defined intervention strategy,
- ✓ Significant data and market research

- ✓ Not a tied to a program goal.
- ✓ Can be related to a program.
- ✓ Often less data on baseline trends.
- ✓ Often connected to NEEA's relationships with other entities

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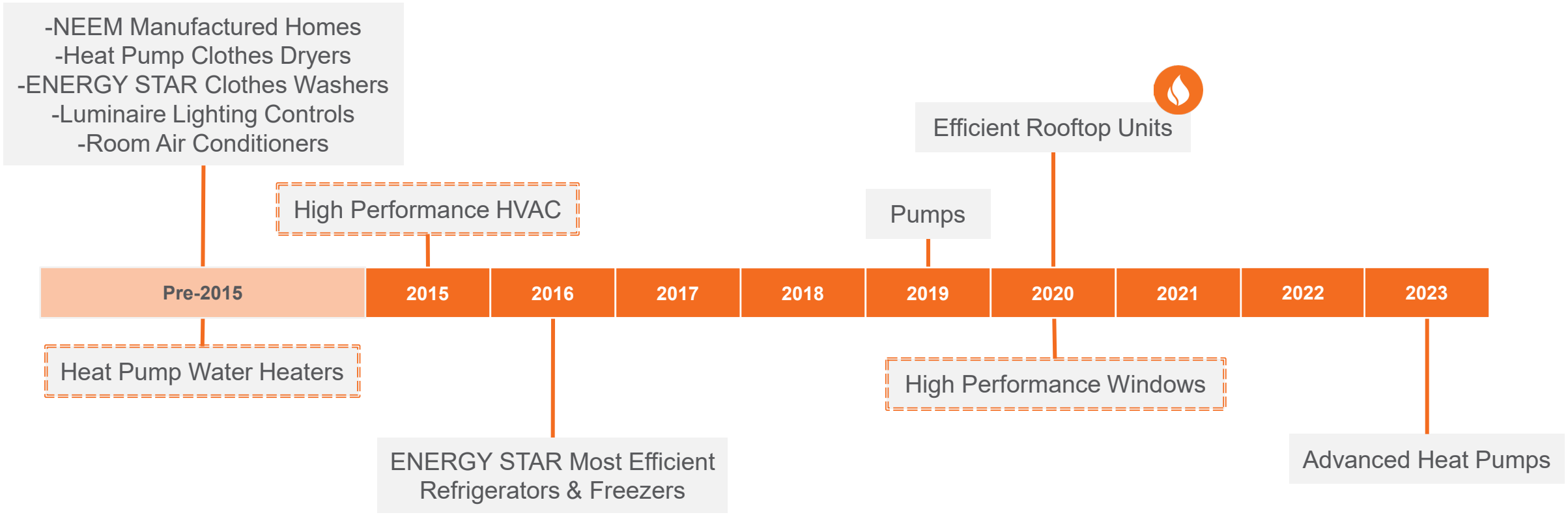
Composition of the Program Category

Most programs have codes & standards Market Transformation goals & intervention strategies.



Note: dates approximate when NEEA developed a codes & standards strategy though the program.

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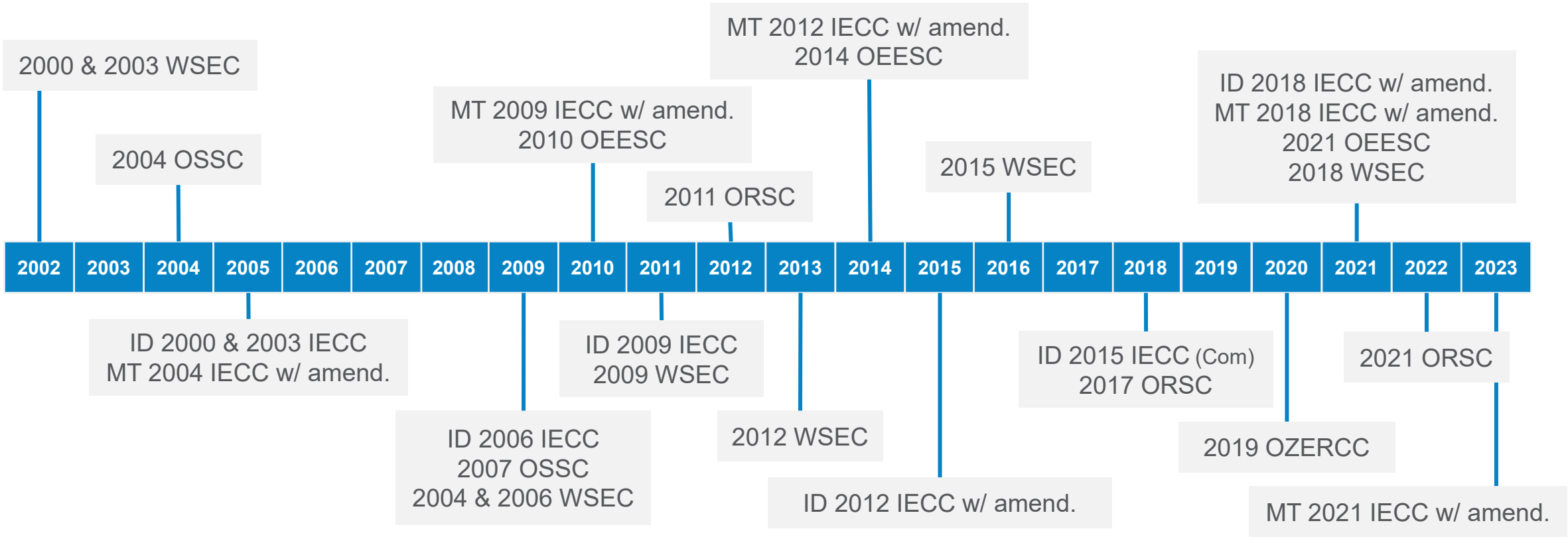
Composition of the Energy Codes Category

NEEA has been working on code development since its inception but started reported commercial code savings in 2002 and residential in 2009.



Note: dates represent when we started reported savings

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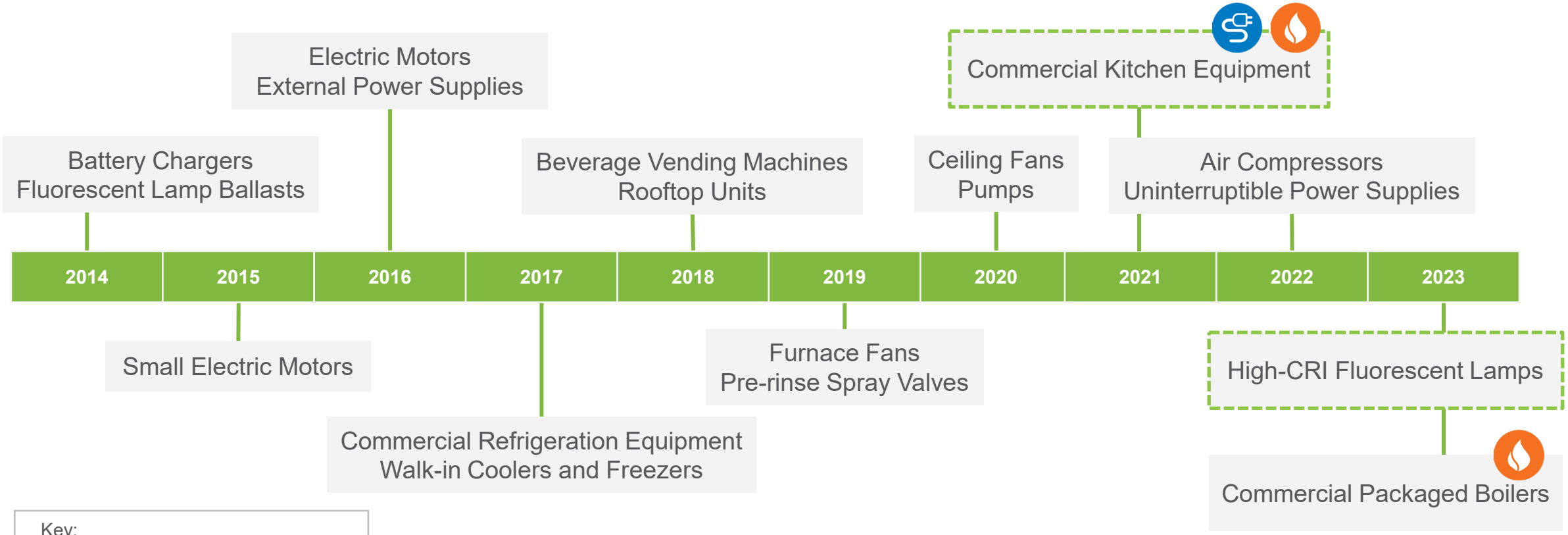
Composition of the Other Standards Category

NEEA started reporting savings from standards separate from programs in 2014 when new opportunities developed.



Note: dates represent when we started reported savings

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Accounting for Total Regional Savings

NEEA calculates total savings for a **portion** of the benefits from codes and standards.

	Building Energy Codes	Program Standards	Other Standards
Efficiency	Current Min State Code	Current Standard	Current Standard
Baseline Efficiency	Prior Code, assume fuel mix matches current practice	Market average prior to program start	Market average prior to effective date
Market/ Product	Commercial & Residential New Construction	Product Shipments	Product Shipments

Excludes momentum occurring after adoption

Excludes efficiency exceeding code

Excludes major renovation

Excludes savings overlap (Codes)

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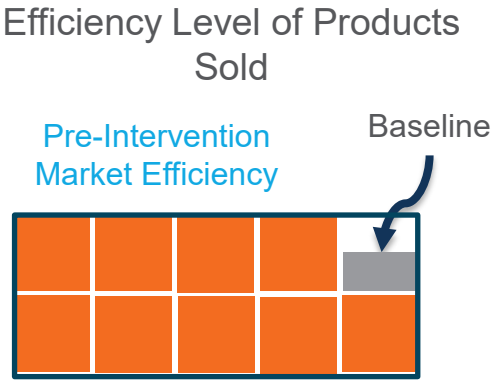
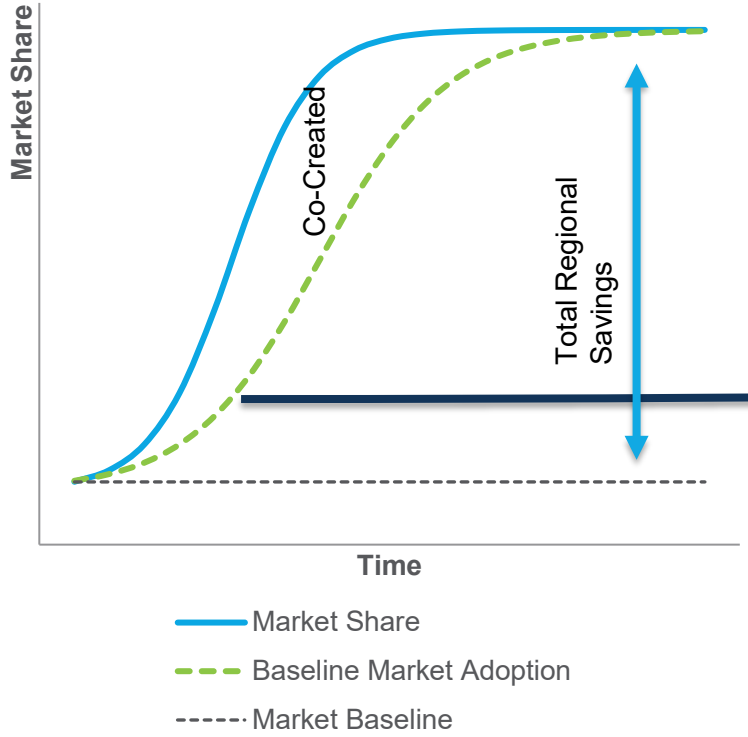
Share of Program Category Savings Co-created

NEEA forecasts a Naturally Occurring Baseline to approx. Co-Created standards savings tied to a program

1) Measure pre-market intervention baseline



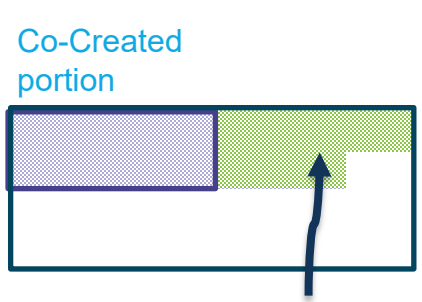
2) Forecast Naturally Occurring Baseline



3) Influence Standard



4) Account for Savings



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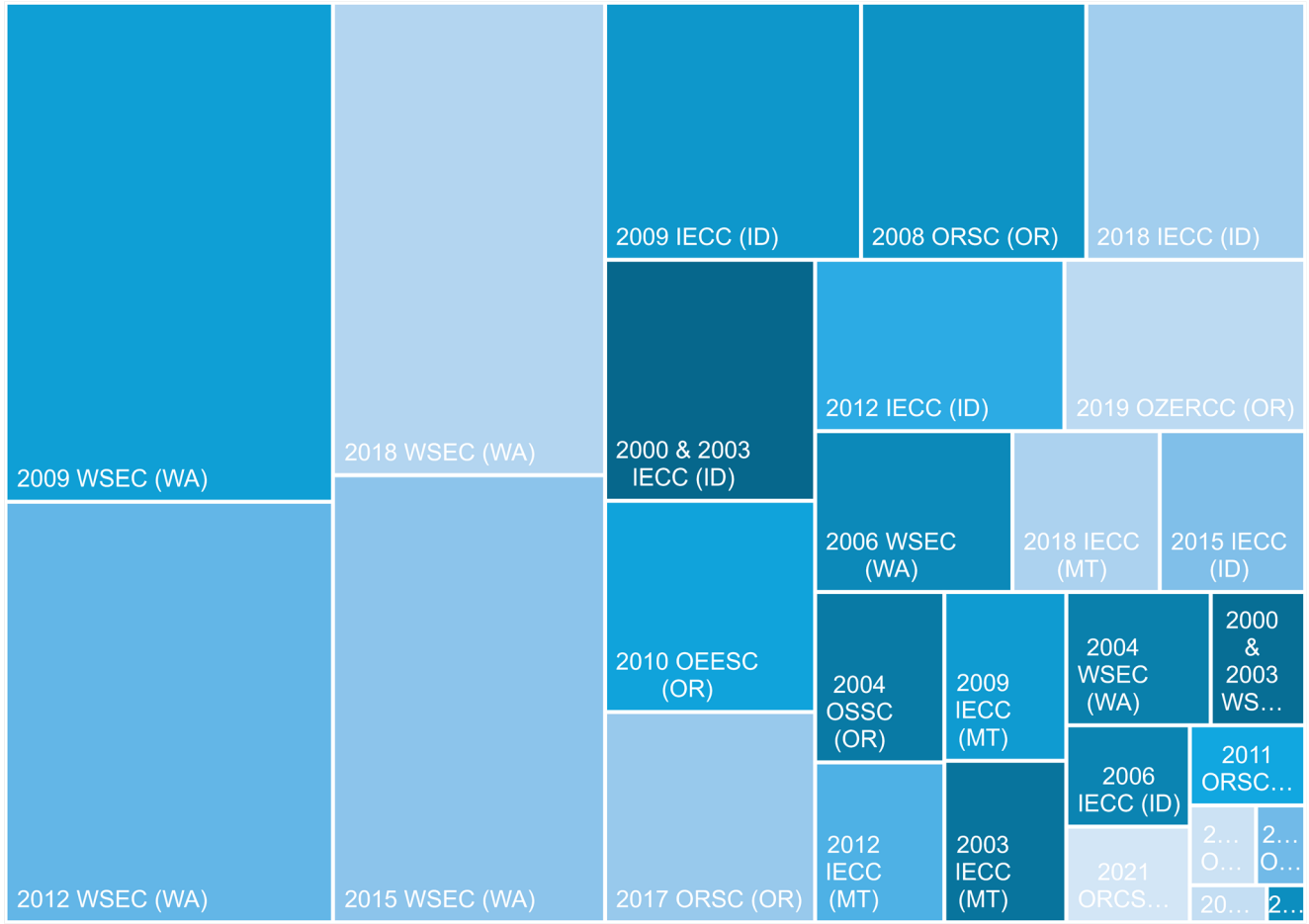
Share of Codes Category Savings Co-Created

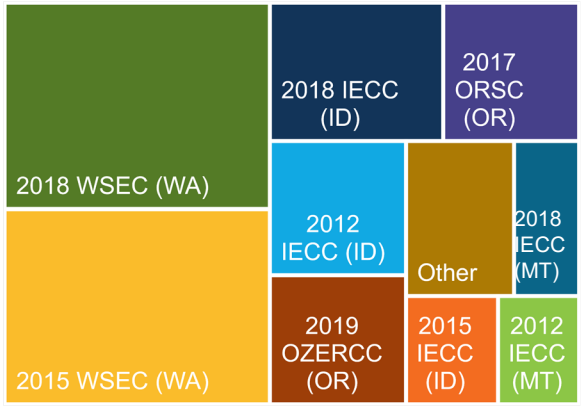
NEEA reports code savings for 10 years (approximately 2 code cycles) to account for Co-Created Savings

2023 Total Regional Savings = 32 aMW



2023 Co-Created Savings= 14 aMW (44%)

NEEA reports Market Transformation savings 10 years.



2023 Power Plan Savings = 3 aMW (9%)

NEEA reports Power Plan Savings for Codes adopted after the start of a plan.

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Share of Other Standards Category Co-Created

NEEA reports a portion of the standards savings as Co-Created based on post-standard influence evaluations

2023 Total Regional Savings = 38 aMW



2023 Co-Created Savings= 6 aMW (16%)

NEEA reports a % of the savings as Co-created based on Influence Evaluations.



**sum of the savings from the other standards listed*

2023 Power Plan = 1 aMW (3%)

NEEA reports Power Plan Savings for Standards adopted after the start of a plan.

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How NEEA estimate the savings

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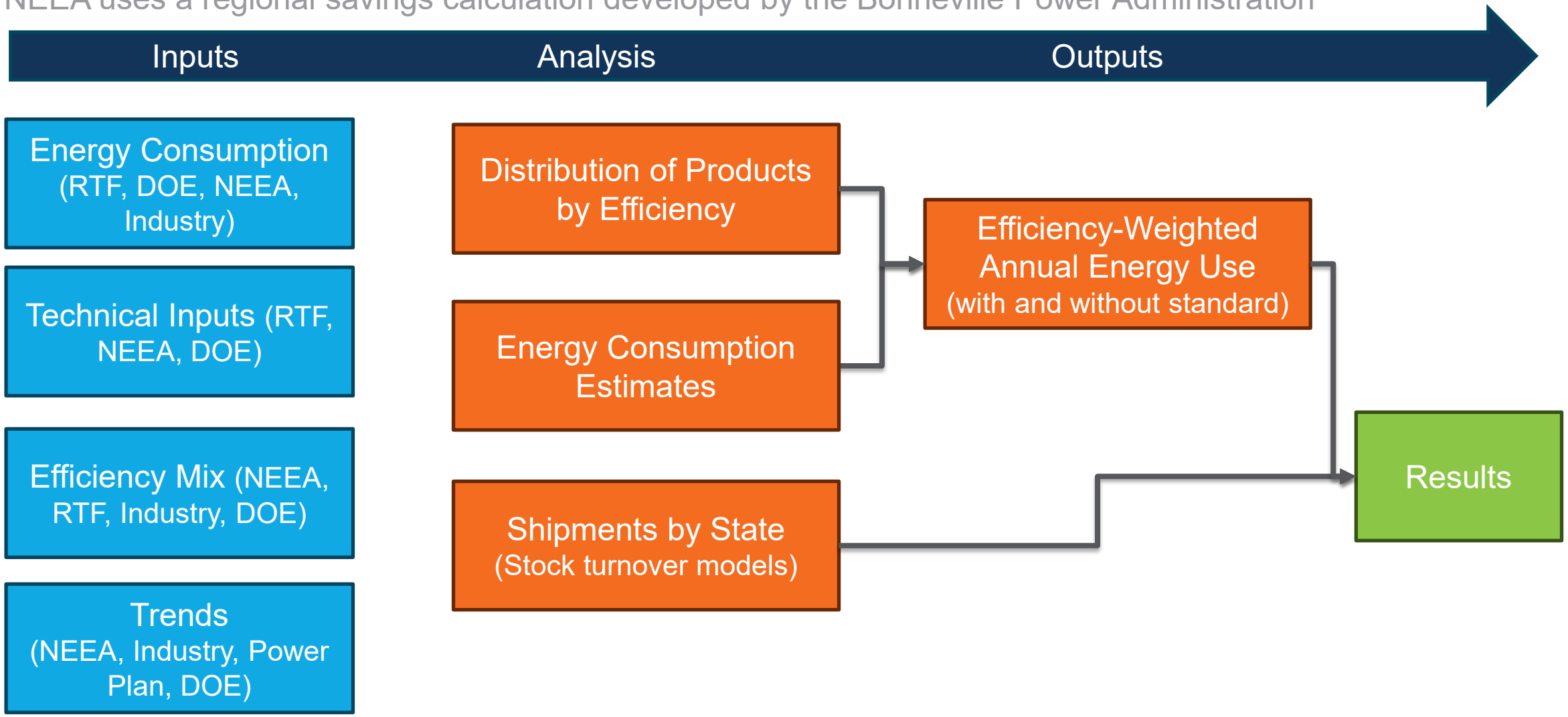
Modeling Structure for Other Standards Category

NEEA uses a regional savings calculation developed by the Bonneville Power Administration



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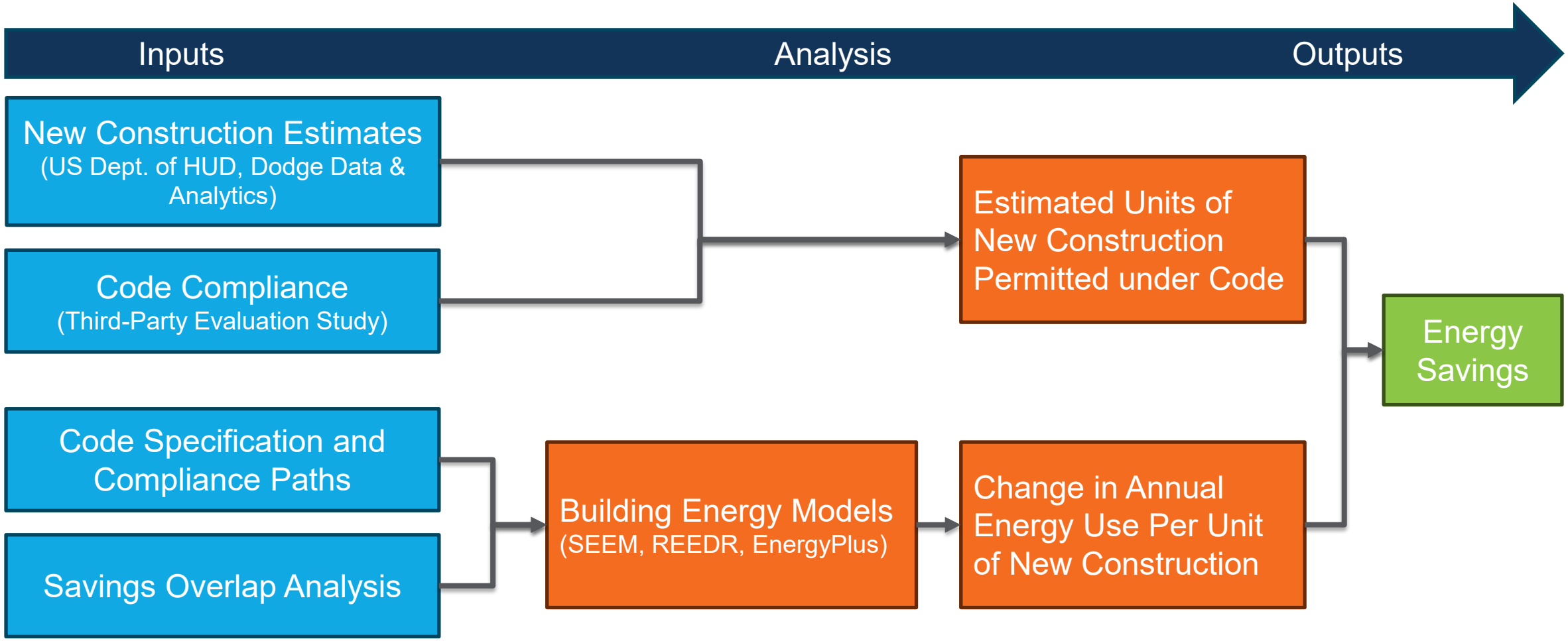
Modeling Structure for Building Energy Codes Category

NEEA leverages various sources and tools to calculate Code savings



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Example of Calculation Approach (Residential Codes)

NEEA conducts energy use modeling for each code change.

Based on building practices

Building types based on 5 prototypes

Climate Considered

State	Year Code	Heating System	Whole Home Electric Energy Consumption (kWh/Home)				Whole Home Gas Energy Consumption (therms/Home)			
			Single-family		Multifamily		Single-family		Multifamily	
			Zone 5	Zone 6	Zone 5	Zone 6	Zone 5	Zone 6	Zone 5	Zone 6
ID	2015	Gas	7,966	8,105	4,223	4,325	837	1,000	429	501
		Gas w AC	8,857	8,381	4,667	4,571	848	1,013	426	498
		Heat Pumps	17,206	19,436	10,430	11,463	-	-	-	-
		Zonal	21,733	25,321	13,548	15,303	-	-	-	-
	2018	Gas	7,425	7,588	3,952	4,059	721	922	371	456
		Gas w AC	8,242	7,859	4,339	4,290	731	932	369	455
		Heat Pumps	15,567	18,175	9,637	10,775	-	-	-	-
		Zonal	18,845	23,011	12,091	14,055	-	-	-	-
MT	2012	Gas	7,751	7,862	3,978	4,051	746	886	396	456
		Gas w AC	8,255	8,190	4,243	4,282	755	894	395	454
		Heat Pumps	15,832	17,670	9,889	10,721	-	-	-	-
		Zonal	19,933	22,859	12,746	14,065	-	-	-	-
	2018	Gas	6,933	7,031	3,568	3,637	761	883	391	448
		Gas w AC	7,402	7,336	3,831	3,864	769	891	389	446
		Heat Pumps	15,085	16,764	9,418	10,217	-	-	-	-
		Zonal	19,424	21,987	12,235	13,496	-	-	-	-

Updates for 2024

- Move from SEEM to REEDR
- Add separate field for Water Heating
- Add Gas Heat Pump Heating System Type

Example of Calculation Approach (Residential Codes)

NEEA reports the results at the state level.

Electric Savings Rate

	Natural Gas Furnace w/Air Conditioning	Natural Gas Furnace	Electric Heat Pump	Electric Zonal
IECC 2015 w/Amend	8,811	7,979	17,421	22,079
IECC 2018 w/ Amend	8,205	7,441	15,818	19,247
Savings Rate	**607**	**539**	**1,602**	**2,833**
Heating System Split	95%	1%	4%	0%
				649 *kWh/home*

Natural Gas Savings Rate

	Natural Gas Furnace w/Air Conditioning	Natural Gas Furnace
IECC 2015 w/Amend	864	853
IECC 2018 w/ Amend	750	741
Savings Rate	**114**	**112**
	99%	1%
		114 *Therms/homes*

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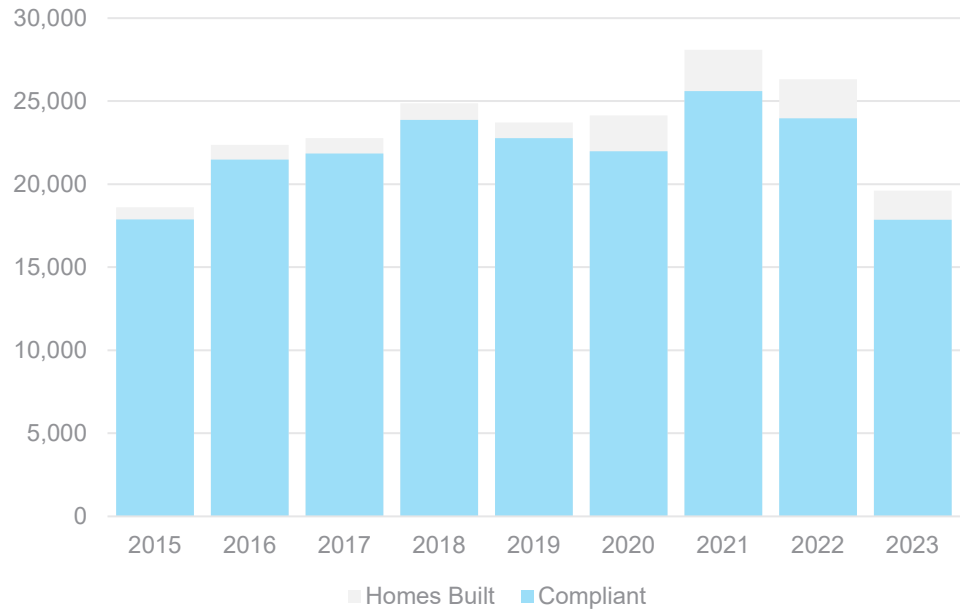
Example of Calculation Approach (Residential Codes)

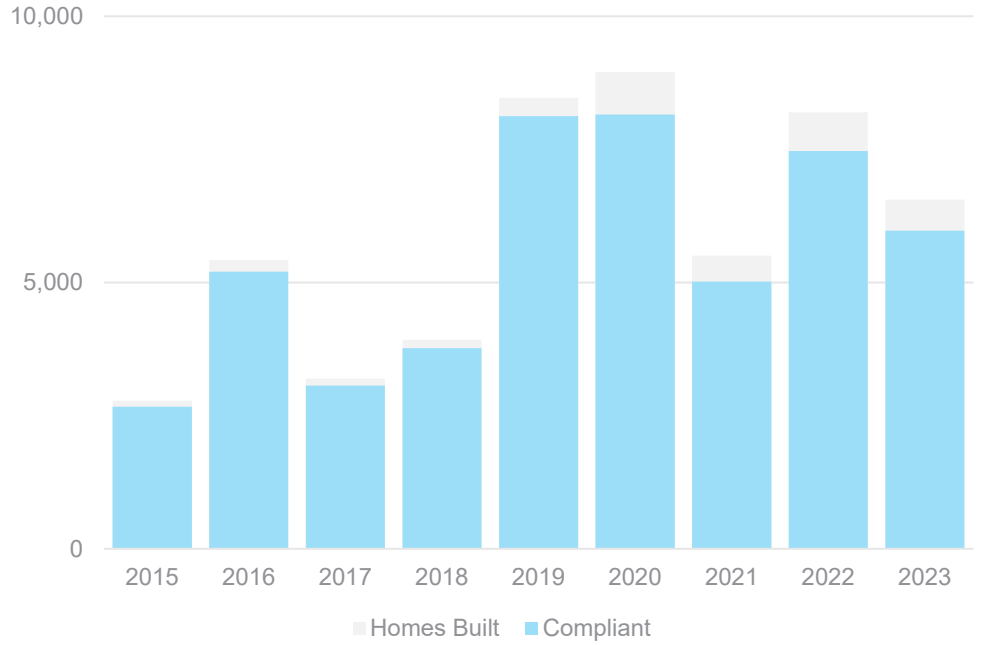
NEEA applies the savings rate to an estimate of code compliant homes.

Single-Family (WA)



- Permits (Department of Housing & Urban Development)
- Compliance Rates (NEEA Compliance Evaluations)

Multifamily (WA)



- Permits (Department of Housing & Urban Development)
- Compliance Rates (NEEA Compliance Evaluations)
- % less than four stories (Dodge Analytics)

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Summary

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Savings Accounting Differs by Category

				Basis for Co-Created Savings
Codes	Bundle of measures with variations of pathways.	Pre-intervention strategies defined at a higher level.	Savings modeled at a building level.	10 years & Market Progress Evaluations
Programs Standards	Defined measure(s)	Pre-intervention strategies defined at the measure level.	Savings modeled based on program and standards savings teased out for reporting.	Naturally Occurring Baseline & Market Progress Evaluations
Other Standards	Defined measure(s)	Strategies defined as opportunities arise.	Savings are modeled based on standard approved.	Post-standard influence evaluations

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Summary

Key Takeaways

- ✓ Codes & standards are a goal of Market Transformation and integral in program strategies.
- ✓ Codes & standards have significant value to the region both in providing load reduction and spurring innovation.
- ✓ NEEA and its partners play a role in their development.
- ✓ NEEA reports a portion of these savings to account for the regional value of investing in codes and standards.
- ✓ The savings accounting approach does not attempt to identify attribution but instead avoids overlap, uses standard modeling tools, and regional assumptions.

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Alternative Approaches for Evaluating NEEA's Influence on State Energy Codes

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NEEA's approach to estimating and reporting energy savings from state energy codes work
Draft evaluation approaches and early assessment from the 3rd party evaluator









CEAC

April 30, 2024
Christina Steinhoff, Amy Webb, Susan Hermenet, and NMR

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Outcomes & Objectives to Address Recommendation #9

Recommendation #9: Complete influence evaluations for each code update to estimate NEEA's qualitative and quantitative influence towards the code update, or, alternatively, incorporating a quantitative method for isolating incremental savings due to NEEA-specific efforts approved by a third-party evaluator.

The highlighted text was added as part of the June 15th addendum.

- Outcome:
  - Develop a recommendation for a framework for evaluating state energy codes that is most applicable to Market Transformation and NEEA's current framework for reporting energy savings.
- Objectives:
  - Assess the current evaluation approach to state energy codes.
  - Explore alternative frameworks for evaluating and reporting energy savings associated with state energy codes.

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CEAC Process & Timeline

Date	Topics
Q4 2023 Nov. 30.	Provide background and process. COMPLETE
Q1 2024 March 6	Provide an overview of the work NEEA does to influence state energy codes, including how it compares to its work in influencing federal standards. Provide current state of evaluation approaches used to evaluate state energy codes, federal appliance standards work, and other federal standards work.
Q2 2024 April 30	Review approach and key assumptions used in estimating and reporting energy savings from state energy codes work. Present draft approaches including early assessment from the 3rd party evaluator, with an opportunity for discussion and feedback.
Q3 2024 Aug 28	Present refined draft approaches with 3rd party evaluator assessment. Staff provides initial recommendation.
Q4 2024 Nov 4	Staff provides final recommendation with implications. Staff will also address if this recommendation would need to be tested before full implementation.

Today's Agenda

- Review NEEA's approach and key assumptions used in estimating and reporting energy savings from state energy codes work and standards work.

- Present draft evaluation approaches for state energy codes, including early assessment from the 3rd party evaluator, with an opportunity for discussion and feedback

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Proposed Alternative Approaches for the Evaluation of NEEA's Influence on Codes:

Overview from Amy Webb & Interim Assessment from NMR

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Background on Alternate Evaluation Approaches

- What was the development process?
- What were key characteristics and criteria?
- What was the rationale for inclusion?
- Do we support all of them?
- How does each differ from our current process?

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The Four Alternative Evaluation Approaches

…plus the current approach.

1. ***Qualitative Description of NEEA Influence***

   Aligned with NEEA developed, cycle-specific state code support plans.

2. ***(Modified) Standards Influence Evaluation Approach***

   Conduct a qualitative assessment to develop a quantitative influence "score" similar to NEEA's standards approach.

3. ***Index of NEEA's Effective Code Proposals***

   Analysis of share of effective (successful) proposals. Would require defining and valuating "effectiveness."

4. ***Quantitative Measure-level Assessment***

   Consistent with CA PUC impact evaluation approach.

5. ***Current Evaluation Approach (Codes "MPER")***

   Assessment of NEEA's influence on each code cycle through standard theory-based MPER approach, intentionally aligned with NEEA's cycle-specific Code Support Plans.

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Comparing the Approaches

Description	Incremental Cost	Precedents	Other Considerations
Qualitative description of influence	Low	NEEA MT Program Market Progress Evals (MPERs)	Investment to develop data collection and analysis methods. Could scope this as part of a future Codes MPER.
Modified standards approach	Low	Similar to “other standards” evals (Other Standards not part of MT programs)	Investment to develop data collection and analysis methods. Does not account for long-term approach associated with market transformation.
Effectiveness score for code proposals	Low	Code proposals are a logic model outcome; periodically assessed	Does not capture key elements of codes market interventions (builder training, call center, continuous improvement of codes language, etc)
Quantitative measure-level assessment	High	California Public Utilities Commission	Data collection and analysis procedures would need to be established and standardized; budget would need to be allocated.
Current approach	None	MPERs 1, 2, and 3 (upcoming)	Data collection and analysis procedures will be refined and standardized through MPER #3 and beyond.

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Comparing the Approaches

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Proposal 1

Qualitative Description of Influence

- Builds on current approach taken in the Codes Market Progress Evaluation Report (MPER)
- Documents NEEA's **contribution** to codes in the Northwest but would not measure the strength of the relationship between outcomes and specific NEEA investments.

Precedents in NEEA's Evaluation Reporting

1. "Summative Initiative History" sections of Transition Market Progress Evaluations (T-MPERs)
   - Example: Chapter 3 of Manufactured Homes Transition MPER
2. Output tracking in program MPERs
   - Example: Chapter 1 of Luminaire Level Lighting Controls MPER #2

Comparing the Approaches

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An Overview of NEEA's Approach to Evaluating Influence On "Other Standards"

1. For a given standard, identify relevant barriers
2. Scale barriers and assign significance weights
3. Scale NEEA & partners' effectiveness and assign significance weights
4. Assess NEEA & partners' role and assign relative weights
5. Multiply weights (barrier x effectiveness x relative role)
6. Sum across all barriers

Proposal 2

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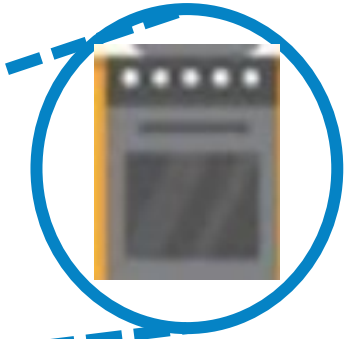
Modified Standards Approach

Proposal 2

State Codes Go Here



Other Federal Standards Go Here



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Three Evaluation Approaches

Proposal 2

BUILDING CODES	PRODUCT STANDARDS	
	"OTHER STANDARDS"	STANDARDS, PART OF MT PROGRAM
Varies by state	Federal (some state)	Federal
Longterm, strategic involvement	Opportunistic	Explicit in MT program logic
Assesses influence on a suite of code measures	Assesses influence on an appliance standard	Assesses influence on an appliance standard as one of many market outcomes
Evaluated annually (assesses progress toward outcome)	Evaluated post-standard (retrospective)	Evaluated annually (assesses progress toward outcome)

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Comparing the Approaches

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Codes Proposals Effectiveness Score

Proposal 3

$$Effectiveness\ Score = \frac{Number\ of\ Effective\ Proposals}{Total\ Number\ of\ Proposals\ Submitted}$$

Pros

- Shows trends.
- Emphasizes important outcome of codes work (proposals).

Cons

- Unclear what constitutes “effective”.
- Ignores other streams of work.
- Disregards long arc of market transformation.

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Comparing the Approaches

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Quantitative Measure-Level Assessment

Proposal 4

- An approach used by the California Public Utilities Commission (CPUC).
  - A key difference: In CA, Codes & Standards are a stand-alone effort. Emerging Tech and Market Transformation (future) are treated separately.
- Quantifies the outcome, in terms of energy savings, but does not assess NEEA and partners' influence.
  - Ignores the integrated and cumulative approaches of Market Transformation.
- Substantial resources required would exceed NEEA's Codes program budget (about $2.4 million in 2024.)

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Presentation of Early Feedback on the Assessment

TOPIC

NMR will present their assessment of the four proposed alternatives and their **draft** recommendations.

PURPOSE

To share information and discuss.

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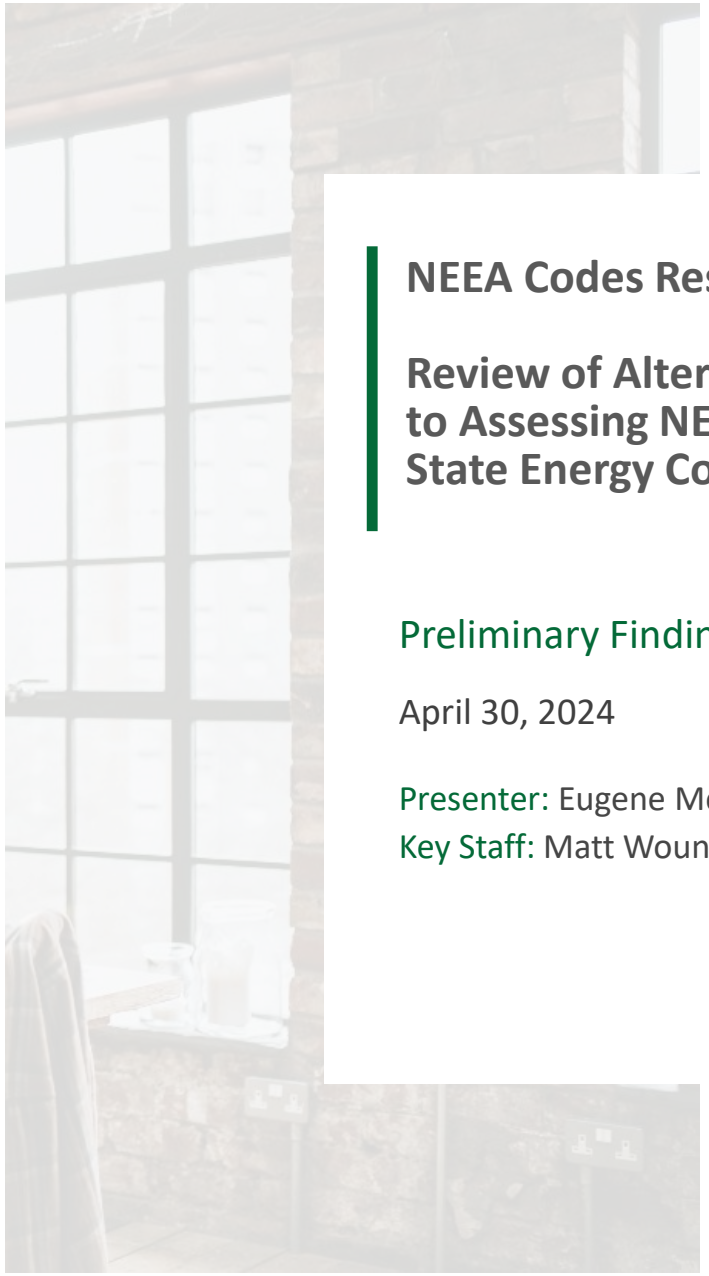




NEEA Codes Research

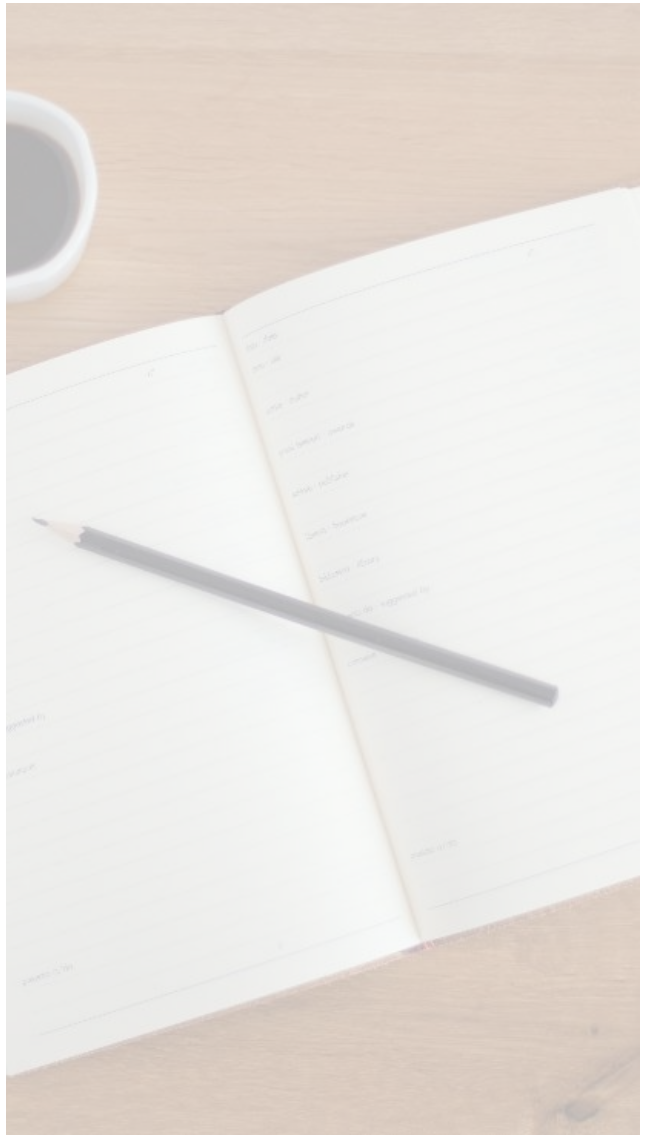
Review of Alternate Approaches to Assessing NEEA Influence on State Energy Codes

Preliminary Findings

April 30, 2024

Presenter: Eugene McGowan
Key Staff: Matt Woundy, Jared Powell, Monica Nevius

April 30, 2024



Agenda

Review of NEEA's Current Approach

Review of Identified Alternative Approaches

Recommendations



Study Overview

NEEA's energy codes work includes key market transformation goals, including:

- Partnering with regional entities to identify potential code measures
- Providing technical expertise and data analysis to public code development processes
- Working with state organizations to support code implementation

Identify opportunities for methodological refinement to ensure that evaluations efficiently capture accurate data on NEEA influence

Inform residential and commercial codes work in all four NW states



Study Methods

1. ***Understand NEEA's approach to assessing influence***
2. ***Assess 4 alternate approaches to assessing influence on code outcomes***

Staff interviews

- ***5 interviews with 7 NEEA staff***
- ***Understand goals, activities, history, savings quantification for codes and standards***

Literature Review

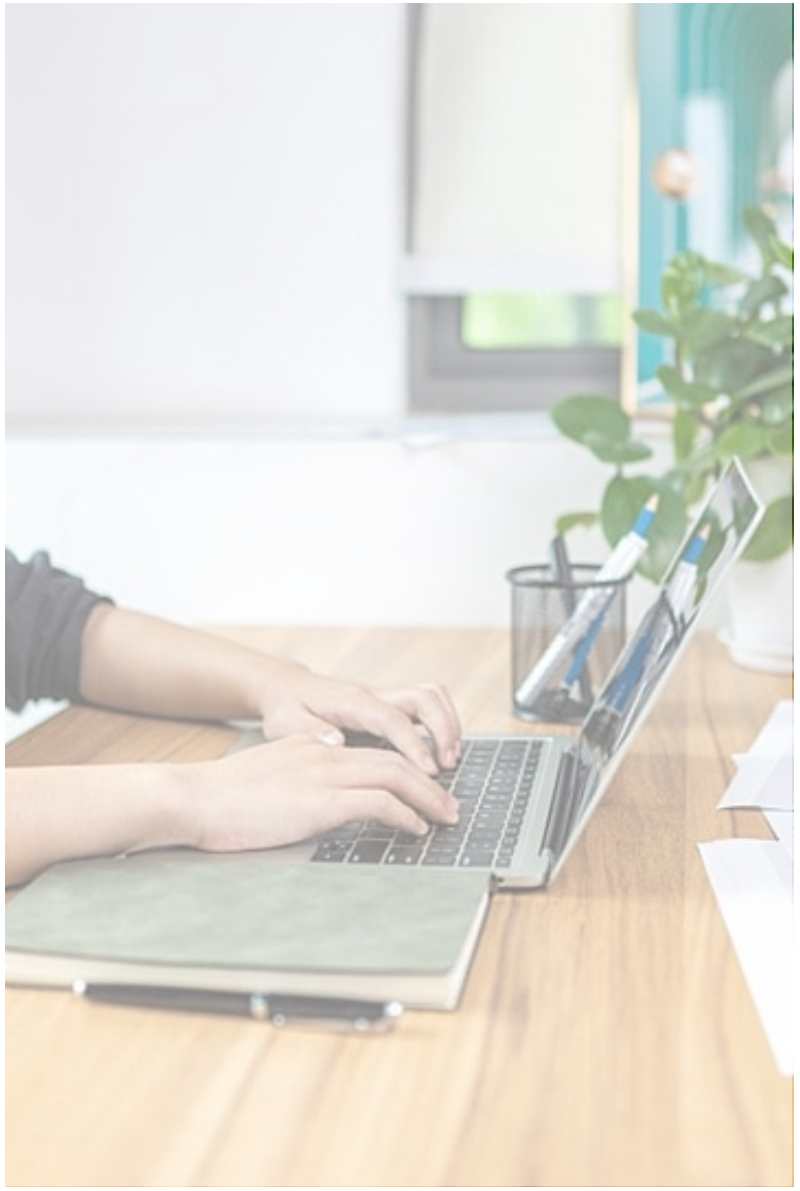
- Examples of NEEA's current approach and of the alternate approaches being assessed.



Study Methods

Assessment of 4 alternate approaches:

- *No easy fit with current codes approach or NEEA's evaluation needs*
- *A starting point for assessing opportunities for methodological refinement*
- *Not about concluding one option is 'better'*
- *Identify distinct evaluation methods to augment current approach and create more transparent, defensible reporting*



NEEA Approach

Program Theory Logic Model

- Established activities, outputs and outcomes
- Limited progress indicators, developed in MPERs #1&2

Stakeholder Interviews

- Market actors with knowledge of code process and NEEA activities in the region
- Confirm NEEA activities and influence qualitatively

Calculate Gross Savings

- Third party uses energy modeling to estimate energy savings generated by new code adoption in each state

Compliance Adjustment

- Savings are adjusted based on findings of code compliance studies (residential) or a deemed adjustment (C&I)



NEEA Approach

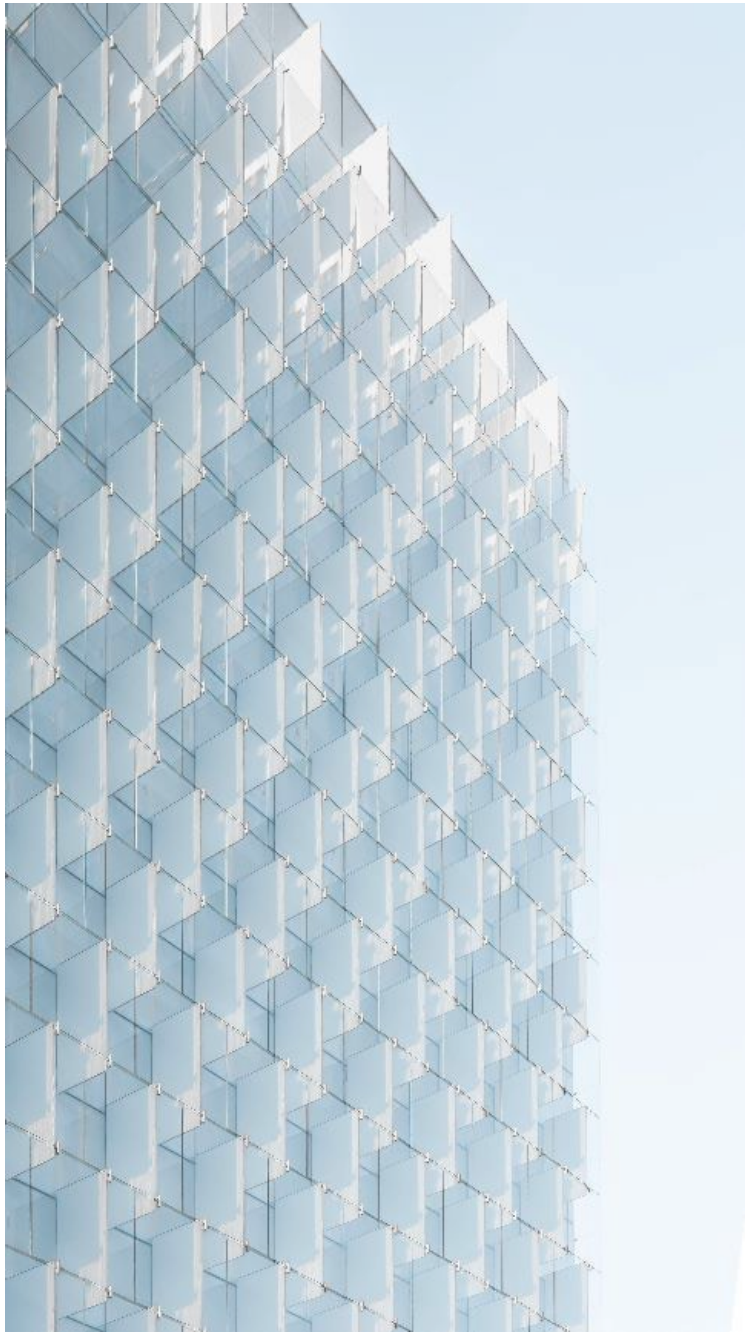
Evaluator Comments:

Building a Body of Evidence for Influence

- Activities and outcomes are laid out in logic model and guide program interventions
- MPERs occur every 1-2 years
- Data collected from key market actors to confirm NEEA activities
- Some PIs developed and measured
- MPER #2 recommended state-specific plans (with connection to LM)

Discussion

- What other data could be collected to add to the body of evidence?
- How can NEEA overcome barriers to establishing PIs for code influence?
- Adoption of MPER #2 logic model edit recommendations?



Alternate Approaches

Quantitative Measure-level Assessment

- Could be seen as highly defensible, and most accurate adjustment to gross savings
- Difficult to get to the measure level
- Large increase in time and budget
- Not a practical allocation of resources

Index of NEEA's Effective Code Proposals

- Highly cost effective, would not require any additional data collection
- Does not fully assess influence or tie efforts back to logic model
- Likely insufficient to inform an overall savings adjustment, but a good candidate for a PI
- Simple approach to build the case for NEEA influence, tracking adoption over time, supporting interview findings



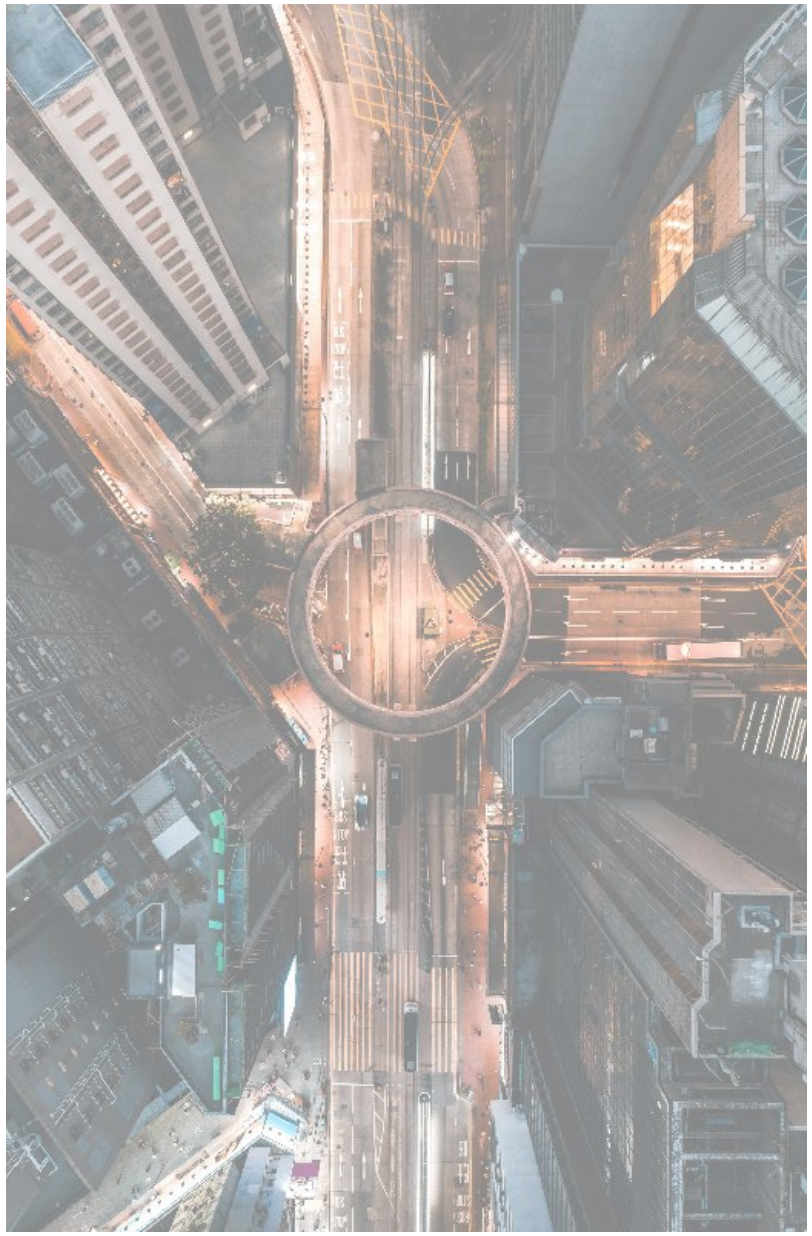
Alternate Approaches

Qualitative Description

- Allows for more specific mapping of activities and outcomes at the state and code cycle level
- Higher possibility of identifying and tracking PIs related to influence with more granularity
- Does not include an adjustment factor to account for other influences
- Readily implementable

Other Standards Approach

- Qualitative ratings of NEEA's role/primacy in code cycle could be used to create a savings adjustment factor
- Not currently recommending to adopt other adjustment factor for effectiveness in overcoming barriers



Essential Considerations

Broad, multi-level scope

- National (IECC) and state-level

Various roles across states, code cycles

- Adapting to current conditions as needed

History

- Over two decades of NEEA involvement in development/adoption of codes in NW

Focus on partnerships and co-created savings

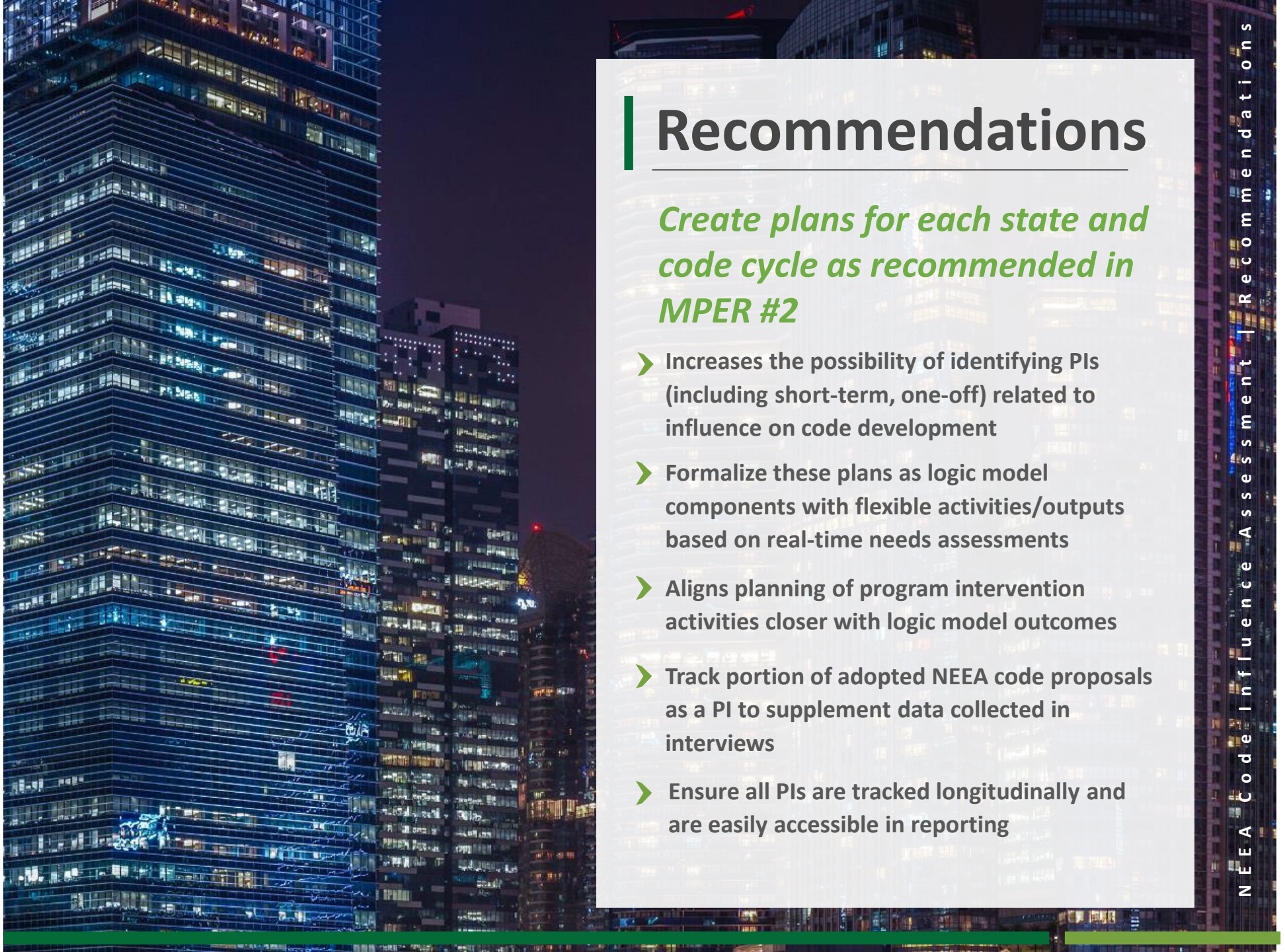
- Many evaluations assessing net savings for codes work focus on differentiating impact and influence between parties



Recommendations

Ensure future research confirms NEEA impacts and assumptions while answering relevant questions raised in evaluation literature about influence and impact on codes outcomes

- **Energy code development and adoption are complex, multistakeholder processes where outcomes are decided by numerous factors**
- **Attempt to document key features of NEEA's unique role (partnerships, historical presence, variable/adaptable roles) in qualitative data collection longitudinally, including NEEA's key role in code enhancements**
- **Identify opportunities for qualitative historical tracing and adjust data collection accordingly**



Recommendations

Create plans for each state and code cycle as recommended in MPER #2

- Increases the possibility of identifying PIs (including short-term, one-off) related to influence on code development
- Formalize these plans as logic model components with flexible activities/outputs based on real-time needs assessments
- Aligns planning of program intervention activities closer with logic model outcomes
- Track portion of adopted NEEA code proposals as a PI to supplement data collected in interviews
- Ensure all PIs are tracked longitudinally and are easily accessible in reporting



Recommendations

Add topics to MPER data collection and report longitudinal tracking results

- Topics to dig deeper on in MPER data collection:
  - Does NEEA engage with all impactful stakeholders?
  - Changes in NEEA influence or impact across multiple code cycles
  - Is there more NEEA could be doing to influence code outcomes?
  - How has code development context changed around NEEA?
- Include full narrative (e.g., more historical context) of NEEA work in codes in future code evaluations, bolstering evidence of impacts
- These findings can also point to new opportunities or highlight activities to deemphasize

Thank You!

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35 EMPLOYEE OWNERS



CEAC Process & Timeline

Date	Topics
Q4 2023 Nov. 30.	Provide background and process. COMPLETE
Q1 2024 March 6	Provide an overview of the work NEEA does to influence state energy codes, including how it compares to its work in influencing federal standards. Provide current state of evaluation approaches used to evaluate state energy codes, federal appliance standards work, and other federal standards work.
Q2 2024 April 30	Review approach and key assumptions used in estimating and reporting energy savings from state energy codes work. Present draft approaches including early assessment from the 3rd party evaluator, with an opportunity for discussion and feedback.
Q3 2024 Aug 28	Present refined draft approaches with 3rd party evaluator assessment. Staff provides initial recommendation.
Q4 2024 Nov 4	Staff provides final recommendation with implications. Staff will also address if this recommendation would need to be tested before full implementation.



Thank You

neea

Avista · Bonneville Power Administration · Cascade Natural Gas Corporation · Chelan County P.U.D. · Clark Public Utilities · Energy Trust of Oregon · Idaho Power An IDACORP Company · NorthWestern Energy · NW Natural · Pacific Power · Portland General Electric · PSE Puget Sound Energy · Seattle City Light · Snohomish County PUD Public Utility District No. 1 · Tacoma Power Tacoma Public Utilities

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Wrap Up

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Upcoming Meeting Topics

Q3 – August 28, 2024

- Update: State Energy Code Assessment
- Key Assumption Updates

Topic Requests?

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How was your experience?





Meeting Wrap-up

- Public Comment?
- Upcoming Meetings:
  - August 28th, 2024
- Feedback:
  - Overall
  - Agenda
  - Packet Materials
  - What went well?
  - What needs work?

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