

2017



2017 Operations Plan

Electric Plan



2017 Operations Plan Context

Table of Contents

- 2017 Operations Plan Context
- Key Indicators – Progress to Business Plan
- Financial Progress to Business Plan
 - Includes 2017 budget

2017 Operations Plan Context

- 2015-2019 Business Plan included a very intentional change in how NEEA and funders operate together
 - Focus for NEEA is upstream in markets
 - Funders leverage their relationships with local customers to drive awareness and adoption
- Market transformation success and energy savings is highly dependent on funder implementation of local programs and customer-facing activities
- Desired outcome is seamless collaboration with funders for improved customer relationships and maximum energy savings benefit

***Key Indicators
Progress to Business Plan***

2017 Planned Portfolio

Legend:
 Programs not in Business Plan
 Business Plan initiatives
 Business Plan infrastructure investments
 Programs funded prior to 2017

PIPELINE HEALTH



ENERGY SAVINGS





Scanning & Concepts

Program Development

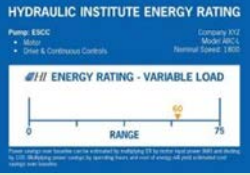

Market Development

	Scanning & Concepts	Program Development	Market Development	
Consumer Products	Heat Pump Water Heater Split Systems Residential Window Attachments	Super Efficient Dryers Retail Product Portfolio	Heat Pump Water Heaters Ductless Heat Pumps Codes & Standards	TVs Residential CFLs White Goods
New Construction (Commercial & Residential)		Next Step Home Manufactured Homes Comm. Code Enhancement	Codes & Standards	Efficient Home
Commercial Lighting		Luminaire Level Lighting Controls	Reduced Wattage Lamp Replacement Codes & Standards <i>Top Tier Trade Ally Infrastructure (optional)</i>	
Other Markets	Extended Motor Products Pneumatic Air Nozzles	Refrigeration Operator Certification Commercial Window Attachments	Building Operator Certification Expansion Codes & Standards <i>Industrial Technical Training Infrastructure (optional)</i> <i>Commercial Real Estate Infrastructure (optional)</i> <i>Commercial & Industrial SEM Infrastructure (optional)</i>	Food Processor Drive Power Commissioning 80Plus/Desktop Power Supply

Strategic Goal 1 – 2017 Scanning Priorities - Residential

Technology Category	Description	Status	Ready for Portfolio
<p>Split System Heat Pump Water Heater</p> 	<p>Inverter-driven HP-based domestic hot water with an outdoor compressor unit, and indoor storage tank.</p> <ul style="list-style-type: none"> •Product meets “hard to install” challenges to ensure that the HPWH initiative’s Federal Standard goals are met. 	<p>Monitoring progress of manufacturers and supporting lab testing of the Sanden product.</p> <p>Sanden is planning to offer a premium, product in mid-late 2016. UTL is planning to bring a product to the US for testing later this year</p>	<p>Planning to incorporate into our existing heat pump water heater program in 2017.</p>
<p>Window Attachments</p> 	<p>Operable interior or exterior window attachments with a low-e coating to improve U value and heat gain.</p> <ul style="list-style-type: none"> •Low cost alternative to primary window replacement in existing homes. 	<p>No current rating system to distinguish efficient products</p> <p>The Attachment Energy Rating Council (AERC) is planning to develop a rating for this product category.</p> <p>NEEA is a sponsor of AERC. We expect Energy Star to follow AERC’s rating effort with a performance standard.</p>	<p>Planning to incorporate the residential window attachments into our existing commercial window attachment program in 2017.</p> <p>Both products are dependent on AERC’s rating work.</p>

Strategic Goal 1 – 2017 Scanning Priorities – Commercial/Industrial

Technology Category	Description	Status	Ready for Portfolio
<p>XMP (Extended Motor Products)</p> 	<p>Motor, pump and control system sold as an integrated system.</p>	<p>BPA, ETO and NEEA participated in developing an energy testing method and labeling approach (single unit sales) in 2013. The DOE has formally adopted the pump system test method, and the Hydraulic Institute has developed a label for these systems.</p>	<p>In 2017, NEEA staff plan to develop a new program for motor products. Water pumps will be the first product category.</p>
<p>Compressed Air Nozzle – Air Saver Unit</p> 	<p>Compressed air nozzle with a pulsing controller that quickly turns air on and off to the nozzle.</p> <ul style="list-style-type: none"> • Significant compressed air (and energy) savings and better particle movement and drying capabilities. 	<p>This product line has been commercialized in Asia and Europe, and is now in process of commercializing in the US.</p> <p>A limited product assessment suggests that the Air Saver Unit could save our region 8aMW if used in Industrial applications.</p>	<p>In 2017, NEEA staff will perform limited field research.</p> <p>If research is positive, staff plan to develop a new very small program to provide a test method and specification that utilities can use in their industrial programs.</p>

We are continuously working on scanning opportunities for all markets.

2017 Scanning Activity

Technology	20 Year aMW*	Potential 2017 Activity
Split System Heat Pump Water Heaters	354	Initiative Start (Add to Heat Pump Water Heater Program)
Window Attachments (Residential)	100	Initiative Start (Add to Window Attachments Program)
Extended Motor Products (XMP)	150	Initiative Start (New Industrial Program)
Compressed Air Nozzle - Air Saver Unit	8	Initiative Start (New Industrial Program)
	612	
Ventilation separated from Heating and Cooling (V/HAC)	85	Commercial program potential - In Testing
Unitary Water Heater - Tier 4 and 5	200	Residential program potential - May add to Heat Pump Water Heater Program
Ultra High Definition TV	57	Residential program potential - May utilize Retail Product Platform
Ductless Heat Pump Quick Connect	100	Residential program potential - May add to Ductless Heat Pump Program
	442	
Pump Operator Certification	20	In Scanning
Multi-function Heat Pump	194	In Scanning
Connected Thermostats	226	Monitoring - not currently funded
Pivot Commission	10	On hold
Dynamic Glass	40	Monitoring - not currently funded
	490	<i>* Estimated potential</i>

Strategic Goal #2 – Create Market Conditions to Accelerate...

Consumer Products Market

Program	Goals and Barriers	Market Interventions
<p><i>Heat Pump Water Heaters</i></p>	<p>Goal: Influence passage of a federal standard for all electric storage tanks > 45 gallons by 2025</p> <p>Barriers: Product availability and cost</p>	<ul style="list-style-type: none"> • Grow supply chain and unit sales through incentives, awareness, and manufacturer marketing support • Partner with new manufacturers to support and qualify products • Capture emergency replacements
<p><i>Ductless Heat Pumps</i></p>	<p>Goal: Accelerate the adoption of inverter-driven DHP's in electrically heated homes by building distribution channels, market capacity and consumer demand.</p> <p>Barriers: Product cost and consumer awareness/acceptance</p>	<ul style="list-style-type: none"> • Lower installed costs • Support utility programs through increased unit energy savings and cost-effectiveness • Create consumer education tools • Expand to manufactured homes

Strategic Goal #2 – Create Market Conditions to Accelerate...

Consumer Products Market

Program	Goals and Barriers	Market Interventions
<p>Super-Efficient Dryers</p>	<p>Goal: Support inclusion of super-efficient dryers into the U.S. market and influence the enactment of better federal test protocols and more stringent federal efficiency standards.</p> <p>Barriers: Product availability and cost, consumer awareness</p>	<ul style="list-style-type: none"> • Get heat pump products floored at big box retailers • Support utility programs for Tier 2+ products • Support ENERGY STAR Most Efficient dryer category
<p>Retail Product Portfolio</p>	<p>Goal: Leverage mid-stream incentives to influence retail stocking practices, ultimately driving manufacturing and standards for a portfolio of energy-efficient products sold through the retail channel.</p> <p>Barriers: Consumer awareness, supply chain indifference</p>	<ul style="list-style-type: none"> • Expand retailer participation • Expand extra-regional partnerships • Streamline product selection, energy savings and evaluation

Strategic Goal #2 – Create Market Conditions to Accelerate... Residential New Construction Market

Program	Goals and Barriers	Market Interventions
<p><i>Next Step Homes</i></p>	<p>Goal: Develop and increase market adoption of energy-efficient advanced building practices and accelerate advancement of building codes over next 3-4 code cycles.</p> <p>Barriers: Builder capability and unclear value proposition</p>	<ul style="list-style-type: none"> • Develop/support performance-based utility programs • Drive/support participation in Home Certification program • Develop training/support for code changes
<p><i>Manufactured Homes</i></p>	<p>Goal: Introduce a new above-code specification while the existing HUD code goes through it's first revision in 30 years.</p> <p>Barriers: Product availability, unclear value proposition, builder capability</p>	<ul style="list-style-type: none"> • Establish new specification • Provide technical assistance to builders • Develop tools and resources to support marketing and sales • Develop/support utility programs

Strategic Goal #2 – Create Market Conditions to Accelerate... Commercial Lighting

Program	Goals and Barriers	Market Interventions
<i>Reduced Wattage Lamp Replacement</i>	<p>Goal: Low Wattage T8 lamps becomes standard product choice instead of the current 32W lamp in T8 lamp replacement market.</p> <p>Barriers: Limited relationships with supply chain; Low awareness and market demand TLED programs</p>	<ul style="list-style-type: none"> • Enroll nontraditional channels • Bundle with funder programs in regional midstream platform • Continue incentives and outreach to drive sales
<i>Luminaire-Level Lighting Controls</i>	<p>Goal: Bring clarity to the controls market by developing best practice for LLLC, aiming to have the technology adopted as standard industry practice.</p> <p>Barriers: Low awareness and value proposition</p>	<ul style="list-style-type: none"> • Complete market research and demonstration projects • Support installer training through TTTA (NXT Level)

Strategic Goal #2 – Create Market Conditions to Accelerate... Commercial Lighting

Program	Goals and Barriers	Market Interventions
<i>Top Tier Trade Ally Advanced Training</i>	<p>Goal: Create an elite group of lighting trade allies that design, sell and install retrofit projects with deep energy savings for utility programs.</p> <p>Barriers: Trade ally capability and differentiation</p>	<ul style="list-style-type: none"> • Support and monitor NXT Level 1 • Develop and launch NXT Level 2
<i>Lighting Resources</i>	<p>Goal: Leverage resources for the region to invest in key strategies that work to support utility partners' collective efficiency efforts in the commercial and industrial lighting markets</p> <p>Barriers: Trade ally awareness, capability; lack of training coordination</p>	<ul style="list-style-type: none"> • Support and leverage NW Lighting Network and Lighting Basics training • Represent region in DLC • Support funder promotional efforts

Strategic Goal #2 – Create Market Conditions to Accelerate...

Commercial Buildings

Program	Goals and Barriers	Market Interventions
Commercial Real Estate	<p>Goal: The Northwest commercial real estate industry leads the nation in leveraging energy efficiency as a value creation investment with compelling financial returns to gain competitive advantage.</p> <p>Barriers: Awareness of business case for energy efficiency. A cluttered market.</p>	<ul style="list-style-type: none"> • Enable engagement with decision makers • Improve resources to help identify opportunities
Commercial Window Attachments	<p>Goal: Secondary Glazing Systems become the standard product choice in the existing building window upgrade market.</p> <p>Barriers: Product performance and differentiation; market awareness</p>	<ul style="list-style-type: none"> • Support AERC certifications • Complete product assessment and energy savings rate • Support funder program design

Strategic Goal #2 – Create Market Conditions to Accelerate...
Commercial New Construction

Program	Goals and Barriers	Market Interventions
Commercial Code Enhancement	<p>Goal: Create a regional framework with individual state action plans supporting state adoption of progressively effective energy codes.</p> <p>Barriers: Fragmented regional programs and activities; cost concerns</p>	<ul style="list-style-type: none">• State action plan to advance code in Washington• Assess and build support for advanced technologies• Educate and demonstrate results

Strategic Goal #2 – Create Market Conditions to Accelerate... Other Industrial/Commercial

Program	Goals and Barriers	Market Interventions
Certified Refrigeration Energy Specialist (CRES)	<p>Goal: Increase industrial facility energy efficiency through implementation of a certification program for refrigeration system operators</p> <p>Barriers: Awareness; value proposition</p>	<ul style="list-style-type: none"> • Market CRES to owners/managers • Increase number of certificants by co-sponsoring review courses and supporting activity completion • Support ANSI accreditation
Commercial & Industrial Strategic Energy Management (SEM)	<p>Goal: Sustained adoption of Strategic Energy Management is valued, desired and implemented by a majority of Northwest business owners.</p> <p>Barriers: Awareness; value proposition</p>	<ul style="list-style-type: none"> • Provide standardized tools and resources to support funder programs • Facilitate collaboration on SEM challenges and opportunities
Industrial Technical Training	<p>Goal: Coordinated technical training on key industrial energy efficiency concepts to support industrial energy efficiency programs and build market capacity.</p> <p>Barriers: Knowledge and capability</p>	<ul style="list-style-type: none"> • Provide technical training and support

Objectives and Metrics for Codes & Standards

(progress compared to Business Plan)

Business Plan Objective	Business Plan Metric	2017 Goals
Support increases in stringency and compliance of energy codes in each of the four Northwest states	Savings analysis of new code versus old code	All northwest states are either implementing new codes (training, education and technical assistance) or in the development stage for new codes.
Support the adoption of more stringent federal and state efficiency standards	Savings analysis of new standards for regional attribution.	Regional standard savings for 2017 will add up to 5 aMW or more.
Develop a package of policies and data that will support implementation of a hybrid voluntary/mandatory approach to limiting energy use in existing buildings.	Development of package and implementation of proof of concept demonstration projects that include case studies and an online database for energy use analysis.	Development of an online database for use by cities in management of building energy use. Tacoma begins to track building energy use and sets targets for energy use reduction. Boise develops a master plan for building renewal.
Transition, where appropriate, to system and performance-based standards.	Number of standards (voluntary/mandatory) increase that meet the objective.	Continued development of a Regional Code Index to track EUI trending over time and through code changes.
Integrate building science principles more formally into all advanced practices and systems NEEA promotes.	Development of best practice training modules. Training implemented in regional states.	High performance construction methods, systems and appliances are being utilized to meet code.

Strategic Markets

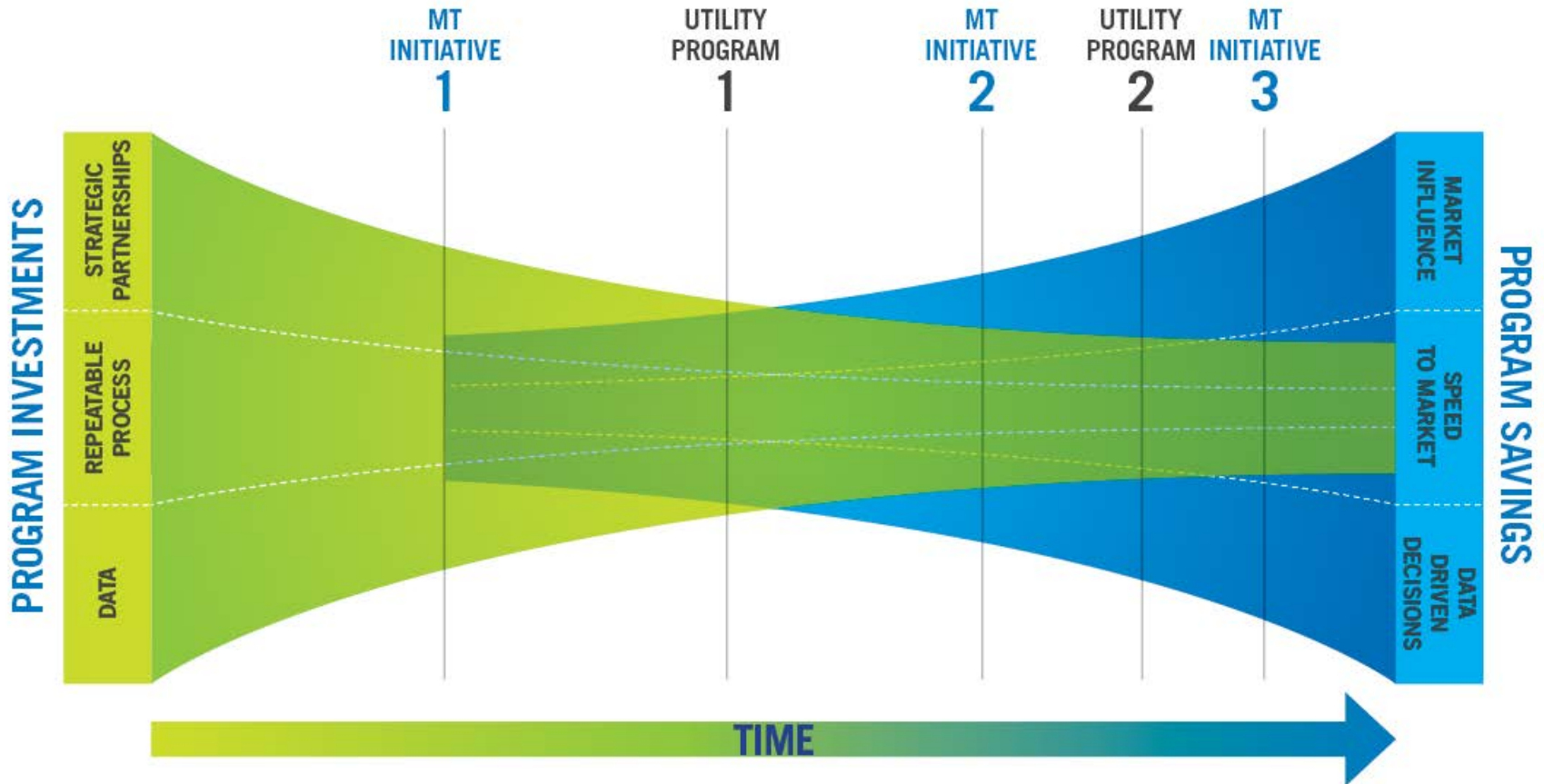
2017 Key Focus Areas

Greater efficiency and regional coordination as a result of implementation and increased shared ownership of the regional strategic market plans

Expanded regional platforms to support multiple programs, increase volume of efficient products and to expand regional data collection and analytics

REGIONAL PLATFORMS

Over time, platforms enable greater market influence and energy savings at an overall lower cost to the region.



Strategic partnerships in Retail and Upstream Commercial Lighting lead to greater market influence; repeatable processes lead to greater speed to market for products; increased data drives more data-driven decisions.

Cycle 5 Goal Summary

Strategic Goal #1: Fill the Energy Efficiency Pipeline

Pipeline Health (in aMW)				
aMW of 20-year Program Savings Potential	2017 Forecast Activity	Total 2017 Forecast	% to Business Plan Goal	Comments
Scanning Health	-200	1200	85%	Reflects concepts advancing into portfolio.
Pipeline Health	200	1000	100%	+3 programs and 1 product extension in 2017 plans
Program Advancement	145	210	100%+	

NEEA emphasized new concept development in 2015/16 to build up our Pipeline Health for the Region. Starting at 50% to goal in 2015, we are now on target. This goal is a leading indicator of a consistent flow of energy savings beyond our current funding cycle.

Cycle 5 Savings Summary

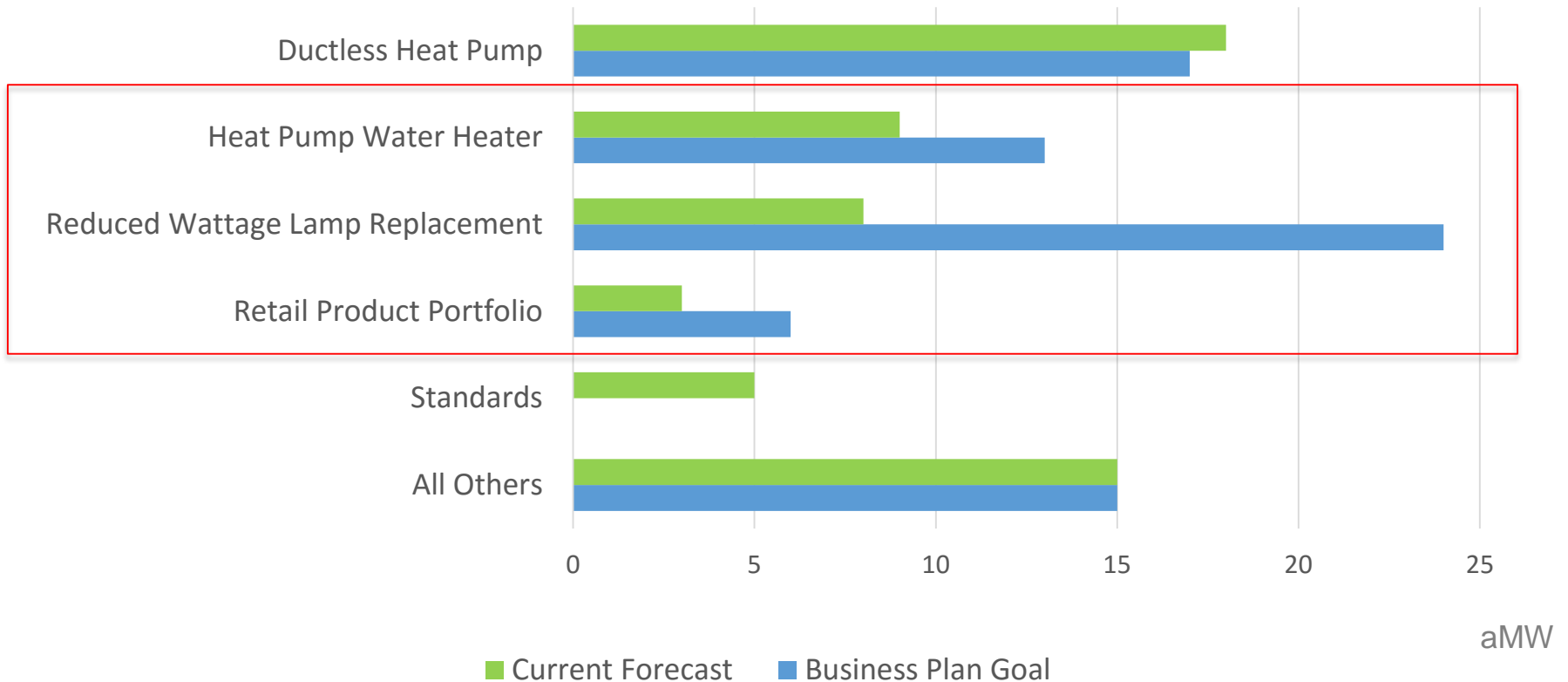
Energy Savings Delivery (in aMW)						
	2017		5 Year		10 Year	
	TRS	CC	TRS	CC	TRS	CC
Current Investments	34	10	160-170	55-60	400-450	150-190
% to Goal for Current Investments			110%+	70-80%	110%+	85-105%
All Investments	128	35	600-620	160-170	1000-1150	280-330
% to Goal for All Investments			100%+	105%+	100%+	95%+

Risk in short term (5 year) co-created savings due mainly to the Reduced Wattage Lamp Replacement market. Data shows large opportunity in the market, but increased TLED competition is slowing adoption.

TRS = Total Regional Savings; CC = Co-Created Savings

NEEA 2017 Portfolio Overview

2015-19 Co-Created Savings



Note:

All Others includes: Super-Efficient Dryer, Building Operator Certification Expansion, Next Step Home, Manufactured Home, Multifamily Code, Commercial Code, Luminaire Level Lighting Control, RETA CRES Refrigeration Operator Certification programs

2017 Business Plan Goals – Energy Savings Forecast

Cycle 5 (2015-2019) aMW Energy Savings GOALS			
NEEA Cycle 5 2015-2019	Total Regional Savings	Co-Created Savings	Net Market Effects
Current Investments	145	75	55
Prior Investments	455	75	n/a
All Investments	600	150	n/a

Cycle 5 (2015-2019) aMW Energy Savings FORECAST			
NEEA Cycle 5 2015-2019	Total Regional Savings	Co-Created Savings	Net Market Effects
Current Investments	160-170	55-60	35-50
Prior Investments	440-450	105-110	n/a
All Investments	600-620	160-170	n/a

- The forecast for Co-Created savings on the current investment portfolio has declined, but is offset by forecasted performance of prior investments.
- Important to note the Net Market Effects is driven by a rough forecast of local programs across the region. There is wide variability in this forecast.

2017 Priority Programs (2015-2019 Savings Drivers) & Risks

Ductless Heat Pump

- On target to meet savings goals
- Activities include market expansion to Manufactured Homes
- Some cost effectiveness challenges

Heat Pump Water Heater

- Risk in short-term savings target due to delayed large tank standard adoption even though small tank sales (and projected 5 year savings) improved in 2016.
- Goal to support national adoption and reach federal standard for small tanks in 2023-2025
- Needs additional local utility program support

Reduced Watt Lamp Replacement

- High risk in short-term savings due to competition with LED
- Regional incentive coordination is key to a strategic approach
- Long-term savings potential is high especially if developed with the Commercial Lighting platform.

Retail Product Portfolio

- Risk in short-term savings due to delay in regional coordination. Mitigation to achieve short and long term potential is full regional support and utilization.
- New distributor coming online in 2017 benefits smaller retailers, smaller markets.
- Ultra High Definition TVs expedited through this platform

Initiative Advancement

Milestone	2017 Planned Milestones
Concept Approval	TBD
Initiative Start RPAC VOTE	Residential Window Attachments Heat Pump Split System Pneumatic Air Nozzle Extended Motor Product
Product Readiness	Luminaire Level Lighting Controls Commercial Window Attachments
Scale-Up RPAC VOTE	Next Step Homes Manufactured Homes Retail Product Portfolio Commercial Code Enhancement Certified Refrigeration Energy Specialist Training
Transition Complete	Building Operator Certification Extension – MT/ID

2017 Portfolio Cost Effectiveness

9/27/2016

Market Development Programs	Portfolio Savings Weights	Levelized Cost (fully loaded) (in Cents/kWh)
Reduced Wattage Lamp Replacement	5%	2.3
Ductless Heat Pumps	22%	5.0
Heat Pump Water Heaters	73%	2.4
Portfolio Total		2.9

- Portfolio is weighted on initiative % contribution to Total Regional Savings over the 20-year analysis period
- Includes investments that are in Market Development stage, and apportions 100% of NEEA's 2015-2019 funding
- Employs the 7th Power Plan methodology

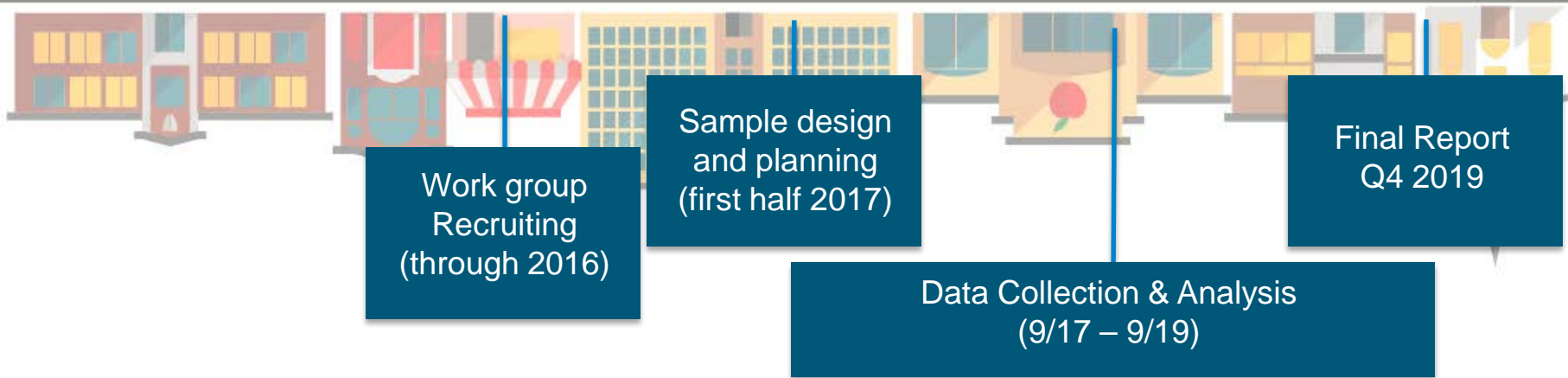
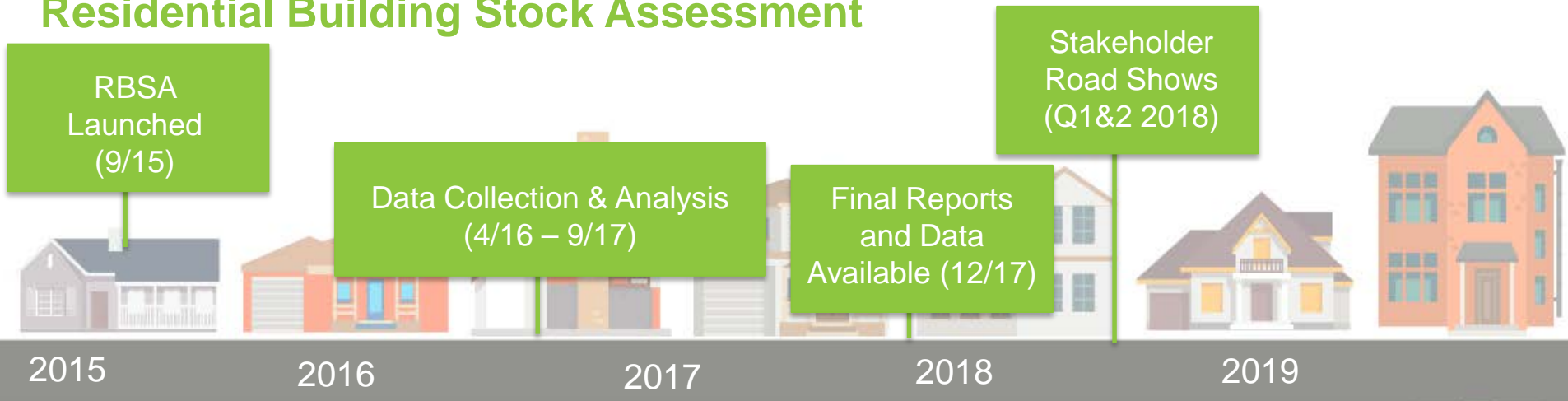
NEEA's goal is to maintain a portfolio levelized cost below 3.5 cents per kWh.

Other Focus Areas

- Finish Financial/Business System implementation (NEEABiz)
- Complete NEEA Strategic Planning resulting in a draft 2020-2024 Strategic Plan
- Develop Data Hub to improve speed to market with better data and analytics
- Continue adoption of data security measures in accordance with security assessment
- Coordinate 3rd party evaluation on costs and benefits of optional programs and act on recommendations
- Continue to pursue excellence in stakeholder collaboration and coordination
- Build/deploy Workforce Evolution foundation (workforce, technological, and process improvements to meet future business needs)

Regional Stock Assessments

Residential Building Stock Assessment



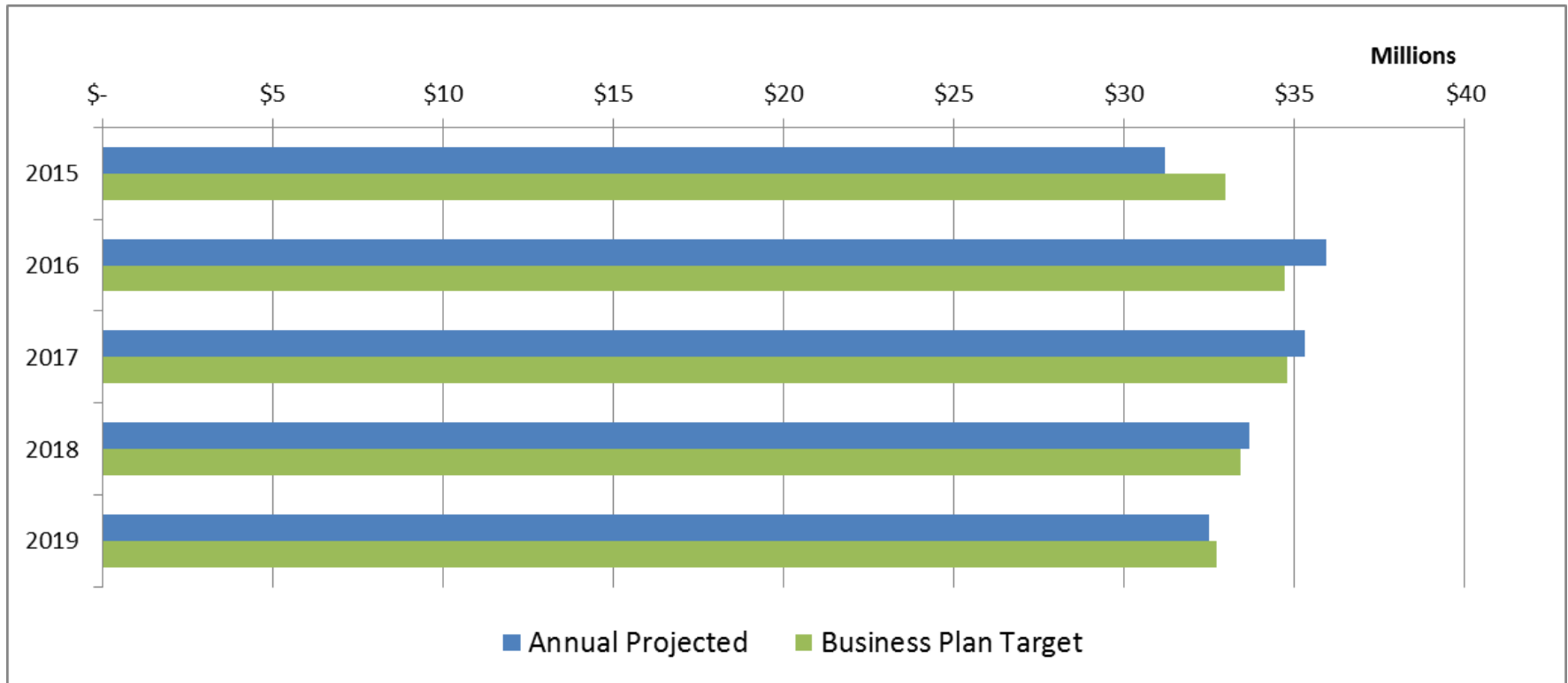
Commercial Building Stock Assessment

Financial Progress to Business Plan

Summary 2017 Budget by Division

Division (\$ Thousands)	2016 Q-3 Forecast	2017 Budget	Net Change
Executive & Business Admin	3,550	3,704	154
Stakeholder Relations	2,042	2,134	92
Planning, Evaluation & Technology	9,386	8,529	(857)
Market Strategy & Execution	20,971	20,934	(37)
Sub-Total Electric	\$ 35,949	\$ 35,301	\$ (648)
Special Funds-Electric	-	160	
Federal Funds-Electric	20	75	
Total Electric	\$ 35,969	\$ 35,536	
Natural Gas	\$ 2,798	\$ 3,765	\$ 967
Grand Total	\$ 38,767	\$ 39,301	

Annual Cycle 5 Budget Compared to the Business Plan



- Under budget in 2015 leveraged in 2017-2019
- 2016 forecasted over budget due to excellent market uptake for HPWH
- Total Cycle 5 spend projected to be close to Business Plan

Expenses* & Savings for Existing and Prior Programs (by Strategic Market)

Strategic Market	2017 Core & Optional Budget (\$M)	2015 - 2016 Estimated Core & Optional Expenses (\$M)	Total 2015 - 2017 Estimated Core & Optional Expenses	2015 - 2017 Expenses To Date: 5 Year budget (\$M)	5 Year Budget (\$M)	Total Regional Savings Progress To Date (2015 - 2017)	Total Regional Savings Estimate (Revised 9/2016)		Total Regional Savings in Business Plan	
							5 Yr	10 Yr	5 Yr	10 Yr
Consumer Products	10.2	19.8	\$ 30.0	68%	\$ 44.3	19.3	44.6	153.9	49.0	155.0
Res. New Construction	2.2	5.7	\$ 7.8	50%	\$ 15.5	3.2	6.4	20.2	13.0	31.0
Commercial & Industrial Lighting	4.9	7.7	\$ 12.6	66%	\$ 19.1	4.4	15.3	43.3	34.0	75.0
Commercial New Construction (IDL)	0.7	1.4	\$ 2.2	50%	\$ 4.4					
Other Markets	1.8	7.0	\$ 8.8	76%	\$ 11.5	1.3	2.6	12.0	4.0	13.0
Total	\$ 19.8	\$ 41.5	\$ 61.3	65%	\$ 94.8	28.3	68.8	229.4	100.0	274.0

- * Includes project staff and general & administrative costs
- * Total does not include Codes and Standards expenses and savings

Cycle 5 Optional Program Projection (\$ thousands)

Fully Loaded Costs	Cycle 5 BP Total	2015 Actual	2016 Q-3 Forecast	2017 Budget	2018 Forecast	2019 Forecast	Cycle 5 Projected Total
Commercial Real Estate	\$ 6,532	\$ 1,448	\$ 1,645	\$ 972	\$ 1,177	\$ 1,290	\$ 6,532
Top Tier Trade Ally	\$ 5,218	\$ 660	\$ 1,087	\$ 994	\$ 1,128	\$ 1,349	\$ 5,218
Ind Tech Trng	\$ 1,170	\$ 227	\$ 302	\$ 223	\$ 200	\$ 217	\$ 1,170
Remaining NEEA Programs	\$ 155,330	\$ 28,861	\$ 32,915	\$ 33,111	\$ 30,980	\$ 29,463	\$ 155,330
Total	\$ 168,250	\$ 31,196	\$ 35,949	\$ 35,301	\$ 33,486	\$ 32,319	\$ 168,250

- Projected 2017 budgets for the 3 optional programs total \$2.2M.
- By the end of 2017, the 3 optional programs will have used approximately 58% of the funds available for 2015 – 2019.
- Estimates are fully-loaded

Reconciliation of Business Plan New Initiative Funding

Cycle 5 Fully Loaded New Initiative Funding				
Program Name	2015 - 2016 Estimated Core & Optional Expenses (\$M)	2017 Core & Optional Budget (\$M)	Projected 2018 - 2019	Total Cycle 5 Core & Optional Expenses (\$M)
2015 Scanning	\$ 1.00			\$ 1.00
Dryers	\$ 1.41	\$ 1.03	\$ 3.35	\$ 5.80
Manufactured Homes	\$ 0.22	\$ 1.05	\$ 3.09	\$ 4.36
Commercial Code Enhancement	\$ 0.10	\$ 0.71	\$ 1.50	\$ 2.31
Commercial Window Attachments	\$ 0.15	\$ 0.92	\$ 1.58	\$ 2.65
Unallocated Placeholder Funds	\$ 0.06	\$ 0.46	\$ 3.11	\$ 3.63
Total Projected New Initiative Spend	\$ 2.94	\$ 4.17	\$ 12.63	\$ 19.75
Cycle 5 Business Plan Budget				\$ 18.50
Total Projected as % of Business Plan Budget				107%