Natural Gas Market Transformation Business Plan

2015-2019

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2015 – 2019 Natural Gas Market Transformation Business Plan

Executive Summary

Improving energy efficiency for Northwest end users served by multiple fuels will result in significant benefits to the Northwest's economy and energy availability. At the request of the region's natural gas utilities, NEEA organized a collaborative of natural gas stakeholders in early 2014 to develop a strategy for initiating natural gas market transformation in the Northwest. This natural gas market transformation business plan is the outcome of six months of work by that collaborative. Participants (referred to as "Collaborative") included representatives from Avista Utilities, Cascade Natural Gas, Energy Trust of Oregon, NW Gas Association, NW Natural and Puget Sound Energy.

On behalf of the Collaborative, NEEA proposes a five-year, $18.3 million natural gas market transformation plan that leverages and complements NEEA's 2015 – 2019 Business Plan (6/20/2014). This initial foray into natural gas market transformation will allow NEEA and its funders to build experience working in natural gas markets, to identify and resolve integration issues and to drive towards a fully integrated approach to market transformation for the long term. NEEA expects this integrated approach will result in significant improvements in the cost-effectiveness and efficacy of both electric and gas initiatives. The 2015-2019 Plan includes a portfolio of five new residential and commercial gas initiatives, scanning, codes and standards, research and evaluation, a mid-cycle evaluation, and a new natural gas advisory committee. The proposed funding allocation model, funding cycle and basic initiative market transformation approach are consistent with NEEA's electric market transformation model.

The three largest initiatives in the portfolio represent a long-term, energy savings resource capable of delivering over 280 million Therms annually, at a weighted average TRC levelized cost of $0.28/Therm. This levelized cost falls below the recently revised wholesale market forecast from the Northwest Power and Conservation Council for near-term forecasts and below the expected long-run marginal cost of gas.

To minimize both costs and impacts on the organization, NEEA expects to leverage existing business structures and processes as much as possible. However, NEEA estimates that it will need six to seven FTE to perform the work and will supplement this FTE with contractors. The G&A overhead charge included in the budget will cover any incremental costs for other administrative and operational systems. The FTE will include a mix of existing staff and new hires. NEEA built in a half-time senior manager position in the budget to provide leadership and oversight of NEEA's gas market transformation efforts.

The Collaborative recommends launching this natural gas market transformation work with gas funding from the current Collaborative members including Avista Utilities, Cascade Natural Gas, Energy Trust of Oregon, NW Natural, and Puget Sound Energy. These gas funders represent roughly 64 percent of the region's residential and commercial load and customers. As NEEA demonstrates success with this gas market transformation effort and as regulatory environment and energy efficiency goals align, the Collaborative's intent is to expand participation to remaining regional gas utilities over time.

Key principles of operation are:

- No promotion of fuel switching
- No cross subsidies between gas and electric
- Implementing gas efforts without diminishing existing electric market transformation work

Similar to NEEA's electric market transformation launch strategy, NEEA will hire an independent contractor to conduct a mid-cycle evaluation to provide guidance for any needed adjustments in budgets, initiative portfolio and approach. The mid-cycle evaluation will also provide an opportunity for NEEA to address gas/electric cost allocation issues that surface and to develop a strategy for quantifying the benefits of a duel fuel or integrated approach to market transformation.

Background

In 2009, the NEEA Board adopted a fuel-neutral mission for NEEA, followed by a natural gas policy in 2010 (See Attachment 1). NEEA worked with regional natural gas utilities and developed a proposed pilot project for consideration in 2012. At the time, there were a number of trends within the natural gas industry, including some dramatic changes in avoided cost, that led the group to postpone further work on the project. During NEEA's recent 2015-2019 strategic planning process, its Board of Directors re-affirmed its support of NEEA's efforts to work collaboratively with natural gas stakeholders to define a scenario for NEEA as a dual-fuel market transformation organization, and to recommend an approach for natural gas market transformation in the Northwest. A large proportion of Northwest residences and businesses are currently served by multiple energy sources, so improving energy efficiency for these end users is inherently a multi-fuel issue. Pursuing this approach offers significant benefits to the Northwest, its economy and its energy availability.

In February 2014, NEEA organized a natural gas market transformation collaborative initially composed of representatives from Avista Utilities, Cascade Natural Gas, Energy Trust of Oregon, NW Natural, the NW Gas Association (NWGA) and Puget Sound Energy(PSE). Intermountain Gas and NorthWestern Energy were invited but declined to participate at this time. NorthWestern requested to stay apprised of progress. Between February and August 2014, the Collaborative met monthly to develop a business plan for undertaking natural gas market transformation in the Northwest. Using $50,000 of funding from these natural gas stakeholders, NEEA served as the convener and facilitator for the Collaborative.

In parallel with the development efforts of the Collaborative, Avista Utilities, Cascade Natural Gas, Energy Trust of Oregon, NW Natural, and PSE agreed to fund an emerging technology project to gain some practical experience working together in gas market transformation. In response to this, the Collaborative launched a project in partnership with the Gas Technology Institute (GTI) to demonstrate the real-world performance of a new gas-fired heat pump water heater (G-HPWH). NEEA is managing this first demonstration as a contractor to GTI, on behalf of Northwest funders. Intermountain Gas is contributing data to this project from an additional demonstration site funded through its existing relationship with GTI.

To determine the initial portfolio of gas initiatives, the Collaborative established initiative and portfolio selection criteria and identified technologies of interest. Utilizing this information, NEEA partnered with the Gas Technology Institute (GTI) to conduct a high-level scanning/screening exercise. Collaborative participants then selected the most promising initiatives. The Collaborative also considered which additional services would be needed and aligned on scanning, codes and standards, and a mid-cycle gas market transformation evaluation. NEEA prepared a high level five-year budget, long-term energy savings and cost effectiveness estimates and staffing plan.

This Business Plan is the output of this collaborative effort.

Collaborative Goals and Key Principles

The Collaborative established a goal to guide this development effort:

To accelerate the development and market adoption of efficient natural gas products, practices and services resulting in increased consumer choices and increased efficiency of natural gas use in the Northwest.

The Collaborative developed the following Business Plan using this goal as its primary guidance for the process.

Portfolio Strategy. The Collaborative adopted a strategy for the 2015-2019 Business Plan that focuses on implementing a small portfolio of initiatives. This strategy allows both NEEA and its funders to gain experience working on gas market transformation together and to minimize major organizational changes. Once NEEA and funders have more confidence in this portfolio, NEEA will integrate gas market transformation into its future Strategic and Business planning.

Consistency with NEEA's 2015-2019 Strategic and Business Plan (6/20/2014). This proposed Gas Business Plan is consistent with NEEA's mission and strategic goals, as identified in NEEA's 2015 – 2019 Strategic and Business Plans. This plan aligns with NEEA's distinct characteristics and core competencies and follows NEEA's principles, values, and its Board-approved natural gas policy (see Appendix 1).

Gas Advisory Committee. The Collaborative believes that it is important for this initial effort to keep some independent oversight by gas utilities. This plan includes a recommendation for the establishment of a natural gas advisory committee that would subsume the role of the Collaborative in advising and guiding NEEA's gas market transformation portfolio over the next five years. As with other NEEA advisory committees, the new Gas Advisory Committee will report to the NEEA Executive Director.

Mid-Cycle Assessment. The Collaborative believes it is important to conduct a timely assessment of the approach laid out in this Business Plan. NEEA will conduct a mid-cycle evaluation in late 2016 to assess progress, address gas/electric integration issues and to recommend improvements or changes going forward. This mid-cycle assessment will also focus on identifying and quantifying the benefits of a dual fuel or integrated fuel market transformation approach and/or put a plan in place to collect the data necessary to do determine the benefits.

Operational Planning. The Collaborative acknowledged that the next level of development should align with NEEA's 2015 Operations Planning timeframe. If the NEEA Board approves this business plan in August 2014, NEEA will develop a 2015 Gas Market Transformation Operations Plan in the fall of 2014. The Collaborative will review this proposed operations plan as the final stage in this process.

Investment and Return

As with electric market transformation, gas market transformation is inherently a long-term investment strategy that supports energy efficiency efforts over a 20-year horizon. Most of the initiatives identified

in this business plan are in the very early phases of the initiative life cycle. While NEEA does not expect them to deliver significant savings until late in this funding cycle, it projects all of these to be regionally cost-effective in the long-term. The three largest initiatives in the portfolio will represent a long-term, energy savings resource capable of producing over 280 million therms per year at a weighted average 20-year TRC levelized cost of $0.28/therm. This levelized cost falls below the recently revised wholesale market forecast from the Northwest Power and Conservation Council (Council) for near-term forecasts and below the expected long-run marginal cost of gas.

Accordingly, NEEA measures returns on investment using metrics that are reflective of this long-term view. For this initial five-year cycle of gas market transformation, NEEA will measure success as follows:

- Energy savings
- Acceleration of market adoption metrics (i.e. market progress indicators); a measurable change in all targeted markets
- Cost-effectiveness

NEEA will establish more specific energy savings and market progress indicators during formal initiative planning which is anticipated to be completed in 2015. Both the related initiative lifecycle (ILC) documents and annual operations planning will incorporate these indicators.

Budget

Program investment comprises direct contractor expenses, NEEA staff costs and indirect expenses for general and administrative expenses for five initiatives. Each initiative budget includes associated expenses including market research and evaluation, market planning and stakeholder relations. In addition, the budget includes expenses for a mid-cycle assessment and business planning costs to prepare for a future funding cycle. The total, five-year funding level is $18.3 million. Three budget views are included below:

- Table 1 provides the five-year (2015 – 2019) investment summary by primary activity.
- Table 2 shows the total five year and average annual indirect and direct costs for staffing, initiatives and business planning.
- Table 3 shows the projected annual expenditure by budget category (FTE, direct costs and indirect costs).

Detailed initiative budgets for each initiative and for the supplemental services (scanning, codes and standards) are included in Appendix 2. The budgets ramp up over time to reflect start-up realities.

Table 1: Initiative Planning Costs Fully Loaded

Initiative Costs Fully Loaded		
Gas HPWH	$	7,508,041
Combined Space-Water Heating	$	3,520,720
Hearth Products	$	1,972,451
Rooftop HVAC	$	2,226,961
Dryers	$	572,647
Scanning	$	1,272,549
Codes and Standards	$	848,366
Total Contracted Costs	$	17,921,735
Mid-Cycle Assessment/Business	$	413,000
Total Costs	$	18,334,735

Table 2: Five Year Natural Gas Budget by Budget Category

Direct Staff Compensation	5-Year Total	Annual Avg.
Director		0.22
Gas Sr. Mngr + Cost Ctr Manager		0.74
Initiative/Product Manager		2.84
Project Manager		0.57
Planning Analyst & Evaluation PM		1.79
Project Admin Support		0.26
Total FTE		6.42
Total Direct Salary	$ 3,293,065	$ 658,613
Fringe	$ 1,307,347	$ 261,469
Total Direct Compensation	**$ 4,600,411**	**$ 920,082**

General & Administrative		
Consulting	$ -	
Other G & A	$ 25,000	$ 5,000
Total Genl & Admin	**$ 25,000**	**$ 5,000**

Initiative Direct Costs	5-yr Totals	
Gas HPWH	$ 4,425,000	$ 885,000
Combined Space-Water Heating	$ 2,075,000	$ 415,000
Hearth Products	$ 1,162,500	$ 232,500
Rooftop HVAC	$ 1,312,500	$ 262,500
Dryers	$ 337,500	$ 67,500
Initiative 6	$ -	$ -
Initiative 7	$ -	$ -
Initiative 8	$ -	$ -
Scanning	$ 750,000	$ 150,000
Codes and Standards	$ 500,000	$ 100,000
Total Contracted Costs	**$ 10,562,500**	**$ 2,112,500**

Other Direct Costs		
Mid-Cycle Assessment/Business Planning	**$ 350,000**	**$ 70,000**

Total Direct Costs	$ 15,537,911	$ 3,107,582
Indirect	$ 2,796,824	$ 559,365
Total Budget	**$ 18,334,735**	**$ 3,666,947**

Table 3: Natural Gas Collaborative Annual Budget (2015 - 2019)

		Year 1		Year 2		Year 3		Year 4		Year 5		Total
Compensation Inflation Factor from Base Year 1					3.0%		6.1%		9.3%		12.6%	
Direct Staff Compensation	2014 Salary Range Mid-Point	FTE	Budget	FTE	Budget	FTE	Budget	FTE	Budget	FTE	Budget	
Total Direct Salary		4.19	402,113	6.21	610,247	6.35	652,314	7.81	817,055	7.56	811,334	3,293,065
Fringe	39.7%		159,639		242,268		258,969		324,371		322,100	1,307,347
Total Direct Compensation			$561,752		$852,516		$911,283		$1,141,426		$1,133,434	$4,600,411
General & Administrative												
Consulting			-		-		-		-		-	-
Other G & A			5,000		5,000		5,000		5,000		5,000	25,000
Total Genl & Admin			$5,000		$5,000		$5,000		$5,000		$5,000	$25,000
Contracted Initiative Costs												
Gas HPWH			150,000		400,000		875,000		1,250,000		1,750,000	4,425,000
Combined Space-Water Heating			75,000		175,000		325,000		625,000		875,000	2,075,000
Hearth Products			75,000		175,000		187,500		325,000		400,000	1,162,500
Rooftop HVAC			225,000		175,000		187,500		325,000		400,000	1,312,500
Dryers			37,500		75,000		112,500		75,000		37,500	337,500
Scanning			100,000		125,000		150,000		175,000		200,000	750,000
Codes and Standards			100,000		100,000		100,000		100,000		100,000	500,000
Total Contracted Costs			$762,500		$1,225,000		$1,937,500		$2,875,000		$3,762,500	$10,562,500
Other Direct Costs												
Mid-Cycle Assessment/Business Planning					$150,000				$100,000		$100,000	$350,000
Total Direct Costs			1,329,252		2,232,516		2,853,783		4,121,426		5,000,934	15,537,911
Indirect	18%		239,265		401,853		513,681		741,857		900,168	2,796,824
Total Budget			$1,568,518		$2,634,368		$3,367,464		$4,863,283		$5,901,102	$18,334,735

Note: The 18% indirect factor includes executive adminstration, stakeholder relations, communications, business administration, IT and shared services.

Portfolio Investment Strategy

This Business Plan is a technology-focused strategy that targets residential and commercial markets only. The Collaborative recommends excluding the industrial sector because the residential and commercial markets have the greatest potential for market transformation and align with NEEA's core strengths and/or existing efforts within its current 2015-2019 Strategic and Business Plans (6/20/14).

The Collaborative used the following criteria and portfolio attributes for selecting initiatives:

- **Energy Savings:** Long-term market transformation potential
- **Cost-effectiveness:** Long-run market transformation based on Total Resource Cost Test (TRC)
- **Market Transformation Potential**: Identified market transformation barriers or opportunities; strong business case for market actors and strong customer appeal
- **Alignment/synergies:** Support NEEA's other market transformation efforts
- **Early wins:** Provide early demonstration of natural gas market transformation

In addition, the Collaborative tried to balance the portfolio of gas market transformation projects around the following attributes:

- **Regional Equity**: The gas market transformation portfolio should ultimately provide benefits equitably across the funder region.
- **Risk:** The gas market transformation portfolio should have a mix of projects with varying degrees of risk and with potential benefits of each commensurate with the risk. The portfolio should be managed to an appropriate level for the size and scope of the collaborative effort.

Because the Northwest Power and Conservation Council focuses on electric energy efficiency, there are no existing regional gas energy efficiency supply curves and there is limited baseline gas equipment efficiency and sales data. Individual utilities have varying levels of gas efficiency data in their IRPs, and lack data aggregated at a regional level. NEEA applied expertise gained working in the regional electric markets to develop reasonable estimates for gas. Consequently at this time NEEA was only able to develop rough estimates of energy savings and cost-effectiveness for gas equipment. As we gain experience and gather new data over the next five years, NEEA will refine its analysis.

Within these criteria, there are sometimes competing interests that must be balanced across the portfolio. For example, most of the efficiency opportunities that would qualify as "early wins" represent relatively small portions of the overall savings potential while the largest opportunities are very early in their development and will likely take considerable time to mature. Given this tension, the Collaborative directed NEEA to focus on the following five strategic technology areas during this Business Plan period:

- Gas-fired heat pump water heaters
- Combined space-water heating
- Hearth products
- Rooftop HVAC
- Gas clothes dryers

Detailed descriptions for each initiative and functional area of focus are included in Appendix 3. NEEA built the initiatives budgets using very preliminary information and projections of initiative lifecycle progress. These projections are included in Appendix 4.

Following NEEA Board approval of this business plan in August 2014, NEEA will develop a detailed annual operations plan for 2015. The operations plan will mirror NEEA's annual electric market transformation operations plans, including goals and objectives for the year, metrics for measuring progress, and resource plans by functional area. Additionally, NEEA will identify dependencies in each area as well as challenges and contingencies to support successful execution of the plan. NEEA will refine budgets in this plan.

Energy Savings and Cost-effectiveness

Table 4 represents a 20-year estimate of the total annual energy savings produced by the portfolio in 2034. It also contains an estimate of the Total Resource Cost (TRC) "levelized cost" (LC) that should be comparable to avoided costs within an integrated resource planning framework. The TRC-LC is a representation of the net of the sum of societal costs and non-energy benefits levelized over the lifetime of the efficient product or service and then divided by the annual energy savings to establish an effective "cost of saved energy" that can be compared to other resource options on an equivalent basis.

Table 4: 20-year Portfolio Cost-Effectiveness

		Total Societal
Program	20-Year Savings Potential - Therms	TRC Cost-Effectiveness $/Therm
Gas Fired HPWH	104,564,346	0.394
Combination Heating+Hot Water GF-HP	163,643,995	0.374
Hearth Products	10,535,660	(2.26)
Dryers	3,600,000	TBD
Rooftop HVAC	TBD	TBD
Total	**282,344,002**	**0.28**

Notes: Weighted Average TRC is based on GF-HPWH, Combo systems, and hearth products

Virtually all of these initiatives are very early in their product lifecycles and there is simply not a large set of data from which to make robust estimates of cost-effectiveness. NEEA normally does not create a formal cost-effectiveness model until it collects field data to validate the key inputs into the cost-effectiveness model. At this early stage, cost-effectiveness analysis is largely an exercise in secondary data collection and abbreviated analysis using best professional judgment.

NEEA anticipates the largest portion of the savings will come from the three main initiatives: gas-fired HPWHs, combination heating and water heating systems using gas-fired heat pump technology, and

efficient hearth products. Assuming these three programs and efficiency opportunities continue to make up the bulk of the portfolio, the portfolio has a 20-year TRC levelized cost of approximately $0.28/Therm with a range from negative $2.26/Therm to $0.39/Therm. The weighted average falls below the recently revised wholesale market forecasts from the Northwest Power and Conservation Council for near-term forecasts and below the expected long-run marginal costs of gas under even the low-range forecast. However, whether the portfolio is cost-effective for any individual utility will depend on the avoided cost frameworks currently adopted by each utility.

For more discussion about this preliminary energy savings and cost effectiveness analysis, see Appendix 5 (Preliminary Cost-Effectiveness Memo).

Funding Model and Allocation

As shown in Table 5* below, twelve gas and dual-fuel utilities operate within NEEA's electric geographical footprint. Based on 2012 U.S. Energy Information Administration (EIA) data, this table shows each utility's share of the Northwest residential and commercial retail market based on the existing NEEA funding formula (weighted 12.5 percent for the customer component and 87.5 percent for the retail sales component). As shown, excluding industrial load and customers, six of these utilities serve less than 1 percent of the gas residential and commercial market. Of the remainder, three (Avista Utilities, Cascade Natural Gas and NW Natural) operate in multiple states.

Table 5: Northwest Gas Utility Shares of the Residential and Commercial Markets*

Funder	State	2015 - 2019 Shares
AVISTA UTILITIES	Idaho	2.63%
	Oregon	3.11%
	Washington	6.47%
BUCKLEY CITY OF	Washington	0.06%
CASCADE NAT GAS CORP	Oregon	2.32%
	Washington	7.27%
ELLENSBURG CITY OF	Washington	0.26%
ENERGY WEST WEST YELLOWSTONE	Montana	0.00%
ENUMCLAW CITY OF	Washington	0.15%
INTERMOUNTAIN GAS COMPANY	Idaho	12.07%
NORTHWEST NATURAL GAS CO	Oregon	21.67%
	Washington	2.44%
NORTHWESTERN ENERGY	Montana	9.17%
PUGET SOUND ENERGY	Washington	32.22%
QUESTAR GAS COMPANY	Idaho	0.07%
SACO MUNICIPAL GAS SVC	Montana	0.01%
SHELBY GAS ASSOCIATION	Montana	0.06%
Total		100.00%

* Table 5 is preliminary. NEEA may need to make adjustments to reflect the Montana gas utilities that serve within NEEA's electric geographical footprint and to reflect that the City of Buckley is now part of Puget Sound Energy.

The initial funders of this gas market transformation business plan represent four of the six large gas or dual-fuel utilities: Avista Utilities, Cascade Natural Gas, Energy Trust of Oregon, NW Natural, and PSE. These funders represent utilities that serve roughly 64 percent of the retail residential and commercial gas customer/load within NEEA's existing electric footprint. At this time, Intermountain Gas and Northwestern Energy are not participating due either to regulatory issues, budget constraints or general alignment on energy efficiency goals.

Funding formula: Gas Collaborative participants recommend utilizing the same funding allocation formula that NEEA uses for electric market transformation funding except using only residential and commercial customers and sales data (excluding industrial). NEEA based the recommended formula on total retail customers and total retail energy sales adjusted for a 1 percent forecasted growth for each funder over the five-year funding period. The proposed weighting scheme (similar to the electric formula weighting) is 12.5 percent for the customer component and 87.5 percent for the retail sales component. Should gas funders choose to expand into industrial arena in the future, NEEA would update the funding formula, or funders would fund the project as a supplemental project.

Funding commitment duration (number of years): Gas Collaborative participants recommend a five-year funding commitment, consistent with the five-year cycle for electric market transformation, and with a mid-cycle evaluation that provides an opportunity for adjustments to the operations plan and funding.

Table 6 below shows the funding shares based on this formula for participating utilities:

Table 6: Five-Year Direct Funding Commitment per Funding Share:

Funders	2015-2019 Approved Funding Shares (% of Total)	2015-2019 NEEA Natural Gas Funding Commitment
Avista	15.63	$2,866,334
Cascade Washington	9.3	$1,704,849
Energy Trust of Oregon (representing Cascade Oregon, NW Natural Washington and NW Natural Oregon)	33.82	$6,200,354
PSE	41.25	$7,563,198
Total	100	$18,334,735

Operating Principles, Guidelines and Cost Allocation

The Collaborative agreed on the following objective statement:

> *To accelerate the development and market adoption of efficient natural gas products, practices and services resulting in increased consumer choices and increased efficiency of natural gas use in the Northwest.*

Core principles that will guide the natural gas work, consistent with Board guidelines are:

- No promotion of fuel switching
- No cross subsidies between gas and electric
- Implementation without diminishing existing electric market transformation work

In addition, gas market transformation funders have requested that NEEA design initiatives where feasible to maximize benefits to funding utilities while achieving overall market transformation goals.

Cost and Savings Allocation between Gas and Electric Funders

The Collaborative and NEEA have developed a fair method to allocate initiative and supplemental services costs between gas and electric utilities. With input from collaborative members, NEEA developed an issue paper on this subject identifying potential scenarios and cost allocation options. (see Appendix 6) The Collaborative recommends initially targeting gas funding where it will make a significant difference for gas customers in the Northwest over and above the benefits from NEEA activities already funded by electric utilities. During the early years of gas market transformation work (i.e. first five-year cycle) when we have our "training wheels on," NEEA should not make any major internal changes until it is clear that there is a viable future for gas market transformation. Therefore, this Business Plan focuses on a few, gas-focused market transformation initiatives. NEEA can then leverage its existing infrastructure and expertise, where possible. Incremental costs for other services such as codes and standards, evaluation, gas business planning, etc. are included in proportion to the selected gas initiatives. If gas and electric funders choose to jointly fund a new initiative, cost allocation would have to be addressed at that time based on a real (rather than a hypothetical) situation. During the proposed mid-five year cycle assessment with a couple of years of experience, NEEA expects to better understand the types of cost allocation issues that are arising and can develop a more thoughtful cost allocation policy. The issue paper provides a framework for thinking through the cost allocation issues during the mid-cycle evaluation.

Organization, Staffing and Governance

Described below are the recommended initial (short-term) governance strategy and internal NEEA organizational and staffing strategy to implement this business plan. The overarching strategy is to minimize permanent internal changes (systems, organizational structure, etc.) until NEEA and the Collaborative get their feet wet, have the opportunity to identify and resolve issues as they surface and have confidence the gas market transformation work is viable over the long term. However, down the road the Board should expect some internal changes in order to move NEEA to a fully integrated gas/electric market transformation entity.

Governance: To minimize changes until the gas work becomes more permanent, NEEA will establish a Gas Advisory Committee that reports to the executive director to provide guidance to NEEA for natural gas initiatives. NEEA will invite its gas funders to sit on this new Gas Advisory Committee, and on the existing cost-effectiveness and emerging technology committees. NEEA will expand the scope of these existing committees to include gas. NEEA will establish a regular cross advisory communication mechanism (between, for example, the Gas Advisory Committee and the existing electric sector advisory committees). The Collaborative recommends no changes to the composition of the NEEA Board at this time. All gas direct funders already have a seat on the NEEA Board (i.e. Avista Utilities, Energy Trust of Oregon and PSE). Gas indirect funders (i.e. Cascade Natural Gas and NW Natural) do not have a Board seat but electric indirect funders only share a board seat.

Internal organizational and staffing strategies: By syncing the gas market transformation funding cycle with the electric market transformation funding cycle, NEEA will be able to conduct gas and electric annual operations planning in a more integrated fashion. NEEA estimates it will need an average of six to seven FTE to implement this plan. This will likely be a mix of existing staff and strategic new hires. NEEA will assign a Senior Manager (half time) with responsibility for leading the gas market transformation work. Similar to NEEA's strategy on the electric side, NEEA will hire contractors to support assigned NEEA staff. NEEA's goal is to leverage the experience and talent of existing NEEA staff to help ensure that gas market transformation gets off to a fast and effective start, while maintaining the momentum on the electric side of the business.

Internal Systems: Existing NEEA systems will accommodate the gas work in the short term with a few exceptions. NEEA will modify its existing Alliance Cost Effectiveness (ACE) models as needed for each initiative. NEEA anticipates establishing a parallel planning and reporting system for gas initiatives based on the electric system. Costs to accomplish this work are included in the gas budgets. Note that NEEA's existing accounting and time-keeping systems allow its staff to direct time charges to specific projects, thus ensuring no cross subsidization.

Risks and Risk Mitigation

Similar to NEEA's electric market transformation efforts, NEEA's success in natural gas market transformation depends on many factors in a complex and rapidly-changing environment. The Collaborative has identified several risks in successfully executing this plan. A proposed mitigation strategy is below:

Ability to improve efficiency of gas equipment without significantly impacting fuel choice: There are competitive issues between gas and electric utilities in the residential markets. This portfolio includes residential technologies. Perceptions or actual efforts that directly encourage fuel switching could result in a Board decision that gas and electric market transformation efforts are incompatible.

NEEA can mitigate this risk by establishing and enforcing clear fuel switching policy direction and by establishing a gas market transformation objective that focuses on improving efficiency of equipment rather than influencing fuel choice.

Portfolio management risk: With this first foray into natural gas market transformation, the portfolio is heavily weighted towards initiatives that are very early in the initiative life cycle. In other words, we are betting on technology that is very early in the development stage. The associated risk is that the portfolio does not produce sufficient savings during the first three to five years, causing funders to pull future funding.

NEEA will mitigate this risk by including one early-win initiative (dryers) in the portfolio and by conducting a mid- cycle evaluation, which will provide the opportunity to make mid-course corrections, to manage expectations and improve the chance of success.

Individual initiative risk: While the proposed initiatives have been carefully vetted and appear promising, success of any initiative in this portfolio is far from certain.

NEEA employs two key strategies to address this risk. The first is engagement in a diverse portfolio of projects. Because of the diversity of promising initiatives, and the scale of potential success, it is likely that several will succeed and justify the cost of the overall investment. Second, NEEA implements a careful research and stage-gating process that provides for successively larger investment as prospects improve. Should an initiative be terminated or a new opportunity arise, the Gas Advisory Committee will consider adjustments to the portfolio as appropriate.

Free ridership: NEEA is launching gas market transformation with funder representation from 64 percent of the NEEA geographical footprint. NEEA's goal is to broaden this representation over time and to increase funder representation by the next five-year cycle. The risk is that other gas utilities will not join NEEA because they receive the benefits of gas market transformation without needing to fund.

NEEA will mitigate this risk by designing initiatives where feasible to maximize benefits to funders (without risking overall market transformation)

Cost allocation between gas and electric funders: NEEA's five-year goal is to become a fully integrated gas/electric market transformation organization. Achieving this vision depends on NEEA's ability to achieve alignment on cost allocation between gas and electric funders. The risk is that we cannot achieve alignment.

NEEA will mitigate these risks by presenting options, benefits and drawbacks using real initiatives and solid, data based analysis as issues arise and during the mid-cycle evaluation.

Appendix 1: Board Natural Gas Policy

HISTORY			
Source	**Date**	**Action/Notes**	**Next Review Date**
Board Decision	May, 26 2010	Approved.	TBD
Executive Committee	April 28, 2010	Reviewed. Concurrence with Strategic Planning Committee	
Strategic Planning Committee	April 23, 2010	Reviewed. Unanimously Recommended for Board Approval as amended	TBD
Strategic Planning Committee	2/13/14	Recommended update.	
Executive Committee	5/20/14	Recommended update.	
Board	5/29/14	Approved as amended	

Background and Underlying Philosophy:

Multiple energy sources currently serve a large proportion of Northwest residences, businesses and industry. Improving energy efficiency for these end users is inherently a multi-fuel issue that offers significant benefits to the Northwest, its economy and its energy availability.

In recognition of these facts, in 2009 the Board of Directors adopted a "fuel-neutral" mission for NEEA: ***Mobilize the Northwest to become increasingly energy efficient for a sustainable future.*** Markets are more likely to respond to efforts that align with their own needs and perspectives. NEEA's own experience, as well as that in other parts of the nation, has shown that coordinated dual-fuel energy efficiency efforts that focus on the customers overall needs are often more effective than those aimed at only one fuel. We recognize that natural gas efficiency efforts, well managed and combined with our existing electric-focused market transformation efforts, have the potential of improving results for both fuels, thereby improving cost-effectiveness of efforts in electric or natural gas initiatives.

Further, NEEA's electric efficiency efforts historically have resulted in significant incidental natural gas energy savings. Similarly, a focused increase in natural gas savings would likely result in additional electric savings. The Board recognizes that a current inequity exists between who pays for NEEA's efficiency savings and who benefits. Electric ratepayers are the sole funders presently but both electric and gas customers benefit with market changes that affect both fuels, e.g., Energy Star windows, new homes, and industrial multi-fuel processes.

POLICY

In keeping with NEEA's mission, the Board of Directors affirms the following policy statements:

1) **Scope:** NEEA supports natural gas efficiency initiatives, as funded on an opt-in basis by natural gas and efficiency providers. All natural gas initiatives undertaken by NEEA must:

- Be consistent with NEEA's Vision, Mission and Strategic Plan Goals;
- Align with NEEA's distinct characteristics and core competencies;
- Result in cost-effective, sustainable benefits for Northwest stakeholders; and
- Define limits of scope and duration.

2) **Fuel Switching:** NEEA will not engage in any activities directly targeting fuel choice; i.e. no promotion of "fuel switching". NEEA's efforts in multi-fuel markets will focus on improvements in efficiency in all fuels and equipment currently under use. However, NEEA recognizes that an indirect product of market transformation activities may be a change in the economics of customer fuel choice. NEEA will design and operate its market interventions to minimize the potential for any additional "indirect" influences on fuel choice.

3) **Electric Efficiency Commitments:** New, additional natural gas efficiency related efforts must in no way diminish the outcomes defined in NEEA's current Business Plan from initiatives targeted at electric energy use.

4) **Accounting and Reporting:** NEEA will maintain separate accounts for natural gas funds in alignment with expenses for activities targeted at natural gas efficiency opportunities. NEEA will report project outcomes and energy savings to direct funders of natural gas activities in a manner consistent with direct funding by electric utilities. This reporting includes outcomes and energy savings in each direct funder's service territory, to the extent possible within available data and resources.

Appendix 2: Detailed Budgets

Natural Gas 5 Year G-HPWH Budget

		Year 1		Year 2		Year 3		Year 4		Year 5		Total
Compensation Inflation Factor from Base Year 1				3.0%		6.1%		9.3%		12.6%		
Direct Staff Compensation	2014 Salary Range Mid-Point	FTE	Budget	FTE	Budget	FTE	Budget	FTE	Budget	FTE	Budget	
Total FTE		0.800		1.200		1.150		1.350		1.250		6
Total Direct Salary			79,631		120,930		119,099		140,222		132,845	592,727
Fringe	39.7%		31,614		48,009		47,282		55,668		52,740	235,313
Total Direct Compensation			$ 111,245		$ 168,939		$ 166,381		$ 195,891		$ 185,585	$ 828,040
General & Administrative												
Consulting			-		-		-		-		-	-
Other G & A			5,000		5,000		5,000		5,000		5,000	25,000
Total Genl & Admin			$ 5,000		$ 5,000		$ 5,000		$ 5,000		$ 5,000	25,000
Contracted Initiative Costs												
Gas HPWH			150,000		400,000		875,000		1,250,000		1,750,000	4,425,000
Total Contracted Costs			$ 150,000		$ 400,000		$ 875,000		$ 1,250,000		$ 1,750,000	$ 4,425,000
Total Direct Costs			266,245		573,939		1,046,381		1,450,891		1,940,585	5,278,040
Indirect	18%		47,924		103,309		188,349		261,160		349,305	950,047
Total Budget			$ 314,169		$ 677,248		$ 1,234,729		$ 1,712,051		$ 2,289,890	$ 6,228,088

Natural Gas Combined Space and Water Heat 5 Year Budget

		Year 1		Year 2		Year 3		Year 4		Year 5		Total
Compensation Inflation Factor from Base Year 1				3.0%		6.1%		9.3%		12.6%		
Direct Staff Compensation	2014 Salary Range Mid-Point	FTE	Budget	FTE	Budget	FTE	Budget	FTE	Budget	FTE	Budget	
Total FTE		0.18		0.57		0.90		1.35		1.35		4
Total Direct Salary			17,532		51,440		93,001		140,222		144,429	446,624
Fringe	39.7%		6,960		20,422		36,921		55,668		57,338	177,310
Total Direct Compensation			$24,493		$71,861		$129,922		$195,891		$201,767	$623,934
General & Administrative												
Consulting												-
Other G & A												-
Total Genl & Admin			-		-		-		-		-	-
Contracted Initiative Costs												
Combined Space-Water Heating			75,000		175,000		325,000		625,000		875,000	2,075,000
Total Contracted Costs			$75,000		$175,000		$325,000		$625,000		$875,000	$2,075,000
Total Direct Costs			99,493		246,861		454,922		820,891		1,076,767	2,698,934
Indirect	18%		17,909		44,435		81,886		147,760		193,818	485,808
Total Budget			$117,401		$291,297		$536,808		$968,651		$1,270,586	$3,184,742

Natural Gas 5 Year Hearth Products Budget

		Year 1		Year 2		Year 3		Year 4		Year 5		Total
Compensation Inflation Factor from Base Year 1					3.0%		6.1%		9.3%		12.6%	
Direct Staff Compensation	2014 Salary Range Mid-Point	FTE	Budget	FTE	Budget	FTE	Budget	FTE	Budget	FTE	Budget	
Total FTE		0.57		1.19		1.20		1.40		1.35		6
Total Direct Salary			52,203		116,677		123,358		144,610		141,884	578,733
Fringe	39.7%		20,725		46,321		48,973		57,410		56,328	229,757
Total Direct Compensation			$72,928		$162,998		$172,332		$202,020		$198,212	$808,490
General & Administrative												
Consulting												-
Other G & A												-
Total Genl & Admin			-		-		-		-		-	-
Contracted Initiative Costs												
Hearth Products			75,000		175,000		187,500		325,000		400,000	1,162,500
Total Contracted Costs			$75,000		$175,000		$187,500		$325,000		$400,000	$1,162,500
Total Direct Costs			147,928		337,998		359,832		527,020		598,212	1,970,990
Indirect	18%		26,627		60,840		64,770		94,864		107,678	354,778
Total Budget			$174,555		$398,838		$424,602		$621,884		$705,890	$2,325,768

Natural Gas 5 Year Rooftop HVAC Budget

		Year 1		Year 2		Year 3		Year 4		Year 5		Total
Compensation Inflation Factor from Base Year 1					3.0%		6.1%		9.3%		12.6%	
Direct Staff Compensation	2014 Salary Range Mid-Point	FTE	Budget	FTE	Budget	FTE	Budget	FTE	Budget	FTE	Budget	
Total FTE		0.77		1.14		1.04		1.35		1.25		6
Total Direct Salary			72,787		112,541		106,198		140,222		132,845	564,595
Fringe	39.7%		28,897		44,679		42,161		55,668		52,740	224,144
Total Direct Compensation			$101,684		$157,220		$148,359		$195,891		$185,585	$788,739
General & Administrative												
Consulting												-
Other G & A												-
Total Genl & Admin			-		-		-		-		-	-
Contracted Initiative Costs												
Rooftop HVAC			225,000		175,000		187,500		325,000		400,000	1,312,500
Total Contracted Costs			$225,000		$175,000		$187,500		$325,000		$400,000	$1,312,500
Total Direct Costs			326,684		332,220		335,859		520,891		585,585	2,101,239
Indirect	18%		58,803		59,800		60,455		93,760		105,405	378,223
Total Budget			$385,487		$392,020		$396,314		$614,651		$690,990	$2,479,462

Natural Gas 5 Year Dryers Budget

		Year 1		Year 2		Year 3		Year 4		Year 5		Total
Compensation Inflation Factor from Base Year 1					3.0%		6.1%		9.3%		12.6%	
Direct Staff Compensation	2014 Salary Range Mid-Point	FTE	Budget	FTE	Budget	FTE	Budget	FTE	Budget	FTE	Budget	
Total FTE		0.87		0.89		0.79		0.85		0.85		4
Total Direct Salary			74,034		79,051		72,903		83,990		86,509	396,487
Fringe	39.7%		29,391		31,383		28,942		33,344		34,344	157,405
Total Direct Compensation			$103,425		$110,435		$101,845		$117,333		$120,854	$553,893
General & Administrative												
Consulting												-
Other G & A												-
Total Genl & Admin			-		-		-		-		-	-
Contracted Initiative Costs												
Dryers			37,500		75,000		112,500		75,000		37,500	337,500
Total Contracted Costs			$37,500		$75,000		$112,500		$75,000		$37,500	$337,500
Total Direct Costs			140,925		185,435		214,345		192,333		158,354	891,393
Indirect	18%		25,367		33,378		38,582		34,620		28,504	160,451
Total Budget			$166,292		$218,813		$252,928		$226,954		$186,857	$1,051,843

Natural Gas 5 Year Scanning Budget

		Year 1		Year 2		Year 3		Year 4		Year 5		Total
Compensation Inflation Factor from Base Year 1					3.0%		6.1%		9.3%		12.6%	
Direct Staff Compensation	2014 Salary Range Mid-Point	FTE	Budget	FTE	Budget	FTE	Budget	FTE	Budget	FTE	Budget	
Total FTE		0.26		0.38		0.38		0.44		0.44		2
Total Direct Salary			24,686		37,659		38,789		48,852		50,318	200,305
Fringe	39.7%		9,800		14,951		15,399		19,394		19,976	79,521
Total Direct Compensation			$34,487		$52,610		$54,188		$68,247		$70,294	$279,826
General & Administrative												
Consulting												-
Other G & A												-
Total Genl & Admin			-		-		-		-		-	-
Contracted Initiative Costs												
Initiative 10												-
Total Contracted Costs			$100,000		$125,000		$150,000		$175,000		$200,000	$750,000
Total Direct Costs			134,487		177,610		204,188		243,247		270,294	1,029,826
Indirect	18%		24,208		31,970		36,754		43,784		48,653	185,369
Total Budget			$158,694		$209,580		$240,942		$287,031		$318,947	$1,215,195

Natural Gas 5 Year Codes and Standards Budget

		Year 1		Year 2		Year 3		Year 4		Year 5		Total
Compensation Inflation Factor from Base Year 1				3.0%		6.1%		9.3%		12.6%		
Direct Staff Compensation	2014 Salary Range Mid-Point	FTE	Budget	FTE	Budget	FTE	Budget	FTE	Budget	FTE	Budget	
Total FTE		0.24		0.34		0.39		0.57		0.57		2
Total Direct Salary			22,718		31,671		36,882		54,988		56,638	202,897
Fringe	39.7%		9,019		12,574		14,642		21,830		22,485	80,550
Total Direct Compensation			$31,737		$44,245		$51,524		$76,818		$79,123	$283,447
General & Administrative												
Consulting												-
Other G & A												-
Total Genl & Admin			-		-		-		-		-	-
Contracted Initiative Costs												
Codes and Standards			100,000		100,000		100,000		100,000		100,000	500,000
Total Contracted Costs			$100,000		$100,000		$100,000		$100,000		$100,000	$500,000
Total Direct Costs			131,737		144,245		151,524		176,818		179,123	783,447
Indirect	18%		23,713		25,964		27,274		31,827		32,242	141,020
Total Budget			$155,450		$170,209		$178,798		$208,646		$211,365	$924,468

Appendix 3: 2015 -2019 Gas Market Transformation Program and Other Services

Gas-Fired Heat Pump Water Heaters

Program Description:

The Gas-fired Heat Pump Water Heater initiative seeks to have gas-fired heat pump water heater technology adopted as the standard water heating product for homes with gas fuel for water heating. The initiative will work with manufacturers to bring a fully commercialized product to market. The initiative will then create the market conditions to help accelerate the market adoption of the technology. The ultimate goal is to influence federal manufacturing standards for gas water heaters. The initiative will work with manufactures to ensure that the products function well in Northern climates, creating and expanding distribution channels and increasing market awareness and demand.

Market Description:

- Residential and light commercial gas-fired water heaters
- Over 1.7 million gas water heaters in single-family homes in the Northwest
- Current minimum efficiency of EF 0.65 for standard gas water heaters

Energy Savings Potential:

- First-generation commercial products expected to be rated at EF 1.3, with savings of 50 percent. Next generation technologies have been lab tested at EF 1.7 +
- At 50 percent of the standard EF 0.65 product, the GF-HPWH is expected to save 115 therms/year per tank.
- Total technical savings potential exceeds 200 million therms/yr if all of the 1.7 million residential water heaters adopt the technology.

Cost-Effectiveness:

While cost effectiveness is difficult to predict for emerging technologies, current target costs for gas HPWHs are in the $1500 - $1700 range at low to moderate volumes (20,000 units). Preliminary cost effectiveness calculations indicate a consumer break-even cost of $1437. With increased volumes (national sales of gas water heaters are over 1 million annually) and potentially increased measure life for Gas HPWHs compared to standard gas water heaters, the cost effectiveness is projected to increase with volume production and competitive market forces.

Market Barriers:

- Lack of commercialized product
- High cost of installation and equipment
- Limited consumer awareness of and demand for this technology
- Lack of proven in-field performance
- HPWHs not integrated into existing water heater supply channels
- Lack of supply chain interest in HPWHs

- Federal test procedure/ENERGY STAR rating system does not support Northern Climate Specification (NCS) for electric or gas HPWHs
- Lack of trained installation contractor base

Market Interventions:

NEEA will use its regional leverage and economies of scale, while reducing risk to the region's utilities, to overcome these barriers by:

- Working with manufacturers to bring a commercial gas-fired HPWH product suitable for use in cold-climates to the Northwest market
- In-field performance and consumer satisfaction measurements
- Providing information and support for the gas-fired HPWH product in the Federal standards process
- Developing and maintaining energy-efficient product specifications
- Increasing product availability at lower cost through new or expanded channels
- Using NEEA's non-profit status and regional influence to develop and implement coordinated marketing strategies with market and utility partners at reduced cost*
- Developing training and marketing resources for utility and market partners to leverage in educating trade allies and consumers*
- Recruiting, training and maintaining a network of qualified installers*
- Ensuring quality installations and consumer satisfaction through implementation of quality assurance programs
- Developing and/or coordinating financing and incentive platforms that can be leveraged and scaled across the market
- Identifying and mitigating risks for product deployment in the market

Outcomes:

NEEA's market interventions will transform the market in the following ways:

- Gas-fired HPWH commercial products at EF 1.3+ are available in all conventional market delivery channels from multiple manufacturers
- Gas-fired HPWH products meet the Northern Climate Specification requirements are accessible and affordable to market
- ENERGY STAR adopts EF 1.3 as minimum requirement
- Trained and active installer base exists in the Region
- Increased awareness and adoption of GF-HPWH products among manufacturers, distributors, retailers, contractors and consumers
- Federal standard is adopted that requires EF 1.3 or higher for gas-fired tanks 45 gallons or larger.

Alignment with Other NEEA MT Efforts:

NEEA has an extensive electric HPWH market transformation program that is working with the same set of manufacturers, distributors, retailers and installers that will be involved in the GF-HPWH market transformation program. The primary difference at the moment is the lack of a fully commercialized product. However, NEEA is currently engaged with the same set of manufacturers on electric HPWH product development efforts that will be working on on the GF – HPWH. NEEA will leverage these existing efforts to accellerate adoption of this new technology into commercialized products; increasing speed to market and lowering costs to the Region. Similar economies are anticipated in market research, evaluation, data tracking and reporting for this GF-HPWH effort through leverage of the existing infrastructure in electric HPWHs.

Combination Space and Water Heating Systems

Program Description:

The combination space and water heating systems program will leverage other efforts in gas-fired heat pump water heating (GF-HPWH) technology to develop a combination system that can provide both space and water heating at an efficiency exceeding that of the current high-efficiency furnace and stand-alone gas water heater technology. The program will work with manufacturers of both space and water heater equipment to develop an integrated solution for both new construction and for retrofit. This effort will include exploration of alternative heating distribution systems using hydronic delivery in addition to conventional forced-air ducted systems. Ultimately this "combo" system approach will be developed into new energy code proposals as an alternative compliance approach for new construction.

Market Description:

- Residential and light commercial buildings with gas space and water heating.
- Over 1.7 million single-family homes with gas space and water heat in the Northwest
- Current minimum efficiency of EF of 0.90[2] and EF 0.65 for standard gas space and water heating equipement

Energy Savings Potential:

- First-generation commercial HPWH products expected to be rated at EF 1.3, with savings of 50 percent for water heating and savings of 30 percent for space heating. Next generation technologies have been lab tested at EF 1.7 + that would increase savings in both categories.
- At 50 percent of the standard EF 0.65 product, the GF-HPWH Combo system would be expected to save 115 therms/year per tank and at 30 percent savings for space heating, the GF-HPWH Combo system would save another 180 therms/year per home[3]
- Total technical savings potential exceeds 500 million therms/yr if all of the 1.7 million homes with gas space and water heater adopt the technology.

Cost-Effectiveness:

The cost-effectiveness of the combo system will ultimately depend on a number of factors that are still to be determined; for example, the ease with which a furnace air-handler could be converted to a hydronic source with associated piping and controls has yet to be established. In principle, the combined system should be at least as cost-effective as the water heater alone since the combined energy savings of both space and water heating are being leveraged against the fixed cost of the water heater. As long as the costs associated with the space heating system are proportionate to the savings increase from space heat the system should be at least as cost-effective as the water heater alone. In theory, cost-effectiveness should improve with volume production and competitive market forces.

[2] Higher efficiency is available in both space and water heat; these are assumed to be current federal minimums (water heating) or standard practice (space heating)

[3] From Residential Building Stock Assessment estimated space heating of 625 Therms/year times estimated savings of 30 percent.

However, the technology is not yet in full commercialization yet and will cost-effectiveness will need to be re-assessed as the commercialization activity moves forward.

Market Barriers:

- Lack of commercialized product
- High cost of installation and equipment
- Limited consumer awareness of and demand for this technology
- Lack of proven in-field performance
- Lack of supply chain to deliver combined system
- Federal test procedure/ENERGY STAR rating system for combo systems is complicated and may not be fully aligned with HPWH based-systems.
- Lack of trained installation contractor base

Market Interventions:

NEEA will use its regional leverage and economies of scale, while reducing risk to the region's utilities, to overcome these barriers by:

- Working with manufacturers to bring a commercial gas-fired HPWH combined space and water heat product to the Northwest market
- Work with GTI, US-DOE and other to support national product development work.
- In-field performance and consumer satisfaction measurements
- Providing information and support for the gas-fired HPWH combo system products in the Federal standards processes.
- Developing and maintaining energy-efficient product specifications
- Increasing product availability at lower cost through new or expanded channels
- Using NEEA's non-profit status and regional influence to develop and implement coordinated marketing strategies with market and utility partners at reduced cost *
- Developing training and marketing resources for utility and market partners to leverage in educating trade allies and consumers*
- Recruiting, training and maintaining a network of qualified installers*
- Ensuring quality installations and consumer satisfaction through implementation of quality assurance programs
- Developing and/or coordinating financing and incentive platforms that can be leveraged and scaled across the market
- Identifying and mitigating risks for product deployment in the market

Outcomes:

NEEA's market interventions will transform the market in the following ways:

- Gas-fired HPWH combo commercial products at EF 1.3+ are available in all conventional market delivery channels from multiple manufacturers
- Gas-fired HPWH combo products are accessible and affordable to market
- Trained and active installer base exists in the Region

- Increased awareness and adoption of GF-HPWH combo products among manufacturers, distributors, retailers, contractors and consumers
- Combo products are available for both retrofit and new construction markets.

Alignment with Other NEEA MT Efforts:

NEEA is already working with manufacturers of electric ductless heat pump heating systems to develop commercially available combined space and water heating systems for single-family homes with electric heat. This effort is developing a number of key elements that can be leveraged to support the gas-fired combo system effort. These include field testing of combos systems that can validate simulation modeling of the systems for purposes of establishing a unit-energy system estimate; field measurements that help understanding the dynamics between end-customer use of space and water heating under real field conditions in order to understand how to control the demand for both that will minimize overall systems size and cost; and interaction with HVAC contractors that are likely to be installing these systems and understanding their needs/concerns in delivering these combo products in the market.

Hearth Products

Program Description:

The Hearth Products Program will increase market adoption of high-efficiency hearth products (Tier 1 EF 0.70-74, Tier 2 EF 0.75-0.80 and Tier 3, EF 0.90+[4]) by working with manufacturers, distributors and retailers to change the mix of products available to end-consumers in the Northwest markets. The program will work with local utilities to increase market awareness and availability of higher efficiency tiers of hearth products specifically targeting an increase in the number of condensing Tier 3 products available in the market.

Market Description:

- Residential and light commercial buildings with gas service including single and multifamily and manufactured housing. The majority of sales go into new residential construction.
- Hearth product sales estimates at 20,000 units sales per year.
- Current weighted average efficiency of EF of 0.67[5]
- New (2013) product offering of condensing EF 0.90 now available from one manufacturer

Energy Savings Potential:

- Total technical savings potential estimated at 11.5 million therms/yr[6]
- Potential could be much greater if these product become the primary heating system for homes.

Cost-Effectiveness:

- The cost-effectiveness of hearth products varies by Tier. Currently, it appears that Tier 1 and Tier 2 products may actually cost less than baseline products[7]. This may be due to more to differences in product features than in actual efficiency costs but evidentily efficiency is not a strong determinant of cost.
- Tier 3 products are very new to the market and incremental cost data is not currently available but would, in theory be reduced as more products enter the market.

Market Barriers and Opportunities:

- Limited consumer awareness of and demand for Tier 2 and Tier 3 technology
- Distributor stocking practices that still include baseline efficiency products
- Distributor and Manufacturers represent key upstream leverage points for incentives to change availability and stocking

[4] Tier 3 represents fully condensing equipment with an EF>.90. Similar to gas furnaces, there is really no non-condensing equipment with efficiencies greater than 80%, so Tier 2 ends at EF .80.
[5] From Energy Trust internal memo 6-25-2014. Regional averages may be lower.
[6] Assumes ultimate penetration of 85 percent for Tier 1, 65 percent for Tier 2 and 50 percent for Tier 3
[7] Energy Trust internal memo 6-25-2014

Market Interventions:

NEEA will use its regional leverage and economies of scale, while reducing risk to the region's utilities, to overcome these barriers by:

- Work with distributors to influence stocking practices
- Develop appropriate mid-stream incentives for distributors to change stocking to include only Tier 1 and Tier 2 products
- Work with manufacturers and distributors to create market demand for Tier 3 products.
- Work with utilities to provide a coordinated consumer awareness and marketing program focused on Tier 2 and Tier 3 products
- Ensuring quality installations and consumer satisfaction through implementation of quality assurance programs as appropriate
- Developing and/or coordinating financing and incentive platforms that can be leveraged and scaled across the market
- Working with state building codes to incorporate higher efficiency requirements in codes.
- Identifying and mitigating risks for product deployment in the market

Outcomes:

NEEA's market interventions will transform the market in the following ways:

- Only Tier 1 or higher products are stocked throughout the region
- Tier 2 achieves 50 percent market share by 2024
- Multiple Tier 3 products and manufacturers participating in the market
- Trained and active installer base exists in the Region

Alignment with Other NEEA MT Efforts:

NEEA currently intersects with the hearth product industry through its new residential construction markets.

Rooftop HVAC

Program Description:

The Rooftop HVAC Program will work to advance gas efficiency in two seperate but parallel efforts. The program will work to introduce and increase market adoption of rooftop units with condensing(EF>0.90) gas-fired heatingequipment. The program will also work to advance market adoption of both new and retrofit equipment that reduces outdoor air and that can modulate associated heating in response to advanced controllers that seek to maintain an appropriate air-flow for health and comfort purposes. NEEA will work with manufacturers, distributors and trade-allies to accellerate market adoption of products with one or both of these efficiency measures. NEEA will also work with regional utilities to coordinate with local program efforts. NEEA will also work with appropriate codes and standards entities to adopt cost-efficient improvements in this equipment (e.g. Et>0.90).

Market Description:

- Commercial buildings served by packaged rooftop HVAC equipment
- NEEA has old market research on sales of rooftop HVAC that will need to be refreshed with current market research
- Current combustion efficiency of rooftop equipment is commonly at Et of 0.80
- Several second-tier manufacturers are now offering condensing Et of 0.90
- Demand control ventilation, fan-system optimization controllers and modulating burner controls are now available as separate equipment retrofits.
- Some HVAC service companies offer retrofit services that incorporate one or more of the options above

Energy Savings Potential:

- TBD from analysis using 2014 CBSA estimates of space heating in buildings using this equipment

Cost-Effectiveness:

- TBD. Condensing equipment is still new as an upgrade option on equipment from only a few manufacturers. Current incremental costs would be expected to go down over time as more competition and higher volume drive pricing. In principle, the incremental costs should be the same or less than for a piece of residential condensing equipment but with potential for much lower installed costs.
- Previous program offerings with Demand controlled ventilation or advanced controllers have passed cost-effectiveness tests on combined gas and electric energy savings; however, actual performance in the field has been mixed. A new analysis of cost-effectiveness will be required once the new combined equipment and service offering is established.

Market Barriers and Opportunities:

- Limited product availablity for condensing equipment
- Integration problems between technical components for advanced ventilation controls and modulating burner controls especially in retrofit applications

- Lack of service contractor technical and sales training for enhanced rooftop retrofits
- Distributor stocking practices that favor incumbent equipment
- Overall industry focus on lowest first-cost for rooftop equipment
- Top-tier manufacturers reluctance to change
- Increasing pressure on codes and standards to incorporate higher levels of efficiency in commercial equipment

Market Interventions:

NEEA will use its regional leverage and economies of scale, while reducing risk to the region's utilities, to overcome these barriers by:

- Validate field performance of condensing equipment across the Northwest Climate Zones
- Work with distributors to change stocking practces to keep condensing equipment on-hand
- Work with manufacturers to increase the number of products with condensing equipment as an option
- Work with specifiers and trade-allies to ensure proper equipment specification and installation
- Test and validate new ventilation controled modulating burner controls that can be combined with variable speed fan operation to minimize both gas and electric energy consumption
- Work with service contractors to establish and appropriate and successful field retrofit program to install advance controls on existing equipment
- Working with state building codes to incorporate higher efficiency requirements in codes
- Identifying and mitigating risks for product deployment in the market

Outcomes:

NEEA's market interventions will transform the market in the following ways:

- Condensing heating becomes standard on new roof-top heating equipment
- Modulating burners combined with variable speed fan controls is a standard retrofit service offering
- Trained trade-allies are widely available and capable of installing and maintaining new and retrofitted rooftop equipment with these high-efficiency features
- Codes and standards increased to recognize new efficient equipment

Alignment with Other NEEA MT Efforts:

NEEA has a long history of working the rooftop HVAC industry starting with the original development work that became the AirCare Plus program. Recently, NEEA has been scanning for new technologies in evaporative cooling for rooftop HVAC and has developed a detailed understanding of rooftop controls and operations. NEEA will leverage this existing knowledge to support this new initiative to accellerate adoption of more efficient equipment and enhanced retrofit offerings.

In addition, NEEA will leverage its focused efforts working with commercial real estate owners and managers under its Commercial Real Estate program to drive market demand for these more efficient rooftop products and services.

Lastly, NEEA will leverage its existing work in codes and standards to incorporate these new technologies into local building codes as well as national standards where appropriate.

ENERGY STAR Dryers

Program Description:

NEEA will leverage its proposed promotion of ENERGY STAR electric dryers to increase market adoption of ENERGY STAR gas dryers. Gas dryers are manufactured, distributed and sold through all of the same supply chain as electric dryers and will benefit from all of the program elements developed for electric equipment. Ultimately, NEEA will work to move ENERGY STAR requirements into federal manufacturing standards for gas and electric clothes dryers.

Market Description:

- Residential clothes dryer appliances
- Gas product sales estimated at 25,000 units sales per year; representing roughly 10 percent of total dryer sales per year.
- Savings of approximately 10-15 percent; or 5 to 8 therms/year/unit.[8]

Energy Savings Potential:

- Total technical savings potential estimated at 3.6 million therms/yr.[9]

Cost-Effectiveness:

- The cost-effectiveness of ENERGY STAR gas dryers has yet to be determined but discussions with manufacturers suggest that early termination controls may ultimately be a low to no cost feature added to all dryers.

Market Barriers and Opportunities:

- Limited consumer awareness of and demand for ENERGY STAR dryers.
- High consumer awareness of ENERGY STAR clothes washers.
- Manufacturers want to have products capable of meeting the ENERGY STAR specification.

Market Interventions:

NEEA will use its regional leverage and economies of scale, while reducing risk to the region's utilities, to overcome these barriers by:

- Work with manufacturers, distributors and retailers to ensure awareness and availablity of ENERGY STAR gas dryers for Northwest consumers.
- Work with manufacturers and retailers to create appropriate consumer marketing information around ENERGY STAR gas dryers.
- Work with local utility programs to coordinate regional marketing of ENERGY STAR dryers in appliance programs where appropriate.
- Develop appropriate upstream incentives to accellerate adoption of ENERGY STAR dryers

[8] Based on NEEA testing of early termination controls for electric dryers required to meet ENERGY STAR; converted from electric kWhs of 100-150 kWh/yr and assumed combustion efficiency of 60 percent.
[9] Assumes gas dryer market share of 10 percent and 5.5 million households

- Provide data and information to federal dryer standards process to support including ENERGY STAR efficiency levels for new standards process.

Outcomes:

NEEA's market interventions will transform the market in the following ways:

- ENERGY STAR gas dryers attain 50 percent market share by 2019.
- Federal standards includes ENERGY STAR levels of efficiency in 2020 standards proceedings.

Alignment with Other NEEA MT Efforts:

NEEA is developing a very extensive market transformation program working to advance electric clothes dryer efficiency including ENERGY STAR as the first Tier of efficiency. NEEA is already working with major appliance manufacturers to bring ENERGY STAR and higher efficiency electric dryers into major retailers in the Northwest. These manufacturers are also working to develop ENERGY STAR gas dryers to sell alongside their electric counterparts. The gas dryer effort will require only a small incremental effort to work with manufacturers and retailers to ensure that gas ENERGY STAR dryers will be marketed and promoted alongside the electric products.

Scanning

Program Description:

NEEA will support the identification, assessment and development of new, emerging technologies that advance efficiencyof natural gas energy use. This effort will strategically leverage both NEEA's electric energy efficiency emerging technology efforts as well as those by other potential partners such as Gas Technology Institute, California's Emerging Technology Coordinating Council and others.

Program Description:

The Gas ET program effort includes three major components of activity:

- *Scanning:* This activity is all about "prospecting" for new energy efficiency technologies. It involves a host of activities designed to help seek out and identify technologies with significant opportunity to advance energy efficiency.
- *Opportunity Assessment:* This activity is focused on developing an early assessment of the potential size of the opportunity, determining how "real " the opportunity is, and an early take on market barriers and opportunities that need to be addressed to realize the opportunity potential.
- *Concept Development:* This activity takes a confirmed opportunity and develops a "prospectus" suitable for making a decision on whether the opporunity warrants further development through inclusion within the portfolio of market transformation programs supported by NEEA.

Energy Savings Potential Goal:

- NEEA will work with the Natural Gas Advisory Committee to establish a suitable energy savings potential goal similar to that adopted for electric emerging technologies.

Outcomes:

NEEA's work in emerging technologies will result in the following outcomes:

- A portfolio of new technologies that have been screened and assessed for opportunity suitability for market transformation or utility programs
- A long-run energy savings potential for the portfolio of emerging technologies that will meet or exceed the goal set in consultation with the Natural Gas Advisory committee.

Alignment with Other NEEA MT Efforts:

This activity is completely parallel with and leverages off of NEEA's electric emerging technology efforts. The existing framework for scanning and screening technologies is completely applicable to natural gas end-use technologies and will be leveraged wherever possible to minimze costs.

Codes and Standards

NEEA has a long history of providing regional support for energy efficiency in the development and adoption of building codes and equipment standards. NEEA's efforts are focused primarily on ensuring that the Northwest Regional needs and unique requirements are represented in the many different forums in which these codes and standards are developed. Activities covered within this are include providing data and technical support in development of standards as well training and education after adoption by the governing jurisdiction.

NEEA will leverage its existing electric focused work in codes and standards to cover natural gas equipment and end-uses within buildings. NEEA currently works to advance cost-effective energy efficiency requirements at both the Federal level as well as the local and state level for both mandatory activities (e.g. federal manufacturing standards) as well as voluntary specifications such as Energy Star. NEEA will work with the Natural Gas Advisory Committee to prioritize activities in this area.

Research, Planning and Evaluation Summary

The Market Research, Planning and Evaluation business unit focuses on the analysis and evaluation of markets, technologies and market transformation initiatives and reports on market/stock characteristics, market progress, cost effectiveness and energy savings metrics. The unit will support the needs of the natural gas pilot during 2015 - 2019. NEEA plans to establish a parallel planning and reporting system for gas initiatives based off of the electric system. For market research and evaluation, NEEA will follow its established approach it uses for electric market transformation initiatives. Lastly, the unit we provide the functional support to the mid-cycle evaluation of the gas pilot overall. Following is a description of the planning, research and evaluation functions.

Market Planning is an in-house function that is responsible for the quantitative modeling and analysis of MT initiatives, including the development and maintenance of MT modeling methodologies and policies to support cost effectiveness and savings. The group forecasts and reports on multiple quantitative metrics, such as levelized cost, benefit cost ratios, energy savings, "non-energy" benefits, and other portfolio metrics. Market Planning has direct engagement with planning staff at funders and is responsible for working with funders to provide forecasts of energy savings and report actuals, and ensure consistency with the Council's Power Plan. Portfolio management responsibility is a core function of the group. Lead staff for the Cost Effectiveness Advisory Committee.

Market Research & Evaluation (MR&E) is a data-driven group that helps NEEA to achieve its goals of evidence-based practice. Through both in-house research and project management of third-party contractors, MR&E generates information including market characterizations that inform the design of NEEA's MT initiatives, evaluations that help assess the potential and actual market progress from these efforts, regional studies that influence conservation and energy-use planning in the region, and information to answer questions about the organization itself. The deliverables of this group fall into five categories:

- Market Research Reports: typical reports are market characterization studies and pre-intervention baseline assessments and forecasts, and consumer and product research;
- Market Progress Evaluation Reports (MPERs): NEEA requires ongoing, unbiased, empirically based evaluation for every initiative it runs, and hires specialized third-party evaluators to conduct the work. NEEA measures the progress of its initiatives based on market progress indicators (MPIs) directly tied to the stated goals of each initiative. NEEA uses MPIs to identify key shifts in a target market (such as increased or decrease product sales). MPERs provide critical information about the efficacy of an initiative, and as such help inform adaptive management decisions. NEEA conducts MPERs on an annual basis and occur during the Market Development stage of an initiative, and are scheduled to coincide with the annual implementation review process in the Initiative Life Cycle (ILC);
- Long-Term Monitoring and Tracking Reports (LTMT): Market Transformation is long term by nature. NEEA tracks the progress of its market transformation initiatives during their market development and execution phase through periodic Market Progress Evaluation Reports

(MPERs). However, since market diffusion often occurs after NEEA direct intervention and funding has ceased, NEEA also tracks ongoing market progress in the post-funding period so that it can ensure the structural market changes take, and market adoption increases as forecast. NEEA calls these periodic, third party evaluation reports Long-Term Monitoring and Tracking Reports (LTMTs).

Regional Studies and Building Stock Assessments: Regional evaluations to quantify the energy consumption impact of specific technologies, such as Ductless Heat Pumps; NEEA conducts comprehensive Regional Building Stock Assessments periodically to develop an inventory and profile of existing building stock in the Northwest based on field data from representative, random samples of existing homes, buildings and facilities. In addition to producing comprehensive reports, the databases are available to stakeholders. NEEA funders can leverage these regional studies and oversample in their service territories cost effectively.

- **Regional Data Services:** A centralized resource for sales data collection/analysis function for the region, including the collection of additional sales data within the region, beyond what NEEA collects as part of a market transformation initiative. This service is responsible for purchasing and communicating market findings to the region, and provides regional coordination about sales data with CEE, and other efforts around the country in order to leverage their efforts for the NW region. The Regional Data Resources Clearinghouse is a growing project to consolidate and make available data and tools that can help energy efficiency and related research efforts.

Business Planning

Every five years, NEEA reviews its strategic and business plans in preparation for the next five-year funding cycle. This activity mostly involves incremental staff costs to assess market trends, develop alternative business future scenarios, evaluate multiple initiative portfolios, and conduct funder and public stakeholder outreach. Contract costs for this activity have historically included high level market research of trends, stakeholder surveys and facilitation support for the development process. The primary outcome is a revised natural gas Business Plan for 2020-2024.

Appendix 4: Gas Market Transformation Projected Initiative Stages

Gas Market Transformation Projected Initiative Stages

Initiative: Gas HPWH	Year 1	Year 2	Year 3	Year 4	Year 5
Scanning & Concept ID	x				
Concept Opportunity Assessment		x			
Market & Product Assessment			x		
Strategy Testing & Finalization				x	
Market Development					x

Same channels as Electric. Leverages electric HPWH work.

Initiative: Combined Space/Water Heat	Year 1	Year 2	Year 3	Year 4	Year 5
Scanning & Concept ID	x	x			
Concept Opportunity Assessment			x		
Market & Product Assessment				x	x
Strategy Testing & Finalization					
Market Development					

Same path as combined electric space/water heat. Leverages that work (heating system components)

Initiative: Hearth Products	Year 1	Year 2	Year 3	Year 4	Year 5
Scanning & Concept ID	x				
Concept Opportunity Assessment		x			
Market & Product Assessment			x		
Strategy Testing & Finalization				x	
Market Development					x

Completely unique to gas. Will need market research (built into budgets) in scanning for year 1. Assume we will pick products already in the market.

Initiative: Rooftop HVAC	Year 1	Year 2	Year 3	Year 4	Year 5
Scanning & Concept ID	x	x			
Concept Opportunity Assessment			x		
Market & Product Assessment				x	
Strategy Testing & Finalization					x
Market Development					
Out-year stage projections are based on very preliminary information					

Initiative: Dryers	Year 1	Year 2	Year 3	Year 4	Year 5
Scanning & Concept ID					
Concept Opportunity Assessment					
Market & Product Assessment					
Strategy Testing & Finalization	x				
Market Development		x	x		
Energy Star product path.					

Appendix 5: Preliminary Cost-Effectiveness Memo

Memorandum

July 25, 2014 (Revised 8/14/2014)

TO: Natural Gas Market Transformation Collaborative
FROM: Jeff Harris, Director Technology and Strategy

SUBJECT: Preliminary 2015-2019 Portfolio Cost-Effectiveness Analysis

Table 1 below summarizes a very preliminary analysis of the portfolio of possible gas MT initiatives in order to arrive at an early assessment of cost-effectiveness.

Table 1. Preliminary Cost-Effectiveness Summary

Program	20-Year Savings Potential - Therms	TRC Cost-Effectiveness $/Therm
Gas Fired HPWH	104,564,346	0.394
Combination Heating Hot Water GF-HP	163,643,995	0.374
Hearth Products	11,486,767	(2.26)
Dryers	3,600,000	TBD
Rooftop HVAC	TBD	TBD
Total	**282,344,002**	**0.28**

*Weighted average costs/savings based on the three programs: GF-HPWH, Combined Heating + Water Heating, and Hearth Products

Table 1 represents both a 20-year estimate of the total annual energy savings produced by the portfolio in 2034. It also contains an estimate of the Total Resource Cost (TRC) "levelized cost" (LC) that should be comparable to avoided costs within an integrated resource planning framework. The TRC-LC is a

representation of the net of the sum of societal costs and non-energy benefits levelized over the lifetime of the efficient product or service, and then divided by the annual energy savings to establish an effective "cost of saved energy" that can be compared to other resource options on an equivalent basis.

Virtually all of these initiatives are very early in their product lifecycles, and there is simply not a large set of data from which to make robust estimates of cost-effectiveness. NEEA normally does not create a formal cost-effectiveness model until it collects field data to validate the key inputs into the cost-effectiveness model. At this early stage, cost-effectiveness analysis is largely an exercise in secondary data collection and abbreviated analysis using best professional judgment.

Even with the caveats stated above, NEEA needs more time to assess cost-effectiveness for dryers and Rooftop HVAC. NEEA could base dryer estimates based on electric counterparts that meet ENERGY STAR criteria. ENERGY STAR could assess and add new dryers over the next several weeks, but the data is unavailable at the current time. Rooftop HVAC, however, needs much more development of the particular concept since there are multiple possible technology paths that need more exploration before finalizing the initiative design. Cost-effectiveness for Rooftop HVAC will likely not be calculable with any reliability until sometime next year following some more detailed work on concept development.

For the moment, the largest portion of the savings are anticipated to come from the three main MT initiatives: gas-fired heat pump water heaters, combination heating and water heating systems using gas-fired heat pump technology, and efficient hearth products. Assuming these three programs and efficiency opportunities continue to make up the bulk of the portfolio, the portfolio has a 20-year TRC levelized cost weighted average at $0.28/Therm. This falls below the recently revised wholesale market forecasts from the Council for near-term forecasts and below the expected long-run marginal costs of gas. However, whether the portfolio is cost-effective for any individual utility will depend on the avoided cost frameworks currently in play at each of the utilities.

There are many significant assumptions built-into each measure in Table 1 and included in the attached spreadsheet (Gas Portfolio CE v1b 07-25-2014.xlsx), including the following:

- **Sales-weighted, long-term average costs:** NEEA's standard cost-effectiveness model uses 20-year, sales-weighted average costs for the various components of costs to assess "total-societal" TRC cost-effectiveness. This approach is consistent with a market transformation framework where front-end costs for a new technology are usually higher than at the end of the initiative when sales volumes are high and competitive forces/codes and standards drive prices down.

- **MT Programs Costs:** The results in Table 1 are intended to be representative of all societal costs and non-energy benefits over a 20-year horizon (2015-2034) but at this early stage not all costs and benefits are identified or calculable. Based on prior experience with electric market transformation programs, market transformation program costs are typically only a very small fraction of total societal expenses over the 20-year planning horizon. By far the majority of costs result from the cost of the efficiency measure itself. Given the very early nature of this analysis, these market transformation program costs are not estimated here.

- **Codes and standards:** There are assumptions in the analysis that assume that first voluntary programs (e.g. ENERGY STAR) and then eventually codes and standards come into play and drive market shares to very high levels. Due to the very early stage of development for these technologies, NEEA is assuming these standards will not come into play until 2030, although voluntary programs may start much earlier.

- **Differential life times and O&M costs:** For both water heaters and combined systems, a significant driver of cost-effectiveness is differential life-times between the HPWH and conventional gas-storage water heaters. This analysis uses a 13-year measure life for the standard gas-fired water heater, a 15-year measure life for the heat pump water heater, and a 26 year measure life for the combined system. The difference in life-time results in a "credit" to the heat pump water heater/combined system for the years of additional life that would have had to be provided by a replacement conventional water heater.

- **Negative levelized costs:** For hearth products, cost data from the Energy Trust program indicates that products meeting efficiency tiers 1 and 2 actually cost less than the conventional alternative. This scenario results in a net societal cost-reduction and therefore a *negative* levelized cost. The Energy Trust program data is currently the only real installed cost data set available, and is the most reliable assessment of cost-effectiveness until NEEA tracks these cost trends across a broader regional effort.

We would like to know if this preliminary assessment is missing any critical factors for the Collaborative members to move forward with their respective commissions. Please provide your feedback to Karen Meadows and we will try to make adjustments in time for the meetings with commissions, as appropriate.

CC:

Susan Stratton

Karen Meadows

Susan Hermenet

Appendix 6: Cost Allocation Issue Paper

Memorandum

July 8, 2014

TO: Natural Gas Market Transformation Collaborative Participants
FROM: Karen Meadows
CC: Jeff Harris

SUBJECT: **Issue: Natural Gas Market Transformation - Method for Allocating Costs between Gas and Electric Funders**

Issue

What is a fair method to allocate initiative and supplemental services costs between gas and electric utilities?

There are a variety of potential situations to consider:

1. Historical electric initiatives that produced gas savings as a byproduct. Example: efficient electric clothes washers (that save gas water heat).

2. Current and ongoing electric initiatives that produce cost-effective electric savings, gas savings as a byproduct and that are currently funded by electric utilities. Example: new construction. (Note – in the future this could apply to a gas initiative that produces electric savings as a byproduct).

3. New initiatives that produce both gas and electric savings and cost-effectiveness potentially depend on cost allocation (i.e. rooftop demand control ventilation that reduces fan energy and the need to heat outside air).

4. New gas initiatives that produce gas savings only (no electric savings) and that leverage infrastructure/market relationships developed through an existing electric initiative. For example, gas fired HPWH initiative that leverages infrastructure/market relationships build through the existing electric HPWH initiative.

5. Initiatives that result in fuel savings for only gas or only electricity (i.e. hearth products).

6. Supplemental services in which adding another fuel only adds incremental cost. For example, evaluation, stock assessments, annual conference, Conduit, cost effectiveness modeling, management of the cost-effectiveness committee).

Discussion on allocation of NEEA overhead and staffing costs:

Gas funders will pay a proportional share of NEEA overhead because the gas budgets will include an 18 percent factor to cover indirect costs. This 18 percent indirect factor covers executive administration, Stakeholder Relations, communications, business administration, IT and shared services (which include space, utilities, etc.). The factor is the same used (and approved by DOE) for NEEA DOE grants with two minor exceptions – The DOE approved indirect factor is slightly less because DOE disallows some corporate communication costs and some Board of Director expenses.

Gas funders will also pay fully loaded staff costs for needed staffing (a 39.7 percent fringe on direct costs, G&A and contractor costs will be included).

Strategies/Options:

As noted above, NEEA needs to consider a variety of scenarios. Discussion and some potential options for each scenario are included below.

1. **Scenario:** Historical electric initiatives that produced gas savings as a byproduct.

   Discussion: Note – NEEA historically has tracked gas savings but has not evaluated or tracked gas savings at the level of rigor that occurs for electric savings. Have dual fuel utilities been taking credit for these gas savings if they wanted credit? Do gas only utilities upon joining NEEA want to take credit for this historical gas savings? Is that fair and/or practical? Rather, do we only look forward? For gas only utilities, being able to take credit for past gas savings would increase the cost-effectiveness of their NEEA portfolio investment (perhaps a quick win?). However, there would be costs incurred to improve the saving estimate accuracy and for the tracking and reporting costs by utility and we would need to discuss whether or not this would be perceived as fair.

2. **Scenario:** Current and ongoing electric initiatives that produce cost-effective electric savings, gas savings as a byproduct and that are currently funded by electric utilities. Example: new construction. (Note – in the future this could apply to a gas initiative that produces electric savings as a byproduct).

   Discussion: Here are a few options to consider.
   a) Gas utilities and the gas side of Energy Trust and dual fuel utilities should co-fund these initiatives based on the gas share of the net present value of benefits and evaluation on the gas side should enhanced.
   b) Gas utilities and gas side of Energy Trust and dual fuel utilities should not pay for any activity that is going on without their help. However, if they want credit for the gas savings, should pay to enhance the gas side of the evaluation.
   c) Mostly do option b. Where programs will fall apart based on option b due to electric UCT issues (may be for new homes) go to option a.

3. **Scenario:** New initiatives that produce both gas and electric savings and cost -effectiveness potentially depends on cost allocation. For example, rooftop demand control ventilation that reduces fan energy and the need to heat outside air).

   Discussion: there are a number of options for cost allocation in this scenario. We need to be clear as to which would pass GAAP and/or public service commission rate recovery requirements.

   a) Allocate costs based on the split of benefits (for example projected savings stream).
   b) Allocate costs such that savings are TRC cost-effective on both the gas and electric side. For example, allocate costs to insure savings for the limiting fuel are TRC cost-effective and allocate the rest of the costs to the other fuel.
   c) Allocate costs based on share of incentive costs where we can (where they are distinct by fuel). Where there is no incentive split (e.g. and EMS system that controls both gas and electric), use present value of energy savings to the utility system.

4. **Scenario:** New gas initiatives that produce gas savings only (no electric savings) that leverage infrastructure/market relationships developed through an existing electric initiative. For example, gas fired HPWH initiative that leverages infrastructure/market relationships build through the existing electric HPWH initiative.

   Discussion: Options for funders of the new initiative include:

   - Funders of the new initiative pay only incremental cost. The logic is that since the existing initiative is cost-effective for one fuel - it would be funded regardless of any new initiative piggybacking on. Another consideration whether or not to burden gas market transformation with existing costs as the region tries to build gas market transformation.
   - Funders of the new initiative pay incremental and portion of existing infrastructure costs (as a percent of annual costs for each year going forward or split according to projected saving value). The question is how would you determine what portion of existing infrastructure costs the funders of the new initiative should pay? What method would meet regulatory requirements for rate recovery?

5. **Scenario:** Initiatives that result in fuel savings for only gas or only electricity. For example, hearth products.

   Discussion: This is a pretty straightforward scenario. The fuel sector that is receiving the benefits should pay the entire cost of the initiative.

6. **Scenario:** Supplemental services in which adding another fuel only adds incremental cost. For example, evaluation, stock assessments, annual conference, Conduit, cost effectiveness modeling, management of the cost-effectiveness committee)

   Discussion: Questions to consider – should the goal should be to get to an equitable place between gas and electric funding? Assuming this is the goal, do we figure out that equitable place now or, do we launch the gas market transformation work, gain some experience and see

what issues surface, and then over the next several years, determine the best allocation between gas and electric funding? For stock assessments, do the stock assessments already collect sufficient information on gas equipment? Options for gas utilities include:

- Gas side pays only incremental costs
- Allocate funding based on a ratio of the overall gas to electric budget in a five year period
- Allocate funding based on gas vs electric dollar sales
- Gas side pays incremental cost and a contribution to fixed costs. For example, if we want to supplement the residential building stock assessment study by adding sampling for natural gas end use equipment and we want to sort results by natural gas utility, should the gas companies pay only the incremental cost? Should the gas utilities pay the incremental costs and a portion of the fixed costs (field work, analytical work, report writing)? Does this vary depending on whether the utility is a dual fuel utility or a gas only utility? How do we determine the percent of fixed costs to cover?