



In the Community to Serve®

**2016
Washington
Conservation Plan**



Table of Contents

Introduction	3
Overview	3
Program Goals & Budgets– at a glance 2016 & 2017	4
Program Cost Effectiveness	5
Measure Updates	6
Emerging Technologies	6
Potential DSM Measures and Their Costs	7
Reassessment of Cascade Conservation Potential and EM&V Study	8
Administrative costs & TEAPOT modeling moving forward	10
Total Resource Cost test (TRC)	10
Utility Cost Test (UCT)	10
Market Segmentation Findings	11
Energy Efficiency Portfolio Development	11
DSM Portfolio Updates and Planning	14
Budgeting Parameters	14
Incentive Level	14
Targets	15
Commercial/Industrial Scenarios	15
Most Recent Program Update	15
Residential Program Delivery Changes for 2016	16
Program Offerings through 2016	17
Washington Low Income Program	25
Conservation Programs in 2017	27
Forward Looking Targets/ TEAPOT Forecasts	28
Residential Potential	28
Commercial/Industrial Potential	32
CY 2016 & 2017 Targets	34
Long term Conservation Potential	39
Planning and EM&V	41

Introduction

Cascade Natural Gas Corporation has developed this Conservation Plan in consultation with its Conservation Advisory Group (CAG) as a roadmap to the 2016 and 2017 short term conservation strategy for reducing consumption through its Conservation Incentive Programs. In this first rendition of the Conservation Plan the Company is recapping the process that has traditionally taken place in the Integrated Resource Plan document (IRP) and transitioning to this standalone plan with an executive summary of the planning and savings forecasting replacing it in future iterations of the IRP. General discussion around Demand Side Management including environmental externalities, outside determinants of customer usage, regional energy planning and legislative impacts will remain as part of the IRP with the focus of the Conservation Plan gearing toward potential and near-term conservation program planning vs the long term 20 year outlook inherent in the IRP.

Throughout this document we will discuss the potential savings determined for the Cascade Natural Gas Corporation (CNGC) Washington service territory through our TEAPOT (Technical Economic Achievable Potential) Modeling tool provided by Nexant Inc. We are also including an explanation of past modeling processes and a revised structure for modeling the Achievable potential moving forward as per the CAG's recommendations. This document demonstrates the immediate two year conservation goals as well as the 10 year forecast of savings to parallel the format of Conservation Plans provided by other utilities in the state.

The Company is approaching the 2016 Calendar Year as an opportunity to fine tune and update our program reporting and planning, implementation procedures and residential rebate processing. We are transitioning from a third party residential program delivery vendor to internal delivery of the programs with an associated software platform. This significant alteration in our approach to residential program delivery will allow us to directly control the customer's experience throughout the CIP processing as well as tailor our reporting and tracking to better align with program needs. This delivery alteration is further described under the [Residential Program Delivery Changes for 2016](#) heading in this plan. We are also incorporating updates to include rebate tracking by paid date vs install date ([see CY 2016 & 2017 Targets](#)) and discussing alterations to incentive levels with the CAG.

Overview

Utilities engage in Demand Side Management (DSM) activities for a variety of reasons including regulatory requirements, resource planning and environmental stewardship. DSM resources are generally thought of as conservation measures or actions that result in the reduction of natural gas consumption due to increases in efficiency of energy use or load management. The Washington Utility Commissions requires gas utilities to consider cost-effective DSM resources in their energy portfolio on an equal and comparable basis with

supply side resources. In the gas industry, DSM resources are conservation measures that include but are not limited to ceiling, wall and floor insulation, higher efficiency gas appliances, insulated windows and doors, ventilation heat recovery systems and weather stripping. By prompting customers to change their demand for gas, Cascade displaces the need to purchase additional gas supplies, displaces or delays contracting for incremental pipeline capacity, and possibly displaces or delays the need for reinforcements on the Company's distribution system.

There are two basic types of demand side resources - baseload resources and heat sensitive resources. Baseload options are those that displace the need for baseload supply-side resources. They will offset gas supply requirements daily, regardless of the weather. Baseload DSM resources include high efficiency water heaters, higher efficiency cooking equipment and horizontal axis washers. Heat sensitive DSM resources are measures whose therm savings increase during cold weather. For example, a high efficiency furnace will lower therm usage in the winter months when the furnace is utilized the most and will provide little if any savings in the summer months when the furnace is rarely used or is turned off. Examples of heat sensitive DSM measures include ceiling, floor, or wall insulation measures, high efficiency gas furnaces, and improvements to duct work. These types of measures offset more of the peaking or seasonal gas supply resources, which are typically more expensive than baseload supplies.

Program Goals & Budgets— at a glance 2016 & 2017

Table 1

	Calendar Year 2016				Calendar Year 2017			
	Residential	Commercial / Industrial	Low Income	Total	Residential	Commercial Industrial	Low Income	Total
Program Budget¹	\$507,199	\$983,301		\$1,490,500	\$524,951	\$1,017,717		\$1,542,668
Therm Targets²	409,975	565,940	7,000	975,915	419,773 ³	608,074	15,000	1,027,847
NEEA Natural Gas Market Transformation efforts				\$244,996				\$313,174

¹. Traditionally the Company provides a range for budgeting purposes. The budget noted here is a rough estimate of the higher end of the range (+10%), with expenses potentially falling below these numbers by up to 9.1%.

². Therm targets from this graph have been developed through the TEAPOT modeling tool inclusive of administrative costs – as opposed to the programmatic potential scenario from the 2014 IRP. These targets are aspirational targets. The Company will actively work toward achievement of these goals, but program cost-effectiveness is the primary metric of success.

³. The Company forecast residential potential under an incentive of 30% incremental cost for this table to represent current levels. The Company will discuss increasing incentive levels with its CAG for 2017, but

will note TEAPOT models a therm target for the residential program of 162,798 as opposed to the level noted here as a proposed increase in incentive amounts results in a decreases in available measures. See [Conservation Programs in 2017](#) for elaboration.

Program Cost Effectiveness

The declining costs of natural gas in the marketplace have made it increasingly difficult to maintain robust conservation programs as a utility. Despite this hurdle, the Company continues its commitment to offering meaningful conservation programs to help drive customer decisions toward higher-efficiency appliances and upgrades. In CY2013/2014 the Company had its Conservation Potential Assessment performed by Nexant which specifically included analysis on our potential from two perspectives - on the old method of establishing potential and a new version based on guidance from the UG-121207 Conservation Policy Statement from the WUTC. The Company held multiple discussions with its Conservation Advisory Group related to the policy statement.

One of the primary actions the Company took in adherence to UG-121207 was our migration to the Utility Cost Test from utilizing the Total Resource Cost (TRC) test. This alteration allowed us to maintain our Washington programs despite the low cost of natural gas.

Docket UG-121207 Policy Statement on the Evaluation of the Cost-Effectiveness of Natural Gas Conservation Programs

The Policy statement was released in October 2013 and has provided the Company with guidance on evaluating the cost effectiveness of its natural gas conservation programs. As per the policy's guidelines the Company has elected to utilize the UCT in consultation with our Conservation Advisory Group (CAG). The use of the UCT, as opposed to the traditional TRC method, has allowed the Company to maintain a continued, robust conservation portfolio of measures that is cost-effective.

Washington Utilities and Transportation Commission Docket UG-121207 offers guidance regarding the optimal method for the valuation of natural gas conservation efforts in the State of Washington. This document thoroughly addresses best practices for measuring cost-effectiveness and has stated that: “[W]e are unwilling to allow utilities to end natural gas conservation programs as a result of an unbalanced or incomplete TRC analysis. Any TRC analysis without these values [conservation’s risk reduction value, the downward price pressure from reduced demand, and non-energy benefits] is potentially biased against conservation programs. Accordingly, the UCT is an acceptable option when a properly balanced TRC is not available.”

The Policy statement also addressed the use of discount rates in cost-effectiveness

calculations. The Company has worked closely with our CAG to determine the appropriate rate to use when calculating the net present value of its annual costs and benefits from the conservation programs. It was determined Cascade would continue to use the long-term discount rate as had previously been used to enable the programs to remain in place at their current levels and to prevent removal of measures due to a severe discounting scenario, as would have been the case had the Company utilized the Weighted Average Cost of Capital (WACC).

Measure Updates

As the energy efficiency market continues to develop and cost-effective conservation technologies become increasingly available, the equipment standards and accessibility to such measures may evolve over time. In order to ensure the Company's DSM offerings stay current, Cascade engages in a regular review of the measure-mix within its conservation portfolio. Measures are added, removed, replaced, or modified when it is determined new technologies of equal or greater cost-effectiveness are available to the market. However, the emergence of a high-performance natural gas conservation technology will only have positive energy-savings impacts if customers are willing to pay the initial higher costs associated with the purchase and installation of cutting edge efficiency measures. By monitoring and updating the measures and incentive levels within Cascade's Conservation Incentive Program (CIP), the Company is able to ensure ratepayers have access to an optimal level of behavior-motivating incentives needed to encourage the purchase of cutting-edge, cost effective, gas conservation technologies. In conjunction with monitoring the viability of more "traditional" natural gas conservation measures, the Company also engages in concurrent efforts to research and determine the feasibility of emerging high-efficiency gas technologies. We continue to monitor cutting edge measures and have made tremendous progress on this front thanks to the reassessment of our conservation potential in CY 2013/2014 by Nexant. More details regarding both sets of efforts can be found below. Further discussion about the Nexant Conservation Potential study and Cascade's approach to the UCT will be provided in detail later in this plan.

Emerging Technologies

The Company has also begun to closely monitor emerging technologies with strong potential for deeper natural gas savings. Such high performance measures include energy-efficient Natural Gas Heat Pumps (GHP) which have been identified as a promising and high-impact conservation measure by Oakridge National Laboratories.

Along with the natural gas heat pumps for use in commercial space heating applications as noted above, the Company is also in the process of gathering more information regarding Gas-fired Heat Pump Water Heaters. This technology has been identified by the Northwest

Energy Efficiency Alliance (NEEA) as a potentially viable technology with costs in a similar range to electric models currently available on the market.

Utility support for technology like those noted above is important in the industry to demonstrate to manufacturers there is interest in supporting deployment through rate payer funded efficiency programs. The more interest displayed in emerging technologies, the more likely manufacturers are to increase production and market availability.

As mentioned previously the Company has elected to partner through NEEA with other gas utilities in the region to engage in the first Regional Gas Market Transformation Collaborative in the nation. The goal is to increase market adoption of energy-efficient natural gas products and practices in the future. As part of the project the Collaborative plans to pilot five distinct technologies by increasing their uptake and availability in our joint service territory to improve cost effectiveness of these natural gas technologies. This five year effort started in 2015 and should result in increased savings as the technology is adapted and uptake increases in future years for upgrades including residential natural gas ENERGY STAR[®] dryers and commercial condensing natural gas rooftop units (RTUs).

The Company will continue to keep apprised of this and other equally cutting-edge efficiency options with significant future savings potential for our customers.

Potential DSM Measures and Their Costs

In order to understand the impact declining costs can have on the programmatic potential of natural gas conservation programs, it is important to understand how these programs work. Utility-run energy efficiency programs are designed to encourage the use of high-efficiency natural gas equipment and measures. The threshold used to verify if the amount paid by the utility is reasonable is the avoided cost of natural gas.

In short, a utility should not pay more than 100% of the avoided cost of a measure. Likewise, it is considered general industry best practice that a rebate should be no lower than around 1/3 the incremental cost of the measure, nor higher than is necessary to achieve maximum anticipated participation. This helps the utility avoid both the risk of free ridership and the hazards of skewing program cost effectiveness and triggering the law of diminishing returns by paying beyond the level of an appropriate market signal.

As of the latest IRP Cascade is able to pursue a combined Residential and Commercial/Industrial conservation portfolio with an average levelized cost limited to below \$0.4521, and a total avoided cost of \$5.38 for a 20 year measure.

Utilizing the UCT, Company program management set the rebate thresholds to achieve a delicate balance between driving program participation and ensuring a broad breadth and

depth of measures. This balance was reviewed with the Conservation Advisory Group on June 6, 2014 and demonstrates our current program offerings as of the time of writing for this Conservation Plan.

The Utility Cost Test is the optimal vehicle for valuation of these measures since it is a straightforward and clean calculation of the utility's investment in Demand Side Management and does not penalize customers for making independent determinations regarding the cost-benefit of an energy efficiency upgrade. The UCT instead treats the rebate from utility run natural gas efficiency programs as a leveraged partnership that drives positive market change and the installation of measures with the potential for long-lived and deeper energy savings.

In addition to the use of the Utility Cost Test, the Company also discussed with its Conservation Advisory Group and Staff regarding the continuation of its Long-Term Discount Rate of 4.17% so that longer-lived measures continue to thrive within its portfolio and that no reductions or slowed momentum was experienced as a result of migrating the programs to the Weighted Average Cost of Capital (WACC).

Based on the changes to avoided costs and the continued evolution of building codes and conservation technologies, and in light of the Policy Statement issued through UG 121207, the Company commissioned a study in 2013 to comprehensively reassess its conservation potential and perform evaluation, measurement and verification on previous conservation efforts performed through the Conservation Incentive Program (CIP). This study was noted as a commitment in the Company's 2012 IRP Action Plan. Cascade is pleased with the outcomes of this effort.

Reassessment of Cascade Conservation Potential and EM&V Study

As of 2014 the Company discontinued use of its outdated potential assessment study by Stellar/Ecotope and adopted an updated and refined comprehensive reassessment of its potential performed by Nexant Inc. Because of the revised study performed by Nexant, the Company now has a much more nuanced understanding of its conservation potential and is able to further refine and more accurately develop conservation targets and portfolios to optimize energy savings in its Washington service territory. The study has provided new insights into the Company's overall technical, economic, and achievable potential. Program potential was excluded from this study, but the vendor did provide guidance to Cascade staff as to how this can be manually developed by their program implementation team. In addition, Nexant provided the Company with a thorough planning tool for use by Cascade in drilling down to more precise conservation targets for IRP and program planning based on the actual measures included in the conservation portfolio.

The primary goal of the Nexant assessment was to develop a comprehensive analysis of technical, economic and achievable potential for natural gas energy efficiency for customers on Rate Schedules 503, 504, 505, 511, 570 & 577 (residential, commercial and non-transport sales industrial customers). This third-party analysis illustrates the remaining savings potential by sector, segment and end use as a means to inform future program design given the low cost of natural gas. The study also integrated a detailed evaluation and measure savings review of Cascade's conservation portfolio. Key objectives of this study include:

- Provide credible and transparent estimation of the technical and achievable energy efficiency potential by year over the next 21 (2014-2034) years within Cascade's Washington service territory;
- Assess and validate therm savings associated with key measures that qualified for, and received, a conservation incentive in the 2012 program year, and apply findings to determine realistic therm savings potential in Cascade's Washington Service area;
- Provide a user friendly, executable dynamic model that will support the potential assessment and allow for testing of sensitivity of all model inputs and assumptions;
- Develop a final report including summary data tables and graphs reporting incremental and cumulative potential by year from 2014 through 2034.

The Nexant study estimated energy efficiency savings developed into three types of potential: technical potential, economic potential, and achievable potential. Market penetration rates associated with each potential were estimated and included in this assessment. Nexant analyzed this potential via a customized modeling tool based from a Microsoft Excel-based modeling tool, TEA-POT (**T**echnical/**E**conomic/**A**chievable **P**otential) for the Cascade Conservation Potential Assessment.¹ This modeling tool was built on a platform that provides the ability to run multiple scenarios and re-calculate potential savings based on variable inputs such as sales/load forecasts, natural gas prices, discount rates, and actual program savings. This model provides Cascade with the utmost transparency into the assumptions and calculations for estimating market potential.

While technical and economic potential are both theoretical limits to efficiency savings, achievable potential embodies a set of assumptions about the decisions consumers make regarding the efficiency of the equipment they purchase. Relevant factors to Cascade's

¹ To review the full study referenced in this section see:

Nexant, Inc. (February 25, 2014). Cascade Natural Gas Corporation, Assessment of Achievable Potential & Program Evaluation Volume 1: Executive Summary, Volume 2: Assessment of Achievable Potential & Program Evaluation, Volume 3: Appendices

conservation program were included in the Achievable Potential to simulate a realistic estimate of real-life conditions. Again, as stated earlier, program potential (i.e. the subset of achievable potential attainable given constraints on program budget and implemented measures) was not presented in Nexant's report. In the most recent iteration of the IRP the Company elaborated on its method of drilling down to the programmatic level using the TEAPOT potential provided through the model.

Administrative costs & TEAPOT modeling moving forward

As per Stakeholder requests in subsequent Conservation Plans, as well as IRP iterations, the Company will move away from the Programmatic Planning method described below, and instead include administrative costs associated with program implementation under the Achievable screen. The TEAPOT tool developed by Nexant has the capability of factoring the administrative costs into the modeling, but as this was not the initial intent when the model was activated for Cascade it was not represented in the most recent IRP. The Company has since requested Nexant activate the ability to include administrative costs as an input in the model and is providing these initial forecasts here for reference in 2016 and 2017. Please note, the Company maintains the Achievable potential (with admin included) will still be an *aspirational* goal (especially as it relates to the residential program) and believes it does not provide the same level of refinement to goal setting as can be performed at a programmatic level (as seen in the following graphs). Having said that, this altered method will allow the Company to set future goals commensurate with the Achievable level through the modeling tool while increasing transparency.

The following section elaborates on the methods used by the TEAPOT model to develop the three levels of Potential for the programs and subsequent creation of the Company's 2-year short-term plan.

Industry standard cost effectiveness tests were performed to gauge the economic merits of the portfolio. Each test compared the benefits of the energy efficiency metric to their costs defined in terms of net present value of future cash flows. The definitions for the two standard tests used in the Nexant analysis are described below.

Total Resource Cost test (TRC). The benefit to this test lies in the holistic approach to looking at the total benefits and total costs of the measure, not just energy related costs.

Utility Cost Test (UCT). The benefits in this test are the lifetime avoided energy costs and avoided capacity costs, the same as the TRC benefits. The costs in this test are the program administrator's incentive costs and administrative costs.

Cost effectiveness under both scenarios was measured under a base-case scenario of Cascade's current avoided costs as of the acknowledged IRP at the time (2012), and an

incentive rate of 30%. These inputs can be altered within the TEAPOT model and updated by the Company on an ongoing basis as appropriate. Please note findings from the report were included in the 2014 IRP.

Market Segmentation Findings: An important first step in calculating Cascade’s energy efficiency potential estimates is to establish baseline energy usage characteristics and disaggregate the market by sector, segment, and end use. In its final report to the Company Nexant offered the Company control totals to which all energy usage was calibrated in the base year of the study and then forecasted while using the same three climate zones the company has used in the past for calculating its potential. This resulted in a calculation of total natural gas consumption by eligible residential, commercial and industrial customers in Cascade’s Washington service territory.

Table 2

Washington Conservation Climate Zones by District		
<u>Zone 1</u>	<u>Zone 2</u>	<u>Zone 3</u>
• Bellingham	• Aberdeen	• Sunnyside
• Mount Vernon	• Bremerton	• Tri-Cities
	• Longview	• Walla Walla
		• Wenatchee
		• Yakima

Energy Efficiency Portfolio Development: High-level energy efficiency potential was developed by Nexant based on measures as screened through the initial run of the TEAPOT model for the study under the following main assumptions:

- Measure cost effectiveness screen: Utility Cost Test (UCT)
- Incentive percent of incremental cost (for achievable scenarios): 30%, 50% or 75%
- Avoided Costs: Current avoided costs as provided in Appendix H of Cascade’s 2014 IRP
- Discount Rate: 8.55% (the WACC per the WUTC Policy Statement UG-121207). Additional scenarios were run under the 4.17% discount rate and reflect more favorable results to continued, comprehensive conservation efforts as described later in this document). Please note - the Company has run all subsequent scenarios under the 4.17% discount rate.

These high level screens performed under Nexant’s baseline conditions yielded total Achievable Potential for the Residential, Commercial and Industrial sectors.

It is important to recognize the screens only represented the Technical, Economic, and Achievable potential within Cascade’s Washington service territory and at their current

levels did not represent on-the-ground conservation potential. Furthermore, the high-level screens provided in the Nexant report represent the savings potential available if every measure identified under the Achievable screen could be cost-effectively integrated into the Company's conservation program portfolio. In other words, the summary pages of the study provide a high-level view into what would be *theoretically* possible without concerns from program budgets, administrative costs or regulatory parameters. But in reality, not all measures identified by Nexant remain cost effective under real-world conditions and within the cost-screen thresholds identified in Appendix H of the Company's IRP. When Nexant developed the TEAPOT model for the Company they did not enable the model to include administrative costs associated with program implementation – as the intention was to include them at the programmatic potential development level.

It is not uncommon for a utility to set programmatic goals below achievable potential findings. Many utilities utilize potential studies to inform the direction of goals and help design programs to capture untapped end use/technology potential. In the most recent IRP the Company established a separate programmatic level of potential for a variety of reasons as noted above, but primarily because administrative costs were not calculated into the program at the Achievable level through the TEAPOT model. The Achievable potential also assumes savings are captured in all end uses in all market segments. It's rare for utilities to develop DSM programs that address all segments simultaneously as they tend to be more strategic in where they focus their resources.

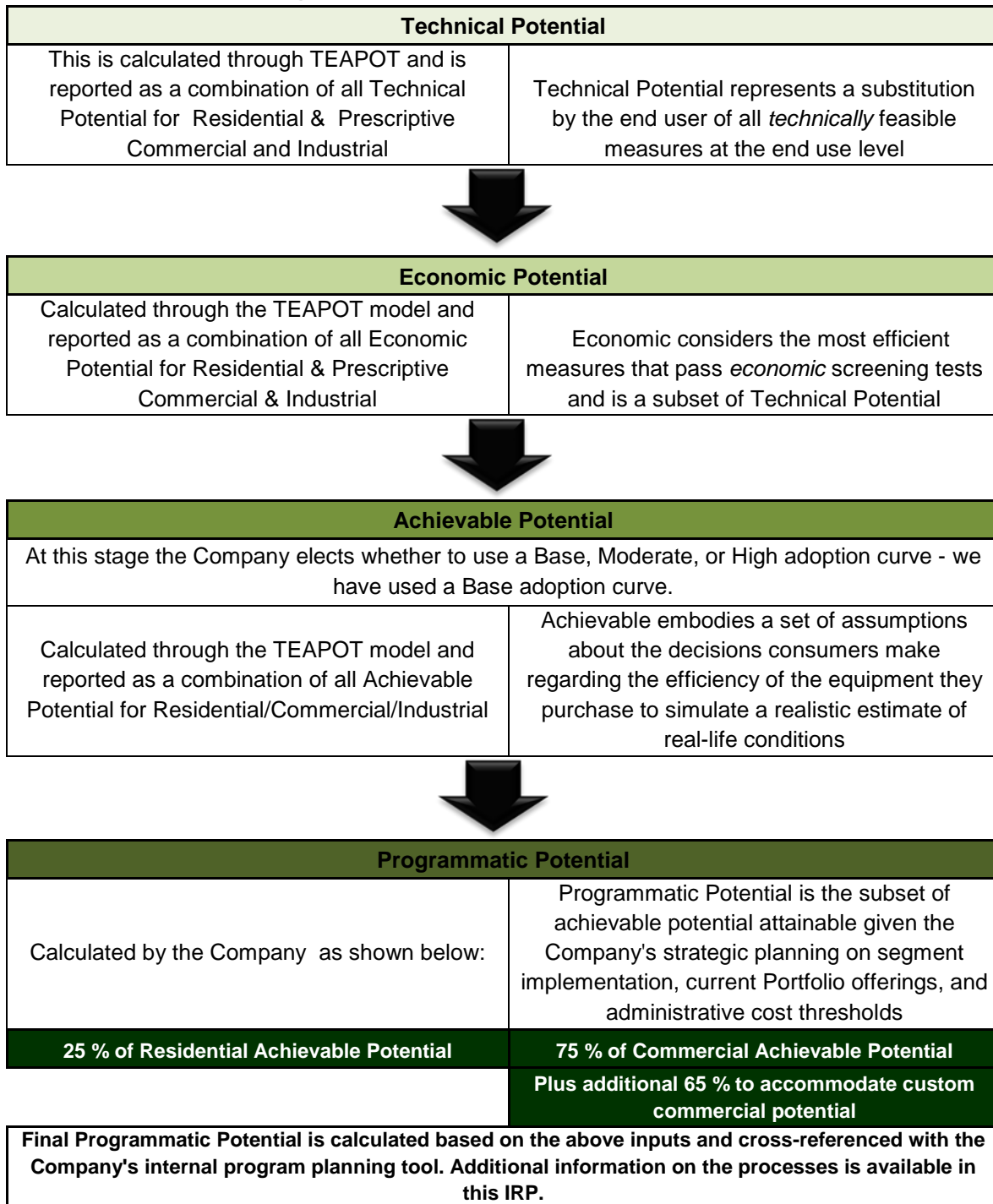
As recognized by Nexant, a more nuanced approach was required in order for the Company to create a realistic portfolio of conservation measures that pass programmatic cost effectiveness screens and offered realistic conservation benefits to customers.

Therefore, the Company treated the Base Case findings as a high-level assessment of potential, and then utilized the TEAPOT model to create dynamic, focused portfolios and subsequent targets for use in the IRP and for program planning.

A summary of the program planning and TEAPOT modeling scenarios used by the Company for its Conservation Incentive Program portfolio in the 2014 IRP is included here. Following is a visual representation of the process of narrowing down potential from the Technical potential level to the programmatic level employed by the Company.

Figure 1

Programmatic Potential Processes



DSM Portfolio Updates and Planning

TEAPOT provides the Company with a much more nuanced and manageable method to developing our portfolio than has been used in the past. In the following section we identify the forecast models for the next 20 years utilizing all the measures identified by Nexant as potentially cost-effective (as demonstrated in the Company's most recent IRP) for year 3-18 and then include a snapshot of the expected forecast of conservation potential for the next two years using our current offerings, taking into account our realistic savings goals. *As mentioned above, we are also providing an update to these goals to demonstrate the difference between our programmatic potential forecast and TEAPOT forecast inclusive of administrative costs.*

The Company's objectives in developing our rebate offerings centered on the desire to:

1. Maximize the inclusiveness of viable, industry-acknowledged conservation measures
2. Maintain incentive levels that send a meaningful market signal to consumers to upgrade to high-efficiency equipment and measures
3. Remain cost effective at the Company's most recently acknowledged avoided costs, even if participation levels remain on par with prior year's achievements

For an explanation of the process by which the Company developed its most recent rebate offerings for Tariffs 300 (Residential Conservation Incentive Program), and 302 (Commercial Industrial Conservation Program) please see tariff filing Advice No. CNG/W14-08-01 filed on August 1, 2014 with an effective date of September 2, 2014. In brief – here are a few elements that went into the process by which the Company narrows down its portfolio.

Budgeting Parameters

We set an administrative budget in order to plan and operate programs. This budget must ensure an acceptable ratio of costs balanced with therm savings achievements. Since therm savings offset the costs of administrative investment, the greater the achievement, the more cost-effective our programs. If the budget or therm savings upon which the portfolio is built are unrealistic, we risk developing a scale-dependent portfolio unable to maintain cost effectiveness.

Incentive Level

Incentive levels had been set to one third of incremental costs as determined by Nexant and programmatic data. Keeping all incentives in the 30-33% range allowed us to clearly synchronize program offerings with the TEAPOT model which begins a base scenario of Achievable 1 at an assumption of a minimal viable rebate level of 30%. Please note per discussions with our CAG, the Company is exploring increasing the incentive level to encourage additional uptake from this base to 50% of incremental cost for the residential

programs. We have modeled this scenario in TEAPOT for 2017 onward under the (admin inclusive) Achievable potential later in this plan for reference. The Company also modeled the savings potential for 2017 onward at the 30-33% incentive level to provide an apples-to-apples comparison of impact to the program potential due to incentive increases and impacts to the rebate portfolio as a reflection of these increases.

Targets

TEAPOT generated targets will be acknowledged in the conservation plan as *aspirational* targets and those we will aggressively strive towards throughout the year. However, the programs will be built in a way that ensures cost-effectiveness can be maintained even if we fall short of that target. See Section 2016-2017 targets for additional details.

Commercial/Industrial Scenarios

It is important to note the screen conducted with the TEAPOT tool and internal valuation mechanism for the Commercial/Industrial sector was performed strictly to assess viable **prescriptive** measures and potential. TEAPOT can only provide estimated achievable potential based on known measures. However, program experience has clearly demonstrated the prescriptive portion of savings from the CNGC Conservation Program is fairly consistent, with an average of 65% of therm savings coming from custom projects. Therefore the prescriptive portfolio is assumed to represent 35% of total program savings and then the Company adds the 65% portion for custom to arrive at the full program's forecast for planning purposes.

Most Recent Program Update

Following the above program planning process in summer of 2014, the Company submitted several proposed program updates after consultation with its CAG to the WUTC which were approved with an effective date of September 2, 2014. See the 2014 IRP for details on these program alterations.

The Company will continue to monitor the state of natural gas conservation technologies within its service territory and make adjustments commensurate with evolving ENERGY STAR standards and code requirements as well as monitor new and promising technologies available to optimize the use of natural gas in our customers' homes. Such measures may include a natural gas heat pump as they become more widespread throughout the market place, or potentially Boiler Pipe Insulation and Demand Control Ventilation as both have been shown to be cost effective measures in our TEAPOT modeling. The Company is also monitoring the residential natural gas furnace standards as well as water heater criteria and will alter the program offerings as standards and building codes change in the next few years.

Residential Program Delivery Changes for 2016

The Company's decision to switch to an internal delivery model for the residential conservation incentive program was initiated for a variety of reasons. The primary motivator behind transitioning in CY 2016 is the expiration of a 2-year contract with the current program implementer, Electric and Gas Industries Association (EGIA). Since 2008 the Company has worked through three separate residential program vendors with varying levels of support for program implementation. The first transition from Conservation Services Group (now CLEAResult) in 2010 to Lockheed Martin was put into place to help streamline delivery between the residential and commercial programs while taking advantage of the economies of scale inherent in bundling all the program delivery under a single vendor. The Company, while pleased with program performance, found with the drop in natural gas prices in 2012-2013 that it needed to reduce administrative costs primarily for the residential program. In spring 2013 the residential rebate processing (Commercial program implementation remained with Lockheed Martin) and Trade Ally management tasks were assigned to EGIA while other aspects of the program were absorbed internally by the Company (quality control inspections for example) with additional staff joining the Conservation Department in support roles.

For the past two years the residential programs have been delivered through a mix of third party implementation and internal program oversight. In an attempt to pursue a long-term, sustainable, affordable and simplified delivery model the Company began exploring internal program implementation options for our residential program in the summer of 2015 knowing the existing vendor contract would expire by the end of the year. Internal delivery will provide the Company with greater oversight and management of the customer rebate experience, smoother and shorter rebate processing from start to finish, and direct control over data quality and data management – meaning tailored reporting and tracking ability.

While discussing 2016 options with the current vendor the Company also understood the expenses for implementation would increase for 2016 as initial estimates of administrative costs for delivery of the CNGC residential rebate programs were not adequate to cover the vendor's costs. While transitioning to an internal delivery model is not a lower cost option (the move necessitates adding on two additional Company staff to support processing) it does provide continuity and independence in future years with the support of an internal software solution.

Upon moving to an internal delivery model the Company needs to have a software package in place to support the program processing and customer rebate portal. Throughout the summer Cascade contacted various software implementation companies to discuss cloud based software options to support internal residential program delivery.

In late summer the Company engaged in conversations with its Conservation Advisory

Group about proposed program delivery changes and advised it would send out an RFP for software support. The software package vendor has been chosen and is in contract discussions with the Company at this time. The current delivery vendor (EGIA) has agreed to continue processing residential rebates and working with the company through the first few months of CY 2016 as their program delivery ramps down and the software and internal delivery absorbs the existing tasks.

Program Offerings through 2016

As suggested above, all items offered at the time of the 2014 Integrated Resources Plan were developed based on the Company's best understanding of avoided costs as outlined in Appendix H of the previous Integrated Resources Plan acknowledged by the WUTC and savings assumptions and targets were built from the Nexant Study, TEAPOT modeling tool, and on-the-ground knowledge of Cascade's Washington service area. The Company's conservation portfolios and programs are subject to modification following the acknowledgement of this more recent IRP, and/or following any and all changes to the underlying data or circumstances surrounding the assessment and measurement of program cost-effectiveness. Customer participation levels will be commensurate with a cost-effective natural gas conservation measure mix that Cascade will be able to maintain in its portfolio.

Current program offerings for the residential and prescriptive commercial/industrial program can be found in detail in **Tables 3** and **4** as well as a brief list of current offerings below:

Residential Rebates:

- High-Efficiency Natural Gas Furnace¹
- High-Efficiency Natural Gas Hearth (Fireplace)
- High-Efficiency Combination Domestic Hot Water and Hydronic Space Heating System using pre-approved Tankless Water Heater³
- Condensing High-Efficiency Natural Gas Tankless Water Heater
- Conventional High-Efficiency Natural Gas Water Heater
- High-Efficiency Exterior Entry (not sliding) Door¹

Existing Homes Only:

- Floor Insulation⁴
- Wall Insulation⁴
- Ceiling or Attic Insulation⁴
- Whole House Residential Air Sealing⁴

New Homes Only:

- ENERGY STAR[®] Certified Home + U.30 Window Glazing⁷
- Upgrade to ENERGY STAR Premium High-Efficiency

- Natural Gas Furnace⁸
- Built Green Certified Home⁷

1. Home must be heated by natural gas.
2. Must use intermittent ignition device.
3. Water must be heated with a tankless system. Pre-approval from CNGC required. Boilers do not qualify.
4. All insulation and air sealing must be performed by a CNGC qualified Trade Ally in order to be eligible for a rebate through the Conservation Incentive Program. Attic insulation cannot be filled to cavity.
5. Minimum of R-19 or higher to fill cavity.
6. Requires WA Department of Commerce Combustion Safety Test Report Exhibit 5.3.1A. Whole House Residential Air Sealing must comply with Washington State Energy Code section 502.4.5
7. These incentives are only applicable to new homes, not available to existing homes.
8. Only eligible on ENERGY STAR Certified homes. These incentives are only applicable to new homes, not available to existing homes.

Commercial/Industrial Standard Incentives

- Warm Air Furnaces - High Efficiency Condensing Furnace—Min 91% AFUE
- HVAC Unit Heater - High Efficiency Non-Condensing Min—86% AFUE
- HVAC Unit Heater - High Efficiency Condensing Min—92% AFUE
- Radiant Heating - Direct fired radiant heating
- Boiler - High Efficiency Condensing Boiler, Min 90% Thermal Eff & 300 kBtu input
- Boiler Vent Damper - Min 1,000 kBtu input
- Boiler Steam Trap¹ - 300 kBtu in; steam pressure at 7psig or >
- Domestic Hot Water Tanks³ - Condensing tank, Min 91% Thermal Eff
- Domestic Hot Water Tankless Water Heater³ - ENERGY STAR[®] .82 EF
- Attic Insulation - (retrofit only)
 - Tier 1: Min R-30 - \$0.50/sq ft
 - Tier 2: Min R-45 - \$0.65/sq ft
- Roof Insulation - (retrofit only)
 - Tier 1: Min R-21 - \$0.60/sq ft
 - Tier 2: Min R-30 - \$0.80/sq ft
- Wall Insulation² - (retrofit only)
 - Tier 1: Min R-11 - \$0.50/sq ft
 - Tier 2: Min R-19 - \$0.56/sq ft
- Energy Savings Kits³ - FREE
 - A: Kitchen Pre Rinse Spray Valve & Bath Aerators
 - B: Low Flow Showerhead
- Ozone Injection Laundry³ - Venturi injection or bubble diffusion - Min 125 lb. total washer/extractor capacity. Pre-approval required.
- Motion Control Faucet³ - Maximum flow rate of 1.8 gpm, WaterSense[®] Certified and Below Deck Mixing Valve
- Clothes Washer³ - Commercial gas washer—1.8 MEF
- Gas Convection Oven - ENERGY STAR[®], ≥42% Cooking Eff/ ≤13,000 Btu/hr Idle Rate
- Gas Griddle - ENERGY STAR[®], ≥38% Cooking Eff/ ≤2650 Btu/hr sq ft Idle Rate

- Gas Conveyor Oven - Greater than 42% tested baking efficiency
- Connectionless 3 Pan Gas Steamer - ENERGY STAR[®] or CEE/FSTC Qualified, ≥38% Cooking Eff / ≤2,083 Btu/hr/pan Idle Rate
- Connectionless 6 Pan Gas Steamer - \$1,200 ENERGY STAR[®] or CEE/FSTC Qualified, ≥38% Cooking Eff / ≤2,083 Btu/hr/pan Idle Rate
- Double Rack Oven - \$2,000 FSTC Qualified, ≥50% Cooking Eff/ ≤3,500 Btu/hr/Idle Rate D Rack
- ENERGY STAR[®] Gas Fryer - \$600
- Door Type Dishwasher Low Temp Gas3 - \$650 ENERGY STAR[®], ≤.6 kw Idle Rate/ ≤1.18 gallon/rack
- Multi-Tank Conveyor Low Temp Dishwasher³ - \$1,000 Gas Main w/Electric Booster ENERGY STAR[®], ≤2.0 kw Idle Rate; ≤ 0.50 gallons/rack
- Recirculation Controls³ - \$100 Continuous Operation DHW Pump, Pre-Approval required.

¹ This measure will only be allowed where the customer agrees to regular trap maintenance and replacement every seven (7) years.

² Minimum value of R-11 applies only where existing walls have no internal insulation cavities.

³ Incentive eligibility dependent on use of gas fired domestic hot water serving the specified measure equipment or fixture.

For the following tables please note – levelized costs displayed include administrative costs. As mentioned previously the Company will now include the administrative costs at the achievable level, which are used for programmatic planning in our annual reporting. Also, levelized costs are shown differently for some measures depending on the Zone, since Cascade tracks therm savings dependent upon which of Washington’s three climate zones the measure is installed in. The range below is based on the 2014 Annual Conservation Incentive Program Report.

**Table 3
Current Residential Program Offerings from Tariff 300**

MEASURE	ZONE	ANNUAL THERM SAVINGS	PROGRAM REBATE	UCT Levelized Cost/Thm
*Blank "UC Levelized Cost/Thm" cells indicate no measures were installed.				
Energy * Certified Home (BOP 1) OLD, HERS 75	1	206	\$ 550.00	\$-
Energy * Certified Home (BOP 1) OLD, HERS 75	2	200	\$ 550.00	\$-
Energy * Certified Home (BOP 1) OLD, HERS 75	3	207	\$ 550.00	\$0.275

MEASURE	ZONE	ANNUAL THERM SAVINGS	PROGRAM REBATE	UCT Levelized Cost/Thm
Energy * Certified Home (BOP 1) (Incentive Increase effective 09/02/2014), HERS 75	1	206	\$ 600.00	\$-
Energy * Certified Home (BOP 1) (Incentive Increase effective 09/02/2014), HERS 75	2	200	\$ 600.00	\$-
Energy * Certified Home (BOP 1) (Incentive Increase effective 09/02/2014), HERS 75	3	207	\$ 600.00	\$0.289
95% AFUE Gas Furn Upgrade E* OLD, 95% AFUE Rating	1	111	\$ 200.00	\$-
95% AFUE Gas Furn Upgrade E* OLD, 95% AFUE Rating	2	110	\$ 200.00	\$-
95% AFUE Gas Furn Upgrade E* OLD, 95% AFUE Rating	3	111	\$ 200.00	\$0.305
95% AFUE Gas Furn Upgrade E* (Incentive Increase effective 09/02/2014), 95% AFUE Rating	1	111	\$ 250.00	\$0.341
95% AFUE Gas Furn Upgrade E* (Incentive Increase effective 09/02/2014), 95% AFUE Rating	2	110	\$ 250.00	\$-
95% AFUE Gas Furn Upgrade E* (Incentive Increase effective 09/02/2014), 95% AFUE Rating	3	111	\$ 250.00	\$0.341
90% Furnace & PTCS Duct Sealing (Discontinued 09/02/2014), 90% AFUE Rating	1	122	\$ 400.00	\$0.395
90% Furnace & PTCS Duct Sealing (Discontinued 09/02/2014), 90% AFUE Rating	2	112	\$ 400.00	\$0.417
90% Furnace & PTCS Duct Sealing (Discontinued 09/02/2014), 90% AFUE Rating	3	143	\$ 400.00	\$0.359
90% AFUE New Gas Furnace (Existing) (Discontinued 09/02/2014), 90% AFUE Rating	1	81	\$ 150.00	\$0.309
90% AFUE New Gas Furnace (Existing) (Discontinued 09/02/2014), 90% AFUE Rating	2	75	\$ 150.00	\$0.321
90% AFUE New Gas Furnace (Existing) (Discontinued 09/02/2014), 90% AFUE Rating	3	99	\$ 150.00	\$0.282

MEASURE	ZONE	ANNUAL THERM SAVINGS	PROGRAM REBATE	UCT Levelized Cost/Thm
95% AFUE New Gas Furnace (New & Existing), 95% AFUE Rating	1	111	\$ 250.00	\$0.341
95% AFUE New Gas Furnace (New & Existing), 95% AFUE Rating	2	110	\$ 250.00	\$0.343
95% AFUE New Gas Furnace (New & Existing), 95% AFUE Rating	3	111	\$ 250.00	\$0.341
80% AFUE Hearth (Incentive decreased effective 09/02/2014), 80% AFUE Rating	1	75	\$ 250.00	\$0.399
80% AFUE Hearth (Incentive decreased effective 09/02/2014), 80% AFUE Rating	2	75	\$ 250.00	\$-
80% AFUE Hearth (Incentive decreased effective 09/02/2014), 80% AFUE Rating	3	75	\$ 250.00	\$-
70% FE Hearth OLD, 70 % FE Rating	1	56	\$ 200.00	\$0.417
70% FE Hearth OLD, 70 % FE Rating	2	56	\$ 200.00	\$0.417
70% FE Hearth OLD, 70 % FE Rating	3	56	\$ 200.00	\$0.417
70% FE Hearth (Incentive decreased effective 09/02/2014), 70 % FE Rating	1	56	\$ 150.00	\$0.350
70% FE Hearth (Incentive decreased effective 09/02/2014), 70 % FE Rating	2	56	\$ 150.00	\$0.350
70% FE Hearth (Incentive decreased effective 09/02/2014), 70 % FE Rating	3	56	\$ 150.00	\$0.350
High Efficiency Entryway Door, Door U-Factor <0.21 ENERGY STAR Door	1	13	\$ 50.00	\$-
High Efficiency Entryway Door, Door U-Factor <0.21 ENERGY STAR Door	2	13	\$ 50.00	\$-
High Efficiency Entryway Door, Door U-Factor <0.21 ENERGY STAR Door	3	13	\$ 50.00	\$0.381
Ceiling Insulation, Equal to or Greater than R-38	1	0.062	\$ 0.30	\$0.339
Ceiling Insulation, Equal to or Greater than R-38	2	0.057	\$ 0.30	\$0.360
Ceiling Insulation, Equal to or Greater than R-38	3	0.067	\$ 0.30	\$0.321

MEASURE	ZONE	ANNUAL THERM SAVINGS	PROGRAM REBATE	UCT Levelized Cost/Thm
Floor Insulation OLD, Equal to or Greater than R-30 or to fill cavity	1	0.056	\$ 0.45	\$0.498
Floor Insulation OLD, Equal to or Greater than R-30 or to fill cavity	2	0.054	\$ 0.45	\$0.513
Floor Insulation OLD, Equal to or Greater than R-30 or to fill cavity	3	0.059	\$ 0.45	\$0.478
Floor Insulation (Incentive decreased effective 09/02/2014), Equal to or Greater than R-30 or to fill cavity	1	0.056	\$ 0.30	\$0.365
Floor Insulation (Incentive decreased effective 09/02/2014), Equal to or Greater than R-30 or to fill cavity	2	0.054	\$ 0.30	\$0.375
Floor Insulation (Incentive decreased effective 09/02/2014), Equal to or Greater than R-30 or to fill cavity	3	0.059	\$ 0.30	\$0.352
Wall Insulation OLD, Equal to or Greater than R-11 to fill cavity	1	0.071	\$ 0.40	\$0.379
Wall Insulation OLD, Equal to or Greater than R-11 to fill cavity	2	0.065	\$ 0.40	\$0.405
Wall Insulation OLD, Equal to or Greater than R-11 to fill cavity	3	0.076	\$ 0.40	\$0.360
Wall Insulation (Incentive decreased effective 09/02/2014), Equal to or Greater than R-11 to fill cavity	1	0.071	\$ 0.35	\$0.344
Wall Insulation (Incentive decreased effective 09/02/2014), Equal to or Greater than R-11 to fill cavity	2	0.065	\$ 0.35	\$0.366
Wall Insulation (Incentive decreased effective 09/02/2014), Equal to or Greater than R-11 to fill cavity	3	0.076	\$ 0.35	\$0.328
High Efficiency Combination Radiant Heat OLD, 90% Eff Condensing Tankless Combo w/ WH	1	475	\$ 1,000.00	\$0.298
High Efficiency Combination Radiant Heat OLD, 90% Eff Condensing Tankless Combo w/ WH	2	468	\$ 1,000.00	\$0.300
High Efficiency Combination Radiant Heat OLD, 90% Eff Condensing Tankless Combo w/ WH	3	476	\$ 1,000.00	\$-
High Efficiency Combination Radiant Heat (Incentive decreased effective 09/02/2014), 90% Eff Condensing Tankless Combo w/ WH	1	475	\$ 825.00	\$0.271
High Efficiency Combination Radiant Heat (Incentive decreased effective 09/02/2014), 90% Eff Condensing Tankless Combo w/ WH	2	468	\$ 825.00	\$0.273
High Efficiency Combination Radiant Heat (Incentive decreased effective 09/02/2014), 90% Eff Condensing Tankless Combo w/ WH	3	476	\$ 825.00	\$-

MEASURE	ZONE	ANNUAL THERM SAVINGS	PROGRAM REBATE	UCT Levelized Cost/Thm
.64 Water Heater (Discontinued 09/02/2014), 0.64 Energy Factor or Greater	1	26	\$ 40.00	\$0.381
.64 Water Heater (Discontinued 09/02/2014), 0.64 Energy Factor or Greater	2	26	\$ 40.00	\$0.381
.64 Water Heater (Discontinued 09/02/2014), 0.64 Energy Factor or Greater	3	26	\$ 40.00	\$0.381
.67 Water Heater, 0.67 Energy Factor or Greater	1	33	\$ 45.00	\$0.293
.67 Water Heater, 0.67 Energy Factor or Greater	2	33	\$ 45.00	\$-
.67 Water Heater, 0.67 Energy Factor or Greater	3	33	\$ 45.00	\$0.293
.91 Tankless Hot Water Heater, 0.91 Energy Factor or Greater	1	54	\$ 150.00	\$0.383
.91 Tankless Hot Water Heater, 0.91 Energy Factor or Greater	2	54	\$ 150.00	\$0.383
.91 Tankless Hot Water Heater, 0.91 Energy Factor or Greater	3	54	\$ 150.00	\$0.383
Energy Saver Kit (Kit 1), Low Flow Showerhead plus Aerators	1	17	\$ 10.00	\$0.323
Energy Saver Kit (Kit 1), Low Flow Showerhead plus Aerators	2	17	\$ 10.00	\$0.323
Energy Saver Kit (Kit 1), Low Flow Showerhead plus Aerators	3	17	\$ 10.00	\$0.323
Energy Saver Kit (Kit 2), Low Flow Showerhead plus Aerators	1	31	\$ 16.00	\$0.314
Energy Saver Kit (Kit 2), Low Flow Showerhead plus Aerators	2	31	\$ 16.00	\$0.314
Energy Saver Kit (Kit 2), Low Flow Showerhead plus Aerators	3	31	\$ 16.00	\$0.314
TOTAL PROGRAM				\$0.349

Table 4

Current Commercial – Industrial Program Offerings from Tariff 302

Prescriptive Commercial Measures	PROGRAM REBATE	ANNUAL THERM SAVINGS/ UNIT	UNITS	UC W/ DELIVERY
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Prescriptive Commercial Measures	PROGRAM REBATE	ANNUAL THERM SAVINGS/ UNIT	UNITS	UC W/ DELIVERY
HVAC Unit Heater, High-Eff Non-Condensing with Electronic Ignition , Minimum 86% AFUE	\$1.50	0.61	kBtu/hr	\$-
HVAC Unit Heater, High Efficiency Condensing , Minimum 92% AFUE	\$3.00	1.10	kBtu/hr	\$-
Warm Air Furnace , High Efficiency Condensing Furnace, Minimum 91% AFUE	\$3.00	1.10	kBtu/hr	\$0.426
Radiant Heating, Direct Fired Radiant Heating, None	\$6.50	4.33	kBtu/hr	\$0.328
Insulation-Attic , Attic Insulation (Tier 1 - Z1 &Z3), Minimum R-30	\$0.50	0.40	sq. ft.	\$0.227
Insulation-Attic , Attic Insulation (Tier 1- Z2), Minimum R-30	\$0.50	0.22	sq. ft.	\$-
Insulation-Attic , Attic Insulation (Tier 2 - Z1 &Z3), Minimum R-45	\$0.65	0.41	sq. ft.	\$0.247
Insulation-Attic , Attic Insulation (Tier 2 - Z2), Minimum R-45	\$0.65	0.23	sq. ft.	\$-
Insulation-Roof , Roof Insulation (Tier 1 - Z1 & Z3), Minimum R-21	\$0.60	0.45	sq. ft.	\$0.232
Insulation-Roof , Roof Insulation (Tier 1 Z2), Minimum R-30	\$0.60	0.25	sq. ft.	\$-
Insulation-Roof , Roof Insulation (Tier 2 - Z1 & Z3), Minimum R-21	\$0.80	0.46	sq. ft.	\$0.256
Insulation-Roof , Roof Insulation (Tier 2- Z2), Minimum R-30	\$0.80	0.25	sq. ft.	\$-
Insulation-Wall , Wall Insulation (Tier 1- Z1 & Z3), Minimum R-11	\$0.30	0.22	sq. ft.	\$0.234
Insulation-Wall , Wall Insulation (Tier 1- Z2), Minimum R-19	\$0.30	0.12	sq. ft.	\$-
Insulation-Wall , Wall Insulation (Tier 2- Z1 & Z3), Minimum R-11	\$0.40	0.24	sq. ft.	\$0.250
Insulation-Wall , Wall Insulation (Tier 2- Z2), Minimum R-19	\$0.40	0.14	sq. ft.	\$-
Domestic Hot Water Tanks, Condensing Tank, Minimum 91% AFUE or 91% Thermal Efficiency	\$2.50	0.79	kBtu/hr	\$0.524
Boiler Vent Damper, Boiler Vent Damper, Minimum 1,000 kBtu input	\$1,000.00	270.00	kBtu/hr	\$0.678
Gas Fryer, ENERGY STAR, None	\$600.00	548.00	each	\$0.552
Clothes Washer, Commercial Gas Washer, 1.8 MEF	\$180.00	90.00	each	\$-
Steam Trap , Steam Traps Line Size <2", Minimum 300 kBtuh system size, steam pressures operating at 7 psig or greater, steam trap line size < 2", Min 25 psig Trap Design Pressure	\$80.00	136.90	kBtu/hr	\$0.533
Boiler, High Efficiency Condensing Boiler, Min 90% Thermal Eff & 300 kBtu input	\$4.00	1.50	kBtu/hr	\$0.393
DHW Tankless Water Heater, ENERGY STAR, .82 EF	\$60.00	35.00	gpm	\$0.345

Prescriptive Commercial Measures	PROGRAM REBATE	ANNUAL THERM SAVINGS/ UNIT	UNITS	UC W/ DELIVERY
Gas Convection Oven, ENERGY STAR, ≥44% Cooking Eff/ ≤13,000 Btu/hr Idle Rate	\$400.00	261.00	each	\$0.444
Conn 6 Pan Gas Steamer, ENERGY STAR or CEE/FSTC Qualified, ≥38% Cooking Eff / ≤2,083 Btu/hr/pan Idle Rate	\$1,200.00	912.00	each	\$-
Door Type Dish LT Gas, ENERGY STAR, ≤.6 kw Idle Rate/ ≤1.18 gallon/rack	\$600.00	448.00	each	\$0.423
Double Rack Oven, Double Rack Oven, FSTC Qualified/≥50% Cooking Eff/ ≤3,500 Btu/hr/Idle Rate D Rack	\$2,000.00	1,806.00	each	\$-
Gas Griddle, ENERGY STAR, ≥38% Cooking Eff/ ≤2650 Btu/hr sq ft Idle Rate	\$200.00	158.00	each	\$-
Gas Fryer (New Tariff), ENERGY STAR, None Motion Control Faucet, Maximum flow rate of 1.8 gpm, WaterSense® Certified and Below Deck Mixing Valve	\$600.00	272.00	each	\$0.517
Insulation - Attic (New Tariff), Attic Insulation (Tier 1), Minimum R-30	\$105.00	136.00	each	\$0.760
Insulation - Wall (New Tariff), Wall Insulation (Tier 2), Minimum R-19	\$0.50	0.31	sq. ft.	\$0.248
Insulation - Wall (New Tariff), Wall Insulation (Tier 2), Minimum R-19	\$0.56	0.190	sq. ft.	\$0.327
Gas Convection Oven (New Tariff), ENERGY STAR, ≥42% Cooking Eff/ ≤13,000 Btu/hr Idle Rate	\$450.00	213.000	each	\$0.506
Radiant Heating (New Tariff), Direct Fired Radiant Heating, None	\$6.95	4.330	kBtu/hr	\$0.336
Energy Saver Kit A, Kitchen Pre Rinse Spray Valve & Bath Aerators, Provided	\$68.59	109.000	each	\$0.728
Energy Saver Kit B, Low Flow Showerhead, Provided	\$26.49	14.000	each	\$0.558
Total Program				\$0.251

Washington Low Income Program

This program is available to income-eligible residential dwellings served by Cascade Natural Gas where the primary heating equipment in the residential dwelling is fueled by natural gas. The program is designed to increase energy efficiency in low-income households within Cascade service territory by providing rebates for the installation of certain energy efficiency measures in qualifying residential dwellings following the completion of a home energy evaluation performed by a qualifying Agency. The customer must be a residential customer of the Company and must be certified as low-income by a Community Action Agency or Low Income Agency. The customer must also reside in a dwelling built prior to 1991 with natural gas as the primary heating source.

The following measures qualify for a rebate through the current Cascade Low-Income Washington Weatherization program. Calculations for rebates are based on projected annual therm savings of the measure(s) x 100% of the Avoided Cost per therm.

Table 5

Current Low Income Weatherization rebate offerings from Tariff 301

Measure	Avoided Cost per Therm
Ceiling Insulation	\$8.09
Wall Insulation	\$8.09
Floor Insulation	\$8.09
Duct Sealing & Insulation	\$6.15
Infiltration Reduction	\$6.15

Table 8 offers adjustments to reflect more realistic annual achievements for the Company’s Low Income Weatherization program. Note the decrease in expected savings from previous years’ projections under the Low Income Weatherization program. This decrease is a reflection of program achievements for 2014 and a more realistic goal based on new evidence related to current client prioritization performed by the Community Action Agencies for natural gas heated homes. The U.S. Department of Energy Weatherization Assistance Program (DOE-WAP) requires if the Community Action Agencies use DOE-WAP funds, all rules and guidelines for utilization of their funds be met – including their prioritization guidelines.

These guidelines instruct agencies to develop an “actual waiting list” to determine which households are served next for weatherization services. Priority is given by age, disabilities and homes with children age six or younger. Priority can also be given to high residential energy users and households with a high energy burden. Currently, agencies are serving those homes with the largest Heat Cost Burden (percentage of clients’ income dedicated to paying for heat) and by their large Energy Cost (total dollars being spent annually on baseload and space heat). Due to the low cost of natural gas and the commensurate higher electric heating bills, client homes heated with electricity are being served first. In the current energy-price environment, natural gas customers are at a distinct disadvantage for getting assistance with weatherization services regardless of their need. In fact, some agencies are planning on less than 10% of the homes they weatherize for 2015 to be customers with natural gas heated homes. This is why our 2015 therm savings projection is similar to our 2014 therm savings achieved and why the Company has elected to decrease expected savings for the 20 year forecast over the 2012 IRP estimates. It is probable that the agencies will find a way to utilize utility funding for gas heating homes more regularly if gas prices increase causing a higher energy burden for natural gas homes.

The Company has identified the causes of the reductions in 2014 and is currently working with the Community Action Program Agencies to help move the Low-Income Weatherization therm savings back toward historic program performance levels. The Company contacted the following Community Action Program Agencies to discuss the impact of the DOE-WAP prioritization list in July, August and September of 2015: Opportunity Council, Housing Authority of Skagit Count, Northwest Community Action Center, Benton Franklin Community Action Committee, Blue Mountain Action Council, Kitsap Community Resources, Opportunities Industrialization Center of Washington and the Lower Columbia Community Action Program. At this point the Company learned the State of Washington Department of Commerce modified the Commerce Priority List in July 2015, with the modification removing the “high residential energy users” allocation (as measured by total dollars spent annually on base-load and space heat). The Agencies believe the removal of the high residential energy users priority will shift the eligibility away from fuel source and back to income. The Company encourages the Agencies to bring forward all issues and potential barriers to implementation of weatherization services for low income natural gas customers to the Department of Energy through the Department of Commerce meetings with the Agencies twice a month via advisory group teleconferences or in-person conferences three times a year. If additional funding becomes available, and modifications in administrative rules are made from the Department of Commerce, the Low-Income program will provide additional savings potential.

The Company represents the lowered savings potential in the near future through 2016 and has ratcheted up the savings in the following years to a level more commensurate with past achievements in years that were not dependent on American Recovery and Reinvestment Act funding.

Conservation Programs in 2017

The Company expects in the next year to engage the CAG in discussions around viable rebate levels and potential portfolios for the 2017 program year. The advisory group has shown interest in the company moving away from our traditional method of maintaining the most robust cost-effective portfolio as feasible with rebates set near 1/3 of the incremental cost of the measure. The idea is to increase the incentive levels to make them more enticing to consumers, without adversely affecting the programs or inadvertently promoting free-ridership. The Company is including a graph of program potential at both the existing incentive levels for 2017 (30-33%) as well an increase to the 50% incentive level scenario for 2017 on to provide a quick visual of impact to the program. We will be exploring the effects on potential and the portfolio options in the near future with the CAG, but did not model increased incentive levels for 2016 as we are not posed to make the change immediately and wish to have further discussions with the advisory group keeping in mind

the proposed increased incentive approach would reduce the portfolio of options with the increased rebate amounts – providing fewer options, but more hearty incentives.

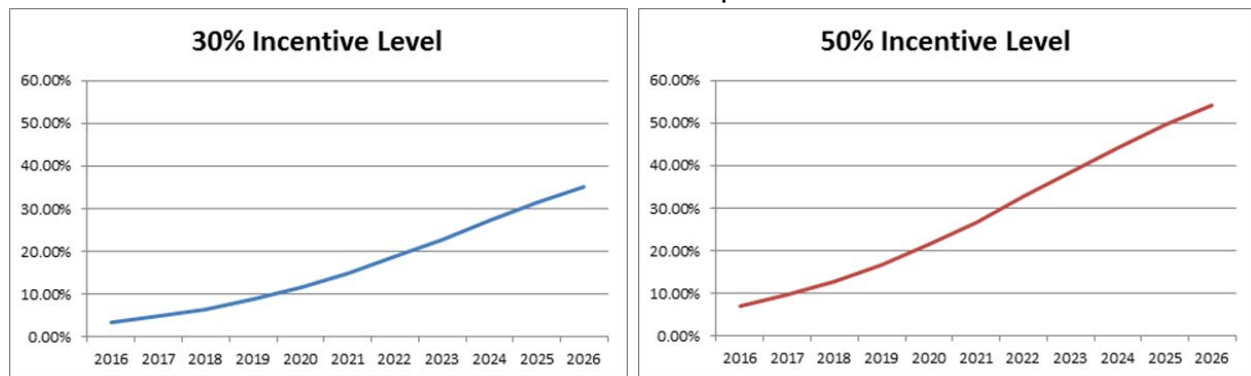
Forward Looking Targets/ TEAPOT Forecasts

The TEAPOT model was used in the following section to provide an illustration of the Company’s Conservation Potential for Residential and Commercial/Industrial program participation for a 20 year forecast as displayed in the 2014 IRP. It was also used to provide a foreshadow of the more immediate 2-year potential incorporating expected programmatic levels of participation demonstrated in the IRP alongside the new TEAPOT modeled base Achievable levels. As mentioned, the Company is providing an iteration of the TEAPOT model’s Achievable potential including the administrative costs in lieu of the programmatic screen.

Residential Potential

The TEAPOT model shown in Figure 3 for the Residential program was run for the long term forecast with an all-inclusive measure set, meaning all measures indicated by Nexant to potentially be cost-effective under the UCT were included in the forecast through 2034. We then ran a subset of measures based on the current program portfolio for short-term program planning to give a potential savings in-line with our programmatic expectations.

Figure 2
Achievable Forecast Adoption Curves



TEAPOT has the ability to model additional adoption curves at a moderate or higher incentive level for the Achievable potential forecast. Up to this point the Company has elected to use the base adoption curve that correlates with the 30% incentive level as opposed to the moderate and high option which correlates with higher incentive levels of 50% and 70%. As a policy decision, we used the base level at this stage because the savings potential could be slightly greater than the achievable moderate savings potential, even though the moderate had a more aggressive adoption curve as was the case in

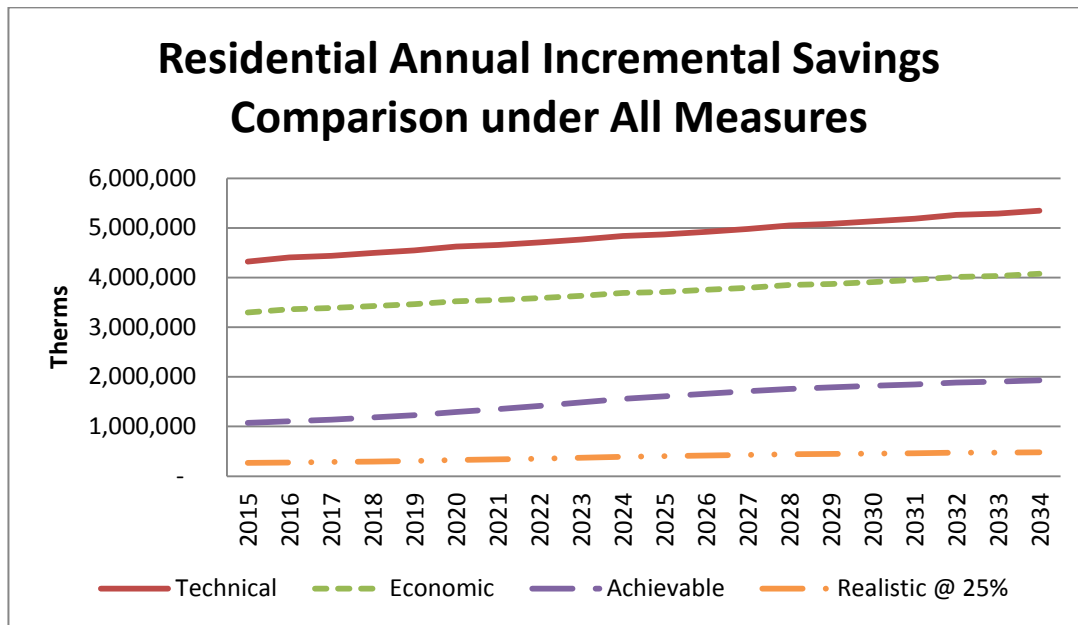
2014. Nexant addresses this in Volume II page 48 of the Cascade Assessment of Achievable Potential & Program Evaluation. This occurs because the measure cost used in the cost-effectiveness test under the achievable moderate scenario (50% of incremental cost) compared to the achievable base scenario (30% of incremental cost) can cause more measures to fail cost effectiveness. Fewer measures passing cost effectiveness can have a greater impact on potential than the increased adoption of the measures in the moderate scenario. By running the program at the base adoption curve we were able to maintain a more robust portfolio. We will be revisiting incentive levels and adoption curves with the CAG in 2016.

As per the request of stakeholders the Company also modeled an alternative to the current 30% incentive level for 2017 and set residential incentive levels at 50% incremental cost. This increased incentive level for residential results in fewer measures passing cost-effectiveness, and thus significantly fewer measures being available for the Company's potential savings. Also note in 2018, potential modeled by the Company through TEAPOT increases commensurate with inclusion of the full breadth of measures Nexant deemed viable for Cascade's WA service territory, as opposed to simply modeling the current portfolio of options.

Following is the breakdown of potential as demonstrated in the most recent IRP – which is why it represents 2015 in the graphs. We are now including an iteration of the goals and potential for the next two years and forecast through year ten, 2026 – moving away from the programmatic screening toward an administrative cost inclusive model run of the Achievable Potential without further reduction via a Programmatic level scenario.

Based on the all-inclusive scenario of the residential program savings in an ideal setting, the following figure demonstrates what potential could look like if the Company included all residential measures represented by Nexant as cost-effective – with the inclusion of the programmatic screen labeled here as “Realistic” potential. Note, this graph is from the 2014 IRP and thus the Achievable Potential Forecast does NOT include Administrative Costs:

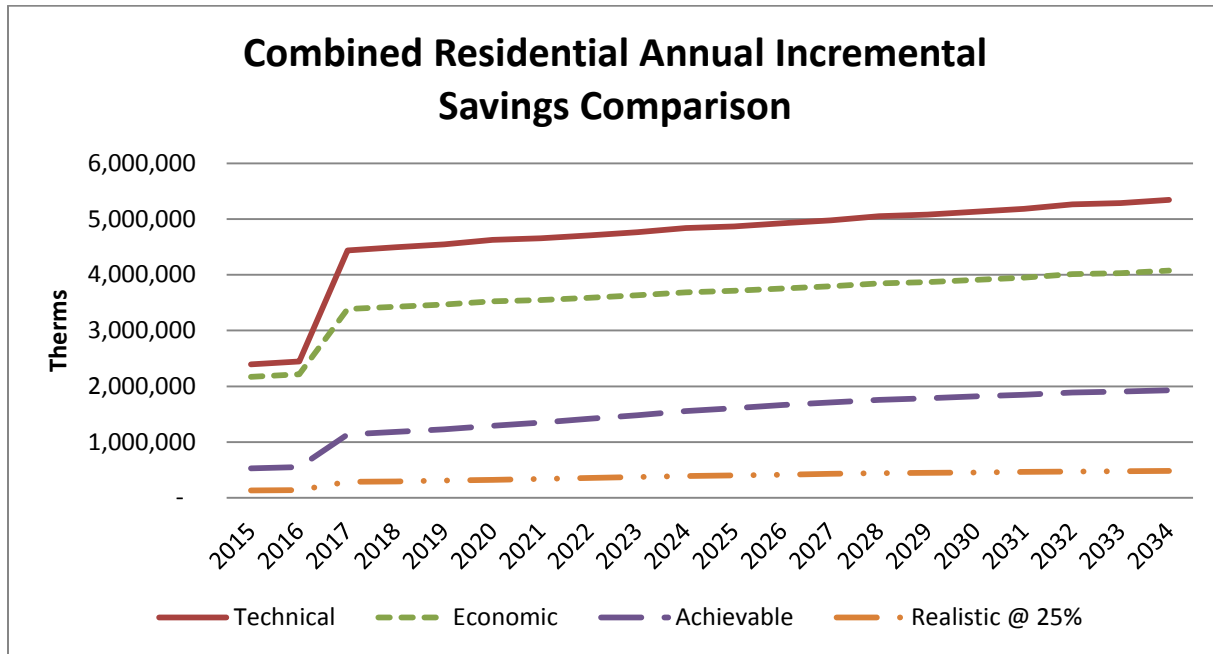
Figure 3



The line graph above provides four separate lines denoting the various savings potentials for Technical, Economic, Base Achievable, and a reduction to 75% of Achievable to accommodate aspirational programmatic targets. For the purposes of program development, we narrowed the target closer to 25% of Achievable base to reflect a number within approximate range of our previous year’s achievements, although the Company will continue to seek higher savings goals.

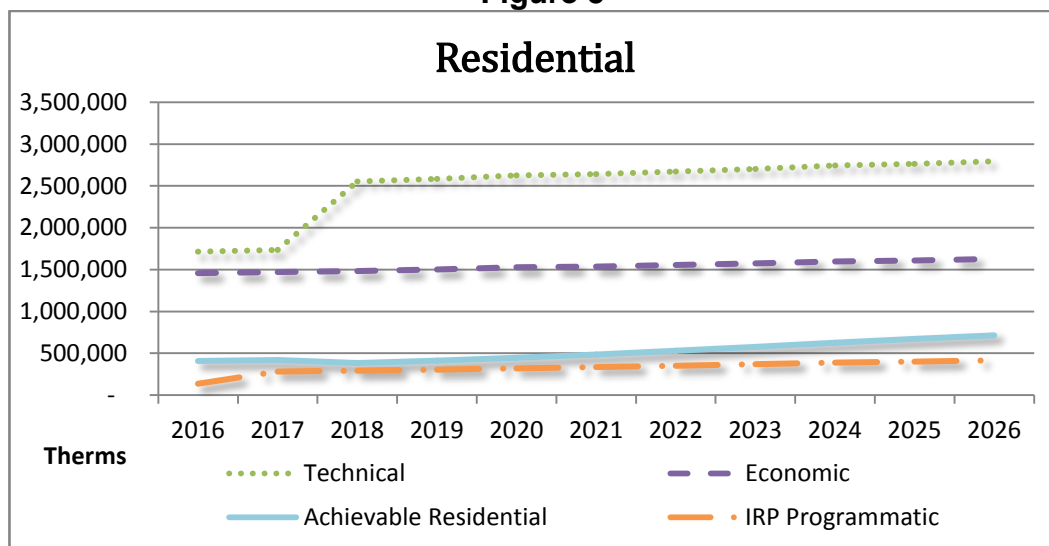
Below is the Residential combined annual incremental energy savings by scenario. Note the sharp increase from year 2016 to 2017 when the company moves to the all-inclusive potential scenario as opposed to the portfolio specific scenario utilized in 2015 and 2016.

Figure 4



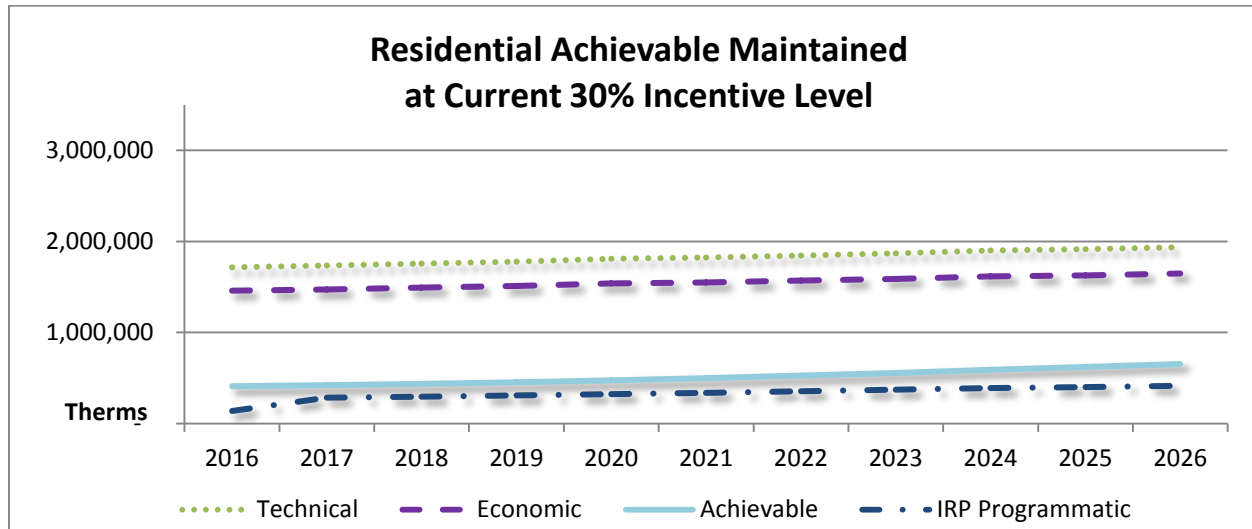
The following graph shows a comparison for the Residential program potential between the 2014 IRP goals and the re-run of TEAPOT in which the Company included the administrative costs as an input in the model and did not further reduce the savings potential by a programmatic scenario screen. As was the case in previous graphs, the Company ran the potential for the remaining years under the full breadth of all cost-effective measures as indicated by Nexant.

Figure 5



For comparison **Figure 6** below shows a different iteration of the Residential potential through 2026, but this time the incentive levels are maintained at current levels as opposed to increasing to 50%

Figure 6

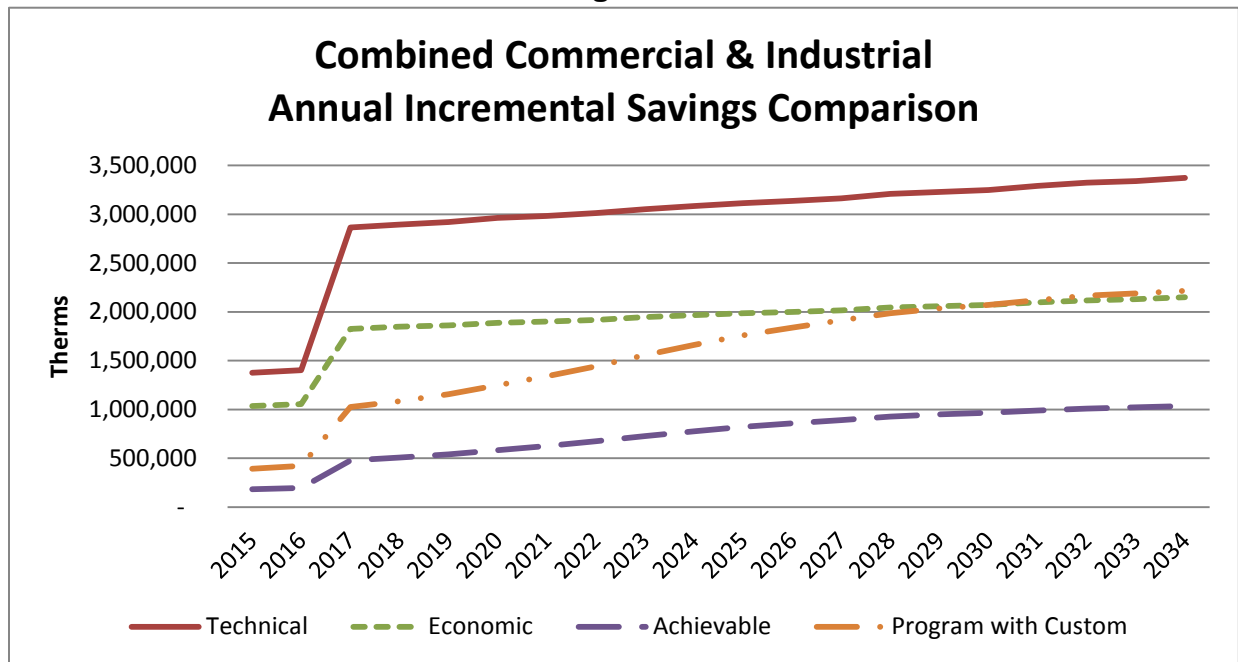


Commercial/Industrial Potential

As noted previously, the model does not allocate savings associated with the Company’s Custom Commercial/Industrial program offerings, which characteristically account for 65% of the conservation savings for the Commercial/Industrial CIP. To display overall expected participation numbers we have added in the historic participation levels for custom projects which make the Program with custom potential exceed the savings potential alone for Economic prescriptive measures.

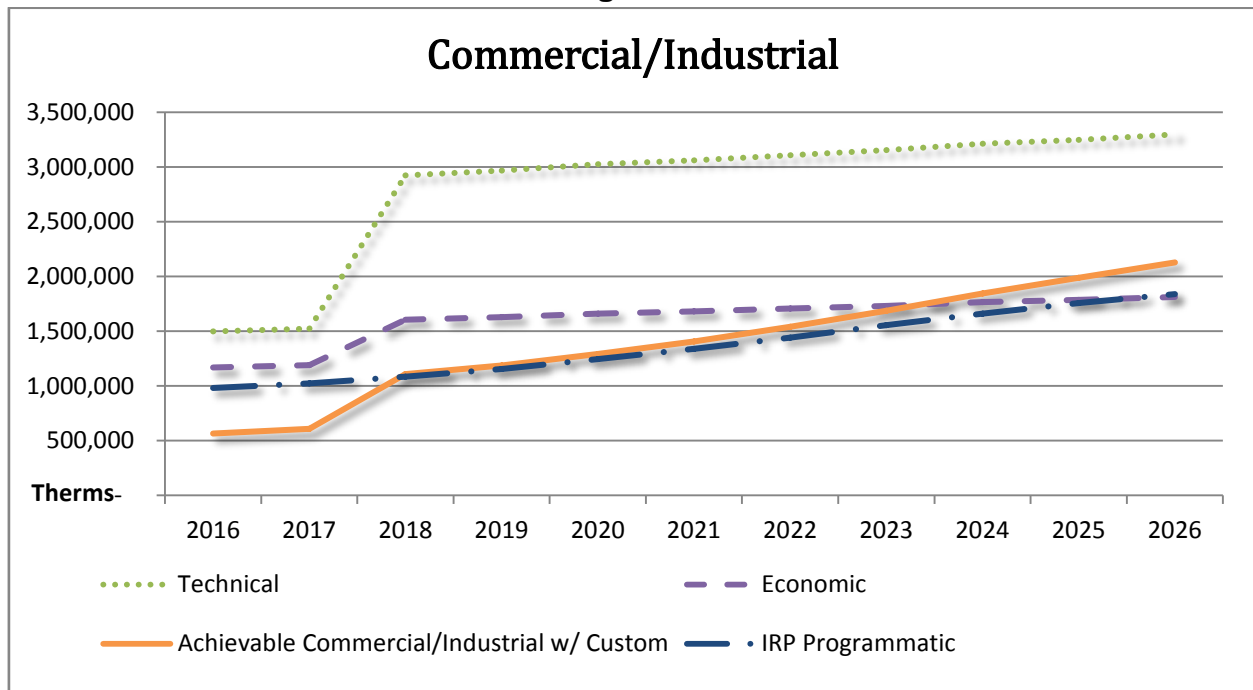
Once the Company had the combined Commercial/Industrial measures and was able to add in the custom component, we arrived at the following Commercial/Industrial Annual Incremental Energy Savings by Scenario for the IRP. Note the uptake between years 2016 and 2017 indicating the transition from tracking savings potential by the current portfolio in effect to the all-inclusive portfolio for years 2017-2034.

Figure 7



Similar to the residential program graphics – the Company is providing the Commercial/Industrial potential comparison for the 10- year forecast between the initial detail from the IRP - in which the company established the Programmatic Potential levels, to the updated TEAPOT run of Achievable potential inclusive of administrative costs. One other item to note is that the Company did not model for an increase in incentive level for the commercial program in 2017 as we did for the residential program. A significant portion of program participation for the Commercial/Industrial sector comes from custom project implementation, which TEAPOT does not account for. As custom projects and incentive levels are based on calculated savings as opposed to average deemed savings an increase in the incentive levels is premature to model at this time. As the majority of the program is custom based and savings and incentives are calculated individually we feel it appropriate to maintain the incentive levels at their current levels for the commercial program. If the Company does proceed with increasing the incentive levels after further discussion with our CAG then it would prefer to start with the residential program and experience the impacts in real-time prior to transitioning the entire portfolio to higher incentive levels than may be necessary to drive uptake.

Figure 8



CY 2016 & 2017 Targets

We are once more providing the most recent IRP submission below as a reference point (with the understanding that it was developed under the Programmatic Screen potential level). We have also included the updated Achievable goals as per the TEAPOT model *inclusive* of administrative costs as our aspirational goal for 2016 and 2017. These goals have been developed keeping in mind the alterations our program is currently undergoing for the residential program implementation and general reporting updates including rebate tracking per paid date vs install date.

Historically the Company tracks rebate submissions to the date the measure or upgrade is installed at the premise. Conservation Advisory Group members requested the Company pursue tracking via the date a rebate is paid rather than the current install date method to help reduce lag-time in reporting savings. The Company has agreed to transition our program reporting model to track savings based on the date the rebate has been paid, which should make annual reporting more straightforward. The Company is also altering the requirement for submission of rebates to require they be sent to the Utility within 90 days of install (as opposed to previous requirements to submit by March 1 of the following year after install). The combination of these two changes should help the programs avoid the standard influx of rebate applications in the following year and enable us to have greater transparency into program accomplishments throughout the year.

As the tracking method is changing for 2015 the Annual Report released in 2016 reporting 2015 savings will show a reflection of savings by paid date in the CY 2015. We will also include a graph noting the variations for this first year of reporting in this manner and how it compares to the therm savings totals if tracked by install date for 2015.

All program updates and changes have an effect on the savings the Company is able to achieve. These proposed changes allow staff to put more time toward implementing the program and outreach to bring in additional savings.

In CY 2016 we do not anticipate a significant alteration to the rebate structure or current offerings unless legislation or building code changes require it; however, in 2016 we are engaging in conversations with our CAG and plan on exploring the opportunity to increase the incentive levels in 2017 for the residential program which will have an impact on Achievable potential through the modeling software as noted below. The Company will also explore the cost-effectiveness of some of the measures included in the full Nexant review that are not currently being offered in our portfolio.

Note in the 2014 IRP, the Company modeled only the current portfolio of offerings for CY2015 & CY2016, and the full breadth of offerings from 2017 into the 20 year forecast (with the expectation that the portfolio would likely change along with building codes and technology updates after the near-term two years). As this Conservation plan is intended for the next two years, the forecast for therm savings for 2017 has decreased from that shown in the IRP since we are using TEAPOT to model the specific current portfolio in the short term as well as incorporating the administrative costs into the model.

We also wanted to include a snapshot of what the 10 year potential looks like if the incentive levels for the residential program change from their current levels to a 50% incentive level. Please see **Figure 9** for the Achievable Forecast maintained at current incentive levels with the increase in potential in 2018 commensurate with tracking at the full breadth of measures deemed cost-effective by Nexant' s. We have also represented the difference in the 30% and 50% incentive levels for years 2018-2026 in **Table 6**.

Figure 9

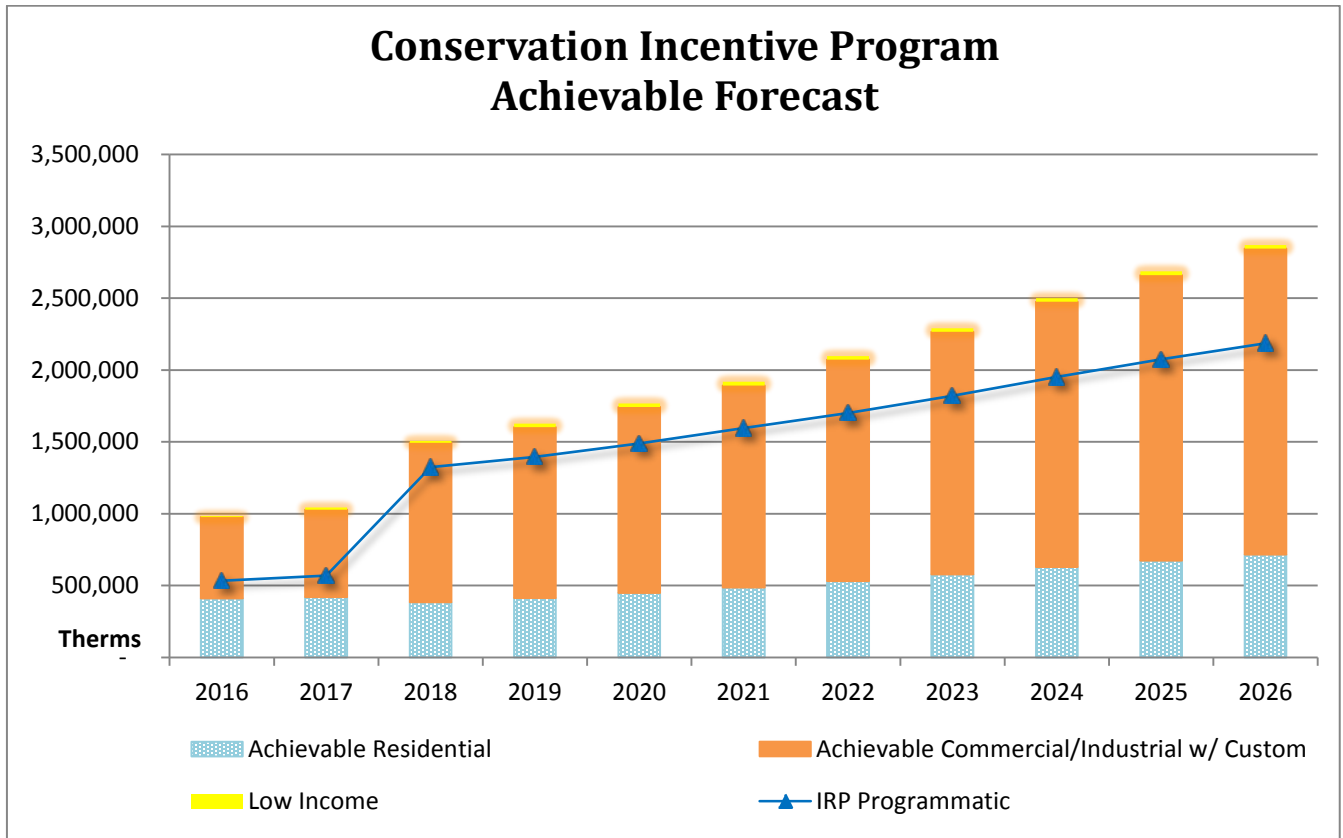


Table 6

30% Incentive Level, Current Measures						
Year	Res	Com	Ind	Com & Ind w/ Custom	Low Income	Total
2018	434,126	227,798	4,939	664,963	15,000	1,114,089
2019	451,557	251,472	6,566	737,251	25,000	1,213,808
2020	474,710	281,869	8,660	830,084	25,000	1,329,794
2021	497,194	315,585	11,182	933,620	25,000	1,455,814
2022	525,361	355,631	14,167	1,056,568	25,000	1,606,929
2023	556,239	399,192	17,500	1,190,548	25,000	1,771,787
2024	591,351	446,313	21,075	1,335,393	25,000	1,951,744
2025	620,932	488,888	24,545	1,466,951	25,000	2,112,883
2026	651,853	530,722	27,894	1,596,047	25,000	2,272,900
50% Incentive Level for Res, 30% for Com/Ind, All Measures for All						
Year	Res	Com	Ind	Com & Ind w/ Custom	Low Income	Total
2018	384,844	383,258	4,481	1,107,827	15,000	1,507,671
2019	412,797	410,169	6,102	1,189,346	25,000	1,627,143

2020	449,150	444,783	8,188	1,294,203	25,000	1,768,353
2021	486,492	481,613	10,704	1,406,620	25,000	1,918,112
2022	530,830	525,723	13,682	1,541,156	25,000	2,096,986
2023	578,283	573,533	17,007	1,687,257	25,000	2,290,540
2024	629,415	625,739	20,574	1,846,608	25,000	2,501,023
2025	672,965	671,854	24,038	1,988,264	25,000	2,686,229
2026	715,763	717,888	27,380	2,129,337	25,000	2,870,100

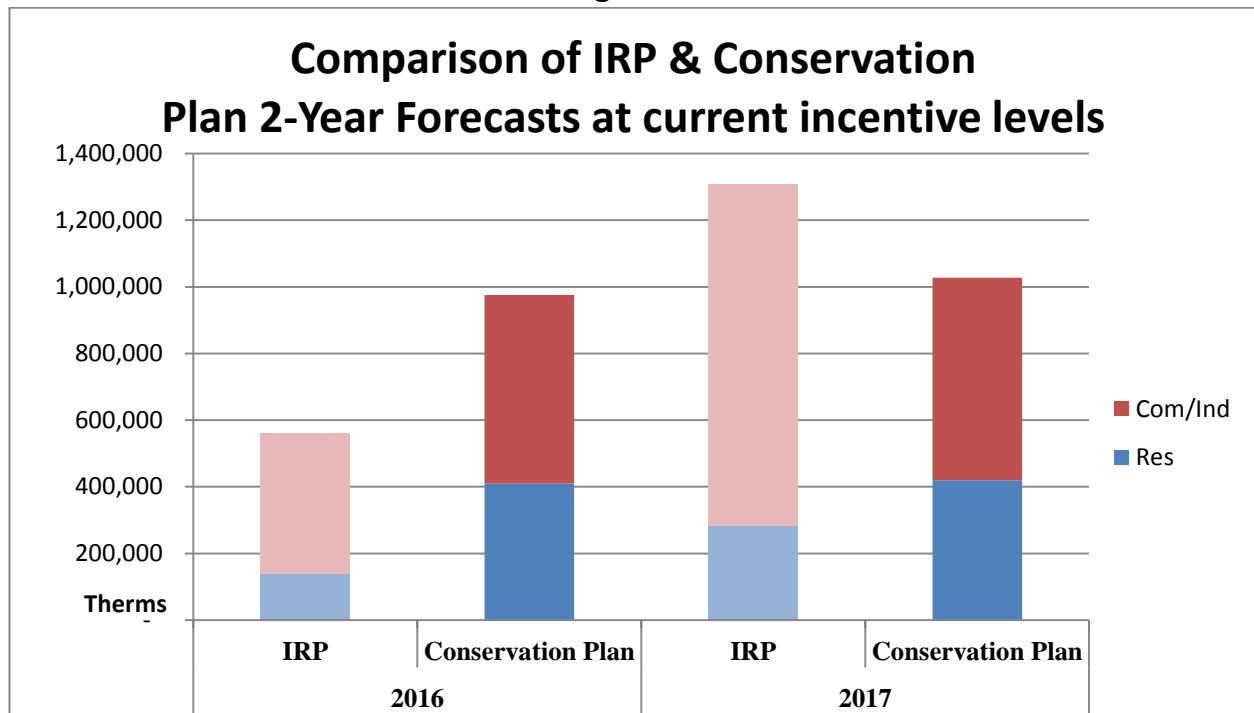
The Company also plans on keeping abreast of the savings potential in three of our service territories (Bellingham, Walla Walla and Anacortes) within Washington that may experience an uptake in program participation over CY 2016 as they engage in the Georgetown University Energy Prize Competition. The prize competition goal is to raise awareness of energy-efficiency in communities by local governments, communities and utilities working together to develop and implement plans for innovative, replicable, scalable and continual reductions in the per capita energy consumption from both natural gas and electric providers.

Table 7

Comparison of Potential from Current IRP with Programmatic scenario vs admin inclusive Achievable at both current incentive levels & 50% incentive levels for residential program

Year	Program	Residential	Commercial / Industrial
2016	IRP	138,074	423,047
	Conservation Plan	409,975	565,940
2017	IRP	284,585	1,025,511
	Conservation Plan Residential increased to 50% incentive	162,798	608,074
	Conservation Plan Maintained at 30% incentive levels	419,773	608,074

Figure 10



These projected achievements are based on the Company's current best estimates of its achievable potential, which are based on projected gas costs and the Nexant Potential study of viable natural gas measures and are subject to modification dependent upon updated forecasts, knowledge of evolving efficiency technologies, customer interest and program participation levels and updates based on external influences. Budgets for FY 2016 and 2017 will be based commensurately with these targets and adjusted to ensure maintenance of cost-effectiveness and appropriate levelized costs. The Company anticipates the budget on a portfolio level for 2016 to be in the range of **\$1.355 - \$1.49 million** in administrative costs to support the increased goals for the residential program. FY 2017 is estimated to have a budget up to **\$1.54 mil.** Administrative costs for FY 2016 are slightly higher than those in 2015 due to the transition of the Residential program processing to internal delivery, as well as the initial implementation fee for the new software platform. The Company also includes expected participation level costs for the 5 year NEEA pilot (total **\$1,705,130**) as agreed upon in January, 2015. The Company lists these costs in the Annual Conservation Report and will represent the program's cost-effectiveness primarily without the costs but will also include the NEEA pilot efforts to demonstrate its effect on cost-effectiveness.

Cascade Natural Gas NEEA Natural Gas Market Transformation Pilot Participation

Table 8

Year	Cascade's Washington Commitment at 9.3% of total budget for 5 year pilot
2015	\$145,872
2016	\$244,996
2017	\$313,174
2018	\$452,285
2019	\$548,803
Total	\$1,705,130

Long term Conservation Potential

The Company provided a table for our total CIP Forecast for Residential, Commercial and Industrial efficiency gains from 2015-2034 in the IRP. We are providing a clearer iteration of the incremental annual potential savings for this Conservation Plan for years 2016-2026 below including a comparison of the Programmatic Potential as noted in the IRP to the admin inclusive potential as per TEAPOT as modeled in this Conservation Plan. This Table and graph also show the residential incentive levels maintained at the current 30-33% incremental cost as is currently offered through the program.

Table 9

Total CIP Forecast 2016-2026								
Incremental Annual Energy Savings								
Year	Technical	Economic	Res Achievable	Commercial /Industrial Achievable*	Total Achievable	Low Income	Conservation Plan	IRP Program Goal
2016	3,215,393	2,629,304	409,975	565,940	975,915	7,000	982,915	568,121
2017	3,259,974	2,664,110	419,773	608,074	1,027,847	15,000	1,042,847	1,325,096
2018	5,478,964	3,090,375	384,844	1,107,827	1,492,671	15,000	1,507,671	1,396,032
2019	5,554,052	3,133,507	412,797	1,189,346	1,602,143	25,000	1,627,143	1,489,315
2020	5,654,533	3,190,912	449,150	1,294,203	1,743,353	25,000	1,768,353	1,596,083
2021	5,705,696	3,220,521	486,492	1,406,620	1,893,112	25,000	1,918,112	1,701,560
2022	5,782,310	3,264,444	530,830	1,541,156	2,071,986	25,000	2,096,986	1,821,302
2023	5,859,326	3,308,564	578,283	1,687,257	2,265,540	25,000	2,290,540	1,952,200
2024	5,963,212	3,367,809	629,415	1,846,608	2,476,023	25,000	2,501,023	2,074,503
2025	6,014,837	3,397,566	672,965	1,988,264	2,661,229	25,000	2,686,229	2,186,307
2026	6,093,233	3,442,381	715,763	2,129,337	2,845,100	25,000	2,870,100	2,279,276

* Achievable with added Custom measures to the Commercial/Industrial Forecast at 65%.

This forecast displays the first two years under the current program’s measure offerings for the Goal category and years three through ten including all possible measures from Nexant’s study. Short-term goals are more realistic when viewed in two-year increments

since they allow flexibility in addressing current legislative, building code and budgeting criteria. Due to these external factors the Company has elected to display the savings forecast in this manner.

As noted we also provided a further comparison forecast under the TEAPOT model with the inclusion of the administrative costs in the Achievable screen in **Figure 9** above. The Company initially modeled the proposed incentive level change for 2017 which showed a reduction in 2017 – a representation of the incentive level moving up from 30% to 50% of incremental costs, as per discussions with the CAG. Because the administrative costs of performing the program are being incorporated at the Achievable level, as opposed to the programmatic level, the number of viable measures decreased resulting from the inclusion of administrative costs, from \$0 in the TEAPOT modeling to \$1.49 million for this Conservation Plan. The Company modeled the next two years with the current program portfolio, and ran the model for the next eight years under the full breadth of cost effective measures identified by Nexant to allow a greater transparency into potential with the understanding that the portfolio will be altered by CY2018 and beyond to accommodate building code changes, technological advancements and variations in the market as higher-efficiency measures become more prevalent.

Many specific details are required to implement successful programs. As discussed above, the Program Potential, that which is based from actual implementation design, delivery, and market conditions, reflects some variance in savings, costs, and overall achievements. Customer participation in a program is heavily influenced by the level of incentive paid by the utility versus the cost to the customer.

External infrastructure considerations must also be addressed, such as product availability to utility customers and an adequate network of contractors, retailers, and other trade allies to support a program. As new measures or expanded programs are developed and added to the current program mix, internal and external resources and capabilities need to grow accordingly and progress through a “learning curve.” Additionally, revised projections regarding the cost of natural gas and other external factors will likely lead to needed revisions to the company’s existing programs, and will result in additional impacts on the company’s projected participation levels.

Planning and EM&V

The Company is in the process of updating and transitioning to alternative delivery mechanisms through a recent Request for Proposal from software vendors. As part of this transition – namely in the method used to deliver its residential program offerings, the Company is looking at ways to cost-effectively increase Evaluation, Measurement and Verification opportunities within the program reporting software platform. The Company has

not yet implemented the new software but is actively reviewing proposals from vendors and available options and will have a plan in place to increase EM&V in the programs within the 2016 Calendar Year.