



2021 Washington Electric Energy Efficiency Annual Conservation Plan

November 13, 2020

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Such risks, uncertainties, and other factors include, among others, those included in our most recent Annual Report on Form 10-K, or Quarterly Report on Form 10-Q, filed with the Securities and Exchange Commission. Those reports are available on our website at avistacorp.com.

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EXECUTIVE SUMMARY



EXECUTIVE SUMMARY

Avista Utilities' *Annual Conservation Plan (ACP)* is provided consistent with RCW 19.285.040(1) and WAC 480-109-120(2),¹ as well as requirements outlined in Commission Order No. 01 in Docket No. UE-190912, approving Avista's 2020-21 *Biennial Conservation Plan (BCP)* with conditions.

For 2021, Avista continues its commitment of delivering reliable energy service along with the choices that matter most to its customers. With priorities aligned to customers' energy needs, 2020 and 2021 focus on exploring innovative ways to provide energy-efficiency benefits, as well as reaching customers who have not been served before. With the recent impact of the COVID-19 pandemic, Avista's customers have experienced significant hardships – highlighting the need to focus on keeping energy affordable. With more than 300 energy-efficiency measures across 16 programs, Avista's energy-efficiency portfolio continues to be an effective tool for lowering customers' overall energy usage. The planned activities for 2021 continue to elevate this goal of lower energy consumption and making better use of energy.

As Avista begins to implement the various initiatives contained in the Clean Energy Transformation Act (CETA), the company looks forward to expanding those efforts to more customers. In 2021, the energy-efficiency program will work to ensure that vulnerable populations and highly impacted communities have access to low-cost educational and energy-efficiency resources. Avista is excited about the new opportunities that come with CETA's emphasis on energy assistance.

The 2021 *ACP* represents program efforts made by the company to achieve its expected eligible acquisition savings for the second year of the 2020-21 biennium, along with providing details on energy efficiency-related initiatives. For 2021, Avista has identified estimated conservation savings of 43,022 megawatt-hours (MWh) from local efforts as well as 7,183 MWh from regionally acquired savings through the Northwest Energy Efficiency Alliance (NEEA),² combining for a total estimate of 50,205 MWh.

Avista has estimated expenses of \$2.65 million of fully loaded labor funding across electric and natural gas programs in Washington. The proportion of total utility expenditures returned to customers in the form of direct benefit is 72 percent, which mirrors the 68 percent in the 2020 *ACP*.

As compared with the 2020 *ACP*, the estimated 43,022 MWh from local efforts mirrors the 42,889 MWh from the prior year's plan. While Avista's energy-efficiency program experienced a downturn in the number of customers participating in 2020, Avista is confident that 2021 will bring a higher level of participation in energy-efficiency programs. As a response to the impact of COVID-19 and the need to maintain a safe distance for Avista's customers, employees, and contractors, the company has made several changes to its approach to interacting with customers and contractors, ensuring safety for all parties involved.

Table 1 provides the estimated conservation achievement (in MWh) and anticipated expenses for each market sector in Avista's program portfolio as well as expenses for Evaluation, Measurement, and Verification (EM&V). The total expense for 2021 is estimated to be \$16,045,023. Included in this amount is an estimated \$1 million for new pilot programs, \$1.3 million to fund NEEA, and \$253,445 related to EM&V.

1) On or before November 15 of each even-numbered year, a utility must file with the commission, in the same docket as its current biennial conservation plan, an annual conservation plan containing any changes to program details and annual budget.

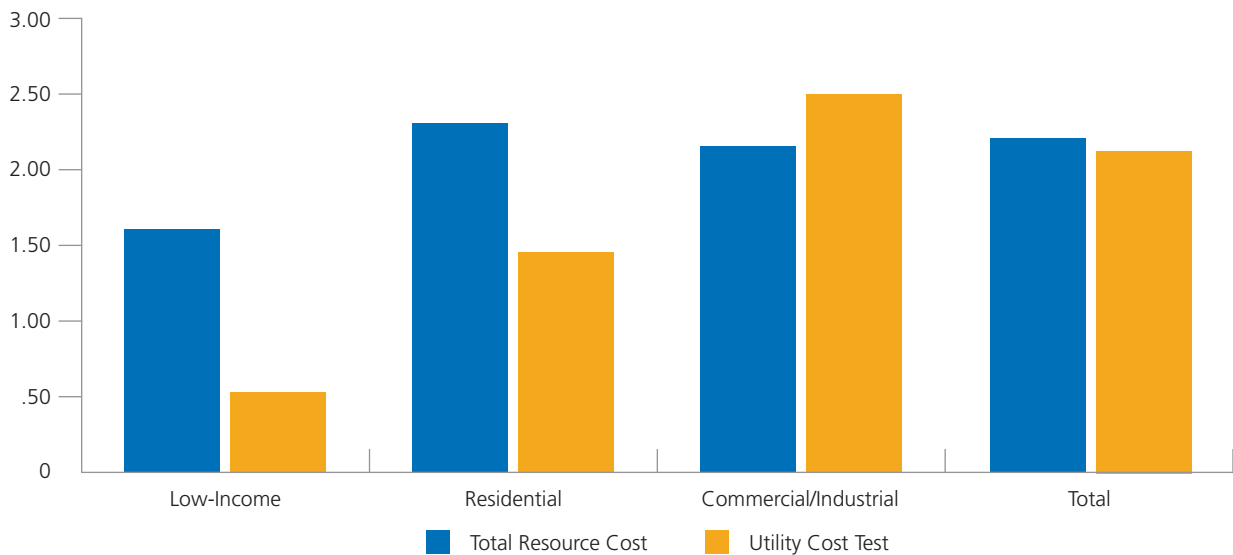
2) To achieve consistency with other Washington investor-owned utilities, Avista has included "Program Measures" and savings from "Codes & Standards Measures."

TABLE 1: PORTFOLIO SAVINGS AND BUDGET BY SECTOR

Sector	MWh	Budget
Low-Income Programs	409	\$ 1,117,599
Residential Programs	4,939	\$ 3,215,092
Commercial/Industrial Programs	37,675	\$ 9,101,387
Energy-Efficiency Pilot Programs	TBD	\$ 1,000,000
EM&V	–	\$ 253,445
Total Before NEEA Savings	43,022	\$ 14,687,523
NEEA	7,183	\$ 1,358,000
Total	50,205	\$ 16,045,523

Cost-effectiveness is a key indicator of Avista’s energy-efficiency portfolio performance, and while Avista pursues all cost-effective measures, the company also retains flexibility in its program design so that meaningful energy efficiency can be achieved by all customers. Avista’s energy-efficiency program is inclusive of a segment that targets efforts toward low-income qualified customers, providing a higher level of benefit (incentive) to these more vulnerable populations. Figure 1 contains a summary of the portfolio cost-effectiveness.

FIGURE 1: PORTFOLIO COST-EFFECTIVENESS



	Low-Income	Residential	Commercial/Industrial	Total
Total Resource Cost	1.60	2.39	2.17	2.19
Utility Cost Test	0.53	1.44	2.52	2.09

Introduction

The 2021 *ACP* outlines Avista's conservation offerings, its approach to energy efficiency, and provides details on verifying and reporting savings. The company's plan is based on two key principles: The first is to pursue all cost-effective kWh savings by offering financial incentives for energy-saving measures, with a simple financial payback of over one year; the second is to use the most effective mechanism to deliver energy-efficiency services to customers. These mechanisms are varied and include (1) prescriptive programs or standard offers such as high-efficiency appliance rebates; (2) site-specific or customized analyses at customer premises; (3) market transformational or regional efforts with other utilities; (4) low-income weatherization services through local Community Action Partnership (CAP) agencies; (5) low-cost/no-cost advice through a multi-channel communication effort; and (6) support for cost-effective appliance standards and building codes.

This *ACP* is intended to represent a continuous planning process. Avista is committed to maintaining and enhancing meaningful stakeholder involvement within this process. Over the course of the following year, revisions and updates to the plan are to be expected as part of adaptively managing the energy-efficiency portfolio.

The company's programs are delivered across a full spectrum of customers, virtually all of whom have the opportunity to participate in – and a great many have directly benefited from – the program offerings. All customers, including non-participants, benefit indirectly through enhanced cost efficiencies as a result of this portfolio approach.

The business planning process for the Avista program portfolio builds on the electric *Integrated Resource Plan (IRP)* and Conservation Potential Assessment (CPA) processes. These are overall resource planning processes completed every two years that integrate energy efficiency and generation resources into a preferred resource scenario. The purpose of the business plan is to create an operational strategy for reaching the aggregate targets identified within the *IRP* in a manner that is cost-effective – and that gives consideration to all aspects of customer value.

The budgetary projections established within the plan are applied in a separate mid-year process to revise the conservation tariff rider funding mechanisms contained within the Schedule 91 electric tariff. The tariff rider surcharges are periodically adjusted with the objective of moving these balances toward zero.

2020-21 Washington I-937 Acquisition Target

The Energy Independence Act (EIA) requires utilities to establish a minimum electric acquisition standard for conservation resources for each designated biennium. Avista's Ten-Year Achievable Electric Conservation Potential and 2020-21 Biennial Conservation Target under RCW 19.285.040 and WAC 480-109-010 were approved by the Washington Utilities and Transportation Commission (WUTC) on December 17, 2019 in Order No. 01 and retained on May 21, 2020 in Order No. 02 of Docket UE-190912.

For 2020-21, Avista's EIA target is 72,844 MWh, which represents the overall conservation to be obtained by the company before the additional 5 percent decoupling threshold³ of 3,642 MWh. The total utility conservation goal is 76,486 MWh. The utility-specific conservation goal, which removes 12,896 MWh in savings derived from NEEA, is 63,590 MWh. To arrive at the EIA penalty threshold of 59,948 MWh, the 5 percent decoupling penalty is removed from the utility-specific conservation goal. Energy savings acquisitions attributed to Avista through regional market transformation have been included in the acquisition target; they have been excluded, however, from the EIA penalty threshold.

TABLE 2: BIENNIAL CONSERVATION TARGET

2020-21 Biennial Conservation Target (MWh)	
CPA Pro-Rata Share	72,340
Distribution and Street Light Efficiency	504
EIA Target	72,844
Decoupling Threshold	3,642
Total Utility Conservation Goal	76,486
Excluded Programs (NEEA)	(12,896)
Utility Specific Conservation Goal	63,590
Decoupling Threshold	(3,642)
EIA Penalty Threshold	59,948

Since the Washington EIA target was established based on Northwest Power and Conservation Council (NWPPCC) methodologies and the Council's Regional Technical Forum (RTF) Unit Energy Savings (UES) values, those same methodologies and savings are employed, to the extent possible, in measuring the savings eligible to achieve that target. The planning effort has, with a few isolated exceptions, adopted the same approach in order to generate the best prediction of how 2021 portfolio performance will be retrospectively measured. The use of RTF UES values also assists in the management of the company's EM&V expense by reducing the expenses associated with impact evaluation. The relationship between the regional utilities and the RTF is, however, a symbiotic one, and any impact evaluations performed on a current RTF measure will be shared with the RTF to help improve the quality of the regional deemed UES.

3) As part of the General Rate Case Settlement Agreement in Docket Nos. UE-140188 and UG-140189, the company agreed, in consideration of receiving a full electric decoupling mechanism, to increase its electric energy conservation achievement by 5 percent over the conservation target approved by the commission, beginning with the 2016-17 biennial target.

Key Impacts

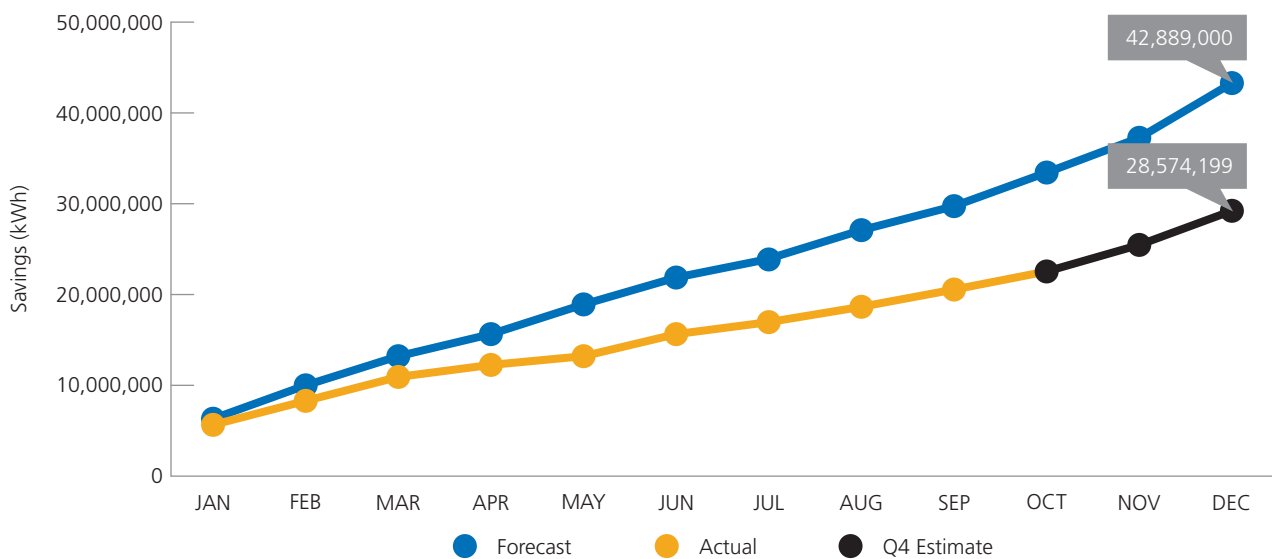
Impacts of COVID-19 on Avista Customers and Programs

The impact of COVID-19 has been felt by all customers, businesses, and community associations within Avista's service territory. In addition to remaining focused on providing care, concern, compassion, and empathy through all interactions, the company will continue to work toward an increase in the number of customers receiving energy assistance, and will also explore methods to continue to provide customers with access to energy-efficiency opportunities.

During 2020, Avista modified its rate assistance program and established a hardship grant available to customers who experience COVID-related hardship regardless of income. In addition, Avista voluntarily stopped all collection activities within its service territory, thereby halting the distribution of past due and final notices, discontinuing fees for late bill payments, and ceasing all service disconnections resulting from customer non-payment.

For Avista's energy-efficiency program, COVID-19 has presented several challenges and opportunities that have had an impact on the program's overall conservation achievements. State and company requirements around social distancing, interruptions of commercial/industrial customer operations, and apprehension around investments at a time of uncertainty have all contributed to lower-than-anticipated throughput for Avista's energy-efficiency program in 2020. Since March, the program has trailed behind its estimates through the year. Figure 2 compares the company's estimated conservation achievements against its actual achievements from January through September 2020.

FIGURE 2: YEAR-TO-DATE CUMULATIVE CONSERVATION SAVINGS (KWH)



The majority of Avista's programs rely on some type of direct interaction, in close proximity, between customers and program implementers: Low-income programs partner with CAP agencies, direct-installation programs rely on business partners, and most prescriptive and site-specific programs rely on either physical installation or verification of measures, both of which require on-site presence. This is just one among many factors contributing to lower program participation in 2020.

In response to these challenges, Avista has looked for ways to keep customers engaged in conservation programs. Below are a few of the approaches the company has taken to adaptively manage its programs during the COVID-19 pandemic:

1. For the multifamily direct install program, Avista and its vendor, SBW, agreed to modify the approach so that leave-behind kits will be used until it is again safe to enter customer homes. This approach is an effective temporary solution for social distancing and continuing program operations.
2. For commercial/industrial projects, Avista temporarily implemented a virtual option for installation verifications. Customers and vendors were asked to provide photos of projects or provide a live stream of the installed measures to verify and document the proper and intended use of the measure. This was applicable for projects over \$25,000.
3. For the new home energy audits program, originally scheduled to launch in 2020 with in-person, in-home audits, Avista is offering a virtual audit with follow-up phone discussions on customer data inputs and report recommendations, using the same reporting tool for the standard audit service. Avista is also testing other technology in an effort to provide a phone audit, guided by an energy-efficiency specialist, that can be performed remotely. When available, it too will be offered to customers as an option until standard service can be resumed.

Clean Energy Transformation Act and Implementation

Senate Bill (SB) 5116, otherwise known as the Clean Energy Transformation Act (CETA), was approved by the Washington State Legislature in 2019. Avista, in collaboration with commission staff and consumer advocacy groups, participated in various rule-making workshops relating to CETA. One key subsection within SB 5116 introduces the Clean Energy Implementation Plan (CEIP). A CEIP must describe the utility's plan for making progress toward meeting the clean energy transformation standards while the utility continues to pursue all cost-effective, reliable, and feasible conservation and efficiency resources. The utility must also provide equitable distribution of energy and non-energy benefits, as well as help vulnerable populations and highly impacted communities.

In 2021, the company will create and engage an equity advisory group to jointly develop indicators to ensure compliance in providing cost-effective, reliable, and feasible conservation and efficiency resources to all Washington customers. The group will define highly impacted communities and vulnerable populations in Avista's service territory, and will create a plan to mitigate risks for these populations. This new advisory group will include already established low-income, conservation, and resource planning advisory groups and will be engaged in the development and review of the company's CEIP, biennial update, and compliance reports.

Biennial Conservation Plan Conditions for 2020-21

As part of the WUTC’s approval of Avista’s 2020-21 *BCP*, Avista, as with other Investor-Owned Utilities (IOUs), is provided with several conditions to be addressed within the biennial period. These requirements are set forth by the Commission and are recognized by both Avista and the WUTC. For 2020-21, Avista’s *BCP* conditions contain action items that support company and CETA initiatives, and also highlight Avista’s role in supporting customers through the company’s transition to clean energy.

Section 9 of the *BCP* conditions focuses on affordability and providing equitable benefits to customers in a targeted way. Table 3 identifies the conditions by item.

TABLE 3: BIENNIAL CONSERVATION PLAN PILOT PROGRAMS

Section	Topic	Action Item
9a	Energy Cost Reductions	Avista must develop a plan and conduct the research necessary to achieve sustained energy cost reductions for low-income households, with advice and review provided by the advisory group. The low-income savings potential must be included in the 2022-23 <i>BCP</i> along with a description of how the plan prioritizes energy assistance to low-income households with the highest energy cost and future actions under consideration to improve this prioritization.
9b	Pilot for Highly Impacted Communities	Avista must design and implement pilot programs that serve some highly impacted communities and vulnerable populations. These pilots will be instrumental in identifying data gaps and other barriers to ensure an equitable distribution of energy and non-energy impacts.
9c	Non-Wires Solutions	Avista must evaluate opportunities for location-targeted programs that provide non-wires alternatives to eliminate or delay the need for distribution system investments.

The Avista energy-efficiency team anticipates 2021 having a strong emphasis on these efforts as the company moves toward defining highly impacted communities and vulnerable populations within the Avista service territory.

For a home to have a sustainable energy cost as required in Section 9a, the company historically addresses the weatherization of the home while also considering rate assistance programs to address the immediate need. This approach helps customers maintain the same level of comfort in a more efficient home. For customers with the highest energy cost, it will be critical for Avista to gain more insight into factors contributing to the energy cost. For this biennium, the company will explore potential enhancements to its low-income program and will present potential solutions to the advisory group.

In addition to serving low-income households, Avista will focus on defining and reaching highly impacted communities and vulnerable populations in 2021. Avista is currently working with community partners to identify these populations and to gain a better understanding of the various conditions that affect its customers. While development and implementation of a program often focuses on geographical location of customers, Spokane Regional Health District partners have also identified at-risk groups that are more dispersed. Impacts to health are a key consideration in identifying at-risk groups.

Section 9c, while not focusing on end-use customers as in 9a and 9b, still presents an opportunity to ease energy costs by deferring investments in new distribution equipment. In 2021, Avista will evaluate opportunities for location-based non-wires alternatives as part of its efficiency planning efforts. While the scope of the term *non-wires* remains somewhat broad, Avista’s current understanding includes demand response, energy efficiency, solar, battery storage, and other distributed energy resources. In addressing Section 9c, Avista will consider options that can meet multiple business objectives. Tools such as demand response have a high value when considering a location-based approach, since that technology is dispatched to help curb energy use when the distribution system is at capacity. The company will also explore deploying non-wires programs to help meet the energy needs of highly impacted communities and vulnerable populations.

Section 10 of the *BCP* conditions requires Avista to identify and quantify Non-Energy Impacts (NEIs) of efficiency programs. Table 4 identifies each condition subsection.

TABLE 4: BIENNIAL CONSERVATION PLAN NON-ENERGY IMPACTS

Section	Topic	Action Item
10a		During this biennium, Avista must demonstrate progress toward identifying, researching, and developing a plan to properly value NEIs that have not previously been quantified. The NEIs considered must include the costs and risks of long- and short-term public health benefits, environmental benefits, energy security, and other applicable NEIs. These impacts and risks must be included in the 2022-23 <i>BCP</i> .
10b	Non-Energy Impacts Study	Avista must identify the discrete NEIs and the monetized value used in cost-effectiveness testing for each electric conservation program. This must be provided in a detailed format with a summary page and subsequent supporting spreadsheets, in native format with formulas intact, providing further detail for each program and line item shown in the summary sheet in annual plans and reports.
10c		To the extent practicable, Avista must begin to identify the distribution of energy and non-energy benefits in annual plans and reports. This reporting must use currently quantified NEIs as well as values and estimates of additional impacts as they become available.

Avista has taken steps to research NEIs for its program in 2021 based on residential and commercial/industrial customer impact (see the Company Initiatives, Studies, and Other Items section). This research is an interim effort. Avista will collaborate with IOUs across the state to develop a shared methodology for identifying and quantifying NEIs for Washington customers. Puget Sound Energy, PacifiCorp, and Avista will work collectively with a third party to research and identify NEIs in each respective service territory, as well as common factors that span service territories.

Summary of 2021 Budget

Overall Energy Efficiency Budget Projections

Based on all the preceding planning, a compilation of the total energy-efficiency budget is assembled at the completion of the planning process. The placement of the budget compilation at the close of the process is consistent with Avista’s commitment to achieve all cost-effective energy-efficiency measures and to maximize the value of the portfolio without budgetary constraints. This process assumes that prudently incurred expenditures will be fully recoverable through the conservation tariff rider and that revisions in the tariff rider surcharge will be sufficiently timely to maintain a materially neutral tariff rider balance. The budget is thus a product of the planning process and not a planning objective. The company recognizes that customer demand and market factors exist outside of the budgeting process and that forecasted expenses may be higher or lower than actual results. The forecasted budget does not represent an expectation or commitment to limit expenses to the planned amounts.

The overall 2021 budget projection is summarized in Table 5, which includes elements of the energy-efficiency budget that have been designated as “supplemental” to indicate that they are unrelated to the current-year operations and are not included in the cost-effectiveness calculation. These supplemental costs include NEEA funding as well as funds for third-party conservation potential assessment studies and EM&V studies.

TABLE 5: ENERGY-EFFICIENCY BUDGET SUMMARY

	2021 Washington Electric Budget	Supplemental Budget	Non-Supplemental Budget
Total Incentives	\$ 9,803,569	\$ 0	\$ 9,803,569
Administrative Labor	\$ 1,782,482	\$ 0	\$ 1,782,482
Direct Benefit to Customer Labor	\$ 602,644	\$ 0	\$ 602,644
Total Non-Labor/Non-Incentive	\$ 3,856,829	\$ 1,611,445	\$ 2,245,384
Total	\$ 16,045,523	\$ 1,611,445	\$ 14,434,078

Avista continues to track the proportion of total utility expenditures returned to customers in the form of direct incentives and benefits as a metric to guide the company toward improved administrative efficiencies.

The amount included in the direct benefit figure includes not only the incentives paid to customers through monetary incentives for energy-efficiency programs, but also the engineering time that is spent on customized projects for energy-efficiency participants. While labor costs are generally not included as a direct customer benefit, the inclusion of the energy-efficiency engineering team in an energy-efficiency project provides customers with access to a valuable resource for identifying and implementing savings measures at their home or business.

TABLE 6: PROPORTION OF FUNDS RETURNED TO CUSTOMERS THROUGH DIRECT BENEFITS

Utility Expenditures Returned to Customers via Direct Benefits	72%
----------------------------------------------------------------	-----

The program-by-program details of the expected incentive expenditures for 2021 are provided in greater detail in Table 7. The direct-incentive expenditures represent the estimated incentives that will be paid to customers directly or indirectly for participation in energy-efficiency programs. The overall level of expense is highly correlated to programs' throughput and energy acquisition and, based on customer participation, the amounts are subject to change.

TABLE 7: CUSTOMER DIRECT INCENTIVE EXPENDITURE DETAIL

Energy Efficiency Program	Direct Incentive Expenditures
Low-Income Programs	
Low-Income	\$ 805,498
Total Low-Income Incentives	\$ 805,498
Residential Programs	
Residential Prescriptive	\$ 265,275
Multifamily Direct Install	\$ 2,384,448
Multifamily Weatherization	\$ 19,900
Total Residential Incentives	\$ 2,669,623
Commercial/Industrial Programs	
Interior Prescriptive Lighting	\$ 1,546,800
Exterior Prescriptive Lighting	\$ 2,172,500
Site-Specific	\$ 2,464,000
Prescriptive Shell	\$ 17,250
Variable Frequency Drives	\$ 60,000
Prescriptive Green Motor	\$ 4,960
Fleet Heat	\$ 26,025
Grocer	\$ 9,193
Food Services	\$ 17,640
Compressed Air	\$ 10,080
Total Commercial/Industrial Incentives	\$ 6,328,448
Total of All Incentives	\$ 9,803,569

The non-incentive expense, including both non-supplemental and supplemental expenditures, is detailed to a lower level of aggregation and broken out by portfolio in Table 8. Expenses are allocated based on the percentage of value provided by each program. This cost-assignment policy is based on the source of the requirement or justification for the expense, and the portfolio benefiting from the outcome of that expense.

TABLE 8: NON-INCENTIVE UTILITY EXPENSE DETAIL

Expense Type	Washington Electric Portfolio	Supplemental Budget	Non-Supplemental Budget
Third-Party Non-Incentive Payments	\$ 243,684	\$ 0	\$ 243,684
Labor	\$ 2,385,126	\$ 0	\$ 2,385,126
EM&V	\$ 253,445	\$ 253,445	\$ 0
Memberships	\$ 63,000	\$ 0	\$ 63,000
Outreach	\$ 126,000	\$ 0	\$ 126,000
Marketing	\$ 409,500	\$ 0	\$ 409,500
Training/Travel	\$ 3,150	\$ 0	\$ 3,150
Regulatory	\$ 3,150	\$ 0	\$ 3,150
Studies and Research	\$ 63,000	\$ 0	\$ 63,000
Software	\$ 144,900	\$ 0	\$ 144,900
CPA	\$ 0	\$ 0	\$ 0
General Implementation	\$ 189,000	\$ 0	\$ 189,000
Pilot Programs	\$ 1,000,000	\$ 0	\$ 1,000,000
NEEA	\$ 1,358,000	\$ 1,358,000	\$ 0
Total	\$ 6,241,955	\$ 1,611,445	\$ 4,630,510

Projections of expected labor requirements by job classification are made by managers within the energy-efficiency team and labor overheads are applied. Labor is allocated to programs based on the weighted value of benefits the program brings to the overall portfolio.

Framework Topics

Evaluation, Measurement, and Verification

Within its energy-efficiency portfolio, Avista incorporates EM&V activities to validate and report verified energy savings related to its energy-efficiency measures and programs. EM&V protocols serve to represent the comprehensive analyses and assessments necessary to supply useful information to management and stakeholders that adequately identify the acquisition of energy efficiency attributable to Avista's conservation programs, as well as potential process improvements necessary to improve operations both internally and for customers. EM&V includes impact evaluation and process evaluation. Taken as a whole, EM&V is analogous with other industry standard terms such as *portfolio evaluation* and *program evaluation*.

For 2021, Avista will engage with two separate EM&V vendors: one for the commercial/industrial customer segment, the other for the residential and low-income sectors. This approach adds the benefit of more diversity in impact recommendations to further improve Avista's programs. Avista issued a Request for Proposals (RFP) for the residential and low-income programs in September 2020 and is currently in the process of determining its selection for those programs. The EM&V for the commercial/industrial customer sectors will be served by Cadmus. After the 2020-21 engagement, a new RFP process will begin for the 2022-23 biennium.

To support planning and reporting requirements, several guiding EM&V documents are maintained and published. This includes the *EM&V Framework*, an annual *EM&V Plan*, and EM&V contributions within other energy-efficiency and Avista corporate publications. Program-specific EM&V plans are created, as necessary, to inform and benefit the energy-efficiency activities. These documents are reviewed and updated regularly, reflecting improvements to processes and protocols.

EM&V efforts will also be applied to evaluating emerging technologies and applications being considered for inclusion in the company's energy-efficiency portfolio. In the electric portfolio, Avista may spend up to 10 percent of its conservation budget on programs whose savings impact have not yet been measured if the overall portfolio of conservation passes the applicable cost-effectiveness test. These programs may include educational, behavior change, and other types of investigatory or pilot projects. Specific activities can include product and application document reviews, development of formal evaluation plans, field studies, data collection, statistical analysis, and solicitation of user feedback.

Because of the benefits to customers and to the utility, Avista actively participates in regional energy-efficiency activities. Avista has a voting role on the RTF, a critical advisory committee to the NWPEC. The RTF oversees standardization of energy savings and measurement processes for electric applications in the Pacific Northwest. This knowledge base provides energy-efficiency data, metrics, non-energy benefits, and references suitable for inclusion in Avista's *Technical Reference Manual (TRM)* relating to acquisition planning and reporting. In addition, the company engages with other Northwest utilities and the NEEA in various pilot projects or subcommittee evaluations. Portions of the energy-efficiency savings acquired through the NEEA's programs within the region are attributable to Avista's portfolio.

Avista's commitment to the critical role of EM&V is supported by the company's continued focus on the development of best practices for its processes and reporting. The *International Performance Measurement and Verification Protocol* serves as the basis of measurement and verification plans developed and applied to Avista programs. In addition, the compilation of EM&V protocols released under the U.S. Department of Energy's Uniform Methods Project will be considered and applied where applicable to support the consistency and credibility of reported results. Verification of a statistically significant number of projects is often extrapolated to perform impact analysis on complete programs, within reasonable standards of rigor and degree of conservatism. This process serves to ensure that Avista will manage its energy-efficiency portfolio in a manner consistent with both utility and public interests.

Cost-Effectiveness Metrics, Methodology, and Objectives

Avista's planning approach aims to maximize cost-effective conservation acquired by analyzing the cost-effectiveness of each segment (residential, low-income, and commercial/industrial), as well as the ways in which measures within programs contribute to the cost-effectiveness of that segment and eventually the individual portfolios. NEIs are a common topic of discussion in many energy-evaluation circles. Avista is appreciative of the valuable work the RTF has done to quantify NEIs for the region. In this plan, NEIs were identified from the RTF and also sources outside the region. Since the RTF does not currently have UES or NEI values for commercial lighting, a similar methodology is used to calculate the NEI value of efficient lighting measures that have longer measure lives than the baseline technology. The company will continue to follow and participate in RTF activities around NEIs and will include NEIs in the cost-effectiveness calculation when appropriate.

As with other utilities in the region, Avista actively participates in RTF meetings and provides measure-level data back to the RTF to further refine their estimates. Avista acknowledges that it has the responsibility to use the best available data no matter the source; at times, that comes from internal estimates. Avista will continue to work with members from the RTF to identify measures or technologies that may have gaps in data and provide information where needed. These efforts further refine the RTF measures and form UES values that are more specific to Avista's service territory.

The company maintains an active involvement in the regional energy-efficiency community and is committed to acknowledging and addressing new energy-efficiency developments as they are presented. Avista will continue to work with stakeholders as conversations around cost-effectiveness arise.

Schedule 90 – Energy-Efficiency Programs

Avista's electric energy-efficiency operations are governed by Schedule 90 tariff requirements. These tariffs (attached to Appendix C) detail the eligibility and allowable funding that the company provides for energy-efficiency measures. Though the tariff allows for considerable flexibility in how programs are designed and delivered – and accommodates a degree of flexibility around incentives for prescriptive programs subject to reasonable justification – there remains the occasional need to modify the tariff to meet current and future market conditions and opportunities.

Schedule 91 – Demand Side Management Rate Adjustment

WAC 480-100-130(2) requires the utility to file on or before June 1 every year to true up the rider balance with an August 1 effective date. On April 30, 2020, Avista filed, in Docket UE-200395, a request for exemption from the annual requirement to file revisions to its schedule indicating that its current tariff rider balance was aligned with its expectations. The WUTC approved the company's request in Order No. 2 on May 21, 2020. Avista will revisit its need to revise its Schedule 90 rates on or before June 1, 2021 as per WAC 480-100-130(2).

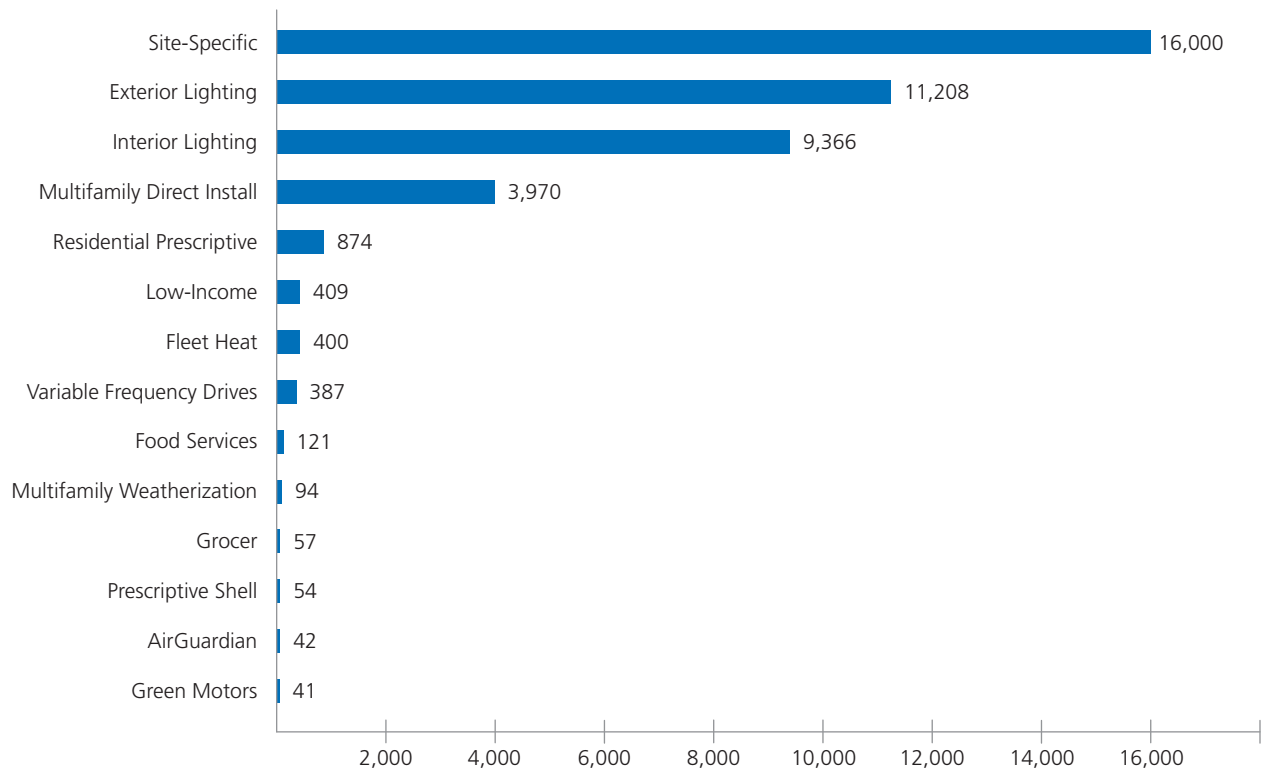
ENERGY-EFFICIENCY PORTFOLIO OVERVIEW



ENERGY-EFFICIENCY PORTFOLIO OVERVIEW

Avista's energy-efficiency portfolio is composed of residential, low-income, and commercial/industrial programs. For 2021, the company anticipates approximately 43,022 MWh of I-937 qualified savings from its program offerings. These savings are derived from utility-specific conservation and do not include regional efforts from NEEA. Figure 3 illustrates the major categories from which those savings are achieved.

FIGURE 3: SAVINGS FROM ENERGY-EFFICIENCY PROGRAMS (MWH)



Residential Portfolio Overview

Avista's residential portfolio comprises several approaches to engage and encourage customers to consider energy-efficiency improvements within their home. Prescriptive rebate programs are the main component of the portfolio, augmented by other interventions such as a multifamily direct install program, and supplemented by educational and outreach efforts, such as a residential home energy audit. While the audit program is instrumental in identifying the need for weatherization, the associated savings from those efforts are captured within the residential shell program.

The manufactured home segment is an important component within the residential portfolio, and many of the company's 2021 program offerings are designed to be inclusive of this segment. Avista provides incentives through its ENERGY STAR Homes incentive for eco-rated manufactured homes. The company also offers a ductless heat pump and a heat pump water heater incentive that offers manufactured homes additional options, especially when natural gas is not available.

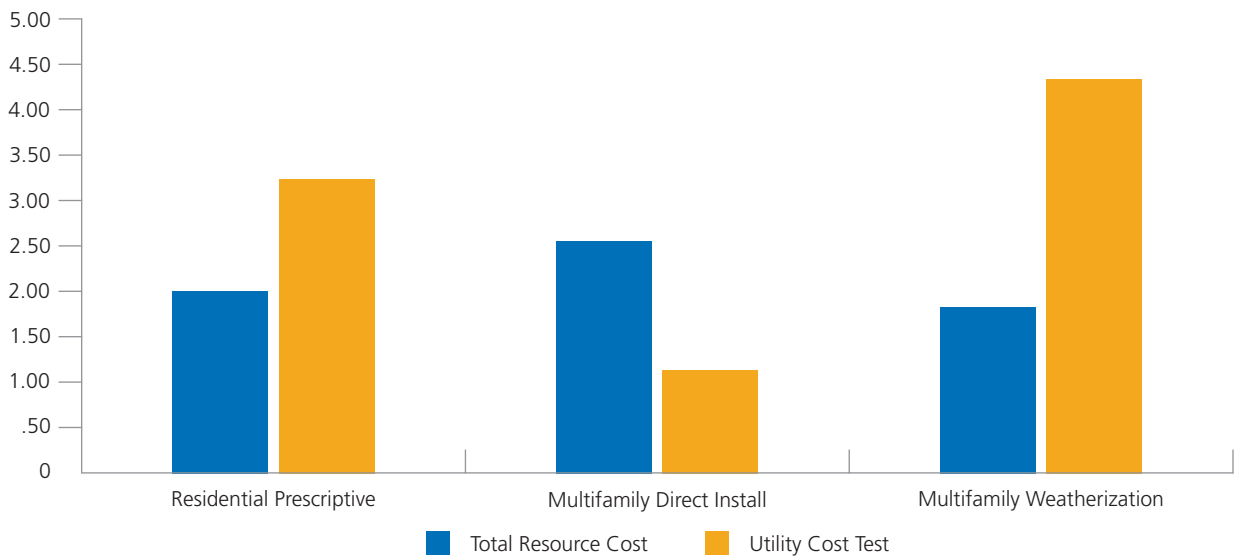
For 2021, Avista anticipates approximately 4,938,581 kWh to be achieved through residential programs with an expected spend of \$3,215,092. Table 9 summarizes the 2021 residential program estimates.

TABLE 9: RESIDENTIAL PROGRAMS OVERVIEW

Residential Programs	Electric Program Savings (kWh)	Expected Spend
ENERGY STAR Homes	116,025	\$ 59,417
Multifamily Direct Install Program	3,969,977	\$ 2,742,346
HVAC Program	285,893	\$ 128,082
Water Heat Program	163,240	\$ 44,755
Shell Program	308,948	\$ 199,733
Multifamily Weatherization	94,287	\$ 40,664
Appliances	211	\$ 94
Total Residential	4,938,581	\$ 3,215,092

The program-by-program cost-effectiveness of the portfolio is graphically represented in Figure 4.

FIGURE 4: RESIDENTIAL PROGRAMS COST-EFFECTIVENESS



	Residential Prescriptive	Multifamily Direct Install	Multifamily Weatherization
Total Resource Cost	2.01	2.58	1.82
Utility Cost Test	3.28	1.11	4.33

Residential Programs

Multifamily Direct Install Program

General Program Description

The multifamily direct install program partners with SBW Consulting to provide direct-installation measures to multifamily residences of five units or more. The program targets a hard-to-reach market of customers who rent rather than own their property, as well as property managers and owners. This program offers direct-installation measures to owners of multifamily buildings in order to make energy-efficiency improvements and help tenants with energy costs.

Field installers coordinate with property managers of multifamily complexes of five units or more to directly install energy-saving measures in units. Installers also audit the complex for any eligible supplemental common-area lighting measures. Information for potential common-area lighting projects is passed on to lighting vendors contracted to work in various areas. Lighting contractors communicate with the property managers to audit and put together project data. Individual common-area lighting projects are completed after approvals by the building owner, Avista, and SBW.

The implementation of this program was paused in March of 2020 due to the COVID-19 pandemic. Avista and the contracted implementer are piloting a new unit-by-unit drop-off model of this direct-installation program, in which the implementer delivers a retrofit kit containing new lamps and aerators for each unit, then returns at a later date to collect old lamps. In August and September, all identified exterior common-area lighting was identified and completed. Results of the tenant drop-off model will be evaluated to see if the model is an adequate substitute until the program can return to normal operating procedures. Supplemental lighting will continue to follow direct-installation for exterior lighting only. The program will resume a direct-installation process for interior and combination interior/exterior projects when public health protocols indicate that it is safe to do so.

Program Manager

Greta Zink

TABLE 10: RESIDENTIAL MULTIFAMILY DIRECT INSTALL PROGRAM METRICS

Projected Program Metrics	
Overall kWh Savings	3,969,977
Incentives	\$ 2,384,448
Non-Incentive Utility Costs	\$ 357,898
Total Costs	\$ 2,742,346
Cost-Effectiveness	
Total Resource Cost	2.58
Utility Cost Test	1.11

Program Eligibility

Multifamily complexes with Avista electric service are eligible for this program. SBW Consulting contacts property owners and managers to gauge interest and schedule audits of facilities and installation of tenant measures. At the time of the audit, it is determined whether there are also common-area lighting fixtures that might be eligible for the program. If common-area lighting is identified, it is passed to lighting contractors to put together a proposal for eligible fixtures, and installation is scheduled after approval. Table 11 shows the estimated annual savings and incentives for the multifamily direct install program. Note that incentive amounts represent the total cost of the program outside of allocated program administrative costs.

TABLE 11: RESIDENTIAL MULTIFAMILY DIRECT INSTALL PROGRAM MEASURES AND INCENTIVES

	Annual kWh Savings	Annual Incentive
Multifamily Direct Install	3,969,977	\$ 2,384,448

Products included in the direct-installation program include a site audit, various LED lamps installed in tenant units, energy-efficient faucet aerators, vending misers for common spaces, and smart power strips.

Residential Prescriptive Programs

Prescriptive rebate programs use financial incentives to encourage customers to adopt qualifying energy-efficiency measures. Customers must complete installation and apply for a rebate, submitting proper proof of purchase, installation, and/or other documentation to Avista, typically within 90 days from project completion. Customers can submit this form in hard copy, and several prescriptive measures are also available to submit online at myavista.com.

Residential prescriptive programs typically cover single-family homes up to a four-plex. For multifamily situations (five-plex or larger), owners and developers may choose to treat the entire complex with an efficiency improvement.

Prescriptive programs have a strong presence and coordination with regional efforts such as those offered by NEEA. There are currently significant regional efforts active in the markets for consumer electronics, ductless heat pumps, and standard improvements for new heat pump water heating technologies. Avista has offered local rebates in support of many NEEA market transformation ventures, and will continue to do so where opportunities for the application of these programs are cost-effective options.

Prescriptive measures do not require a pre-installation contract and offer a fixed incentive amount for eligible measures. Measures offered through prescriptive programs are evaluated based on the typical application of that measure by program participants. Prescriptive measures are generally limited to those that are low-cost, offer relatively homogenous performance across the spectrum of likely applications, and would not significantly benefit from a more customized approach. Specific plans for Avista's prescriptive programs are enumerated below.

Residential Appliance Program

General Program Description

The residential appliance program helps promote the use of high-efficiency appliances for residential customers. Avista will offer incentives for the purchase and use of high-efficiency front-load washers and vented ENERGY STAR clothes dryers.

Program Manager

Camille Martin

Program Metrics

Avista has historically offered rebates for appliances through CLEAResult's Simple Steps program on a seasonal basis. For 2021, the company does not anticipate a high level of throughput for this program but will continue to explore ways to engage with customers.

TABLE 12: RESIDENTIAL APPLIANCE PROGRAM METRICS

Projected Program Metrics		
Overall kWh Savings		211
Incentives	\$	70
Non-Incentive Utility Costs	\$	24
Total Costs	\$	94
Cost-Effectiveness		
Total Resource Cost		3.78
Utility Cost Test		2.19

Program Eligibility

The front-load washer incentive requires that customers purchase and install a high-efficiency washer with a Consortium for Energy Efficiency Tier of 1 or 2 or that has an ENERGY STAR designation. Clothes dryers must be ENERGY STAR-designated.

TABLE 13: RESIDENTIAL APPLIANCE PROGRAM MEASURES AND INCENTIVES

	Projected Participation	Per-Unit kWh Savings	Incentive
Front-Load Washer	1 Unit	143 \$	50
Vented ENERGY STAR Clothes Dryer	1 Unit	68 \$	20

Incentive Revisions for 2021

None.

Residential ENERGY STAR Homes Program

General Program Description

The ENERGY STAR Certified Manufactured Homes program helps home buyers easily identify manufactured homes that are significantly more energy-efficient than standard construction in the marketplace. As code requirements have become more rigorous and builder practices have become more efficient, the ENERGY STAR program has modified its guidelines to ensure that certified manufactured homes represent a meaningful improvement over non-labeled manufactured homes.

Program Manager

Camille Martin

TABLE 14: RESIDENTIAL ENERGY STAR HOMES PROGRAM METRICS

Projected Program Metrics		
Overall kWh Savings		116,025
Incentives	\$	35,000
Non-Incentive Utility Costs	\$	24,649
Total Costs	\$	59,649
Cost-Effectiveness		
Total Resource Cost		2.12
Utility Cost Test		3.43

Program Implementation

The ENERGY STAR manufactured home program promotes, to manufactured home builders and homeowners, a sustainable, low-operating-cost, environmentally friendly structure as an alternative to traditional home construction. ENERGY STAR manufactured homes provide energy savings beyond code requirements for space heating, water heating, shell, lighting, and appliances. Avista continues to support the regional program to encourage sustainable building practices.

The current customer descriptions of the programs with primary program requirements are available on the ENERGY STAR/ECO-Rated Manufactured Homes Rebate form.

Program Eligibility

Any residential electric customer (Schedule 1) with an all-electric certified ENERGY STAR or eco-rated manufactured home is eligible, as well as any residential electric customer (Schedule 1) with a certified ENERGY STAR manufactured home with Avista electricity service for lights and appliances. This rebate may not be combined with other Avista individual measure rebate offers (e.g. high-efficiency water heaters).

TABLE 15: RESIDENTIAL ENERGY STAR HOMES PROGRAM MEASURES AND INCENTIVES

	Projected Participation	Per Unit kWh Savings	Incentive
ENERGY STAR Homes	35 Unit	3,315 \$	1,000

TABLE 16: RESIDENTIAL ENERGY STAR HOMES PROGRAM INCENTIVE REVISIONS FOR 2021

Measure Description	2020	2021
ENERGY STAR Homes – Manufactured, Elec/DF	\$ 800	\$ 1,000

Residential HVAC Program

General Program Description

The HVAC program encourages residential customers to select a high-efficiency solution when making energy upgrades to their home. This prescriptive rebate approach issues payment to the customer after the measure has been installed. Energy-efficiency marketing efforts build considerable awareness of opportunities for improvements in customers’ homes and drive customers to the Avista website for rebate information. Vendors generate participation in the program through the use of rebates as a sales tool for their services. Utility website promotion, vendor training, retail location visits, and presentations at various customer events throughout the year are some of the other communication methods that encourage program participation. Overall, residential customers continue to respond well to the program.

Program Manager

Camille Martin

TABLE 17: RESIDENTIAL HVAC PROGRAM METRICS

Projected Program Metrics	
Overall kWh Savings	285,893
Incentives	\$ 85,650
Non-Incentive Utility Costs	\$ 42,432
Total Costs	\$ 128,082
Cost-Effectiveness	
Total Resource Cost	2.03
Utility Cost Test	2.81

Program Eligibility and Incentives

Avista will continue to offer upgrades to electric heat for 2021. As part of the program eligibility requirements, customers must demonstrate a heating season electricity usage of at least 10,000 kWh and less than 340 therms for replacement of electric straight resistance with air source heat pump and ductless heat pump. Ductless heat pumps must be 9.0 HSPF or greater.

TABLE 18: RESIDENTIAL HVAC PROGRAM MEASURES AND INCENTIVES

	Projected Participation		Per-Unit kWh Savings	Incentive	
Smart Thermostats – DIY	62	Unit	749	\$	125
Smart Thermostats – Contractor-Installed	56	Unit	749	\$	150
Air Source Heat Pump	56	Unit	3,090	\$	1,000
Ductless Heat Pumps	27	Unit	908	\$	500

Incentive Revisions for 2021

Avista has made several revisions to its HVAC program to increase throughput and to promote measures with a high level of cost-effectiveness. Both smart thermostat measures increased by \$50 to support broader adoption. Avista anticipates the need for more smart thermostats in people’s homes to enable future demand response programs. For heat pump measures, the revised RTF UES values show a smaller opportunity for kWh savings. As such, the air source heat pump measure has a lowered cost-effectiveness ratio for the Total Resource Cost (TRC), which influenced the level of incentive. The UES value for ductless heat pumps also declined; it remains close to a TRC of 1.0, however. To ensure that Avista customers receive an incentive comparable to other regional utilities, the ductless heat pump incentive was increased to \$500.

TABLE 19: RESIDENTIAL HVAC PROGRAM INCENTIVE REVISIONS FOR 2021

Measure Description	2020		2021	
Smart Thermostats – DIY	\$	75	\$	125
Smart Thermostats – Contractor-Installed	\$	100	\$	150
Air Source Heat Pump	\$	1,100	\$	1,000
Ductless Heat Pumps	\$	400	\$	500

Residential Water Heat Program

General Program Description

Residential electric customers who heat their homes with Avista electric may be eligible for rebates for the installation of a high-efficiency heat pump water heater. Efficiencies for space- and water-heating equipment are verified according to the contractor invoice or the Air-Conditioning, Heating, and Refrigeration Institute (AHRI).

Program Manager

Camille Martin

TABLE 20: RESIDENTIAL WATER HEAT PROGRAM METRICS

Projected Program Metrics		
Overall kWh Savings		163,240
Incentives	\$	30,100
Non-Incentive Utility Costs	\$	14,655
Total Costs	\$	44,755
Cost-Effectiveness		
Total Resource Cost		1.45
Utility Cost Test		2.78

Program Eligibility and Incentives

Residential electric customers who heat their homes with Avista electricity may be eligible for a rebate for the installation of a high-efficiency heat pump water heater. Supporting documentation required for participation includes, at a minimum, project invoices and AHRI certification. Efficiencies for space- and water-heating equipment are verified according to the contractor invoice or AHRI.

TABLE 21: RESIDENTIAL WATER HEAT PROGRAM MEASURES AND INCENTIVES

	Projected Participation	Per-Unit kWh Savings	Incentive
Heat Pump Water Heater	140 Unit	1,166 \$	215

Incentive Revisions for 2021

None.

Residential Shell Program

General Program Description

The shell program encourages residential customers to improve their home's shell or exterior envelope with upgrades to windows, storm windows, and insulation. This prescriptive rebate approach issues payment to the customer after the measure has been installed. Energy-efficiency marketing efforts build considerable awareness of opportunities in the home and drive customers to the website for rebate information. Vendors generate participation in the program through the use of rebates as a sales tool for their services. Utility website promotion, vendor training, retail location visits, and presentations at various customer events throughout the year are some of the other communication methods that encourage program participation.

Program Manager

Camille Martin

TABLE 22: RESIDENTIAL SHELL PROGRAM METRICS

Projected Program Metrics	
Overall kWh Savings	308,948
Incentives	\$ 114,455
Non-Incentive Utility Costs	\$ 85,278
Total Costs	\$ 199,733
Cost-Effectiveness	
Total Resource Cost	2.03
Utility Cost Test	3.62

Program Eligibility and Incentives

Residential electric customers whose energy usage is greater than 8,000 kWh are eligible to apply. Storm windows (interior/exterior) must be new, the same size as existing windows, and not in direct contact with existing windows. Exterior windows' low-e coating must be facing the interior of the home. Glazing material emissivity must be less than .22 with a solar transmittance greater than .55. Windows must have a u-factor rating of .30 or lower.

TABLE 23: RESIDENTIAL SHELL PROGRAM MEASURES AND INCENTIVES

	Projected Participation	Per-Unit kWh Savings	Incentive
Low-e Windows	16,566 Sq Ft	11.51	\$ 4.00
Low-e Storm Windows	308 Sq Ft	11.51	\$ 3.00
Wall Insulation	7,983 Sq Ft	2.50	\$ 0.75
Floor Insulation	2,063 Sq Ft	1.00	\$ 0.75
Attic Insulation	52,976 Sq Ft	1.75	\$ 0.75

Incentive Revisions for 2021

None.

Low-Income Portfolio Overview

General Program Description

Low-income programs are offered in a cooperative effort with multiple agencies under annual contract to Avista. The funding contracts allow for considerable flexibility for the agencies to deliver to each individual low-income client a mix of measures customized to that particular home.

Program Manager

Renee Coelho

TABLE 24: LOW-INCOME PROGRAM METRICS

Projected Program Metrics		
Overall kWh Savings		408,626
Incentives	\$	805,498
Non-Incentive Utility Costs	\$	312,101
Total Costs	\$	1,117,599
Cost-Effectiveness		
Total Resource Cost		1.60
Utility Cost Test		0.53

Avista partners with six CAP agencies and one Tribal Housing Authority to deliver low-income energy-efficiency programs (e.g. weatherization). The agencies income-qualify customers, generate referrals, and have access to a variety of funding sources that can be used to best meet customers' home energy needs. Homes must demonstrate a minimum level of electric usage for space heating to be eligible for Avista funds.

The seven agencies serving Avista's Washington service territory receive an aggregate annual funding amount of \$3 million – an increase over previous years to support increased costs as well as additional spending for health, safety, and repair.

Table 25 shows is the funding allocation by agency and counties served.

TABLE 25: LOW-INCOME PROGRAM FUNDING BY CAP AGENCY

CAP Agency	County	Funding
Spokane Neighborhood Action Partners (SNAP)	Spokane	\$ 1,950,000
Rural Resources Community Action	Ferry, Lincoln, Pend Oreille, Stevens	\$ 270,000
Community Action Center	Whitman	\$ 210,000
Opportunities Industrialization Council	Adams, Grant	\$ 120,000
Spokane Indian Housing Authority	Stevens County	\$ 30,000
Community Action Council of Lewis, Mason & Thurston Counties	Klickitat, Skamania	\$ 60,000
Community Action Partnership	Asotin	\$ 360,000
Total		\$ 3,000,000

The agencies are authorized to use 10 percent of their funds for administration cost reimbursement and 20 percent of their funds for program support reimbursement. Avista also permits agencies to use up to 30 percent of their contract to fund health, safety, and repairs in qualified homes. Health, safety, and repair spend is at the agency's discretion, and offers flexibility in preserving the integration of the improvements that have been installed in each home.

TABLE 26: LOW-INCOME PROGRAM MEASURES AND INCENTIVES

	Projected Participation	Per-Unit kWh Savings	Incentive
Air Infiltration – Electric	100 Unit	631 \$	904
ENERGY STAR Rated Doors	100 Unit	162 \$	609
ENERGY STAR Rated Refrigerator	50 Unit	39 \$	641
Windows	10,000 Sq Ft	6.04 \$	20
Air Source Heat Pump	10 Unit	878 \$	966
Attic Insulation	20,000 Sq Ft	0.57 \$	1.76
Duct Insulation	7,000 Sq Ft	2.68 \$	3.05
Floor Insulation	7,000 Sq Ft	1.17 \$	3.03
Wall Insulation	3,000 Sq Ft	1.39 \$	2.17
Duct Sealing	10 Unit	710 \$	408
Ductless Heat Pump (w FAF)	30 Unit	3,016 \$	4,795
Ductless Heat Pump (displace zonal)	30 Unit	3,016 \$	4,795
Tier 2-3 Heat Pump Water Heater	10 Unit	587 \$	697
Conversion to Air Source Heat Pump	2 Unit	5,865 \$	7,030
Outreach LEDs	10,000 Unit	1.00 \$	1.10

Based on Avista’s billing analysis for the low-income program in the 2019 evaluation report, an increase in the UES for electric measures was incorporated for 2021.

The majority of electric measures will continue to be fully funded through the company’s low-income program. Health, safety, and repair projects are also fully funded through the program. Avista will continue in the same vein as 2020 implementation by reimbursing the agencies the full cost of the measures that appear on the state priority list as presented in the *Washington State Department of Commerce Weatherization Manual*, July 2019 edition. These measures apply to both electric- and natural gas-heated homes and include insulation for attic, floor, wall, air infiltration, and LED lamps. Heat pump water heaters will be rebated the amount equal to the avoided cost of energy.

Measures reimbursed at 100 percent have a TRC of 1.0 or better. Per WAC 480-109-100(10)(a), measures identified through the priority list in the *Weatherization Manual* are considered cost-effective. A list of 2021 approved measures can be found in Table 27:

TABLE 27: LOW-INCOME PROGRAM 2021 APPROVED MEASURES – WASHINGTON

Electric Efficiency Measures
Air Infiltration
Duct Sealing
Attic Insulation
Duct Insulation
Floor Insulation
Wall Insulation
ENERGY STAR Rated Doors
Electric to Ductless Heat Pump
Electric to Air Source Heat Pump
Heat Pump Water Heater (0-54 Gal 1.8 EF)
LEDs (6-Pack)

For efficiency measures with a TRC less than 1.0 and not included on the priority list, a rebate that is equal to Avista’s avoided cost of energy is provided as the reimbursement to the agency. The agencies may also choose to use their health, safety, and repair allocation toward covering the full cost of the rebated measure if they do not have other funding sources to make up the difference. A list of 2021 fully funded and qualified rebate measures can be found in the Table 28.

TABLE 28: LOW-INCOME PROGRAM 2021 REBATES – FULLY FUNDED AND REBATED

Measure Description	Est Units	Unit of Measure	Funding	Measure Cost
Air Infiltration – Electric	100	Unit	Fully Fund	\$ 903.96
ENERGY STAR Rated Doors	100	Unit	Fully Fund	\$ 605.97
ENERGY STAR Rated Refrigerator	50	Unit	Fully Fund	\$ 640.55
Windows	10,000	Sq Ft	Fully Fund	\$ 20.45
Air Source Heat Pump	10	Unit	Fully Fund	\$ 8,142.32
Attic Insulation	20,000	Sq Ft	Fully Fund	\$ 1.76
Duct Insulation	7,000	Sq Ft	Fully Fund	\$ 3.05
Floor Insulation	7,000	Sq Ft	Fully Fund	\$ 3.03
Wall Insulation	3,000	Sq Ft	Fully Fund	\$ 2.17
Duct Sealing	10	Unit	Fully Fund	\$ 407.81
Ductless Heat Pump (w FAF)	30	Unit	Fully Fund	\$ 4,794.76
Ductless Heat Pump (displace zonal)	30	Unit	Fully Fund	\$ 4,794.76
Tier 2-3 Heat Pump Water Heater	10	Unit	Rebate	\$ 697.39
Conversion to Air Source Heat Pump	2	Unit	Fully Fund	\$ 7,029.61
Outreach LEDs	10,000	Unit	Fully Fund	\$ 1.10

Agencies are encouraged to work with Avista when considering the installation of energy-efficiency opportunities that are not found on either the approved or the rebate list.

Community Energy Efficiency Program

Community Energy Efficiency Program (CEEP) was created by the Washington State Legislature in 2009 to tackle hard-to-reach markets in both the residential and commercial/industrial sectors by encouraging energy-efficiency improvements. The CEEP pilot was funded by the U.S. Department of Energy's State Energy Program and the American Recovery and Reinvestment Act. CEEP partners are selected by a competitive request for proposals and independent review committee. Avista has been a CEEP recipient since 2014.

The company received a \$750,000 CEEP allocation for the 2020-21 funding year – set to complete in June 2021 – and is providing a \$750,000 match along with in-kind program administrative support. Three community action agencies have partnered with Avista to implement the CEEP funds under two programs: energy-efficiency improvements for multifamily housing, and converting income-qualified homes with alternative heat sources (e.g. wood and oil) to a heat pump system. In addition, CEEP funds are being used to match utility rebates for energy-efficiency work done in small businesses in rural communities.

Commercial/Industrial Portfolio Overview

The commercial/industrial energy-efficiency market is served through a combination of prescriptive and site-specific offerings. Any measure not offered through a prescriptive program is automatically eligible for treatment through the site-specific program, subject to the criteria for participation in that program. Prescriptive paths for the commercial/industrial market are preferred for measures that are relatively homogenous in scope and uniform in their energy-efficiency characteristics.

Unlike the site-specific program, prescriptive paths do not require pre-project contracting, thus lending themselves to streamlined administrative and marketing efforts. Incentives are established for these prescriptive programs following Avista’s guidelines and standard operating procedures. Actual costs and savings are tracked, reported, and available to the third-party impact evaluator. Many, but not all, of the prescriptive measures use RTF UES.

When the prescriptive path is not available, Avista offers commercial/industrial customers the opportunity to propose any energy-efficiency project with documentable energy savings for technical review and potential incentive through the site-specific program. Multifamily residential developments may also employ the site-specific program when all or a large number of the residences and common areas are treated. The determination of incentive eligibility is based on projects’ individual characteristics as they apply to the company’s guidelines and standard operating procedures.

For the 2021 program year, Avista anticipates approximately 37,674,690 kWh to be achieved through commercial/industrial programs with an expected spend of \$9,101,387. The table below summarizes the 2021 commercial/industrial program estimates.

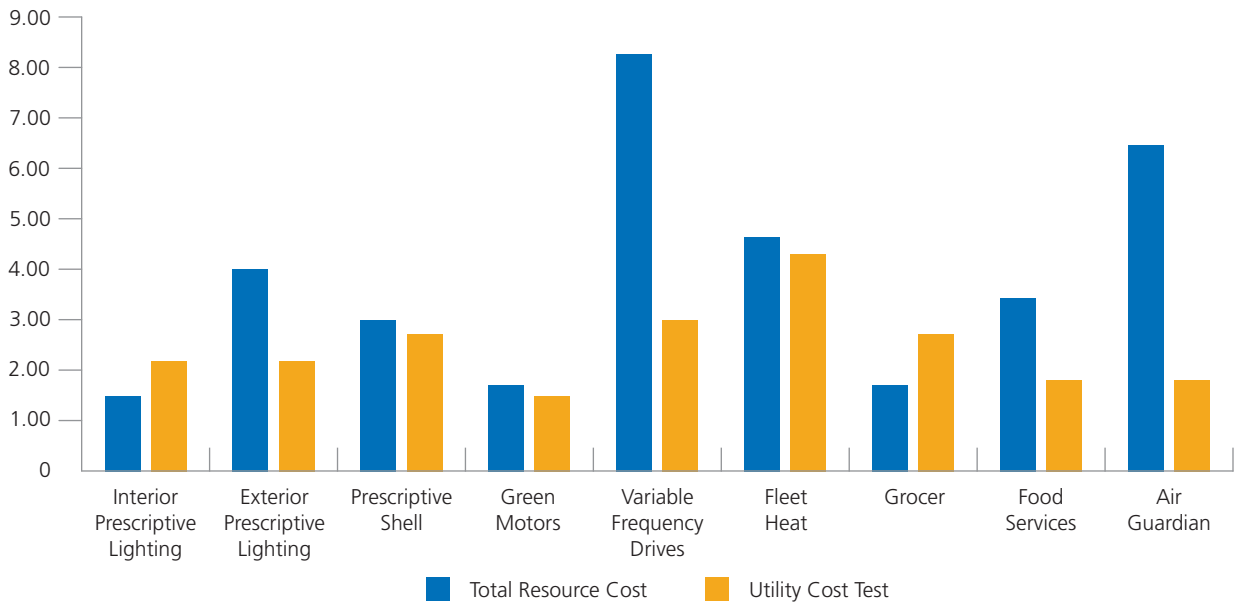
TABLE 29: COMMERCIAL/INDUSTRIAL PROGRAM OVERVIEW

Commercial/Industrial Programs	Electric Program Savings (kWh)	Expected Spend
Commercial/Industrial Lighting – Interior	9,365,651	\$ 2,158,740
Commercial/Industrial Lighting – Exterior	11,208,182	\$ 2,901,532
Site-Specific	16,000,000	\$ 3,814,510
Prescriptive Shell	53,500	\$ 25,391
Variable Frequency Drives	386,900	\$ 91,966
Green Motors	40,685	\$ 8,725
Fleet Heat	400,000	\$ 51,973
Grocer	57,108	\$ 13,513
Food Services	120,665	\$ 22,656
Compressed Air	42,000	\$ 12,381
Total Commercial/Industrial	37,674,690	\$ 9,101,387

The green motors program is offered to customers through third-party implementation staff while the other programs are fielded by Avista energy-efficiency staff.

Quantifiable non-energy benefits are included in the TRC calculation, including but not limited to reductions in maintenance, water, sewer, and non-utility energy costs. All assigned and allocated non-incentive utility costs have been incorporated into the cost-effectiveness calculation. Figure 5 identifies the TRC and Utility Cost Test (UCT) cost-effectiveness for the prescriptive commercial/industrial program.

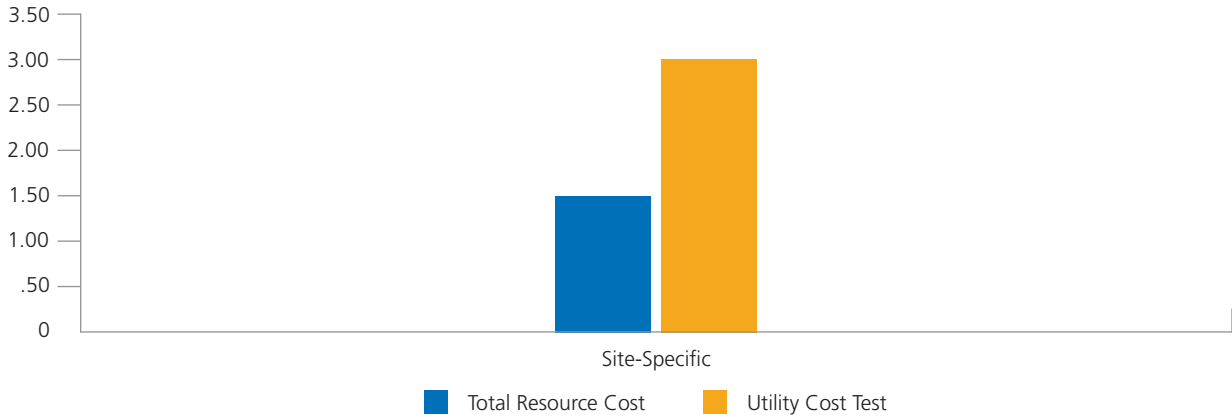
FIGURE 5: COMMERCIAL/INDUSTRIAL PRESCRIPTIVE PROGRAMS COST-EFFECTIVENESS



	Interior Pres. Lighting	Exterior Pres. Lighting	Pres. Shell	Green Motors	Variable Frequency Drives	Fleet Heat	Grocer	Food Services	Air Guardian
Total Resource Cost	1.40	4.03	2.96	1.72	8.14	4.66	1.64	3.51	6.50
Utility Cost Test	2.13	2.13	2.72	1.68	2.95	4.24	2.71	1.88	1.88

Avista’s site-specific program has historically been one of the largest programs – and frequently one of the more cost-effective. Any measure with documentable and verifiable energy savings that is not otherwise covered by a prescriptive program is eligible for the site-specific program. The all-encompassing nature of the program has led to the participation of a number of projects that would not otherwise have been incorporated within the portfolio. Figure 6 identifies the cost-effectiveness for the site-specific program.

FIGURE 6: COMMERCIAL/INDUSTRIAL SITE-SPECIFIC PROGRAM COST-EFFECTIVENESS



		Site-Specific
Total Resource Cost		1.50
Utility Cost Test		3.00

Commercial/Industrial Programs

Commercial/Industrial Site-Specific Program

General Program Description

Avista's site-specific program is a major component in its commercial/industrial offerings and has historically been one of the more cost-effective portions of the energy-efficiency portfolio. Customers receive technical assistance and incentives in accordance with Schedule 90 in Washington. The program approach strives for a flexible response to energy-efficiency projects that have demonstrable kWh savings within program criteria. The majority of site-specific kWh savings are composed of custom lighting projects and custom HVAC, envelope, and industrial process load projects that do not fit the prescriptive path. The site-specific program is available to all commercial/industrial retail electric customers, and typically brings in the largest portion of savings to the overall energy-efficiency portfolio.

Program Manager

Lorri Kirsten

TABLE 30: COMMERCIAL/INDUSTRIAL SITE-SPECIFIC PROGRAM METRICS

Projected Program Metrics	
Overall kWh Savings	16,000,000
Incentives	\$ 2,464,000
Non-Incentive Utility Costs	\$ 1,350,510
Total Costs	\$ 3,814,510
Cost-Effectiveness	
Total Resource Cost	1.50
Utility Cost Test	3.00

Program Implementation

This program will offer an incentive for any qualifying electric energy-saving measure up to the incremental efficiency measure cost that has a simple payback which is less than the life of the measure being installed. Avista will make adjustments to the percentage of incremental cost paid in order to obtain the greatest energy savings at the lowest cost. A cap of 70 percent of the incremental cost and a 15-year measure simple payback based on energy cost savings is used unless a business need to increase either parameter is articulated.¹ Site-specific program savings can be difficult to predict because of the large nature of the projects and long sales cycles. General economy shifts may also affect customer willingness to fund efficiency improvements. Increases in process and eligibility complexity and in customer costs to participate beyond the capital investment, as well as costs for post-measurement activities, are kept in mind and managed in order to continue to successfully engage customers.

1) A 15-year simple payback is used as a proxy for cost-effectiveness for communication with customers. In some situations, a potential project may be tested against the TRC to determine if it is cost-effective outside of the 15-year simple payback guideline.

Key components of the program include direct incentives to encourage customer interest, marketing efforts, account executives whose input and assistance can drive customers to the program, and ongoing work with trade allies to ensure that customer demand can be met. The Avista website and the trade ally network are used to communicate program requirements, incentives, and forms.

TABLE 31: COMMERCIAL/INDUSTRIAL SITE-SPECIFIC MEASURES, INCENTIVES, AND BUDGET

	Annual Electric Savings (kWh)	Annual Incentive
Site-Specific Projects	16,000,000	\$ 2,464,000

Commercial/Industrial Business Partner Program

The Business Partner Program (BPP) is a new outreach effort designed to target Avista’s rural small business customers by bringing awareness of utility programs and services that can assist them in managing their energy bills. When it comes to actually participating in energy-efficiency programs, small businesses are chiefly focused on ways to save money, and often don’t have enough time or capital to make any improvements. The BPP provides advice and tools to educate and empower both business owners and employees to use less energy.

This high-touch initiative provides a free energy-efficiency assessment, along with awareness about other services such as billing options and energy-efficiency rebates. Once customers are educated about potential improvements, the challenge is to encourage them to act on these enhancements. To further support the BPP, a proposal is currently under review with CEEP for financial assistance. If the CEEP proposal is accepted, the funding would be used toward assisting rural small business customers with financing the coordination and installation of identified energy-efficiency measures (e.g. a lighting retrofit) that may have been identified during the energy assessment. With hard-to-reach customers participating in the energy assessment, understanding their utility bills, and seeing the results of an energy-efficiency improvement, this program will provide a comprehensive approach to serving them.

Commercial/Industrial Prescriptive Lighting Program

General Program Description

This program is intended to prompt commercial electric customers to increase the energy efficiency of their lighting equipment through direct financial incentives. It indirectly supports the infrastructure and inventory necessary to ensure that the installation of high-efficiency equipment is a viable option for customers.

In an effort to streamline the process and make it easier for customers and vendors to participate in the program, Avista developed a prescriptive approach for commercial/industrial customers in 2004. This program provides for many common retrofits to receive a pre-determined incentive amount. Incentive amounts are calculated using a baseline average for both existing and average replacement wattages, as well as the average cost per unit from the previous year’s project data. Energy savings claimed are calculated based on actual customer run times using the averages as calculated for incentive amounts.

The prescriptive lighting program makes it easier for customers – especially smaller customers and vendors – to participate in the program. The measures included in the prescriptive lighting program include fluorescent lamps and fixtures, HID, MR16, and incandescent can fixture retrofits to more energy-efficient LED light sources and controls.

Program Manager

Rachelle Humphrey

TABLE 32: COMMERCIAL/INDUSTRIAL PRESCRIPTIVE LIGHTING PROGRAM METRICS

Projected Program Metrics	Interior	Exterior
Overall kWh Savings	9,365,651	11,208,182
Incentives	\$ 1,546,800	\$ 2,172,500
Non-Incentive Utility Costs	\$ 611,940	\$ 729,032
Total Costs	\$ 2,158,740	\$ 2,901,532
Cost-Effectiveness		
Total Resource Cost	1.40	4.03
Utility Cost Test	2.13	2.13

Program Implementation

Key components of this program are direct incentives to encourage customer interest, marketing efforts to drive customers to the program, and ongoing work with trade allies to ensure that customer demand can be met.

Critical to its success is clear communication to lighting supply houses, distributors, electricians, and customers on incentive requirements and forms. The Avista website also communicates program requirements and highlights opportunities for customers. Avista’s regionally based account executives are an important part of delivering the prescriptive lighting program to commercial/industrial customers. Any changes to the program typically include an advance notice of 90 days to submit required documentation under the old requirements and/or incentive levels. This usually includes, at a minimum, direct mail communication to trade allies as well as internal forms and website updates.

Program Eligibility

This program is applicable to commercial/industrial facilities with electric service provided by Avista through rate schedules 011 or above.

TABLE 33: COMMERCIAL/INDUSTRIAL PRESCRIPTIVE LIGHTING PROGRAM MEASURES AND INCENTIVES

	Projected Participation		Per-Unit kWh Savings	Incentive
Interior Lighting				
12-20W LED Fixture Retrofit	1,200	Unit	240 \$	30
140W Fixture/Lamp	1,000	Unit	641 \$	125
175W Fixture/Lamp	1,500	Unit	994 \$	195
400W Fixture/Lamp	50	Unit	2,752 \$	355
2-9W MR16	100	Unit	88 \$	9
Occupancy Sensors	50	Unit	150 \$	30
T5HO TLED	18,000	Unit	106 \$	15
T8 TLED 4'	70,000	Unit	51 \$	8
U-Bend	2,000	Unit	51 \$	10
2x2 (or 1x4) Fixtures	3,000	Unit	99 \$	20
2x4 Fixtures	4,000	Unit	168 \$	30
8' T8 TLED	1,800	Unit	57 \$	12
LLLC Fixture	50	Unit	281 \$	50
T8 TLED 2'	2,000	Unit	53 \$	8
T8 TLED 3'	500	Unit	56 \$	8
Exterior Lighting				
25W Fixture	400	Unit	325 \$	65
30W Fixture	450	Unit	446 \$	85
50W Fixture	500	Unit	650 \$	130
100W Fixture	550	Unit	655 \$	130
100W NC Fixture	50	Unit	720 \$	140
140W Fixture	800	Unit	914 \$	180
140W NC Fixture	50	Unit	802 \$	160
160W Fixture	300	Unit	1,096 \$	215
160W NC Fixture	100	Unit	981 \$	195
175W Fixture	2,200	Unit	1,426 \$	285
300W Fixture	150	Unit	2,547 \$	505
400W Fixture	400	Unit	3,468 \$	640
Sign Lighting	35,000	Unit	116 \$	22

TABLE 34: COMMERCIAL/INDUSTRIAL PRESCRIPTIVE LIGHTING PROGRAM INCENTIVE REVISIONS FOR 2021

Measure Description	2020	2021
Interior Lighting		
20W Can Retrofit	\$ 20.00	\$ 30.00
175W Fixture/Lamp	\$ 185.00	\$ 195.00
400W Fixture/Lamp	\$ 270.00	\$ 355.00
2-9W MR16	\$ 5.50	\$ 8.50
Occupancy Sensors	\$ 25.00	\$ 30.00
T5HO Four-Foot TLED	\$ 12.50	\$ 15.00
T8 Four-Foot TLED	\$ 6.50	\$ 8.00
T8 Two-Foot TLED	\$ 0.00	\$ 8.00
T8 Three-Foot TLED	\$ 0.00	\$ 8.00
2x2 Fixture	\$ 30.00	\$ 20.00
2x4 Fixture	\$ 45.00	\$ 28.00
1x4 Fixture	\$ 0.00	\$ 20.00
LLC Fixture	\$ 35.00	\$ 50.00
Exterior Lighting		
160W Fixture	\$ 195.00	\$ 215.00
175W Fixture	\$ 280.00	\$ 285.00
300W Fixture	\$ 490.00	\$ 500.00
400W Fixture	\$ 610.00	\$ 640.00

Commercial/Industrial Prescriptive HVAC Variable Frequency Drive Program

General Program Description

This program is intended to prompt customers to increase the energy efficiency of their HVAC fan or pump applications with a Variable Frequency Drive (VFD) retrofit. Adding a VFD to HVAC systems is an effective tool for cutting operating costs, improving overall system performance, and reducing wear and tear on motors. The prescriptive rebate approach issues payment to the customer after the measure has been installed. Commercial/ industrial customers who use Avista electricity and apply the VFD to the eligible fan or pump measures are eligible for this program.

Program Manager

Greta Zink

TABLE 35: COMMERCIAL/INDUSTRIAL PRESCRIPTIVE HVAC VARIABLE FREQUENCY DRIVE PROGRAM METRICS

Projected Program Metrics	
Overall kWh Savings	386,900
Incentives	\$ 60,000
Non-Incentive Utility Costs	\$ 31,966
Total Costs	\$ 91,966
Cost-Effectiveness	
Total Resource Cost	8.14
Utility Cost Test	2.95

Program Implementation

The HVAC program is prescriptively based on retrofitting VFDs on existing HVAC equipment as laid out with 10 application codes. Customers must submit a completed rebate form, invoices, and documentation to verify the horsepower of the motor and that the VFD was installed within 90 days prior to submittal. Each rebate will be qualified and processed within iEnergy with the current-year calculator. Avista will send incentive checks to customers or their designees after each project is approved. Rebates will not exceed the total amount on the invoice. All VFD projects have an installation inspection before the check is issued. This program is promoted by trade allies, Avista account executives, the Avista website, and Avista marketing efforts. The website is also used to communicate program requirements, incentives, and forms.

TABLE 36: COMMERCIAL/INDUSTRIAL PRESCRIPTIVE HVAC VFD PROGRAM MEASURES AND INCENTIVES

	Projected Participation	Per-Unit kWh Savings	Incentive
HVAC Cooling Pump	100 Unit	1,091	\$ 200
HVAC Fan	100 Unit	1,022	\$ 200
HVAC Heating Pump or Combo	100 Unit	1,756	\$ 200

Incentive Revisions for 2021

VFD incentives will increase to \$200, up from \$130 in 2020.

Commercial/Industrial Prescriptive Shell Program

General Program Description

The commercial/industrial prescriptive shell program offers incentives to commercial customers who improve the envelopes of their existing buildings by adding insulation, which may make a business more energy-efficient and comfortable. This prescriptive rebate approach issues payment to the customer after the measure has been installed by a licensed contractor. Commercial customers must have an annual heating footprint for a fuel provided by Avista.

Program Manager

Greta Zink

TABLE 37: COMMERCIAL/INDUSTRIAL PRESCRIPTIVE SHELL PROGRAM METRICS

Projected Program Metrics	
Overall kWh Savings	53,500
Incentives	\$ 17,250
Non-Incentive Utility Costs	\$ 8,141
Total Costs	\$ 25,391
Cost-Effectiveness	
Total Resource Cost	2.96
Utility Cost Test	2.72

Program Implementation

This is a prescriptive program with five measures offered. Customers must submit a completed rebate form, invoices, and an insulation certificate within 90 days after the installation has been completed. Avista will send incentive checks to customers or their designees after each project is approved. Rebates will not exceed the total amount on the invoice. Each rebate will be qualified and processed within iEnergy with the current-year calculator. This program is promoted by trade allies, Avista account executives, the Avista website, and Avista marketing efforts. The website is also used to communicate program requirements, incentives, and forms.

TABLE 38: COMMERCIAL/INDUSTRIAL PRESCRIPTIVE SHELL PROGRAM MEASURES AND INCENTIVES

	Projected Participation	Per-Unit kWh Savings	Incentive
Less than R11 Attic Insulation (E/E) to R30-R44 Attic Insulation	5,000 Sq Ft	1.02 \$	0.75
Less than R11 Attic Insulation (E/E) to R45+ Attic Insulation	5,000 Sq Ft	1.39 \$	0.85
Less than R11 Roof Insulation (E/E) to R30+ Roof Insulation	5,000 Sq Ft	1.36 \$	0.60
Less than R4 Wall Insulation (E/E) to R11-R18 Wall Insulation	5,000 Sq Ft	2.82 \$	0.60
Less than R4 Wall Insulation (E/E) to R19+ Wall Insulation	5,000 Sq Ft	4.11 \$	0.65

TABLE 39: COMMERCIAL/INDUSTRIAL PRESCRIPTIVE SHELL PROGRAM INCENTIVE REVISIONS 2021

Measure Description	2020	2021
Wall Less than R4 to R11-R18	\$ 0.35	\$ 0.60
Wall Less than R4 to R19 or Greater	\$ 0.45	\$ 0.65
Attic Less than R11 to R30-R44	\$ 0.50	\$ 0.75
Attic Less than R11 to R45 or Greater	\$ 0.60	\$ 0.85
Roof Less than R11 to R30 or Greater	\$ 0.40	\$ 0.60

Commercial/Industrial Food Services Program

General Program Description

The commercial/industrial food service equipment program offers incentives for commercial customers who purchase or replace food service equipment with ENERGY STAR qualified equipment. This prescriptive rebate approach issues payment to the customer after the measure has been installed. Commercial customers who use Avista electricity to operate the equipment submitted for a rebate are eligible for this program.

Program Manager

Greta Zink

TABLE 40: COMMERCIAL/INDUSTRIAL PRESCRIPTIVE FOOD SERVICES PROGRAM METRICS

Projected Program Metrics	
Overall kWh Savings	120,665
Incentives	\$ 17,640
Non-Incentive Utility Costs	\$ 5,016
Total Costs	\$ 22,656
Cost-Effectiveness	
Total Resource Cost	3.51
Utility Cost Test	1.88

Program Implementation

This is a prescriptive program with 32 measures offered. Customers must submit a completed rebate form and invoices within 90 days after the installation has been completed. Avista will send incentive checks to the customers or their designees after each project is approved. Rebates will not exceed the total amount on the invoice. Each rebate will be qualified and processed within iEnergy with the current-year calculator. This program is promoted by trade allies, Avista account executives, the Avista website, and Avista marketing efforts. The website is also used to communicate program requirements, incentives, and forms.

TABLE 41: COMMERCIAL/INDUSTRIAL PRESCRIPTIVE FOOD SERVICES PROGRAM MEASURES AND INCENTIVES

	Projected Participation	Per-Unit kWh Savings	Incentive
0.81 to 1.00 GPM Electric Pre-Rinse Sprayer	1 Unit	570 \$	50
3 Pan Electric Steamer	1 Unit	9,066 \$	1,300
4 Pan Electric Steamer	1 Unit	12,123 \$	1,700
5 Pan Electric Steamer	1 Unit	15,013 \$	2,200
6 Pan Electric Steamer	1 Unit	17,906 \$	2,600
10 Pan or Larger Electric Steamer	1 Unit	29,954 \$	3,200
Efficient Combination Oven (>= 16 Pan and <= 20 Pan) Electric	1 Unit	5,528 \$	1,000
Efficient Combination Oven (>= 6 Pan and <= 15 Pan) Electric	1 Unit	5,107 \$	1,000
Efficient Electric Convection Oven, Full Size	1 Unit	977 \$	200
Efficient Hot Food Holding Cabinet, 1/2 Size	1 Unit	1,607 \$	300
Efficient Hot Food Holding Cabinet, Full Size	1 Unit	2,860 \$	575
Efficient Hot Food Holding Cabinet, Double Size	1 Unit	5,238 \$	1,000
Electric Fryer (Large Vat Size)	1 Unit	1,660 \$	175
Standard Efficiency Appliance to HE Electric Griddle, 70% Efficiency or Better	1 Unit	1,636 \$	250
High-Temp Electric Hot Water Dishwasher	1 Unit	4,110 \$	750
Low-Temp Electric Hot Water Dishwasher	1 Unit	3,801 \$	750
Standard Efficiency Appliance to ENERGY STAR Ice Maker, Air-Cooled, Ice Making Head, 200 to 399 lbs./day Capacity	1 Unit	592 \$	80
Standard Efficiency Appliance to ENERGY STAR Ice Maker, Air-Cooled, Ice Making Head, 400 to 599 lbs./day Capacity	1 Unit	804 \$	115
Standard Efficiency Appliance to ENERGY STAR Ice Maker, Air-Cooled, Ice Making Head, 600 to 799 lbs./day Capacity	1 Unit	1,000 \$	160
Standard Efficiency Appliance to ENERGY STAR Ice Maker, Air-Cooled, Ice Making Head, 800 to 999 lbs./day Capacity	1 Unit	173 \$	200
Standard Efficiency Appliance to ENERGY STAR Ice Maker, Air-Cooled, Ice Making Head, under 200 lbs./day Capacity	1 Unit	940 \$	35

Incentive Revisions for 2021

None.

Commercial/Industrial Green Motors Program

General Program Description

The green motors initiative goals are to organize, identify, educate, and promote member motor service centers to commit to energy-saving shop rewind practices, continuous energy improvement, and motor-driven system efficiency.

Green Motors Practices Group (GMPG) launched the green motors initiative in 2008 to work with Northwest regional utilities and other sponsoring organizations to provide incentives, through GMPG's member motor centers, for qualifying motors meeting the organization's standards. Avista joined this effort in offering the program to electric customers who participate in the green rewind program for 15-5,000 HP industrial motors. This program provides an opportunity for Avista customers to participate in a regional effort. Without it, this market is difficult for the company to reach as a local utility. Avista commercial/industrial electric customers are eligible for this program. Incentives are paid as a credit off the invoice at the time of the rewind. A \$1 per horsepower incentive goes to the customer; \$1 per horsepower to the service center.

Program Manager

Greta Zink

TABLE 42: COMMERCIAL/INDUSTRIAL GREEN MOTORS PROGRAM METRICS

Projected Program Metrics		
Overall kWh Savings		40,685
Incentives	\$	4,960
Non-Incentive Utility Costs	\$	3,765
Total Costs	\$	8,725
Cost-Effectiveness		
Total Resource Cost		1.72
Utility Cost Test		1.68

Program Implementation

This program is implemented and administered by the GMPG from inception to rebate payment. There is an administration fee based on the kWh savings for the organization. The incentive is split between the service center and the customer. Customers receive their incentive as an immediate discount off their bill. The energy-efficiency program management team oversees the contract, monitors the program, and qualifies and processes the monthly projects within iEnergy with the current-year calculator. The program is promoted by GMPG, participating service centers, Avista account executives, the Avista website, and Avista marketing efforts. The website is also used to communicate program requirements, incentives, and forms.

Measures and Incentives

The incentive for this program is \$1 per HP of the motor being rewound, up to \$10,000 for 5,000 HP, and is taken directly off the customer bill at the service center. There is also a \$1 per HP fee paid to the service center for participating. There are 34 industrial motor HP possibilities.

TABLE 43: COMMERCIAL/INDUSTRIAL GREEN MOTORS PROGRAM MEASURES AND INCENTIVES

	Projected Participation	Per-Unit kWh Savings	Incentive*
15 HP Industrial	1 Unit	525 \$	30
20 HP Industrial	0 Unit	703 \$	40
25 HP Industrial	0 Unit	893 \$	50
30 HP Industrial	0 Unit	962 \$	60
40 HP Industrial	1 Unit	1,121 \$	80
50 HP Industrial	1 Unit	1,206 \$	100
60 HP Industrial	0 Unit	1,269 \$	120
75 HP Industrial	2 Unit	1,305 \$	150
100 HP Industrial	2 Unit	1,723 \$	200
125 HP Industrial	1 Unit	1,990 \$	250
150 HP Industrial	1 Unit	2,366 \$	300
200 HP Industrial	0 Unit	3,138 \$	400
250 HP Industrial	1 Unit	3,799 \$	500
300 HP Industrial	0 Unit	4,535 \$	600
350 HP Industrial	0 Unit	5,287 \$	700
400 HP Industrial	1 Unit	5,994 \$	800
450 HP Industrial	0 Unit	6,732 \$	900
500 HP Industrial	1 Unit	7,491 \$	1,000
600 HP Industrial	1 Unit	10,137 \$	1,200

*This incentive includes the \$1 per HP fee paid to the service center for participating.

Incentive Changes for 2021

None

Commercial/Industrial Compressed Air Line Isolation Program

General Program Description

Targeting commercial/industrial compressed air customers, this program is the direct installation of a programmable compressed air leak reduction device that generates energy savings by reducing the impact of compressed air leaks during off-hour periods. The cost of the installation will be the customer rebate with no actual money going to the customer.

Program Manager

Greta Zink

TABLE 44: COMMERCIAL/INDUSTRIAL COMPRESSED AIR LINE ISOLATION PROGRAM METRICS

Projected Program Metrics	
Overall kWh Savings	42,000
Incentives	\$ 10,080
Non-Incentive Utility Costs	\$ 2,301
Total Costs	\$ 12,381
Cost-Effectiveness	
Total Resource Cost	6.50
Utility Cost Test	0.81

Program Implementation

The compressed air line isolation program is a direct benefit offered to customers who have a qualified compressed air contractor install a programmable line isolation device on their 15 HP or greater existing rotary screw compressor that is not already shut down daily. The line must have a minimum of two weeks of logging done before the line isolation device is installed and a minimum of two weeks of logging done after installation to show kWh savings. This program is available to all commercial/industrial electric customers with compressed air systems that meet the HP requirement, have rotary screw compressors, and currently do not shut off their systems. Contractors who perform the logging can receive 20¢ per kWh saved, and must submit a completed rebate form, invoice, photos, and logging data with savings report within 90 days after the installation has been completed. Avista will send a check to the contractor after the project is approved. The incentive will not exceed the total amount on the invoice. Each rebate will be qualified and processed within iEnergy with the current-year calculator. This program is promoted by trade allies, Avista account executives, the Avista website, and Avista marketing efforts. The website is also used to communicate program requirements, incentives, and forms.

TABLE 45: COMMERCIAL/INDUSTRIAL COMPRESSED AIR LINE ISOLATION PROGRAM MEASURES AND INCENTIVES

	Projected Participation	Per-Unit kWh Savings	Incentive
Compressed Air	7 Unit	6,000 \$	1,440

The incentive amount for this measure covers the cost of the programmable line isolation device as well as installation by a qualified compressed air contractor.

Commercial/Industrial Fleet Heat Program

General Program Description

Vehicle fleet operators use devices to heat vehicle engine blocks in cold weather to ease starting, reduce internal wear, and minimize fuel consumption due to idle warmup time. Block heaters typically use 110-volt single-phase resistive elements with no on-board controls. Heating operation is dependent solely on either the driver or fleet maintenance staff energizing the heaters as needed. In the Inland Northwest, many fleet operators energize vehicle heaters between October 31 and April 1 when the vehicle is off-shift. This 24-hour-a-day/7-days-a-week operation may incur extra energy consumption and costs in conditions when heating is not needed. There is currently a technology available that adds logic and sensor points to control heater operation. Called a thermocord, it adds the ability to sense and measure block coolant temperature and ambient Outside Air Temperature (OAT). With this information, the heater will only be energized when the OAT drops below a temperature set-point and the engine-mounted thermostat is calling for heat. Any commercial/industrial Avista electric customer installing qualified equipment is eligible for this program.

Program Manager

Greta Zink

TABLE 46: COMMERCIAL/INDUSTRIAL FLEET HEAT PROGRAM METRICS

Projected Program Metrics	
Overall kWh Savings	400,000
Incentives	\$ 26,025
Non-Incentive Utility Costs	\$ 25,948
Total Costs	\$ 51,973
Cost-Effectiveness	
Total Resource Cost	4.66
Utility Cost Test	4.24

Program Implementation

Avista customers fill out a rebate form with the specifics of their fleet vehicles. When that form is submitted, the information is recorded and passed on to the vendor for processing. The customer pays the vendor for the cost of the thermocord and the vendor will deliver the product directly to the customer, who will be responsible for installation. The vendor will notify Avista when the product has been delivered and Avista will perform an installation verification within 30 days of installation. Upon inspection, Avista will reimburse the customer for the costs of the thermocords. This program is promoted by the vendor (Hotstart), Avista account executives, the Avista website, and Avista marketing efforts. The website is also used to communicate program requirements, incentives, and forms.

TABLE 47: COMMERCIAL/INDUSTRIAL FLEET HEAT PROGRAM MEASURES & INCENTIVES

	Projected Participation	Per-Unit kWh Savings	Incentive
Washington Fleet Heat	50 Unit	8,000 \$	521

Incentive Changes for 2021

None

Commercial/Industrial Grocer Program

General Program Description

This program offers incentives to customers who increase the energy efficiency of their refrigerated cases and related grocery equipment. Refrigeration often represents the primary electricity expense in a grocery store or supermarket. The prescriptive rebate approach issues payment to the customer after the measure has been installed. Commercial/industrial customers who use Avista fuel for the measure applied for are eligible.

Program Manager

Greta Zink

TABLE 48: COMMERCIAL/INDUSTRIAL PRESCRIPTIVE GROCER PROGRAM METRICS

Projected Program Metrics	
Overall kWh Savings	57,108
Incentives	\$ 9,193
Non-Incentive Utility Costs	\$ 4,320
Total Costs	\$ 13,513
Cost-Effectiveness	
Total Resource Cost	1.64
Utility Cost Test	2.71

Program Implementation

This is a prescriptive program with 31 measures offered. Customers must submit a completed rebate form and invoice within 90 days after the installation has been completed. Each rebate will be qualified and processed within iEnergy with the current-year calculator. Avista will send incentive checks to customers or their designees after each project is approved. Rebates will not exceed the total amount on the customer invoice. This program is promoted by trade allies, Avista account executives, the Avista website, and Avista marketing efforts. The website is also used to communicate program requirements, incentives, and forms.

TABLE 49: COMMERCIAL/INDUSTRIAL PRESCRIPTIVE GROCER PROGRAM MEASURES AND INCENTIVES

	Projected Participation	Per-Unit kWh Savings	Incentive
On-Demand Commercial Overwrapper	1 Unit	1,588 \$	300
LT Case: T12 to LP LED Inside Lamp	1 Unit	104 \$	10
MT Case: T12 to LP LED Inside Lamp	1 Unit	85 \$	10
MT Case: T8 to LED Inside Lamp	1 Unit	52 \$	10
LT Case: T8 to LP LED Inside Lamp	1 Unit	63 \$	10
T12 to LP LED Outside Lamp	1 Unit	73 \$	7
T8 to LP LED Outside Lamp	1 Unit	44 \$	7
MT Case: 2 T8 to 1 High Power LED Inside Lamp	1 Unit	116 \$	18
MT Case: 2 T12 to 1 High Power LED Inside Lamp	1 Unit	183 \$	18
LT Case: 2 T8 to 1 High Power LED Inside Lamp	1 Unit	142 \$	18
LT Case: 2 T12 to 1 High Power LED Inside Lamp	1 Unit	223 \$	18
MT Case: 2 T8 to 1 High Power LED Outside Lamp	1 Unit	99 \$	10
MT Case: 2 T12 to 1 High Power LED Outside Lamp	1 Unit	156 \$	10
Anti-Sweat Heater Controls – Low Temp	1 Unit	336 \$	40
Anti-Sweat Heater Controls – Med Temp	1 Unit	232 \$	40
Gaskets for Low Temp Reach-in Glass Doors	1 Unit	211 \$	40
Gaskets for Medium Temp Reach-in Glass Doors	1 Unit	118 \$	40
Gaskets for Walk-in Freezer – Main Door	1 Unit	711 \$	65
Gaskets for Walk-in Cooler – Main Door	1 Unit	394 \$	25
Evap Motors: Shaded Pole to ECM in Walk-in – Greater than 23W	1 Unit	1,355 \$	140
Evap Motors: Shaded Pole to ECM in Walk-in – Less than 23W	1 Unit	583 \$	140
Evap Motors: Shaded Pole to ECM in Display Case	1 Unit	685 \$	55
Floating Head Pressure for Single Compressor Systems, LT Condensing Unit	1 Unit	1,971 \$	100
Floating Head Pressure for Single Compressor Systems, LT Remote Condenser	1 Unit	4,012 \$	100

	Projected Participation	Per-Unit kWh Savings	Incentive
Floating Head Pressure for Single Compressor Systems, MT Condensing Unit	1 Unit	965 \$	100
Floating Head Pressure for Single Compressor Systems, MT Remote Condenser	1 Unit	3,194 \$	100
Evaporator Fan ECM Motor Controller – Walk-In – Medium Temp – >23W – 2 or more Motors/Controller	1 Unit	318 \$	35
Evaporator Fan ECM Motor Controller – Walk-In – Low Temp – >23W – 3 or more Motors/Controller	1 Unit	253 \$	35
Evaporator Fan ECM Motor Controller – Walk-In – Low Temp – ≤ 23W – 7 or more Motors/Controller	1 Unit	119 \$	35
Strip Curtains for Convenience Store Walk-in Freezers	1 Unit	20 \$	5
Strip Curtains for Restaurant Walk-in Freezers	1 Unit	100 \$	5
Strip Curtains for Supermarket Walk-in Coolers	1 Unit	80 \$	5
Strip Curtains for Supermarket Walk-in Freezers	1 Unit	340 \$	5
Add Doors to Open Medium Temp Cases	1 Unit	533 \$	107
Cases – Low-Temp Coffin to High-Efficiency Reach-in	1 Unit	1,074 \$	215
Cases – Low-Temp Open to Reach-in	1 Unit	1,674 \$	335
Cases – Low-Temp Reach-in to High Efficiency Reach-in	1 Unit	963 \$	193
Cases – Medium-Temp Open Case to New High-Efficiency Open Case	5 Unit	222 \$	44
Cases – Medium-Temp Open Case to New Reach-In	5 Unit	585 \$	117
Special Doors with Low/No ASH for Low Temperature Reach-in	5 Unit	1,700 \$	340
Advanced Floating Controls: Floating Head and Suction Pressure with Balanced Port Valves	5 Unit	238 \$	48
Advanced Floating Controls: Floating Head and Suction Pressure with Electronic Expansion Valves (EEXVs)	5 Unit	677 \$	135
Advanced Floating Controls: Increase Suction Temperature with Electronic Expansion Valves (EEXVs)	5 Unit	204 \$	41
Efficient Compressors – Low Temperature	5 Unit	798 \$	160
Floating Head Pressure Control – Air Cooled	1 Unit	332 \$	66
Floating Head Pressure Control – Evap Cooled	1 Unit	708 \$	142
Floating Head Pressure Control w/ VFD – Air Cooled	1 Unit	915 \$	183
Multiplex – Compressors – Air-cooled Condenser	1 Unit	1,968 \$	394
Multiplex – Compressors – Evaporative Condenser	1 Unit	1,968 \$	394
Multiplex – Controls – Floating Suction Pressure – Air Cooled Condenser	1 Unit	227 \$	45
Multiplex – Controls – Floating Suction Pressure – Evaporative Condenser	1 Unit	231 \$	46
Multiplex – Efficient/Oversized Air-Cooled Condenser for Multiplex	1 Unit	2,061 \$	412

	Projected Participation	Per-Unit kWh Savings	Incentive
Multiplex – Efficient/Oversized Water-Cooled Condenser for Multiplex	1 Unit	1,550 \$	310
VFD – Condenser Fan Motors – Air Cooled	1 Unit	930 \$	186
VFD – Condenser Fan Motors – Evap Cooled	1 Unit	930 \$	186

Incentive Revisions for 2021

None.

REGIONAL MARKET TRANSFORMATION



REGIONAL MARKET TRANSFORMATION

Avista's local energy-efficiency portfolio seeks to influence customers to purchase cost-effective energy-efficiency products and services through a combination of incentives, awareness, and addressing barriers to adoption. The local energy-efficiency portfolio is intended to be permanent in nature, with the understanding that the specific programs and eligibility criteria will be revised over time in recognition of the changing marketplace, technologies, and economics. Though these efforts can, and to a degree do, create permanent changes in how customers make energy choices, it is generally not feasible for Avista to design local programs so as to influence markets that are often regional or national in scale.

Market transformation is an alternate approach to those markets and are defined interventions occurring for a finite period of time, utilizing strategically selected approaches to influence the energy market (customer, trade allies, manufacturers or combinations thereof) followed by an exit strategy. Successful market transformations permanently change the trajectory of markets in favor of more cost-effective energy-efficiency choices, well beyond the termination of the active intervention.

Electric utilities within the Northwest came together in 1997 to establish and fund a cooperative effort toward sustaining market transformation on a regional basis, with sufficient scale and diversity to deliver a portfolio capable of providing a cost-effective electric-efficiency resource.

That organization, the NEEA, is currently in its sixth funding cycle for 2020-24 program years. Avista has been an active participant and funder of this collaborative effort since its inception. The NEEA's successful residential lighting efforts – and many other ventures – are difficult to replicate. Nevertheless, there is little doubt that there are cost-effective opportunities that can only be achieved, or that are best achieved, through a regionally cooperative effort. Avista has a high degree of confidence that the NEEA portfolio will succeed, and that the company's Washington customers will continue to benefit from these efforts.

For 2021, Avista's Washington portion of the NEEA's electric budget is expected to be approximately \$1,358,000. NEEA funding requirements are incorporated within the budget, but are considered to be supplementary expenditures outside of the scope of the current year's local portfolio. The NEEA portfolio has not been incorporated within either the acquisition projection or the cost-effectiveness of the 2021 local portfolio developed within this plan.

Eastside Market Transformation

As identified in the company's *BCP*, Avista is investigating new market transformation efforts with a specific focus on energy-efficiency measures and solutions that work well in eastern Washington and northern Idaho. This engagement will be complementary to the NEEA's efforts for the broader region. Avista will work with its advisory group as this engagement develops and will look forward to feedback from stakeholders.

Avista has partnered with Idaho Power to form a collaborative aimed at assessing market transformation opportunities that drive greater local impact and create deeper customer engagement. To do this, Avista and Idaho Power will pilot the application of a market transformation approach that focuses on mid- and upstream interventions to remove market barriers and create lasting change.

2020 is focused on pilot planning, and the collaborative will test the viability of this localized market transformation approach by conducting a short-term ductless heat pump pilot that is expected to launch in 2021. The team has created a market transformation strategy, captured pilot logic, identified key market indicators of success, and is working to secure relevant data and engage with manufacturers and distributors to discuss ductless heat pump potential and specific barriers to adoption found in Avista's and Idaho Power's service territories.

A steering committee composed of Avista and Idaho Power staff has been charged with supporting pilot launch, exploring for long-term viability of a localized market transformation approach, ascertaining additional program concepts, and identifying tools to understand a pathway for cost-effective savings.

Avista and Idaho Power will continue to work closely with the NEEA and other regional entities to identify synergies, while simultaneously deploying a more thorough and customized market transformation strategy to its local market – including additional investment and direct coordination with the supply chain.

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PILOT PROJECTS AND NEW PROGRAM OFFERINGS



PILOT PROJECTS AND NEW PROGRAM OFFERINGS

As described in WAC 480-109-100(1)(c), utilities must engage in adaptive management of conservation portfolios to ensure that those portfolios respond appropriately to changing market conditions during a biennium. Adaptive management of a conservation portfolio includes conducting pilot programs of new technologies or new approaches to engage customers in conservation.

Avista is continuously evaluating new technologies and new approaches for attaining energy savings. As the company pursues all cost-effective kWh and therms, piloting new programs allows both Avista and its customers to explore new avenues for obtaining energy savings. For 2021, the company is exploring multiple pilot programs for both residential and commercial/industrial customers. Avista will also offer two new programs: small home weatherization, and early adopter incentives for the Washington Clean Buildings Act. The progress of these new and pilot programs is shared regularly with the advisory group.

The timeline in Table 50 illustrates a current target implementation date for each program. Because there are a number of dependencies that may offset these dates, and because of the ongoing uncertainty due to the COVID-19 pandemic, these dates should be considered tentative. Avista updates these projections regularly and shares these updates with the advisory group.

TABLE 50: PILOT PROJECTS AND NEW PROGRAM OFFERINGS

Program/Offering	2021				2022			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Residential Home Energy Audit Pilot Program	Implementation							
Small Home and Multifamily Residential Weatherization	Implementation							
WA State Clean Buildings Act Early Adopter Incentives	Planning	Implementation						
Active Energy Management Pilot Program	Planning	Implementation						
Energy Use Index Retrofit Pilot	Planning	Implementation						
Smart Buildings Center Tool Lending Pilot	Planning	Implementation						
On-Bill Repayment/Financing Program	Planning			Implementation				
Residential Always-On Load Behavioral Program	Planning			Implementation				
Pilot Programs for HIC and VP (BCP Conditions)	Planning			Implementation				
Low-Income Energy Cost Study and Plan	Planning				Implementation			
Demand Response – Residential and Commercial/Industrial	Implementation							
				Planning				
				Implementation				

Residential Home Energy Audit Pilot Program

The home energy audit pilot program is designed to educate and drive customer engagement around conservation and promote Avista’s energy-efficiency programs and renewable-energy options. Energy savings are captured for direct-installation measures. Additional energy savings have been observed during the pilot as a result of program participants implementing recommended efficiency measures. Some of these measures qualify for Avista rebates, and savings are captured through those programs.

Below is an example of recommendations for one audit customer. Each solution may include several measure options the customer can implement.

FIGURE 7: RESIDENTIAL HOME ENERGY AUDIT PILOT PROGRAM EXAMPLE



Key components of this program are the direct incentives to encourage customer interest, marketing efforts to drive customers to the program, and ongoing work with trade allies to ensure that customer demand can be met. The Avista website also communicates program requirements and highlights opportunities for customers.

Program Implementation

Taking advantage of previous home energy audit program experience and aligning with industry best practices, Avista launched a pilot home energy audit program in 2019. Audits were performed on 61 homes during the pilot period ending early 2020. Approval from both Washington and Idaho to expand to full program status was received late in the first quarter of 2020. As a result, Avista proceeded to implement the program and created an RFP to recruit contract auditors. The in-home audit program was suspended due to the COVID-19 pandemic, however, and the RFP was not issued. Avista plans to proceed with the full program when pandemic-related work restrictions are lifted.

During the suspended period, Avista has responded to requests for audits by offering a virtual audit with follow-up phone discussions on customer data inputs and report recommendations, using the same reporting tool for the normal audit service. Those customers have declined the offer and have opted to wait for an in-person audit. Avista is also testing other technology in an effort to provide a professional guided phone audit that can be performed without setting foot in customers' homes. When available, it too will be offered as an option until the normal service can be resumed.

Program Eligibility

This program is applicable to residential customers who use Avista energy as their primary heating source in Washington and Idaho.

Avista Program Manager

Leona Haley

Key Avista Support Staff

Annette Long, Tom Lienhard, Bryce Eschenbacher, Matt Iris, Colette Bottinelli, and the Avista customer service team

Measures and Incentives

A comprehensive and detailed home energy assessment report that includes specific energy savings measures targeted to specific homes; direct installation and leave-behind materials.

Small Home and Multifamily Residential Weatherization

General Program Description

For 2021, Avista has put forth additional efforts to target customers with significant barriers to entry in energy efficiency-related programs. New for 2021 is a segment of the residential program dedicated to providing weatherization measures for small homes and multifamily dwellings. Avista's programs have historically had a minimum-use requirement for participation that ensured that weatherization programs remained cost-effective. Since bringing back weatherization measures in the last biennium, the company has observed that some customers who request weatherization measures have not been able to participate due to the minimum-use requirements. The small home and multifamily weatherization program does not have such a requirement, and is able to offer shell measures based on unit energy savings from the RTF. Included in this program are also line voltage thermostats, which allow customers to have more control over their heating use. While the thermostats are not considered a weatherization measure, they have been included in the program as an offering.

TABLE 51: SMALL HOME AND MULTIFAMILY WEATHERIZATION PROGRAM METRICS

Projected Program Metrics		
Overall kWh Savings		94,287
Incentives	\$	231,573
Non-Incentive Utility Costs	\$	20,764
Total Costs	\$	252,337
Cost-Effectiveness		
Total Resource Cost		1.82
Utility Cost Test		4.33

Program Eligibility

The small home and multifamily weatherization program is designed to provide an opportunity for customers who have not been able to participate because of minimum annual energy use or dwelling-type restrictions for residential units of five or more. To be eligible, you must be an Avista customer with electric service through Schedule 01.

TABLE 52: SMALL HOME AND MULTIFAMILY WEATHERIZATION PROGRAM MEASURES & INCENTIVES

	Projected Participation		Per-Unit kWh Savings	Incentive	
Attic Insulation R0-R38 HZ2 Zonal	1,500	Sq Ft	1.00	\$	0.75
Attic Insulation R0-R49 HZ2 Zonal	1,500	Sq Ft	1.05	\$	0.75
Wall Insulation R0-R11 HZ2 Zonal	1,500	Sq Ft	2.72	\$	0.75
Floor Insulation R0-R19 HZ2 Zonal	1,500	Sq Ft	1.30	\$	0.75
Floor Insulation R0-R30 HZ2 Zonal	1,500	Sq Ft	1.74	\$	0.75
Insulated Door R2.5-R5 HZ2 Zonal (ENERGY STAR Rated or Insulated R5)	1,500	Sq Ft	2.03	\$	0.60
Low-E Storm Window	1,500	Sq Ft	20.20	\$	4.05
Windows	1,500	Sq Ft	21.65	\$	2.20
Line Voltage Communicating Thermostat	100	Unit	91.50	\$	20.00
Line Voltage Thermostat	100	Unit	76.00	\$	20.00

Washington State Clean Buildings Act Early Adopter Incentives

General Program Description

Washington State House Bill 1257 was codified into law late in 2019 with active rule-making underway throughout 2020. This law requires existing commercial buildings over 50,000 square feet to comply with established performance standards. Compliance requirements for commercial building owners will be phased in starting in 2026, with all with all commercial buildings over 50,000 square feet complying by 2028.

The law also includes provisions for incentives to early adopters whose building’s baseline energy use exceeds the performance standard target by a certain amount. \$75 million is designated to assist building owners in achieving compliance. Early adopter incentives will be administered by utilities.

Energy Use Intensity (EUI) metrics will be used to determine compliance with the performance standard. It has been determined that the Department of Energy’s ENERGY STAR portfolio manager tool will be used to calculate the EUI.

The Department of Commerce is responsible for assuring compliance and determining early adopter incentive fund allocations. They’ve published recommendations for affected building owners to prepare, including benchmarking their buildings through portfolio manager and developing and executing an energy-efficiency plan. Utilities in Washington play a vital role in working cooperatively with the Department of Commerce to execute the new law and to support building owners as they navigate the compliance process. Avista has identified the three key areas of support shown in Table 53.

TABLE 53: WASHINGTON STATE CLEAN BUILDINGS ACT EARLY ADOPTER INCENTIVES

Service	Start Date	Prior Service
Pay Early Adopter Incentive	June 2021	renewable incentives
Portfolio Manager	in place	current program offering since January 2009
Energy-Efficiency Engineering Services	in place	current service offered since Avista began energy-efficiency programs

Avista preparations completed, identified, or underway:

1. actively participate in Department of Commerce rule-making meetings
2. actively participate in HB1257 utility working group meetings
3. provide preliminary information and gain customer feedback at two Spokane Building Owners & Managers Association (BOMA) meetings
4. identify affected buildings in service area
 - initial search with internal GIS tools
 - work with Department of Commerce
5. identify current portfolio manager customers affected by the law
6. determine potential additional program offerings to help customers meet targets
7. create an outreach and communications plan
 - target known affected customers
 - provide broader awareness
8. create payment process and procedures
 - set up proper internal accounting
 - develop reporting tools and process

Avista Program Manager

Leona Haley

Key Avista Support Staff

Tom Lienhard, Bryce Eschenbacher, and Colette Bottinelli

Active Energy Management Pilot Program

General Program Description

The Clean Energy Transformation Act, passed in 2019, places aggressive targets on decarbonization of the electric grid and overall energy-efficiency of the building sector. This legislation will increase the renewable mix on the grid, and could have significant operational impacts on utilities in managing more distributed and variable generation resources. To minimize impacts on customers' energy rates, Avista seeks innovative programs to cost-effectively reduce energy consumption. One potential way to further take advantage of efficiency programs is to implement continuous building monitoring to improve building performance in real time, a concept referred to as Active Energy Management (AEM). The goal is a deeper understanding of how building energy demand may shift or flex based on potential tariffs, incentives, technologies, and building occupant behaviors.

The AEM pilot program will use the communication networks in Avista's eco-district¹, as well as cloud services and data mining algorithms, to capture, process, and disseminate information on ways to improve a building's energy usage to participants in the program. Potential building efficiency actions will be generated based on building data from the Scott Morris Center for Energy Innovation and the Catalyst building, both of which are located inside the eco-district, as well as data from up to 10 participating pilot program buildings located outside of the eco-district. Information to increase energy efficiency will be shared with participating pilot program buildings.

This pilot program will seek to achieve the following objectives:

- ◆ **Support customers in identifying and implementing operational energy-efficiency opportunities and demonstrate the cost-effectiveness of those efficiency savings.** This pilot most closely resembles monitoring-based commissioning or strategic energy management programs currently deployed in other utilities, but with a slightly different approach, which aggregates data from multiple buildings.
- ◆ **Build capacity of Avista account management and energy-efficiency resources.** This model is intended to support the Avista account management and energy-efficiency teams in deepening their understanding of facility operations and energy-efficiency opportunities through hands-on training. An outcome of this pilot will be a deeper understanding of the organizational capability of Avista to support this level of customer engagement.
- ◆ **Share facility data with relevant Avista teams for R&D purposes.** Facility operating information can be used to model new customer programs, such as time-of-use rates or Demand Response (DR) incentives. It can also replace assumed data in models and optimization tools.
- ◆ **Increase customer satisfaction and engagement.** The hands-on components of this program are designed to build trust between Avista energy-efficiency team members and building operators. This relationship will increase satisfaction with Avista and engagement by building owners and operators in other Avista programs.

1) As an example of Avista's commitment to leadership in innovation and clean energy, the company designed, owns, and operates an "eco-district development" in Spokane's University District. Funded by shareholder investment, it illustrates how net-zero and carbon-free technology can be economically sustainable.

As a proof-of-concept pilot, Avista aims to evaluate the program by providing sufficient information to better understand the potential energy savings of implementing AEM, the associated cost per kWh saved compared to alternative approaches to acquiring savings, and the resources needed to adequately and effectively engage with customers. The AEM pilot program will also establish a set of metrics to baseline as well as a set of quarterly reports to illustrate the effectiveness of the program.

Energy Use Index Retrofit Pilot

The energy use index retrofit pilot will encourage customers to use their energy more efficiently. The pilot will utilize a pay-for-performance approach with the goal of achieving 50 percent of the customer's previous energy use. The facility must do at least 25 percent of its square footage and there must be a way to accurately measure at a sub-panel for performance. Limited to five customers, this pilot is modeled on the energy use index new construction pilot recently completed and can play a part in the satisfaction of HB 1257 for buildings smaller than the law currently targets. Buildings of all sizes will be eligible for this pilot.

Smart Buildings Center Tool Lending Pilot

The tool lending pilot will be a two-year program allowing tool lending to Avista customers from a public space in the eco-district. In addition to the company's current stock of energy efficiency-related equipment, the library of tools will include some newer technologies that provide more insight into energy use. Training on the tools – as well as shipping both tools and training materials to customers who are not in the immediate area – will also be included. Work is underway to make this an extension of the NEEC program in order to take advantage of the work that has already been done in the Northwest and limit the cost to Avista while offering a more robust tool set.

On-Bill Repayment/Financing Program

General Program Description

For almost four decades Avista has offered financing options for customers' energy-efficiency projects throughout its service territory, with the last program ending in 2016. While the company no longer offers On-Bill Repayment/Financing (OBR) programs, it has been asked to review offering a new OBR program in 2021 for its Washington residential and small business customers. The request was made as part of the Settlement Stipulation in Avista's 2019 Washington General Rate Case and is shown here:

On-Bill Repayment/Financing Program – Avista will provide a proposal for the Energy Efficiency Advisory Group (EEAG) for on-bill repayment/financing programs for residential and small business customers (Schedules 1, 11, and 101). Avista will incorporate feedback from the EEAG in the final program designs by January 2, 2021. If Avista and the EEAG reach agreement on program terms and design, the company will file the programs with the Commission such that the programs are implemented by September 30, 2021. Based on the outcome of discussions with the EEAG, the company may file small business and residential programs together or individually with the Commission. The company will file a status report with the Commission if agreement is not reached with the EEAG for programs offered to the enumerated customer classes by September 30, 2021. Development costs associated with this program will be recoverable from customers and means of recovery will be addressed in a future GRC.

Avista is currently researching options that will meet these requirements to best serve customers.

TABLE 54: PRIOR LOAN PROGRAM EXPERIENCE

Program	OBR	Duration	Eligible Customers	Lender
Loan in Lieu of Rebate	Yes	state inception – 2016	OR – Residential	Avista
Energy-Efficiency Credit Enhancement	No	2010 – 2014	WA – Residential & C/I	third-party
Easy Pay	Yes	mid to late 1990s	ID & WA – Residential	third-party
Products & Services	Yes	mid to late 1990s	ID & WA – Residential	third-party
Switch Saver	Yes	late 1980s-mid 90s	ID & WA – Residential	third-party

Research and evaluation efforts of OBR program options take advantage of this experience. In addition, guidance and assistance from the EEAG in this process will help determine the OBR program offering. The decision for an OBR program offering for 2021 and beyond is expected to be made by the end of 2020.

The business case for OBR programs is based on supporting the increase of energy-efficiency adoption in the built environment, the reduction of greenhouse gas emissions, and more program opportunities to vulnerable populations by helping to make energy-efficiency choices more affordable. Residential and small business customers are often challenged with the lack of available capital to fund an energy-efficiency retrofit project. Both generally grasp the benefits of energy-efficiency retrofits, but the path to project implementation is not always simple. OBR helps to overcome the up-front cost hurdle and allows the benefits of an energy-efficiency project to occur now and be paid for over time. Through an OBR program, a customer’s energy-efficiency project would typically either be funded by a third-party lender or through a tariff mechanism, with costs paid directly on the customer’s utility bill. Avista would regularly collect monthly payments until all costs are recovered.

The scope of items funded through an OBR program are focused on weatherization and energy-efficient equipment upgrades. Avista is also looking at opportunities through an OBR program to fund customers’ renewable energy projects and other clean energy-related products and services.

Program Implementation

Once the program is established, the key to the program’s success are Avista’s trade allies, who would help promote and deliver the program. Multi-channel Avista marketing efforts will also drive customers to the program. As with any program, success will come from clear communication to trade allies and customers on program details.

Program Eligibility

All residential and small business customers may be eligible for OBR. Historically, eligibility for OBR programs has also included the requirement that the customer is currently using an Avista fuel for heating.

Avista Program Manager

Leona Haley

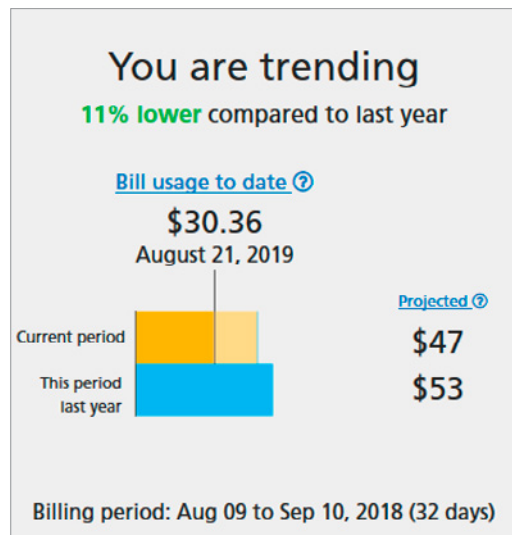
Key Avista Support Staff

program implementation staff, Tom Lienhard, Bryce Eschenbacher, Colette Bottinelli, and Avista’s customer service, finance, and billing teams

Residential Always-On Load Behavioral Program

Avista began installation of Advanced Metering Infrastructure (AMI) meters in its Washington service territory in September 2018. As of October 2020, the project is approximately 95 percent complete. This AMI deployment has presented numerous opportunities to enhance energy conservation opportunities for customers. Customers are currently able to access their energy usage data through a customer portal, myavista.com, which uses AMI data to provide insights for customers to adaptively manage their energy consumption. Through the portal, customers can see a projected monthly bill based on average daily usage. They also have the ability to view five-minute interval data, which enables them to understand their energy usage profile in more detail. Customers are also prompted with tips to further reduce energy consumption. Below is a screenshot of a sample customer portal account summary:

FIGURE 8: RESIDENTIAL ALWAYS-ON LOAD BEHAVIORAL PROGRAM CUSTOMER ACCOUNT PORTAL EXAMPLE



Avista is also finalizing development on functionality that will send notifications to customers when their user-defined budget threshold is projected to be exceeded. Customers will be able to log in at myavista.com or call customer service to define a budget threshold (e.g. \$125). If the projected bill amount is predicted to exceed their chosen amount, Avista will alert the customer, via email or text, thus providing an opportunity to adjust usage to lower their monthly bill. This functionality is planned to be delivered in the fourth quarter of 2020.

Based on what was learned from Avista's previous experience with home energy reports and with the sense device behavioral pilot (2018-19) – which estimated that customers who were engaged with an energy savings application saved approximately 7 percent of baseline usage² – Avista has identified a new opportunity to provide additional customer-facing value from the Washington AMI deployment. The targeted load behavioral program will use AMI-based Non-Intrusive Load Monitoring to identify the loads that are present within a residence. Load information will be shared with customers to better inform them of tailored energy-efficiency solutions. Avista is developing this program in collaboration with Bidgely, WUTC energy-efficiency staff, and E2e, a joint venture between UC Berkeley, the University of Chicago, and MIT. The program is in the early design phase, with program parameter definition the current objective.

An example of an AMI-based load disaggregation is shown in Figure 9.

FIGURE 9: RESIDENTIAL ALWAYS-ON LOAD BEHAVIORAL PROGRAM EXAMPLE



In addition to sharing load information and tailored efficiency solutions, the program will also offer expected savings if recommended changes are implemented. Avista is currently targeting delivery of this program to customers by the fourth quarter of 2021.

The initial target of the program will be reductions in always-on load. This target was selected because, on average, 23 percent of a customer’s bill can be attributed to always-on loads,³ and because calculations related to determining always-on loads are accurate. An additional benefit of targeting always-on loads is that significant improvements can be achieved with low- or no-cost behavioral interventions, such as turning off computers when not in use. The initial program will target customers with the highest third of residential always-on loads. An initial communication to customers will include their personalized information regarding always-on usage, associated costs, tips to reduce the load, and anticipated cost savings. Subsequent communications, sent monthly, will update customers on their progress toward reducing always-on usage. Avista will track and report on observed energy savings as a result of the program.

Biennial Conservation Plan Conditions – Targeted Energy Efficiency Efforts

Avista's 2020-21 *BCP* was approved with the following conditions pertaining to serving highly impacted communities and vulnerable populations:

- ◆ **Item 9a:** Avista must develop a plan and conduct the research necessary to achieve sustained energy cost reductions for low-income households, with advice and review provided by the advisory group. The low-income savings potential must be included in the 2022-23 *BCP* along with a description of how the plan prioritizes energy assistance to low-income households with the highest energy cost and future actions under consideration to improve this prioritization.
- ◆ **Item 9b:** Avista must design and implement pilot programs that serve some highly impacted communities and vulnerable populations. These pilots will be instrumental in identifying data gaps and other barriers to ensure an equitable distribution of energy and non-energy impacts.

While Avista currently offers substantial assistance to low-income households, primarily through partnering with agencies who perform services and distribute funds to customers in need, the program hasn't been evaluated with an eye toward success in reducing customer energy cost. Assessing current achievements from an energy cost perspective is necessary to ensure that customers with the highest energy cost are being prioritized. There is also a need to identify potential gaps in offerings, as well as opportunities to improve current offerings.

For 2021, Avista plans to conduct an assessment of current efforts to address high energy costs in highly impacted communities and vulnerable populations. Avista has defined the following research objectives:

1. Determine a clear working definition of energy cost for Avista customers and set a target threshold for affordable vs. unaffordable.
2. Evaluate what impact existing programs have had on lowering energy costs for low-income households with the highest energy cost.
3. Identify gaps in energy programs to date based on this evaluation. Are there communities in Avista's service territory that have been inadvertently missed? Are people declining services to reduce their energy cost? How and why? Are there any particular characteristics of customers or their housing types that have not participated in Avista programs (e.g. people in multifamily buildings, in manufactured homes, in a particular geographic area)?
4. Prioritize opportunities that emerge and identify 1-3 opportunities to build into pilots and/or changes to existing programs to better meet gaps identified in current programs.
5. Identify low-income savings potential and include in the 2022-23 *BCP*, along with a plan for prioritizing energy assistance to low-income households with the highest energy cost.

Opportunities that emerge as top priorities will be fast-tracked to a pilot design phase with a target launch date of late 2021, in accordance with condition 9b. Other opportunities will be rolled into an energy cost reduction plan in accordance with condition 9a, and included in the 2022-23 *BCP*.

Demand Response – Residential and Commercial/Industrial

Demand Response (DR) has been identified in Avista’s 2020 electric *IRP* as a preferred resource strategy. DR will be an integral part of serving future peak loads by using a variety of cost-effective Direct Load Control (DLC) programs and rate redesigns. Identifying these programs starts by performing an evaluation of DR programs to determine estimated costs and capacity for each. Value is then determined by using these cost and capacity inputs in the *IRP* modeling process.

Avista applies its DR experience that dates back to at least 2001 and contracts with Applied Energy Group to conduct potential assessment studies for DR programs in Washington and Idaho. The fourth DR potential assessment study is currently underway and will be used in the 2021 *IRP*. Modifications in underlying DR measure assumptions are being made to more closely align with the other Pacific Northwest utilities and the NWPCC’s recent efforts for its 2021 power plan. As a result, changes in selected DR programs are expected.

Included in both the last and current DR potential assessment studies are the 17 DR programs listed below. The 2020 *IRP* selected pricing programs and the DLC smart thermostats heating program as cost effective to meet a capacity shortfall in 2026. Once the 2021 *IRP* evaluation is complete, a DR strategy to design and implement cost-effective programs will be developed. For complete DR program descriptions, please see Avista’s 2020 electric *IRP*.

TABLE 55: DEMAND RESPONSE PROGRAM OPTIONS BY MARKET SEGMENT

Demand Response Program		Participating Market Segment				Season Impacted	
Program Type	Program Option	Residential	Small Com./Ind.	Large Com./Ind.	Extra Large Com./Ind.	Winter	Summer
Curtable/ Controllable Demand Response	DLC Central AC	X	X				X
	DLC Smart Thermostat – Cooling	X	X				X
	DLC Smart Thermostat – Heating	X	X			X	
	DLC Water Heating	X	X			X	X
	DLC Vehicle Charging	X				X	X
	DLC Smart Appliances	X	X			X	X
	Third-Party Contracts		X	X	X	X	X
	Thermal Energy Storage		X	X	X		X
	Battery Energy Storage	X	X	X	X	X	X
	Behavioral	X				X	X
	Ancillary Services	X	X	X	X	X	X
	Large Industrial Curtailment					X	X
	Standby Generation			X	X	X	X
Rates	Time-of-Use Opt-In	X	X	X	X	X	X
	Time-of-Use Opt-Out	X	X	X	X	X	X
	Variable Peak Pricing Rates	X	X	X	X	X	X
	Real-Time Pricing			X	X	X	X

AVISTA-SPECIFIC METHODOLOGIES AND ANALYTICAL PRACTICES



AVISTA-SPECIFIC METHODOLOGIES AND ANALYTICAL PRACTICES

Over time, Avista has evolved approaches to calculating the various metrics applied within the planning effort to meet the needs of its portfolio and regulation. Care has been taken to ensure that these approaches are consistent with the intent of the NWPCC's methodologies for the analysis of energy efficiency. Avista completes an *Annual Conservation Report (ACR)* in the spring of each year, based on a retrospective review of actual results from the prior year. This process includes the calculation of each of the four basic standard practice tests (summarized in Appendix B – Summarization of Cost Effectiveness Methodology). Since the TRC and UCT tests are the basis for optimizing the portfolio (for reasons previously explained), the explanation of Avista's methodologies, for planning purposes, focus on these two tests.

The calculation of portfolio cost-effectiveness excludes costs that are unrelated to the local energy-efficiency portfolio in that particular year. Those excluded costs, termed "supplemental" costs in Avista's calculations, include:

- ◆ the funding associated with regional programs (NEEA)
- ◆ the cost to perform CPA studies
- ◆ costs related to EM&V

Individual measures are aggregated into programs composed of similar measures. At the program level, non-incentive portfolio costs are allocated based on direct assignment to the extent possible, and costs are allocated based on a program's share of portfolio-avoided cost-value acquisition when direct assignment is not possible. The result is a program-level TRC and UCT cost-effectiveness analysis that incorporates all of these allocated costs.

Since the costs and benefits associated with the adoption of a measure may accrue over time, it is necessary to establish a discount rate.¹ Future costs and benefits are discounted to the present value and compared for cost-effectiveness purposes. Generally, energy and non-energy benefits accrue over the measure life and costs are incurred up-front.

The calculation of the TRC test benefits, to be consistent with NWPCC methodologies, includes an assessment of non-energy impacts (both benefits and costs) accruing to the customer. These impacts most frequently include maintenance cost, water, and sewer savings, and – in the case of the low-income program – inclusion of the cost of providing base-case end-use equipment as part of a fully funded measure as well as the value of health and human safety funding (on a dollar-for-dollar basis). For 2021, Avista has also included non-energy impacts sourced from outside the Northwest in an effort to have a more complete portfolio of benefits received by customers.

For the purposes of calculating TRC cost-effectiveness, any funding obtained from outside of Avista's customer population (generally through tax credits or state- or federally administered programs) are not considered to be TRC costs. These are regarded as imported funds and, from the perspective of Avista's customer population appropriate to the TRC test, are not costs borne by Avista customers. Co-funding of efficiency measures from state and federal programs for low-income programs applicable to a home that is also being treated with Avista funding is not incorporated within the program cost. This is consistent with permitting tax credits to offset customer incremental cost as described within the *California Standard Practice Manual* description of the TRC test.

Avista's energy-efficiency portfolios are built from the bottom up, starting with the identification of prospective efficiency measures based on the most recent CPA and augmented with other specific opportunities as necessary. Since potential assessments are only performed every two years and the inputs are locked many months in advance of filing the *IRP* itself, there is considerable time for movement in these inputs and the development of other opportunities.

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COMPANY INITIATIVES, STUDIES, AND OTHER ITEMS



COMPANY INITIATIVES, STUDIES, AND OTHER ITEMS

iEnergy DSM Enterprise Software Integration

Avista is continuing its integration of the iEnergy software platform for its energy-efficiency programs. One component of iEnergy, the DSM central module, will be used internally to process and track energy-efficiency projects as well as provide analytics and dashboards. In 2019, Avista completed the integration for its commercial/industrial programs and will be implementing the residential and low-income segments into the enterprise software during 2021.

In addition, the trade ally module will be used to improve communications with regional vendors and installers. This program is a purpose-built data-management, analytics, and customer-engagement platform that assists utilities in managing their business processes. It includes an end-to-end management module that tracks and reports energy-efficiency savings and expenses along with providing timely reporting for both internal and external stakeholders.

Non-Energy Impacts

For 2021, Avista's energy-efficiency team has made additional efforts toward identifying and including NEIs into its residential and commercial/industrial portfolios. NEIs are additional benefits that participants gain from installing energy-efficiency measures. The benefit of an NEI is in addition to energy savings, and can include other real and tangible impacts to resources, quality of life, health, and other economic factors. Increased comfort, improved air quality, water quality, water savings, and other improvements are common examples of NEIs. The acceptability of each type of NEI varies between jurisdictions or region; the widespread identification of NEIs has been a challenge for utilities in general, however.

While basic conservation efforts consider the effect energy-efficiency measures have on the utilities system by way of deferring capital investments, NEIs provide an opportunity to assign value that is received by the customer. As such, NEI values are included in the TRC cost-effectiveness test as a benefit to the customer. Note that since the utility doesn't receive a direct system benefit, NEIs are excluded from the UCT.

A uniformed approach to valuing NEIs has historically proven to be difficult. As new benefits are identified, the quantification of those benefits is not always possible. Moreover, acceptance of specific NEIs varies between regions where there are differing levels of the prevalence of issues mitigated by the measures installed.

While this has been the situation for Avista customers, new efforts have identified the desire to have a well-defined set of NEIs. In Avista's *BCP* conditions, section 10a – 10c addresses NEIs with the following statements:

- a. During this biennium, Avista must demonstrate progress toward identifying, researching, and developing a plan to properly value non-energy impacts that have not previously been quantified. The non-energy impacts considered must include the costs and risks of both long- and short-term public health benefits, environmental benefits, energy security, and other applicable non-energy impacts. These impacts and risks must be included in the 2022-23 *BCP*.
- b. Avista must identify the discrete NEIs and the monetized value used in cost-effectiveness testing for each electric conservation program. This must be provided in a detailed format with a summary page and subsequent supporting spreadsheets, in native format with formulas intact, providing further detail for each program and line item shown in the summary sheet in annual plans and reports.
- c. To the extent practicable, Avista must begin to identify the distribution of energy and non-energy benefits in annual plans and reports. This reporting must use currently quantified NEIs, as well as values and estimates of additional impacts as they become available.

Avista's response to these requests is two-fold. First, the company has made additional efforts to identify existing NEIs applicable to its programs. The result of that work is the quantification of NEIs for the 2021 *ACP*. Second, Avista has committed to a joint engagement to identify new NEIs in the Washington jurisdiction.

For the interim period of 2021, Avista has incorporated NEIs based on two main studies that attempt to quantify impacts. For residential customers, "The Testimony by Lisa Skumatz (of SERA) to the New York Public Service Commission: Non Energy Benefits: Values and Treatment in Cost-Effectiveness Testing – Single and Multifamily Whole-Home Energy Efficiency Programs" provided data for identifying NEIs as a multiplier to customer bill savings. Dr. Skumatz, who at the time had more than 35 years of experience in energy-efficiency, provided testimony on behalf of E4TheFuture and provided estimation of the NEIs on specific technologies. The NEI values include benefits received by customers including, but not limited to:

1. avoidance of low-income subsidies
2. economic factors
3. water/wastewater infrastructure
4. water and other bills
5. equipment operations
6. comfort and noise
7. health and safety

Dr. Skumatz's study also factored in the NEIs received by customers by the technology installed. Table 56 identifies the technology type along with the non-energy benefit multiplier on energy savings.

TABLE 56: NON-ENERGY IMPACTS RECOMMENDED NEB VALUES AS MULTIPLIERS ON BILL SAVINGS

Measure	NEB Multiplier on Energy Savings	Measure	NEB Multiplier on Bill Savings
Air Sealing	47%	Insulation	116%
Appliances	29-65% *	Service to Heating or Cooling System	4%
Cooling Systems	27%	Low-Flow Showerhead	1%
Duct Sealing	4%	AC System Sizing	4%
Heating & Cooling System	24%	Programmable Thermostats	12%
Heating & Hot Water System	7%	Window	6%
Heating System	231%	Weatherization	114%
Hot Water System	8%		

*Estimates of appliance non-energy benefits range vary by appliance but range from 29% for refrigerators to 65% for dishwashers.
Adapted from *NMR Massachusetts Cross-cutting Study*; all allocations on a savings basis are based on Massachusetts value for savings measures.

Dr. Skumatz noted that these multipliers are applied to bill savings and can be applied to both electric and natural gas measures.

For commercial/industrial NEIs, Avista referred to the 2012 *Massachusetts Program Administrators – Final Report – Commercial and Industrial Non-Energy Impacts Study* to value NEIs for 2021. The following tables from that report provide NEIs on an NEI-per-kWh basis for electric (Table 57) and NEI per therm for natural gas (Table 58) measures and identifies those impacts.

TABLE 57: SUMMARY OF AVERAGE ANNUAL NEI ESTIMATES – ELECTRIC

Electric Measures	N	Average Annual NEI per Measure*	NEI/kWh	90% CI Low	90% CI High	Stat Sig
Prescriptive						
HVAC	27	\$ 7,687	\$ 0.0966	\$ 0.0544	\$ 0.1389	Yes
Lighting	163	\$ 1,636	\$ 0.0274	\$ 0.0176	\$ 0.0372	Yes
Motors and Drives	50	\$ 541	\$ 0.0043	\$ (0.0005)	\$ 0.0091	No
Refrigeration	30	\$ 5	\$ 0.0013	\$ (0.0002)	\$ 0.0028	No
Other	32	\$ 28	\$ 0.0039	\$ (0.0002)	\$ 0.0079	No
Total	302	\$ 1,439	\$ 0.0274	\$ 0.0188	\$ 0.0360	Yes
Custom						
CHP/Cogen	6	\$ (12,949)	\$ (0.0147)	\$ (0.0247)	\$ (0.0047)	Yes
HVAC	20	\$ 5,584	\$ 0.0240	\$ 0.0003	\$ 0.0477	Yes
Lighting	89	\$ 5,686	\$ 0.0594	\$ 0.0318	\$ 0.0871	Yes
Motors and Drives	42	\$ 1,433	\$ 0.0152	\$ (0.0005)	\$ 0.0309	No
Refrigeration	90	\$ 1,611	\$ 0.0474	\$ 0.0244	\$ 0.0705	Yes
Other	29	\$ 15,937	\$ 0.0562	\$ 0.0038	\$ 0.1087	Yes
Total	276	\$ 4,454	\$ 0.0368	\$ 0.0231	\$ 0.0506	Yes

*Equals (NEI/kWh) x (Average Annual kWh)

TABLE 58: SUMMARY OF AVERAGE ANNUAL NEI ESTIMATES – NATURAL GAS

Natural Gas Measures	N	Average Annual NEI per Measure*	NEI/Therm	90% CI Low	905 CI High	Stat Sig
Prescriptive						
Building Envelope	2	\$ 1,551	\$ 3.6151	\$ 2.6418	\$ 4.5885	Yes
HVAC	50	\$ 755	\$ 1.3464	\$ 0.5433	\$ 2.1495	Yes
Water Heater	47	\$ 129	\$ 0.2604	\$ (0.0012)	\$ 0.5221	No
Total	99	\$ 439	\$ 0.8344	\$ 0.3634	\$ 1.3053	Yes
Custom						
Building Envelope	46	\$ 922	\$ 0.4774	\$ 0.1258	\$ 0.8290	Yes
HVAC	41	\$ 2,798	\$ 0.2291	\$ 0.1522	\$ 0.3060	Yes
Water Heater	23	\$ 803	\$ 0.1824	\$ (0.4953)	\$ 0.8601	No
Other	2	\$ 1,905	\$ 0.5253	\$ (5.6577)	\$ 6.7083	No
Total	112	\$ 1,940	\$ 0.2473	\$ 0.1490	\$ 0.3455	Yes

*Equals (NEI/Therm) x (Average Annual Therms)

To integrate the commercial/industrial values into Avista’s portfolio, Avista included NEIs for HVAC, motors and drives, and building envelope programs at the stated NEI/kWh and NEI/therm values.

While these NEIs provide a more realistic picture of the benefits received by customers, it does come with some limitations. Most of the information provided by these studies is aggregated and includes several impact types. For instance, while residential HVAC has a 231 percent multiplier, the data necessary to disaggregate the various NEI types that make up that value is not readily available. In addition, the NEIs identified may not be generally accepted in the Northwest at their stated impacts. Avista recognizes that as it moves forward with addressing NEIs in the future, the focus should be on NEIs specific to the region and its customers.

Outside of these studies, Avista has also included NEIs sourced from the RTF, which has historically provided savings on a NEI/kWh value. In addition, Avista includes an NEI for low-income programs to provide provisions for customers who have equipment facing impending failure. Avista has also included NEIs from its wood smoke PM2.5 study done jointly with other Washington-based IOUs.

As a response to Avista’s BCP conditions section 10, the energy-efficiency team will be making substantial efforts for identifying new NEIs for its customers. Given the impacts of CETA and providing equitable benefits to customers, the NEI information will be a key consideration for what is offered and how. Customers in highly impacted communities and vulnerable populations are the highest at-risk groups, and the NEI efforts will provide a direct benefit to the development of programs to serve these customers.

For 2021, Avista will perform another joint effort with other Washington-based IOUs to address the NEI requirements in section 10 of the BCP conditions. The IOUs agree that a joint approach is appropriate as it will provide the most comprehensive option for understanding impacts, identifying needs, and providing NEIs that have a tangible and lasting effect.

CONCLUSION AND CONTACT INFORMATION



CONCLUSION AND CONTACT INFORMATION

This 2021 ACP represents program efforts by Avista in order to achieve its expected eligible acquisition savings for the second year of the 2020-21 biennium. In addition, the plan is designed to identify the various activities that promote and support energy efficiency for the transition to clean energy, reducing energy costs for customers, and deferring investments in Avista's energy system. For additional supporting information please see the corresponding appendices:

Appendix A: Evaluation, Measurement, and Verification Plan

Appendix B: Summarization of Cost-Effectiveness Methodology

Appendix C: Schedule 90 Washington

Appendix D: Program Summary

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GLOSSARY OF TERMS



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advisory group: Avista's group of external stakeholders who comment about the company's energy-efficiency activities.

Active Energy Management (AEM): The implementation of continuous building monitoring to improve building performance in real time.

adjusted market baseline: Based on the RTF guidelines, represents a measurement between the energy efficient measure and the standard efficiency case that is characterized by current market practice or the minimum requirements of applicable codes or standards, whichever is more efficient. When applying an adjusted market baseline, no net-to-gross factor would be applied since the resultant unit energy savings amount would represent the applicable savings to the grid.

Advanced Metering Infrastructure (AMI): Systems that measure, collect and analyze energy usage, from advanced devices such as electricity meters, natural gas meters and/or water meters through various communication media on request or on a predetermined schedule.

Air-Conditioning, Heating, and Refrigeration Institute (AHRI): The trade association representing manufacturers of HVACR and water heating equipment within the global industry.

aMW: The amount of energy that would be generated by one megawatt of capacity operating continuously for one full year. Equals 8,760 MWhs of energy.

American National Standards Institute (ANSI): A source for information on national, regional, and international standards and conformity assessment issues.

American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE): Devoted to the advancement of indoor-environment-control technology in the heating, ventilation, and air conditioning (HVAC) industry, ASHRAE's mission is "to advance technology to serve humanity and promote a sustainable world."

Annual Conservation Plan (ACP): An Avista-prepared resource document that outlines Avista's conservation offerings, its approach to energy efficiency, and details on verifying and reporting savings.

Annual Conservation Report (ACR): An Avista-prepared resource document that summarizes its annual energy efficiency achievements.

Annual Fuel Utilization Efficiency (AFUE): A measurement on how efficient an appliance is in converting the energy in its fuel to heat over the course of a typical year.

Applied Energy Group (AEG): A consulting service that provides a wide range of energy efficiency and demand response-related management services to assist clients in designing and implementing programs for their customers.

avoided cost: An investment guideline, describing the value of conservation and generation resource investments in terms of the cost of more expensive resources that would otherwise have to be acquired.

baseline: Conditions, including energy consumption, which would have occurred without implementation of the subject energy-efficiency activity. Baseline conditions are sometimes referred to as “business-as-usual” conditions.

baseline efficiency: The energy use of the baseline equipment, process, or practice that is being replaced by a more efficient approach to providing the same energy service. It is used to determine the energy savings obtained by the more efficient approach.

baseline period: The period of time selected as representative of facility operations before the energy-efficiency activity takes place.

Biennial Conservation Plan (BCP): An Avista-prepared resource document that outlines Avista’s conservation offerings, its approach to energy efficiency, and details on verifying and reporting savings for a two-year period.

Building Owners & Managers Association (BOMA): An international federation of U.S. local associations and global affiliates that represents the owners, managers, service providers, and other property professionals of all commercial building types.

Business Partner Program (BPP): An outreach effort designed to raise awareness of utility programs and services that can assist rural small business customers in managing their energy bills.

British Thermal Unit (BTU): The amount of heat energy necessary to raise the temperature of one pound of water one degree Fahrenheit (3,413 BTUs are equal to one kilowatt-hour).

busbar: The physical electrical connection between the generator and transmission system. Typically load on the system is measured at busbar.

capacity: The maximum power that a machine or system can produce or carry under specified conditions. The capacity of generating equipment is generally expressed in kilowatts or megawatts. In terms of transmission lines, capacity refers to the maximum load a line is capable of carrying under specified conditions.

Clean Energy Implementation Plan (CEIP): Introduced within a subsection of the Clean Energy Transformation Act, a CEIP must describe the utility’s plan for making progress toward meeting the clean energy transformation standards while it continues to pursue all cost-effective, reliable, and feasible conservation and efficiency resources.

Clean Energy Transformation Act (CETA): Signed into law in 2019, the Clean Energy Transformation Act requires electric utilities to supply their Washington customers with 100 percent renewable or non-emitting electricity with no provision for offsets.

Community Action Partnership (CAP): General term for Community Action Programs, Community Action Agencies, and Community Action Centers that provide services such as low-income weatherization through federal and state agencies and other funding sources (e.g. utility constitutions).

Community Energy Efficiency Program (CEEP): Created by the Washington State Legislature in 2009, CEEP encourages homeowners and small businesses across the state to make energy-efficiency retrofits and upgrades.

conservation: According to the Northwest Power Act, any reduction in electric power consumption as a result of increases in the efficiency of energy use, production or distribution.

Conservation Potential Assessment (CPA): An analysis of the amount of conservation available in a defined area. Provides savings amounts associated with energy-efficiency measures to input into the Company's Integrated Resource Planning (IRP) process.

cost-effective: According to the Northwest Power Act, a cost-effective measure or resource must be forecast to be reliable and available within the time it is needed, and to meet or reduce electrical power demand of consumers at an estimated incremental system cost no greater than that of the least-costly, similarly reliable and available alternative or combination of alternatives.

curtailment: An externally imposed reduction of energy consumption due to a shortage of resources.

customer/customer classes: A category(ies) of customer(s) defined by provisions found in tariff(s) published by the entity providing service, approved by the PUC. Examples of customer classes are residential, commercial, industrial, agricultural, local distribution company, core and non-core.

decoupling: In conventional utility regulation, utilities make money based on how much energy they sell. A utility's rates are set based largely on an estimation of costs of providing service over a certain set time period, with an allowed profit margin, divided by a forecasted amount of unit sales over the same time period. If the actual sales turn out to be as forecasted, the utility will recover all of its fixed costs and its set profit margin. If the actual sales exceed the forecast, the utility will earn extra profit.

deemed savings: Primarily referenced as unit energy savings, an estimate of an energy savings for a single unit of an installed energy-efficiency measure that (a) has been developed from data sources and analytical methods that are widely considered acceptable for the measure and purpose, and (b) is applicable to the situation being evaluated.

demand: The load that is drawn from the source of supply over a specified interval of time (in kilowatts, kilovolt-amperes, or amperes). Also, the rate at which natural gas is delivered to or by a system, part of a system or piece of equipment, expressed in cubic feet, therms, BTUs or multiples thereof, for a designated period of time such as during a 24-hour day.

Demand Response (DR): A voluntary and temporary change in consumers' use of electricity when the power system is stressed.

Demand Side Management (DSM): The process of helping customers use energy more efficiently. Used interchangeably with Energy Efficiency and Conservation although conservation technically means using less while DSM and energy efficiency means using less while still having the same useful output of function.

Direct Load Control (DLC): The means by which a utility can signal a customer's appliance to stop operations in order to reduce the demand for electricity. Such rationing generally involves a financial incentive for the affected customer.

discount rate: The rate used in a formula to convert future costs or benefits to their present value.

distribution: The transfer of electricity from the transmission network to the consumer. Distribution systems generally include the equipment to transfer power from the substation to the customer's meter.

Distributed Generation (DG): An approach that employs a variety of small-scale technologies to both produce and store electricity close to the end users of power.

Effective Useful Life (EUL): Sometimes referred to as measure life and often used to describe persistence. EUL is an estimate of the duration of savings from a measure.

end-use: A term referring to the final use of energy; it often refers to the specific energy services (for example, space heating), or the type of energy-consuming equipment (for example, motors).

energy assistance advisory group: An ongoing energy assistance program advisory group to monitor and explore ways to improve Avista's Low-Income Rate Assistance Program (LIRAP).

Energy Efficiency Advisory Group (EEAG): A group which advises investor-owned utilities on the development of integrated resource plans and conservation programs.

energy-efficiency measure: Refers to either an individual project conducted or technology implemented to reduce the consumption of energy at the same or an improved level of service. Often referred to as simply a "measure."

Energy Independence Act (EIA): Requires electric utilities serving at least 25,000 retail customers to use renewable energy and energy conservation.

Energy Use Intensity (EUI): A metric – energy per square foot per year – that expresses a building's energy use as a function of its size or other characteristics.

evaluation: The performance of a wide range of assessment studies and activities aimed at determining the effects of a program (and/or portfolio) and understanding or documenting program performance, program or program-related markets and market operations, program-induced changes in energy-efficiency markets, levels of demand or energy savings, or program cost-effectiveness. Market assessment, monitoring and evaluation, and verification are aspects of evaluation.

Evaluation, Measurement, and Verification (EM&V): Catch-all term for evaluation activities at the measure, project, program and/or portfolio level; can include impact, process, market and/or planning activities. EM&V is distinguishable from Measurement and Verification (M&V) defined later.

ex-ante savings estimate: Forecasted savings value used for program planning or savings estimates for a measure; Latin for “beforehand.”

ex-post evaluated estimated savings: Savings estimates reported by an independent, third-party evaluator after the energy impact evaluation has been completed. If only the term “ex-post savings” is used, it will be assumed that it is referring to the ex-post evaluation estimate, the most common usage; from Latin for “from something done afterward.”

external evaluators (AKA third party evaluators): Independent professional efficiency person or entity retained to conduct EM&V activities. Consideration will be made for those who are Certified Measurement and Verification Professionals (CMVPs) through the Association of Energy Engineers (AEE) and the Efficiency Evaluation Organization (EVO).

free rider: A common term in the energy-efficiency industry meaning a program participant who would have installed the efficient product or changed a behavior regardless of any program incentive or education received. Free riders can be total, partial, or deferred.

generation: The act or process of producing electricity from other forms of energy.

Green Motors Practices Group (GMPG): A nonprofit corporation governed by electric motor service center executives and advisors whose goal is the continual improvement of the electric motor repair industry.

gross savings: The change in energy consumption and/or demand that results from energy-efficiency programs, codes and standards, and naturally-occurring adoption which have a long-lasting savings effect, regardless of why they were enacted.

heating degree days: A measure of the amount of heat needed in a building over a fixed period of time, usually a year. Heating degree days per day are calculated by subtracting from a fixed temperature the average temperature over the day. Historically, the fixed temperature has been set at 65 degrees Fahrenheit, the outdoor temperature below which heat was typically needed. As an example, a day with an average temperature of 45 degrees Fahrenheit would have 20 heating degree days, assuming a base of 65 degrees Fahrenheit.

Heating Seasonal Performance Factor (HSPF): Defined as the ratio of heat output over the heating season to the amount of electricity used in air source or ductless heat pump equipment.

Heating, Ventilation, and Air Conditioning (HVAC): Sometimes referred to as climate control, the HVAC is particularly important in the design of medium to large industrial and office buildings where humidity and temperature must all be closely regulated whilst maintaining safe and healthy conditions within.

impact evaluation: Determination of the program-specific, directly or indirectly induced changes (e.g., energy and/or demand usage) attributable to an energy-efficiency program.

implementer: Avista employees whose responsibilities are directly related to operations and administration of energy-efficiency programs and activities, and who may have energy savings targets as part of their employee goals or incentives.

incremental cost: The difference between the cost of baseline equipment or services and the cost of alternative energy-efficient equipment or services.

Integrated Resource Plan (IRP): An IRP is a comprehensive evaluation of future electric or natural gas resource plans. The IRP must evaluate the full range of resource alternatives to provide adequate and reliable service to a customer's needs at the lowest possible risk-adjusted system cost. These plans are filed with the state public utility commissions on a periodic basis.

Integrated Resource Plan Technical Advisory Committee (IRP TAC): Advisory committee for the IRP process that includes internal and external stakeholders.

International Performance Measurement and Verification Protocol (IPMVP): A guidance document with a framework and definitions describing the four M&V approaches; a product of the Energy Valuation Organization (www.evo-world.org).

Investor-Owned Utility (IOU): A utility that is organized under state law as a corporation to provide electric power service and earn a profit for its stockholders.

Kilowatt (kW): The electrical unit of power that equals 1,000 watts.

Kilowatt-hour (kWh): A basic unit of electrical energy that equals one kilowatt of power applied for one hour.

Kilo British Thermal Unit (kBTU): BTU, which stands for British thermal units, measures heat energy. Each BTU equals the amount of heat needed to raise one pound of water one degree Fahrenheit; the prefix kilo- stands for 1,000, which means that a kBTU equals 1,000 BTU.

Levelized Cost of Energy (LCOE): The present value of a resource's cost (including capital, financing, and operating costs) converted into a stream of equal annual payments. This stream of payments can be converted to a unit cost of energy by dividing them by the number of kilowatt-hours produced or saved by the resource in associated years. By leveling costs, resources with different lifetimes and generating capabilities can be compared.

line losses: The amount of electricity lost or assumed lost when transmitting over transmission or distribution lines. This is the difference between the quantity of electricity generated and the quantity delivered at some point in the electric system.

Low-Income Home Energy Assistance Program (LIHEAP): Federal energy assistance program, available to qualifying households based on income, usually distributed by community action agencies or partnerships.

Low-Income Rate Assistance Program (LIRAP): LIRAP provides funding (collected from Avista's tariff rider) to CAP agencies for distribution to Avista customers who are least able to afford their utility bill.

market effect evaluation: An evaluation of the change in the structure or functioning of a market, or the behavior of participants in a market, that results from one or more program efforts. Typically, the resultant market or behavior change leads to an increase in the adoption of energy-efficient products, services, or practices.

measure (also Energy Efficiency Measure or "EEM"): Installation of a single piece of equipment, subsystem or system, or single modification of equipment, subsystem, system, or operation at an end-use energy consumer facility, for the purpose of reducing energy and/or demand (and, hence, energy and/or demand costs) at a comparable level of service.

measure life: See Effective Useful Life (EUL).

Measurement and Verification (M&V): A subset of program impact evaluation that is associated with the documentation of energy savings at individual sites or projects, using one or more methods that can involve measurements, engineering calculations, statistical analyses, and/or computer simulation modeling. M&V approaches are defined in the International Performance Measurement and Verification Protocol (IPMVP available at www.evo-world.org).

Megawatt (MW): The electrical unit of power that equals one million watts or one thousand kilowatts.

Megawatt-hour (MWh): A basic unit of electrical energy that equals one megawatt of power applied for one hour.

net savings: The change in energy consumption and/or demand that is attributable to an energy-efficiency program. This change in energy use and/or demand may include, implicitly or explicitly, consideration of factors such as free drivers, non-net participants (free riders), participant and non-participant spillover, and induced market effects. These factors may be considered in how a baseline is defined and/or in adjustments to gross savings values.

Non-Energy Benefit/Non-Energy Impact (NEB/NEI): The quantifiable non-energy impacts associated with program implementation or participation; also referred to as non-energy benefits (NEBs) or co-benefits. Examples of NEIs include water savings, non-energy consumables and other quantifiable effects. The value is most often positive, but may also be negative (e.g., the cost of additional maintenance associated with a sophisticated, energy-efficient control system).

Northwest Energy Efficiency Alliance (NEEA): A nonprofit organization that works to accelerate energy efficiency in the Pacific Northwest through the adoption of energy-efficient products, services, and practices.

Northwest Power and Conservation Council (NWPPCC): An organization that develops and maintains both a regional power plan and a fish and wildlife program to balance the environment and energy needs of the Pacific Northwest.

Outside Air Temperature (OAT): Refers to the temperature of the air around an object, but unaffected by the object.

On-Bill Repayment/Financing (OBR): A financing option in which a utility or private lender supplies capital to a customer to fund energy efficiency, renewable energy, or other generation projects. It's repaid through regular payments on an existing utility bill.

portfolio: Collection of all programs conducted by an organization. In the case of Avista, portfolio includes electric and natural gas programs in all customer segments. Portfolio can also be used to refer to a collection of similar programs addressing the market. In this sense of the definition, Avista has an electric portfolio and a natural gas portfolio with programs addressing the various customer segments.

prescriptive: A prescriptive program is a standard offer for incentives for the installation of an energy-efficiency measure. Prescriptive programs are generally applied when the measures are employed in relatively similar applications.

process evaluation: A systematic assessment of an energy-efficiency program or program component for the purposes of documenting operations at the time of the examination, and identifying and recommending improvements to increase the program's efficiency or effectiveness for acquiring energy resources while maintaining high levels of participant satisfaction.

program: An activity, strategy or course of action undertaken by an implementer. Each program is defined by a unique combination of program strategy, market segment, marketing approach and energy-efficiency measure(s) included. Examples are a program to install energy-efficient lighting in commercial buildings and residential weatherization programs.

project: An activity or course of action involving one or multiple energy-efficiency measures at a single facility or site.

Regional Technical Forum of the Northwest Power and Conservation Council (RTF): A technical advisory committee to the Northwest Power and Conservation Council established in 1999 to develop standards to verify and evaluate energy-efficiency savings.

realization rate: Ratio of ex-ante reported savings to ex-post evaluated estimated savings. When realization rates are reported, they are labeled to indicate whether they refer to comparisons of 1) ex-ante gross reported savings to ex-post gross evaluated savings, or 2) ex-ante net reported savings to ex-post net evaluated savings.

reliability: When used in energy-efficiency evaluation, the quality of a measurement process that would produce similar results on (a) repeated observations of the same condition or event, or (b) multiple observations of the same condition or event by different observers. Reliability refers to the likelihood that the observations can be replicated.

reported savings: Savings estimates reported by Avista for an annual (calendar) period. These savings will be based on best available information.

Request for Proposal (RFP): Business document that announces and provides details about a project, as well as solicits bids from potential contractors.

retrofit: To modify an existing generating plant, structure, or process. The modifications are done to improve energy efficiency, reduce environmental impacts, or to otherwise improve the facility.

rigor: The level of expected confidence and precision. The higher the level of rigor, the more confident one is that the results of the evaluation are both accurate and precise, i.e., reliable.

R-value or R-factor (resistance transfer factor): Measures how well a barrier, such as insulation, resists the conductive flow of heat.

schedules 90 and 190: Rate schedules that show energy-efficiency programs.

schedules 91 and 191: Rate schedules that are used to fund energy-efficiency programs.

sector(s): The economy is divided into four sectors for energy planning. These are the residential, commercial (e.g., retail stores, office and institutional buildings), industrial, and agriculture (e.g. dairy farms, irrigation) sectors.

Site-Specific (SS): A non-residential program offering individualized calculations for incentives upon any electric or natural gas efficiency measure not incorporated into a prescriptive program.

simple payback: The time required before savings from a particular investment offset costs, calculated by investment cost divided by value of savings (in dollars). For example, an investment costing \$100 and resulting in a savings of \$25 each year would be said to have a simple payback of four years. Simple paybacks do not account for future cost escalation, nor other investment opportunities.

spillover: Reductions in energy consumption and/or demand caused by the presence of an energy-efficiency program, beyond the program-related gross savings of the participants and without direct financial or technical assistance from the program. There can be participant and/or nonparticipant spillover (sometimes referred to as “free drivers”). Participant spillover is the additional energy savings that occur as a result of the program’s influence when a program participant independently installs incremental energy-efficiency measures or applies energy-saving practices after having participated in the energy-efficiency program. Non-participant spillover refers to energy savings that occur when a program non-participant installs energy-efficiency measures or applies energy savings practices as a result of a program’s influence.

Technical Reference Manual (TRM): An Avista-prepared resource document that contains Avista’s (ex-ante) savings estimates, assumptions, sources for those assumptions, guidelines, and relevant supporting documentation for its natural gas and electricity energy-efficiency prescriptive measures. This is populated and vetted by the RTF and Third-party evaluators.

Total Resource Cost (TRC): A cost-effectiveness test that assesses the impacts of a portfolio of energy-efficiency initiatives regardless of who pays the costs or who receives the benefits. The test compares the present value of costs of efficiency for all members of society (including all costs to participants and program administrators) compared to the present value of all quantifiable benefits, including avoided energy supply and demand costs and non-energy impacts.

transmission: The act or process of long-distance transport of electric energy, generally accomplished by elevating the electric current to high voltages. In the Pacific Northwest, Bonneville operates a majority of the high-voltage, long-distance transmission lines.

Uniform Energy Factor (UEF): A measurement of how efficiently a water heater utilizes its fuel.

Unit Energy Savings (UES): Defines the savings value for an energy-efficiency measure.

U-value or U-factor: The measure of a material's ability to conduct heat, numerically equal to 1 divided by the R-value of the material. Used to measure the rate of heat transfer in windows. The lower the U-factor, the better the window insulates.

uncertainty: The range or interval of doubt surrounding a measured or calculated value within which the true value is expected to fall within some degree of confidence.

Utility Cost Test (UCT): One of the four standard practice tests commonly used to evaluate the cost-effectiveness of DSM programs. The UCT evaluates the cost-effectiveness based upon a program's ability to minimize overall utility costs. The primary benefit is the avoided cost of energy in comparison to the incentive and non-incentive utility costs.

Variable Frequency Drive (VFD): A type of motor drive used in electro-mechanical drive systems to control AC motor speed and torque by varying motor input frequency and voltage.

verification: An assessment that the program or project has been implemented per the program design. For example, the objectives of measure installation verification are to confirm (a) the installation rate, (b) that the installation meets reasonable quality standards, and (c) that the measures are operating correctly and have the potential to generate the predicted savings. Verification activities are generally conducted during on-site surveys of a sample of projects. Project site inspections, participant phone and mail surveys, and/or implementer and consumer documentation review are typical activities associated with verification. Verification may include one-time or multiple activities over the estimated life of the measures. It may include review of commissioning or retro-commissioning documentation. Verification can also include review and confirmation of evaluation methods used, samples drawn, and calculations used to estimate program savings. Project verification may be performed by the implementation team, but program verification is a function of the 3rd party evaluator.

Washington Utilities and Transportation Commission (WUTC): A three-member commission appointed by the governor and confirmed by the state senate, whose mission is to protect the people of Washington by ensuring that investor-owned utility and transportation services are safe, available, reliable, and fairly priced.

weather normalized: This is an adjustment that is made to actual energy usage, stream-flows, etc., which would have happened if “normal” weather conditions would have taken place.

Weighted Average Cost of Capital (WACC): A calculation of a firm’s cost of capital in which each category of capital is proportionately weighted. All sources of capital, including common stock, preferred stock, bonds, and any other long-term debt, are included in a WACC calculation.

8760: Total number of hours in a year.

APPENDICES AND SUPPLEMENTS



APPENDIX A

2021 Energy Efficiency Evaluation, Measurement, and Verification Annual Plan

I. Background

Avista's 2021 *Energy Efficiency EM&V Annual Plan*, in combination with the *EM&V Framework*, is intended to identify the evaluation, measurement, and verification activities planned to be performed in 2021 in order to adequately inform and assess energy-efficiency programs provided by Avista for its customers in Washington and Idaho. This evaluation effort is not only to verify savings estimates of the 2021 program year, but also to enhance program design and improve the marketing and delivery of future programs. This document also provides the projected 2021 EM&V budget.

II. Overview

Avista's 2021 *EM&V Annual Plan* identifies evaluation activities intended to be performed during 2021 on the 2021 energy-efficiency portfolio. The evaluation of 2021 energy savings acquisition will be consolidated with results from the 2020 evaluation to satisfy biennial reporting requirements associated with Washington's Energy Independence Act (EIA), also known as I-937. The scope of this plan is consistent with prior evaluation plans as presented to Avista's energy-efficiency advisory group. A comprehensive EM&V overview and definitions are included in Avista's *EM&V Framework*, a companion document to this plan.

A key consideration integrated into this plan is the role of the independent third-party evaluator that will perform the majority of evaluation planning, tasks, analysis, and external reporting as coordinated by Avista energy-efficiency staff.

For the 2020-21 period, Cadmus has been retained as the independent third-party evaluator for Avista's commercial/industrial segments and also for the company's multifamily direct install program. Avista is currently in the process of selecting an evaluator for its residential and low-income programs.

Key components of this plan are as follows:

- ◆ Avista continues to pursue a portfolio approach for impact analysis, ensuring a comprehensive annual review of all programs, to the degree necessary, based on the magnitude of savings and uncertainty of the related UES values and magnitude of claimed energy-efficiency acquisition relative to the portfolio.
- ◆ Inherent in the impact analysis for 2019, a locked UES list identifying a significant number of UES values is available to employ through verification rather than fundamental impact analysis; this list of UES is reevaluated, however, as part of the company's normal and recurring savings value analysis. Measures will also be updated to reflect the best science from other sources as well – primarily the RTF.
- ◆ Portfolio impact evaluations will be conducted for all electric and natural gas programs in Washington and Idaho. For programs with a majority of savings or particular aspects of interest, such as a high level of uncertainty, detailed impact evaluations using protocols from the Uniform Methods Project, *The International Performance Measurement and Verification Protocol*, and other industry-standard techniques for determining program-level impacts will be used. Billing analyses will be incorporated as appropriate.

- ◆ Electric energy-efficiency acquisition achieved during 2021 will contribute to the biennial savings acquisition for EIA compliance, which will complete its sixth biennium at the end of 2021.¹
- ◆ A final evaluation of the electric programs deployed during 2020 and 2021 will be initiated prior to the end of 2021 in order to meet the June 1, 2022 filing deadline in Washington.
- ◆ The evaluation will provide energy-efficiency acquisition results with 90 percent precision and a 10 percent confidence interval. Discrete measures may be represented by reduced precision and wider confidence, such as 80 percent with a 20 percent confidence interval, but must support the required portfolio criteria of 90 percent/10 percent.
- ◆ This planning document will not be construed as pre-approval by the Washington or the Idaho utilities commissions.
- ◆ Evaluation resources will be identified through the development of the 2021 evaluation work plan in conjunction with the independent third-party evaluator. Primary segments will include:
 - **Residential:** The impact analysis will consider the portfolio of measures provided to residential customers during the program year. Evaluation efforts will be focused on measures that contribute significant portfolio savings and allow consolidation and grouping of similar measures to facilitate the evaluation.
 - **Low-Income:** For the impact analysis, billing analysis on the census of measures – including conversions – will be conducted. In addition, a comparison group, possibly consisting of Low-Income Home Energy Assistance Program (LIHEAP) or Low-Income Rate Assistance Program (LIRAP) participants, may be incorporated into the analysis if possible.
 - **Commercial/Industrial:** Interviews of Avista staff and third-party implementers will be conducted, along with the creation of customer surveys, tracking databases, marketing materials, and quality assurance documents.
- ◆ Consideration will be made to recognize that most of Avista's current portfolio of electric energy-efficiency offerings has been in place since 1995 and natural gas programs since 2001.
- ◆ A process evaluation report will be delivered as part of the 2021 energy-efficiency ACR, which addresses program considerations for that program year.

III. External EM&V Budget for Evaluations

For 2020-21, the total budget for external evaluation is estimated to be \$999,464 on a total system basis. The following table identifies evaluation activities and allocations anticipated for 2020-21. The Washington and Idaho expenses include evaluation activities for both electric and natural gas fuel types.

Individual Evaluations	Evaluation Type	Contractor	Budget (System)	WA Expense	ID Expense
2020-21 Electric and Natural Gas Portfolio – Commercial/Industrial	Impact	Cadmus	\$ 629,464	\$ 329,211	\$ 300,253
2020-21 Electric and Natural Gas Portfolio – Residential	Impact	TBD	\$ 250,000	\$ 175,000	\$ 75,000
Electric and Natural Gas DSM Operations (or components of)	Process	Cadmus	\$ 120,000	\$ 84,000	\$ 36,000
Total Budget for Individual Evaluations			\$ 999,464	\$ 588,211	\$ 411,253

IV. Overall 2021 EM&V Budget

The table below captures the individual evaluations specifically identified in the previous table in aggregate and augments them with the associated expenses related to participate in and fund the activities of the RTF.

Activity	Budget (WA/ID system)	Total Budget	WA Expense	ID Expense
Individual Evaluations Previously Specified	\$ 999,464	\$ 999,464	\$ 588,211	\$ 411,253
Regional Technical Forum Dues	\$ 105,000	\$ 105,000	\$ 73,500	\$ 31,500
Total	\$ 1,104,464	\$ 1,104,464	\$ 661,711	\$ 442,753
Expected Total DSM Budget	\$ 27,246,448		\$ 19,319,429	\$ 7,927,019
EM&V as a % of Total DSM Budget*	4.1%		3.4%	5.6%

* While EM&V expenditures will be directly assigned where appropriate, this illustrates the anticipated allocation of estimated EM&V expenditures.

V. EM&V External Evaluation Contract

Avista will continue its engagement with Cadmus for measurement and verification activities associated with the energy-efficiency portfolio as executed by Avista during 2020 and 2021. While in the past a single vendor had been selected to evaluate all activities, for 2020-21 Avista has modified its approach to employ separate vendors in evaluating its commercial/industrial and residential programs. After the 2020-21 biennium is complete, Avista will submit an RFP for its 2022-23 EM&V engagement.

VI. Summary of Individual Evaluations

Following is a summary of each of the external evaluation activities anticipated to occur in 2021. All savings estimates, calculations, assumptions, and recommendations will be the work product of the independent evaluator in conjunction with the respective portfolio impact, process, or market evaluation component. The final evaluation plans will also be included in this plan as an appendix as they become available.

2020-21 Electric and Natural Gas Portfolio Impact Evaluation

The electric and natural gas portfolio impact evaluation will be performed by Cadmus (commercial/industrial and multifamily direct install) and a separate evaluator that has yet to be selected. Both independent third-party evaluators are selected through a competitive bidding process. Based on the evaluator's work plan, performance data and supporting information may be derived from primary consumption data collected in the field, site audits, phone surveys, billing analysis, and other methods identified to effectively quantify the performance of the energy-efficiency measure.

Similar to prior evaluations, billing analyses are to be conducted to identify the electric and natural gas impacts of the low-income program based on a census of program participants to estimate savings by state, fuel type, and overall program levels. For this evaluation cycle, savings estimates will be evaluated through a combined approach of billing and engineering analysis, as well as developing net savings estimates by measuring the effects of a comparison group.

If possible, a low-income comparison group study may be used to evaluate this specific program activity. There are two feasible approaches for selecting this comparison group: One would be to identify non-participants from data on Avista customers who receive energy assistance payments such as LIHEAP or LIRAP but who have not participated in the low-income program; another would be to consider using future program participants. The best approach will be identified as the timeline and available data are considered.

Additional participant phone surveys may be conducted to provide a better understanding of certain topics, such as primary and secondary heating sources, equipment functionality prior to replacement, customer behaviors and take-back effects, participant non-energy benefits, and other building or equipment characteristics.

For the commercial/industrial segment, site and metering visits on prescriptive and site-specific projects will support project verification and gather necessary data to validate energy savings and engineering calculations. Sample sizes for each type of fuel will be based on the combined two-year (2020-21) projected project count. Prior evaluations may inform sampling rates to effectively reduce the sample size in measure categories with less uncertainty, and increase the sampling for those measures with greater variation.

2021 Portfolio Process Evaluation

To identify program changes and areas of interest, brief interviews will be conducted to gather relevant information. Key participants in the interview process will include Avista staff and, as appropriate, third-party implementation staff and trade allies.

The independent third-party evaluator will review communication and participant materials for critical program documents that have new or updated materials, including program tracking databases and marketing and trade ally materials. The program materials will be evaluated against industry best practices for their adequacy, clarity, and effectiveness. Where appropriate, feedback will be provided to support the development of new or enhanced program materials.

Participant and nonparticipant surveys will be conducted for both residential and commercial/industrial segments and used to assess differences in customer experiences, effectiveness of programs, and materials available for customers and trade allies. Participant and non-participant surveys will focus on the decisions, attitudes, barriers, and behaviors regarding Avista's programs and efficient equipment/measure installations, as well as supplement past spillover research.

Cadmus Evaluation Plan

As part of its contractual requirements, Cadmus provided an overall detailed evaluation plan for 2020-21. That plan will be attached to this EM&V plan.

2022-23 Electric and Natural Gas Portfolio Impact Evaluation

Avista will continue its engagement with Cadmus for the 2020-21 biennium. After that time, the company will begin to solicit bids for the evaluation of the 2022-23 biennium and will work with the advisory group to finalize the selection of the next external evaluator.



Avista Corporation 2020-2021 Evaluation Work Plan

October 15, 2020

Prepared for:

Avista Corporation

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Spokane, WA 99252

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Introduction and Goals

Avista Corporation contracted with Cadmus to evaluate its Nonresidential program portfolio for program year (PY) 2020 and PY 2021. For this engagement, the Nonresidential evaluation also includes the Multifamily Direct Install program. Cadmus will also conduct a process evaluation of Avista's entire portfolio, including Nonresidential, Residential, and Low Income programs.

The primary goals for the evaluation are these:

- Independently verify, measure, and document energy savings impacts from each electric and natural gas energy efficiency program or from program categories representing consolidated small-scale program offerings, from January 1, 2020, through December 31, 2021
- Analytically substantiate the measurement of those savings
- Calculate the cost-effectiveness of the portfolio and component programs
- Identify any program improvements
- Identify possible future programs

This evaluation work plan reflects Cadmus' understanding of the programs as described in Avista's 2020 Annual Conservation Plans as well as at the project kickoff. The work plan may change in response to program modifications or at Avista's request during PY 2020 and PY 2021. Cadmus will relay to Avista all modifications to evaluation approaches prior to proceeding.

Presently, this document offers proven methods to conduct full impact and process evaluations for Avista's Nonresidential portfolio and the Multifamily Direct Install program, as well as process evaluations for Avista's Residential and Low-Income portfolio of programs.

The following chapter summarizes the overall evaluation effort and includes an introduction to project staff, overview of the budget, and list of deliverables. Subsequent chapters present the evaluation methodologies for the impact and process evaluations, cost-effectiveness calculations, and Cadmus' quality assurance and quality control (QA/QC) processes.

Evaluation Work Plan Overview

Cadmus’ highly skilled evaluators have considerable knowledge from many years of evaluating Avista’s portfolio of programs and can rely on resources such as Cadmus’ inventory of data monitoring equipment and Portfolio Pro+. The team has experience conducting virtual site visits, even before the limiting effects from Covid-19, and its proactive approach to project management will ensure the evaluation objectives are achieved in the most cost-effective manner. The following sections introduce the evaluation team and present the budget, timeline, and communication activities.

Evaluation Team

Cadmus’ evaluation team is organized as shown in Figure 1 and features key personnel who have previous experience with Avista’s evaluations.

Figure 1. Cadmus Evaluation Team Organizational Chart



Table 1 presents the projected staffing hours by state and includes current Cadmus titles and billing rates.

Table 1. Cadmus Staffing Plan

Staff	FY2021 Title	FY2021 Billing Rate	Projected Hours	
			Washington	Idaho
Jeffrey Cropp	Principal II	\$310	195	132
Jerica Stacey	Associate I	\$180	343	326
Nathan Hinkle	Associate II	\$190	287	203
Kristie Rupper	Associate III	\$205	67	64
Max Blasdel	Analyst	\$125	113	60
Romio Mikhael	Associate III	\$205	63	50
Evan Talan	Sr. Analyst II	\$165	215	174
Brandon Kirlin	Analyst II	\$135	192	181
Ian Nimmo	Engineering Tech III	\$135	73	71
Aaron Huston	Engineering Tech II	\$115	16	12
Nora Twichell	Engineering Tech II	\$115	107	99
Mitt Jones	Sr. Associate II	\$250	12	29
Kean Amidi-Abraham	Research Analyst	\$115	120	108
Brian Hedman	Principal II	\$310	10	10
Maggie Buffum	Associate I	\$180	31	31
Taylor La Prairie	Analyst I	\$125	84	52
Amanda McLeod	Analyst II	\$135	116	76
Alex Chamberlain	Sr. Analyst I	\$155	68	55
Alexander Opirari	Research Analyst	\$115	179	160
Leslie Anderson	Technical Editor	\$125	42	40

Budget

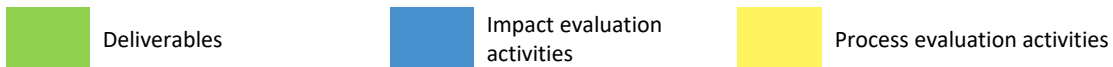
Avista awarded Cadmus \$413,211.25 for the PY 2020-2021 Washington evaluation and \$336,252.50 for the Idaho evaluation. This budget includes \$33,169 in travel and other direct costs for site visits.

Timeline and Reporting

The overall timeline presented in Table 2 broadly depicts progress for each of the work tasks. The work plans for each program cluster include their own specific evaluation timelines. Deliverables associated with work tasks are specified after the table.

Table 2. PY 2020 and PY 2021 Task and Deliverable Schedule

Task	PY 2020		PY 2021				PY 2022	
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Kickoff Meeting	Deliverables							
Work Plan		Deliverables						
Project Management	Impact evaluation activities	Impact evaluation activities	Impact evaluation activities	Impact evaluation activities	Impact evaluation activities	Impact evaluation activities	Impact evaluation activities	Impact evaluation activities
Advisory Group Meetings, as needed		Impact evaluation activities	Impact evaluation activities	Impact evaluation activities	Impact evaluation activities	Impact evaluation activities	Impact evaluation activities	Impact evaluation activities
Verification Surveys		Impact evaluation activities		Impact evaluation activities		Impact evaluation activities	Impact evaluation activities	
On-Site or Virtual M&V and Analysis		Impact evaluation activities	Impact evaluation activities	Impact evaluation activities	Impact evaluation activities	Impact evaluation activities	Impact evaluation activities	
Cost-Effectiveness Analysis			Impact evaluation activities	Impact evaluation activities			Impact evaluation activities	Impact evaluation activities
Document and Database Review		Process evaluation activities		Process evaluation activities				
Avista and Implementer Interviews		Process evaluation activities		Process evaluation activities				
Participant Surveys and Interviews			Process evaluation activities		Process evaluation activities		Process evaluation activities	
Market Actor Interviews			Process evaluation activities		Process evaluation activities			
Electric Impact Memos				Deliverables				Deliverables
Natural Gas Impact Memos				Deliverables				Deliverables
Process Memo and Report				Deliverables				Deliverables
Cost-Effectiveness Memos				Deliverables				Deliverables



Cadmus will provide the following deliverables by the dates listed:

- April 9, 2021
 - PY 2020 Washington Nonresidential electric impact evaluation memorandum
 - PY 2020 Washington Nonresidential natural gas impact evaluation memorandum
 - PY 2020 Washington Nonresidential electric and natural gas cost-effectiveness analysis
- April 16, 2021
 - PY 2020 Idaho Nonresidential electric impact evaluation memorandum
 - PY 2020 Idaho Nonresidential natural gas impact evaluation memorandums
 - PY 2020 Idaho Nonresidential electric and natural gas cost-effectiveness analysis
 - PY 2020 Washington and Idaho (combined) process evaluation memorandum
- April 8, 2022
 - PY 2020 – 2021 Washington Nonresidential electric impact evaluation memorandum
 - PY 2020 – 2021 Washington Nonresidential natural gas impact evaluation memorandum
 - PY 2020 – 2021 Washington Nonresidential electric and natural gas cost-effectiveness analysis

- April 15, 2022
 - PY 2021 Idaho Nonresidential electric impact evaluation memorandum
 - PY 2021 Idaho Nonresidential natural gas impact evaluation memorandum
 - PY 2021 Idaho Nonresidential electric and natural gas cost-effectiveness analysis
 - PY 2020 – 2021 Washington and Idaho (combined) process evaluation memorandum

Prior to delivery of each memorandum, Cadmus will prepare a comprehensive outline for Avista’s review and approval. The memorandums will describe data collection and process methods, present results of the analysis and summarize findings, draw conclusions, and provide meaningful recommendations. Data collection instruments used for the process evaluation will be included as appendices to the final report. Cadmus will submit all supporting workpapers for the calculations, tables, graphs, and other illustrations contained in the deliverables.

Cadmus will also prepare *ad hoc* reports to document problems, urgent issues, and resolutions as they arise.

Communication

Avista expects multiple communication and reporting activities to be performed as part of this evaluation effort. Cadmus will design its project communications based on the following:

- The Avista DSM Planning and Analytics team serves as the lead contact for all evaluation aspects (impact and process) and, for contract purposes, is the client. Ryan Finesilver of the DSM Planning and Analytics team will serve as the contract manager and primary contact for the Cadmus team.
- The Avista DSM Planning and Analytics team will work with the Cadmus team to facilitate incorporation of Avista’s implementation team’s input into the final product. Avista may encourage the implementation team to actively participate in the evaluations, seeking to deliver the best product possible, consistent with the evaluation’s independent character.
- An Avista DSM Planning and Analytics team member may be present (in person, by phone, or copied on e-mails) during any interactions between the Cadmus team and Avista’s DSM implementation team.

Cadmus will hold biweekly conference calls with the Avista DSM Planning and Analytics team. These calls will provide updates about the project’s status and issues. *Ad hoc* calls may be required to address specific project issues and activities. Cadmus anticipates attending and occasionally facilitating in-person, telephone, or web-based meetings in addition to regular and *ad hoc* project meetings and a final close-out meeting.

Throughout the evaluation process, Cadmus will remain engaged with Avista’s regional stakeholders, participating as requested in DSM Advisory Group and Technical Committee meetings. Cadmus will provide the following support to Avista through these meetings:

- Present evaluation plans

- Present interim or final results on energy savings, realization rates, and cost-effectiveness
- Act as a technical resource to explain details of the evaluation methodologies and the rationale behind the methods employed for Avista
- Explore opportunities for new or expanded techniques to evaluate programs or inform program design

Impact Evaluation

Cadmus will apply the methods described below to develop findings that will determine the impacts of Avista’s Nonresidential programs and guide the development of current and future programs.

Overview of Nonresidential Impact Evaluation Methods

Cadmus’ analyses will use standard engineering approaches such as those defined by the International Performance Measurement and Verification Protocols (IPMVP) and the Uniform Methods Project (UMP). Cadmus will employ the following primary methods:

- Simple verification (desk review, phone, online, remote walk-through, or on-site)
- Energy calculation models
- Metering (IPMVP A and B)
- Whole building billing analysis (IPMVP Option C)
- Simulation modeling (IPMVP Option D)

Table 3 lists the impact evaluation data collection and analysis activities by program. Cadmus will conduct the online, phone, remote, and on-site measurement and verification activities in two waves in both 2020 and 2021 to obtain a reasonable sample from each program year.

Table 3. PY 2020–2021 Natural Gas and Electric Impact Evaluation Activities

Sector	Program	Database/ Document Review	Remote Verification/ Site Visit	Metering	Billing Analysis	Simulation Modeling
Multifamily	Multifamily Direct Install	✓				
	Multifamily Market Transformation – Fuel Efficiency (Idaho)	✓	✓			
Nonresidential	Site Specific	✓	✓	✓	✓	✓
	Interior Lighting	✓	✓			
	Exterior Lighting	✓	✓			
	Prescriptive Shell	✓	✓		✓	
	Green Motors	✓	✓			
	Motor Control HVAC (VFD)	✓	✓			
	HVAC	✓	✓		✓	
	Fleet Heat	✓	✓			
	Food Services	✓	✓			
	Compressed Air	✓	✓	✓		
Grocer	✓	✓				

Simple Verification

Cadmus will verify some prescriptive measures (particularly those with relatively small reported savings) on site, via remote video walkthrough, by phone, by reviewing submitted documentation, or through an on-line questionnaire to confirm that measures are installed in the reported quantity and operating in a manner consistent with deemed-savings assumptions. Cadmus will also verify recorded nameplate efficiency data against manufacturer's specifications. Cadmus will accept reported savings without further investigation if it can confirm that these details match the assumptions used for unit energy savings in the Regional Technical Forum (RTF) or Avista technical reference manual (TRM). Cadmus will adjust the savings for any inconsistencies based on equipment and operating parameters found at the site.

Engineering Calculation Models

For some Nonresidential Site Specific measures, Avista uses spreadsheets to calculate the estimated energy savings for a variety of measures based on relevant inputs, such as quantity, fixture wattage, square footage, efficiency value, HVAC system details, and location details. For each spreadsheet, Cadmus will review input requirements and outputs to determine if the approach is reasonable. We will discuss any concerns about the approach with Avista's implementation team and explain why we think a different method may yield more accurate results. Where applicable, we will update calculations using on-site verification data, energy management system (EMS) trend data, spot measurements, and metering data.

Metering Analysis (IPMVP Options A and B)

To estimate the relevant operational parameters needed to inform engineering calculation models, Cadmus may perform data logging for a period of days, weeks, or months. During the site visits, we will confirm relevant information such as installation of the efficient equipment, set points, sequence of operations, operating schedules, and ambient conditions. We will also estimate the baseline energy performance, according to program documentation, on-site conditions, facility interviews, and relevant energy code requirements.

After downloading, we will clean meter data, checking key fields for missing data, correcting bad data, and removing sites with insufficient data. We will flag anomalies and send them to a senior engineer who will determine if the data should be used, corrected, or excluded from the analysis. Next, we will analyze the key variables in the metering data using spreadsheet tools or Python. We will use the resulting information to calculate savings (as input variables in an engineering model) or for comparison to consumption estimates.

Whole Building Analysis (IPMVP Option C)

Cadmus can use monthly billing or interval data to conduct regression analyses for nonresidential retrofit projects, particularly in the Site Specific and HVAC-related prescriptive programs (for example, HVAC and Shell). This analysis method is particularly useful for accurately assessing the energy savings from comprehensive retrofit projects, especially those involving custom HVAC or controls measures.

Using the pre- and post-modeling approach, Cadmus will develop retrofit-savings estimates for the sampled sites, accounting for cooling degree days (CDDs) and heating degree days (HDDs). We will match the participant-consumption data to the nearest weather station by zip code. We will then calculate the building balance-point temperature by correlating monthly energy use with monthly average temperature.

Cadmus will use the balance-point temperature to calculate the CDDs and HDDs then match these to the monthly billing data. We will use the resulting regression estimates to extrapolate average energy savings based on normalized weather conditions. (For this calculation, we will use typical meteorological year [TMY], 15-year normal weather averages from 1991–2005, obtained from the National Oceanic and Atmospheric Administration.)

For each project, Cadmus will model average daily consumption in kilowatt hours (kWh) and/or therms as a function of base load, HDDs and CDDs, and, where appropriate, daily production. For the evaluated sites, we will estimate two demand models—one for the pre-period and one for the post-period. We typically choose this methodology over a single standard-treatment-effects model to account for structural changes in demand that can occur with retrofits, such as changes in occupancy or usage patterns. We will then estimate the annual consumption based these values.

Simulation Model Analysis (IPMVP Option D)

Cadmus may review and verify the savings calculated from simulation models if this methodology is applied on projects. Our simulation approach, which is based on *in situ* observations and measurements, is calibrated to the best available energy-use indices. It entails the use of well-developed, sophisticated building-simulation tools, such as DOE-2, and follows methods described in the U.S. Department of Energy M&V Guideline and ASHRAE Guideline 14.^{1,2}

We will obtain the existing as-built and baseline models, utility billing data, and any available documentation for each simulated measure project in the sample. Step one will be to conduct a side-by-side comparison of the existing baseline and as-built models. Because different versions of the same software (mainly eQuest and EnergyPlus) can return conflicting results, we will open models only in the software-build version in which they were developed.

Our goal for the site visit will be to gather all data necessary to improve and calibrate the model. Using our on-site data collection form and following our facility operator interview guide, we will verify all necessary assumptions and obtain any available EMS data needed to further inform the calibration process.

¹ U.S. Department of Energy. *M&V Guidelines: Measurement and Verification for Performance-Based Contracts (Version 4.0)*. Available online at: http://energy.gov/sites/prod/files/2016/01/f28/mv_guide_4_0.pdf

² ASHRAE. *Measurement of Energy, Demand, and Water Savings*. Atlanta, GA. 2014.

Following the site visit, Cadmus will update the model with the verified values and actual meteorological year (AMY) weather data for the appropriate location and time period then test statistical calibration, comparing model results with utility and metered data. In accordance with ASHRAE Guideline 14, we will target a monthly accuracy within a mean bias error (MBE) of $\pm 5\%$ and a coefficient of variation root mean square error (CVRMSE) of $\pm 15\%$. We will make logical improvements, based on engineering judgment where anomalies are identified. In our analysis, we will account for fluctuations, such as those from initial building commissioning or first-year occupancy changes.

Once the adjusted as-built model has achieved the accuracy requirements, the remaining steps are straightforward. We will replace the AMY data used for calibration purposes with typical meteorological year (TMY) data. To develop the baseline model, we will back out the conservation measures based on incentive documentation, changes between existing models documented during the initial comparison, and any measure stipulations, such as code requirements. Unless instructed otherwise by Avista, we will calculate measure savings in the same order and manner suggested by the existing models and documentation (that is, first measure in, last measure out, and so on). We will determine savings by comparing results from the calibrated typical year as-built and baseline models.

Impact Sampling Plan

Cadmus' approach to developing impact evaluation sampling plans is consistent with the methods described in the UMP. Specifically, we will include these guidelines in our approach:

- **Determine confidence and precision requirements for key metrics.** Our team will use key metrics to support our gross and net energy estimates for each program. For programs with more complex or comprehensive offerings, we typically expect variation between customers to be larger than for programs with fewer variables or more streamlined installations. We will rely on our experience evaluating Avista's programs to estimate the homogeneity or heterogeneity of the population of participants and rely on coefficients of variance calculated from the previous round of evaluation to inform the variability in the expected sample population. When possible, we will design a sample for each program so that we can estimate the overall portfolio energy savings with 90% confidence and $\pm 10\%$ precision for each fuel type within each state.
- **Develop the sample design.** We will apply a sample design that primarily features stratified random sampling. The optimal design depends on the homogeneity or heterogeneity of the population of participants within each program as well as any targeted research we plan to perform (that is, if we are particularly interested in evaluating savings for a particular measure or collection of measures, we will stratify accordingly to ensure ample sample sizes from that population). We may select very large projects with certainty, when their expected savings are expected to differ substantially from the rest of the population. We will select at minimum the number of projects in each program as necessary to calculate confidence and precision within the program, even if participation or savings are low.

- **Calculate sample sizes.** We will calculate sample sizes based on the confidence and precision requirements, expected variation, sample design, and population size for each program. Sample sizes will be sufficient to estimate gross savings for each program and the portfolio as a whole.

For Nonresidential programs and Multifamily Market Transformation, Cadmus proposes a stratified sample design, with strata defined based on fuel type (electric and natural gas) and project savings. For each program and fuel type, we will stratify the sample into large- or small-savings projects and conduct verification on a simple random sample of the projects within each stratum. We will include dual fuel projects in the natural gas stratum for sampling purposes but will include electric savings from dual fuel measures with the electric stratum. We will evaluate the electric savings as a certainty selection for any dual fuel projects selected for random sampling. For the Multifamily Direct Install program, Cadmus will apply a simple random sample to select projects.

We will determine sample sizes for each program and fuel type separately in Washington and Idaho. Data we obtain during site visits will inform our calculation of realization rates used to estimate population savings for each program and fuel type. We will report these results and the corresponding state-specific program savings results.

After receiving program population data from Avista for January to September 2020 we determined sample sizes according to the most recent evaluation results, actual participant and project population sizes, additional stratification variables, and/or alternative sampling approaches (for example, probability proportional to size), with portfolio-level target confidence of 90% and precision of 10%. If possible, we will apply a finite correction to sample sizes to decrease the sample sizes. Table 4 shows the sample design for Washington and Idaho combined.

Table 4. Sample Design for Verification Surveys and Site Visits for Washington and Idaho Combined

Program	Fuel Type	Confidence	Precision	Washington		Idaho	
				Expected Population Size*	Sample Size	Expected Population Size*	Sample Size
Site Specific	Electric	80	20	184	34	64	30
	Natural Gas	80	20	32	6	7	4
Grocer	Electric	90	20	13	2	12	2
Interior Lighting	Electric	90	20	1084	17	516	20
Exterior Lighting	Electric	90	20	1304	17	712	20
Green Motors	Electric	90	20	16	8	16	0
Compressed Air	Electric	90	20	2	1	1	1
Fleet Heat	Electric	90	20	1	1	0	0
Motor Control HVAC (VFD)	Electric	90	20	4	7	3	1
HVAC	Natural Gas	90	20	80	10	80	6
Prescriptive Shell	Electric	90	20	16	3	1	1
	Natural Gas	90	20	16	4	4	2
Food Services	Electric	90	20	28	5	8	2
	Natural Gas	90	20	56	9	52	4
Multifamily Market Transformation	Fuel Efficiency	90	20	N/A	N/A	7	3
Total Nonresidential Site Visits/Verification Surveys				2836	124	1483	96

* Expected population size is extrapolated from 2020 Q1-Q2 participation and 2018-2019 participation. Dual fuel measures are counted as gas for population size and sampling purposes.

Impact Evaluation Activities by Program

Cadmus will conduct the verification activities in four waves—fall 2020, January 2021, summer 2021, and January 2021—using desk reviews, remote or physical site visits, and phone surveys to collect baseline data, operations data, and other information to inform the energy savings analyses. The following sections describe each Avista program and the proposed impact evaluation activities.

Multifamily Direct Install Program

Avista provides free gas and electric direct-install measures to multifamily residences (of five units or more) and common areas in its service territory through the Multifamily Direct Install program. Cadmus will conduct document reviews on the census of projects installed through this program to assess the quality of program tracking data (noting missing, duplicate, and out-of-range values) and will verify that values of key metrics are within expected limits.

We will provide Avista with *ex post* savings values by measure and will also calculate the program’s cost-effectiveness.

Nonresidential Site Specific Program

The Nonresidential Site Specific program provides flexible opportunities to achieve energy savings for measures that do not fit a prescriptive path. In the past, these projects have been for compressed air, custom lighting, process improvement, and complex HVAC measures, among others. Multifamily Market Transformation projects for Idaho are also included in this program.

Cadmus will calculate participants' gross reductions in electricity and natural gas consumption using data collected through desk reviews, remote or on-site visits, customer billing histories (as needed), and engineering models and calculations, for the projects selected by the sample. The number of site visits will depend on actual enrollment and sample-size calculations, based on expected variability and the desired confidence and precision of evaluated savings. During the site visits, we will verify measure installations, collect baseline and equipment data, and identify addressable enrollment or installation issues.

We will analyze gross program impacts using data collected from site visits and from tracking data. We will verify reported *ex ante* savings by recalculating energy savings using Excel spreadsheet analysis tools, site-specific data, and standard engineering analysis methods. Data may include savings calculations, manufacturers' specification sheets, and commissioning reports. We may also conduct regression analyses, as needed, for measures such as comprehensive HVAC controls, whose savings impact cannot readily be evaluated through other means. Information collected during our site visits will determine if the sample projects reasonably address the measure's operating parameters and accurately reflect operating conditions.

Because we will not inspect all participant sites, we need a mechanism to extrapolate the difference between *ex ante* and *ex post* savings to the population. To resolve this, we will apply a correction factor based on the realization rates to *ex ante* savings to calculate evaluated *ex post* gross savings. We will document the reasons and impacts on savings of all adjustments and will review these with Avista's implementation team during a presentation before committing results to the draft reports.

Nonresidential Prescriptive Programs

Avista implements these ten prescriptive programs that provide incentives directly to customers for a variety of measures supported by unit energy savings in the RTF or Avista's TRM:

- Compressed Air
- Fleet Heat
- Food Services
- Green Motors
- Grocer
- HVAC
- Lighting Interior
- Lighting Exterior
- Prescriptive Shell
- Variable Frequency Drives

Cadmus will first work with Avista to prioritize and review prescriptive measures in the TRM to identify those with the most variance based on previous impact evaluation results. These measures may benefit from primary data collection and analysis during the 2020-2021 impact evaluation. This review requires

in-depth knowledge and understanding about the specifics of each measure to ensure that the baseline and savings calculations reflect the best possible *ex ante* values for the region. Cadmus and Avista engineers will coordinate to ensure consistency in inputs and calculations and to ensure that the TRM uses the most up-to-date sources for Avista's engineering calculations. We may recommend measures to examine, as necessary, including references, algorithms, and inputs.

Cadmus will design a sample for verification activities to include all prescriptive programs, with primary emphasis on those that contribute the most savings or represent the highest level of uncertainty. We will apply sampling weights accordingly as part of the correction factor.

We will conduct desk reviews, remote, or on-site inspections during the initial round of impact data collection to confirm that Avista's quality-assurance processes have been maintained. This is particularly relevant for any new programs or programs with updated processes. If we find a high correlation between the *ex ante* and *ex post* results in our initial inspections, we may increase our reliance on less-intrusive data collection methods including desk reviews and phone interviews with participants.

We will review project documents, verify assumptions, adjust reported calculations, and compute *ex post* savings using Excel spreadsheet analysis tools or by approving installation rates for RTF measures with well-defined unit energy savings. We will derive baseline data from virtual/on-site visits, customer interviews, and Avista's program data. We will calculate *ex post* savings using submitted documentation, site visit data, and standard engineering analysis practices. We will also calculate a realization rate based on sampled sites and will apply this rate to the project population to estimate program total *ex post* savings.

In the Prescriptive program, as with the Site Specific program, we will document all reasons and impacts on savings for adjustments and will review these with Avista's implementation team before committing the results to the draft reports.

Remote Verification Strategy

The COVID-19 pandemic has resulted in significant and rapid changes to facility operations and caused uncertainty about future operations. This has complicated impact evaluation and especially affected on-site project verification site visits. Cadmus has developed a virtual and contactless approach that prioritizes customer comfort, preference, privacy concerns and operational policies, and is designed to minimize the burden on the customer throughout the data collection and inspection process.

Our virtual verification process involves using a web-based audio and video connection to simulate in-person customer interactions with a project-specific site contact. To verify savings, our evaluation staff may use a combination of:

- Existing submitted project documentation, including project application files, invoices, specification sheets, calculation models, and Installation Verification reports provided by Avista or available in the iEnergy web software

- Virtual site visit observations, for example a video recording, interview with the site contact, and photos taken during a virtual project tour
- Additional information provided by the site contact, for example additional trend data from the equipment, control system, or meter, more detailed photos or videos of equipment operation, or other documentation requested during the virtual site visit

Cadmus has conducted over 100 virtual site visits for 12 clients throughout the country across a wide variety of project types, and over the next 12 months we expect to have completed over 1,000 virtual site visits across the country. Our process has been designed for the long haul and we plan to keep the virtual/contactless option as a part of our evaluation offerings moving forward. In addition to the safety benefits related to the COVID-19 pandemic, our virtual site visit process saves travel costs, and allows for more flexible scheduling, particularly for geographically remote sites in rural regions of Avista's service territory.

We will review each project selected for verification to ascertain whether it is appropriate for remote verification and what level of remote verification is required to sufficiently verify the measures.

- Desk review: Lower-complexity projects which can be verified through a review of existing complete documentation.
- Desk review with interview: Projects with nearly complete documentation requiring additional photos, invoices, spec sheets, or other simple documentation. Projects with complete documentation where assumptions need to be reviewed or discussed. Interview may be conducted via email, phone call, or web video conference.
- Virtual site visit: Projects that have large savings, higher complexity, or incomplete documentation. Remote verification and interview will be conducted via video walkthrough of the project with a site contact involved in the implementation or operation of the system.
- Physical site visit: Projects that are too complex for remote verification, require on-site data collection or meter installation, projects with a large number of measures or large quantity of equipment, or where safety concerns, participant availability, or time required on site make a virtual site visit impractical or unsafe.

To be eligible for remote verification, a project must meet criteria for participant safety, data security and privacy, suitability of measures to remote verification, and site contact knowledge, availability, and technology limitations. Cadmus will provide a detailed virtual site visit protocol to Avista, and will notify the Avista account executive assigned to each project prior to initiating recruitment for remote or on-site verification. Physical site visits may be postponed until travel to the region is safe and prudent. We will review all in-person site visit plans with Avista prior to scheduling travel and will adhere to all COVID safety procedures provided by Cadmus, Avista, and the participant.

Real-Time Evaluation and Measurement

Cadmus may coordinate with Avista’s implementation team to identify projects with both relatively large expected energy savings and relatively high uncertainty (for example, demand control ventilation and multi-stage compressed air retrofit). In comparison, projects such as large lighting retrofits may not require real-time EM&V because the savings should be relatively certain if the operating hours are well-characterized. Once Avista identifies the most likely projects for real-time EM&V, we will coordinate with implementation engineers and/or contractors to track project installation progress and estimate the completion date.

We will develop a site-specific EM&V plan for each project. Our metering engineer will be prepared to travel to the site to install meters during a timeframe estimated by Avista’s implementation team. After removing the meter, we will follow our standard procedures for analyzing the data. We will summarize our methodology and results for further discussion with Avista before finalizing the energy savings.

EM&V for Advanced Metering Infrastructure (AMI)

Where relevant, and to support Avista’s move toward advanced meter infrastructure (AMI), Cadmus will conduct EM&V for projects with AMI data. To support this type of analysis, we assume that electricity interval consumption data will be available for the pre-treatment, or **baseline**, and treatment, or **reporting**, periods.

The approach to calculating energy savings starts with building a predictive statistical model using baseline data, which includes baseline weather conditions and facility operating conditions as explanatory variables in the model. By applying the baseline model to the explanatory data measured during the reporting period, the model outputs represent the expected energy usage during the reporting period that would have occurred without the influence of the energy-saving measures. Therefore, subtracting the observed energy usage and predicted energy usage at each point in time results in the evaluated energy savings (adjusted for reporting period weather and facility operations).

Our proposed method has several advantages over other approaches:

- The method allows for **flexible modeling** of each facility’s energy consumption. Because we conduct a separate analysis for each facility, it is possible to select a set of variables that are specific to that facility.
- Baseline models are **uncontaminated** by project treatment effects. Because the model is fit with baseline period data, the parameters of the adjusted baseline consumption reflect only baseline period operation.
- The model-building process is **objective**. Because we rely on automated machine-learning to select the model variables, we can identify relevant variables affecting a facility’s consumption from a larger set of candidate variables based on pre-determined criteria, which reduces time and the possibility for idiosyncratic choice by the analyst in building a model.

- The proposed approach is **versatile, scalable, and cost-effective**. Much of the estimation can be automated and applied to a variety of commercial building types and samples with large numbers of facilities.

Our proposed analysis approach has four main steps—data collection and pre-processing, modeling, savings estimation, and reporting— as described in the next sections.

Data Collection and Preprocessing

Cadmus will collect the following data for the evaluation:

- Interval data of facility energy consumption
- Project implementation data including installation dates, project description, and *ex ante* savings estimate
- Building systems data from the facility’s energy management system (if available)
- Interval weather data from nearest weather station

Cadmus will then conduct a quality review of the raw data. This process involves a visual inspection by a domain expert and automated checks for max and min values, consumption per square footage, rates of change, completeness of the data, etc. Once the validity of the data is established, we will define the facility’s baseline and reporting periods from documentation about the project implementation.

Modeling

Cadmus will develop models using these steps:

- **Identify candidate model inputs.** Cadmus will begin by plotting energy usage against all explanatory variables and identify trends. Trends identified from visual inspection will be linear, non-linear, or periodic. These will require evaluation in the context of Cadmus’ understanding of the physical systems involved and experience modeling similar facilities. We will also consider derived variables, such as day of week or degree days, and will assess correlations of these inputs and interactive effects between variables.
- **Select model type.** Cadmus has applied a range of modeling techniques and methods and knows that performance of an algorithm can depend on the dataset it is attempting to fit. Our approach is to select a class of models based on a specific use case and test performance (that is, predictive accuracy, minimization of prediction error, minimal data requirements, etc.) for the various model types within that class. Table 5 summarizes the collection of models we have used.

Table 5. Model Classes for Selection

Model Class	Model Type	Use Case
Linear	Single and multiple linear, ridge, Lasso regression	Low temporal resolution usage data, known physical relationships, observed linear trends
Time Series	Autoregressive integrated moving average (ARIMA), error term models, transfer functions	High temporal periodicity and seasonality, predicting future response
Bayesian	Decision trees, random forests, neural networks	Nonlinear relationships, complex systems, large amounts of data

Model validation and testing. Cadmus will create a set of candidate models based on prior experience and understanding of energy-savings projects and will rigorously evaluate these models against the facility-specific data and choose the best model in the energy-savings calculations. As a starting point in selecting the best model, we will apply graphical analysis of the relationship between energy usage and possible explanatory variables. We will then evaluate existing seasonality or temporal changes in selecting model types. In this initial step, we will consider using the model that is the simplest, has the fewest explanatory variables, and can be interpreted based on good engineering judgment.

Cadmus will test model prediction ability using a procedure that minimizes selection bias. This involves randomly splitting the baseline period data into training and testing sets, giving us two datasets of independent variables and measured energy consumption. Models are fit to the training data, applied to the test data, and scored on bias, model fit, and prediction accuracy metrics, such as the mean prediction error, relative root mean-squared error of prediction, mean absolute percentage error of prediction, and the median and other percentiles of prediction errors, r-square, and Akaike information criterion (AIC).

Randomly splitting the data does introduce bias and to fully understand a model we repeat this process for each model many times. These simulations build distributions of test statistics for each model that inform the selection of a final model.

Furthermore, we will identify patterns in the prediction errors by plotting or regressing the errors against variables such as hour of the day and day of the week. Also, we will investigate the evolution of errors over weeks and months to determine if there are prolonged trends that require further investigation.

Cadmus will fit the selected model to the entire set of baseline data. If, in the model validation and testing phase, we find that several models provide relatively good fit and predictions, we will calculate energy savings using several models and provide the results to Avista. For any given model that is chosen during the validation and testing phase, we will calculate the uncertainty in energy savings obtained using the entire dataset.

Cadmus expects that a variety of factors could confound the savings analysis. For example, a facility may undertake energy efficiency projects that are not funded through Avista during the reporting period. If

these other projects are unaccounted for, the estimate of electricity savings could be biased upward. Table 6 lists possible confounding factors and the strategies for addressing them.

Table 6. Potential Confounding Variables

Confounding Variable	Problem	Solution Strategy
Other Energy Efficiency Projects	Unaccounted savings from other energy efficiency projects during the reporting period may bias the savings estimate.	Develop an engineering estimate of savings for the other project(s) and subtract validated savings estimates from Cadmus' regression-based estimate.
Floor Space Additions or Changes in Use of Facility Space	These changes can bias the savings estimates.	Cadmus will review project documentation and available energy management system data to identify significant changes. Cadmus may make engineering-based adjustments to the savings estimates or model energy intensity instead of consumption.

Savings Estimation

After developing a model, estimating savings is straightforward. Cadmus will fit the model to the baseline data and apply it to the conditions present during the reporting period, generating facility consumption at each interval, and subtract these estimates from the actual measured consumption. To calculate “typical year” savings, Cadmus fits a baseline model and a reporting period model, applies each of these models to TMY3 data, and takes the difference in the estimated energy consumption. Savings are provided on a per-site basis in each of these cases.

Cost-Effectiveness Analysis

Cadmus will calculate and report the program's cost-effectiveness using evaluated savings, avoided energy costs, and actual incurred implementation costs. We will use Portfolio Pro+ to provide cost-effectiveness assessments by portfolio, program, fuel type, year, measure, and state level.

We will determine the economic performance of a program from four standard perspectives—a combination of the utility and program participants, the utility, program participants, and all ratepayers (including nonparticipants). Cadmus will evaluate these perspectives using four cost-effectiveness tests—total resource cost (TRC) test, utility cost test (UCT), participant cost test (PCT), and rate impact measure (RIM) test. If requested, we may also look into applying the Resource Valuation Test (RVT).

We will populate a database with Avista's utility data common to all programs (such as discount rates, avoided costs, load shapes, and retail rates) so that we can maintain a consistent approach to cost-effectiveness valuation across all programs and portfolios.

Process Evaluation

The process evaluation approach considers past evaluation findings, insight from the kickoff meeting, and Avista’s 2020 Annual Conservation Plans.

For all programs, our research methods will consider these three fundamental objectives:

- Assess participant and market actor program journey including motivation for participation, barriers to participation, and satisfaction
- Assess Avista and implementer staff experiences including organizational structure, communication, and program processes
- Document areas of success, challenge, and changes to the program

To address these research objectives, we will conduct implementation and customer research. Our implementation research will include a document and database review for each program, in-depth interviews with key Avista and implementation staff and contractor and Community Action Partner (CAP) agencies for relevant programs. Our customer research will include participant surveys and interviews, as well as builder and property manager interviews for relevant programs (Figure 2). We discuss each of these research areas and the associated tasks in more detail below.

Figure 2. Process Evaluation Research Areas and Tasks



Table 7 shows the research areas by program and year in Idaho and Table 8 shows the research areas by program and year in Washington. Cadmus will not complete a process evaluation for Simple Steps Smart Savings because the program will be discontinued soon.

Table 7. PY 2020–2021 Idaho Process Evaluation Activities

Program Name	Implementation Research		Customer Research	
	PY 2020	PY 2021	PY 2020	PY 2021
Residential Programs				
ENERGY STAR Homes	✓			
Shell		✓		✓
HVAC		✓		✓
Water Heat		✓		✓
Fuel Efficiency		✓		✓
Low-Income Programs				
Low-Income		✓		
Multifamily Programs				
Multifamily Direct Install	✓		✓	
Multifamily Market Transformation	✓		✓	
Nonresidential Programs				
Site Specific	✓		✓	
Prescriptive*		✓		✓
Grocer		✓		✓

*Nonresidential Prescriptive: Lighting, HVAC, Shell, Motor Control HVAC (VFD), Food Services, Green Motors, Compressed Air, and Fleet Heat.

Table 8. PY 2020–2021 Washington Process Evaluation Activities

Program Name	Implementation Research		Customer Research	
	PY 2020	PY 2021	PY 2020	PY 2021
Residential Programs				
ENERGY STAR Homes	✓			
Shell		✓	✓	✓
HVAC		✓	✓	✓
Water Heat		✓	✓	✓
Low-Income Programs				
Low-Income		✓		
Community Energy Efficiency Program		✓		
Multifamily Programs				
Multifamily Direct Install	✓		✓	
Nonresidential Programs				
Site Specific	✓		✓	✓
Prescriptive**		✓	✓	✓
Grocer		✓	✓	✓

*Residential prescriptive: space and water heating, smart thermostats, insulation, and windows.

**Prescriptive: Lighting, HVAC, Shell, Motor Control HVAC (VFD), Food Services, Green Motors, Compressed Air, and Fleet Heat.

The next sections describe the task methods for each research area.

Implementation Research

Cadmus will assess program processes and provide timely and actionable recommendations for continuous implementation improvement by reviewing the database and program documentation and conducting interviews with key Avista and third-party implementation staff, such as SBW Consulting, Washington State University Energy Program, 4 Sight Energy Group, the Green Motors Practices Group, contractors in the residential programs, and CAP agencies in the Low-Income program. Our reviews of key program documents and corresponding databases will inform what data we collect to meet the research objectives.

Table 9 lists the implementation research by program.

Table 9. Implementation Research by Program

Program	Implementation Research			
	Document Review	Avista Interviews	Implementer Interviews	Contractor and CAP Agency Interviews
Residential Programs				
ENERGY STAR Homes	✓	✓		
Shell	✓	✓		✓*
HVAC	✓	✓		
Water Heat	✓	✓		
Fuel Efficiency	✓	✓		
Low-Income Programs				
Low-Income	✓	✓		✓
Community Energy Efficiency Program	✓	✓	✓	
Multifamily Programs				
Multifamily Direct Install	✓	✓	✓	
Multifamily Market Transformation	✓	✓		
Nonresidential Programs				
Site Specific	✓	✓		
Prescriptive Lighting	✓	✓		
HVAC	✓	✓		
Prescriptive Shell	✓	✓		
Motor Control HVAC (VFD)	✓	✓		
Food Services	✓	✓		
Green Motors	✓	✓	✓	
Compressed Air	✓	✓	✓	
Fleet Heat	✓	✓		
Grocer	✓	✓		

*Contractor group to be determined after consulting with Avista.

The following sections describe the implementation research tasks. Program-level details are provided in the *Process Evaluation Activities by Program* section of this work plan.

Document and Database Review

Cadmus will review operation manuals, the program website, and the program database to gain a thorough understanding of how the program is implemented. In our database review, we will also assess the quality of program tracking data as it relates to our customer research.

We also will review Avista's most recent process and impact evaluation results to learn how Avista has incorporated earlier recommendations and to identify trends in program performance. We will apply our findings from the program document and database reviews to refine program-specific research objectives and develop data-collection instruments.

Avista Staff and Third-Party Implementer Interviews

Avista and its third-party implementers hold critical insight into program administration and delivery processes. Telephone interviews with these key stakeholders will focus on these topics:

- Program roles and responsibilities
- Program goals and objectives
- Program design and implementation
- Data tracking
- Program participation
- Marketing and outreach
- Program successes
- Market barriers
- Program impact on the market
- Future program changes including redesign

During the interview, we will be conscientious of staff members' time. Because we know they sometimes oversee multiple programs, our interview guides will avoid repetitive questions for programs with similar processes, such as data tracking, and we may cover all programs overseen by one or more staff members in one interview. We will build on our early findings from these program staff interviews to focus interviews with third-party staff about areas of interest.

For Residential and low-income programs in which contractors or agencies play a vital role, we will conduct contractor and CAP agency interviews.

Contractor Interviews

For many customers, contractors are an important source of program awareness and their involvement, cooperation, and understanding can be an indicator of program success. Cadmus proposes to conduct in-depth interviews to gain insights into contractors' motivations, experience, marketing strategies, how contractors identify customers, their standard business practices, knowledge about customer perceptions and experience, perspectives on program processes, the program's influence on business, and the opportunities for improvement.

Cadmus plans to complete up to 10 interviews with residential contractors (five per state). We will probably concentrate Residential contractor interviews on the HVAC program but will consult with Avista staff to determine if this is the best group to target. We will ask Avista program managers and

account executives to identify target contactors and will coordinate communication to program contractors.

CAP Agency Interviews

Cadmus plans to complete up to five interviews with CAP Agency staff. These interviews will be focused on program experience, marketing strategies, knowledge about customer perceptions and experience, and program successes and opportunities for improvement.

Customer Research

As shown in Table 10, Cadmus will conduct online participant surveys, as well as interviews with trade allies where smaller populations exist.

Table 10. Customer Research by Program

Program Category	Customer Research	
	Participant Surveys	Trade Ally Interviews
Residential Programs		
Shell	✓	
HVAC	✓	
Water Heat	✓	
Fuel Efficiency	✓	
Multifamily Programs		
Multifamily Market Transformation (Builders)		✓
Multifamily Direct Install (Property Managers)		✓
Nonresidential Programs		
Site Specific	✓	
Prescriptive*	✓	
Grocer	✓	

*Nonresidential Prescriptive: Lighting, HVAC, Shell, Motor Control HVAC (VFD), Food Services, Green Motors, Compressed Air, and Fleet Heat.

Participant Online Surveys and Interviews

Cadmus will prepare participant survey and interview guides in each of Avista’s programs. Questions will focus on topics that can help Avista understand trends in measure adoption and overall program performance and that gather critical data to inform the impact evaluation.

Our participant survey and interview guides will gather critical insights into participants’ program journey, such as these aspects:

- Program awareness
- How respondents learned about the program
- General program participation
- Program delivery experience
- Overall program satisfaction
- Satisfaction with Avista

- Reasons for participation
- Program benefits
- Current energy-efficient behaviors and purchases
- Suggestions for program improvements

All participant surveys will be online and will involve emailing a link to the survey to participating customers for whom an email address is available.

We typically recommend simple random sampling when the population is sufficiently large but will finalize the sampling plan according to the target sample sizes and expected response rates and after receiving comprehensive participant tracking data. See Table 11 in the *Process Sampling Plans* section for sampling details.

For programs with unique populations (Multifamily Market Transformation and Multifamily Direct Install), we will conduct participating builder and property manager telephone interviews, respectively, to allow for a greater range of topic exploration. We will conduct up to five builders participating in the Multifamily Market Transformation program and up to five property managers in each state for the Multifamily Direct Install program.

Process Sampling Plans

For the participant surveys, Cadmus will calculate sample sizes for each program category and fuel type based on unique participant population sizes, expected variation, and confidence and precision targets. For this work plan, we have described the sample design and estimated sample sizes but will revise them according to actual participant and project population sizes.

In Table 11, we provide the anticipated survey sample sizes for each program category and fuel type, determined based on target 90% confidence and 15% precision for each program category and to far exceed 90% confidence and 10% precision for the portfolio overall with error ratios of 0.5. For programs with limited sample sizes, we will send the survey to a census of participants in the planned year and gather as many survey responses as possible.

We will conduct in-depth interviews with up to five builders participating in the Multifamily Market Transformation program and up to five property managers in each state of the Multifamily Direct Install program.

Table 11. Estimated Participant Survey Sample Design

Program Category	Fuel Type	Idaho and Washington Combined	
		Annual Participant Size*	Survey Target **
HVAC, Shell, Water Heat	Electric	~4,000	30
	Natural Gas	~12,000	40
Fuel Efficiency	Natural Gas	~500	AMAP (estimating between 10 and 20)
Residential Total		~16,500	~90
Site Specific	Both	~400	AMAP (estimating between 10 and 20)
Prescriptive Lighting	Electric	~700	30
HVAC	Natural Gas	~400	AMAP (estimating between 10 and 20)
Prescriptive Shell	Both		
Motor Control HVAC (VFD)	Electric		
Food Services	Both		
Green Motors	Electric		
Compressed Air	Electric		
Fleet Heat	Electric		
Nonresidential Total			
Portfolio Total		~18,000	~160

* Participant size is the number of residential program participants and nonresidential program projects. These are estimates based on previous years.

**Final survey target will be based on actual unique participants/project by state in each program category in the year survey is scheduled. Due to small population sizes, Cadmus will send email invite to census and gather as many completed surveys as possible.

Process Evaluation Activities by Program

This section describes the process evaluation activities by program. Although many process research activities are similar, such as reviewing program documents and tracking database to assess roles and responsibilities, marketing and outreach, participation trends, and informing subsequent interview and survey questions, the following descriptions note more program-specific focus areas.

Residential HVAC, Shell, and Water Heat Programs

The process evaluation of these programs will include the following data-collection activities:

- **Review program documents and database** to assess program changes and determine if database contains all necessary fields for customer surveys.
- **Interview Avista staff** to assess differences between the implementation of the program in Idaho and Washington, assess the impact of Washington’s Clean Energy Transformation Act on program design and implementation, document program changes and goals, and identify program successes and challenges.

- **Interview participating contractors (n=10)** to assess program understanding, experience, and satisfaction, how contractors identify customers, use of rebates as a sales factor, customer awareness of the program prior to engaging the contractor, standard business practices, influence of the program on business, and qualifying equipment offered.
- **Survey participating customers** to explore their experience, including application processing and influence of the contractor, continued levels of satisfaction, and marketing preferences.

ENERGY STAR Homes Program

The process evaluation of the ENERGY STAR Homes program will include the following data-collection activities:

- **Review program documents** to assess program changes.
- **Interview Avista staff** to document program changes and goals, assess differences between the implementation of the program in Idaho and Washington, identify program successes and challenges, assess regional communication and coordination with NEEA and other partnering utilities, and assess builder and dealer perceived experience and relationship.

Residential Fuel Efficiency Program (Idaho only)

The process evaluation of the Fuel Efficiency program will include the following data-collection activities:

- **Review program documents and database** to assess program changes and determine if database contains all necessary fields for customer surveys.
- **Interview Avista staff** to document program changes and goals and identify program successes and challenges.
- **Survey participating customers** to explore their experience, including application processing and influence of the contractor, continued levels of satisfaction, and marketing preferences.

Low-Income Program

The process evaluation of the Low-Income program will include the following data-collection activities:

- Review program document to assess program changes.
- Interview Avista staff to assess program changes and goals, assess differences between the implementation of the program in Idaho and Washington, identify program successes and challenges, and assess CAP agency and contractor experience and relationship.
- **Interview CAP agencies (up to n=5)** to assess program implementation, document marketing methods, assess experience with contractors, Avista staff, and customers, and identify program successes and challenges.

Community Energy Efficiency Program (Washington Only)

The process evaluation of the Community Energy Efficiency Program will include the following data-collection activities:

- **Review program documents** to document program processes, marketing efforts, and data tracking.

- **Interview Avista and implementer staff** to document program design including goal setting, delivery process, customer eligibility, incentive structure, and data tracking, as well as roles and responsibilities, and areas of success and challenge.

Multifamily Direct Install Program

The process evaluation of the Multifamily Direct Install program will include the following data collection activities:

- Review program documents to assess program changes.
- Interview Avista staff to document program changes and goals, assess differences between the implementation of the program in Idaho and Washington, identify program successes and challenges, and assess trade ally relationship.
- Interview implementer to document program understanding, including coordination of program marketing and outreach, and overall program experience, including satisfaction and suggestions for improvement.
- **Interview participating property managers (up to 5 per state)** to explore customer experience, including program awareness, satisfaction, energy efficiency actions, barriers to energy efficiency programs, and marketing preferences.

Multifamily Market Transformation (Idaho Only)

The process evaluation of the Multifamily Market Transformation program will include the following data collection activities:

- Review program documents to assess program changes.
- Interview Avista staff to document program changes and goals, identify program successes and challenges, and assess trade ally relationship.
- **Interview participating builders (up to 5)** to assess motivation and challenges, explore customer satisfaction and experience, and asses influence of the program on business practices.

Nonresidential Site Specific and Prescriptive Programs

The process evaluation of the Site Specific and Prescriptive programs (Interior and Exterior lighting, HVAC, Shell, Motor Control HVAC [VFD], Food Services, Green Motors, Compressed Air, Fleet Heat, and Grocer) will include the following data-collection activities:

- Review program documents and database to assess program changes and determine if database contains all necessary fields for customer surveys.
- Interview Avista staff to assess differences between the implementation of the program in Idaho and Washington, assess the impact of Washington’s Clean Energy Transformation Act on program design and implementation, document program changes and goals, identify program successes and challenges and to assess contractor relationships.
- **Interview implementers** to document program understanding, roles and responsibilities, experience, satisfaction, and suggestions for improvement.

- Green Motors: Green Motor Program Group
- Compressed Air: 4Sight Energy Group, LLC
- **Survey participating customers** to explore their experience and continued levels of satisfaction, including satisfaction with and influence of the contractor or designer, assess energy-saving behavior and document marketing preferences.

Cadmus QA/QC Procedures

Cadmus will use a variety of QA/QC procedures throughout the evaluation, from the initial data import through prudence review, to ensure our work is accurate and transparent.

Impact Evaluation

Upon receipt of data from Avista, Cadmus will begin the first step in our QA process. We will review each data field to confirm our understanding of the data received and to ensure data are complete and without errors. We will run each data file through a comprehensive review that checks for the fields required for the impact evaluation, looks for possible duplicate records, and compares the number of applications and total electric and gas savings reported in the detailed report for each program category against a separate overview report of savings across all programs. Cadmus will discuss any data questions with Avista in a timely manner to ensure database issues are rectified quickly.

Throughout the evaluation and after analyses are complete, a senior engineer will conduct a thorough and comprehensive QC of inputs, outputs, and calculations.

Process Evaluation

Our team will follow these three practices to manage and implement high-quality data collection for our process evaluation:

- **Data-collection instruments that conform to best practices.** Our team is dedicated to the quality and rigor of primary research. Project managers will review questionnaires to ensure they are consistent with best practices (for example, do not use double-barreled questions and use appropriate scales) and, whenever possible, use consistent questions across programs to enable trend analysis. We will provide all instruments to Avista for review prior to launch and will provide a final copy of the instrument with the final report.
- **Online survey coordinator for streamlined and efficient data collection.** We will designate a single survey coordinator who manages all survey activities to ensure consistent data collection across all research efforts and is our team's primary contact for online programming and survey administration. The coordinator will review each survey instrument, oversee the secure exchange of data with Avista and/or survey vendor, monitor data-collection results on a daily basis, and report progress to Avista and our team.
- **Expert survey oversight and quality assurance.** Cadmus' survey research specialists will supervise every step of survey programming, testing, and data-collection process. We always check programming for errors before fielding the survey to ensure skip patterns work as intended and that responses show the appropriate understanding of the survey questions.

Cost Effectiveness Analysis

Cadmus will meet with Avista staff to ensure the cost-effectiveness analysis is complete, accurate, and transparent. During these meetings, Cadmus will clearly demonstrate how it uses data received from Avista and its implementers in the cost-effectiveness model so Avista can replicate the results. Cadmus

will also provide a replicate model to Avista; this Excel model simulates the cost-effectiveness calculations of Portfolio Pro+ so Avista can easily track inputs, outputs, and results.

Cadmus will have a dedicated cost-effectiveness QC analyst ensure the source documentation aligns with all data used in the analysis, data are not missing and have not been double-counted, and the results provided to Avista are accurate.

Reporting

The goal of our reporting QA/QC procedures is to ensure information is reported accurately, consistently, and clearly. We will develop a reporting QA/QC document to be shared with Avista and Cadmus staff responsible for reporting prior to drafting reports and memorandums. The document will be used to ensure quality requirements are understood. This document will outline Avista's preferred terminology and will include a checklist for QC verification covering, at a minimum, these quality metrics:

- **Content is complete and as expected.** Cadmus provides meaningful recommendations, methodologies are stated and any changes are documented, etc.
- **Consistent and accurate values.** For example, table values match workbook values, text values match table values, and table totals add correctly.
- **Consistent and accurate formatting.** For example, reference links are tested and accurate and tables do not break across pages where possible.
- **Complete workpapers.** Supporting workpapers are included, complete and free of hardcoded numbers to the extent possible.

We will develop our reporting QA/QC procedures to meet applicable requirements in Cadmus' Idaho Scorecard review.

APPENDIX B

Summarization of Cost-Effectiveness Methodology

Avista takes a standardized¹ approach to the evaluation of the energy-efficiency portfolio to ensure transparency and clarity.

Cost-effectiveness of energy-efficiency programs can be assessed from a variety of perspectives, each of which lead to a specific standardized cost-effectiveness test. The following descriptions outline the costs and measures Avista uses to evaluate the cost-effectiveness of its energy-efficiency portfolio.

1. **Total Resource Cost (TRC):** The perspective of the entire customer class of a particular utility. This includes not only what customers pay for efficiency – individually and directly (through the incremental cost associated with higher-efficiency options) – but also the utility costs that they will indirectly bear through their utility bills. When looking at the full customer population, incentives are viewed as a transfer between ratepayers rather than a cost for the overall ratepayer class. This perspective is represented in the TRC test. Avista has included a 10 percent conservation credit to the TRC calculation, adding a benefit to the overall cost-effectiveness.
2. **Utility Cost Test (UCT):** If the objective is to minimize the utility bill, without regard to costs borne by the customer outside of that which is paid through the utility bill, then cost-effectiveness simply comes down to a comparison of reduced utility avoided cost and the full cost (both incentive and non-incentive) of delivering the utility program. This is the UCT, also known as the program administrator cost test.
3. **Participant Cost Test (PCT):** Participating customers' views of cost-effectiveness are focused on reduced energy cost (at their retail rate). Avista also includes the value of any non-energy benefits that they may receive. Incentives received by customers offset the incremental costs associated with the efficiency measure. This is the PCT. Since participation within utility programs is voluntary, it could be asserted that well-informed participating customers are performing their own cost-effectiveness test based on individual circumstances – and voluntarily participating only to the extent that it is beneficial for them to do so.
4. **Ratepayer Impact Measure (RIM):** Non-participating customers are affected by a utility program solely through the impact on their retail rates. Their usage, since they are non-participants, is unaffected by the program. The impact of energy-efficiency programs on the utility rate imposed upon these non-participating customers is the result of the reduced utility energy costs, diminished utility revenues, and the cost associated with the utility program. Since utility retail energy rates exceed the avoided cost under almost all scenarios (peak end-use load and a few other exceptions apply), non-participants rarely benefit. This is the RIM, also known as the non-participant test. The following table summarizes Avista's approach to calculating the four basic cost-effectiveness tests. The categorization and nomenclature have been worded so as to provide clarity regarding each cost and benefit component. Please note that some of the values within the table represent negative values.

APPENDIX B, TABLE 1: SUMMARIZATION OF STANDARD PRACTICE TEST BENEFITS AND COSTS

	TRC	UCT	PCT	RIM
Benefit Components				
Avoided Cost of Utility Energy	\$	\$		\$
Value of Non-Utility Energy Savings	\$		\$	
Non-Energy Impacts	\$		\$	
Reduced Retail Cost of Energy			\$	
Cost Components				
Customer Incremental Cost	\$		\$	
Utility Incentive Cost		\$	(\$)	\$
Utility Non-Incentive Cost	\$	\$		\$
Imported Funds – Tax Credits, Federal Funding, etc.	(\$)		(\$)	
Reduced Retail Revenues				\$

The following is a summary of some of the approaches by which Avista measures these values and how they are applied within the company's evaluation of cost-effectiveness.

- ◆ **Avoided Cost of Utility Energy:** The avoided cost of electricity and natural gas is based on the results of the most recent *IRP* to include the valuation of several avoided costs that are somewhat unique to energy efficiency (e.g. distribution losses, the monetary cost of carbon, etc.). The cost of electric transmission and distribution capacity benefits was adjusted to align with the seventh power plan, and a \$26.90 per kW-yr. for 20-year levelized cost was used to bring electricity into the Avista balancing area from the mid-C market.

The electric *IRP* provides 20 years of mid-C prices for every hour of the year (8,760 hours) and system capacity benefits for generation, transmission, and distribution. Different measures have different distribution of their savings of the year so to properly value the commodity portion for individual measures, the 175,200 market prices (8,760 x 20) are multiplied by the individual load shapes yielding 23 different end-use commodity avoided costs.

To calculate the capacity value, an average of the percentage of savings on January weekdays between 7:00-12:00 and 18:00-23:00 was used to estimate the peak coincidence to be multiplied by that year's generation, transmission, and distribution capacity benefits.

The commodity and capacity benefits are summed for each year and the combined avoided costs are increased to account for avoided line loss rates (6.1 percent).

The avoided cost of the natural gas *IRP* produces an annual and winter avoided therm value to which an avoided delivery charge is added (represented by the demand portion of Schedule 150) to each.

The application of the avoided cost of energy to energy-efficiency measures includes all interactive impacts including those upon its own fuel (e.g. interactive impacts upon electric consumption by electric programs) and cross fuel (e.g. interactive impacts upon natural gas usage as a result of an electric program).

- ◆ **Value of Non-Utility Energy:** For forms of energy not provided by the utility, such as propane or wood fuel, and for which there is no *IRP* valuation of the avoided cost, all savings are valued-based on the customer's retail cost of energy.
- ◆ **Non-Energy Impacts:** Impacts of efficiency measures unrelated to energy usage are incorporated into the appropriate standard practice tests to the extent that they can be reasonably quantified and externally represented to a rational, yet critical, audience. Avista is appreciative of the RTF's increased focus on quantifying non-energy impacts. Savings most typically quantified are related to reductions in lighting maintenance, reduced replacement costs (LEDs vs. halogen), and water and sewer cost savings.

In addition, when Avista pays the full cost of a measure within the low-income portfolio, and includes that full cost as a customer incremental cost, the value of the baseline measure is included as a non-energy benefit as a representation of the end-use service beyond the energy-efficiency impact. Those impacts that have been determined to be unquantifiable within reasonable standards of rigor consist of both benefits and costs. For example, Avista has not been able to quantify the value of comfort, preventing us from valuing the benefit of draft reduction from efficient windows, or the increased productivity due to lighting upgrades.

- ◆ **Reduced Retail Cost of Energy:** For the participant test, it is participating customers' reduced retail cost of energy and not the utility avoided cost of energy that is relevant to that perspective.
- ◆ **Customer Incremental Cost:** This represents the additional cost of an efficient measure or behavior above the baseline alternative. To the maximum extent possible, the determination of customer incremental cost is based on alternatives that are identical in all aspects other than efficiency. When a clear comparison isn't achievable, an individualized adjustment is made to the extent possible.
- ◆ **Utility Incentive Cost:** Direct financial incentives, or the utility cost of physical products or services distributed to individual customers, are transfer payments between participating and non-participating customers. The provision of program delivery services is not a transfer cost and is not incorporated into the definition of the utility incentive cost.
- ◆ **Utility Non-Incentive Cost:** All utility costs that are outside of the previously defined incentive costs. This typically consists of costs associated with the administration of the program such as labor, EM&V, training, outreach, marketing, pilot programs, conservation potential assessments, organizational memberships, etc.
- ◆ **Imported Funds:** Avista considers the value of imported funds (generally tax credits or governmental co-funding of programs) to be a reduction in the customer's incremental cost of the measure for purposes of calculating the TRC test and the participant test. These funds are acquired from entities outside the ratepayer population or the individual participant.

The alternative approach to treating imported funds as an offset to the customer incremental cost is to consider these funds to be a benefit. For the purposes of Avista's cost-effectiveness objective (maximize residual net TRC benefit) there would be no mathematical difference between these two approaches.

- ◆ **Reduced Retail Revenues:** For the purposes of the RIM test, the loss of retail revenue is a cost to the non-participating customer.

The means by which Avista's energy-efficiency portfolio is defined for the purposes of evaluation and cost allocation is also an important part of the company's methodology. The various definitions used to describe the different levels of aggregation are explained below, followed by an explanation of how these are applied in the allocation of costs.

- ◆ **Sub-Measure:** A sub-measure is a component of a measure that cannot be coherently offered without aggregating it with other sub-measures. For example, an efficient three-pan fryer couldn't be offered as part of a sensible customer-facing program if the program did not also include two-pan and four-pan fryers. Avista may offer sub-measures that fail cost-effectiveness criteria if the overall measure is cost-effective. This is the only area where Avista permits the bundling of technologies for the purpose of testing offerings against the cost-effectiveness screen. There are relatively few sub-measures meeting the criteria specified above within the portfolio.
- ◆ **Measure:** Measures are standalone energy-efficiency options, and are generally expected to pass cost-effectiveness requirements barring justifiable exceptions. Those exceptions include, but are not necessarily limited to, measures with market transformation value not incorporated into the assessment of the individual measure, significant non-energy benefits that cannot be quantified with reasonable rigor, and cooperative participation in larger regional programs.
- ◆ **Programs:** Programs consist of one or more related measures. The relation among the measures may be based on technology (e.g. aggregation of efficient lighting technologies) or market segment (e.g. aggregation of efficient food service measures). The aggregation is generally performed to improve the marketability and/or management of the component measures.
- ◆ **Portfolio:** Portfolios are composed of aggregations of programs. The aggregating factor will vary based on the definition of the portfolio. The following portfolios are frequently defined in the course of Avista's energy-efficiency reporting and management:
 - **Customer Segment Portfolio** – An aggregation of programs within a customer segment (e.g. low-income, residential, commercial/industrial).
 - **Fuel Portfolio** – Aggregating electric or natural gas energy-efficiency programs.
 - **Regular vs. Low-Income Portfolios** – Separating income-qualified measures delivered through CAP agencies from the remainder of the portfolio.
 - **Jurisdictional Portfolio** – Aggregating programs within either the Washington or Idaho jurisdiction.
 - **Local or Regional Portfolio** – Aggregating all elements of the local energy-efficiency portfolio vs. the regional market transformation portfolio.
 - **Fuel/Jurisdictional Portfolio** – Aggregating all programs within a given fuel and jurisdiction (Washington electric, Washington natural gas, Idaho electric, or the currently suspended Idaho natural gas portfolio).
- ◆ **Overall Portfolio:** Aggregating all aspects of the Washington and Idaho electric and natural gas energy-efficiency portfolio.

Methodology for Allocation of Energy Efficiency Costs

The Avista methodology for cost allocation builds from the measure or sub-measure analysis to the program and ultimately portfolio analysis. At each level of aggregation, those costs that are incremental at that stage are incorporated into the cost-effectiveness analysis. Incremental customer cost and benefits are fully incorporated into measure-level analysis. Utility costs (both labor and non-labor) are currently fully incorporated within the program level of aggregation based on previous advisory group discussions regarding Avista's ability to expand or contract the portfolio to meet acquisition targets. Cost allocations are made based on the expected adjusted BTU acquisition of the program, with adjustments by the relative avoided cost of electricity and natural gas (e.g. a kWh is a highly processed BTU compared with an equivalent natural gas).

Generally little of the non-incentive utility cost (labor and non-labor) is allocated at the measure level, with the exception of programs delivered through a third-party contractor where those costs are truly incremental. Other non-incentive utility costs are allocated at the program level in the belief that the addition or elimination of programs would lead to a change in the scale of the overall portfolio, and that therefore these costs are incremental at the program level.

It should be noted that costs *not* associated with the delivery of local energy-efficiency programs within the planned year are excluded from the cost-effectiveness calculations. These are termed "supplemental costs" and consist of:

- ◆ the funding associated with regional programs (NEEA)
- ◆ the cost to perform conservation potential assessment studies (CPA)
- ◆ Evaluation, Measurement, and Verification engagements (EM&V)
- ◆ funding of low-income educational outreach programs (ID)
- ◆ Idaho research funding and similar expenses unrelated to the planned local portfolio

Unit Energy Savings

The quantification of energy savings applicable toward achieving Washington EIA acquisition targets has been an ongoing topic of discussion since the effective date of the requirement. Avista's plan will create an annual locked UES associated with the TRM that will be updated on an annual basis. The savings will primarily be derived from the RTF or previous impact evaluations.

For planning purposes, the business plan has applied the same assumptions regarding UES to the Idaho portfolio as our best current estimate of savings. However, the retrospective ACR may displace these assumptions with the results of actual impact evaluations when available and appropriate.

Analytical Methodology Applicable to the Low-Income Programs

Avista has developed several analytical methodologies specific to the evaluation needs of the low-income portfolio. These include (a) the accommodation of incentive levels equal to the entire cost of the measure, including the cost of the baseline measure, and (b) the treatment and quantification of the considerable non-energy benefits incorporated within the low-income portfolio. Beyond these two rather significant analytical issues, the treatment of the low-income portfolio is similar to that applied to the other portfolios.

Except for the low-income program, Avista does not typically fully fund the customer incremental cost, and even less frequently the full installed cost of an end use. For low-income programs delivered with Avista funding in partnership with CAP agencies, the participating customer may receive full funding of the end use. There is a need to appropriately represent this expenditure within the overall energy-efficiency expenditure budget, but at the same time it is necessary to recognize that only a portion of this expenditure is dedicated toward energy efficiency. Avista does so by recognizing the full expenditure as a cost, but also recognizing that there is a non-energy benefit associated with the provision of base case end-use services. The full cost less this non-energy benefit is equal to the amount invested in energy efficiency. Thus the assessment of the cost-effectiveness of the energy-efficiency investment is appropriately based on the value of the energy savings of the efficient measure in comparison to this incremental cost. In situations where a measure might be found cost-effective under one fuel it will be reimbursed at the full cost for both fuels.

Avista has also defined the expenditure of non-energy health and safety funds as a non-energy benefit (on a dollar-for-dollar basis). This quantification is based on the individual assessment of each of these expenditures by the CAP agency prior to the improvements being made. This approval process provides reasonable evidence that the improvements are worth, at a minimum, the amount that has been expended on them through CAP agency funds.

As a consequence of these two assumptions, the low-income portfolio accrues considerable non-energy benefits.

The administrative reimbursement permitted to the CAP agency is considered to be a component of the measure cost. This amount reimburses the CAP agency for back-office costs that would, in a typical trade ally bid, be incorporated into the project invoice. For 2021, the administrative reimbursement is 30 percent for Washington and 15 percent for Idaho.

AVISTA CORPORATION
 dba Avista Utilities

**SCHEDULE 90
 ELECTRIC ENERGY EFFICIENCY PROGRAMS
 WASHINGTON**

1. AVAILABILITY

The services described herein are available to specified residential, commercial, and industrial, retail electric distribution customers of Avista for the purpose of promoting the efficient use of electricity. Customers receiving electric distribution service provided under special contract and/or customers receiving electric services not specified under Tariff Schedule 91 (Energy Efficiency Rider Adjustment) are not eligible for services contained in this schedule unless specifically stated in such contract or other service agreement. The Company may provide partial funding for the installation of electric efficiency measures and may provide other services to customers for the purpose of identification and implementation of cost effective electric efficiency measures as described in this schedule. These services are available to owners of facilities, and also may be provided to tenants who have obtained appropriate owner consent.

Assistance provided under this schedule is limited to end uses where electricity is the primary energy source. Assistance may take the form of monetary incentives or non-monetary support, as further defined within this tariff. The Company shall strive to develop a portfolio of programs that is cost-effective on an aggregate basis. Customer participation under this schedule shall be based on eligibility requirements contained herein.

2. ELIGIBLE CUSTOMER SEGMENTS

All customers in all customer segments to whom this tariff is available are eligible for participation in electric efficiency programs developed in compliance with this tariff. The broad availability of this tariff does not preclude the Company from targeting measures, markets and customer segments as part of an overall effort to increase the cost-effectiveness and access to the benefits of electric efficiency.

3. MEASURES

Only electric efficiency measures with verifiable energy savings and demand response measures intended to achieve capacity reductions are eligible for assistance. Measure eligibility may not necessarily apply to all customer segments. Final determination of applicable measures will be made by the Company. Eligible technologies may include, but are not limited to, energy-efficient appliances, assistive technologies, controls, distributed renewable energy, motors, heating, ventilation and air-conditioning (HVAC) systems, lighting, maintenance, monitoring, new technologies, and shell.

Incentives for distributed renewable energy measures will be limited to net-metering facilities operating under Avista Utilities Idaho/Washington Rate Schedule 63 Net Metering rules. Incentives will be limited to energy production not to exceed 100% of the average annual energy use of the facility for the preceding three years or if new, a similar facility's annual use as calculated by the Company. Incentives will be limited to

(N)

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 By Kelly Norwood, Vice President, State and Federal Regulation

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SCHEDULE 90 continued

the amount specified in section 4.1 below. This market transformation effort supports renewable energy measures in the residential and small commercial segments.

Market transformation ventures will be considered eligible for funding to the extent that they improve the adoption of electric efficiency measures that are not fully accepted in the marketplace. These market transformation efforts may include efforts funded through regional alliances or other similar opportunities.

4. FUNDING AND NONMONETARY ASSISTANCE

4.1 Funding

The Company shall offer incentives for projects based upon the incremental capital cost associated with the energy efficiency of the project. Energy savings are calculated using the current retail energy rates.

(C)

(D)

The Company shall pay an incentive up to a maximum of the incremental measure cost. The Company shall make adjustments to the percent of incremental cost paid to attempt to obtain the greatest energy savings at the lowest cost

(N)

Low Income measures that have a TRC of 1.0 or higher are incentivized at 100% of the project cost. For measures that have a TRC of less than 1, the project is incentivized at an amount equal to the present value of avoided cost.

Incentives for efficiency measures within the following categories shall not exceed 100% of the project cost:

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SCHEDULE 90 continued

- 4.1.1** Energy efficiency programs delivered by community action agencies contracted by the Company to serve Low Income or vulnerable customer segments including agency administrative fees and health and human safety measures;
- 4.1.2** Low-cost electric efficiency measures with demonstrable energy savings (e.g. compact fluorescent lamps);
- 4.1.3** Programs or services supporting or enhancing local, regional or national electric efficiency market transformation efforts.
- 4.1.4** Prescriptive programs are guided by the typical application of that measure in accordance with the previously defined incentive structure. Incentive levels for these programs are based on market conditions at the time of program design and are not dependent on actual project cost relative to incentive caps. Incentives shall not exceed project costs.
- 4.1.5** Incentives for demand response programs shall not exceed 75% of the calculated capacity present value of the measure if and when an interruption event is triggered.

The Company will actively pursue electric efficiency opportunities that may not fit within the prescribed services and described in this tariff. In these circumstances the customer and the Company will enter into a site specific services agreement.

(D)

4.2 Non-Monetary Assistance

Assistance without the granting of direct monetary incentives to the customer is available across all applicable segments and may be provided in various ways, that include, but are not limited to, the following:

- 4.2.1. Educational**, training or informational activities that enhance electric efficiency. This may include technology or customer-segment specific seminars, literature, trade-show or community events, advertising or other approaches to increasing the awareness and adoption of resource efficient measures and behaviors.
- 4.2.2. Financial** activities intended to reduce or eliminate the financial barriers to the adoption of electric efficiency measures. This may include programs intended to reduce the payment rate for resource efficiency measures, direct provision of leased or loaned funds or other approaches to financial issues with better than existing market terms and conditions.

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SCHEDULE 90 continued

4.2.3. Product samples may be provided directly to the customer when energy efficiency products may be available to the utility at significantly reduced cost as a result of cooperative buying or similar opportunities.

(M)

4.2.4. Technical Assistance may consist of engineering, financial or other analysis provided to the customer by or under the direction of, Company staff. This may take the form of design reviews, product demonstrations, third-party bid evaluations, facility audits, measurement and evaluation analysis or other forms of technical assistance that addresses the cost- effectiveness, technical applicability or end-use characteristics of customer alternatives.

5. BUDGET & REPORTING

The electric efficiency programs defined within this tariff will be funded by surcharges levied within Schedule 91. The Company will manage these programs to obtain resources that are cost-effective from a Total Resource Cost (TRC) perspective and achievable through utility intervention. Schedule 91 will be reviewed annually and revised as necessary to provide adequate funding for electric efficiency efforts.

6. GENERAL RULES AND PROVISIONS

Service under this schedule is subject to the General Rules and Provisions contained in this tariff and is limited to facilities receiving electric service from the Company. All installations and equipment must comply with all local code and permit requirements applicable and be properly inspected, if required, by appropriate agencies.

The Company may establish specifications regarding any electric efficiency measures and modifications to be effected under this schedule and may conduct inspections to insure that such specifications are met.

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APPENDIX D

Electric Program Summary

Program	MWh Savings	Estimated Budget
Low-Income Program		
Low-Income	409	\$ 1,117,599
Low-Income Total	409	\$ 1,117,599
Residential Programs		
Residential Prescriptive	874	\$ 432,082
Multifamily Direct Install	3,970	\$ 2,742,346
Multifamily Weatherization	94	\$ 40,664
Residential Total	4,939	\$ 3,215,092
Commercial/Industrial Programs		
Lighting – Interior	9,366	\$ 2,158,740
Lighting – Exterior	11,208	\$ 2,901,532
Site-Specific	16,000	\$ 3,814,510
Prescriptive Shell	54	\$ 25,391
Variable Frequency Drives	387	\$ 91,966
Green Motors	41	\$ 8,725
Fleet Heat	400	\$ 51,973
Grocer	57	\$ 13,513
Food Services	121	\$ 22,656
AirGuardian	42	\$ 12,381
Commercial/Industrial Total	37,675	\$ 9,101,387
Total Programs Before NEEA	43,022	\$ 13,434,078
CPA & EM&V	–	\$ 253,445
NEEA	7,183	\$ 1,358,000
Pilot Programs	–	\$ 1,000,000
TOTAL Electric Budget	50,205	\$ 16,045,523

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