



**Washington 2026  
Natural Gas**

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**Annual  
Conservation Plan**

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**October 31, 2025**



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## ■ Introduction

Avista Utilities' Natural Gas *Annual Conservation Plan (ACP)* is provided in alignment with RCW 80.28.380 and in accordance with the requirements outlined in Order No. 01 in Docket UG-230898, through which the Commission approved Avista's 2024-2025 *Biennial Conservation Plan (BCP)* with conditions.<sup>1</sup>

The 2026 *ACP* outlines Avista's energy efficiency program offerings and provides details on the company's process for verifying and reporting savings. Avista remains focused on acquiring all conservation measures that are available and cost-effective. Avista accomplishes this objective by offering financial incentives for energy-saving measures, while using the most effective mechanism to deliver energy efficiency services to customers. These mechanisms are varied, and include prescriptive programs or standard offerings, such as high-efficiency appliance rebates; site-specific or customized analyses at customer premises; midstream incentives, which encourage partnerships with HVAC and hot water heating equipment distributors; regional market transformation efforts in collaboration with other utilities; programs to encourage and incentivize efficient behaviors; provision of low-income weatherization services through local community action agencies (CAAs); new programs to serve energy needs for members of Named Communities; a multi-channel communication effort; and support for cost-effective appliance standards and building codes.

As with the electric *ACP*, Avista's natural gas *ACP* represents a planning process that relies on meaningful and extensive engagement from Avista's Energy Efficiency Advisory Group (EEAG) as well as its Equity Advisory Group (EAG). Avista consults with its advisory groups multiple times over the course of a year – seeking input and guidance on best practices for new programs, as well as advice on possible changes to existing programs and services – to adaptively manage its program portfolio in a nimble way that reflects changing market conditions.

The planning process for Avista's energy efficiency efforts builds upon the electric and natural gas *Integrated Resource Plan (IRP)* and *Conservation Potential Assessment (CPA)* processes – overall resource planning, completed every two years, which integrates energy efficiency and generation resources into a preferred resource scenario. The purpose of the process, and resulting plan, is to create an operational strategy for reaching the aggregate targets identified within the *IRP* in a manner that is cost-effective and with due consideration to all aspects of customer value.

Budgetary projections established as part of Avista's biennial planning process, and in this *ACP*, are tracked continuously as part of the company's adaptive management of its programs and associated costs. Revisions to the conservation tariff rider funding mechanisms contained within the Schedule 191 natural gas tariff are completed on an annual basis, if needed. These adjustments to the tariff rider surcharges are made with the objective of moving these balances toward zero and reflecting, at all times, the most appropriate collection rate in support of Avista's energy efficiency programs.

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<sup>1</sup> Docket UG-230898, Order 01, Attachment A contains the approved Conditions for 2024-2025 Avista Natural Gas Biennial Conservation Plan.

## ■ Definitions

Table 1 below provides a list of definitions for select terms used throughout Avista’s 2026 ACP. These terms are specific to the conservation standards set forth within RCW 80.28.380 and affirmed through previous planning cycles.<sup>2</sup>

**TABLE 1 – NATURAL GAS CONSERVATION TERMS**

<b>Natural Gas Conservation Terms</b>	
<b>Two-Year Conservation Target</b>	All cost-effective conservation potential as required by RCW 80.28.380. Includes the Pro-Rata Share from Avista’s CPA, plus other programs/measures with confident savings omitted from the CPA, such as distribution-level efficiency, pilots with uncertain savings, and additional portfolio buildout.
<b>Decoupling Commitment</b>	Five percent of the Two-Year Conservation Target, as established in Dockets UE-140188 and UG-140189, Order No. 05, with incremental penalties established in Dockets UE-190334, UG-190335, and UE-190222 (consolidated), Order No. 09.
<b>Total Local Biennium Target</b>	Two-Year Conservation Target plus Decoupling Commitment.
<b>Total Conservation Goal</b>	Two-Year Conservation Target plus Decoupling Commitment plus any additional targets identified by the utility.

<sup>2</sup> See Dockets UG-210827 and UG-230898.

## ■ Executive Summary

The 2026 ACP provides details on programs and initiatives the company intends to offer to customers to achieve eligible acquisition savings as it enters the first year of the 2026-2027 biennium. For 2026, Avista has identified estimated conservation savings to be 665,292 therms from local efforts as well as 6,600 therms of regionally acquired savings through the Northwest Energy Efficiency Alliance (NEEA), combining for a total estimate of 671,892 therms. The 2026 ACP's expected acquisition matches the conservation target, with overall budgeted expenditures estimated to be \$8,945,894.

Table 2 provides the estimated conservation achievement (in therms) and anticipated expenses for each market sector in Avista's program portfolio, as well as estimated expenses for Evaluation, Measurement, and Verification (EM&V).

**TABLE 2 – 2026 PORTFOLIO SAVINGS AND BUDGET BY SECTOR**

Sector	Therms	Budget
Low-Income Programs	14,879	\$2,862,365
Residential Programs	539,537	\$2,953,379
Commercial/Industrial Programs	110,877	\$470,792
NEEA Savings	6,600	\$551,691
CPA, EM&V	-	\$78,322
Third Party Implementation	-	\$1,134,913
Labor, Marketing, General Implementation	-	\$458,442
Outreach	-	\$14,000
Pilot Programs	-	\$421,988
<b>Total</b>	<b>671,892</b>	<b>\$8,945,892</b>

As Avista enters the first year of its biennial period, its energy efficiency programs remain well positioned to achieve the biennial conservation target identified through its CPA process.<sup>3</sup> Market conditions that have continued to create headwinds for customers remain – including inflation, economic uncertainty, and labor shortages – however, the company is confident the planned program offerings provide ample and adaptive efficiency opportunities for customers. Avista continues to deliver efficiency choices that meet customers' evolving energy needs while prioritizing affordability.

Cost-effectiveness remains a key indicator of Avista's energy efficiency portfolio performance. While Avista pursues all cost-effective measures, the company also retains flexibility in its program portfolio so that meaningful energy efficiency can be achieved by all natural gas customers. Avista's program portfolio includes a segment of programs designed to serve low-income customers, providing a higher level of benefit (incentive) to these more vulnerable populations. Table 3 below provides a summary of portfolio cost-effectiveness for Avista's

<sup>3</sup> See Avista's 2026-2027 BCP, filed in conjunction with this ACP, for information regarding the full biennium.

natural gas program portfolio.

**TABLE 3 – PORTFOLIO COST-EFFECTIVENESS**

	Total Portfolio	Portfolio without Low-Income
Total Resource Cost	1.46	1.98
Utility Cost Test	1.00	1.54

For 2026, the achievable economic potential identified for the first year of the biennium is 717,400 therms, which is inclusive of residential, commercial/industrial, and low-income segments. Table 4 below builds upon this single year look to provide a more comprehensive view of the total 2026-2027 total local biennium target, which includes both Avista’s two-year conservation target in addition to its decoupling commitment.<sup>4</sup>

**TABLE 4 – NATURAL GAS BIENNIAL CONSERVATION TARGET**

Biennial Conservation Target (therms)	
CPA Two-Year Conservation Target	1,552,260
Decoupling Commitment	77,613
<b>Total Two-year Natural Gas Savings Goal</b>	<b>1,629,873</b>

The level of conservation estimated to be achieved in 2026 (and further, throughout the 2026-2027 biennium) will have a direct impact on the current balances within the energy efficiency tariff rider (Schedule 191). Anticipated spending is expected to produce an underfunded balance by the end of 2026. To appropriately and adequately meet the anticipated costs of achieving the savings targets outlined in this 2026 *ACP* and associated 2026-2027 *BCP* – in addition to remedying an existing underfunded balance – Avista filed revisions to its Schedule 191 on May 30, 2025. The new collection rates for Schedule 191 were approved effective August 1, 2025. Tariff rider balance estimates for 2026 are shown in Table 5 below.

**TABLE 5 – 2026 TARIFF RIDER BALANCE ESTIMATES**

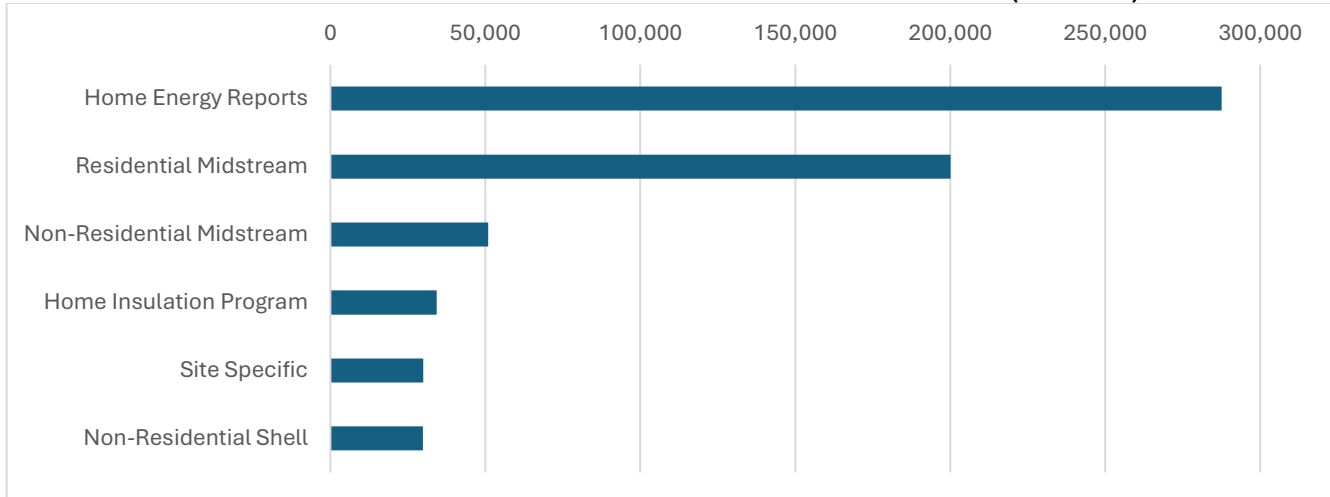
Estimated Natural Gas Energy Efficiency Balances	(Underfunded)/ Overfunded
Estimated Balance at January 1, 2026	\$(6,709,057)
Tariff Rider Funding	\$14,926,764
Annual Expenditures	\$8,930,492
Estimated Balance at December 31, 2026	\$(712,785)

<sup>4</sup> As established within Avista’s 2019 General Rate Case (GRC), Dockets UE-190334, UG-190335, and UE-190222 (Consolidated), Final Order 09.

## Energy Efficiency Portfolio Overview

Avista’s energy efficiency portfolio is composed of residential, low-income, and commercial/industrial programs. For 2026, the company anticipates savings of approximately 676,000 therms from its program offerings. Figure 1 illustrates the major categories from which savings are achieved.

**FIGURE 1 – SAVINGS FROM ENERGY EFFICIENCY PROGRAMS (THERMS)**



## Overall Energy Efficiency Budget Projections

Avista’s budget process is consistent with the company’s commitment to achieve all cost-effective energy efficiency measures and 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 timely enough to maintain a materially neutral tariff rider balance. The budget is thus a product of the planning process rather than 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, nor does it represent any minimum commitment or achievement of savings for any given program.

The overall 2026 budget projection is summarized in Table 6, which includes elements of the energy efficiency budget that have been designated as “supplemental” to indicate they are not included in the cost-effectiveness calculation. These supplemental costs include the funding associated with regional programs like NEEA, as well as funds for third-party CPA and EM&V studies.

**TABLE 6 – ENERGY EFFICIENCY BUDGET SUMMARY**

	2026 Natural Gas Budget	Supplemental Budget	Non-Supplemental Budget
Total Incentives	\$6,271,136	\$ -	\$6,271,136
Administrative Labor	\$125,216	\$ -	\$125,216
Total Non-Labor/Non-Incentive	\$1,982,449	\$598,310	\$1,384,140
NEEA	\$551,693	\$551,693	\$ -
<b>Total</b>	<b>\$8,930,492</b>	<b>\$1,150,002</b>	<b>\$7,780,491</b>

Program-by-program details of the expected incentive expenditures for 2026 are provided in greater detail in Table 7. 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
<b>Low-Income Programs</b>	
Low-Income	\$2,862,365
<b>Total Low-Income Incentives</b>	<b>\$2,862,365</b>
<b>Residential Programs</b>	
Residential Prescriptive	\$1,408,104
Residential Midstream	\$1,529,875
<b>Total Residential Incentives</b>	<b>\$2,937,979</b>
<b>Commercial/Industrial Programs</b>	
Prescriptive Shell	\$188,816
Commercial Midstream	\$177,275
Site-Specific	\$104,701
<b>Total Commercial/Industrial Incentives</b>	<b>\$470,792</b>
<b>Total of All Incentives</b>	<b>\$6,271,136</b>

Non-incentive expenses, including both non-supplemental and supplemental expenditures, are detailed to a lower level of aggregation and broken out by portfolio in Table 8. These expenses are allocated by the percentage of overall avoided cost achieved through each program's energy efficiency achievements. An exception to this allocation methodology is that third-party non-incentive payments are directly attributable to the programs they originate from.

**TABLE 8 – NON-INCENTIVE UTILITY EXPENSE DETAIL**

Expense Type	Washington Natural Gas Portfolio	Supplemental Budget	Non-Supplemental Budget
NEEA	\$551,691	\$551,691	\$ -
CPA, EM&V	\$78,322	\$78,322	\$ -
Third Party Implementation	\$1,134,913	\$ -	\$1,134,913
Outreach	\$14,000	\$14,000	\$ -
Labor, Marketing, General Implementation	\$458,442	\$84,000	\$374,442
Pilot Programs	\$421,988	\$ -	\$421,988
<b>Total</b>	<b>\$2,659,356</b>	<b>\$728,013</b>	<b>\$1,931,343</b>

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.

### Residential Portfolio Overview

Avista’s residential portfolio is comprised of several approaches to engage and encourage customers to make energy efficiency improvements in their home. The Midstream program is the largest contributor of therm savings to the residential portfolio and includes incentive offerings for HVAC and water heating measures.

Windows and ENERGY STAR Manufactured homes incentives are offered through a long-standing prescriptive rebate model. Avista also recently launched its Home Insulation Program, a direct-install offering for insulation and air sealing measures for residential customers in Washington. The On-Bill Repayment Program provides customers access to a simple and convenient financing option for efficiency upgrades at an affordable interest rate. These programs are supplemented by educational and outreach efforts, including a residential Home Energy Audit Program.

For the 2026 program year, Avista anticipates approximately 543,742 therms to be achieved through residential programs with an expected spend of \$2,953,379. Table 9 summarizes 2026 residential program savings and budget estimates.

**TABLE 9 – RESIDENTIAL PROGRAM OVERVIEW**

Residential Programs	Natural Gas Program Savings (Therms)	Expected Incentive Spend
Residential Midstream	200,138	\$1,529,875
Residential Prescriptive	339,399	\$1,408,104
<b>Total Residential</b>	<b>539,537</b>	<b>\$2,937,979</b>

## ■ Residential Marketing

Avista has a robust residential marketing strategy. Historically, the company utilized traditional marketing tactics like broadcast and print media. Over the past several years, residential marketing tactics have shifted to align with commercial ones. The company has expanded its use of digital, search, streaming, and video sharing platforms, in addition to organic and unpaid tactics. Education and awareness messaging focuses on energy-saving tips, available rebate programs, and customer success stories.

In 2024, Avista launched the “Power of Change” campaign to reach customers on social media channels, streaming and digital platforms, and YouTube. The campaign provides energy efficiency tips and promotes rebates and programs. It is designed to increase customer awareness and engagement with energy efficiency, ideally helping to drive program participation. Its creative collateral is approachable and seasonally relevant, designed to reach customers in target demographics with customized messaging. Through this campaign, Avista is reaching out to customers on the platforms they are increasingly turning to for trusted communication. It increases their exposure to energy efficiency messaging and provides relatable content through both static and motion ads. Due to its continued success, the “Power of Change” campaign has been extended through at least 2026.

**FIGURE 2 – RESIDENTIAL “POWER OF CHANGE” DIGITAL ADVERTISING CAMPAIGN EXAMPLES**



## ■ Residential Programs

### Residential Prescriptive Program

#### ***Program Description***

Prescriptive measures offer a simple pathway to encourage customers to adopt qualifying efficiency measures. Prescriptive programs do not require a pre-installation contract, instead offering 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 in this section.

**TABLE 10 – RESIDENTIAL PRESCRIPTIVE PROGRAM METRICS**

<b>Projected Program Metrics</b>	
Overall Therm Savings	339,399
Incentives	\$1,408,104
Non-Incentive Utility Costs	\$378,135
<b>Total Costs</b>	<b>\$1,795,239</b>

#### ***Equity Considerations***

The Residential Prescriptive Program will continue to implement targeted strategies to ensure equitable access and benefit distribution across all customer segments, with a focus on Named Communities and underserved populations. Avista has realigned collateral and physical applications to culturally relevant materials to reduce communication barriers. Participation pathways will be streamlined through simplified processes and personalized support from associate program managers, including community-based outreach events. Outreach will be enhanced through strategic partnerships with our communities and targeted engagement in rural and high energy-burdened areas.

#### ***Program Revisions***

No revisions to this program are planned for 2026.

### Residential Appliance Program

#### ***Program Description***

Residential appliance measures are intended to motivate customers to purchase appliances that demonstrate higher than average energy-efficient performance by meeting ENERGY STAR criteria for efficiency. ENERGY STAR acts as an independent third-party, maintaining a website of qualified products and verifying the performance of various appliances. Customers are asked to provide an ENERGY STAR certificate for each appliance they purchase, along with an application and purchase documentation.

**TABLE 11 – RESIDENTIAL APPLIANCE PROGRAM METRICS**

<b>Projected Program Metrics</b>	
Overall Therm Savings	995
Incentives	\$9,650
Non-Incentive Utility Costs	\$2,720
<b>Total Costs</b>	<b>\$12,370</b>

***Program Eligibility***

All Washington residential natural gas customers who utilize a natural gas water heater and who purchase ENERGY STAR certified front-load clothes washers are eligible for appliance rebates. Appliance rebates for natural gas dryers are also available for customers who have Avista-provided natural gas.

***Equity Considerations***

In 2026, the Residential Appliance Program will actively advance equity by translating program materials into Spanish to better serve Avista’s linguistically diverse communities. A dedicated team of associate program managers will support customers, particularly those in Named Communities and rural areas, by simplifying eligibility and documentation processes. Avista has established relationships with community partners and advisory panels to guide real-time program adjustments and ensure responsiveness to local needs. These efforts will reduce participation barriers, increase awareness, and tailor services to meet the unique needs of underserved populations.

***Program Revisions***

The Residential Appliance Program will retain its existing measures through the 2026 program year. While no new measures are being introduced at this time, program staff are actively reviewing RTF findings and exploring additional opportunities to expand offerings. The clothes washer and dryer measures are under consideration for sunset in 2027, and customers will begin to be informed that rebate submission deadlines for these items may be approaching. Final decisions regarding measure updates will be made following further evaluation in late 2026.

**Residential Window Measures**

***Program Description***

This program encourages customers to improve their home’s shell or exterior envelope with upgrades to windows and storm windows. Energy efficiency marketing efforts build considerable awareness of opportunities in the home and drive customers to Avista’s website for rebate information. Vendors generate participation in the program using rebates as a sales tool for their services. Other communications the company uses to encourage program participation includes utility website promotion, vendor training, and presentations at various customer events throughout the year.

**TABLE 12 – RESIDENTIAL WINDOW METRICS**

<b>Projected Program Metrics</b>	
Overall Therm Savings	16,589
Incentives	\$279,136
Non-Incentive Utility Costs	\$95,432
<b>Total Costs</b>	<b>\$374,568</b>

***Program Eligibility***

All Avista Washington residential natural gas customers who install qualified windows and meet all program requirements for installation are eligible for the program. Self-install options for windows and storm windows will also continue. Rebates are offered on a per-window basis and are tiered, offering a higher rebate for a lower u-factor rating.

***Equity Considerations***

This program will enhance equity by translating materials for linguistically diverse communities and featuring inclusive marketing that reflects customer experiences. Messaging will emphasize health, comfort, and financial benefits, especially for households with high energy burdens. Associate program managers will streamline processes to support customers in Named Communities and rural areas. Ongoing engagement with community and advisory panels will ensure responsive program adjustments. These efforts will continue to reduce barriers, increase awareness, and better reach underserved populations.

***Program Revisions***

No revisions to this program are planned for 2026.

## Home Insulation Program

### **Program Description**

This program, launched in August of 2025, offers a direct-install insulation and air sealing service for residential customers. The program is intended to deliver energy savings while increasing customer engagement and satisfaction through innovative marketing and delivery approaches.

**TABLE 13 – HOME INSULATION PROGRAM METRICS**

Projected Program Metrics	
Overall Therm Savings Projected	34,264
Total Incentives Projected (Materials,Labor)	\$1,119,318
Non-Incentive Utility Costs	\$197,119
<b>Total Costs</b>	<b>\$1,316,437</b>

### **Program Implementation**

Avista is partnering with Resource Innovations and C+C as third-party implementers for the program. Their delivery model includes onsite audits to assess insulation needs and identify air sealing opportunities in walls, attics, and floor spaces. The implementers will enforce program guidelines with Avista’s trusted network of trade allies, who will then install appropriate energy-saving measures at each residence.

Program offerings for gas measures are designed to cover approximately 70 percent of project costs, on average.

### **Program Eligibility**

The program is available to natural gas service residential customers in Washington who use natural gas as their primary heating source and live in single-family homes, condominiums, or multifamily properties of up to four units. Eligibility is determined by meeting pre- and post-installation R-value requirements for insulated areas, which may include floors, attics, and walls.

### **Equity Considerations**

The Home Insulation Program promotes equity through enhanced rebates for Named Community participants. Inclusive outreach and messaging emphasize health, comfort, and financial benefits, especially for homes with little or no insulation. Educational tools are integrated into the enrollment process, and in-network contractors are required to inform customers about the improvements they can benefit from. Focused engagement in Tribal and rural communities, supported by events and sustained presence, will continue to expand access and participation. Ongoing collaboration with community members and advisory panels will ensure the program remains responsive, while efforts continue to reduce barriers and increase awareness among underserved populations.

### **Program Revisions**

No revisions to this program are planned for 2026.

## Residential Midstream Program

### **Program Description**

Common barriers to participation in traditional downstream rebate programs include: a lack of customer awareness of rebate programs; language and technology barriers; and distributors' tendency to stock low-cost, low efficiency units because of the high cost of energy-efficient equipment. Prior to the implementation of Avista's Midstream Program, customers who requested high-efficiency equipment often had to wait weeks for the equipment. By focusing efforts on distributors directly, Avista's Midstream Program leverages distributors' recognized influence over contractors and specific equipment sales while mitigating many participation barriers. Distributors work with contractors to submit claims for Avista customers, and claims are then paid promptly. This approach benefits both the customer as well as the company. Customers have improved equitable access, as they may receive an incentive without having to complete any paperwork or have background knowledge of the rebate program, and Avista gains additional savings without the burden of customers having to submit paperwork to the utility.

**TABLE 14 – MIDSTREAM RESIDENTIAL PROGRAM METRICS**

Projected Program Metrics	
Overall Therm Savings	200,138
Incentives	\$1,529,875
Non-Incentive Utility Costs	\$675,726
<b>Total Costs</b>	<b>\$2,205,601</b>

### **Program Eligibility**

Residential customers are eligible for the program if they have Avista natural gas service and install qualifying equipment through a participating contractor. Avista's implementation partner, Energy Solutions, engages in outreach and education for distributors, who utilize a software system to enter and track claims. Avista has provided basic data to Energy Solutions to enable verification of customer eligibility primarily at the time of claim submittal.

### **Equity Considerations**

The Midstream approach is inherently more equitable than the traditional downstream rebate model, as participation does not rely on customer knowledge of the program and products or customer ability to complete documentation. The program is continuously open at no cost to any interested distributor willing to complete a participation agreement. Any contractor may participate at any time by working with any participating distributor. Distributors will work with contractors to complete the required documentation. The open approach, combined with broad distributor participation, will continue to ensure program incentives are available throughout the service territory.

### **Program Revisions**

No major changes are anticipated for the program in 2026; however, if new measures are planned to be added during the program year, Avista will consult with the EEAG in accordance with established procedures.

## On-Bill Repayment Program

### Program Description

Avista continues to partner with Puget Sound Cooperative Credit Union (PSCCU) to offer the On-Bill Repayment (OBR) Program, which provides a funding solution for Washington State customers who need capital to implement energy efficiency projects.

PSCCU offers Energy-Smart Loans for energy-efficient projects to home and business owners in Washington State, along with personalized underwriting practices and interest rates that are lower than other options in the finance market. Participants reap immediate benefits from energy efficiency upgrades. Paying the loan back on their Avista bill further provides participants with the ease and convenience of one less bill to manage.

Customers' Energy-Smart Loan installments are billed monthly as a line item on the Avista bill until either the term of the loan is completed or Avista is otherwise instructed by PSCCU to remove the loan from the bill. Extra principal payments or early loan payoffs are made directly to PSCCU.

FIGURE 3 – ON-BILL REPAYMENT BILL EXAMPLE

The image shows a sample Avista bill with the following details:

- Account Information:** myavista.com, 1 (800) 227-9187, Account Number [REDACTED], Statement Date: 09/03/2021, Service Address: 170 16 [REDACTED] 210.
- Monthly Statement Summary:**

Total Amount Due	Due Date
\$198.96	Sep 23, 2021
- Bill at a Glance:**

Previous Balance Due	\$59.19
Payment(s) Received Through 09/03/2021	0.00
<b>Subtotal</b>	<b>\$59.19</b>
<b>New Charge(s)</b>	
Electric	20.27
Natural Gas	9.50
Energy-Smart Loan	110.00
<b>Total Amount Due This Month</b>	<b>\$198.96</b>
<b>Due Date (Applies to new charges only):</b>	<b>Sep 23, 2021</b>
- Your Message Center:**
  - Disconnections for non-payment resume **October 1**. Visit [myavista.com](http://myavista.com) for assistance for more detailed information. If you find you're behind on your bill, please contact us now by calling (800) 227-9187 or email us at [ask@myavista.com](mailto:ask@myavista.com) to prevent disconnection. We know these are challenging times and we're here to help. Visit [myavista.com/tips](http://myavista.com/tips) for ways to stay cool this summer!
  - Puget Sound Cooperative Credit Union (PSCCU) Energy-Smart Loan Number(s) M88920-VD1, M88921-VD2. If you have questions contact PSCCU at 800-273-1560 or [askus@psccu.org](mailto:askus@psccu.org).
  - Your electric bill includes Federal Columbia River benefits supplied by the Bonneville Power Administration.

PSCCU's favorable interest rates are further lowered by Avista subsidies to allow more customers access to energy efficiency project funding.

**TABLE 15 – ON-BILL REPAYMENT PROGRAM RATES AND TERMS**

<b>Loan Amount</b>	<b>\$1,000 – \$30,000 Residential</b>	<b>\$5,000 – \$75,000 Small Business</b>
Interest rate	Up to 7.50% APR	Up to 7.50% APR
Term	Up to 15 years	Up to 15 years
Recording fee	\$700 UCC filing fee*	Varies*
Example	\$15,000 loan at 7.50% APR; 180 payments at \$139.05 per month	

\* Fees can be paid up front or added to the loan at the borrower’s discretion.

Participation in the OBR Program is outlined below.

**FIGURE 4 – ON-BILL REPAYMENT CUSTOMER PARTICIPATION JOURNEY**

<b>Bid &amp; Loan Application</b>	<ul style="list-style-type: none"> <li>– Contractor works with customer to complete bid and sends documents to askus@PSCCU.org</li> <li>– Customer applies for the loan at www.pscu.org/Borrow/Energy-Smart-Loans. Paper applications mailed upon request.</li> </ul>
<b>Review</b>	<ul style="list-style-type: none"> <li>– Puget Sound Cooperative Credit Union (PSCCU) reviews bid and loan application.</li> </ul>
<b>Approval</b>	<ul style="list-style-type: none"> <li>– Within three business days, PSCCU communicates credit and project decision to customer and communicates loan funding decision to contractor.</li> <li>– Customers may also request pre-approval for a project in the near future.</li> </ul>
<b>Loan Documents</b>	<ul style="list-style-type: none"> <li>– PSCCU sends loan documents for electronic signatures (or sends by postal mail if needed). Customer reviews, signs, and returns.</li> </ul>
<b>Project Begins</b>	<ul style="list-style-type: none"> <li>– PSCCU notifies contractor when loan is ready for funding and work may begin. With permission from the borrower, a partial payment of loan amount may be deposited to the contractor.</li> </ul>
<b>Project Completed</b>	<ul style="list-style-type: none"> <li>– Contractor installs upgrade and submits customer-signed final invoice to the credit union to askus@pscuc.org or directly to the loan officer handling the loan.</li> </ul>
<b>Final Payment</b>	<ul style="list-style-type: none"> <li>– PSCCU distributes remaining loan balance to the contractor.</li> <li>– Avista rebates can be applied for directly with Avista for qualifying projects.</li> </ul>

Energy-Smart Loans through Avista’s OBR Program are intended for customers who need assistance for upfront capital for the purchase of energy efficiency equipment and related labor. However, the program is not intended to divert income-qualified customers from obtaining no-

cost weatherization services through their local CAA. To this end, processes are in place to ensure that income-qualified customers are directed to CAAs for qualification. Income-qualified customers may apply for an Energy-Smart Loan and participate in the OBR Program if they choose to do so, after all other options have been shared with them.

### ***Program Eligibility***

Residential and small business customers in owner-occupied buildings may be eligible for OBR; funded measures must be fueled by Avista. An eligible projects list created by Avista and supported by Washington State's Clean Energy Fund program guidelines is maintained on both Avista's and PSCCU's websites; customers can refer to this list when considering this funding solution for their project.

### ***Equity Considerations***

OBR promotes equity by delivering targeted outreach that highlights the health, comfort, and financial benefits of energy efficiency, especially for households with high energy burdens. Customers can finance improvements through a bank loan integrated with their Avista utility bill, eliminating the need for upfront payment. Associate program managers will continue to streamline support for customers in Named Communities and rural areas through direct outreach and accessible communication channels. Ongoing collaboration with community and advisory panels will ensure the program remains responsive and inclusive. These efforts are reducing barriers, increasing awareness, and improving service to underserved populations.

### ***Program Revisions***

Avista will offer a loan rate of 7.5% for the OBR program in 2026. Avista recognizes the key to the program's success is Avista's trade allies, who will help promote and deliver the program. Multi-channel Avista marketing efforts also drive customers to the OBR program.

## Home Energy Audit Program

### ***Program Description***

The Home Energy Audit 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 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.

Key components of this program include (a) providing customers with a home assessment from a knowledgeable and qualified home inspector with energy auditor credentials, (b) direct installation measures such as pipe wrap and LEDs, (c) marketing efforts to drive customers to the program, and (d) energy efficiency education that includes increasing awareness of behavioral impacts on energy use, as well as awareness of Avista's rebate programs, products, and services. The Avista website also communicates program requirements and highlights opportunities for customers. Customers participating in the program receive a comprehensive and detailed Home Energy Assessment Report that includes energy savings measures targeted to the specific home, as well as direct installation and leave-behind materials.

### ***Program Implementation***

Avista anticipates continued growth in demand for the Home Energy Audit Program in early 2026, driven by weather-related factors and expanded marketing efforts. In 2025, demand exceeded auditor capacity, a trend expected to persist into 2026. To enhance accessibility and reduce wait times, Avista has partnered with Homeboost to introduce a do-it-yourself audit option. This offering enables customers to complete an audit using a mailed kit and mobile application, generating results comparable to the traditional in-home audit. Both options will be available in 2026, providing greater flexibility for participants. Avista projects approximately 2,027 audits will be completed during the program year.

### ***Program Eligibility***

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

### ***Equity Considerations***

The Home Energy Audit Program is driving equitable outcomes through inclusive marketing strategies that resonate with the diverse experiences of Avista's customer base. Messaging focuses on the health, comfort, and financial benefits of energy efficiency, with particular emphasis on households experiencing high energy burdens. To support informed decision-making, educational tools are integrated into the sign-up process, and auditors remain available post-audit to help customers interpret their reports and take meaningful action. Targeted outreach in low-income communities, through events and sustained presence, will continue to create accessible entry points for participation, education, and engagement. Ongoing collaboration with community members and advisory panels will ensure the program remains responsive and adaptive. These efforts are effectively reducing barriers, increasing awareness, and expanding access to underserved populations.

***Program Revisions***

No revisions to this program are planned for 2026.

## Home Energy Reports (HERs) Program

### **Program Description**

Avista launched its Home Energy Reports (HERs) program in the second quarter of 2025 to randomly selected residential dual-fuel and electric only customers. Leveraging a data-driven approach, the reports deliver personalized insights into household energy usage identify opportunities for savings. The reports may include comparative energy usage data for similar homes located in the same geographical area. The reports align with the information available on Avista’s website, which customers can access by logging into their MyAccount.

Unlike the website, which allows customers to pull detailed information on demand, the HERs proactively push tailored content directly to customers. This multichannel strategy is designed to enhance customer engagement and promote energy savings through increased awareness and behavior change. Report cadence varies on the cohort group and includes paper reports mailed four times a year, monthly email reports, or both.

The HERs program began as an educational initiative but is expected to generate measurable energy savings beginning in 2026. First year energy savings for the program are shown in Table 19; the program is currently scheduled to run through Q2 2027.

**TABLE 16 – HOME ENERGY REPORTS PROGRAM METRICS**

Projected Program Metrics	
Overall Therm Savings	287,551
Incentives	\$ -
Non-Incentive Utility Costs	\$91,864
<b>Total Costs</b>	<b>\$91,864</b>

### **Equity Considerations**

Home Energy Reports provide itemized appliance operating costs, comparisons of a customer’s energy use and expenses against similar households, and actionable tips to save energy and money. By delivering these reports directly to customers, Avista promotes engagement and awareness in energy efficiency while reducing barriers to participation.

### **Program Revisions**

In 2026, HERs will transition from an educational program to a claimable energy efficiency program.

## ■ Pilot Programs for 2026

### Hybrid Heat Pump Study

#### ***Program Description***

Avista is halfway through a two-year study evaluating the performance differences between cold climate heat pumps and standard heat pumps, both utilizing a natural gas furnace as backup heating. The study is scheduled to conclude Q4 2026, with final measurement and verification expected by March 2027. The primary objective is to assess the feasibility of incorporating these technologies into Avista's energy efficiency program offerings. In addition to technical performance, the study aims to better understand the economic, environmental, behavioral, and emotional factors that influence customer decision-making when considering major HVAC upgrades. Avista is also exploring customer perceptions of home comfort associated with each system type to support broader clean energy transition efforts.

Avista, working with third-party HVAC and EM&V contractors, installed 12 heat pump systems (six cold-climate and six with natural gas back-up furnaces), and performance monitoring equipment in homes with existing natural gas furnaces with central air-conditioning in fall of 2024. Monitoring equipment was also installed to collect performance data across two heating and cooling seasons.

In 2025, half of the homes in each group received weatherization upgrades to evaluate the impacts of heat-pump sizing. The pilot is supported by an \$800,000 budget.

In addition to its own hybrid heat pump study, Avista is actively supporting and participating in a parallel research initiative by the Energy Trust of Oregon (ETO). Like Avista's study, the ETO study is still underway and focuses on evaluating hybrid electric and gas systems in low- to moderate-income households across Oregon.

#### ***Equity Considerations***

Two of the twelve study participants are either part of Avista's Named Communities or enrolled in the bill-discount program. Impacts will be assessed among all participants, including these two.

## ■ Low-Income Portfolio Overview

### Low-Income Weatherization Program

#### **Program Description**

Low-income programs are offered through a collaborative effort via partnerships between Avista and eight CAAs, including one Tribal Housing Authority, each of which holds a bi-annual contract with Avista. This funding offers significant flexibility for CAAs to deliver weatherization services tailored to the specific needs of each low-income client, using a combination of the most suitable measures for their home.

**TABLE 17 – LOW-INCOME PROGRAM METRICS**

Projected Program Metrics	
Overall Therm Savings	14,879
Incentives	\$2,862,365
Non-Incentive Utility Costs	\$66,219
<b>Total Costs</b>	<b>\$2,928,584</b>

As trusted partners in Avista’s low-income energy efficiency programs, CAAs play a vital role in identifying and qualifying eligible customers, often leveraging referrals from their bill assistance programs. They also coordinate multiple funding sources to deliver comprehensive solutions that address each household’s unique energy needs. Together, Avista and its partner agencies share a common goal: to improve home energy efficiency, reduce energy bills, and alleviate energy burden for income-qualified customers.

Agencies serving Avista’s Washington service territory receive an annual aggregate funding allocation of \$5 million. This funding supports a comprehensive range of services, including energy efficiency upgrades, health and safety improvements, necessary home repairs, agency administration, and overall program support. It applies to both electric and natural gas weatherization programs across the state.

Avista does not require agencies to serve a specific number of homes based on heating fuel type. Instead, in alignment with 2024-2025 BCP Condition 13(a),<sup>5</sup> priority is given to households with high energy use, high energy burden, or other qualifying characteristics, such as seniors, individuals with disabilities, and Tribal communities.

Although funding is allocated to individual agencies, Avista maintains flexibility to respond to evolving needs within the communities served, ensuring that resources are directed where they can have the greatest impact.

The budgets allocated to each agency represent annual funding levels, but they remain flexible and may be adjusted at Avista’s discretion. In 2026, Avista will initiate new two-year agreements with participating agencies, aligning with the 2026–2027 biennium. This two-year budget structure allows agencies to access future-year funds in advance, enabling them to continue serving Avista customers without disruption as they transition into a new contract cycle.

<sup>5</sup> Docket UG-230898, Order 01, Attachment A.

Because many external funding sources operate on a fiscal year while Avista’s utility funding is typically based on a calendar year, utility dollars are often deployed later in the year. This shift in funding availability supports a more consistent and continuous use of utility funds throughout the year, helping establish a regular cadence for utility billing and avoiding a concentration of expenses in the latter half of the calendar year.

Table 18 shows the 2026 budgeted annual funding allocation by agency and counties served. Please note that the contract amounts below include funding for both electric and natural gas weatherization programs.

**TABLE 18 – LOW-INCOME PROGRAM FUNDING BY COMMUNITY ACTION AGENCY**

Agency	County	Funding
Spokane Neighborhood Action Partners (SNAP)	Spokane	\$3,200,000
Rural Resources Community Action	Ferry, Lincoln, Pend Oreille, Stevens	\$470,000
Community Action Center	Whitman	\$350,000
Opportunities Industrialization Council	Adams, Grant	\$190,000
Spokane Indian Housing Authority	Stevens County	\$50,000
Northwest Community Action Center	Klickitat, Skamania	\$45,000
Benton Franklin County Community Action	Franklin	\$45,000
Community Action Partnership	Asotin	\$620,000
Set aside/TBD	–	\$30,000
<b>Total</b>		<b>\$5,000,000</b>

Agencies are authorized to allocate up to 30 percent of these funds for administrative cost reimbursement. Additionally, Avista permits up to 30 percent of the contract value to be used for health, safety, and essential home repairs. This discretionary funding provides agencies with the flexibility to address critical needs that prepare homes for energy efficiency upgrades and help ensure the long-term durability of installed measures.

Avista fully funds a substantial list of energy efficiency measures for natural gas. The list includes all measures on the Deemed Measure Priority List (DMPL) in the Washington State Department of Commerce’s *Weatherization Manual, July 2022* edition, as well as additional utility-approved measures.

**TABLE 19 – LOW-INCOME APPROVED MEASURES AND DIRECT CUSTOMER BENEFITS**

	Projected Participation		Per-Unit Therm Savings	Funding	Direct Benefit to Customer
Air Infiltration – Natural Gas	40	Sq. Ft.	16.09	Fully Fund	\$979.20
ENERGY STAR-Rated Doors	31	Units	12.32	Fully Fund	\$704.40
ENERGY STAR-Rated Windows (u-factor .29)	70,913	Sq. Ft.	0.31	Fully Fund	\$30.74
High-Efficiency Natural Gas Furnace	7	Units	73.55	Fully Fund	\$3,612.67
Water Heater	3	Units	7.74	Fully Fund	\$2,515.62

	Projected Participation		Per-Unit Therm Savings	Funding	Direct Benefit to Customer
Attic Insulation	32,807	Sq. Ft.	0.04	Fully Fund	\$1.87
Duct Insulation	3	Sq. Ft.	0.17	Fully Fund	\$2.92
Floor Insulation	25,372	Sq. Ft.	0.05	Fully Fund	\$2.67
Wall Insulation	13,508	Sq. Ft.	0.06	Fully Fund	\$2.12
Duct Sealing	3	Units	20.17	Fully Fund	\$793.95

In the 2026 program year, many common gas efficiency improvements will remain fully funded. Health, safety, and repair projects will also be eligible for full funding; however, no more than 30 percent of the annual contract may be allocated to these projects, and they must be paired with a qualifying efficiency measure

According to WAC 480-109-100(10)(a), measures identified through the deemed measure priority list in the Weatherization Manual are considered cost-effective. Agencies may use their health, safety, and repair allocation to cover the full cost of the rebated measure if other funding sources are not available. Agencies are encouraged to collaborate with Avista when identifying energy efficiency opportunities that are not on either the approved or the rebate list.

At the conclusion of the 2026 program year, and in alignment with *BCP* Condition 13a(i)(1), Avista will include in its annual and biennial reporting the impact of low-income conservation programs on reducing energy burden, along with the total number of program participants. The utility remains committed to developing and refining strategies that address barriers to participation for eligible customers, ensuring equitable access to energy efficiency services.

## Low-Income Agency Workforce Development Initiative

### ***Program Description***

In late 2023 and early 2024, Avista conducted interviews with CAAs across its service territory and identified a key challenge: limited access to weatherization training. With most training opportunities located in Bellingham, Washington, agency staff faced significant travel burdens that hindered ongoing professional development.

To address this issue, Avista launched the Low-Income Agency Workforce Development Pilot in 2024, partnering with a nonprofit training provider to deliver multi-day sessions in eastern Washington. These trainings focused on core weatherization skills and principles, helping build local capacity and reduce barriers to participation.

In 2025, the pilot program continued with the same foundational trainings, while introducing two important enhancements. First, the Building Analyst Technician (BA-T) training was expanded to include a proctored field exam, allowing participants to earn certification locally and further professionalize their skillsets. Second, Avista added a customizable, one-on-one Program Manager coaching component focused on program policies and procedures. This new offer provided targeted support tailored to the unique operational needs of each CAA.

Throughout both years, all training courses emphasized Healthy Housing Principles and were designed in direct response to agency feedback, reinforcing Avista’s commitment to collaborative, community-driven workforce development.

In 2026, Avista will continue its Workforce Development Training Series in collaboration with its CAA partners. At the beginning of the year, Avista will work closely with each agency to develop a tailored training plan that reflects their specific needs and priorities.

Avista will maintain key offerings introduced in 2025, including one-on-one Program Manager training and proctored BA-T exams. Agencies have shared that this series has been especially valuable given the limited availability of federal funding, and Avista is proud to support their teams through meaningful, accessible training opportunities.

Avista remains committed to investing in workforce development and strengthening its partnerships with CAAs to better serve communities. Avista looks forward to continuing its collaboration with the Building Performance Center and expanding the impact of this program in the year ahead.

### ***Equity Considerations***

In 2026, Avista will continue to prioritize equity in its low-income energy efficiency programs by reducing barriers to participation and ensuring that benefits are distributed fairly across all communities, especially those historically underserved. Several key strategies will guide this work:

1. **Prioritizing high-need households and Named Communities:**  
In alignment with the Clean Energy Transformation Act (CETA) and *BCP* Condition 9(a)1, Avista will continue to prioritize services for households with high energy burden, high usage, and other qualifying characteristics such as seniors, individuals with disabilities, and Native American communities. This approach ensures that resources are directed at those who need them most.
2. **Flexible, community-driven program design:**  
Avista’s partnerships with CAAs allow for localized, culturally responsive program delivery. In 2026, Avista will maintain flexible funding structures that allow agencies to tailor services to the unique needs of their communities, including rural and tribal populations. This includes the ability to allocate up to 30% of funds for health, safety, and essential home repairs, critical for preparing homes for energy efficiency upgrades. Additionally, Avista will be making a formal request to increase the overall program budget for the 2026–2027 biennium to better meet the growing needs of income-qualified customers, particularly considering the limited availability of federal funds for agencies.
3. **Addressing language and process barriers:**  
Avista’s Energy Efficiency and Social Impact teams are working closely with the company’s marketing department to translate outreach materials into multiple languages. This effort will continue in 2026 to expand the reach and impact of program communications, ensuring that non-English speaking and limited-English proficiency households can access services more easily. Additionally, Avista will continue to support

simplified application processes in partnership with CAAs to reduce administrative burdens for customers.

4. Expanding targeted outreach to underserved communities:

In 2026, Avista will expand its targeted outreach efforts to better connect with underserved populations, including rural communities and seniors. One example is the continued partnership with the Silver Café Meals on Wheels program, which helps Avista reach older adults who may be unaware of available energy efficiency services. Through this collaboration, Avista provides information and referrals to seniors during meal deliveries, helping reduce energy burden for a population that often faces mobility and access challenges.

Through these efforts, Avista remains committed to advancing equity, promoting inclusion, and ensuring that all customers, regardless of income, geography, or background, can benefit from clean energy solutions.

## ■ Commercial/Industrial Portfolio Overview

The commercial/industrial energy efficiency market is served through a combination of prescriptive and site-specific offerings, as well as through midstream and clean buildings support programs.

Prescriptive paths do not require pre-project contracting, thus lending themselves to streamlined administrative and marketing efforts, resulting in a straightforward customer experience. 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 Regional Technical Forum's (RTF) Unit Energy Savings (UES).

When the prescriptive or midstream channels are 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 be treated through 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 2026 program year, Avista anticipates approximately 113,697 therms to be achieved through commercial/industrial programs, with an expected spend of \$471,192. Table 20 summarizes 2026 commercial/industrial program estimates.

**TABLE 20 – COMMERCIAL/INDUSTRIAL PROGRAM OVERVIEW**

Commercial/Industrial Programs	Natural Gas Program Savings (Therms)	Expected Incentive Spend
Prescriptive Shell	29,859	\$188,816
Site-Specific	29,915	\$104,701
Commercial Midstream	51,104	\$177,275
Building Operator Certification	2,820	\$400
<b>Total Commercial/Industrial</b>	<b>113,697</b>	<b>\$471,192</b>

## ■ Commercial/Industrial Marketing

Avista has a robust commercial energy efficiency marketing strategy. Historically, the company’s account executives were tasked with promoting programs and energy efficiency and were the primary source of outreach. However, since the COVID-19 pandemic, tactics have shifted to include a greater digital presence. A broad spectrum of paid tactics is now used in addition to promotion by the account executives, energy engineering, and community outreach teams. These paid tactics include digital, streaming, video sharing, and broadcast platforms. They also include emails, customer newsletters, direct mail, and print advertisements. Several commercial programs are also marketed by their third-party implementors. Commercial customers are targeted by industry type, size, geographic location, and other demographic factors.

In 2025, paid social media advertising was added to the company’s commercial energy efficiency marketing strategy when Avista launched the “Power of Change” campaign aimed at increasing customer awareness of energy efficiency benefits. The campaign’s initial goal was to help drive engagement and, ultimately, participation in the company’s programs. Due to its initial success in 2025, the campaign will continue into 2026 with messaging centered around approachable and seasonally relevant energy saving tips, energy efficiency rebates, and programs. Demonstrating adjustments to changing customer preferences, the “Power of Change” campaign humanizes energy savings and includes paid social media ads, both static and motion.

**FIGURE 5 – COMMERCIAL/INDUSTRIAL “POWER OF CHANGE” DIGITAL ADVERTISING CAMPAIGN EXAMPLES**



## ■ Commercial/Industrial Programs

### Business Partner Program

#### ***Program Description***

The Business Partner Program (BPP) is a strategic outreach initiative designed to engage Avista's small business customers by raising awareness of utility programs and services that can help them better manage their energy costs. Recognizing that small business owners and managers are often focused on day-to-day operations and may lack the time or resources to pursue energy improvements, the BPP offers a comprehensive, high-touch approach to support their needs.

Through personalized engagement, the BPP educates these traditionally hard-to-reach customers about their utility bills, available billing options, and financial incentives for implementing energy efficiency measures. The program also highlights valuable services such as electric vehicle resources, loan programs, and energy efficiency rebates, while connecting customers with trade allies who can assist with bid proposals and project implementation.

By building trust and providing tailored information, the BPP empowers small businesses to make informed decisions. The goal is to motivate these customers to take action on improvements that can lead to long-term energy savings and sustainability, resulting in lower monthly energy bills.

Looking ahead to 2026, the BPP will continue to expand its outreach by engaging small business customers through presentations at local Chambers of Commerce, participation in Chamber events and luncheons, and involvement with business associations and community events to further raise awareness of available programs and services.

#### ***Equity Considerations***

Avista will continue to prioritize equitable access to energy efficiency support for small businesses in rural communities by reducing contractor barriers and expanding local capacity. In 2026, Avista will identify underserved rural small business clusters, recruit and coordinate qualified contractors to serve those communities, and provide tailored technical and grant assistance information so participating businesses can complete energy efficiency upgrades affordably and on schedule.

#### ***Program Revisions***

No revisions to this program are planned for 2026.

## Site-Specific Program

### **Program Description**

Avista's Site-Specific Program provides calculated incentives to support the installation of qualifying energy efficiency equipment at commercial/industrial sites. These projects typically involve a higher degree of complexity than the traditional prescriptive or midstream offerings and require custom engineering analysis to determine energy savings and appropriate cost-effective incentive levels. Examples include process improvements, upgrades to specialized manufacturing equipment, advanced lighting systems with integrated controls, and other measures tailored to the customer's operational needs.

Avista's Site-Specific Program is a foundational element of its commercial/industrial offerings and has consistently ranked among the most cost-effective components of the overall energy efficiency portfolio. The program provides customers with technical assistance and customized incentives in accordance with Avista's Schedule 190, supporting energy efficiency projects that deliver measurable savings within the program criteria. Designed for flexibility, the Site-Specific Program accommodates energy efficiency projects that fall outside prescriptive or midstream pathways. These projects typically involve custom engineering analysis and are tailored to the unique operational needs of each customer. Common project types include custom lighting systems, HVAC upgrades, building envelope improvements, and industrial process load reductions.

**TABLE 21 – COMMERCIAL/INDUSTRIAL SITE-SPECIFIC PROGRAM METRICS**

Projected Program Metrics	
Overall Therm Savings	29,915
Incentives	\$104,701
Non-Incentive Utility Costs	\$109,893
<b>Total Costs</b>	<b>\$214,595</b>

### **Program Implementation**

This program offers incentives for qualifying energy-saving measures, up to the incremental cost of the efficiency upgrade, provided the measure's simple payback period is less than its expected useful life. To maximize cost-effectiveness, Avista adjusts the percentage of incremental cost paid, aiming to achieve the greatest energy savings at the lowest cost. Unless a specific business case is presented, incentives are capped at 70 percent of the incremental cost, and measures must demonstrate a simple payback of 15 years or less, based on energy cost savings. Due to the scale and complexity of site-specific projects, savings can be difficult to forecast. Long sales cycles and broader economic conditions may influence customer willingness to invest in energy efficiency. Additionally, increased complexity in eligibility requirements, higher participation costs beyond capital investment, and expenses related to post-installation measurement and verification are actively managed to maintain customer engagement and program effectiveness.

Key components of the program include:

- Direct financial incentives to encourage customer interest
- Targeted marketing efforts

- Dedicated account executives who provide guidance and support throughout the project lifecycle
- Collaboration with trade allies to ensure technical capacity and responsiveness to customer demand

Program requirements, incentive details, and application forms are communicated through the Avista website and the trade ally network, ensuring transparency and accessibility for all eligible participants.

### ***Program Eligibility***

The program is available to all commercial and Industrial natural gas customers and has historically contributed the largest share of verified savings to Avista's energy efficiency portfolio. Its adaptive structure enables Avista to respond effectively to diverse customer opportunities while maintaining alignment with regulatory criteria and cost-effectiveness goals.

### ***Equity Considerations***

The site-specific path allows customers to claim savings from building retrofits and equipment upgrades that will not qualify under the prescriptive path. This enables smaller facilities, which would otherwise be excluded, to participate, allowing for more inclusive participation.

### ***Program Revisions***

No revisions to this program are planned for 2026.

## Pay for Performance Program

### ***Program Description***

The Commercial Pay for Performance Program is an incentive-based program that pays customers for verified energy savings measured directly at the meter. These savings may result from a variety of projects, including building retrofits, equipment upgrades, behavioral changes, operational improvements, maintenance practices, and retro-commissioning efforts. While savings are submitted through the Site-Specific Program, the Pay for Performance differs from the traditional Site-Specific mechanism, offering a distinct approach to compensating customers based on actual performance outcomes.

### ***Program Implementation***

Avista's commercial Pay for Performance Program provides annual incentives based on total verified electricity and natural gas savings, rather than separate incentives for individual energy efficiency measures. Eligible commercial customers who undertake whole-building energy retrofits receive a fixed incentive rate for measurable savings achieved over the course of a three-year period. Incentive payments are issued annually at the end of each year, contingent on verified savings, at rates of \$0.08 per kWh and \$1.25 per therm.

Participation involves submitting a completed rebate application. Avista then establishes a usage baseline, reviews and approves the proposed projects, and issues an Agreement. Following implementation, energy savings are measured against the established baseline, and incentive payments are made annually for up to three years, provided savings targets are met.

### ***Program Eligibility***

This program is open to all Avista commercial customers who own or operate buildings with conditioned heated or cooled space and demonstrate consistent, measurable energy usage. Each participating building must have stable energy consumption over the prior 12 months and be individually metered – preferably with interval meters to support accurate measurement and verification. To qualify, planned improvements must yield at least a 10 percent reduction in the building's baseline electricity or natural gas consumption. Industrial and manufacturing process loads are excluded from this program but may be eligible under Avista's Site-Specific program.

### ***Equity Considerations***

In 2026, the Pay for Performance pathway will expand opportunities for participation by allowing customers to claim savings from building retrofits and equipment upgrades that will not qualify under the Prescriptive or Site-Specific paths. By eliminating the minimum square-footage requirement, this pathway will open the door to a wider range of building owners and operators, including those with smaller facilities that would otherwise be excluded. These changes will help level the playing field, ensuring energy efficiency incentives will be more equitable and inclusive across diverse customer groups.

### ***Program Revisions***

No revisions to this program are planned for 2026.

## Washington State Clean Buildings Law Support Programs

### **Program Description**

Washington State House Bill 1257 was codified into law late in 2019 and expanded in 2024. This law currently requires most existing commercial buildings over 20,000 square feet to benchmark energy use, and complete both energy management and operations and maintenance plans. Larger buildings must also either seek exemption, meet their performance standard or take additional steps that may include an audit and project work.

Avista is 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 four key areas of support shown in Table 20.

**TABLE 22 – COMMERCIAL/INDUSTRIAL WASHINGTON STATE CLEAN BUILDINGS ACT SUPPORT EFFORTS**

Service	Start Date	Description
Energy Efficiency Engineering	Late 1970s	Various customer support to identify and incentivize efficiency
ENERGY STAR Portfolio Manager	2009	Monthly energy use data pushes
Clean Buildings Accelerator Program	2022	Cohort-based, comprehensive compliance assistance
Pay for Performance Early Adopter Incentive	2025	Avista pays customer and then gets credit against Public Utility Tax

Avista has offered energy efficiency engineering support for several decades, assisting customers in identifying and incentivizing energy efficient processes and equipment, and working to quantify savings. The engineering team assists commercial and industrial customers within this space.

Since 2009, Avista has supported customers by uploading energy use data to Energy Star Portfolio Manager. The Clean Buildings Law requirement to utilize this resource in benchmarking and reporting has significantly increased the number of customers who utilize Energy Star Portfolio Manager to track energy use at their facilities. The system provides visual tools for assessing energy use at a facility holistically, over time.

Avista has continued to offer a Clean Buildings Accelerator Program to guide customers through the process of compliance. This strategic energy management program educates customers about the law and provides tools including benchmarking assistance, document preparation and controls reviews. Using a cohort-based model allows customers to learn from the facilitators and from their peers. Avista will continue to offer this program based on customer interest. Avista will continue offering the program based on customer interest and the activities and guidance of the Department of Commerce.

Avista will provide early adopter incentive funds to customers under the guidance of the Department of Commerce. The Department of Commerce is responsible for assuring compliance and determining early adopter incentive fund allocations. Avista will administer the payment process and be made whole through Public Utility Tax offsets that will correspond with

approved incentives. The first incentives came through in late 2025 and are expected to continue until state funding caps are reached.

### ***Equity Considerations***

Avista's Clean Buildings Accelerator program is designed to support building owners, including those in Named Communities, in meeting Washington's Clean Buildings Performance Standard. The program is delivered virtually and at no cost, ensuring equitable access regardless of location or financial resources. Through outreach, coaching, and training, participants gain access to tools like ENERGY STAR Portfolio Manager and customized energy management planning. The program's individualized coaching helps overcome barriers such as limited technical expertise, making it easier for building owners to participate and succeed.

By identifying low-cost or no-cost energy-saving opportunities, the program helps decrease operating expenses and can lead to reduced energy burden for building operators or tenants. Additionally, by improving building operating efficiency, the program contributes to lower greenhouse gas emissions and enhanced indoor air quality.

### ***Program Revisions***

No revisions to this program are planned for 2026.

## Commercial/Industrial Prescriptive Insulation Program

### Program Description

The Commercial/Industrial Prescriptive Shell Program provides incentives to customers who improve the envelope of their existing buildings by adding insulation, which may make a business more energy-efficient and comfortable.

**TABLE 23 – COMMERCIAL/INDUSTRIAL PRESCRIPTIVE INSULATION PROGRAM METRICS**

Projected Program Metrics	
Overall Therm Savings	29,859
Incentives	\$188,816
Non-Incentive Utility Costs	\$109,454
Total Costs	\$298,270

### Program Implementation

Under the Commercial/Industrial Prescriptive Insulation Program, incentives are issued to eligible customers following the installation of qualifying insulation measures by a licensed contractor. To participate, commercial customers must demonstrate an annual heating footprint using fuel supplied by Avista. After installation, customers are required to submit a completed rebate form, itemized invoices, and an insulation certificate. Once the project is reviewed and approved, Avista will issue an incentive check either directly to the customer or to a designated recipient. Rebates are capped at the total amount listed on the customer's invoice and are processed through iEnergy using the current-year calculator. Program awareness and participation are supported through outreach by trade allies, Avista account executives, targeted marketing efforts, and the Avista website, which also serves as a central hub for program requirements, incentive details, and downloadable forms.

**TABLE 24 – COMMERCIAL/INDUSTRIAL PRESCRIPTIVE INSULATION PROGRAM MEASURES AND INCENTIVES**

	Projected Participation		Per-Unit Therm Savings	Incentive
Less than R11 Attic Insulation (E/G) to R45+ Attic Insulation	67,205	Sq. Ft.	0.13	\$1.25
Less than R11 Roof Insulation (E/G) to R30+ Roof Insulation	-	Sq. Ft.	0.12	\$1.00
Less than R4 Wall Insulation (E/G) to R11-R18 Wall Insulation	-	Sq. Ft.	0.24	\$1.00
Less than R4 Wall Insulation (E/G) to R19+ Wall Insulation	58,672	Sq. Ft.	0.36	\$1.25

### Equity Considerations

The program's design supports equitable access by minimizing administrative complexity: customers submit post-installation documentation, and incentives are processed through the iEnergy platform, capped at the invoiced amount. To promote participation, Avista uses outreach by trade allies and account executives, targeted marketing, and its website to ensure customers can easily access program information and forms. In 2026, these established

channels will continue to serve as key tools for connecting commercial customers to available energy-saving opportunities.

To further support Named Communities, Avista will prioritize outreach in areas with older commercial building stock, which often lack adequate insulation and present high opportunities for energy savings. Additionally, Avista will explore multilingual materials and culturally relevant outreach strategies to reduce language and communication barriers that may prevent participation. These efforts aim to ensure that businesses in historically underserved areas can fully benefit from insulation upgrades and energy cost reductions.

***Program Revisions***

No revisions to this program are planned for 2026.

## Commercial/Industrial Midstream Program

### **Program Description**

Common barriers to participation in traditional downstream rebate programs include: a lack of customer awareness of rebate programs; language and technology barriers; and distributors' tendency to stock low-cost, low efficiency units because of the high cost of energy-efficient equipment. Prior to the implementation of Avista's Midstream Program, customers who requested high-efficiency equipment often had to wait weeks for the equipment. By focusing efforts on distributors directly, Avista's Midstream Program leverages distributors' recognized influence over contractors and specific equipment sales while mitigating many participation barriers. Distributors work with contractors to submit claims for Avista customers, and claims are then paid promptly. This approach benefits both the customer as well as the company. Customers have improved equitable access, as they may receive an incentive without having to complete any paperwork or have background knowledge of the rebate program, and Avista gains additional savings without the burden of customers having to submit paperwork to the utility.

The Food Service Program is a national model that is familiar to many large commercial chains yet also has the benefit of partnering with local distributors to reach non-chain food service providers.

**TABLE 25 – MIDSTREAM COMMERCIAL PROGRAM METRICS**

Projected Program Metrics	
Overall Therm Savings	51,104
Incentives	\$177,275
Non-Incentive Utility Costs	\$160,928
<b>Total Costs</b>	<b>\$338,203</b>

### **Program Eligibility**

Commercial customers are eligible for the program if they have Avista natural gas service and install qualifying equipment through a participating contractor. Avista's implementation partner, Energy Solutions, engages in outreach and education for distributors, who utilize a software system to enter and track claims. Avista has provided basic data to Energy Solutions to enable verification of customer eligibility primarily at the time of claim submittal. Equipment utilized for industrial processes is not part of the Midstream Program.

### **Equity Considerations**

The Midstream approach is inherently more equitable than the traditional downstream rebate model, as participation does not rely on customer knowledge of the program and products or customer ability to complete documentation. The program is continuously open at no cost to any interested distributor willing to complete a participation agreement. Any contractor may participate at any time by working with a participating distributor. Distributors will work with contractors to complete the required documentation. The open approach, combined with broad distributor participation, will continue to ensure program incentives are available throughout the service territory.

***Program Revisions***

The Midstream Program for HVAC, water heating, and commercial food service will continue in 2026, with Avista considering the addition of radiant heaters and condensing unit heaters to natural gas offerings. Within the food service area of the program, changes in baseline efficiencies for commercial oven measures will require adjustments to both the savings and types of ovens incentivized through the program. The changes will align program offerings with Washington State's House Bill 1619. Avista will continue to evaluate all measures offered through the midstream program and will revise program offerings or incentives as necessary.

## Building Operator Certification Program

### ***Program Description***

Avista offers customers a discount on Building Operator Certification (BOC) training. BOC is a nationally recognized program for building engineers and maintenance personnel to learn how to improve comfort and efficiency within the buildings they operate.

### ***Program Implementation***

The BOC training program and discount are offered in partnership with Building Performance, the regional program administrator. In person and virtual trainings are offered throughout the year in both in-person and virtual settings. Building Performance handles logistics, including hiring instructors and administering registration. The program is advertised by both Building Performance and Avista. Avista staff participate in courses by sharing energy efficiency opportunities with participants.

### ***Program Eligibility***

BOC training is open to building engineers and maintenance staff who oversee one or more commercial buildings within the Avista service territory.

### ***Equity Considerations***

BOC equips building operators with the skills to optimize energy performance in commercial facilities. By applying best practices in HVAC, lighting, and energy management systems, operators reduce energy waste and lower operating costs. These savings translate into more affordable energy bills for all customers, particularly in commercial and institutional sectors. As operators implement low-cost and no-cost efficiency measures, the cumulative impact contributes to system-wide cost containment, supporting Avista's goal of maintaining affordable rates. BOC promotes sustainable operations, including energy and water conservation. These practices reduce greenhouse gas emissions and align with Avista's clean energy goals. Additionally, Avista's support for BOC demonstrates its investment in workforce development and community partnerships, further strengthening customer relationships.

Avista will continue to target BOC participation from organizations that serve Named Communities through targeted, individual outreach. A tuition discount is available for all Avista customers, while those organizations that serve Named Communities may request a full scholarship for tuition costs.

### ***Program Revisions***

No revisions to this program are planned for 2026.

## ■ Commercial/Industrial Pilot Programs

### Roof Top Unit Controls Pilot Program

#### ***Program Description***

This pilot initiative seeks to address a commonly overlooked gap in space heating and cooling controls, particularly among small- to medium-sized businesses using Roof Top Units (RTUs) without an accompanying energy management system (EMS), also known as BAS or BMS. These businesses typically rely on standalone thermostat controls, which may be manual or programmable.

The proposed RTU controls solution includes a controller unit, Wi-Fi-enabled thermostats, a software subscription, and a customer-facing dashboard. To ensure reliable connectivity, Avista will provide a dedicated Wi-Fi access point and cellular service for select pilot sites, minimizing dependence on customer-provided internet.

The RTU controls software operates on a “control you don’t notice” algorithm, which is projected to deliver up to 15% energy savings compared to conventional RTU thermostat controls. Additionally, the system offers building operators enhanced visibility into RTU performance trends, anomalies, and thermostat overrides—enabling improved operational efficiency, asset performance, and control over indoor climate conditions.

Given the emerging nature of this technology, the pilot will follow a phased approach over two years. Phase one will involve a single test site in a controlled environment. Should the initial results demonstrate measurable energy savings, phase two will expand to multiple customer sites to validate consistency and scalability. If proven cost-effective, the technology may be integrated into Avista’s broader energy efficiency program offerings.

Contracting is currently underway, with equipment installation targeted ahead of the 2025–2026 heating season. One full heating and cooling season will be evaluated before determining progression to phase two. Any updates to scope and budget will be provided upon that decision.

The budget for phase one is set at \$10,000.

#### ***Equity Considerations***

This program is designed for small- to medium-sized businesses that lack building automation systems, offering comparable control and operational benefits at a significantly lower cost. By streamlining energy management and providing accessible technology, the program aims to increase customer participation, drive measurable energy savings, and enhance comfort for a broader range of business customers. This approach helps bridge the gap in energy efficiency access for businesses that may otherwise face financial or technical barriers. This presupposition will be evaluated in 2026.

## ■ Regional Market Transformation

Market transformation consists of 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, NEEA, is currently in the second year of its 2025-29 funding cycle. Avista has been an active participant and funder of this collaborative effort since its inception. 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.

For 2026, Avista's Washington portion of the NEEA natural gas budget is expected to be approximately \$551,000. NEEA funding requirements are incorporated within the budget but are 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 2026 local portfolio developed within this *ACP*. NEEA provided Avista with a 2026 savings forecast of 6,600 therms<sup>6</sup> derived from an estimated 900 therms attributed to efficient rooftop units, 3,100 therms attributed to commercial kitchen equipment, and 2,600 therms attributed to commercial new construction.

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<sup>6</sup> If NEEA fails to achieve this target, Avista will be invoiced only for actual savings achieved.

## ■ Avista-Specific Methodologies and Analytical Practices

Over time, Avista has evolved in its approach to calculate the various metrics applied within the planning effort to meet the needs of its portfolio and jurisdictional regulation. Care has been taken to ensure that these approaches are consistent with the intent of the Northwest Power and Conservation Council's (NWPCC) 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). Because the total resource cost (TRC) test and utility cost test (UCT) are the basis for optimizing the portfolio, 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 CPAs
- 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 test and UCT cost-effectiveness analysis that incorporates 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<sup>7</sup>. Future costs and benefits are discounted to the present value and compared for cost-effectiveness purposes. Generally, energy and non-energy benefits (NEBs) 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), or NEIs, 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). Starting in 2024, the modified TRC test will become the primary cost-effectiveness test for natural gas programs in Avista's Washington portfolio.

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) is not considered to be a TRC. These costs 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

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<sup>7</sup> Avista uses a discount rate of 4.29% for commercial/industrial and residential programs.

not incorporated within the program cost. This is consistent with permitting tax credits to offset customer incremental costs 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.

### ***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 non-company parties that adequately identify the acquisition of energy efficiencies 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.

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 Avista, Avista actively participates in regional energy efficiency activities. The company has a voting role on the RTF, a critical advisory committee to the NWPCC. 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 NEEA in various pilot projects or subcommittee evaluations. Portions of the energy efficiency savings acquired through 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.

The EM&V vendor for evaluation of program year 2026 has not been determined as of this writing. Avista will be issuing a Request for Proposal (RFP) in Q4 of 2025 to select the independent third-party evaluator for the 2026-2027 biennium. Once the contract has been awarded, the EEAG will be informed of the selection.

### ***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. Avista is appreciative of the valuable work the RTF has done to quantify non-energy impacts (NEI) for the region and where values have not been identified, Avista will look to the RTF to supplement values. The company views these efforts as an iterative process and expects that more discovery will take place in the future.

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 interested parties as conversations around cost-effectiveness arise.

### ***Schedule 190 – Energy Efficiency Programs***

Avista's natural gas energy efficiency operations are governed by Schedule 190 tariff requirements. This tariff details 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.

For 2026, Avista has not proposed any changes to the language in this schedule.

***Schedule 191 – Demand Side Management Rate Adjustment***

Avista evaluates the need for revisions to its natural gas tariff Schedule 191 – Demand Side Management Rate Adjustment tariff on an annual basis with revisions occurring each June 1, if needed.

## ■ Conclusion and Contact Information

This 2026 *ACP* represents program efforts by Avista to achieve its expected eligible acquisition savings for the first year of the 2026-27 biennium. In addition, the plan is designed to identify various activities that promote and support energy efficiency for the transition to clean energy, for reduction of energy costs for customers, and deferral of investments in Avista's energy system. For additional supporting information, please see the following appendices:

- Appendix A – 2024-2025 Energy Efficiency Evaluation, Measurement, and Verification Work Plan
- Appendix B – Cost Effectiveness Methodology
- Appendix C – Natural Gas Program Summary

For further information, please contact:

**Nicole Hydzik**

*Director, Energy Efficiency*

509.495.8038

Nicole.Hydzik@avistacorp.com

**Kim Boynton**

*Manager, Energy Efficiency Analytics*

509.495.4744

Kim.Boynton@avistacorp.com

**Meghan Pinch**

*Manager, Energy Efficiency Program Management*

509.495.2853

Meghan.Pinch@avistacorp.com

## ■ Glossary of Terms

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

**adder:** An additional amount, typically a percentage, added to a quantification of conservation savings, risks, and/or benefits.

**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.

**advisory group:** Avista's group of external interested persons and efficiency program experts who advise on the company's planned energy efficiency activities, as well as activities under consideration.

**Air-Conditioning, Heating, and Refrigeration Institute (AHRI):** The trade association representing manufacturers of HVAC 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.

**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 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 Btu are equal to one kilowatt-hour).

**busbar:** The physical electrical connection between the generator and transmission system. Load on the system is typically 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.

**cooling degree days:** A measure of how hot the temperature was on a given day or during a period of

days. Cooling 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 above which cooling is typically needed. As an example, a day with a mean temperature of 80°F has 15 cooling degree days. If the next day has a mean temperature of 83°F, it has 18 cooling degree days.

**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.

**Customer Benefit Indicator (CBI):** An attribute, either quantitative or qualitative, of a resource or related distribution investment associated with customer benefits.

**customer/customer classes:** A category, or categories, of customers 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, Btu 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.

**highly impacted community:** designated by the Washington Department of Health, any census tract with an overall ranking of 9 or 10 on the Environmental Health Disparities map, or any census tract with tribal lands.

**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 participants.

**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](http://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 levelizing 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](http://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.

**Named Community:** Represents areas within Avista's service territory that are considered to be a highly impacted community or vulnerable population.

**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 (NWPCC):** 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 (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 is 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 commercial/industrial 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 non-participant 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 third party evaluator.

**vulnerable population:** Communities that experience a disproportionate cumulative risk from environmental burdens.

**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.

**8,760:** Total number of hours in a year.

## ■ Appendix A – 2024-2025 Energy Efficiency Evaluation, Measurement, and Verification Work Plan

*Note: The EM&V vendor for evaluation of program year 2026 has not been determined as of this writing. Avista will be issuing a Request for Proposal (RFP) in Q4 of 2025 to select the independent third-party evaluator for the 2026-2027 biennium. Once the contract has been awarded, the EEAG will be informed of the selection. In the interim, the 2024-2025 EM&V Work Plan has been included for reference.*

# Work Plan for Evaluation, Measurement and Verification (EM&V) of Avista's 2024 - 2025 Energy Efficiency Programs

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*Prepared for:*  
Avista Corporation

*Delivered on:*  
August 29, 2024

*Prepared by:*



**ADM Associates, Inc.**  
3239 Ramos Circle  
Sacramento, CA95827  
916.363.8383

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# Technical Evaluation Plan

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This Evaluation, Measurement, and Verification (EM&V) Work Plan details the methods by which ADM Associates, Inc. (ADM) will complete the impact and process evaluation of Avista Utility's (Avista) 2024-2025 Programs as-specified in ADM's response to the Request for Proposals (RFP) R-44922 for evaluating Avista Utility's ("Avista") 2024-2025 energy efficiency programs (residential, low-income, and non-residential) in Idaho and Washington.

## 1. Summary of Avista's Energy Efficiency Portfolio

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Table 1-1 summarizes the programs offered to residential and low-income customers in the Avista service territory as well as ADM's impact and process evaluation tasks and impact methodology for each program. Table 1-2 and Table 1-3, portrays the same information for the programs offered to Avista's non-residential customers and the pilot programs offered within Avista's territory, respectively.

*Table 1-1: Residential and Low-Income Impact Evaluation Activities by Program*

Program	Database Review	Document Verif.	Survey Verif.	On-Site Verif.	Electric Impact Methodology	Gas Impact Methodology
Residential Appliance and Thermostat Program	✓	✓	✓		RTF UES	IPMVP Option C: Billing analysis with comparison group
Residential ENERGY STAR Manufactured Homes Program	✓	✓			RTF UES	Avista TRM
Residential Shell Program	✓	✓	✓		RTF UES	IPMVP Option C: Billing analysis with comparison group
Residential Fuel Efficiency Program	✓	✓	✓		RTF UES and Avista TRM	IPMVP Option C: Billing analysis with comparison group
Residential Midstream Program	✓	✓			RTF UES	IPMVP Option C: Billing analysis with comparison group
Residential Multifamily Weatherization – New Offerings Program	✓	✓			RTF UES and Avista TRM	IPMVP Option C: Billing analysis with comparison group
Residential On-Bill Repayment/Financing Program	✓	✓			IPMVP Option C: Billing analysis with comparison group	
Residential Always-On Behavioral Program	✓				IPMVP Option C: Billing analysis with RCT groups	
Residential Behavioral Program	✓				IPMVP Option C: Billing analysis with RCT groups	
Residential Home Energy Audit Program	✓				RTF UES/Avista TRM/ IPMVP Option C: Billing analysis with comparison group	
Residential Direct Install Insulation Program	✓	✓	TBD	TBD	TBD	TBD
Low-Income Program	✓	✓	✓		RTF UES/IPMVP Option C: Billing analysis with comparison group	
Named Community Investment Fund (NCIF) Program	✓	✓	TBD	TBD	TBD	TBD

*Table 1-2: Non-residential Impact Evaluation Activities by Program*

Program	Database Review	Document Verif.	Survey Verif.	On-Site Verif.	Electric Impact Methodology	Gas Impact Methodology
C&I Appliance and HVAC Controls Program	✓	✓	✓		RTF UES	RTF UES
C&I Site-Specific Program	✓	✓	✓	✓	IPMVP Options A, B, C, D as appropriate	
C&I Prescriptive Lighting Program	✓	✓	✓		Engineering algorithms with equipment inputs	N/A
C&I Small Business Direct Install Lighting Program	✓	✓	✓		Engineering algorithms with equipment inputs	N/A
C&I Prescriptive HVAC Variable Frequency Drive Program	✓	✓	✓		RTF UES	N/A
C&I Midstream Program	✓	✓			RTF UES, engineering algorithms with equipment inputs, CA eTRM and Avista Midstream TRM	IPMVP Option C: Billing analysis with comparison group
C&I Prescriptive Shell Program	✓	✓	✓		Avista TRM	
C&I Green Motors Program	✓	✓	✓		RTF UES	N/A
C&I Grocer Program	✓	✓	✓		RTF UES and Avista TRM	N/A
C&I Building Operator Certification Program	✓	✓			BOC Study <sup>1</sup>	N/A

<sup>1</sup> <https://www.theboc.info/wp-content/uploads/2023/11/2023-BOC-Energy-Savings-FAQ-Final.pdf>

*Table 1-3: Pilot Impact Evaluation Activities by Program*

Program	Database Review	Document Verif.	Survey Verif.	On-Site Verif.	Electric Impact Methodology	Gas Impact Methodology
Time of Use Pilot	✓				IPMVP Option C: Billing analysis with comparison group	N/A
Peak Time Rebates Pilot	✓				IPMVP Option C: Billing analysis with comparison group	N/A
Hybrid Heat Pump Pilot	✓	✓	✓		IPMVP Option C: Facility-level regression analysis with NTG adjustments	
Building Operator IQ Pilot	✓	✓			IPMVP Option C: Facility-level regression analysis with NTG adjustments, IPMVP options A, B or D as needed	
Compressed Air Pilot	✓	✓	TBD	TBD	TBD	TBD
Pay for Performance Pilot	✓	✓	✓	✓	IPMVP Option C: Facility-level regression analysis with NTG adjustments, IPMVP options A, B or D as needed	
Additional Pilots	TBD	TBD	TBD	TBD	TBD	TBD

## 2. Impact Evaluation Approach

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ADM will perform an impact evaluation on each of the programs. ADM will use the following approaches to calculate energy impact defined by the International Performance Measurement and Verification Protocols (IPMVP) and the Uniform Methods Project (UMP):

- Simple verification (document-based, survey-based)
- Deemed savings
- Partially/Fully Measured Retrofit Isolation (IPMVP Options A & B)
- Whole building billing analysis (IPMVP Option C)
- Simulation modeling (IPMVP Option D)

ADM will complete and report the results of the above impact tasks for each of the electric impacts and the natural gas impacts for each state separately.

The M&V methodologies are program-specific and determined by previous Avista evaluation methodologies as well as the relative contribution of a given program to the overall energy efficiency impacts. ADM will review relevant information on infrastructure, framework, and guidelines set out for EM&V work in several guidebook documents that have been published over the past several years. These include the following:

- Northwest Regional Technical Forum (RTF)
- Technical reference manuals, such as the Avista TRM, AR TRM 9.2, PA TRM 2021 and the IL TRM 12.0
- National Renewable Energy Laboratory (NREL), United States Department of Energy (DOE) The Uniform Methods Project (UMP): Methods for Determining Energy Efficiency Savings for Specific Measures, April 2013<sup>2</sup>
- International Performance Measurement and Verification Protocol (IPMVP) maintained by the Efficiency Valuation Organization (EVO) with sponsorship by the U.S. Department of Energy (DOE)<sup>3</sup>

We will keep our data collection instruments, calculation spreadsheets, and monitored/survey data available at the request of Avista. Any component of the data collection or analysis will be made available to Avista and will remain available through prudence review and investigation as required by the Washington Utilities and Transportation Commission and the Idaho Public Utilities Commission, subsequent to the 2024-25 evaluation period. All communications (including data transfer) will be consistently performed with constant communication and data sharing protocols established in the kick-off meeting. This transparency will allow for independent review of ADM's efforts. We believe that self-contained, transparent, and auditable M&V data and analysis products can minimize the long-term

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<sup>2</sup> Notably, The Uniform Methods Project (UMP) includes the following chapters authored by ADM. Chapter 9 (Metering Cross-Cutting Protocols) was authored by Dan Mort and Chapter 15 (Commercial New Construction Protocol) was Authored by Steven Keates.

<sup>3</sup> Core Concepts: International Measurement and Verification Protocol. EVO 100000 – 1:2016, October 2016.

regulatory burden and final acceptance of results as well as provide further clarity and benefits for all stakeholders involved.

Additionally, for all programs ADM will provide comprehensive documentation and transparency for all evaluation tasks throughout the evaluation cycle. This includes, but is not limited to, the thorough explanation of measure and program-level realization rates which are <90% or >110%. Where applicable, the explanation(s) will also provide quality recommendations for adjusting future claimed savings.

## 2.1 Impact Evaluation Approach

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This section presents our general cross-cutting approach to accomplishing the scope of work outlined in the Request for Proposal (RFP) for impact evaluation of Avista's Portfolio listed in Table 1-1 through Table 1-3. The Evaluators start by presenting our general evaluation approach. This chapter is organized by general task due to the overlap across sectors and programs. Section 4, Section 5, and Section 6 describes the Evaluators' program-specific impact evaluation methods in further detail for the residential, non-residential, and pilot programs, respectively.

ADM outlines our approach to verifying, measuring, and reporting the energy efficiency portfolio impacts as well as cost-effectiveness and summarizing potential program and portfolio improvements. The primary objective of the impact evaluation is to determine residential, low-income, and non-residential ex-post verified net energy savings.

Our general approach for this evaluation considers the cyclical feedback loop among program design, implementation, and impact evaluation. Our activities during the evaluation will estimate and verify annual energy savings and identify whether a program is meeting its goals. These activities are aimed to provide guidance for continuous program improvement and increased cost effectiveness for the 2024 and 2025 program years. ADM will provide the following services and objectives as deliverables to Avista for this evaluation, as specified in the RFP:

- Independently verify, measure and document energy savings impacts from each of Avista's electric and natural gas energy efficiency Programs, or for Program categories representing consolidated small-scale offerings from January 1, 2024, through December 31, 2025;
- Develop a schedule for impact evaluations that ensures established programs receive evaluations at least every two (2) years. Identify new and/or "at risk" programs to be evaluated annually.
- For Washington Programs, calculate the cost effectiveness of the Portfolio and component Programs using the Total Resource Cost Test (TRC), Utility Cost Test (UCT), Participant Cost Test (PCT), Ratepayer Impact Measure Test (RIM), and, potentially, newly adopted jurisdictional specific tests (collectively, the "Services");
- Include in the evaluation any pilot programs ("Pilots") from which conservation savings have been realized. For each effort that Avista identifies as a Pilot, provide recommendations on appropriate evaluation methodologies;
- Analytically substantiate the measurement of those savings;
- Identify Program improvements, if any; and
- Identify possible future Programs.

In addition to the above services, we have identified the following deliverables to Avista for this evaluation:

- **Deliverable 1 – Evaluation Work Plan:** One (1) evaluation work plan for the 2024-2025 Programs, with a draft plan delivered within four weeks after project kick-off, including a presentation to Avista’s Energy Efficiency Advisory Group (“The Advisory Group”);
- **Deliverables 2a and 2b – Idaho and Washington Natural Gas Impact Evaluations:** Two (2) separate and independent impact evaluation reports, one for Idaho and one for Washington, of Avista’s Residential, Commercial, and Industrial Natural Gas Impact Evaluations for each program year – with the Washington reports delivered on March 15, 2025 and 2026 and the Idaho reports on April 15, 2025 and 2026;
- **Deliverables 3a and 3b – Idaho and Washington Electric Impact Evaluations:** Two (2) separate and independent impact evaluation reports, one for Idaho and one for Washington, of Avista’s Residential, Commercial, and Industrial Electric Impact Evaluation for each program year – with the Washington reports delivered on March 15, 2025 and 2026 and the Idaho reports on April 15, 2025 and 2026;
- **Deliverable 4 – Cost Effectiveness Analysis (*Washington Only*):** Two separate and independent (2) cost effectiveness report (“CE Report”) for Washington Programs including written documents which support the CE Report, disaggregated into electric and natural gas components, one for each program year, delivered April 15, 2025, and April 15, 2026;
- **Deliverable 5 – Process Evaluation Report:** One (1) process evaluation of Avista’s Residential, Commercial, and Industrial in Washington and Idaho including notable observations and recommendations, with a memorandum of process evaluation efforts completed to date delivered by March 15, 2026, and the full report delivered April 15, 2026;
- **Deliverable 6 – Meeting Participation:** Availability to meet and participate with advisory groups, subcommittees, and others, as needed. Meet with the Energy Efficiency Analytics team on a regular cadence to ensure issues are tracked and resolved expediently and to discuss changes or additions to the Programs and meet with Avista to develop accurate equations that represent Consultant’s methodology for evaluating the Programs;
- **Deliverable 7 – DSM Prudence Review:** Availability for prudence review and investigation as required by the Washington Utilities and Transportation Commission and the Idaho Public Utilities Commission after the close of the 2024-2025 period. Provide comprehensive workpapers, supporting documentation and responses to production requests as needed by the respective Commissions;
- **Deliverable 8 – Time of Use Pilot Impact Evaluation:** At the conclusion of the first full year of the initial Time of Use pilot for Washington electric customers (June 1, 2024 through May 30, 2025), provide bill impact evaluation of the pilot participants and review Avista’s load impact analysis for the pilot participants, delivered by October 1, 2025;
- **Deliverable 9 – Time of Use Pilot / Peak Time Rebate Design Recommendations:** At the conclusion of the 2025 program year, use Deliverable 8 conclusions to assist Avista in recommendations for Time of Use (TOU)/ Peak Time Rebate (PTR) program design/modifications in anticipation of full program rollout for the 2026-2027 biennium, delivered by April 1, 2026;

- An independent estimate of kWh and Therm savings for 2024 and 2025 through thorough and proper evaluation of program impacts with statistical  $\pm 10\%$  statistical precision at 90% confidence for each state and fuel type;
- Presentation of evaluation findings to The Advisory Group, Spokane offices, or other regional locations, as required, along with additional stakeholders, as necessary;
- Updates to Avista's Technical Reference Manual (TRM), annually, based on Avista's evaluation findings and secondary information;
- All supporting workpapers for calculations, tables, graphs, and other documents as necessary;
- State-specific reports on any project where realization rate is expected to be less than 90% or greater than 110% as well as a complete listing of all projects where any material adjustments were made; and
- Summary of any deviations from historical methodology for calculating cost-effectiveness in the final report in addition to a presentation of deviations to the Advisory Group.

We approach evaluation with the frame of mind that the final report should not contain information that has not already been communicated with Avista. This is achieved through the following:

- **Transparency of Evaluation Effort.** In our evaluations, we will keep our data collection instruments, models, calculation spreadsheets, programming scripts, and monitored data/survey data available at the request of Avista. All components of the data collection or analysis will be made available in their native format with all formulas intact, informing Avista as to how the calculation of energy savings is performed and allowing for independent review of ADM's efforts.
- **Regular Updates on Evaluation Findings.** ADM will provide regular updating of all involved parties as to the findings of the impact and process evaluation efforts. This allows for real-time feedback regarding the performance of varying measures or participant classes, feeding into a process of continuous program improvement. This also allows Avista to conduct an independent review or quality check of ADM's analysis, if desired. ADM's analysis will be kept transparent throughout the evaluation effort.

This document contains the approach for the evaluation of Avista's 2024-2025 program years. It is ADM's intention to formalize this workplan in collaboration with Avista; This is a collaborative effort with Avista to ensure Idaho Public Utilities Commission (PUC) and Washington Utilities and Transportation Commission (WUTC) receives accurate and reliable program findings and that Avista receives meaningful insights to continue energy efficiency efforts and improve program results. ADM will provide comprehensive documentation and transparency for all evaluation tasks and will provide ongoing technical review and guidance throughout the evaluation cycle.

ADM will employ the following approach to complete impact evaluation activities for the programs. ADM defines five major approaches to determining net savings for Avista's programs:

- A *Deemed Savings* approach involves using stipulated savings for energy conservation measures for which savings values are well-known and documented. These prescriptive savings may also require an adjustment for certain measures, such as lighting measures in which site operating

hours may differ from RTF values. ADM will work with Avista to identify these instances and develop a method for calculating an adjusted value.

- A *Partially/Fully Measured Retrofit Isolation* approach. This refers to any program where savings must be calculated on a per-site basis using primary data collected on-site or facility bills for a unique, premise-level analysis (as opposed to the large-scale, whole-program analysis detailed under the “Billing Data Analysis” bullet). This includes the Site-Specific Program for which custom protocols may need to be applied. This approach aligns with the IPMVP Option A and B.
- A *Billing Analysis* approach involves estimating energy savings by applying a linear regression to measured participant energy consumption utility meter billing data. Billing analyses may also include billing data from nonparticipant customers. This approach does not require on-site data collection for model calibration. However, a sample of customers or sites may be selected and surveyed to confirm that the energy conservation measures were installed and are still operating. This approach aligns with the IPMVP Option C.
- A *Facility-Level Regression Analysis* approach involves estimating energy savings by applying a linear regression to a facility’s pre-retrofit and post-retrofit interval meter data. This methodology includes defining a baseline for the facility, adjusting the baseline, and developing and refining a regression model to accurately predict energy consumption in the facility. The difference between projected energy consumption from the model and actual energy consumption equals the gross savings estimate. The methodology provided here references UMP Chapter 24 on Strategic Energy Management (SEM) Evaluation Protocol<sup>4</sup> and aligns with the IPMVP Option C.
- A *Simulation Model Analysis* approach involves a whole building simulation using the program REM/Rate and a User Defined Reference Home (UDRH) to compare the efficient home and the baseline home. The UDRH is designed as an exact replica of each program participating home in terms of size, structure, and climate zone. This approach aligns with the IPMVP Option D.

ADM will accomplish the following quantitative goals as part of the impact evaluation:

- Verify savings with 10% precision at the 90% confidence level by program year;
- Where appropriate, apply the RTF to verify measure impacts; and
- Where available data exists, conduct billing analysis with a suitable comparison group to estimate measure savings.

## 2.2 Database Review

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This section describes ADM’s general methodology for conducting database reviews for Avista’s Residential and Non-Residential programs.

At the outset of the process evaluations, it will be important to review each program database to ensure that previous recommendations regarding developing a data dictionary and adequately tracking key data have been implemented. For this task, our team will also review the databases to ensure that they conform to industry standards.

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<sup>4</sup> <https://www.nrel.gov/docs/fy17osti/68316.pdf>

Having conducted previous evaluations with Avista and with numerous other energy efficiency systems, we recognize that a well-designed tracking system is a key tool for accomplishing effective program delivery, monitoring, verification and evaluation. We are experienced with Avista's Cognos and iEnergy databases currently used and are well-informed regarding recent changes in program tracking systems. ADM consistently reviews each tracking system in order to provide early feedback on implementation efforts, provide continuous tracking of program performance, and provide critical information for verification and evaluation. ADM recognizes that failure to develop and maintain a sufficient tracking system can add significantly to the cost of implementation, monitoring, verification and evaluation; reduce confidence in results; and increase the variance in estimates of savings. Therefore, we make this a high priority in our iterative review of each program over the course of the program year.

The role of the tracking system becomes particularly important because this evaluation will be proceeding in real-time along with the program implementation. An advantage of a real-time evaluation is that it should allow the evaluation contractor to coordinate with the implementation contractor to ensure that appropriate pre-installation data collection and measurement are conducted to establish agreed-on baseline conditions for analyzing savings. An example of this is when ADM notified Avista that the transfer from Cognos to iEnergy database resulted in a mismatch of measure names and therefore system tracking connected to the Avista TRM and savings values applied to each measure. Consistent review and communication of findings led to a timely resolution for this prior to year-end deadlines.

Because of our previous M&V work for Avista, we are familiar with Avista's tracking system and changes occurring over time. We will work with Avista and implementers to identify any additional elements that should also be included to facilitate M&V of existing or proposed programs. Our review will be based on the requirements for reporting to WUTC; goals defined by CETA, specifically related to Named Communities; internal auditing requirements; program requirements; monitoring, verification, and evaluation requirements; and our long experience in evaluating residential and nonresidential energy efficiency programs.

ADM will review program materials – such as program theory and logic models to identify potential issues and key barriers to end-use behavior changes that could be influenced by efforts by each program. We will review the tracking and reporting system for duplicates, inconsistencies, missing information, and potential misinformation. We will perform sanity and logic checks to ensure data are consistent and meaningful. We will also perform test queries to ensure data are being populated consistently, accurately, and meaningfully. We will assess whether the data are sufficient for use in assessing program impacts, regulatory reporting, and other requirements. We will review reporting channels and procedures for ease of delivery of data and completeness and to determine if the reporting methodology is cost-effective, accessible, and easy to use.

Before conducting each impact analysis, ADM will conduct a database review for the program. ADM will complete document-based verification in order to verify detailed measure inputs, values, efficiency levels, and installation characteristics for a sample of participating households. This detailed review will assist with the development of verified savings. ADM will review the aggregate tracking data to verify each measure satisfies all program efficiency requirements.

ADM will also evaluate measure-level savings applications primarily by reviewing assigned measure unit energy savings ("UES") values in the tracking system to assure that they are appropriately applied using the Avista TRM. ADM will then aggregate and cross-check program and measure totals. ADM will

evaluate if the Avista TRM was applied correctly to the program tracking data by comparing Avista-provided project-level savings to the ADM-calculated project-level savings using the Avista TRM for each project. This will be reported as “adjusted savings” in the final reports.

ADM will clearly identify, explain, and substantiate any variations in the savings calculations we uncover for each program. We will integrate all findings into the final evaluation report with recommendations for updating values where applicable. In addition to reporting the total gross realization rates, we will also quantify the associated impact each adjustment had on the overall program savings.

ADM will work with Avista and implementer staff to incorporate recommended changes into the tracking system database. We focus on addressing issues of sufficiency, compatibility, and consistency that we detected during our review and on other problems that may be identified. We will also consider the administrative effort required by Avista and relative benefits for each additional recommended change.

## 2.3 Simple Verification Methods

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ADM will verify a sample of participating households for detailed review of the installed measure documentation and development of verified savings. This includes developing samples to verify measures and equipment via two activities:

- Document-based verification
- Survey-based verification

Preliminary sample sizes for documentation-based review and survey-based verification are detailed in the sections below. ADM will work with Avista to adjust the sampling plan once program tracking data has been delivered and participation rates are finalized.

ADM will also verify tracking data by reviewing invoices and surveying a sample of participant customer households. We will coordinate as needed with Avista’s process evaluation contractor in conducting participant surveys. The following sections describe ADM’s general methodology for conducting document-based verification and survey-based verification.

### 2.3.1 Documentation-Based Verification

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ADM will first screen each rebate household to ensure the customer who received a measure did not also receive another measure that disqualifies that customer from participating in either program, such as the ENERGY STAR Homes rebate in combination with an HVAC rebate. Tracking data will be reviewed to verify each measure satisfies all program efficiency requirements.

Documentation for this task will include rebate application forms, supporting customer or contractor invoices, household builder documents, AHRI certificate documents, and any other associated rebate documents specific to each program. These documents will include invoices, rebate applications, and additional materials required for accepting rebate applications for each program Avista offers to its customers. Further program-level details are summarized in Table 2-1, *Document-Based Verification Sample Design for Washington and Idaho Combined*.

For each program and measure sampled, ADM will verify quantities and efficiencies for rebated equipment according to the invoices and associated applications and documents. If ADM finds any deviations between the tracking data and application values, ADM will note and summarize these differences to Avista through periodic updates and the final report.

ADM will develop a sampling plan that aims to achieve a sampling precision of  $\pm 10\%$  at 90% statistical confidence – or “90/10 precision” – for net realized savings estimates at the measure category level for all significant measures during document-based verification for each program in each population:

- Washington electric participant population
- Washington natural gas participant population
- Idaho electric participant population
- Idaho natural gas participant population

That is at each state and fuel type’s Portfolio level, statistical precision and confidence will meet 90/10 precision at minimum. In a generalized form, simple random samples for a statistically infinite population are developed as follows:

$$n = \left( \frac{1.645 * cv}{rp} \right)^2$$

Where,

n = sample size

1.645 = z score reflecting 90% confidence for a two-tailed distribution

cv = Coefficient of Variation, defined as standard deviation / mean

rp = Required Precision, 10% for 90/10 sampling

Standard practice is to assume a CV of .50 for homogenous programs (such as residential programs). In this instance, the required sample for 90/10 is  $(1.645 * .5 / .1)^2 = 68$ . For programs with limited participation, this sample is adjusted as follows:

$$n_0 = \frac{n}{1 + \frac{n}{N}}$$

Where,

$n_0$  = Finite-population adjusted sample

n = Sample for a statistically infinite population

N = total population size

Thus, for a population of 400, the required sample to meet  $\pm 10\%$  precision at 90% confidence is:

$$n_0 = 68 / [1 + 68/400] = 58.12, \text{ rounding up to } 59.$$

ADM will work with Avista to adjust the sampling plan before submitting a data request.

Based on the above considerations, ADM has estimated the following sample sizes for the above programs’ document review (Table 2-1, *Document-Based Verification Sample Design for Washington*

and Idaho Combined). The representative participant sample will be adjusted for each of the programs in Washington and Idaho, by fuel type.

Table 2-1: Document-Based Verification Sample Design for Washington and Idaho Combined

Program	Washington				Idaho			
	Electric		Natural Gas		Electric		Natural Gas	
	Pop	90/10	Pop	90/10	Pop	90/10	Pop	90/10
<b>Residential/Low-Income</b>								
Residential Appliance and Thermostat Program	400	59	400	59	400	59	400	59
Residential ENERGY STAR Manufactured Homes Program	30	21	5	5	15	13	5	5
Residential Shell Program	300	56	1,700	66	150	47	400	59
Residential Fuel Efficiency Program					150	47		
Residential Midstream Program	400	59	400	59	400	59	400	59
Residential Multifamily Weatherization – New Offerings Program	250	54	400	59	75	36	130	45
Residential On-Bill Repayment/Financing Program	100	41	50	29	70	35	30	21
Residential Always-On Behavioral Program	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Residential Behavioral Program	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Residential Home Energy Audit Program	150	47			150	47		
Residential Direct Install Insulation Program	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Low-Income Program	1,400	65	1,600	66	350	57	400	59
Named Community Investment Fund (NCIF) Program	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
<b>Commercial &amp; Industrial</b>								
C&I Site-Specific Program	54	17	9	5	9	23	3	3
C&I Appliance and HVAC Controls Program	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
C&I Prescriptive Lighting Program	870	64			473	60		
C&I Small Business Direct Install Lighting Program	200	51			100	40		
C&I Prescriptive HVAC Variable Frequency Drive Program	2	2			4	4		
C&I Midstream Program	500	68	400	68	400	68	300	68
C&I Prescriptive Shell Program	6	6	1	1	1	1	1	1
C&I Green Motors Program	8	7			2	2		
C&I Grocer Program	9	8			4	4		
C&I Building Operator Certification Program	11	11	11	11	11	11	11	11

The values in the above represent our preliminary sample design. Sampling and verification of the Site-Specific Program differs from those above and is discussed below in section 5.2.2 Sampling and Precision. ADM will work with Avista to adjust the proposed sample sizes during the kickoff meeting and the formation of Avista’s Electric and Natural Gas Residential, Low-Income, and Commercial and Industrial EM&V Plan for Idaho and Washington.

ADM will work with Avista to adjust these sample sizes once program tracking data has been delivered for the program year in evaluation. ADM understands that representation of participants in each state in Avista’s service territory is critical. Therefore, ADM will ensure the samples for document review includes participants in both Washington and Idaho in addition to representation of each the electric and natural gas fuel types.

### 2.3.2 Survey-Based Verification

This section describes ADM’s general methodology for conducting survey-based verification for Avista’s Residential, Low-Income, Commercial, and Industrial programs. In addition to the document-based verification summarized above, ADM will also verify tracking data by surveying a sample of participant customer households.

A sample of participants will be surveyed to confirm that the measure was installed and is still currently operational and whether the measure was a new construction, early retirement, or replace-on-burnout, if applicable to the measure. If the units are found to be inoperative prior to replacement, ADM will re-classify the unit as replace-on-burnout. This will aid in providing more accurate estimation of annual savings by replacement type. Most importantly, this survey effort will help ADM develop in-service rates, or the percentage of rebates in which the measure is still currently operational and installed. This in-service rate will act as an adjustment to deemed savings estimates to reflect verified savings in the service territory. ADM will also ask the participant questions about additional details of the installed unit, such as sizing of water heater, model number, space heating equipment type, etc. The selected sample participants will be offered a \$10 gift card incentive to participate in the verification survey.

ADM proposes the sample sizes for survey-based verification in Table 2-2. ADM will combine survey-based verification efforts with the survey-based process evaluation efforts in order to maximize the quality and quantity of data collected toward multiple deliverables while minimizing customer response fatigue. The findings from these activities will primarily serve the impact evaluation to:

- Verify measure was installed
- Verify measure is functional
- Gather pre-retrofit equipment information
- Gather retrofit equipment information
- Estimate annual hours of use

ADM has estimated the sample sizes shown in Table 2-2 for the survey-based verification. The representative participant sample will be adjusted for each of the programs in Washington and Idaho, by fuel type.

Table 2-2: Survey-Based Verification Sample Design for Washington and Idaho

Program	Washington						Idaho					
	Electric			Natural Gas			Electric			Natural Gas		
	Pop.	90/10	%	Pop.	90/10	%	Pop.	90/10	%	Pop.	90/10	%
<b>Residential &amp; Low-Income</b>												
Residential Appliance and Thermostat Program	400	58	15%	400	58	15%	400	58	15%	400	58	15%
Residential ENERGY STAR Manufactured Homes Program	30	21	70%	5	5	100%	15	13	87%	5	5	100%
Residential Shell Program	300	56	19%	1,700	66	4%	150	47	31%	400	58	15%
Residential Fuel Efficiency Program							150	47	31%			
Residential Midstream Program <sup>5</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Residential Multifamily Weatherization – New Offerings Program	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Residential On-Bill Repayment/Financing Program	100	41	41%	50	29	58%	70	35	50%	30	21	70%
Residential Always-On Behavioral Program	50,000	68	0%	50,000	68	0%						
Residential Behavioral Program	TBD	TBD	TBD	TBD	TBD	TBD						
Residential Home Energy Audit Program	150	47	31%				150	47	31%			
Residential Direct Install Insulation Program	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Low-Income Program	1,400	65	5%	1,600	65	4%	350	57	16%	400	58	15%
Named Community Investment Fund (NCIF) Program	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
<b>Commercial &amp; Industrial</b>												
C&I Appliance and HVAC Controls Program	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
C&I Site-Specific Program	54	17	32%	9	5	56%	9	23	36%	3	3	100%
C&I Prescriptive Lighting Program	870	63	7%				473	60	13%			
C&I Small Business Direct Install Lighting Program	200	51	26%				100	41	41%			
C&I Prescriptive HVAC Variable Frequency Drive Program	2	2	100%				4	4	100%			
C&I Midstream Program	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C&I Prescriptive Shell Program	6	6	100%	1	1	100%	1	1	100%	1	1	100%
C&I Green Motors Program	8	8	100%				2	2	100%			
C&I Grocer Program	9	8	89%				4	4	100%			
C&I Building Operator Certification Program	11	11	100%	11	11	100%	11	11	100%	11	11	100%

<sup>5</sup> Surveys are not proposed for the Residential Midstream Program, as participation is invisible to the downstream Avista customer.

It likely will not be feasible to achieve 90/10 sample sizes for several programs, even by supplementing state samples with non-native participants due to unrealistically high required survey response rates. In this table, we have summed the estimated Washington and Idaho participant populations for each program. For the 90/10 sample, we have summed the completion counts *that would be required if we achieved a 90/10 sample for each state*, with two-thirds of each state's count coming from native participants.

For programs for which obtaining a 90/10 participant sample is not feasible, we propose a combination of online surveys, supplemented with an increased larger document verification sample. In the case of programs with very small participant populations, we may attempt a census of participants. ADM will develop the survey-based verification guide for review and comment by Avista staff prior to deploying these verification surveys.

To implement the impact surveys, ADM will use our in-house survey research center to support all survey-based data collection efforts. This group is comprised of full-time ADM staff and is dedicated solely to energy efficiency-related efforts. This allows our team to provide maximum transparency between program evaluation management and data collection efforts, which helps ADM provide a more accurate and detailed summary of findings to Avista program managers. In cases where the survey-based responses do not meet sampling target, ADM will use our in-house survey research center to reach out to customers via phone call. Alternatively, ADM will include in the email an option for customers to define a suitable time for ADM staff to survey via phone call. ADM will develop the web-based verification guide for review and comment by Avista staff prior to deploying these verification surveys. ADM will employ our in-house survey research center to support all survey-based data collection efforts. In cases where the web-based survey response does not meet sampling target, ADM will use our in-house survey research center to reach out to customers via phone call.

For each program, ADM will include program-specific questions. For example, the C&I Prescriptive HVAC Program verification surveys will likely include questions such as:

- Was this HVAC a new construction, or did it replace another HVAC?
- Was the previous HVAC functional?
- Is the newly installed HVAC still properly functioning?
- What is the efficiency and sizing of the newly installed HVAC?

Program-specific questions are provided under each program Section 4, Section 5, and Section 6 for the residential, non-residential, and pilot programs, respectively. These questions will help ADM verify that the measure was documented accurately and that data collection activities are progressing smoothly for the program. In addition, in the event that billing analysis is infeasible, this simple verification will help ADM more accurately estimate measure-level impacts using engineering algorithms.

## 2.4 On-Site Verification

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In addition to document-based and survey-based verification, on-site data collection activities are planned for a subset of programs. On-site data collection activities are expected for the Site-Specific Program.

Site visits accomplish two major evaluation tasks. First, field staff verify that the energy efficiency measures of interest were indeed installed, that they were installed correctly, and that they still function properly. Second, staff collect data to analyze the energy impacts for the installed measures. We have well-developed and tested procedures in place for collecting the data necessary for detailed M&V of each measure. While on-site, we also obtain appropriate information to analyze the performance of the different types of energy systems at a facility. This includes collecting information on the quantity, efficiency, sizing, servicing, and scheduling for each measure.

Prior to conducting on-site visits, ADM will submit to Avista a list of sites to be visited, along with the site M&V plan for review before going on site. For any sites at which Avista wishes to accompany ADM, scheduling arrangements will be made by ADM staff so that an Avista representative can be present at the time of the visit.

Table 2-3 summarizes the estimated sample sizes for on-site verification for the Site-Specific Program, where on-site verification is anticipated.

*Table 2-3: On-Site Verification Sample Design for Washington and Idaho Combined*

Program	Washington	Idaho
Site-Specific Program	22	12

ADM will develop and prepare materials for each site selected for on-site verification. Further details on site-specific M&V plans are described below.

#### 2.4.1 Site-Specific M&V Plans

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In preparation for the site-level verification efforts, site-specific M&V plans will be developed for each of the sampled projects selected to receive a site-visit. Plans will be developed after a full review of project documentation and, if necessary, brief exploratory interviews with the program staff (or the applicant). Drafted site-specific M&V plans and a summary of the sample of projects will be provided to Avista for review. We will incorporate all Avista feedback received from this review into the final M&V plan prior to deployment of ADM field technicians. Each plan will contain the following information:

1. A description of site, project, and measure(s) being evaluated;
2. The expected M&V methodology describing its application<sup>6</sup> to the site;
3. Information to be collected to accomplish the expected M&V methodology;
4. Data to be collected to accomplish the expected M&V methodology; and
5. Expected data-collection equipment to be used by ADM staff.

ADM is familiar with and regularly employs several key references used to guide this process. The most common references are the International Performance Measurement and Verification Protocol (IPMVP), the Uniform Methods Project (UMP); and American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) Guideline 14. However, we also rely on our extensive experience to discern an appropriate rigor level for each site. For this evaluation we also expect to employ the Avista Technical Reference Manual (TRM) and Regional Technical Forum (RTF) to inform data collection needs.

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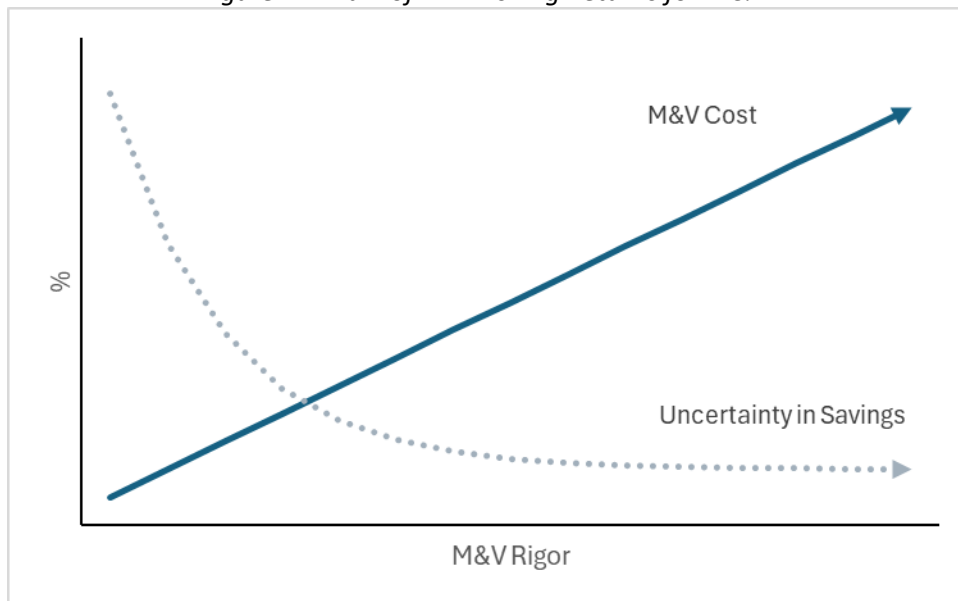
<sup>6</sup> Including contingencies and alternate approaches.

This leverages the thorough evaluation work already completed on such measures within the industry and allows the evaluation team to prioritize Avista customer experience. ADM has specific expertise in these matters, having completed the following efforts:

- Authored the UMP methods chapters for Commercial New Construction and Field Data Collection
- Developed RTF measure ENERGY STAR Air Purifier UES measure workbook;
- Reviewed all RTF UES measure workbooks for NWCC measure cost review efforts; and
- Utilized RTF UES measure workbook values, inputs, and assumptions for several impact evaluation efforts conducted in the Pacific Northwest.

Site-specific M&V Plans are tailored to both the unique measures evaluated, such as required level of rigor, and the unique facility, such as the feasibility of data collection and customer burden. ADM engineers are cognizant of the value of information principle and diminishing returns of additional value of information. As shown in Figure 2-1 the IPVMP philosophy of diminishing returns for M&V is instilled in ADM mentality. That is, ADM will compare the benefit of the additional information compared to the amount of effort, budget, and customer burden to determine if additional efforts are worthwhile.

Figure 2-1: Law of Diminishing Returns for M&V<sup>7</sup>



#### 2.4.2 Measurement Verification, Monitoring and Measurements

Though most projects will have measure-level savings previously estimated through TRM or RTF values, there may be custom projects in the randomly selected sample that require on-site metering, such as facilities with uncommon operating hours, construction, or measures installed. ADM has experience with a wide variety of monitoring approaches applied to a spectrum of technologies and is well

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<sup>7</sup> IPMVP M&V Guidelines: Measurement and Verification for Federal Energy Products. 2015. [https://www.energy.gov/sites/prod/files/2016/01/f28/mv\\_guide\\_4\\_0.pdf](https://www.energy.gov/sites/prod/files/2016/01/f28/mv_guide_4_0.pdf)

equipped with an extensive inventory of monitoring equipment available for use during this project. Our staff members have developed efficient and technically viable approaches for conducting primary monitoring and data retrieval. Having both the experience and proper tools, ADM provides cost effective and efficient field monitoring for this evaluation effort. In many cases, a low-level end-use monitoring effort can considerably improve engineering analysis estimates and modeling while reducing measurement errors, leading to improved estimates for future program savings.

If a site is selected for field monitoring, the field personnel will have all the personal protective equipment (PPE) required for safe and proper installation at the time of the visit. We will conduct measurement activities with minimal intrusion on the customer and facility operation. Our field personnel will also take photographs of a site and of its electrical and mechanical systems during the on-site visit, without infringing on customer or facility privacy. This form of documentation provides useful means of verifying equipment installation as well as resolving future potential contextual questions about the site.

## 2.5 Impact Evaluation Methods

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ADM will employ the following approach to complete impact evaluation activities for the programs. ADM defines five major approaches to determining net savings for Avista's programs:

- Deemed Savings
- Partially/Fully Measured Retrofit Isolation (IPMVP Options A & B)
- Billing Analysis (IPMVP Option C)
- Facility-Level Regression Analysis (IPMVP Option C)
- Simulation Model Analysis (IPMVP Option D)

ADM notes that the Northwest RTF UES measures do not require NTG adjustments. In addition, billing analyses with counterfactual control groups, as proposed in our impact methodology, does not require a NTG adjustment, as the counterfactual represents the efficiency level at current market (i.e. the efficiency level the customer would have installed had they not participated in the program).

The facility-level regression analyses and simulation model analyses defined below indeed estimate gross energy savings, as they lack comparison groups, and therefore require NTG adjustments. For programs evaluated with these methods, ADM proposes to conduct in-depth interviews or participant surveys to estimate a NTG adjustment factor.

In the following sections, we summarize the general guidelines and activities ADM will follow to conduct each of the above analyses.

### 2.5.1 Deemed Savings

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ADM will complete the validation for specific measures across each program using the RTF unit energy savings (UES) values, where applicable. Because ADM has experience with the Avista TRM, ADM understands that the Avista TRM references assigns average RTF UES for each measure. This is done in order to assign reasonably accurate ex-ante savings for each measure. For verified deemed savings, ADM will instead assign the appropriate RTF UES assigned to the measure specification, which is dependent on variables included but not limited to the following:

- Verify household type (SF, MF, MH, etc.)
- Verify space heating system type
- Verify cooling system type
- Verify water heating system type
- Verify heating and cooling zone
- Verify equipment sizing (tonnage, gallons)

Using this method, ADM will be able to accurately estimate deemed verified savings using region-based research conducted by the RTF. This enables the Evaluators and Avista to take advantage of the funding spent towards the RTF work in the region, access reviewed and approved UES values, and prioritize program learnings and adjustments based on credible estimates. The goal is to ensure that the proper measure unit savings are utilized in verified savings. ADM will document any cases where we recommend values differing from the specific unit energy savings workbooks used by Avista. If we find any projects that do not use the RTF values, we will complete additional investigation and review of measures with custom savings inputs.

ADM will review program application documents for a sample of incented measures to verify the tracking data accurately represents the original program documents. This sample will meet 90/10 precision goals. ADM will ensure the home installed measures that meet or exceed program efficiency standards.

ADM will then apply verification adjustments to these RTF values if deviations are found between tracking data and document-based verification, and if in-service rates deviate from 100% reported in survey responses. ADM will summarize measure-level verified savings impacts by extrapolating verified measure realization rates to the population of associated projects within each program.

### 2.5.2 Partially/Fully Measured Retrofit Isolation (IPMVP Options A & B)

For custom or otherwise non-deemed measures, ADM will carefully review the analyses and calculations that were used to develop stipulated savings values for the measures that are rebated. We evaluate the analysis for each measure according to the degree to which the savings calculations are supported and defensible and documentation is adequate. To facilitate our review of savings calculations, we use a checklist to record whether (1) the methodology used for the calculation was appropriate, (2) assumptions used were reasonable and appropriate, and (3) savings calculations were completed correctly.

The accuracy of a savings estimate developed through engineering calculations depends on the extent to which the analysis is based on correct assumptions regarding such factors as usage patterns and operating hours. We assess assumed and actual baseline conditions by reviewing program baseline assumptions, verifying adequate supporting documentation, and testing the validity of those assumptions via interviews with participants and the findings from primary verification efforts. In our review of the calculation procedures used for different types of measures, we focus on the main factors that determine energy use.

- Normally, the weakest part of any engineering calculation of savings relates to the characterization of the operating schedules of energy using equipment. In reviewing the energy

savings calculations, we determine whether the assumptions for usage patterns are within the range of reasonable hours for each building type and end-use application.

- For analyzing the calculations of energy savings and peak demand reductions associated with lighting measures, we focus on the three main factors that contribute to lighting energy use in a building: 1) lighting capacity, 2) the percentage of the capacity that is utilized, and 3) hours of use. That is, while lighting retrofits primarily reduce power densities (i.e., watts per square foot), account needs to be taken of the observed or typical utilization of that capacity.
- Similarly, there are factors whose effects on HVAC energy use are particularly important and that therefore are given special particular attention when we review the calculations for HVAC energy savings. Examples of such factors include thermostat set points and schedules, type of distribution system and control; ventilation rates, operating schedules for fans, lighting levels and schedules, particularly for office buildings, and equipment sizing.

Based on our evaluation of the calculations, we classify measures into one of three categories:

- Documentation is sufficient and original savings estimate is reasonable.
- Documentation is sufficient, but original savings estimate is not reasonable.
- Both documentation and original savings estimate are inadequate.

If a measure falls into one of the last two categories, we provide references that demonstrate observed deficiencies pertaining to the reasonableness of the given assumptions, the adequacy of the given documentation, and the appropriateness of the given methodology. Based on this work, we develop recommendations to Avista and program implementation staff regarding changes to stipulated savings values.

For custom measures, we develop a plan to sample and verify actual project savings and the engineering calculations used to calculate savings. Typically, we develop a process with program implementation staff through which the program implementer develops measurement & verification (M&V) plans that meet industry best standards for such projects and submits them to ADM engineering staff for review. We then revise the M&V approach to coordinate with the program implementer on on-site data collection or metering (as needed). This allows for the finalizing of savings prior to the issuing of a rebate check, allowing for custom incentives to be paid on verified savings, removing uncertainty surrounding what are often high-value projects. Custom projects are typically routed through the Site-Specific program. Evaluation details for this program and custom measures are described further in section 5.1.

### 2.5.3 Billing Analysis (IPMVP Option C)

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This section summarizes the general billing analysis methods ADM will employ for the evaluation of a subset of measures for each program.

For the purpose of this summary, a household is considered a treatment household if it has received a program incentive or has been defined in a treatment group, such as for the Residential Always-On Load Behavioral Program. Additionally, a household is considered a control household if the household has not received a program incentive or has been defined in a control group. To conduct a linear regression billing analysis for energy efficiency measures, ADM requires billing data for a control group to compare against treatment households. Control groups can be designed via randomized control trials (RCT) at the

outset of program design, or via quasi-experimental methods. For programs where RCT groups are defined, the evaluation team will compare the treatment group against the RCT-selected control group.

For programs where RCT design is not available, the evaluation team will request billing data for nonparticipant customers to serve as the control group. This method assumes Avista is able to provide consumption data for a group of similar non-participating customers in the service area. Further information on the selection of customers for a counterfactual control group is detailed in the “Comparison Group” section below, as well as potential risks and implications.

Using the constructed control group or the RCT assigned control group, ADM will fit a regression model to estimate weather-dependent daily consumption differences between treatment group households and control group households. ADM will include independent variables such as Heating Degree Days and Cooling Degree Days for weather controls, square footage, and other household characteristics where applicable to improve model confidence. We will tailor our regression model specifications to each program and measure. ADM will explore the following regression models:

- Fixed effect Difference-in-Difference (D-n-D) regression model (recommended in UMP protocols)
- Random effects post-program regression model (recommended in UMP protocols)

Further details on model specifications can be found below. It is important to note that because whole household consumption is used, the savings value includes the positive or negative effects of any non-measure changes made in the household. This option is used to determine the collective savings of all measures applied to the program-participating household by the energy meter. Therefore, ADM will attempt to isolate households that have installed only the measure in evaluation. For example, in evaluating the furnace measure in billing analyses, ADM will exclude households that have also installed an incented water heater in order to effectively isolate the effects of the furnace retrofit.

To evaluate the 2024 and 2025 program years, ADM will request billing data ranging from at least one year prior to measure intervention (i.e. date measure was installed, or date household was built) through the most recent date available from each household.

The following lists the data requirements for billing analysis:

- Monthly billing data for program participants (treatment)
- Monthly billing data for a group of non-program participants (control)
- Household-level data provided by Avista and public sources relevant to program requirements and targeted customers

In addition, ADM will gather the following datasets to complete each billing analysis:

- Historical NOAA weather data
- Typical Meteorological Year (TMY) weather data
- Publicly available household characteristics from county assessor data, if available

The following steps will be taken to prepare data:

- Gather billing data for homes that participated in the program

- Exclude participant homes that also participated in the other programs, if either program disqualifies the combination of any other rebate or participation
- Gather billing data for similar customers that did not participate in the program in evaluation
- Calendarize billing data
- Create a matched control group using non-participant billing and customer and/or household characteristic data
- Exclude homes missing sufficient billing data
- Exclude bills with consumption indicated to be invalid and/or outliers

ADM will report parameters necessary to portray model accuracy and significance such as coefficient p-values, adjusted r-squared values, and household-level and program-level kWh and Therm savings at the 90% confidence intervals for each state and fuel type. Program-year savings estimates at the monthly- and annual-level will also be reported for each state and fuel type.

ADM will summarize the measure-level impacts by extrapolating regression coefficients with TMY data to estimate typical measure savings based on participant household usage behaviors. The resulting regression measure-level savings estimates do not require any adjustments resulting from verification survey responses, as non-functioning equipment or equipment verified as not having been installed is already observed in the household consumption data.

One major caveat of this method is that we must be able to gather a sufficiently large sample of control households that are statistically similar to the treatment households. If the nonparticipant homes are statistically different from the participant homes in the pre-treatment period, this analytical approach will not provide meaningful results and ADM will therefore validate savings via RTF or Avista TRM engineering algorithms as well as additional literature review.

Billing analysis with a valid counterfactual group can provide reliable net impact estimates at the measure-level and program-level. However, the success of a billing analysis depends on the availability of several key factors:

- A sufficient number of customers have installed the measure to isolate measure-level savings;
- A sufficient number of similar nonparticipant customers can be identified and used towards propensity score matching to create a valid counterfactual group for the measure;
- Install dates for the measure display sufficient variability; and
- Historical billing data is available for at least one year prior to customer install dates.

This option is used to determine the collective savings of all measures applied to the program-participating household by the energy meter. It is important to note that because whole household consumption is used, the savings value includes the positive or negative effects of any non-measure changes made in the household.

ADM provides further detail on the implications of each of the components listed above.

### 2.5.3.1 Comparison Group

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To estimate reliable net impacts through billing analysis, a similar counterfactual group must be selected. In programs where RCT groups are designed, such as for the Residential Always-on Load Behavioral Program, ADM will verify that these RCT treatment and control groups remain statistically valid in order to use in regression models. For billing analyses in which a RCT control group has not been previously defined, ADM will attempt to create a statistically similar control group using propensity score matching (PSM), a method that allows the evaluators to find the most similar nonparticipant customer households based on a range of independent variables. PSM allows the evaluators to find the most similar household based on the customers' billed consumption trends in the pre-period and verified with statistical difference testing. ADM has extensive experience conducting propensity score matching for residential program billing analyses of similar measures and is familiar with the implications and uncertainties involved in this type of analysis.

ADM proposes to construct a comparison group of nonparticipants who are similar to participants and reflect the counterfactual condition. ADM aims to achieve this by selecting customers from one of the two following options:

- Future program participants or
- Nonparticipants selected through propensity score matching (PSM)

For the prior case, ADM would isolate customers that participated later in the program year as the control group to compare against customers that participated earlier in the program year (the treatment group). ADM would then verify that the treatment and control groups display similar pre-period average daily consumption through t-testing and run a linear regression model to estimate the measure effect on consumption in the post-period.

In the latter case, ADM would use propensity-scoring matching (PSM) to match nonparticipants to similar participants using pre-period data, test the validity of the matches with t-testing, and run a linear regression to estimate the measure effect.

ADM will use available datasets to ensure the control households are similar to the treatment homes, using variables such household square footage, household heating type, household occupancy date, household zip code, and any other information available for the nonparticipant customers specific to the program. For example, to create a sufficient counterfactual group for the Low-Income Program, ADM will request flags for income eligibility across nonparticipant customers.

A propensity score is a metric that summarizes several dimensions of household characteristics into a single metric that can be used to group similar households. ADM will create a post-hoc control group by compiling billing data from a subset of nonparticipants in the Avista territory to compare against treatment households using quasi-experimental methods. This will allow ADM to select from a large group of similar households that have not installed an incented measure. With this information, ADM will attempt to create a statistically valid matched control group via seasonal pre-period usage. After matching, ADM will conduct a *t*-test for each month in the pre-period to help determine the success of PSM. ADM will also conduct a *t*-test for each month in the pre-period to help determine the validity of the previously defined RCT groups, if the program has defined these groups.

After creating a PSM control group, ADM will carry out linear regression modeling on the treatment and matched control group.

### 2.5.3.2 Fixed Effects Difference-in-Difference Regression Model

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To calculate the impacts of heating season measures, ADM proposes to apply a linear fixed effects regression using participant and nonparticipant billing data with weather controls in the form of Heating Degree Days (HDD) and Cooling Degree Days (CDD).

For measures that are active during the heating season only, such as the air source heat pump or furnace, ADM will include heating degree days in the model specification. For measures that are active during the heating season and cooling season, such as water heaters and thermostats.

In addition, ADM will test and select the optimal temperature base for heating degree days and cooling degree days based on model r-squared values. ADM will select a value between 60- and 80-degrees Fahrenheit that displays the optimal model r-squared value. The selected base temperature therefore maximizes the total variation the model is able to explain.

The following equation displays the model specification to estimate the average daily savings due to the measure.

Equation 2-1: Fixed Effects Difference-in-Difference (D-n-D) Model Specification

$$ADC_{it} = \alpha_0 + \beta_1(Post)_{it} + \beta_2(Post \times Treatment)_{it} + \beta_3(HDD)_{it} + \beta_4(CDD)_{it} \\ + \beta_5(Post \times HDD)_{it} + \beta_6(Post \times CDD)_{it} + \beta_7(Post \times HDD \times Treatment)_{it} \\ + \beta_8(Post \times CDD \times Treatment)_{it} + \beta_9(Customer Dummy)_i + \varepsilon_{it}$$

Where,

$ADC_{it}$  = Estimated average daily consumption (dependent variable) in home  $i$  during period  $t$

$Post_{it}$  = A dummy variable indicating pre- or post-period designation during period  $t$  at home  $i$

$Treatment_i$  = A dummy variable indicating treatment status of home  $i$

$HDD_{it}$  = Average Heating Degree Days (base with optimal Degrees Fahrenheit) during period  $t$  at home  $i$

$CDD_{it}$  = Average Cooling Degree Days (base with optimal Degrees Fahrenheit) during period  $t$  at home  $i$

$Customer Dummy_i$  = A dummy variable indicating customer-specific identifier at home  $i$

$\varepsilon_{it}$  = Customer-level random error

$\alpha_0$  = The model intercept for home  $i$

$\beta_{1-9}$  = Coefficients determined via regression

The Average Daily Consumption (ADC) is calculated as the total monthly billed usage divided by the duration of the bill month.  $\beta_2$  represents the average change in daily baseload in the post-period between the treatment and control group and  $\beta_5$  and  $\beta_6$  represent the change in weather-related daily

consumption in the post-period between the groups. Typical monthly and annual savings will then be estimated by extrapolating the  $\beta_2$ ,  $\beta_7$ , and  $\beta_8$  coefficients with Typical Meteorological Year (TMY) HDD and CDD data or actual weather displayed in the program year, gathered from NOAA.

### 2.5.3.3 Random Effects Post-Program Regression Model

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ADM will also explore the post-program regression model with random effects to estimate net program savings. The post-program regression (PPR) model combines both cross-sectional and time series data in a panel dataset. This model uses only the post-program data, with lagged energy use for the same calendar month of the pre-program period acting as a control for any small systematic differences between the treatment and control customers; in particular, energy use in calendar month  $t$  of the post-program period is framed as a function of both the participant variable and energy use in the same calendar month of the pre-program period. The underlying logic is that systematic differences between treatment and control customers will be reflected in the differences in their past energy use, which is highly correlated with their current energy use. These interaction terms allow pre-program usage to have a different effect on post-program usage in each calendar month.

The model specification is as follows:

Equation 2-2 Post-Program Regression (PPR) Model Specification

$$ADC_{it} = \alpha_0 + \beta_1(Treatment)_i + \beta_2(PreUsage)_i + \beta_3(PreUsageSummer)_i + \beta_4(PreUsageWinter)_i + \beta_5(Month)_t + \beta_6(Month \times PreUsage)_{it} + \beta_7(Month \times PreUsageSummer)_{it} + \beta_8(Month \times PreUsageWinter)_{it} + \varepsilon_{it}$$

Where,

$i$  = the  $i$ th household

$t$  = the first, second, third, etc. month of the post-treatment period

$ADC_{it}$  = Average daily usage for reading  $t$  for household  $i$  during the post-treatment period

$Treatment_i$  = Dummy variable indicating whether household  $i$  was in the treatment or control group

$Month_t$  = Dummy variable indicating month-year of month  $t$

$PreUsage_i$  = Average daily usage across household  $i$ 's available pre-treatment billing reads

$PreUsageSummer_i$  = Average daily usage in the summer months across household  $i$ 's available pre-treatment billing reads

$PreUsageWinter_i$  = Average daily usage in the winter months across household  $i$ 's available pre-treatment billing reads

$\varepsilon_{it}$  = Customer-level random error

$\alpha_0$  = The model intercept for home  $i$

$\beta_{1-8}$  = Coefficients determined via regression

The coefficient  $\beta_1$  represents the average change in consumption between the pre-period and post-period for the treatment group.

In this specification, savings are calculated by:

Equation 2-3 Monthly Savings Estimate

$$Savings = \sum Treatment\ Coeff \times Number\ of\ recipients\ in\ month\ i \\ \times Number\ of\ days\ in\ month\ i$$

ADM will summarize measure-level savings using the equation above.

## 2.5.4 Facility-Level Regression Analysis (IPMVP Option C)

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This section summarizes the facility-level regression analysis methods ADM will employ for the evaluation of a subset of programs in the portfolio. The methodology provided here references UMP Chapter 24 on Strategic Energy Management (SEM) Evaluation Protocol<sup>8</sup>.

For the purposes of this summary, a facility may comprise a single building with a single meter or multiple buildings at the same time with multiple meters. Additionally, the evaluation period is when energy savings from retrofits will be estimated, and the baseline period is when energy consumption measurements are taken to establish a baseline for the facility's energy consumption. The objective of this evaluation activity is to estimate changes in a facility's energy consumption due to the program. In order to complete this analysis, it is important to have the following datapoints for each facility:

- Hourly or 15-minute interval meter data of the past 24 or 36 months for each facility
- Facility square footage
- Facility occupancy
- Detailed information on facility type
- Schedule of operations
- Facility shutdowns or closures
- Efficiency measures installed
- Changes in facility or building operations or production unrelated to program, but affecting energy consumption

In some cases, submetering may be feasible with the implementation of an ECM. This information will give the evaluators sufficient understanding of energy consumption at the facility to construct a valid energy consumption model tailored to the specific facility being evaluated. It is also important that the expected energy savings are sufficiently large to be detected with a statistical analysis of the available data.

The EnergyStar Portfolio Manager information will be reviewed to explore consumption trends and variation in benchmarking over time. We will also perform a documentation review each quarter of the

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<sup>8</sup> <https://www.nrel.gov/docs/fy17osti/68316.pdf>

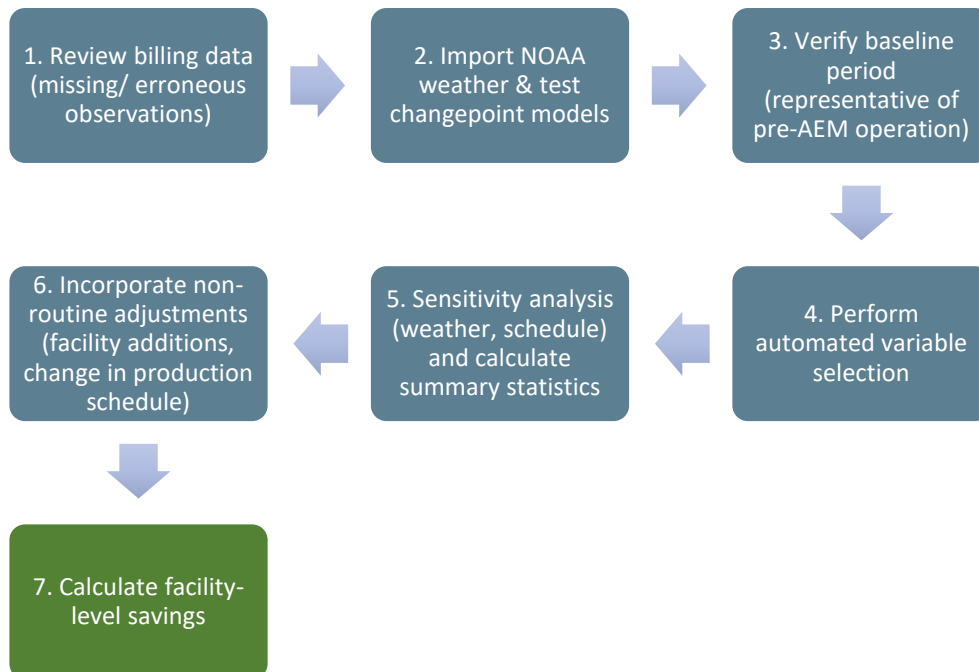
application form, measure tracker, occupancy tracker, and any other information available. Routine status update calls will mitigate any long-term risks from a lack of information.

The model specifications for the facility-level regression will be dependent on the facility to minimize observed standard errors. Therefore, there are no regression model specifications listed in this section. However, the analysis will be a multivariate linear regression model, with weather-dependent (Heating and Cooling Degree Days) and site-specific variables, such as square footage and building type, as inputs. We will also identify, estimate, report, and verify non-routine events monthly and apply non-routine adjustments as necessary on an annual basis. The M&V plan will be developed by all key members of our team and will be updated with feedback from Avista and relevant stipulations from the IPMVP Application Guide on advanced M&V strategies.

ADM will use consumption data in the baseline period (the 12 months immediately prior to project participation) and in the performance period (program intervention) in a linear regression model with specifications tailored to each building to predict monthly energy usage if no measures were installed. If additional baseline meter data is available, we may request consumption data as far back as 36 months. Specific models for each facility will be selected based on the highest observed R-squared value as well as the root mean squared error's coefficient of variation. High frequency data such as hourly or daily data is encouraged for this type of evaluation because it increases the probability of detecting energy savings and provides greater insights about the program effects.

ADM summarizes the steps completed towards this facility-level analysis:

*Figure 2-2. Facility-Level SEM Analysis Process Flow*



The statistical packaging software R will be used to conduct our analyses. An R shiny application provides a browser-based user interface easily operable by all users simultaneously. Although a similar tool has been developed, a custom version will be generated for this scope-of-work to incorporate the requirements in the M&V Guidelines. The automated regression tool (ART) will incorporate the

regression analysis, visual representation, uncertainty analysis, offline and online change point detection, and NRA's. Use of a shiny interface allows for secure access through a web browser to an internal server. Access to the shiny application can be granted to stakeholders as necessary for collaboration.

To complete the analysis, the following data is necessary:

- Building data from Avista including gross sf, leased sf, and space use type;
- A list of planned installed measures and their expected energy savings, costs, and timelines in the initial project application;
- Continuous monthly utility billing data in baseline period through performance period for all participants;
- National Oceanic and Atmospheric Administration (NOAA) weather data measured at the nearest weather stations; and
- Onsite generation, submeter, and building automation system (BAS) data.

Building data to be collected includes building space type, gross square footage, leased square footage percent per building space type, occupancy schedule, details of planned energy efficiency measures, and details of current HVAC, HVAC controls, lighting, lighting controls, server loads, and other building equipment. We may request additional information to increase the accuracy of the analysis. For example, building base temperatures for each space type, along with scheduled thermostat settings is valuable information in order to accurately estimate HDDs and CDDs.

Routine adjustments will be made to the model using the provided billing data and as site variable inputs change. Each year, for new construction buildings, we will use observed energy use data to change the shape of the baseline curve for the following year. We will also adjust the energy model for any changes in occupancy, operating hours, space use type, data centers, and cold years, as specified in the M&V Guidelines.

Through collaboration and data reviews, potential non-routine events (NREs) will be identified to integrate the necessary adjustments before calculating avoided energy use. NREs are events that change a building's energy use that were not accounted for in the baseline model, such as, changes in space use type, change in operating hours, fuel switching, on-site energy generation, occupancy changes, etc.

ADM will specify the regression model for the facility's energy consumption to accurately predict the facility's adjusted baseline. A model designed with this goal is able to yield an accurate estimate of facility energy savings and help the evaluator identify relationships in energy consumption data not evident through engineering analysis. ADM will accomplish this by selecting independent variables that portray important details about the facility's operation and which provide a level of detail about energy consumed at the facility. ADM will include HDD and CDD independent variables in addition to information on facility temperature setpoints, and we will explore a range of HDD and CDD base temperatures to select a base temperature that yields the best model fit. ADM will test the model fit by observing several factors, such as model residuals to investigate any auto-correlated errors, model *R*-squared coefficients, and predictive accuracy by comparing predicted energy consumption against metered energy consumption. ADM will include in the evaluation report the standard errors and confidence intervals to indicate the savings uncertainty at the facility-level and program-level.

ADM will explore the following regression-based methods for estimating facility savings:

- E. Forecast models
- F. Pre-post models
- G. Normal operating conditions models
- H. Backcast models
- I. Panel models

Each of the models listed above comply with IPMVP Option C, as each uses regression to adjust the baseline for differences in facility operating conditions between baseline and reporting periods.

The results from this analysis are facility-level, gross verified energy savings. ADM understands that Avista reports net energy savings in Washington and Idaho. Therefore, an additional component of this evaluation method is to adjust facility-level gross savings with a NTG adjustment. For programs which are evaluated with this method, ADM will also interview building managers to gather information on awareness of the program, whether energy efficiency measures would have been installed in the absence of the program, or alternative improvements in the absence of the program.

#### 2.5.5 Simulation Modeling (IPMVP Option D)

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ADM provides the following method as a supplemental option for estimating verified net savings for the ENERGY STAR Manufactured Homes Program, or new potential new construction pilots. This method involves a whole building simulation (IPMVP Option D) in addition to a billing analysis with a counterfactual control group.

The simulation analysis results in gross savings estimates whereas a billing analysis with a control group results in net savings estimates. Therefore, ADM proposes the option of a simulation analysis with a net-to-gross (NTG) savings adjustment or a billing analysis with a counterfactual control group.

This approach involves the comparison of participating homes with a User Defined Reference Home (UDRH). The methodology detailed in this section is supported by the IPMVP Option D as a whole building simulation using calibrations. ADM will use the simulation models to compare a sample of participating homes with a User Defined Reference Home (UDRH), an agreed upon set of efficiency standards built to represent the baseline residential home in the region. The UDRH is defined in more detail in the following subsection.

ADM will use the program REM/Rate to complete whole building simulation modeling efforts. The UDRH feature in REM/Rate allows energy consumption to be calculated using energy efficiency input values for both the efficient home and the baseline home. The UDRH will be designed as an exact replica of each program participating home in terms of size, structure, and climate zone. However, instead of using the actual HERS-rated efficiency values, we use the energy codes defined in the UDRH. ADM will gather energy characteristics for the efficient, rated home by requesting HERS datafiles from the certified HERS-raters or by gathering information from the HERS certificates required by the program and provided by Avista.

To calculate the gross savings for a given home, first, the as-built home is verified using building characteristics found in supporting documentation. Once the efficient home is modeled, the energy model calculates the unadjusted gross savings by subtracting the energy use of the as-built home from

the energy use of its UDRH baseline home. This method provides a reliable and supported means of verifying gross residential new construction home savings.

Energy savings will be calculated per-home with the following calculation:

Equation 2-4: Whole Building Model Energy Savings

$$\text{Energy Savings} = \text{Consumption}_{\text{UDRH}} - \text{Consumption}_{\text{ENERGY STAR}}$$

Where,

$\text{Consumption}_{\text{UDRH}}$  = Simulated energy consumption values from REMRate for a household under the UDRH efficient code standards

$\text{Consumption}_{\text{ENERGY STAR}}$  = Simulated energy consumption from REM/Rate for a household built referencing the HERS certification values

ADM defines the UDRH used to evaluate simulated savings in the following section.

#### User Defined Reference Home (UDRH)

The UDRH represents a home built to meet the state of Idaho's and Washington's current minimum energy efficiency code requirements. Idaho uses the residential 2015 International Energy Conservation Code (IECC) with amendments<sup>9</sup> for newly constructed residential homes until January 1, 2021. Idaho's current building code references the residential 2018 IECC with Idaho amendments. ADM will use the residential 2018 IECC with Idaho-specific amendments efficiency values to create the UDRH when evaluating homes built in Idaho after January 1, 2021. This comparison will provide an accurate simulation of a newly constructed minimum efficient code residential home to compare against efficiency, program-participating homes. For homes built in Avista's territory in Washington state lines, ADM will create a UDRH based on Washington residential building codes, which are modeled after International Residential Code (IRC) 2018, which came into effect on February 1, 2021. If this IECC or IRC code for Idaho or Washington is updated before or during either the 2024 or 2025 program years, ADM will update the UDRH as necessary to meet residential building codes in each state.

Realization rates from the home-level analyses can be used to provide strategic guidance for program improvement. We will examine realization rates for commonalities among home builders or HERS raters and inform Avista if any program partner demonstrates a statistically significant increased likelihood of association with low realization rates. We will then review the home results in further detail to identify a root-cause (errors in model input, construction practice, equipment sizing, etc.)

## 2.6 Net-To-Gross and General Spillover Analysis

ADM proposes to conduct NTG analysis for programs in which impact evaluation methods result in gross energy savings, such as the Washington State Buildings Early Adopter Incentives Pilot, and the BEIQ Pilot. For this task, we will interview a sample of facility managers to assess free ridership and spillover. ADM will work with Avista to develop a sampling plan which achieves 90/10 precision for free ridership and spillover estimates.

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<sup>9</sup> <https://www.energycodes.gov/adoption/states/idaho>

As this task involves spillover assessment and ADM staff have developed an innovative approach to spillover assessment, we have opted to discuss the optional NTG task in this section. We first describe our approach to assessing free-ridership and spillover specifically for the option task. We then discuss more generally the innovative approach to spillover assessment.

### 2.6.1 Free Ridership and Spillover Assessment

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Our proposed free ridership approach is consistent with other self-report approaches. We will ask building managers questions to assess the likelihood that they would have reduced energy consumption or installed energy efficient measures absent the program interventions. In this case, interventions would not be limited to the program incentives, but to program outreach and any other assistance the program offers. If a building manager indicated improvements would not have been implemented to the same level without program assistance, we would ask questions to identify the likelihood that the building manager would have included any energy efficiency measures and, if so, what those measures would have been.

For each facility and measure, we will estimate a free ridership probability based on the average of three scores: a *program components score*; a *program influence score*; and a *no-program score*. Each score has a value ranging from 0 (no free ridership) to 1 (maximum free ridership).

The program components score is based on how much the building manager's decisions to implement energy efficiency improvements was influenced by: 1) technical assistance or information from program staff; 2) technical assistance or information from program implementers; 3) the program incentives; and 4) program informational materials. The maximum rating from the four components, converted to a score from 0 (corresponding to a rating of 1) to 1 (corresponding to a rating of 5), represents the program components score.

The program influence score is based on respondents' rating of how likely (on a scale from 1 to 5) it is they would have built any of the efficient homes if the rebate and information had not been provided by the program. It is assigned by converting the rating into a score from 0 (corresponding to a rating of 5) to 1 (corresponding to a rating of 0).

Finally, the no-program score is based on responses to a series of questions about the energy efficiency measures that the facility would have likely installed that meet energy prescription efficiency standards without the program.

The free ridership score is calculated as:

1 – Average (Program Components Score, Program Influence Score, No Program Score)

We also will ask questions to assess spillover. We will quantify a series of questions into a score representing the maximum level of spillover that the nonparticipating buildings from participating building managers represent. Then, to factor in the program influence on the decision to implement energy efficiency improvements on participating buildings, we will adjust the maximum spillover value by 1-FR, where FR represents the free ridership score program.

## 2.7 Cost-Effectiveness Tests

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ADM will calculate each program's cost-effectiveness, avoided energy costs, and implementation costs. ADM will use our ADM-developed cost-effectiveness tool to provide cost-effectiveness assessments for the Residential, Low-Income, Commercial, and Industrial Portfolios by program, fuel type, program year, and measure, for each state.

As specified in this solicitation, ADM will determine the economic performance with the following cost-effectiveness tests:

- Total Resource Cost (TRC) test;
- Utility Cost Test (UCT);
- Participant Cost Test (PCT);
- Rate Impact Measure (RIM) test; and
- Resource Valuation Test (RVT).

ADM has extensive experience conducting and summarizing cost-effectiveness for residential and non-residential programs for utility commission reporting across the country as well as summarizing impact evaluation findings that could be useful to improve program cost-effectiveness, such as adjustments to program requirements, program tracking, and program implementation.

## 2.8 Non-Energy Benefits

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ADM will use the RTF and Avista's non-energy benefits evaluation report results to quantify non-energy benefits (NEBs) for residential measures with established RTF values where available. Measures with quantified NEBs include residential insulation, high efficiency windows, air source heat pumps, and ductless heat pumps. ADM understands the RTF provides NEB values for electric measures, but not natural gas measures.

In addition to the residential NEBs, ADM proposes to apply the end-use non-energy benefit and health and human safety non-energy benefit to the Low-Income Program. ADM understands that the two major non-energy benefits referenced above are uniquely applicable to the Low-Income Program. ADM will apply those benefits to the program impacts as well as additional non-energy benefits associated with individual measures included in the program.

In the case NEBs are also quantified in Avista's separate process evaluation, ADM will incorporate these NEBs to the impact evaluation. ADM will also explore potential non-energy impacts (NEIs) and NEBs such as the following, for each program:

1. GHG reduction
2. Reduced maintenance costs for customers
3. Water conservation
4. Job creation

ADM will work with Avista staff during the kick-off meeting to identify a listing of NEIs and NEBs that are of interest for each program. Additionally, ADM recognizes there may be additional health and safety benefits for programs that target Named Community efforts. ADM will work with Avista to prioritize the identification of such additional NEIs and NEBs for these programs as they are designed and rolled out.

Given the differences across these programs, we expect that the NEBs quantified (or qualified) for each will vary accordingly.

### 3. Process Evaluation Approach

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ADM will conduct a thorough process evaluation to identify program strengths as well as areas for potential program improvement. As detailed below, the process evaluation will, at a minimum, address all the objectives identified in the RFP and cover all elements of a successful program, including design, staffing, marketing, implementation, delivery, and customer response. An important part of this evaluation will be to identify market barriers that impede the program's reach into all parts of Avista's residential and non-residential markets.

The following subsections present overviews of our approach to process evaluation, followed by information on how we identify and answer important research questions, our data collection approaches, interview and survey implementation, and the timing and cadence of process evaluation activities.

#### 3.1 Process Evaluation Overview

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Our approach to process evaluation for the Avista portfolio will address the overall effectiveness of program activities in overcoming barriers and will provide strategic guidance to assist program improvement. Data collection activities will provide information on the effectiveness of program processes and procedures, including how well the program works with key stakeholders to optimize program operations. To this end, ADM will:

- Review program documentation and interview program and implementer staff to understand program goals, rules, and processes - including any coordination with delivery of gas utility programs - as well as to reveal any issues or concerns to be investigated through other process evaluation data collection;
- Interview applicable market actors about their experiences with the program to shed light on the effectiveness of program processes, the communication between Avista and its implementers, marketing activities, customer decision-making, and participation barriers;
- Survey program participants about their experiences, including satisfaction with the program, and their decision-making process; and
- Survey nonparticipants to reveal the level of program awareness and identify barriers to participation.

From the information obtained from the process evaluation, ADM will identify what the programs are doing well and what factors may be preventing the programs from achieving their goals or doing so more cost-effectively. This will help Avista and its implementers better understand the impact evaluation results and make related management decisions.

ADM will use process evaluation best practices, which include:

- Allocating process evaluation resources based on each program's contribution to overall energy savings; evidence of evaluation need (e.g., failure to meet savings goals or unsolicited feedback from customers or trade allies); changes in program design or implementation; and the recency with which programs had a detailed process evaluation.

- Designing all data collection instruments to address specific research questions, ensuring that all needed information is collected, and none is collected that will not or cannot be used.
- Presenting the process evaluations results clearly and efficiently, identifying how each interview or survey finding addresses a specific research question. Avista will not have to sort through lengthy descriptions of every survey response trying to figure out the meaning of the results.
- Providing meaningful high-level conclusions, which will form the basis for clear, actionable recommendations for process improvements where identified.

As specified by Avista, we will conduct a separate process evaluation for Washington and Idaho Programs. Each evaluation will cover all programs. We recognize Avista's desire for each process evaluation to be as comprehensive and meaningful as feasible. To that end, we will ensure that the process evaluation for each program is informed by multiple sources: staff and implementers, trade allies, program participants, and nonparticipating customers.

Where possible, we will seek to achieve the standard level of 90% confidence of 10% precision (90/10) – separately for Washington and Idaho – for participant surveys. We note, however, Avista's recognition that such a level of confidence and precision is not always feasible, particularly in programs with relatively small participant populations. In the case of market actors, such as contractors, retailers, and distributors, the choice of data collection approach will be driven by the size of the relevant market actor population and the nature of the data to be collected.

Table 3-1 summarizes our data collection approaches for each program. We will revise this as needed after we obtain greater detail about program participation and trade ally involvement during the project initiation period. We discuss sample size and confidence/precision issues in more detail in Section 3.3, *Data Collection Approaches*, below.

Table 3-1: Summary of Process Evaluation Sources, by Program

Programs	Document & Data Review	Staff / Implementers	Trade Allies	Participants	Non-participants
<b>Residential and Low-Income</b>					
Residential Appliance and Thermostat Program	Review all program documentation, (e.g., marketing plans and materials, implementation plans, applications) and project files.	Individual or group interviews with program and implementer staff of each program	Omnibus online survey and/or phone interviews	Program-specific multi-mode surveys, targeting 90/10 confidence/precision per state	Cross-cutting multi-mode survey, with 90/10 confidence/precision (n = 68) in each state
Residential Shell Program					
Residential Fuel Efficiency Program					
Residential On-Bill Repayment/Financing Program					
Residential Always-On Behavioral Program					
Residential Behavioral Program					
Residential Home Energy Audit Program			CAP interviews		
Residential Direct Install Insulation Program					
Low-Income					
Named Community Investment Fund (NCIF) Program				CAP interviews/ other organization interviews/ participant interviews	
Residential ENERGY STAR Manufactured Homes				Retailer interviews	
Residential Multifamily Weatherization – New Offerings Program				Property manager interviews	
Residential Midstream Program	Distributor interviews	N/A			
<b>Commercial &amp; Industrial</b>					
C&I Appliance and HVAC Controls Program	Review all program documentation, (e.g., marketing plans and materials, implementation plans, applications) and project files.	Individual or group interviews with program and implementer staff of each program	Omnibus online survey and/or phone interviews	Program-specific multi-mode surveys, targeting 90/10 per state	Cross-cutting multi-mode survey, with 90/10 confidence/precision (n = 68) in each state
C&I Site-Specific Program					
C&I Prescriptive Lighting Program					
C&I Small Business Direct Install Lighting Program					
C&I Prescriptive HVAC Variable Frequency Drive Program					
C&I Prescriptive Shell Program					
C&I Green Motors Program					
C&I Grocer Program					
C&I Building Operator Certification Program					
C&I Midstream Program				N/A	

### 3.2 Identifying and Answering the Important Process Questions

ADM will use the various information sources – program documentation review, staff and implementer interviews, applicable market actor interviews, and customer surveys – to provide convergent information to address the identified research questions. We will make maximally effective use of each source by identifying which sources will provide the most applicable information to each question, as shown in Table 3-2. For example, while program and implementer staff interviews will likely touch on most or all research questions, we will rely more heavily on feedback from market actors, participants, and nonparticipants to assess customer service and market barriers.

Market actors and program participants will provide important input into most questions relating to program implementation, but they likely will not be major sources of information regarding management tools or cost management. Our assessment of nonparticipants’ awareness of the program offerings and reasons for nonparticipation will provide important information relating to program marketing, participation information, rebates and incentives, and customer service as well as participation barriers.

*Table 3-2: Data Sources to Answer Process Evaluation Research Questions*

Process Evaluation Research Question	Document and Data	Staff	Market Actors	Participants	Nonparticipants
Are programs run per design and efficiently/effectively?	✓	✓	✓	✓	
Is staffing/organization sufficient and appropriate?		✓			
Is customer service of high quality, timely, and effective?			✓	✓	✓
Are marketing plans implemented per design and effective?	✓	✓	✓	✓	✓
Are quality assurance procedures appropriate and effective?	✓	✓	✓	✓	
Are management and implementation tools appropriate and effective?	✓	✓			
Are implementation contractors running programs effectively?		✓	✓	✓	
Are program materials effective and complete?	✓	✓	✓	✓	✓
Are costs managed properly and efficiently?	✓	✓			
Are contractors effectively capturing appropriate opportunities and ensuring comprehensive services?		✓	✓	✓	
Are rebates/incentives appropriate for meeting program goals?		✓	✓	✓	✓
What are the market barriers that impede program reach?			✓	✓	✓

The key to delivering a truly valuable process evaluation is refining and specifying the research questions by reviewing previous evaluation findings and thoughtfully interviewing program and implementer staff. For example, our review of prior evaluation reports identified the following issues that we would expect to investigate in our process evaluation:

- **Contractors are an important source of program awareness among program participants, while word of mouth and bill inserts are the most common among program nonparticipants. Recently, contractors as a source of awareness of residential programs have decreased, while word of mouth has increased.** The relationship between source of awareness and participation status has at least two interpretations: 1) that nonparticipants are less likely than participants to

have done recent work with a contractor and so have had less opportunity to learn from a contractor about the program; and 2) that the contractors that nonparticipants have worked with are less likely to tell their customers about the program. Both of these interpretations have potential implications for the program. The second interpretation points to greater opportunity for the program to increase participation, by increasing outreach to contractors to increase program referrals when working with customers that have contacted them for home improvement projects. However, the first interpretation may also have implications for increasing program participation if contractors can sell more improvement work by making more program referrals. Investigating which of these interpretations is more accurate by asking customers about their experience with contractors could help point the program to the correct outreach strategies. The decrease in the degree to which contractors have served as a program awareness source underscores the importance of investigating this issue and identifying reasons for the decrease.

- **The process evaluation of the 2019 Idaho low-income program pointed to high turnover by weatherization contractors.** This could affect the success of the program not only by reducing the availability of contractors to complete weatherization projects, but also potentially by decreasing the quality of weatherization treatments if many are performed by inexperienced contractors. Investigating the causes of the high turnover rate, and the impacts of turnover on project completion and quality, could provide the program with information that it could use to reduce turnovers and mitigate the impacts.

Another aspect of identifying and answering the important questions is understanding what is and is not meaningful in evaluation results. In preparing reports, ADM seeks to prioritize the dissemination of information that can lead to material and beneficial changes or insight for Avista's program managers and stakeholder groups.

### 3.3 Data Collection Approaches: Core Programs

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The following provides details on the process evaluation data collection approaches we will use.

#### 3.3.1 Document and Data Review

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We will review available program documents, including program manuals, program logic models, contractor training materials, marketing materials and plans, and application forms to better understand how the program operates and to inform the evaluation design. The review also serves as process evaluation input, by helping us identify opportunities for program improvement, such as potentially overlooked marketing channels or tactics, or opportunities to streamline or expand application forms to collect needed data.

Reviewing Avista's program logic models will help ensure our understanding of each program's objectives and how the program's activities are expected to achieve those objectives. The logic model review will be a process evaluation end in itself – we will provide feedback on how well the model explains and describes the program theory – but it also will guide data collection and interpretation. In turn, our data collection activities may provide feedback on how a given model should be revised to better reflect the realities for that program.

We also will review project tracking data, which is a valuable resource for understanding how the program is performing and the market response. A review of the data system can also verify that the data are sufficient and complete enough to support program management and evaluation.

### 3.3.2 Program and Implementer Interviews

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We will conduct in-depth interviews (IDIs) with program management staff to fill out our understanding of program design, goals, processes, and marketing strategies; to assess communication and coordination between Avista and its implementers; to get Avista's input on its implementer performance; to gain insight into quality control and assurance processes; to identify challenges that the programs have encountered and how those challenges have been addressed; and to clarify evaluation goals and research questions. Senior evaluation team members will conduct the IDIs using semi-structured interview guides (see Section 3.4, *Instrument Development*, below).

### 3.3.3 Participant In-depth Interviews for Named Community Programs

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We will conduct in-depth interviews (IDIs) with select program participants to fill out our understanding of participant customer journey, benefits of the program, and helpful communication methods. This method of data collection will be prioritized for programs providing offerings to Named Communities. Because these programs are new offerings from Avista and are targeted towards customers in Named Communities with the goal of resolving their unique barriers to program participation and unique energy needs, ADM will develop a unique participant interview guide for this target demographic that focuses on energy burden, program satisfaction, program communication methods, and additional energy needs. Senior evaluation team members will conduct the IDIs using semi-structured interview guides (see Section 3.4, *Instrument Development*, below).

### 3.3.4 Market Actor, Participant, and Nonparticipant Surveys

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We will conduct either telephone or web surveys with market actors, program participants, and nonparticipants. We anticipate conducting surveys as telephone, web, or mixed-phone/web surveys. We typically will conduct web surveys with email invitations, but we also use mail or postcard invitations to take web surveys. We have used the latter when email addresses were not available or, in some cases, as an adjunct to the email invitations.

The selection of survey type will depend on the nature of the target audience, the anticipated challenges in reaching customers by various methods, and the nature of the information to be collected.

Decreasing response rates to residential phone surveys over the past several years have made web surveys a more cost-effective approach for residential target audiences. Response to web surveys also have declined in recent years; thus, we will consider and recommend other modes as appropriate.

We still obtain good response rates to phone surveys of most nonresidential target groups, including market actors. Further, phone surveys are valuable when discussing more technical issues that may require clarification or when contacting larger customers, when the contact identified in project records is not necessarily the best respondent for an organization. Thus, we will consider phone surveys, as appropriate, with these groups.

#### *3.3.4.1 Market Actors*

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In the case of market actors, such as contractors, retailers, and distributors, the choice of data collection approach will be driven by the size of the relevant market actor population and the nature of the data to be collected. However, as noted in Table 3-1, above, we anticipate a combination of online surveys and phone interviews.

#### *3.3.4.2 Participants*

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As Table 3-3 shows, achieving 90/10 confidence/precision separately for each state and fuel type would not be feasible, as it would require achieving survey completions with more than one-third of the participant population. Anticipating this, Avista has indicated that participant samples for each state may include residents of the other state so long as most of the sample comes from the native state. The ADM team will make use of the above allowance when needed but will take measures to ensure that each sample includes the minimum number of non-native customers.

Table 3-3: Estimated Participant Population<sup>1</sup>, Sample Size, and Respondent Goals by Program Separated by State

Program <sup>2</sup>	Washington						Idaho					
	Electric			Natural Gas			Electric			Natural Gas		
	Pop.	90/10	%	Pop.	90/10	%	Pop.	90/10	%	Pop.	90/10	%
<b>Residential/Low-Income</b>												
Residential Appliance and Thermostat Program	400	58	15%	400	58	15%	400	58	15%	400	58	15%
Residential ENERGY STAR Manufactured Homes Program	30	21	70%	5	5	100%	15	13	87%	5	5	100%
Residential Shell Program	300	56	19%	1,700	66	4%	150	47	31%	400	58	15%
Residential Fuel Efficiency Program							150	47	31%			
Residential Midstream Program	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Residential Multifamily Weatherization – New Offerings Program	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Residential On-Bill Repayment/Financing Program	100	41	41%	50	29	58%	70	35	50%	30	21	70%
Residential Always-On Behavioral Program	50,000	68	0%	50,000	68	0%						
Residential Behavioral Program	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Residential Home Energy Audit Program	150	47	31%				150	47	31%			
Residential Direct Install Insulation Program	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Low-Income Program	1,400	65	5%	1,600	65	4%	350	57	16%	400	58	15%
Named Community Investment Fund (NCIF) Program	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
<b>Commercial &amp; Industrial</b>												
C&I Appliance and HVAC Controls Program	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
C&I Site-Specific Program	54	17	32%	9	5	56%	9	23	36%	3	3	100%
C&I Prescriptive Lighting Program	870	63	7%				473	60	13%			
C&I Small Business Direct Install Lighting Program	200	51	26%				100	41	41%			
C&I Prescriptive HVAC Variable Frequency Drive Program	2	2	100%				4	4	100%			
C&I Midstream Program	500	68	14%	400	68	17%	400	68	17%	300	68	23%
C&I Prescriptive Shell Program	6	6	100%	1	1	100%	1	1	100%	1	1	100%
C&I Green Motors Program	8	8	100%				2	2	100%			
C&I Grocer Program	9	8	89%				4	4	100%			
C&I Building Operator Certification Program	11	11	100%	11	11		11	11	100%	11	11	100%

<sup>1</sup> Participant populations were estimated from the 2024 Annual Conservation Plan, making some assumptions about the mean number of measure units per participant and assuming 80% of participation would be in Washington and 20% in Idaho. ADM will, of course, use the most up-to-date data on actual participation available to establish sample sizes.

ADM will make use of the above allowance when needed but will take measures to ensure that each sample includes the minimum number of non-native customers. Thus, for example, according to Table 2-1, achieving 90/10 for electric customers in the ENERGY STAR Manufactured Homes would require obtaining 21 survey completions for Washington (70% of the population) and 12 for Idaho (80% of the population). Assuming we complete the survey with 4 (33%) of the estimated 12 Idaho customers, we would “borrow” 8 of the Washington survey respondents to complete the Idaho sample.

We will work with Avista to establish an approach that ensures that, in such cases, we use the non-native respondents that best represent the native state. Possible approaches include selecting those who live closest to the state border or to draw a non-native subsample that is demographically closest to the native state sample.

Notwithstanding the above, it remains the case that it likely will not be feasible to achieve 90/10 sample sizes for several programs, even by supplementing state samples with non-native participants, as Table 3-4 illustrates. In this table, we have summed the estimated Washington and Idaho participant populations for each program. For the 90/10 sample, we have summed the completion counts *that would be required if we achieved a 90/10 sample for each state*, with two-thirds of each state’s count coming from native participants. For example, according to Table 3-3, above, achieving 90/10 samples with electric customers for the Residential On-Bill Repayment Program would require 41 survey completions for Washington and 35 for Idaho. If two-thirds of each sample were native customers, that would require responses from 28 Washington customers and 13 Idaho customers, for a total of 41 responses.

For programs for which obtaining a 90/10 participant sample is not feasible, we propose a combination of online surveys, supplemented with in-depth interviews with selected participants. The latter may include those who did not respond to the online survey and/or those who indicated any dissatisfaction in the online survey. In the case of programs with very small participant populations, we may attempt a census of participants.

In developing any sample, we will ask Avista for a list of customers that had been selected for another survey within the previous year, if available, to scrub the sample frame of such customers. When sample development overlaps for two or more surveys, we will allocate the overlapping customers to one or the other sample to ensure that no customer is recruited for more than one survey (or, in the case of influential, “must-have” customers, that they are included in all important survey efforts in a manner that minimizes survey and EM&V burden to the customer).

*Table 3-4: Estimated Combined Washington and Idaho Participant Population, Sample Size, and Required Survey Completion Rates for All Programs – Assuming Two-Thirds of Each State’s 90/10 Sample are Native to that State*

Program	Washington and Idaho Combined					
	Electric			Natural Gas		
	Pop.	Sample	%	Pop.	Sample	%
Residential Appliance and Thermostat Program	800	63	8%	800	63	8%
Residential ENERGY STAR Manufactured Homes Program	45	28	62%	10	9	90%
Residential Shell Program	450	59	13%	2,100	66	3%
Residential Fuel Efficiency Program				150	47	31%
Residential Midstream Program	N/A	N/A	N/A	N/A	N/A	N/A
Residential Multifamily Weatherization – New Offerings Program	N/A	N/A	N/A	N/A	N/A	N/A
Residential On-Bill Repayment/Financing Program	170	49	29%	80	37	46%
Residential Always-On Behavioral Program	50,000	68	0%	50,000	68	0%
Residential Behavioral Program	TBD	TBD	TBD	TBD	TBD	TBD
Residential Home Energy Audit Program	300	56	19%			
Residential Direct Install Insulation Program	TBD	TBD	TBD	TBD	TBD	TBD
Low-Income Program	1,750	66	4%	2,000	66	3%
Named Community Investment Fund (NCIF) Program	TBD	TBD	TBD	TBD	TBD	TBD
C&I Appliance and HVAC Controls Program	TBD	TBD	TBD	TBD	TBD	TBD
C&I Site-Specific Program	63	40	63%	12	8	67%
C&I Prescriptive Lighting Program	1,343	65	5%			
C&I Small Business Direct Install Lighting Program	300	56	19%			
C&I Prescriptive HVAC Variable Frequency Drive Program	6	6	100%			
C&I Midstream Program	N/A	N/A	N/A	N/A	N/A	N/A
C&I Prescriptive Shell Program	7	7	100%	2	2	100%
C&I Green Motors Program	10	9	90%			
C&I Grocer Program	13	11	85%			
C&I Building Operator Certification Program	22	17	77%	22	17	77%

### 3.3.4.3 Nonparticipants

We will conduct separate cross-cutting nonparticipant surveys of nonresidential and residential customers in both Washington and Idaho, targeting 90/10 confidence/precision for each survey. As with participant surveys, we anticipate a mix of online and phone surveys, possibly including mailed recruitments to take the online survey. For work with Energy Trust of Oregon, we found that a letter recruitment with a link to an online survey was an effective adjunct to other recruitment methods.

## 3.4 Interview and Survey Implementation

ADM will conduct all interviews and surveys using in-house resources. Our senior staff have broad and deep experience interviewing program and implementer staff, and ADM carries out dozens of phone, web, and mail surveys each year. ADM’s in-house dedicated call center is staffed with a full-time manager and both English- and Spanish-speaking professionals. As-needed, ADM has completed surveys in additional languages including Mandarin and Vietnamese. Since 2015, our call center has handled an average of about 180 surveys a year with market actors, program participants, and nonparticipants, with about 12,000 survey completions overall.

### 3.4.1 Instrument Development

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We will develop all interview guides and survey instruments to address research questions identified in the RFP, during project initiation, or in staff and implementer interviews and with a mind to the analyses to be performed. The evaluation plan will document the research questions specific to each data source, which will guide the process for developing each instrument. This will ensure that the research questions for each instrument will already have been vetted and discussed with Avista.

We will provide a crosswalk between the vetted research questions and each interview or survey item when we submit the draft instruments to Avista. This will ensure that there is no question or confusion about the purpose of any given item. Providing Avista staff with a clear understanding of the purpose of each item in the instrument will enable them to provide focused feedback on those items. We will revise each item as needed based on the feedback received.

### 3.4.2 Survey Programming and Testing

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We will program all surveys, both phone and web, using an industry-standard survey platform, Qualtrics. The platform is widely used by professional survey research and evaluation firms and supports web, telephone, and dual-mode survey administration. It offers sophisticated programming features for developing user-friendly interfaces and offers a range of options for response validation and display logic. It also provides controls for preventing duplicate or ineligible submissions and allows the option of completing surveys in multiple sessions. It provides the ability to allow respondents to select the survey language as well as the ability to embed screener questions in email invitations.

We will test each survey to ensure that all questions and responses are included and worded correctly, and all input and display logic works correctly. The program lead will assess the look and feel of the survey (size of font, amount of white space, location of page breaks, and so forth) and will provide suggestions for improvement, if needed.

Once each survey is programmed, we will carry out a soft launch of a small subsample (if the program population is sufficiently large) as a second check to ensure the survey programming is correct as well as to determine whether any questions are not well understood or should be revised for any other reason.

ADM will also work with Avista program managers and call center to integrate co-branded or branded materials to improve the credibility and trustworthiness of the surveys in the perspective of Avista's customers.

### 3.4.3 Survey Recruitment

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We will prepare telephone and email recruitment scripts. These materials will include several well-known elements, such as personalizing the message, stating the intended use of the responses and the importance of everyone's response, making a personal appeal, and so forth. They will provide the name of an ADM evaluation staff contract to answer questions about the survey. If Avista so desires, they also will provide an Avista contact to provide *bona fides* or answer questions. Email recruitments also will provide a call-in number for customers who would like to complete the survey by phone.

We also will include proven-effective language in the recruitment scripts that ADM's staff developed for use in survey recruitment, based on language used in public radio pledge drives. The key to the "pledge

drive” language is asking the recipient if he or she “can be one of the people who help of achieve our goal” number of responses. This language has been shown to increase response rates to online surveys above and beyond what is accomplished through the elements described above.<sup>10</sup> We hypothesize that it does so because it frames the request in the context of group or collective action, thus inhibiting thoughts that undermine self-efficacy (e.g., “what difference can my actions make?”). In this sense, it may be related to the concept of “collective efficacy.”<sup>11</sup>

In recruiting for both phone and email surveys, we will follow additional protocols to attempt to maximize response rates and reduce customer burden. We will carry out multiple recruitment attempts but will space them to provide adequate opportunity to respond to each one before sending another. We have found that making more than three phone attempts yields quickly diminishing returns but that multiple email recruitment efforts, when spaced adequately and when using the pledge drive language, can generate continued responses with only a moderate decrease with each effort. We also have found that switching recruitment modes (e.g., from email to phone to post card) can reduce response decrement or even generate an increase in response.<sup>12</sup>

When feasible, we will send advance email or mailed notice of telephone surveys to customers. These will explain the purpose of the survey and address frequently asked questions. As with email recruitments for web surveys, the notification will include contact information to obtain additional information about the survey or participate by telephone.

We will use survey completion incentives when needed to increase response rates. Typically, a small incentive of \$10 to \$15 is effective at increasing response rates among residential customers, with increases in response rates offsetting incentive costs. When surveying market actors, a larger incentive of \$50 to \$100 often is needed.

Before beginning any survey recruitment, we will follow Avista’s guidance in notifying Avista’s call center about data collection activities.

#### 3.4.4 Conducting Telephone Surveys

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The call center manager, working with evaluation staff, will provide call center staff thorough project-specific training for each survey. This will cover the basics of the program that the survey addresses, the group that the survey targets, and the purpose and use of the survey and of each question. Our callers are experienced in surveying about a wide range of energy efficiency program types and with an equally wide range of target audiences. Nevertheless, we take every new survey as an opportunity to review and reinforce their understanding of these programs and audiences. Training will include a question-and-answer session as well as practice surveys.

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<sup>10</sup> J. Loomis, E. Focella, A. Weaver, and R. Bliss 2019. “Increasing Response Rates to Web Surveys: No Tote Bag Required.” Informing Innovation: Research and Evaluation in a Changing Energy Landscape, Denver, CO: International Energy Program Evaluation Conference, August 2019.

<sup>11</sup> A. Bandura. 2000. “Exercise of Human Agency Through Collective Efficacy.” Current Directions in Psychological Science, June 2000.

<sup>12</sup> Bliss, R. and D. Rubado. 2020. “Increasing Program Participation in Underserved Groups: The Value of a Nuanced Understanding of Demographics, Awareness, and Attitudes.” Behavior, Energy & Climate Change Virtual Conference. December 7-9, 2020.

During the survey fielding, the call center manager will monitor callers to ensure quality and provide feedback to callers. For each survey, the call center manager will reiterate a standing directive to the callers to provide feedback on the survey instruments, including any challenges they have understanding or being able to ask the questions and any challenges respondents have in answering them. The call center manager immediately provides this information to the evaluation survey lead, who can then determine whether to reword a question or provide additional clarification to the caller.

### 3.4.5 Mailed Letters for Communicating with Hard-to-Reach Customers

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As an additional option, ADM proposes to send mailed letters to customers who do not have valid emails connected to their accounts for the process evaluation survey. This will ensure that we are offering customers all available methods for communication, which increase our ability to reach Named Community participants, hard-to-reach participants, and participants that don't have the ability to use online methods for completing the survey. The mailed letters will be developed and distributed by the ADM lead evaluation researcher. The letters will include a recruitment message noting the survey completion incentive offer. ADM will utilize Anchor Pointe, a small, women-owned business, to print, package, and send out letters to the customers without valid email addresses.

## 3.5 Process Evaluation of Pilot or New Programs

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Process evaluations are particularly important for new programs. Early feedback can lead to critical course corrections that generate smoother delivery, greater participation, and higher customer satisfaction. This section outlines our anticipated program-specific process evaluation approaches for the pilot programs.

### 3.5.1 Residential Home Energy Audit Program

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To support the nascent Home Energy Audit Program, ADM proposes three process tasks:

- *Program Manger Interviews.* At the outset of the evaluation, as well as the close of the 2024 and 2025 program years, we schedule an in-depth interview with Avista's program manager to discuss the state of the program, successes, struggles, and next steps.
- *Auditor Interviews (n=4).* Assuming Avista has enlisted auditors, our team will interview a number of auditors to get their take on the early performance of the program and what the program could improve to educate customers more effectively in addition to encouraging greater participation in other Avista programs.
- *Participant Surveys (n=30).* If sufficient audits have occurred, ADM will survey a randomly selected sample of participants (across both states and fuels) to solicit their feedback on the audit itself, their interactions with the auditors, likelihood of participation in other programs, and information about any additional energy savings habits or behavioral changes they have made because of the audit.

### 3.5.2 Time-of-Use Pilot Program

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The TOU Pilot Program will have its own separate process evaluation completed. However, ADM will include the data collected from the TOU Pilot in the overall biennial process evaluation report. For further details of pilot evaluation methods, refer to Section 6.

### 3.5.3 Peak Time Rebate Pilot Program

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The PTR Pilot Program will have its own separate process evaluation completed. However, ADM will include the data collected from the TOU Pilot in the overall biennial process evaluation report. For further details of pilot evaluation methods, refer to Section 6.

### 3.5.4 Named Community Investment Fund Program

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ADM proposes to conduct the following activities in the process evaluation of this program to understand the impact of the program and identify program successes and learnings:

- *Program Manger Interviews.* To start, ADM will complete an in-depth interview with Avista's program manager to discuss the launch of the NCIF Program, its early successes, early struggles, and next steps. We will work with Avista to determine the best timing for this initial interview, as well as at least two follow-up interviews during the program's two-year evaluation period.
- *CAP Agency and Other Organizations Interviews (n=TBD).* Out team will interview a number of CAP agencies and nonprofit organizations associated with the implementation of this program to get their take on the early performance of the program and what the program could improve to educate customers more effectively, encourage deeper retrofits, and encourage greater participation in other Avista programs.
- *Database Review.* Database reviews play an important role in process evaluations, especially for pilots, as it is essential to ensure the pilot is collecting the requisite information to track participation, enable accurate reporting, and facilitate viable future evaluations. To this end, ADM will review the data collected by Avista and provide feedback as appropriate.
- *Participant Surveys (n=TBD).* A few months after the pilot is launched, ADM will undertake a web survey with a random sample of participating customers. The survey will focus on: 1) how the customer heard about the program, 2) what efficiency improvements they made, and 3) their experience going through program to receive home improvements.

### 3.5.5 Hybrid Heat Pump Pilot Program

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ADM proposes the following process evaluation tasks for the Hybrid Heat Pump Pilot Program:

- *Program Manger Interviews.* To start, ADM will complete an in-depth interview with Avista's program manager to discuss the launch of the lending pilot, its early successes, early struggles, and next steps. We will work with Avista to determine the best timing for this initial interview, as well as at least two follow-up interviews during the pilot's two-year delivery.
- *Database Review.* Database reviews play an important role in process evaluations, especially for pilots, as it is essential to ensure the pilot is collecting the requisite information to track participation, enable accurate reporting, and facilitate viable future evaluations. To this end, ADM will review the data collected by Avista and provide feedback as appropriate.
- *Literature Review.* It is worthwhile to review available information about similar efforts in the region and nationally to identify any lessons learned that may benefit Avista.
- *Participant Surveys (n=TBD).* A few months after the pilot is launched, ADM will undertake a web survey with a random sample of participating customers. The survey will focus on: 1) how the customer heard about the pilot, 2) what efficiency improvements they made using the loaned

tools, and 3) their experience going through the tool lending process, including how Avista could improve the experience and offer.

### 3.5.6 Compressed Air Pilot

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ADM proposes the following process evaluation tasks for the Compressed Air Pilot Program:

- *Program Manger Interviews.* To start, ADM will complete an in-depth interview with Avista’s program manager to discuss the launch of the lending pilot, its early successes, early struggles, and next steps. We will work with Avista to determine the best timing for this initial interview, as well as at least two follow-up interviews during the pilot’s two-year delivery.
- *Database Review.* Database reviews play an important role in process evaluations, especially for pilots, as it is essential to ensure the pilot is collecting the requisite information to track participation, enable accurate reporting, and facilitate viable future evaluations. To this end, ADM will review the data collected by Avista and provide feedback as appropriate.
- *Literature Review.* It is worthwhile to review available information about similar efforts in the region and nationally to identify any lessons learned that may benefit Avista.
- *Participant Surveys (n=TBD).* A few months after the pilot is launched, ADM will undertake a web survey with a random sample of participating customers. The survey will focus on: 1) how the customer heard about the pilot, 2) what efficiency improvements they made using the loaned tools, and 3) their experience going through the tool lending process, including how Avista could improve the experience and offer.

### 3.5.7 Pay for Performance Pilot

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- *Program Manger Interviews.* To start, ADM will complete an in-depth interview with Avista’s program manager to discuss the launch of the Pay for Performance Program, its early successes, early struggles, and next steps. We will work with Avista to determine the best timing for this initial interview, as well as at least two follow-up interviews during the program’s two-year evaluation period.
- *Facility Manager Interviews (n=TBD).* Our team will interview a number of CAP agencies and nonprofit organizations associated with the implementation of this program to get their take on the early performance of the program and what the program could improve to educate customers more effectively, encourage deeper retrofits, and encourage greater participation in other Avista programs.
- *Database Review.* Database reviews play an important role in process evaluations, especially for pilots, as it is essential to ensure the pilot is collecting the requisite information to track participation, enable accurate reporting, and facilitate viable future evaluations. To this end, ADM will review the data collected by Avista and provide feedback as appropriate.
- *Participant In-depth Interviews (n=TBD).* A few months after the pilot is launched, ADM will undertake a web survey with a random sample of participating customers. The survey will focus on: 1) how the customer heard about the program, 2) what efficiency improvements they made to their facility, and 3) their experience going through program to receive facility improvements.

### 3.6 Timing and Cadence of Process Evaluation Activities

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During the development of the portfolio-level M&V plan, process evaluation schedules for WA and ID will ensure that existing, stable programs receive evaluations at least every two (2) years and new and/or “at risk” programs will be identified and evaluated annually. This approach allows for efficient allocation of evaluation resources.

The review of program documentation will occur first, as it – together with discussions during project initiation – will provide an understanding of the programs, form the basis for our draft evaluation plan, and will inform all later data collection. We will request all applicable program documentation during the project initiation period.

Early in the 2024 program year, we will conduct in-depth interviews (IDIs) with program staff to ensure we fully understand the program rules and processes and staff’s expectations for and concerns about the programs and the evaluation. This will help us to identify research questions to address through market actor and customer (participant and nonparticipant) interviews and surveys. We will then check in with program staff late in the 2024 program year or early in the 2025 program year to find out whether anything has changed, to gain a sense of how the programs are progressing, and to identify any new issues or concerns. This will allow us to devise appropriate questions for the other interviews and surveys. It also will ensure that our later data collection addresses any issues or concerns of interest to program and implementer staff. Finally, it will allow us to clarify any questions regarding our proposed sampling plans.

Market actor interviews and customer surveys will follow the staff and implementer IDIs. We will begin preparing guides for these interviews and surveys, as well as the sample plans, after completing the first staff interviews, but we will complete them only after completing the second round of staff interviews to ensure that they are complete and accurate.

As a final data collection activity, we will check in with staff and/or implementer contacts toward the end of the 2025 program year to assess progress and identify any issues that arose during that year that should be addressed in the report.

ADM will submit all data collection materials, sample plans, and other contact materials (e.g., mail or email recruitment scripts) to Avista for review before beginning evaluation activities. We will establish the review protocol with Avista during project initiation. Our goal is to establish the approach that makes the most sense for Avista staff – whether to provide all instruments and sample plans in a bundle or to establish a schedule that prioritizes certain instruments and plans for submittal. The latter may reduce the burden on Avista staff and allow for a more efficient review process. We will address all comments and revise instruments as needed.

### 3.7 Meeting Participation

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ADM commits to meeting and participating with advisory groups, subcommittees, the Advisory Group, the Energy Efficiency Analytics team and others as needed, in addition to presenting annual results at Avista’s convenience. ADM understands that Avista holds, at minimum, (four) in-person Advisory Group meetings per year. In addition, various other meetings may be arranged if needed. ADM also commits to participating in these meetings to present evaluation methodologies, results, and any other need presented in the meetings.

### 3.8 DSM Prudence Review

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ADM commits to remaining available for prudence review and investigation as required by the Washington Utilities and Transportation Commission and the Idaho Public Utilities Commission, subsequent to the 2024-2026 evaluation period. ADM will provide comprehensive workpapers, supporting documentation, and responses to production requests as needed by the respective Commissions.

### 3.9 Proposed Changes to the SOW or Alternative Means to Accomplish Project Objectives

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ADM understands that the solicitation SOW states the Consultant shall verify quantity and quality of installations and apply RTF's UES to determine ex post savings in cases where the RTF has existing unit energy savings. ADM proposes the following changes to the SOW:

- Conduct billing analyses with comparison group via propensity score matching for a subset of measures
- Conduct facility-level regression analysis for a subset of programs
- Apply NTG adjustments as necessary
- Verify measure install and quality of install via web-based survey and/or site visits

ADM proposes to use a combination of RTF UES values, billing analysis, and simulation modeling to calculate ex post savings in the Residential and Non-Residential Electric and Natural Gas Portfolio. Billing analyses are proposed for some measures to remain comparable in methodology to previous Avista portfolio evaluations. In addition, billing analyses with comparison groups provide a reliable method to estimate net measure impacts because the comparison group reflects market-level adoption, which we can assume would be the behaviors the participant customers would have adopted had they not participated in the program.

ADM has experience conducting residential and non-residential billing analyses for a wide variety of measures, in addition to conducting propensity score matching to create a comparison group. Comparison groups are suggested to estimate reliable measure-level savings in the post-period and are important when large-scale environmental factors affect residential energy consumption, such as COVID19 shelter-in-place orders. Similarly, for the commercial and industrial sector ADM has found it necessary to employ greater use of Non-Routine Adjustments (NRAs), with notable recent examples including adjusting for disrupted throughput levels in industrial facilities attributable to supply chain disruptions.

### 3.10 Innovative Techniques

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ADM summarizes the following innovative techniques we propose to employ during the evaluation of the Avista Portfolio:

- Innovative spillover assessment for other programs
- "Pledge Drive" language to increase survey response rates
- Savings group analysis

ADM is confident these innovative techniques can be employed to provide more accurate adjustments and verification to impact analyses as well as providing insight into potential program and portfolio improvements.

### 3.11 Innovative Spillover Assessment for Other Program Types

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ADM understands that the proposed project does not require development of a net-to-gross ratio for most programs, as all savings assessments that are based on existing Regional Technical Forum (RTF) unit energy savings (UES) values account for market baselines and billing analyses produce net savings. However, Avista wishes to know what kinds of spillover its other programs are generating for planning or other purposes. While traditional spillover approaches typically document very little savings, ADM staff have developed and implemented an innovative spillover approach that has been shown to identify much higher spillover rates than standard approaches, in both residential and nonresidential programs. Thus, while we are not now proposing an optional spillover assessment of the type described above, we describe it here for Avista's consideration for later use.

ADM believes that standard spillover approaches are designed based on incorrect assumptions that can only lead to under-estimates of spillover. Specifically, the traditional approach asks customers about purchases of un-incented energy efficient equipment and then asks them to rate the program's influence on their purchase. This approach makes two false assumptions: 1) that customers will necessarily know whether a given purchase was energy efficient; and 2) that customers will know how much the program influenced their purchase. The second assumption is false because program influence often is not direct or observable to the customer, even when the customer is aware of program involvement.<sup>13</sup> In the case of midstream or point of purchase discounts, the discount may easily go unnoticed or not be remembered. In the case of contractor-driven purchases (e.g., HVAC systems), research has shown that customers frequently cite their contractor's recommendation as the primary reason for the decision to purchase a more efficient version of some equipment type.<sup>14</sup>

The evidence suggests that most program influence is indirect, via the distributors and either retailers or contractors who work with the customers. That is, the program influences these various market actors through outreach and training, and those actors influence the customers through recommendations. Further, in downstream programs, distributors may influence contractors. The indirect program influence can thus be represented as the product of the influence each actor has on the next actor in the influence chain.

ADM's proposed Process Evaluation Advisor (while with a previous employer subcontracting to ADM) developed this approach in 2015 for a nonresidential lighting program, identifying spillover savings that were significantly higher than typical approaches. ADM's Process Evaluation Advisor also applied this

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<sup>13</sup> Bliss, R., N. Sage, and D. Diebel. 2017. "Not all Spillover Is the Same – So Don't Treat It That Way!" *Making Ambitious Reductions Real: Accurate and Actionable Evaluation*, Baltimore, MD: International Energy Program Evaluation Conference, August 2017.

<sup>14</sup> Folks, J., and Bliss, R. "Frog Princes and Free-Ridership: Contractor Influence in Residential Programs." 2016. Behavior, Energy & Climate Change Conference, Baltimore, MD. October 20.

“indirect” spillover assessment approach to a residential contractor-driven heat pump program.<sup>15</sup> Quantifying the program’s influence on heat pump recommendations to the contractors’ clients and the influence of those recommendations on client decisions and applying the product to the saved kWh from un-incented heat pump sales again revealed much higher levels of spillover than typical approaches provide.

### 3.11.1 Historical Data Collection Procedure

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ADM provides small incentives for customers to complete surveys on energy efficient measures they have purchased in the program year. Survey data provides estimates for In-Service Rates (ISR) and Hours of Use (HOU) for rebated measures, and baseline conditions for lighting and space and water heating measures. ADM will ensure proper survey sample size to achieve 90% precision with a 10% confidence level for the survey-based verification efforts wherever possible.

Customer surveys include an option for in-person verification of survey responses for the lighting portion of the program. ADM field technicians visit customers who opted-in to field visits and provide visual verification of program tracking information and the lighting, appliance, and space and water heating equipment installation locations reported by customers.

### 3.12 Savings Group Analysis

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ADM proposes to conduct a savings group analysis for a subset of measures evaluated through billing analysis. A savings group analysis identifies participating customers that may not display saved energy through the installation of the measure. Learning more about the portion of customers that are “negative” or “neutral” savers may inform strategies for adjusting target populations or measure offerings in the future. ADM proposes to conduct this analysis to explore potential issues and opportunities to increase cost-effectiveness and maximize program savings. This methodology is especially useful for pilots to gather insights that may affect how the program continues to be implemented.

The analysis will use billing data and/or AMI data to develop a multi-level model to estimate individual savings using both the participant and nonparticipant information to control for exogenous factors that may affect energy savings or consumption within a household over time.

ADM will characterize the distribution of individual participants’ energy savings to develop energy savings groups, followed by using clustering algorithms to identify predictive characteristics of those energy savings groups. ADM will work with Avista to identify additional data availability, such as AMI data, to enhance this analysis. As summarized above, the results of this analysis may provide useful insight into program improvements, and therefore, ADM proposes to explore such opportunities to aid Avista’s program or pilot implementation and improve portfolio cost-effectiveness.

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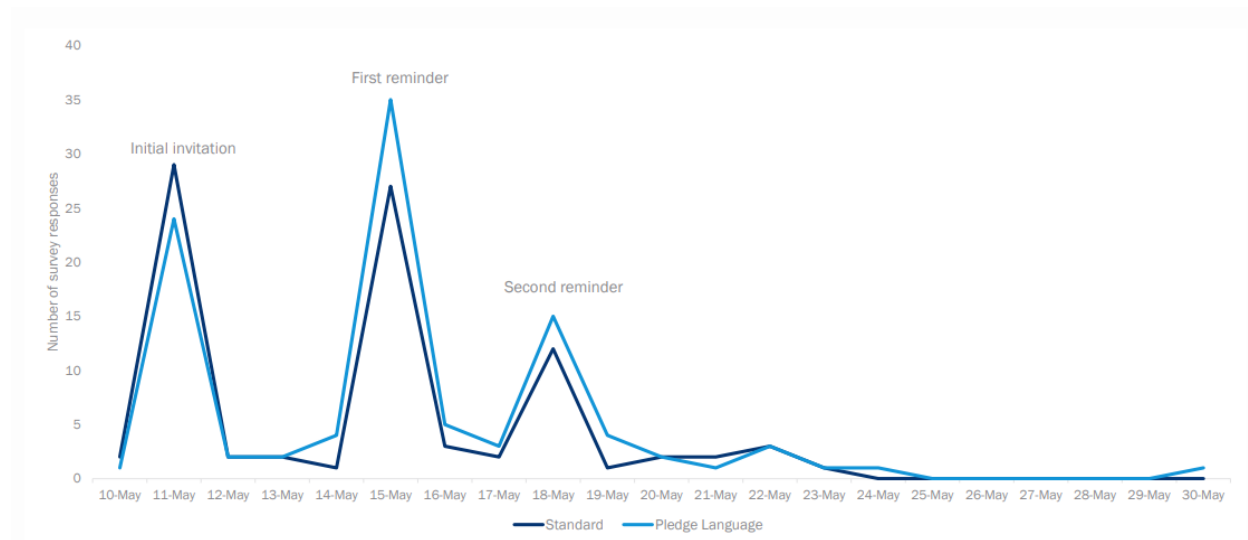
<sup>15</sup> Bliss, R. and M. McClaren. 2018. “Avoiding Being (Too Much of) A Victim of Your Own Success: Mitigating Free-ridership Losses Through Better Spillover Assessment.” *International Energy Policy and Programme Evaluation Conference*, Vienna, Austria, August 2018.

### 3.13 “Pledge Drive” Language to Increase Survey Response Rate

One of the ADM’s innovative developments is the use of “pledge drive” language in survey recruitments to online surveys. The key to the “pledge drive” language, based on language used in public radio pledge drives, is asking the recipient if he or she “can be one of the people who help of achieve our goal” number of responses. This language has been shown to increase response rates to online surveys above and beyond what is accomplished through other approaches.<sup>16</sup> We hypothesize that it does so because it frames the request in the context of group or collective action, thus inhibiting thoughts that undermine self-efficacy (e.g., “what difference can my actions make?”). In this sense, it may be related to the concept of “collective efficacy.”<sup>17</sup>

A current ADM staff member developed this approach in 2015 for a survey that ADM was conducting at that time. Its success engendered multiple additional uses, one that incorporated it into a randomized trial, in which it was shown to increase response rate significantly (Figure 3-1).

Figure 3-1: Test of Pledge Drive Language<sup>18</sup>



ADM will use the pledge drive language in all survey recruitments for the proposed project.

<sup>16</sup> J. Loomis, E. Focella, A. Weaver, and R. Bliss 2019. “How to Increase Response Rates to Web Surveys: No Tote Bag Required.” Proceedings of the 2019 International Energy Program Evaluation Conference. Denver, Colorado: International Energy Program and Policy Evaluation Conference.

<sup>17</sup> A. Bandura. 2000. “Exercise of Human Agency Through Collective Efficacy.” Current Directions in Psychological Science, June 2000.

<sup>18</sup> Loomis et al 2019, op. cit.

## 4. Residential Program-Level EM&V Approaches

The following sections detail ADM’s program-specific impact methods, process methods, and sampling plans for each of the programs in Avista’s Residential Portfolio, as summarized by the 2024 Washington Electric and Natural Gas Annual Conservation Plan. ADM will work with Avista to adjust program-specific impact and sampling plans as additional information is received about program participation, program restrictions, measure offerings, and available data.

### 4.1 Timing and Cadence of Impact Evaluation Activities

ADM plans to conduct an impact analysis for each program based on “high risk” or “low risk” programs; that is, for programs in which evaluated savings may vary from program year to program year, ADM will conduct an evaluation each year in the 2024-2025 evaluation period. However, for programs which display stable savings from year to year and have had no implementation changes over the biannual period, ADM will conduct an impact evaluation once in the two year period. The following tables summarize the cadence ADM will evaluate each program.

*Table 4-1: Residential and Low-Income Impact Evaluation Cadence by Program*

Program	Database Review
Residential Appliance and Thermostat Program	Biannually
Residential ENERGY STAR Manufactured Homes Program	Biannually
Residential Shell Program	Biannually
Residential Fuel Efficiency Program	Biannually
Residential Midstream Program	Annually
Residential Multifamily Weatherization – New Offerings Program	Annually
Residential On-Bill Repayment/Financing Program	Biannually
Residential Always-On Behavioral Program	Annually
Residential Behavioral Program	Annually
Residential Home Energy Audit Program	Biannually
Residential Direct Install Insulation Program	Biannually
Low-Income Program	Biannually
Named Community Investment Fund (NCIF) Program	Biannually

*Table 4-2: Non-residential Impact Evaluation Cadence by Program*

Program	Database Review
C&I Appliance and HVAC Controls Program	Biannually
C&I Site-Specific Program	Annually
C&I Prescriptive Lighting Program	Biannually
C&I Small Business Direct Install Lighting Program	Biannually
C&I Prescriptive HVAC Variable Frequency Drive Program	Biannually
C&I Midstream Program	Annually
C&I Prescriptive Shell Program	Biannually
C&I Green Motors Program	Biannually
C&I Grocer Program	Biannually
C&I Building Operator Certification Program	Annually

*Table 4-3: Pilot Impact Evaluation Cadence by Program*

Program	Database Review
Time of Use Pilot	Annually
Peak Time Rebates Pilot	Annually
Hybrid Heat Pump Pilot	Annually
Building Operator IQ Pilot	Annually
Compressed Air Pilot	Annually
Pay for Performance Pilot	Annually
Additional Pilots	Annually

ADM will work with Avista to modify the planned impact evaluation cadence throughout the 2024 to 2025 biannual period for new programs or pilots, or if programs have undergone substantial changes.

## 4.2 Residential Appliance and Thermostat Program

The Residential Appliance and Thermostat Program helps promote residential customers to use high efficiency appliances, smart thermostats, and line voltage thermostats. This program offers incentives for the purchase and use of high-efficiency ENERGY STAR-certified clothes washers, vented clothes dryers, refrigerators, freezers, connected thermostats, and line voltage thermostats for multifamily applications. Customers receive incentives after installation and after submitting a completed rebate form. Table 4-4 summarizes the anticipated measures offered under this program along with the proposed impact evaluation method for each measure, separated by fuel type.

*Table 4-4: Residential Appliance and Thermostat Program Measures*

Measure	Impact Analysis Methodology
E ENERGY STAR standard size refrigerator and refrigerator-freezer - bottom-mounted freezer - ESME	RTF UES, ResRefrigeratorsAndFreezers_v5_1
E ENERGY STAR standard size freezer - upright - ESME	RTF UES, ResRefrigeratorsAndFreezers_v5_1
E ENERGY STAR washer	RTF UES, ResClothesWasher_v7_2
E ENERGY STAR dryer	RTF UES, ResClothesDryers_v4_2
E Smart thermostat - DIY	RTF UES, ResConnectedTstats_v1.3/Billing Analysis
E Smart thermostat – contractor-installed	RTF UES, ResConnectedTstats_v1.3/Billing Analysis
E Line voltage communicating thermostat	RTF UES, ResElectronicLineVoltageTstats_v4_2
E Line voltage thermostat	RTF UES, ResElectronicLineVoltageTstats_v4_2
G Smart thermostat - DIY	RTF UES, ResConnectedTstats_v1.3/Billing Analysis
G Smart thermostat – contractor-installed	RTF UES, ResConnectedTstats_v1.3/Billing Analysis

ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the Residential Appliance and Thermostat Program in the section below.

### 4.2.1 Database Review & Verification

Before conducting the impact analysis, ADM will conduct the following activities for the Residential Appliance and Thermostat Program:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)
- Survey-based verification for a random subset of customers (Section 2.3.2)

Table 2-1 in Section 2.3.1 summarizes the sample sizes for each the document-based verification activity in the Residential Appliance and Thermostat Program. Table 2-2 in Section 2.3.2 summarizes the sample sizes for the survey-based verification activity for the Residential Appliance and Thermostat Program.

During document-based verification, if any deviations between the tracking data and application values are found, ADM will communicate these differences to Avista through periodic updates and summarize deviations the final report.

During survey-based verification, ADM will randomly select a subset of participant customers to survey for simple verification of installed measure and documentation of prior equipment. ADM will include questions such as:

- Is the newly installed ENERGY STAR washer still properly functioning?
- Is the newly installed ENERGY STAR washer front-loading?
- What type of equipment heats the water in your home?
- Does your new refrigerator also have a freezer?
- Is your new refrigerator standard size ( $\geq 7.75$  cubic feet) or compact ( $< 7.75$  cubic feet)?

These questions will help ADM verify that the measure was collected and documented accurately and will allow ADM to calculate measure-level savings more accurately.

#### 4.2.2 Required Data

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ADM requires the following data to complete the analysis for this program:

- Program tracking data including customer identifiers, address, and date of rebate
- Rebate application forms and applicable invoices
- Monthly billed consumption data for participating and non-participating customers

#### 4.2.3 Impact Analysis

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ADM proposes to utilize the following impact evaluation methodologies to estimate verified net energy savings in the Residential Appliance and Thermostat Program:

- Deemed savings using RTF UES values
- Billing Analysis with counterfactual group (IPMVP Option C)

Measure-level impact evaluation methodologies for this program are specified in Table 4-4, separated by fuel type.

For measures in which an RTF-approved measure has been specified and considered active, ADM proposes to measure net savings using UES values in each RTF workbook for that. ADM will also apply adjustments to these RTF values if deviations are found between invoices and tracking data or if in-service rates deviate from 100% in verification surveys. This methodology is summarized in further detail in Section 2.5.1.

For measures in which an RTF-approved, active measure has not been specified, ADM proposes to measure verified net savings by conducting a billing analysis using with a counterfactual group selected via propensity score matching. The methodology used to select the quasi-experimental counterfactual group and the methodology for linear regression billing analysis are summarized in further detail in the “Billing Analysis (IPMVP Option C)” section. ADM will isolate each unique measure and verify each participant included in the analysis did not also participate in other programs; therefore, ADM will be able to isolate the measure effects using the household’s billed consumption data.

Although ADM proposes to estimate smart thermostats with electric heating via the RTF UES values, ADM recognizes that the RTF workbook for Connected Thermostats in the residential sector assumes that 90% of the smart thermostats are DIY-installed, while 10% are contractor-installed. However, Avista’s projected number of units smart thermostat with electric heating in 2024 portrays 75% of smart thermostats are DIY-installed. Because a larger portion of smart thermostats are installed via contractors, there may be an opportunity to claim additional savings for this measure. To evaluate whether the RTF UES values are appropriate to estimate verified savings for the electric smart thermostats, ADM proposes to explore a billing analysis via regression modeling for each the DIY and contractor-installed electric smart thermostats.

ADM will summarize program-level savings by summing verified net energy savings for all projects in the program, separated and reported by state and fuel type.

#### 4.2.4 Timing and Cadence

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This program is considered “low risk” and therefore will be evaluated once in the 2024-2025 evaluation period.

#### 4.2.5 Technical Comments

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ADM provides no technical comments for this program’s evaluation.

### 4.3 Residential ENERGY STAR Manufactured Homes Program

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The Energy Star Manufactured Homes Program provides rebates for homes within Avista’s service territory that attain an ENERGY STAR certification. This program is administered by a Northwest Energy Efficiency Alliance (NEEA) regional program and incentivizes the ENERGY STAR ECO-rated new manufactured homes and ENERGY STAR with NEEM+ certified homes.

Previously the program provided incentives for one building certification: the ENERGY STAR ECO-rated new manufactured homes. However, beginning in 2024, the prescriptive program started recognizing additional efficiency distinction between homes, including those branded as ENERGY STAR and ENERGY STAR with NEEM+. The NEEM+ certification criteria include additional efficiency measures such as programmable thermostats, improved windows, building wrap, and window flashing. The new incentive levels are intended to motivate customers to choose the highest efficiency manufactured home available.

Table 4-5 summarizes the anticipated measures offered under this program along with the proposed impact evaluation method for each measure, separated by fuel type.

*Table 4-5: ENERGY STAR Manufactured Homes Program Measures*

Measure	Impact Analysis Methodology
G ENERGY STAR Manufactured Home	Billing Analysis or Avista TRM
G ENERGY STAR with NEEM+ Manufactured Home	Billing Analysis or Avista TRM
E ENERGY STAR Manufactured Home	RTF UES, ResMHNewHomesandHVAC_v4_2
E ENERGY STAR with NEEM+ Manufactured Home	RTF UES, ResMHNewHomesandHVAC_v4_2

ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the ENERGY STAR Manufactured Homes Program in the section below.

#### 4.3.1 Database Review & Verification

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Before conducting the impact analysis, ADM will conduct the following activities for the ENERGY STAR Manufactured Homes Program:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)

Table 2-1 in Section 2.3.1 summarizes the sample sizes for each the document-based verification activity in the ENERGY STAR Manufactured Homes Program.

During document-based verification, if any deviations between the tracking data and application values are found, ADM will communicate these differences to Avista through periodic updates and summarize deviations in the final report.

The verification of heating and cooling type will allow ADM to calculate measure-level savings more accurately based on RTF measure specifications. This simple verification will help ADM more accurately estimate measure-level impacts for the other measures using engineering algorithms.

Survey-based verification is not proposed for this measure, as rebates are primarily submitted by builders.

#### 4.3.2 Required Data

---

ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, and date of rebate
- Rebate application forms and certifications
- A sample of REM/Rate project files from HERS raters and documentation on installed equipment, if available
- Monthly billed consumption data for participating households and similar, non-participating households
- Program builder contact information

#### 4.3.3 Impact Analysis

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ADM proposes to utilize the following impact evaluation methodologies to estimate verified net energy savings in the ENERGY STAR Manufactured Homes Program:

- Deemed savings using RTF UES values or Avista TRM values

Measure-level impact evaluation methodologies for this program are specified in Table 4-5, separated by fuel type.

For measures in which an RTF-approved measure has been specified and considered active, ADM proposes to measure net savings using UES values in each RTF workbook for that. For measures in which an RTF-approved, active measure has not been specified, ADM proposes to measure verified net savings by applying Avista TRM values.

Due to the size of the program and the savings achieved through the program relative to the residential portfolio, this evaluation method is proposed to make use of the evaluation budget accordingly. The level of rigor proposed for the evaluation of this program aligns with the savings resulting from the program. ADM offers to also explore a billing analysis for each measure, at Avista's request.

ADM will review the methods employed by the Avista TRM to verify the UES value is appropriate to define savings. ADM will also apply adjustments to these RTF values if deviations are found between invoices and tracking data or if in-service rates deviate from 100% in verification surveys. This methodology is summarized in further detail in Section 2.5.1.

ADM will summarize program-level savings by summing verified net energy savings for all projects in the program, separated and reported by state and fuel type.

#### 4.3.4 Timing and Cadence

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This program is considered "low risk" and therefore will be evaluated once in the 2024-2025 evaluation period.

#### 4.3.5 Technical Comments

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It is likely that the HERS household files will not be available, as was the case for the program historically. In the case that HER household files become available, ADM offers to evaluate each of the rebated ENERGY STAR homes via simulation modeling with a user-defined reference home relative to the state's building codes. Methodology for this analysis is described in further detail in the "Simulation Modeling (IPMVP Option D)" section. In addition, if this methodology is used, ADM will apply a NTG adjustment to the gross energy savings resulting from the simulation model analysis. The NTG adjustment will be gathered via the methods described under the Section 2.6.

### 4.4 Residential Shell Program

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The Residential Shell Program provides incentives to customers for improving the integrity of the home's envelope with upgrades to windows, storm windows, and doors. Rebates are issued after the measure has been installed. Participating homes must have electric or natural gas heating and itemized invoices including measure details such as insulation levels, window values, and square footage. Previously, the program required minimum usage as a prerequisite for participation. However, in 2024, Avista eliminated this prerequisite. Additionally, self-install options for windows and storm windows will also continue. Both eligibility changes remove barriers to customer participation. Table 4-6 summarizes the anticipated measures offered under this program along with the proposed impact evaluation method for each measure, separated by fuel type.

Table 4-6: Residential Shell Program Measures

Measure	Impact Analysis Methodology
G Windows single pane <0.29 U-value	Billing Analysis
G Windows dual pane <0.29 U-value	Billing Analysis
G Storm windows (ENERGY STAR-rated)	Billing Analysis
G Wall insulation	Billing Analysis
G Floor insulation - DIY	Billing Analysis
G Attic insulation - DIY	Billing Analysis
G Insulated door R2.5-R5 HZ2 zonal	Billing Analysis
E Windows	RTF UES, ResSFWx_v4_4
E ENERGY STAR Certified Storm Windows	RTF UES, ResSFWx_v4_4
E Wall Insulation	RTF UES, ResSFWx_v4_4
E Floor Insulation	RTF UES, ResSFWx_v4_4
E Attic Insulation	RTF UES, ResSFWx_v4_4
E ENERGY STAR-Rated Doors	Billing Analysis

ADM understands that Avista recently implemented a tiered efficiency approach for window incentives. ADM will provide any necessary adjustments to the evaluation plan once a tiered approach is in effect. ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the Residential Shell Program in the section below.

#### 4.4.1 Database Review & Verification

Before conducting the impact analysis, ADM will conduct the following activities for the Residential Shell Program:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)
- Survey-based verification for a random subset of customers (Section 2.3.2)

Table 2-1 in Section 2.3.1 summarizes the sample sizes for each the document-based verification activity in the Residential Shell Program. Table 2-2 Section 2.3.2 summarizes the sample sizes for the survey-based verification activity for the Residential Shell Program.

During document-based verification, if any deviations between the tracking data and application values are found, ADM will communicate these differences to Avista through periodic updates and summarize deviations in the final report.

During survey-based verification, ADM will randomly select a subset of participant customers to survey for simple verification of installed measure and documentation of prior equipment. ADM will include questions such as:

- When did the weatherization measures get installed?
- What type of fuel is used to heat your home?
- Does your home have central air conditioning, window, or neither?
- How long did the contractors take to complete the work?

The verification of heating and cooling type will allow ADM to calculate measure-level savings more accurately based on RTF measure specifications. In addition, in the event that billing analysis is

infeasible, this simple verification will help ADM more accurately estimate measure-level impacts for the other measures using engineering algorithms.

#### 4.4.2 Required Data

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ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, and date of rebate
- Rebate application forms and applicable invoices
- Monthly billed consumption data for participating and non-participating customers

#### 4.4.3 Impact Analysis

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ADM proposes to utilize the following impact evaluation methodologies to estimate verified net energy savings in the Residential Shell Program:

- Deemed savings using RTF UES values
- Billing Analysis with counterfactual group (IPMVP Option C)

Measure-level impact evaluation methodologies for this program are specified in Table 4-6, separated by fuel type.

For measures in which an RTF-approved measure has been specified and considered active, ADM proposes to measure net savings using UES values in each RTF workbook for that measure. ADM will also apply adjustments to these RTF values if deviations are found between invoices and tracking data or if in-service rates deviate from 100% in verification surveys. This methodology is summarized in further detail in Section 2.5.1.

For measures in which an RTF-approved, active measure has not been specified, ADM proposes to measure verified net savings by conducting a billing analysis using with a counterfactual group selected via propensity score matching. The methodology used to select the quasi-experimental counterfactual group and the methodology for linear regression billing analysis are summarized in further detail in the “Billing Analysis (IPMVP Option C)” section. ADM will isolate each unique measure and verify each participant included in the analysis did not also participate in other programs; therefore, ADM will be able to isolate the measure effects using the household’s billed consumption data. For example, to evaluate the ENERGY STAR doors measure, ADM will select only customers that have installed the ENERGY STAR door measure and have not installed any additional program measures during the same program year. ADM will include heating season and cooling season controls to estimate the relationship between energy consumption and weather during the pre- and post-periods, for electric or gas, as applicable to the shell measures offered in this program.

ADM will summarize program-level savings by summing verified net energy savings for all projects in the program, separated and reported by state and fuel type.

#### 4.4.4 Timing and Cadence

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This program is considered “low risk” and therefore will be evaluated once in the 2024-2025 evaluation period.

#### 4.4.5 Technical Comments

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In the event that the required data is not available or sufficient to conduct a billing regression analysis, ADM will review and apply Avista TRM methods along with verified tracking data to estimate net program savings.

#### 4.5 Residential Fuel Efficiency Program

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The Fuel Efficiency Program encourages customers to consider converting their resistive electric space and water heating equipment to natural gas. This program is offered to residential customers in the Idaho service territory. Customers must use Avista electricity for electric straight-resistance heating or water heating in order to qualify for the rebate, which is verified by evaluating their energy use. The home's electric baseboard or furnace heat consumption must indicate at least 8,000 kWh during the previous heating season. Customers receive incentives after installation and after submitting a completed rebate form. Table 4-7 summarizes the measures offered under this program.

*Table 4-7: Fuel Efficiency Program Measures*

Measure	Impact Analysis Methodology
E Electric central ducted forced air furnace to air source heat pump (9.0 HFSP or greater) conversion	Billing Analysis / Avista TRM
E Electric to natural gas furnace conversion	Billing Analysis / Avista TRM
E Electric to natural gas furnace & water heat conversion	Billing Analysis / Avista TRM

ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the Fuel Efficiency Program in the section below.

##### 4.5.1 Database Review & Verification

---

Before conducting the impact analysis, ADM will conduct the following activities for the Fuel Efficiency Program:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)
- Survey-based verification for a random subset of customers (Section 2.3.2)

Table 2-1 in Section 2.3.1 summarizes the sample sizes for each the document-based verification activity in the Residential Shell Program. Table 2-2 Section 2.3.2 summarizes the sample sizes for the survey-based verification activity for the Residential Shell Program.

During document-based verification, if any deviations between the tracking data and application values are found, ADM will communicate these differences to Avista through periodic updates and summarize deviations in the final report.

During survey-based verification, ADM will randomly select a subset of participant customers to survey for simple verification of installed measure and documentation of prior equipment. ADM will include questions such as:

- Was this water heater a new construction, or did it replace another water heater?
- Was the previous water heater functional?
- Is the newly installed water heater still properly functioning?

- What is the efficiency and sizing of the newly installed water heater?

These questions will help ADM verify that the measure was documented accurately and that data collection activities are progressing smoothly for the program. In addition, in the event that billing analysis is infeasible, this simple verification will help ADM more accurately estimate measure-level impacts using engineering algorithms.

#### 4.5.2 Required Data

---

ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, and date of measure install
- Participant contact information for web and phone-based survey verification
- Filled rebate application forms and applicable invoices
- Monthly billed consumption data for participating customers
- Monthly billed consumption data for non-participating customers

In addition, ADM will gather the following datasets to complete the analysis:

- Historical NOAA weather data
- Typical Meteorological Year weather data
- Publicly available household characteristics from county assessor data, if available

#### 4.5.3 Impact Analysis

---

ADM will utilize the following impact evaluation methodologies to estimate verified net energy savings in the Fuel Efficiency Program:

- Deemed savings using RTF UES or Avista TRM values
- Billing Analysis with counterfactual group (IPMVP Option C)

For measures in which an RTF-approved measure has been specified and considered active, ADM will measure net savings using UES values in the appropriate RTF workbook for that measure. ADM will also apply adjustments to these values if deviations are found between invoices and tracking data or if in-service rates deviate from 100% in verification surveys. For measures in which an RTF-approved measure has not been specified or approved, ADM will apply the Avista TRM UES values to the types and quantities of each measure, after applying adjustments from verification surveys, if found. This methodology is summarized in further detail in Section 2.5.1.

ADM will also explore measurement of verified net savings by conducting a billing analysis with a counterfactual group selected via propensity score matching. The methodology used to select the quasi-experimental counterfactual group and the methodology for linear regression billing analysis are summarized in further detail in the “Billing Analysis (IPMVP Option C)” section. This method will be explored for each measure in the Fuel Efficiency Program in order to verify if the Avista TRM savings values are appropriate, or if adjustment may be required to more accurately quantify observed savings.

In order to estimate the daily impacts of each measure, ADM will isolate the customers that received an isolated measure. For example, to evaluate the air source heat pump measure, ADM will select only

customers that have retrofitted their air source heat pump and have not installed any additional program measures during the same program year; therefore, ADM will be able to isolate the measure effects using the household's billed consumption data.

ADM will summarize program-level savings by summing verified net energy savings for all projects in the program, separated and reported by state and fuel type.

#### 4.5.4 Timing and Cadence

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This program is considered "low risk" and therefore will be evaluated once in the 2024-2025 evaluation period.

#### 4.5.5 Technical Comments

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In the event that the required data is not available or sufficient to conduct a billing regression analysis, ADM will review RTF values and Avista TRM methods along with verified tracking data to estimate net program savings.

### 4.6 Residential Midstream Program

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The Midstream Program was launched in 2023 and includes measures that were previously part of several other programs. Avista transitioned all residential and commercial HVAC and water heating and food service measures to the Midstream Program in 2023. For the purposes of this work plan, ADM presents the methodology to evaluate the residential measures in the Midstream Program in this section. The methodology to evaluate the commercial measures in the Midstream Program are presented in Section 5.6.

The transition to a midstream structure removes common barriers to participation, such as a lack of customer awareness of rebate programs; participation barriers such as language and technology knowledge; and distributors' tendency to stock low-cost, low-efficiency units due to the high cost of energy-efficient equipment.

The Midstream Program now leverages distributors' recognized influence over contractors and specific equipment sales and work with distributors to help contractors to submit claims for Avista customers. Claims are paid to contractors promptly and additional savings are garnered burdening customers to fill out complex rebate forms. Therefore, access is more equitable for Avista's customers.

ADM has experience with a wide variety of midstream programs promoting a range of (primarily commercial) measures, including motor products, advanced lighting controls, and reduced wattage fluorescent lamps. We can draw on our experience designing, preparing, and evaluating midstream programs to help Avista develop a separate midstream program or route measures offered through an existing program through distributors.

Table 4-8 summarizes the anticipated measures offered under this program along with the proposed impact evaluation method for each measure, separated by fuel type.

Table 4-8: Midstream Program Residential Measures

Measure	Impact Analysis Methodology
E Electric heat pump water heater (0.94 EF or higher)	RTF UES, ResHPWH_v5_3
E Air source heat pump	RTF UES, ResSF&MHExistingHVAC_v5_1
E Ductless heat pump (with existing FAF)	RTF UES, ResDHPonFAF_v3_1
E Ductless heat pump (displace zonal)	RTF UES, ResDHPforZonal_v5_1
Residential <5.4 ton Air-Cooled HP	Billing Analysis
G Natural gas water heater <= 55 gallons (0.65 EF or higher)	RTF UES, ResGasWH_v3_2/Billing Analysis
G Natural gas tankless water heater (0.82 EF or higher)	RTF UES, ResGasWH_v3_2/Billing Analysis
G Natural gas furnace 95% (single stage)	RTF UES, ResESGasFurnaces_v2_1/Billing Analysis
G Natural gas boiler (96% AFUE)	Billing Analysis
G High-efficiency wall furnace (90% AFUE)	Billing Analysis
G Natural gas furnace 95% (multi-stage)	RTF UES, ResESGasFurnaces_v2_1/Billing Analysis
E Electric central ducted forced air furnace to air source heat pump (9.0 HFSP or greater) conversion	Billing Analysis / Avista TRM
E Electric to natural gas furnace conversion	Billing Analysis / Avista TRM
E Electric to natural gas furnace & water heat conversion	Billing Analysis / Avista TRM

ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the Midstream Program in the section below.

#### 4.6.1 Database Review & Verification

Before conducting the impact analysis, ADM will conduct the following activities for the Midstream Program:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)

Table 2-1 in Section 2.3.1 summarizes the sample sizes for each the document-based verification activity in the Residential Midstream Program. ADM will not conduct survey verification for this program. Instead, ADM will interview distributors and trade allies that participate in the program.

#### 4.6.2 Required Data

ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, and date of measure install
- Filled rebate application forms, applicable invoices, and equipment certificates if available
- Monthly billed consumption data for participating customers and for similar, non-participating customers

#### 4.6.3 Impact Analysis

ADM proposes to utilize the following impact evaluation methodologies to estimate verified net energy savings in the Midstream Program:

- Deemed savings using RTF UES values
- Billing Analysis with counterfactual group (IPMVP Option C)

Measure-level impact evaluation methodologies for this program are specified in Table 4-8, separated by fuel type.

For measures in which an RTF-approved measure has been specified and considered active, ADM proposes to measure net savings using UES values in each RTF workbook for that measure.

For measures in which an RTF-approved, active measure has not been specified, ADM proposes to measure verified net savings by conducting a billing analysis with a counterfactual group selected via propensity score matching. The methodology used to select the quasi-experimental counterfactual group and the methodology for linear regression billing analysis are summarized in further detail in the “Billing Analysis (IPMVP Option C)” section. ADM will isolate each unique measure and verify each participant included in the analysis did not also participate in other programs; therefore, ADM will be able to isolate the measure effects using the household’s billed consumption data.

ADM will summarize program-level savings by summing verified net energy savings for all projects in the program, separated and reported by state and fuel type.

#### 4.6.4 Timing and Cadence

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This program is considered “high risk” and therefore will be evaluated each year in the 2024-2025 evaluation period.

#### 4.6.5 Technical Comments

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In the event that the required data is not available or sufficient to conduct a billing regression analysis, ADM will review and apply Avista TRM methods along with verified tracking data to estimate net program savings. ADM will also work with Avista and program implementers to ensure the expected energy savings per unit are reasonable and align with evaluation methods.

### 4.7 Residential Multifamily Weatherization Program – New Offerings

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Avista decided to retire the Multifamily Direct Install Program (MFDI) Program Avista in its current form and focus on developing new multifamily opportunities, called the Residential Multifamily Weatherization Program – New Offerings. Avista is in the process of developing multifamily program offerings that include strategic energy management, fulfillment of any remaining direct install opportunities, and multifamily weatherization offerings. ADM assumes the program will continue to serve hard-to-reach customer segment as well as Avista’s low- and limited-income population. Although ADM has limited information of the new version of this program, Table 4-9 summarizes the anticipated measures offered under this program along with the proposed impact evaluation method for each measure, assuming the continuation of direct install measures, and adding weatherization measures, summarized and separated by fuel type.

*Table 4-9: Multifamily Weatherization Program – New Offerings Measures*

Measure	Impact Analysis Methodology
Faucet aerators <sup>19</sup>	No energy savings
Showerheads <sup>20</sup>	No energy savings
Screw-in LEDs	RTF UES, ResLighting_v9_4
Smart power strips	Avista TRM
Vending misers in common areas	Avista TRM
Lighting (common area)	RTF UES, ResLighting_v9_4
Attic insulation	RTF UES, ResMFWeatherization_v6_1
Wall insulation	RTF UES, ResMFWeatherization_v6_1
Floor insulation	RTF UES, ResMFWeatherization_v6_1
Window replacement	RTF UES, ResMFWeatherization_v6_1
Window efficiency upgrade	RTF UES, ResMFWeatherization_v6_1
Storm windows	RTF UES, ResMFWeatherization_v6_1
Door replacement	RTF UES, ResMFWeatherization_v6_1

ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the Residential Multifamily Weatherization Program – New Offerings in the section below.

#### 4.7.1 Database Review & Verification

Before conducting the impact analysis, ADM will conduct the following activities for the Residential Multifamily Weatherization Program – New Offerings:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)

Table 2-1 in Section 2.3.1 summarizes the sample sizes for each the document-based verification activity in the Residential Multifamily Weatherization Program – New Offerings. Table 2-2 Section 2.3.2 summarizes the sample sizes for the survey-based verification activity for the Residential Multifamily Weatherization Program – New Offerings.

During document-based verification, if any deviations between the tracking data and application values are found, ADM will communicate these differences to Avista through periodic updates and summarize deviations in the final report.

This program does not track participating customer contact information; therefore, surveys will not be deployed for the Multifamily Weatherization Program participants.

#### 4.7.2 Required Data

ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, and date of rebate
- Rebate application forms and applicable invoices

<sup>19</sup> The Regional Technical Forum has deactivated the showerhead measure workbook due to low or negligible energy savings for faucet aerators

<sup>20</sup> The Regional Technical Forum has deactivated the showerhead measure workbook due to low or negligible energy savings for showerheads

### 4.7.3 Impact Analysis

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ADM proposes to utilize the following impact evaluation methodology to estimate verified net energy savings in the Multifamily Weatherization Program – New Offerings:

- Deemed savings using RTF UES values or Avista TRM values

Measure-level impact evaluation methodologies for this program are specified in Table 4-9, separated by fuel type.

Given the measure mix and inherent difficulties reliably modeling common areas in multifamily buildings (typically due to uncertainty mapping to the relevant accounts and/or the wide variety of energy uses associated with those accounts, ADM proposes to measure savings for the program using deemed savings.

For measures in which an RTF-approved measure has been specified and considered active, ADM proposes to measure net savings using UES values in each RTF workbook for that measure. For measures in which an RTF-approved, active measure has not been specified, ADM proposes to measure verified net savings using the values in Avista’s TRM. ADM will review Avista TRM UES data sources to ensure they are applicable to the measure. ADM assumes that we will be able to use the RTF multifamily weatherization UES workbook for the new offerings of weatherization measures.

The RTF had deactivated the faucet aerator measure during the May 2021 RTF meeting due to insufficient data. The RTF had also deactivated the smart power strip measure during the November 2021 RTF meeting. Therefore, these measures will be evaluated with no energy savings. In addition, the vending misers in common areas has historically shown insufficient participation for an isolated billing analysis. Therefore, ADM proposes to employ Avista TRM to evaluate this measure.

ADM will summarize program-level savings by summing verified net energy savings for all projects in the program, separated and reported by state and fuel type.

### 4.7.4 Timing and Cadence

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This program is considered “low risk” and therefore will be evaluated once in the 2024-2025 evaluation period.

### 4.7.5 Technical Comments

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In the case that the Avista TRM does not represent the most applicable UES value for the rebated measure, ADM will review third-party TRM algorithms to estimate verified net energy savings.

In addition, as noted above, billing analyses in multifamily settings are more prone to issues than single family detached homes or even dedicated commercial facilities. However, if Avista is interested in pursuing a billing analysis, ADM will make this change during the planning process.

## 4.8 Residential On-Bill Repayment/Financing Program

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The On-Bill Repayment/Financing Program provides on-bill repayment/financing programs for residential and small business customers. Avista’s on-bill repayment (OBR)/financing program returned as an offering after a half decade hiatus. In 2023 Avista started offering customers access to OBR

through its partner the Puget Sound Cooperative Credit Union (PSCCU). OBR, through PSCCU, offers lower rate loans for energy-efficient projects to homeowners and business owners that can be more easily tracked and paid back through their monthly utility bill. OBR is not intended for customers who qualify for Avista’s Low-Income Weatherization program and that can therefore be served directly through the partnering community action agencies.

ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the On-Bill Repayment/Financing Program in the section below.

#### 4.8.1 Database Review & Verification

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Before conducting the impact analysis, ADM will conduct the following activities for the On-Bill Repayment/Financing Program:

- Database review for program-level data fields (Section 2.2)

The database review will include all available On-Bill Repayment/Financing Program tracking data. ADM does not propose any sampled document-based verification or sampled survey-based verification activities for the evaluation of this program, as impact evaluation savings will be measured in the measure’s native program.

#### 4.8.2 Required Data

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ADM requires the following data to complete the analysis for this program:

- Program marketing materials, program tracking database, and a list of customers participating in the program along with associated measures with repayment plans

#### 4.8.3 Impact Analysis

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Avista does not claim energy savings for OBR, as the savings associated with any measure installed using OBR financial support will be claimed through the relevant and native Avista program. In the event that Avista revises the program to start claiming savings for these financed measures, ADM will discuss with Avista and develop an OBR-specific impact analysis plan.

ADM’s efforts will instead be focused on gathering and estimating program uplift, or additional participation in other programs due to the financing option provided by ADM. This will be identified in participant surveys, which will ask participants whether the financing option impacted their decision to purchase the rebated equipment.

#### 4.8.4 Timing and Cadence

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This program is considered “low risk” and therefore will be evaluated once in the 2024-2025 evaluation period.

#### 4.8.5 Technical Comments

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ADM provides no technical comments for this program’s evaluation.

## 4.9 Residential Always-On Load Behavioral Program

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The Residential Always-On Load Behavioral Program encourages residential households to reduce energy usage contributing to the “always-on” load. This “always-on” load, or “idle” load is the portion of daily household energy usage consumed from household devices that have been turned off or are in standby mode, but still drawing power.

The Residential Always-On Load Behavioral Program makes use of territory-wide AMI deployment by integrating AMI data with machine learning algorithms to identify the always-on load in each household. Avista has identified the top third of residential customers with always-on load and has created three potential groups: two treatment arms and one control group.

ADM understands that Avista may want to test different behavioral responses to personalized information, private costs, and economic incentives to determine a method most likely to generate the highest reduction in always-on load. ADM would work with Avista to develop A-B test groups for messaging, comparing more personalized information against generalized outreach and messaging. Subsequent to this analysis, ADM can then target “high savers” with survey efforts intended to capture demographic data that may be used as an underlying predictor of responsiveness to the program messaging.

This program was implemented by the third quarter of 2023 and targeted the top third (nearly 75,000 customers) of residential always-on loads. The program has identified two treatment groups and one control group, with a target reduction of 5 percent a month relative to each treatment customer’s baseline. The groups are assigned as follows:

- **Group A:** Customer received emails from Avista monthly with their Always On progress (see email templates for more detail).
- **Group B:** Customer received emails from Avista monthly with their Always On progress as well as a \$5 bill credit if they reduced their always on usage that month in comparison to their calculated baseline amount.
- **Group C:** The customer did not receive emails or communication regarding the program – this group reflects the control group.

Table 4-10 summarizes the anticipated cohorts treated under this program.

*Table 4-10: Residential Always-On Load Behavioral Program Summary*

Cohort	Households
Group A (Treatment 1)	25,000
Group B (Treatment 2)	25,000
Group C (Control Group)	25,000
<b>Total</b>	<b>75,000</b>

ADM will employ IPMVP-recommended standards for estimating verified net savings for this behavioral program. This includes validating each cohort’s control group remain a statistically significant match after accounting for attrition, conducting separate linear regression for each cohort including variables for weather normalization, extrapolating model estimates using typical meteorological year (TMY) weather data, removing double counted savings claimed in other residential programs, and summing each cohort’s validated savings to estimate total program energy savings.

Behavioral programs typically display 1-3% annual household energy savings. Behavioral programs also often display persistence savings due to behavioral energy consumption changes that extend further than the length of program treatment.

This behavioral program is highly unique in that messaging targets always-on load and uses high interval meter data to provide personalized tips. ADM will explore avenues for identifying further savings opportunities for targeted expansion of the program, as well as relative benefit of always-on load messaging compared to typical messaging in behavioral programs.

ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the Residential Always-On Load Behavioral Program in the sections below.

#### 4.9.1 Database Review & Verification

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Before conducting the impact analysis, ADM will conduct the following activities for the Residential Always-on Load Behavioral Program:

- Database review for program-level data fields (Section 2.2)

ADM does not propose any sampled document-based verification or sampled survey-based verification activities for the evaluation of this program.

#### 4.9.2 Required Data

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ADM requires the following data to complete the analysis for this program:

- For each treatment and control customer, identifiers for treatment or control assignment and cohort assignment, unique customer identifiers, household zip code, and date of intervention
- Tracking data from Avista downstream programs for the previous three to five program years
- A sample of communication materials sent to customers
- Monthly billed consumption data for treatment and control customers
- AMI meter data for treatment and control customers

#### 4.9.3 Impact Analysis

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ADM proposes to utilize the following impact evaluation methodology to estimate verified net energy savings for each cohort in the Residential Always-On Load Behavioral Program:

- Billing analysis with RCT group (IPMVP Option C)

For this program, ADM proposes to measure verified net savings by conducting a billing analysis detailed in the “Billing Analysis (IPMVP Option C)” section with the program’s defined RCT groups. In the case the RCT groups have not been selected, ADM proposes to assist program implementors with random assignment of eligible households in the top third of residential always-on loads in the service territory.

ADM understands that in 2023, Avista increased the number of participants in the program to approximately 110,000 residential electric customers. ADM has extensive experience assisting behavioral pilot implementors with selecting these groups using the methods described in the Uniform

Methods Project (UMP) by the National Renewable Energy Laboratory<sup>21</sup> to ensure groups are valid, remain scalable in the future, and align with Avista energy efficiency goals.

For this behavioral program, ADM describes the billing analysis in further detail, as this methodology differs from measure-level or census-level billing analyses. The UMP considers Randomized Control Trials (RCT) the golden standard for evaluating behavioral energy efficiency programs. The most important benefit of an RCT is that the experiment results in an unbiased estimate of the program's causal impact. Because the Residential Always-On Load Behavioral Program employs a RCT design, ADM is able to conduct an impact evaluation with reliable and robust verified net energy savings estimates. The UMP recommends RCT groups as it distributes households evenly and randomly into treatment and control groups. Therefore, the pre- and post-period remain comparable over time, allowing the evaluator to control for outside factors that may also contribute to energy usage differences. Such outside factors include large-scale socioeconomic or meteorological changes, such as COVID-19 shelter in place orders or hurricanes. Through random assignment designed at the outset of the program, the effects of these large-scale socioeconomic factors are equally represented within each group, affecting each group's average household consumption equally.

Using the RCT groups designated within this program, ADM will compare treatment consumption with control consumption for each cohort in the program using AMI meter data or monthly billed consumption data. We will explore the following types of linear fixed effects regression (LFER) models during the evaluation of this program: Difference in Difference (D-in-D) and Post-Program Regression (PPR). Each model specification is detailed in the "Billing Analysis (IPMVP Option C)" section. ADM will include heating season and cooling season controls to estimate the relationship between energy consumption and weather during the pre- and post-periods, for each fuel type. ADM will finalize model specifications in collaboration with Avista during the kick-off meeting and subsequent program-specific meetings.

As previously mentioned, it is ideal to have a randomized control trial (RCT) to gather the most reliable and robust results. However, some RCTs may become no longer viable due to changes in implementation or natural attrition. ADM will test the validity of each RCT by completing t-tests for the average daily usage of each of the pre-period months between the remaining treatment group and remaining control. If the pre-period average daily usage rejects the null hypothesis at the 90% confidence interval for any of the 12 pre-period months, the RCT is considered invalid. In the case a cohort no longer passes equivalency testing, ADM proposes a method for producing post-hoc control groups via quasi-experimental methods, further described in the "Comparison Group" section. Using this quasi-experimental control group, ADM will continue impact analysis and explore the regression models mentioned above.

After regression models have been finalized, ADM will estimate and remove double count savings found in other Avista residential energy efficiency programs from the customers in both the treatment group and control groups. The double count savings removal is further described below.

The Residential Always-On Load Behavioral Program communications may also increase the customer's propensity to participate in other energy efficiency programs. This additional participation is known as

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<sup>21</sup> <https://www.nrel.gov/docs/fy21osti/77435.pdf>

uplift. The communication sent to customers includes information about how to save energy, which may lead to customers' adopting more energy efficient upgrades for their home. When a household participates in an efficiency program because of this encouragement, the utility might count their savings twice: once in the regression-based estimate of behavioral program savings and again in the estimate of savings for the other energy efficiency program. Although uplift rarely displays a statistically significant difference between the treatment and control groups, the UMP recommends removing uplift from each group at the household level.

ADM will estimate savings from program uplift and subtract them from the efficiency program portfolio savings. To achieve this, ADM will gather information on the total net kWh saved in other residential programs. We will calculate the double count savings on a per-household level for each treatment group. We will subtract the double counted savings, whether positive or negative, from the wave's gross savings estimates from the regression analysis to get total verified savings. For downstream programs, other program tracking data and verified per-measure energy savings is sufficient to complete the removal of double counted savings.

ADM will summarize the cohort-level impacts by extrapolating regression coefficients with TMY data or actual weather data. ADM will present savings estimates in three formats for the program year:

- Daily and annual energy savings per home
- Annual percent savings per home
- Program-level energy (kWh) savings

ADM will summarize program-level savings by extrapolating verified household net energy savings to the number of unique treatment households participating in the program, separated and reported by state and fuel type.

#### 4.9.4 Timing and Cadence

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This program is considered "high risk" and therefore will be evaluated each year in the 2024-2025 evaluation period.

#### 4.9.5 Technical Comments

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In addition to the proposed methodology described above, ADM will also explore a single linear regression aggregating both cohorts, with an identifier differentiating treatment group 1 from treatment group 2 in order to identify the incremental savings effect gained by offering the incentive to the second treatment group. In addition, ADM will evaluate persisted savings derived from the program treatment using the impact methodology described above, as is industry best practice.

As mentioned previously, this behavioral program is highly unique. In order to better understand the unique strengths of this program's implementation methods, ADM will explore monthly billing data and AMI meter data to better characterize the various changes resulting from these unique, customized communications, such as investigating households that display higher than average household energy reductions in each cohort and similarities in household characteristics. Further details for the methodology of this group analysis are summarized in "Innovative Techniques" in Section 3.10, under "Savings Group Analysis". Information about these groups of customers, combined with customer

feedback about the always-on communications, will help Avista identify further opportunities for targeted expansion of the program with the goal of generating the highest reduction in always-on usage.

#### 4.10 Residential Behavioral Program

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Avista plans to launch a residential behavioral program in late 2024 or early 2024. ADM prepares to evaluate this program with the same methods as the Residential Always-On Program.

Unlike the Residential Always-On Load Behavioral Program, the Residential Behavioral program will not make use of territory-wide AMI deployment by integrating AMI data with machine learning algorithms to identify the always-on load in each household. Instead of focusing on always-on load energy savings, messaging will be deployed based on effective space heating, water heating, and lighting tips.

ADM will employ IPMVP-recommended standards for estimating verified net savings for this behavioral program. This includes validating each cohort's control group remain a statistically significant match after accounting for attrition, conducting separate linear regression for each cohort including variables for weather normalization, extrapolating model estimates using typical meteorological year (TMY) weather data, removing double counted savings claimed in other residential programs, and summing each cohort's validated savings to estimate total program energy savings.

Behavioral programs typically display 1-3% annual household energy savings. Behavioral programs also often display persistence savings due to behavioral energy consumption changes that extend further than the length of program treatment.

ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the Residential Behavioral Program in the sections below.

##### 4.10.1 Database Review & Verification

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Before conducting the impact analysis, ADM will conduct the following activities for the Residential Behavioral Program:

- Database review for program-level data fields (Section 2.2)

ADM does not propose any sampled document-based verification or sampled survey-based verification activities for the evaluation of this program.

##### 4.10.2 Required Data

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ADM requires the following data to complete the analysis for this program:

- For each treatment and control customer, identifiers for treatment or control assignment and cohort assignment, unique customer identifiers, household zip code, and date of intervention
- Tracking data from Avista downstream programs for the previous three to five program years
- A sample of communication materials sent to customers
- Monthly billed consumption data for treatment and control customers
- AMI meter data for treatment and control customers

### 4.10.3 Impact Analysis

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ADM proposes to utilize the following impact evaluation methodology to estimate verified net energy savings for each cohort in the Residential Load Behavioral Program:

- Billing analysis with RCT group (IPMVP Option C)

For this program, ADM proposes to measure verified net savings by conducting a billing analysis detailed in the “Billing Analysis (IPMVP Option C)” section with the program’s defined RCT groups. In the case the RCT groups have not been selected, ADM proposes to assist program implementors with random assignment of eligible households in the top third of residential energy usage in the service territory.

For further information on billing analysis methods for the behavioral program, please reference Section 4.9.3 from the Residential Always-On Behavioral Program methods.

### 4.10.4 Timing and Cadence

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This program is considered “high risk” and therefore will be evaluated each year in the 2024-2025 evaluation period.

### 4.10.5 Technical Comments

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In order to better understand the unique strengths of this program’s implementation methods, ADM will explore monthly billing data and AMI meter data to better characterize the various changes resulting from these communications, such as investigating households that display higher than average household energy reductions in each cohort and similarities in household characteristics. Further details for the methodology of this group analysis are summarized in “Innovative Techniques” in Section 3.10, under “Savings Group Analysis”.

## 4.11 Residential Home Energy Audit Program

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The Residential Home Energy Audit Program is designed to educate and generate interest in efficiency in general and, more specifically, in Avista’s portfolio of residential energy efficiency and renewable-energy programs. ADM summarizes the proposed program-specific impact analysis activities and requirements for the Residential Home Energy Audit Program in the section below.

### 4.11.1 Database Review & Verification

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Before conducting the impact analysis, ADM will conduct the following activities for the Residential Home Energy Audit Program:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)
- Survey-based verification for a random subset of customers (Section 2.3.2)

Table 2-1 in Section 2.3.1 summarizes the sample sizes for each the document-based verification activity in the Residential Home Energy Audit Program.

During document-based verification, if any deviations between the tracking data and application values are found, ADM will communicate these differences to Avista through periodic updates and summarize deviations in the final report.

During survey-based verification, ADM will randomly select a subset of participant customers to survey for simple verification that a home energy audit was conducted, that the participant remembers the results of the home energy audit, and that the participant still has the direct install measures installed and functioning.

#### 4.11.2 Required Data

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ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, contact information, and date of assessment
- Rebate application forms and applicable invoices (when relevant)
- Monthly billed consumption data for participating customers and for similar, non-participating customers

#### 4.11.3 Impact Analysis

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ADM proposes to utilize the following impact evaluation methodologies to estimate verified net energy savings in the Residential Home Energy Audit Program:

- Deemed savings using RTF UES values
- Billing Analysis with counterfactual group (IPMVP Option C)

This program provides direct install measures to customers. The Avista auditor may also provide recommendations for improvements that may be rebated through Avista's programs. In addition, the Avista auditor may also provide recommendations for home improvements that Avista does not currently incent for. Therefore, in order to capture this combination of effects, ADM will conduct a billing analysis with a counterfactual group selected via propensity score matching. The methodology used to select the quasi-experimental counterfactual group and the methodology for linear regression billing analysis are summarized in further detail in the "Billing Analysis (IPMVP Option C)" section.

The measures rebated by the customer through other Avista channels will be removed from the average household billing analysis results, in order to remove double counting effects.

Additionally, for measures in which an RTF-approved measure has been specified and considered active, ADM proposes to measure net savings using UES values in each RTF workbook for that measure.

ADM will summarize program-level savings by summing verified net energy savings for all projects in the program, separated and reported by state and fuel type.

#### 4.11.4 Timing and Cadence

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This program is considered "low risk" and therefore will be evaluated once in the 2024-2025 evaluation period.

#### 4.11.5 Technical Comments

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ADM provides no technical comments for this program’s evaluation.

#### 4.12 Residential Direct Install Insulation Program

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Avista plans to launch the Residential Direct Install Insulation Program during the 2024-2025 biannual period. ADM assumes the measures provided in this program will mimic the residential shell measures and differ in only implementation and incentives. ADM will work with Avista program managers to update our assumptions and impact evaluation methods for additional measures not included in the tables below. Table 4-11 summarizes the anticipated measures offered under this program along with the proposed impact evaluation method for each measure, assuming the continuation of direct install measures, and adding weatherization measures, summarized and separated by fuel type.

*Table 4-11: Residential Direct Install Insulation Program Offering Measures*

Measure	Impact Analysis Methodology
Faucet aerators <sup>22</sup>	No energy savings
Showerheads <sup>23</sup>	No energy savings
Screw-in LEDs	RTF UES, ResLighting_v9_4
Smart power strips	Avista TRM
Vending misers in common areas	Avista TRM
Lighting (common area)	RTF UES, ResLighting_v9_4
Attic insulation	RTF UES, ResMFWeatherization_v6_1
Wall insulation	RTF UES, ResMFWeatherization_v6_1
Floor insulation	RTF UES, ResMFWeatherization_v6_1
Window replacement	RTF UES, ResMFWeatherization_v6_1
Window efficiency upgrade	RTF UES, ResMFWeatherization_v6_1
Storm windows	RTF UES, ResMFWeatherization_v6_1
Door replacement	RTF UES, ResMFWeatherization_v6_1

ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the program in the section below.

##### 4.12.1 Database Review & Verification

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Before conducting the impact analysis, ADM will conduct the following activities for the Residential Direct Install Insulation Program:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)
- Survey-based verification for a random subset of customers (Section 2.3.2)

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<sup>22</sup> The Regional Technical Forum has deactivated the showerhead measure workbook due to low or negligible energy savings for faucet aerators

<sup>23</sup> The Regional Technical Forum has deactivated the showerhead measure workbook due to low or negligible energy savings for showerheads

Table 2-1 in Section 2.3.1 summarizes the sample sizes for each the document-based verification activity in the Residential Direct Install Insulation Program. Table 2-2 Section 2.3.2 summarizes the sample sizes for the survey-based verification activity for the Residential Direct Install Insulation Program.

During document-based verification, if any deviations between the tracking data and application values are found, ADM will communicate these differences to Avista through periodic updates and summarize deviations the final report.

During survey-based verification, ADM will randomly select a subset of participant customers to survey for simple verification of installed measure and documentation of prior equipment. ADM will include questions such as:

- Is the newly installed direct install measures still properly functioning?
- What type of equipment heats the space in your home?

These questions will help ADM verify that the measure was collected and documented accurately and will allow ADM to calculate measure-level savings more accurately.

#### 4.12.2 Required Data

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ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, and date of rebate
- Rebate application forms and applicable invoices
- Monthly billed consumption data for treatment and control customers

#### 4.12.3 Impact Analysis

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ADM proposes to utilize the following impact evaluation methodology to estimate verified net energy savings in the Residential Direct Install Insulation Program:

- Deemed savings using RTF UES values or Avista TRM values

Measure-level impact evaluation methodologies for this program are specified in Table 4-11, separated by fuel type.

Given the measure mix and inherent difficulties reliably modeling common areas in multifamily buildings (typically due to uncertainty mapping to the relevant accounts and/or the wide variety of energy uses associated with those accounts, ADM proposes to measure savings for the program using deemed savings.

For measures in which an RTF-approved measure has been specified and considered active, ADM proposes to measure net savings using UES values in each RTF workbook for that measure. For measures in which an RTF-approved, active measure has not been specified, ADM proposes to measure verified net savings using the values in Avista's TRM. ADM will review Avista TRM UES data sources to ensure they are applicable to the measure. ADM assumes that we will be able to use the RTF multifamily weatherization UES workbook for the new offerings of weatherization measures.

The RTF had deactivated the faucet aerator measure during the May 2021 RTF meeting due to insufficient data. The RTF had also deactivated the smart power strip measure during the November

2021 RTF meeting. Therefore, these measures will be evaluated with no energy savings. In addition, the vending misers in common areas has historically shown insufficient participation for an isolated billing analysis. Therefore, ADM proposes to employ Avista TRM to evaluate this measure.

ADM will summarize program-level savings by summing verified net energy savings for all projects in the program, separated and reported by state and fuel type.

#### 4.12.4 Timing and Cadence

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This program is considered “low risk” and therefore will be evaluated once in the 2024-2025 evaluation period.

#### 4.12.5 Technical Comments

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In the case that the Avista TRM does not represent the most applicable UES value for the rebated measure, ADM will review third-party TRM algorithms to estimate verified net energy savings.

In addition, as noted above, billing analyses in multifamily settings are more prone to issues than single family detached homes or even dedicated commercial facilities. However, if Avista is interested in pursuing a billing analysis, ADM will make this change during the planning process.

#### 4.13 Low-Income Program

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The Low-Income Program delivers energy efficiency measures to low-income residential customers in its Washington service territory in partnership with five network Community Action Agencies (“Agencies”) and one tribal weatherization organization. In-house or contract crews install approved program measures in income-qualified households. In addition, the Agencies have access to other monetary resources which allow them to weatherize a home or install additional energy efficiency measures.

*Table 4-12: Low-Income Program Measures*

Measure	Impact Analysis Methodology
G Air infiltration	Census Billing Analysis
G ENERGY STAR-rated doors	
G Windows	
G High-efficiency natural gas furnace	
G Water heater	
G Attic insulation	
G Duct insulation	
G Floor insulation	
G Wall insulation	
G Duct sealing	
G Tankless water heater	
G High-efficiency boiler	
E Air infiltration	
E ENERGY STAR-Rated Doors	
E ENERGY STAR-Rated Refrigerator	
E Windows	
E Air Source Heat Pump	
E Attic insulation	

Measure	Impact Analysis Methodology
E Duct insulation	
E Floor insulation	
E Wall insulation	
E Duct sealing	
E Ductless Heat Pump (single head) (w FAF)	
E Ductless Heat Pump (single head) (displace zonal)	
E Tiers 2-3 HPWH	
E Conversion to Air Source Heat Pump	
E HHS	
E Outreach LEDs	
E Ductless Heat Pump (multi head) (w FAF)	
E Ductless Heat Pump (multi head) (displace zonal)	

Avista provides CAP agencies with the following approved measure list, which are reimbursed in full by Avista. Avista also provides a rebate list of additional energy saving measures the CAP agencies are able to utilize which are partially reimbursed. Table 4-12 summarizes the anticipated measures offered under this program along with the proposed impact evaluation method for each measure, separated by fuel type.

#### 4.13.1 Database Review & Verification

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Before conducting the impact analysis, ADM will conduct the following activities for the Low-Income Program:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)

Table 2-1 in Section 2.3.1 summarizes the sample sizes for each the document-based verification activity in the Low-Income Program.

During document-based verification, if any deviations between the tracking data and application values are found, ADM will communicate these differences to Avista through periodic updates and summarize deviations in the final report.

Survey-based verification is not proposed for this program, as the evaluation method proposed does not necessitate adjustments to savings estimates.

#### 4.13.2 Required Data

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ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, and date of rebate
- Program materials
- Rebate application forms and applicable invoices
- Monthly billed consumption data for participating and similar non-participating customers
- Identifiers for low- to moderate-income households in both participant and nonparticipant customers in the Avista service territory
- Stakeholder contact information

We understand that Avista will be working with a variety of sources to acquire the requested data. To facilitate this, our team is flexible on the exact format of the data and encourages Avista to provide requested data incrementally rather than wait for a complete set.

#### 4.13.3 Impact Analysis

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ADM proposes to utilize the following impact evaluation methodology to estimate verified net energy savings in the Low-Income Program, as described in Table 4-12:

- Census billing analysis with counterfactual group (IPMVP Option C)

For this program, ADM proposes to measure verified net savings by conducting a census billing analysis using a counterfactual group selected via propensity score matching. The methodology used to select the quasi-experimental counterfactual group and the methodology for linear regression billing analysis are summarized in further detail in the “Billing Analysis (IPMVP Option C)” section. ADM will not isolate each unique measure but instead verify average participant household energy savings for both electric and natural gas. ADM will verify each participant included in the analysis did not also participate in other programs; therefore, ADM will be able to isolate the Low-Income Program participation effects using the household’s billed consumption data. ADM will include heating season and cooling season controls to estimate the relationship between energy consumption and weather during the pre- and post-periods, for electric and gas.

For this program, our approach to creating a quasi-experimental control group utilizes “future” participants from the same program (i.e., those that received measures in 2025 for the 2024 analysis period, and those that received measures in 2024 for the 2025 analysis period) to account for the impact of various macroeconomic factors and other influences on pre- and post-program energy consumption that are unrelated to the installation of program measures. These include economic effects, the movement of people in and out of dwelling units, fluctuations in per-unit energy costs, or, for example, shelter-in-place orders for COVID19. To identify the most relevant customers for the control group, we will use the quasi-experimental matched control group method. This method is further defined in the “Comparison Group” section.

ADM will summarize program-level savings by extrapolating verified household net energy savings to the number of unique participating households, separated and reported by state and fuel type.

#### 4.13.4 Timing and Cadence

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This program is considered “low risk” and therefore will be evaluated once in the 2024-2025 evaluation period.

#### 4.13.5 Technical Comments

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ADM’s previous impact evaluation of the Low-Income Program had insufficient isolated participation to complete a measure-level billing analysis for this program. In addition, a census billing analysis resulted in unreliable savings estimates. It is likely that participation in 2024 and 2025 may also be limited and may cause billing analyses to be unfeasible. ADM is hopeful that participation will increase as residential customers become more comfortable with on-site contractor visits. However, in the event that the

required data is not available or sufficient to conduct a billing regression analysis, ADM will review RTF UES values and Avista TRM methods along with verified tracking data to estimate net program savings.

#### 4.14 Named Community Investment Fund (NCIF) Program

ADM understands that Avista plans to make \$2 million available annually for new energy efficiency projects in Named Communities for each of the last two years of the initial CEIP four-year period. This body of funding will be used specifically to address obstacles to participation in efficiency programs for members of Named Communities. This program will be called the Named Community Investment Fund (NCIF) Program. Avista currently expects program goals will focus on reducing energy burdens; increasing engagement in company programs, health, and safety benefits; and enhancing customer reliability. In addition to working with the CAP Agencies included in the Low-Income Program, this program also incorporates non-profit organizations as well.

Avista plans to offer a mix of rebates and fully funded measures. However, this mix may change, as Avista further engages with its advisory groups and customers to maximize program benefits.

Table 4-13 summarizes the anticipated programs offered under this program along with the proposed impact evaluation method for each program. As additional information becomes available for the programs Avista designs for the Named Communities, ADM will discuss with Avista to revise impact evaluation methods to best meet the program’s annual objectives.

*Table 4-13: Anticipated Named Community Investment Fund Program Impact Methods*

Anticipated Program	Anticipated Measures	Impact Analysis Methodology
Community Identified Projects	Educational/	RTF UES / Billing Analysis /
Multifamily Building Upgrades in Named Communities	Weatherization measures (windows, attic insulation, floor insulation, wall insulation, ENERGY STAR doors), line voltage thermostats, heat pumps, water heaters, and direct install measures	RTF UES / Billing Analysis
Weatherization, Health and Safety for Manufactured and Mobile Homes	Weatherization measures (windows, attic insulation, floor insulation, wall insulation, ENERGY STAR doors) and safety measures	RTF UES / Billing Analysis
Single-Family Weatherization	Weatherization measures (windows, attic insulation, floor insulation, wall insulation, ENERGY STAR doors)	RTF UES / Billing Analysis
Incentives for Business and Organizations Serving Named Communities	Site-specific incentives and distributed energy projects	RTF UES / Billing Analysis
Connected Communities	Educational	TBD
Avista / Spokane Tribe of Indians Energy Partnership	Load and grid optimization	Billing Analysis with AMI data

ADM understands that a portion of the NCIF projects will require more complex evaluation due to the mix of measures and efficiency of the measures installed in the households. ADM will review the available data and propose a suitable impact evaluation methodology for these projects; however, ADM

anticipates that billing analysis may be required for a subset of these projects. ADM will work with Avista to update these plans once the program is rolled out and tracking data is available for review.

#### 4.14.1 Database Review & Verification

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Before conducting the impact analysis, ADM will conduct the following activities for the anticipated NCIF Program:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)
- Survey-based verification for a random subset of customers (Section 2.3.2)
- In-depth interviews for a random subset of customers (Section 3.3.3)

Similar to the other residential program offerings, ADM anticipates that the above activities will be helpful for evaluating the NCIF Program efforts. Once the programs are established and participation trends are gathered, ADM will work with Avista to provide a sampling plan for document verification and survey and interview goals.

During document-based verification, if any deviations between the tracking data and application values are found, ADM will communicate these differences to Avista through periodic updates and summarize deviations in the final report.

During survey-based verification, ADM will randomly select a subset of participant customers to survey for simple verification of installed measure and documentation of prior equipment. More importantly, ADM will gather additional questions during the process evaluation to understand energy burden for the customers in Named Communities, and whether participation in the program has assisted in providing additional comfort and noticeably lower energy bills. Although energy burden in terms of monetary costs is relevant and important, it is also important to gather whether customers need to limit their spending on other essential items, such as food or medications, in order to pay for energy to maintain a healthy home. For this reason, ADM will include questions such as:

- How much of your monthly income do you spend on energy bills?
- Do you or your family members limit spending on necessities, such as groceries or medications, in order to pay for your home's energy bills?

Questions such as these will identify the energy burden present in participating homes, as well as identify circumstances in which the home does not display typical energy burden, but rather, it is only the case because they have to prioritize one essential item over another (energy over food, or energy over medication). These details will help ADM assess the impact that this NCIF program has on the community. In addition, ADM will ask questions that gather insight on perception of the utility before and after having participated in Avista's programs.

#### 4.14.2 Required Data

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ADM anticipates we will require the following data to complete the analysis for these programs:

- Program tracking data, including customer identifiers, address, and date of rebate
- Rebate application forms and applicable invoices

- Monthly billed consumption data for participating and non-participating customers

#### 4.14.3 Impact Analysis

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ADM proposes to utilize the following impact evaluation methodologies to estimate verified net energy savings in the anticipated NCIF Program:

- Deemed savings using RTF UES values
- Billing Analysis with counterfactual group (IPMVP Option C)

ADM will work with Avista to revise impact analysis methods once further information regarding the measures and project mix that are incentivized. For measures in which an RTF-approved measure has been specified and considered active, ADM proposes to measure net savings using UES values in each RTF workbook for that measure. ADM will also apply adjustments to these RTF values if deviations are found between invoices and tracking data or if in-service rates deviate from 100% in verification surveys. This methodology is summarized in further detail in Section 2.5.1. ADM anticipates we may conduct some on-site measurement for some facilities in order to model actual facility usage more accurately.

For measures in which an RTF-approved, active measure has not been specified, ADM proposes to measure verified net savings by conducting a billing analysis using with a counterfactual group selected via propensity score matching. The methodology used to select the quasi-experimental counterfactual group and the methodology for linear regression billing analysis are summarized in further detail in the “Billing Analysis (IPMVP Option C)” section. ADM will isolate each unique measure and verify each participant included in the analysis did not also participate in other programs; therefore, ADM will be able to isolate the measure effects using the household’s billed consumption data.

ADM will summarize program-level savings by summing verified net energy savings for all projects in the program, separated and reported by state and fuel type.

#### 4.14.4 Timing and Cadence

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This program is considered “high risk” because it is a newer program, and therefore will be evaluated each year in the 2024-2025 evaluation period.

#### 4.14.5 Technical Comments

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In the event that the required data is not available or sufficient to conduct a billing regression analysis, ADM will review and apply Avista TRM methods along with verified tracking data to estimate net program savings.

## 5. Non-residential Program-Level EM&V Approaches

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The following subsections detail ADM’s program-specific impact methods, process methods, and sampling plans for each of the programs in Avista’s Non-Residential Portfolio, as summarized by the 2024 Washington Annual Conservation Plan. ADM will work with Avista to adjust program-specific impact and sampling plans as additional information is received about program participation, program restrictions, measure offerings, and available data.

### 5.1 C&I Appliance and Thermostat Program

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The C&I Appliance and Thermostat Program helps promote nonresidential customers to use high efficiency appliances, such as ENERGY STAR clothes washers, and smart thermostats. Customers receive incentives after installation and after submitting a completed rebate form. Table 5-1 summarizes the anticipated measures offered under this program along with the proposed impact evaluation method for each measure, separated by fuel type.

*Table 5-1: C&I Appliance and Thermostat Program Measures*

Measure	Impact Analysis Methodology
E ENERGY STAR washer	RTF UES, ComClothesWashers_v7_1
E Smart thermostat	RTF UES, ComConnectedThermostats_v2
G Smart thermostat	RTF UES, ComConnectedThermostats_v2

ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the C&I Appliance and Thermostat Program in the section below.

#### 5.1.1 Database Review & Verification

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Before conducting the impact analysis, ADM will conduct the following activities for the C&I Appliance and Thermostat Program:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)

Table 2-1 in Section 2.3.1 summarizes the sample sizes for each the document-based verification activity in the Residential Appliance and Thermostat Program. Table 2-2 Section 2.3.2 summarizes the sample sizes for the survey-based verification activity for the C&I Appliance and Thermostat Program.

During document-based verification, if any deviations between the tracking data and application values are found, ADM will communicate these differences to Avista through periodic updates and summarize deviations the final report. ADM will not conduct survey verification efforts for this program.

#### 5.1.2 Required Data

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ADM requires the following data to complete the analysis for this program:

- Program tracking data including customer identifiers, address, and date of rebate
- Rebate application forms and applicable invoices

### 5.1.3 Impact Analysis

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ADM proposes to utilize the following impact evaluation methodologies to estimate verified net energy savings in the Residential Appliance and Thermostat Program:

- Deemed savings using RTF UES values

Measure-level impact evaluation methodologies for this program are specified in Table 5-1, separated by fuel type.

For measures in which an RTF-approved measure has been specified and considered active, ADM proposes to measure net savings using UES values in each RTF workbook for that. ADM will also apply adjustments to these RTF values if deviations are found between invoices and tracking data or if in-service rates deviate from 100% in verification surveys. This methodology is summarized in further detail in Section 2.5.1.

ADM will summarize program-level savings by summing verified net energy savings for all projects in the program, separated and reported by state and fuel type.

### 5.1.4 Timing and Cadence

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This program is considered “low risk” and therefore will be evaluated once in the 2024-2025 evaluation period.

### 5.1.5 Technical Comments

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ADM provides no technical comments for this program’s evaluation.

## 5.2 C&I Site-Specific Program

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The Site-Specific Program provides calculated incentives to support the installation of qualifying energy efficiency equipment at commercial/industrial sites. These projects typically have a higher degree of complexity than the traditional prescriptive offerings and rely on custom calculations of savings and incentive levels. Examples of these projects include process improvements, upgrades to specialized equipment used in manufacturing, lighting installations that rely on specialized controls, and other measures designed around the customer’s specific needs.

ADM understands that Avista incorporated a Contractor Incentive Program (CIP) for contractors who complete projects in order to meet savings goals in a difficult labor and supply chain environment. This incentive will be paid directly to contractors and would be in addition to customer incentives that continue to go directly to the customer.

Avista’s Site-Specific Program is a major component in its non-residential offerings. 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.

ADM's proposed site-specific M&V approach involves (1) selecting a representative sample of customers or sites that participated in a project; (2) determining the savings for each customer or site in the sample, usually by using one or more of M&V Options defined in the IPMVP; and (3) applying the results of estimating the savings for the sample to the entire population in the project.

### 5.2.1 Impact Approach

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Some programs, particularly for commercial and industrial customers, may include provisions for custom measures. For such measures, we develop specifications on how to sample and verify actual project savings and the engineering calculations used to calculate savings. Major methods for estimating energy savings include engineering analysis, computer simulations, end-use metering, and billing data analysis.

- Engineering analysis includes those methods of analysis in which savings and load impacts are calculated by applying engineering principles and calculations.
- Energy analysis through computer simulation is a more sophisticated version of engineering analysis. ADM has developed DOE-2 and EnergyPlus analyses for energy use and savings for over 10,000 buildings of different types in projects throughout the United States and abroad. We use a framework that uses EnergyPlus, eQuest or DOE-2 as the computational engine for simulating and analyzing energy use in different types of facilities. This streamlining of the analysis process greatly reduces the time and cost of analyzing energy use in a building while providing analytical results of high quality.
- End-use metering can be used to obtain data that directly measures pre- or post-measure (or both) energy use for those specific end-uses affected by an energy efficiency measure. ADM has experience with a wide variety of monitoring approaches and is well-equipped with an extensive inventory of monitoring equipment available for use during this project. Having both the experience and the proper tools, ADM can provide end-use monitoring very cost efficiently for this evaluation effort.
- Trending data from building automation systems can substitute for or augment metering data. ADM explores this possibility with the implementation team, trade allies, and customers. Through regular meetings with key trade allies, we have been able to procure both baseline and post-retrofit trend data to support M&V for numerous large and complex projects. ADM will always explore this data acquisition mode as a first option, since it reduces the M&V burden on the customers (trade allies typically set up the trends) and tends to reduce evaluation costs and improve evaluation turnaround time.
- QAQC: quality assurance and quality control, or pre-review, will be conducted for all projects eligible for an incentive greater than \$20,000 or exceeding 500,000 kWh in savings.

Our project team has extensive experience in using all these methods. We draw on the lessons we have learned from this experience to prepare specifications for methods that are appropriate for each custom measure, considering advantages and disadvantages of each method. Moreover, we specify methods that depend on the type of measure and project-specific opportunities or constraints.

### 5.2.2 Sampling and Precision

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For the Site-Specific Program simple random sampling is not an effective sampling methodology as the CV values observed in business programs are typically very high because the distributions of savings are

generally positively skewed. Often, a relatively small number of projects account for a high percentage of the estimated savings for the program.

To address this situation, we will use a sample design for selecting projects for the M&V sample that takes such skewness into account. With this approach, we select a number of sites with large savings for the sample with certainty and take a random sample of the remaining sites. To further improve the precision, non-certainty sites are selected for the sample through systematic random sampling. That is, a random sample of sites remaining after the certainty sites have been selected is selected by ordering them according to the magnitude of their savings and using systematic random sampling. Sampling systematically from a list that is ordered according to the magnitude of savings ensures that any sample selected will have some units with high savings, some with moderate savings, and some with low savings. Samples cannot result that have concentrations of sites with atypically high savings or atypically low savings. We will establish sample sizes to safely exceed  $\pm 10\%$  precision at 90% confidence (90/10 confidence precision).

Using past program year participation, ADM has estimated sample sizes required to meet 90/10 precision for each state and fuel type. Table 5-2 below presents expected sample sizes,

*Table 5-2: Expected Sample Sizes by State and Fuel Type*

Fuel	WA	ID
Electric	17	9
Natural Gas	5	3

### 5.2.3 Site Visits

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For sampled sites in the Site-Specific Program ADM will conduct on-site verification visits to confirm the installation conditions and use-case for sampled projects. For projects where most measures have deemed savings values, we do not expect to conduct extensive metering or monitoring. However, we have conducted both long-term and short-term metering and monitoring in past efforts to collect additional data required for a wide variety of evaluations. For measures for which deemed savings values are not available, we will use site visits to accomplish two major things: First, our field personnel will verify that reported measures have been installed, that they were installed correctly, and that they still function properly. Second, field staff will collect the data needed to analyze the energy savings and demand impacts for the installed measures. ADM will work with Avista to schedule the site visits in an efficient manner to lessen any impact on customer satisfaction. When needed, metered data will be collected either via a data logger or by EMS trend data (if available).

### 5.2.4 Required Data

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ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, and date of measure install
- Filled rebate application forms and applicable invoices
- Individual project files and supporting documentation for sampled projects

### 5.2.5 Impact Analysis

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For the Site-Specific programs, our evaluation work will include:

- Stratified Random Sampling and by selecting large saving sites with certainty;
- QAQC (pre-review) of large and custom projects;
- Engineering reviews of non-prescriptive projects;
- On-site verification and data logging;
- Interviewing of program participants; and
- Net-to-gross.

For custom or otherwise non-deemed measures, we use site-specific methods to determine savings that depend on the type of measure being analyzed (e.g., lighting measures, HVAC measures, refrigeration and process improvement measures, motors, and variable frequency drives).

For measures evaluated according to the site-specific approach, we review documentation for projects selected for the analysis samples to assess (1) whether the methodology used for the savings and kW impact calculations were appropriate, (2) whether data sources or assumptions used were valid, and (3) whether savings calculations were done correctly. We consider a variety of factors in this review, including:

- Energy (kWh) savings and demand (kW) reductions
- Number of different measures in a project;
- Number of installed measures;
- Interactive effects between measures and building systems;
- Uncertainty of the measure itself; and
- Percentage of savings vs. baseline.

As noted, the type of method used to determine savings through the site-specific approach depends on the type of measure being analyzed. A high-level summary of our approach to evaluating lighting projects is as follows:

As a first step, we review ex ante lighting calculations and supporting documents. This review includes checking that the invoices and cut sheets for the purchased materials match the specified lighting upgrades in the calculation spreadsheet. If there are any discrepancies or internal inconsistencies in the documentation these are identified as researchable issues in the site-specific M&V plan. In these instances, our approach is to contact the implementer and the applicant and request for clarification or additional information. In general, our approach is to identify and remove as many uncertainties as possible prior to the on-site visit.

The second step is to devise a metering and project-level sampling plan. For certain projects, notably ones in universities and hospitals, it may not be possible to verify every fixture upgrade in the allotted time<sup>24</sup>. In such cases a sampling plan is created to verify the installation of the project with better than  $\pm 20\%$  precision at the 90% confidence level<sup>25</sup>.

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<sup>24</sup> Most site visits will only require one to three hours of on-site work, but verifications of extensive projects in universities and hospitals can sometimes require one to two working days.

<sup>25</sup> If the project represents a significant portion of the program-level savings these criteria can be tightened as required to ensure that the overall precision goals are achieved at the program level.

The on-site work focuses on determining the hours of operation and verifying the baseline fixtures. During the scheduling process, a preliminary interview will inform the site contact of our data collection needs. Depending on program implementation protocols, the baseline fixtures may represent a significant uncertainty in lighting projects. Our approach to verifying the baseline fixtures and controls is summarized below:

If any of the supplanted fixtures are in storage on site, ADM field staff are instructed to photographically document the baseline fixtures. During the scheduling process we ask if this is possible, since the opportunity may exist to ask the site contact to either retain a sample fixture or to document the make/model.

If the above is not possible but the site contact can attest that fixtures like the baseline fixture are still in utilization in other areas of the facility, those fixtures are documented as proxies for the supplanted fixtures.

If the above is not possible, the site contact (or if applicable, the most knowledgeable person on-site in the matter) is asked to describe the baseline fixtures. Our field staff are trained interviewers and can often obtain enough information to help piece together the connected load of the supplanted fixtures.

Depending on the evaluation protocol chosen for a particular project, the hours of operation may need to be metered. If the new fixtures are high bays with integral occupancy sensors, then the preferred approach is to meter current at the electrical panel. Otherwise, light level loggers or lighting on/off loggers will suffice. On average, just a handful of loggers are required per site, but large projects may require 20 or more loggers to be installed.

Though custom commercial and industrial projects are quite different than lighting projects from an engineering standpoint, there are commonalities in our evaluation approaches. The main goal is to identify and remove or minimize the key uncertainties in the energy savings estimations. After a full review of project documentation and if necessary, brief exploratory interviews with the program implementer or the applicant, ADM develops an M&V plan that (1) describes the project and the initial impact estimation methods (2) identifies the major sources of uncertainty in the impact estimation (3) proposes a method for assessing the project's energy impacts and (4) motivates and details a plan to collect and analyze data to reduce or remove uncertainties from the energy savings estimation.

During a site visit, we use a documentation checklist to record the following types of information.

- We document any equipment changed or new equipment installed, including (1) descriptions, (2) schematics, (3) performance data, and (4) other supporting information.
- We also document information about the savings calculation, including (1) what method was used, (2) specifications of assumptions and sources for these specifications, and (3) correctness of calculations.

In our review of the energy savings calculations, we focus on the key factors and assumptions used to determine energy use, including operating hours, usage patterns, and loading factors. Our review includes the following:

- Review of energy-efficiency improvements considered for comprehensiveness
- Review of energy analysis input assumptions

- Review of methods used to calculate energy savings
- Recommendations for corrective actions if an energy analysis is found to be deficient

We use several sources of information to inform our work:

- Technical reference manuals, such as the NW RTF, PA TRM 2021 and the IL TRM 10.0;
- Evaluation studies that ADM has conducted;
- Data and evaluation and market analysis reports that have been prepared that are specific to WA, ID or other nearby states; and
- Evaluation and market reports that have been prepared for other regions of the country. These types of reports are available through the evaluation report databases maintained by CALMAC (for California) and the Consortium on Energy Efficiency.

After all problems in the documentation for a measure have been resolved and it has been determined that the energy efficiency measures have been correctly analyzed and are justifiable, the engineer performing the review will prepare a worksheet that details the review information.

To verify savings for measures installed at project sites, we use methods that depend on the type of measure.

*Savings from Process Improvement Measures:* Analysis of savings from process improvements, including changes to process equipment, is inherently project specific. Because of the specificity of such processes, analyzing impacts through building simulations is generally not feasible. The M&V effort therefore typically involves retrofit isolation. If pre-installation metering is not possible, then post-installation metering is coupled with regressions, engineering analysis, and production logs to determine energy savings. Whole-facility meter data analysis can be accurate and efficient, provided that the project's impacts are large relative to the amount of unexplained variation (e.g., not correlated with production or weather data) in the facility's energy usage. We often rely on engineering analysis of the process affected by the improvements. Where appropriate, we use a specialized analysis tool such as DOE's excellent Steam System Modeler Tool.

*Savings from Air Compressor Measures:* We analyze savings from air compressor system measures using custom analysis tools. We use the characteristics and monitoring data collected on-site to develop the air flow and kWh load profiles that are the inputs to our analytical tool. These data will include not only electrical load measurements for compressors and auxiliary equipment (e.g., dryers, fans, etc.) but also inlet and discharge pressure measurements to calculate flows and pressure measurements for the compressor, dryer, and other critical components of the air compression system. We have developed an R-based script to help process large data sets (compressed air data can sometimes come in 1-second intervals) that sometimes accompany this measure.

*Savings from Motor and VFDs:* Unless baseline data are available, estimates of the energy savings from use of high efficiency motors or of VFDs are derived through an "after-only" analysis. With this method, energy use is measured for the high efficiency motor or VFD after it has been installed. We (1) make one-time measurements of voltage, current, and power factor of the ASD/motor and (2) use loggers to take continuous measurements of power over a period of time in order to obtain the data needed on operating schedules. The data thus collected are then used in estimating what energy use would have been for the motor application if the high efficiency motor or VFD had not been installed.

*Savings from Refrigeration Measures:* Refrigeration measures are usually project-specific, and the methods used to evaluate savings may differ from case to case. In most cases, we perform the analysis using engineering principles aided by monitored data. Data on the efficiency of new equipment installed will be gathered from program records and verified with the manufacturers. Data on equipment runtime will be collected through short-term monitoring where applicable. We use these data to develop regression models of refrigeration energy usage, or as inputs for the eQuest refrigeration energy analysis program, which has the capability for simulating the energy use associated with various types of refrigeration. Utility interval meter data is particularly useful for evaluations of projects at refrigerated warehouses, or of multiple, similar projects at chains of grocery stores.

*Savings from HVAC Measures:* For the analysis of HVAC measures, we develop estimates of the savings through simulations with our energy analysis models (e.g., DOE-2, eQuest, EnergyPlus). Each simulation produces estimates of HVAC energy and demand usage to be expected under different assumptions about equipment and/or construction conditions. For the analysis of HVAC measures, we draw on the data collected through on-site visits and monitoring. For facility upgrades involving energy management system upgrades, central plant or plant operation upgrades ADM often employs retrofit isolation or calibrated simulations.

We have conducted numerous evaluations of custom energy efficiency measures and programs using this site-specific approach and are therefore well qualified to apply any of these methods of analysis.

Verified savings from sampled sites will be extrapolated to the program level achieving 90% confidence and 10% precision (90/10) for each fuel type in each state.

### 5.2.6 Estimating Net Savings

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The net savings attributable to the Site-Specific Program may differ from gross savings due to free-ridership and spillover. Free ridership decreases net program impacts whereas spillover increases net program impacts. Spillover includes several effects. First, participants may be influenced by the program to invest in energy-efficient measures not included in the program. Second, non-participants may adopt measures promoted by the program as a direct result of the program but do so outside of the program. One impact of spillover is the additional energy savings that result because non-participants purchase greater efficiency than they otherwise would have, due to differences in dealer and contractor actions available at the time of purchase. There may also be additional energy savings from non-participants due to program marketing impact on awareness of energy efficiency. The goal of the net savings analysis is to infer the magnitude of free-ridership and spillover effects and to determine the net savings impact of a program. Net-to-gross ratios or factors are applied to the adjusted or verified gross savings to estimate net program savings.

Unlike deemed UES found in the RTF and Avista TRM, as well as billing analyses which have net savings 'baked in,' savings resulting from the methods described above will be *gross* savings. If required to report verified net savings, ADM offers to use self-reported survey data to evaluate free ridership, spillover, and overall net savings for most programs. Participant surveys for the Site-Specific Program will include a subsection of questions designed to measure both free-ridership and spillover. Survey free-ridership questions are followed by questions designed to measure spillover, referring to where a customer installed equipment through the program in the past year and then installed additional equipment due to program influences without the help of a rebate.

Resulting survey data will be used to develop individual state and fuel type net-to-gross ratios used to adjust verified program-level gross savings to verified net savings. Survey efforts will be such that we will attempt to reach 90/10 precision for NTG estimates. The NTG adjustment will be gathered via the methods described under the Section 2.6.

### 5.2.7 Timing and Cadence

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This program is considered “high risk” and therefore will be evaluated each year in the 2024-2025 evaluation period.

### 5.2.8 Technical Comments

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ADM provides no technical comments for this program’s evaluation.

## 5.3 C&I Prescriptive Lighting Program

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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. 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 retrofits from fluorescent lamps and fixtures, HID, directional, and incandescent can fixtures to more energy-efficient LED light sources and controls.

The Prescriptive Lighting Program accounts for the second largest share of non-residential expected savings, or roughly 32% of the expected non-residential portfolio. Table 5-3 lists eligible program measures and proposed impact savings sources.

Table 5-3: Prescriptive Lighting Program Measures

Location	Measure	Savings Source
Interior	LED tubes	Standard prescriptive engineering algorithms with inputs from actual equipment and RTF lighting workbooks
	LED U-Bend	
	LED W reduction	
	LED Downlamps/Directional	
	Linear LED Fixtures	
	HID LED fixtures/lamps	
	Occupancy Sensors	
LLLC Fixtures		
Exterior	HID LED fixtures/lamps	
	Sign Lighting	
New Construction	HID LED fixtures	

ADM will use the Avista TRM in place at the time of plan filing to estimate verified unit energy savings for the measures in the table above. ADM will verify a sample of participating rebates for detailed review of the rebate documentation and verification of measure type. ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the Prescriptive Lighting Program in the section below.

### 5.3.1 Database Review & Verification

Before conducting the impact analysis, ADM will conduct the following activities for the Prescriptive Lighting Program:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)

If ADM finds any deviations between the tracking data and application values, ADM will note and summarize these differences to Avista through periodic updates and the final report. Table 2-1 in Section 2.3.1 summarizes the sample sizes for each the document-based verification activity in the Prescriptive Lighting Program.

In addition, ADM will randomly select a subset of participant customers to survey for simple verification of installed measure, displayed in Table 2-2 ADM will include questions such as:

- What type of lighting was installed?
- Is the equipment still installed and operational?

These questions will help ADM verify that the measure was documented accurately and that data collection activities are progressing smoothly for the program. This simple verification will help ADM more accurately estimate measure-level impacts using engineering algorithms.

### 5.3.2 Required Data

ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, and date of measure install
- Filled rebate application forms and applicable invoices

### 5.3.3 Impact Analysis

Savings from lighting measures will be verified using a standard engineering algorithm shown below.

$$kWh_{savings} = \sum \left( \left[ N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{pre} - \left[ N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{post} \right) \times AOH \times ISR$$

Where:

Nfixt(i), pre = Pre-retrofit number of fixtures of type i

Nfixt(i), post = Post-retrofit number of fixtures of type i

Wfixt(i), pre = Rated wattage of pre-retrofit fixtures of type i (Standard Wattage Table developed from RTF materials)

Wfixt(i), post = Rated wattage of post-retrofit fixtures of type i (Varies). Self-reported, verified.

AOH = Annual operating hours for specified space type (Varies). Self-reported. Reported weekly hours were divided by seven, then multiplied by 365.25.

ISR = The In-Service Rate, based on type. RTF estimates.

Fixture/lamp quantities, wattages and hours of operation will be taken directly from program tracking data once their accuracy has been verified. In-service rates will be based on primary data collection and supplemented by RTF estimates as needed.

*Table 5-4: Prescriptive Lighting Program Measures*

Location	Measure	Impact Analysis Savings Section(s)
Interior	LED tubes	Standard prescriptive engineering algorithms with inputs from actual equipment and RTF lighting workbooks
	LED U-Bend	
	LED W reduction	
	LED Downlamps/Directional	
	Linear LED Fixtures	
	HID LED fixtures/lamps	
	Occupancy Sensors	
LLLC Fixtures		
Exterior	HID LED fixtures/lamps	
	Sign Lighting	
New Construction	HID LED fixtures	

### 5.3.4 Timing and Cadence

This program is considered “low risk” and therefore will be evaluated once in the 2024-2025 evaluation period.

### 5.3.5 Technical Comments

ADM provides no technical comments for this program’s evaluation.

## 5.4 C&I Small Business Direct Install Lighting Program

The Direct Install Lighting Program is being offered starting 2024 in partnership with Resource Innovations, to supplement and enhance the ongoing customer engagement and energy efficiency

efforts already in place. Avista offers this program for customers who have traditionally been unable to participate in programs requiring upfront capital to receive new lighting and lower energy costs. The direct install delivery method also boosts local markets by endorsing local businesses and trade allies and providing training and upskill opportunities.

In contract with local electrical trade allies, customers receive installation of appropriate energy-saving lighting measures such as lamps, fixtures, and controls; a brief onsite audit identifying additional efficiency opportunities; and marketing and collateral handouts to encourage future program participation.

Table 5-5 lists eligible program measures and proposed impact savings sources.

*Table 5-5: Direct Install Lighting Program Measures*

Measure	Savings Source
Direct Installation – LED Lighting and Controls	Standard prescriptive engineering algorithms with inputs from actual equipment and RTF lighting workbooks

#### 5.4.1 Database Review & Verification

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Before conducting the impact analysis, ADM will conduct the following activities for the Direct Install Lighting Program:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)

If ADM finds any deviations between the tracking data and application values, ADM will note and summarize these differences to Avista through periodic updates and the final report. Table 2-1 in Section 2.3.1 summarizes the sample sizes for each the document-based verification activity in the Direct Install Lighting Program.

In addition, ADM will randomly select a subset of participant customers to survey for simple verification of installed measure, displayed in Table 2-2 ADM will include questions such as:

- What type of lighting was installed?
- Is the equipment still installed and operational?

These questions will help ADM verify that the measure was documented accurately and that data collection activities are progressing smoothly for the program. This simple verification will help ADM more accurately estimate measure-level impacts using engineering algorithms.

#### 5.4.2 Required Data

---

ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, and date of measure install
- Filled rebate application forms and applicable invoices

#### 5.4.3 Impact Analysis

---

Savings from lighting measures will be verified using a standard engineering algorithm shown below.

$$kWh_{savings} = \sum \left( \left[ N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{pre} - \left[ N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{post} \right) \times AOH \times ISR$$

Where:

Nfixt(i), pre = Pre-retrofit number of fixtures of type i

Nfixt(i), post = Post-retrofit number of fixtures of type i

Wfixt(i), pre = Rated wattage of pre-retrofit fixtures of type i (Standard Wattage Table developed from RTF materials)

Wfixt(i), post = Rated wattage of post-retrofit fixtures of type i (Varies). Self-reported, verified.

AOH = Annual operating hours for specified space type (Varies). Self-reported. Reported weekly hours were divided by seven, then multiplied by 365.25.

ISR = The In-Service Rate, based on type. RTF estimates.

Similarly, savings from occupancy sensors will be verified using a standard engineering algorithm shown below.

$$kWh_{savings} = \left[ N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{post} \times AOH \times reduction$$

Where:

Nfixt(i), post = Post-retrofit number of fixtures of type i

Wfixt(i), post = Rated wattage of post-retrofit fixtures of type i (Varies). Self-reported, verified.

AOH = Annual operating hours for specified space type (Varies). Self-reported.

reduction = The reduction in operating hours as a result of the installation of occupancy sensors, 32% for fixture/ceiling mounted sensors.

In both cases, fixture/lamp quantities, wattages and hours of operation will be taken directly from program tracking data once their accuracy has been verified. In-service rates will be based on primary data collection and supplemented by RTF estimates as needed.

*Table 5-6: Direct Install Lighting Program Measures*

Measure	Savings Source
Direct Installation – LED Lighting and Controls	Standard prescriptive engineering algorithms with inputs from actual equipment and RTF lighting workbooks

#### 5.4.4 Timing and Cadence

This program is considered “low risk” and therefore will be evaluated once in the 2024-2025 evaluation period.

#### 5.4.5 Technical Comments

ADM provides no technical comments for this program’s evaluation.

## 5.5 C&I Prescriptive HVAC Variable Frequency Drive Program

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The Prescriptive HVAC Variable Frequency Drive 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 customers who use Avista electricity and apply the VFD to the eligible fan or pump measures are eligible for this program.

The Prescriptive HVAC Variable Frequency Drive Retrofit Program is offered for retrofitting VFDs on existing HVAC equipment. Customers must submit a completed rebate form, invoices, and documentation to verify the horsepower of the motor on which the VFD was installed within 90 days of installation. 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 5-7 lists eligible program measures and proposed impact savings sources.

*Table 5-7: Prescriptive HVAC VFD Program Measures*

Measure	Savings Source
HVAC Cooling Pump	RTF Variable Speed Drives v3.1
HVAC Heating Pump or Combo	
HVAC Exhaust Fan	

ADM will use the Avista TRM to estimate verified savings for the measures in the table above, as approved UES values are estimated for each. ADM will verify a sample of participating rebates for detailed review of the rebate documentation and verification of measure type. ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the Prescriptive HVAC VFD Program in the section below.

### 5.5.1 Database Review & Verification

---

Before conducting the impact analysis, ADM will conduct the following activities for the Prescriptive HVAC VFD Program:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)

If ADM finds any deviations between the tracking data and application values, ADM will note and summarize these differences to Avista through periodic updates and the final report. Table 2-1 in Section 2.3.1 summarizes the sample sizes for each the document-based verification activity in the Prescriptive HVAC VFD Program.

In addition, ADM will randomly select a subset of participant customers to survey for simple verification of installed measure, displayed in Table 2-2 ADM will include questions such as:

What type of pump/fans was the VFD installed on?

- Is the equipment still operational?

These questions will help ADM verify that the measure was documented accurately and that data collection activities are progressing smoothly for the program. This simple verification will help ADM more accurately estimate measure-level impacts using engineering algorithms.

### 5.5.2 Required Data

---

ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, and date of measure install
- Filled rebate application forms and applicable invoices

### 5.5.3 Impact Analysis

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All measures in the Prescriptive HVAC VFD Program have applicable electricity UES through the Avista TRM. Table 5-8 summarizes the anticipated measures offered under this program and corresponding impact M&V methodology sources. ADM will apply the TRM UES values to the types and quantities of each measure, after applying adjustments from database review and verification surveys, if necessary.

*Table 5-8: Prescriptive HVAC VFD Program Measures*

Measure	Impact Analysis Savings Section(s)
HVAC Cooling Pump	RTF Variable Speed Drives v3.1
HVAC Heating Pump or Combo	
HVAC Exhaust Fan	

### 5.5.4 Timing and Cadence

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This program is considered “low risk” and therefore will be evaluated once in the 2024-2025 evaluation period.

### 5.5.5 Technical Comments

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ADM provides no technical comments for this program’s evaluation.

## 5.6 C&I Midstream Program

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ADM understands that Avista’s Prescriptive HVAC Program and Food Service Equipment Program measure offerings have transitioned to the midstream delivery method under the C&I Midstream Program, which works with distributors to incentivize contractors who purchase energy efficient equipment. This delivery mechanism change removes barriers from C&I customers by removing the requirement for customers to fill out rebate application forms themselves, and instead places the responsibility on professionals in the field, such as contractors. Many measures offered through the program do not have corresponding RTF workbooks

Table 5-9 lists eligible program measures and proposed impact savings sources.

Table 5-9: C&I Midstream Program Measures

Measure	Savings Source
Air Conditioners	Standard prescriptive engineering algorithms with inputs from actual equipment, RTF workbooks and regional data, as necessary
Heat Pumps	
Ductless Heat Pumps	
Furnaces	
Boilers	
Water Heaters	
Demand Control Ventilation for Kitchens	Current Avista Midstream TRM Workbook
Combination Ovens	RTF Combination Ovens v5.0
Convection Ovens	RTF Convection Ovens v5.1
Conveyor Ovens	CA eTRM SWFS008-02
Ice Machines	RTF Commercial ENERGY STAR Ice Machines v2.1
Hot Food Holding Cabinets	RTF Commercial Hot Food Holding Cabinets v5.1
Freezers	RTF Commercial Freezers v5.1
Griddles	RTF Commercial Griddles v2.1
Rack Ovens	RTF Commercial Rack Ovens v2.1
Steamers	RTF Commercial Steamers v5.1
Dishwashers	CA eTRM SWFS002-04, SWFS018-05
Hand Wraps	CA eTRM SWFS010-03
Fryers	RTF Commercial Fryers v5.1

ADM will use the RTF to estimate verified savings for the measures in the table above, as RTF-approved UES values are estimated for each. In the case where a measure is not covered by the RTF, such as certain heating zones for the Natural Gas Boiler measure, ADM will evaluate savings using the Avista TRM. ADM will verify a sample of participating rebates for detailed review of the rebate documentation and verification of measure type. ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the C&I Midstream Program in the section below.

### 5.6.1 Database Review & Verification

Before conducting the impact analysis, ADM will conduct the following activities for the C&I Midstream Program:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)

If ADM finds any deviations between the tracking data and application values, ADM will note and summarize these differences to Avista through periodic updates and the final report. Table 2-1 in Section 2.3.1 summarizes the sample sizes for each the document-based verification activity in the C&I Midstream Program. ADM will not conduct verification surveys for this program. Instead, ADM will interview distributors and trade allies.

### 5.6.2 Required Data

ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, and date of measure install

- Filled rebate application forms and applicable invoices
- Monthly energy consumption for participating customers

### 5.6.3 Impact Analysis

Many measures in the C&I Midstream Program have applicable electric and natural gas UES through the RTF. These UES will be used as the primary savings source. For high impact measures, such as HVAC and water heating, not covered by RTF workbooks or whose capacities exceed those provided by the RTF, ADM will use industry standard engineering algorithms with actual equipment specifications and regional data as appropriate. For lower impact measures not covered by the RTF, ADM will first source applicable savings from the California eTRM, followed by the current Avista Midstream TRM document.

Table 5-10 summarizes the anticipated measures offered under this program and corresponding impact M&V methodology sources.

*Table 5-10: C&I Midstream Program Measures*

Measure	Savings Source
Air Conditioners	Standard prescriptive engineering algorithms with inputs from actual equipment, RTF workbooks and regional data, as necessary
Heat Pumps	
Ductless Heat Pumps	
Furnaces	
Boilers	
Water Heaters	
Demand Control Ventilation for Kitchens	Current Avista Midstream TRM Workbook
Combination Ovens	RTF Combination Ovens v5.0
Convection Ovens	RTF Convection Ovens v5.1
Conveyor Ovens	CA eTRM SWFS008-02
Ice Machines	RTF Commercial ENERGY STAR Ice Machines v2.1
Hot Food Holding Cabinets	RTF Commercial Hot Food Holding Cabinets v5.1
Freezers	RTF Commercial Freezers v5.1
Griddles	RTF Commercial Griddles v2.1
Rack Ovens	RTF Commercial Rack Ovens v2.1
Steamers	RTF Commercial Steamers v5.1
Dishwashers	CA eTRM SWFS002-04, SWFS018-05
Hand Wraps	CA eTRM SWFS010-03
Fryers	RTF Commercial Fryers v5.1

### 5.6.4 Timing and Cadence

This program is considered “high risk” and therefore will be evaluated each year in the 2024-2025 evaluation period.

### 5.6.5 Technical Comments

ADM provides no technical comments for this program’s evaluation.

## 5.7 C&I Prescriptive Shell Program

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The 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.

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 project approval. 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 5-11 lists eligible program measures and proposed impact savings sources.

*Table 5-11: Prescriptive Shell Program Measures*

Measure	Savings Source
Attic Insulation	Avista TRM UES
Roof Insulation	
Wall Insulation	

Insulation measures are not covered by the RTF therefore, ADM will evaluate savings using the Avista TRM. ADM will verify a sample of participating rebates for detailed review of the rebate documentation and verification of measure type. ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the Prescriptive Shell Program in the section below.

### 5.7.1 Database Review & Verification

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Before conducting the impact analysis, ADM will conduct the following activities for the Prescriptive Shell Program:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)

If ADM finds any deviations between the tracking data and application values, ADM will note and summarize these differences to Avista through periodic updates and the final report. Table 2-1 in Section 2.3.1 summarizes the sample sizes for each the document-based verification activity in the Prescriptive Shell Program.

In addition, ADM will randomly select a subset of participant customers to survey for simple verification of installed measure, displayed in Table 2-2 ADM will include questions such as:

- Approximately how many square feet of insulation were installed?
- What is the final R-level of insulation?

These questions will help ADM verify that the measure was documented accurately and that data collection activities are progressing smoothly for the program. This simple verification will help ADM more accurately estimate measure-level impacts using engineering algorithms.

### 5.7.2 Required Data

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ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, and date of measure install
- Filled rebate application forms and applicable invoices

### 5.7.3 Impact Analysis

---

All measures in the Prescriptive Shell Program have applicable electricity and natural gas UES through the Avista TRM. Table 5-12 summarizes the anticipated measures offered under this program and corresponding impact M&V methodology sources. ADM will apply the TRM UES values to the types and quantities of each measure, after applying adjustments from database review and verification surveys, if necessary.

*Table 5-12: Prescriptive Shell Program Measures*

Measure	Impact Analysis Savings Section(s)
Attic Insulation	Avista TRM UES
Roof Insulation	
Wall Insulation	

### 5.7.4 Timing and Cadence

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This program is considered “low risk” and therefore will be evaluated once in the 2024-2025 evaluation period.

### 5.7.5 Technical Comments

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ADM provides no technical comments for this program’s evaluation.

## 5.8 C&I Green Motors Program

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The Green Motors Program ensures quality rewinding that results in the motor maintaining its original efficiency, which is commonly called a "green rewind." The Green Motors Practices Group (GMPG) is a non-profit organization that identifies, promotes, and verifies only excellent member motor service centers. These companies are committed to consistently producing repair/rewinds that retain or improve reliability and efficiency and provide on-site motor driven systems assistance.

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.

The measure offered by the Green Motors Program, motor rewinding, will be analyzed using the RTF-approved UES form from the RTF workbook. ADM will verify a sample of participating rebates for detailed review of the rebate documentation and verification of measure type. ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the Green Motors Program in the section below.

*Table 5-13: Green Motors Rewind Program Measures*

Measure	Impact Analysis Savings Section(s)
Industrial Motor Rewind	RTF Green Motor Rewind v5.2
Agricultural Motor Rewind	

### 5.8.1 Database Review & Verification

Before conducting the impact analysis, ADM will conduct the following activities for the Green Motors Program:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)

Table 2-1 in Section 2.3.1 summarizes the sample sizes for each the document-based verification activity in the Green Motors Program. If ADM finds any deviations between the tracking data and application values, ADM will note and summarize these differences to Avista through periodic updates and the final report.

In addition, ADM will randomly select a subset of participant customers to survey for simple verification of installed measure, displayed in Table 2-2 ADM will include questions such as:

- What is the horsepower of the rewind motor?
- Is the motor used in industrial or agricultural applications?
- Is the newly rewind motor properly functioning?

These questions will help ADM verify that the measure was documented accurately and that data collection activities are progressing smoothly for the program. This simple verification will help ADM more accurately estimate measure-level impacts using engineering algorithms.

### 5.8.2 Required Data

ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, and date of measure install
- Filled rebate application forms and applicable invoices

### 5.8.3 Impact Analysis

The measure offered by the Green Motors Program, motor rewinding, will be analyzed using the RTF 'Industrial and Agricultural Motor Rewind v5.2 workbook and based upon horsepower and sector. ADM will apply the RTF UES values to the types and quantities of each measure, after applying adjustments from database review and verification surveys, if necessary.

*Table 5-14: Green Motors Rewind Program Measures*

Measure	Impact Analysis Savings Section(s)
Industrial Motor Rewind	RTF Green Motor Rewind v5.2
Agricultural Motor Rewind	

#### 5.8.4 Timing and Cadence

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This program is considered “low risk” and therefore will be evaluated once in the 2024-2025 evaluation period.

#### 5.8.5 Technical Comments

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ADM provides no technical comments for this program’s evaluation.

### 5.9 C&I Grocer Program

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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 customers who use Avista fuel for the measure applied for are eligible.

Customers must submit a completed rebate form and invoice within 90 days after the installation has been completed. 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.

ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the Grocer Program in the section below. Table 5-15 lists eligible program measures and proposed impact savings sources.

*Table 5-15: Grocer Program Measures*

Measure	Savings Source
Refrigerator Case Lighting	RTF UES
ASH Controls	RTF UES
Door Gaskets	Avista TRM UES
Floating Head Pressure Controls	RTF UES
Strip Curtains	RTF UES
Walk-In ECM Controllers	RTF UES
ECMs on Evaporator Fans	RTF UES
ECM Replacing Evaporator PS and PSC	RTF UES

ADM will use the RTF to estimate verified savings for the measures in the table above, as RTF-approved UES values are estimated for each. In the case where a measure is not covered by the RTF, ADM will evaluate savings using the Avista TRM. ADM will verify a sample of participating rebates for detailed review of the rebate documentation and verification of measure type. ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the Grocer Program in the section below.

#### 5.9.1 Database Review & Verification

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Before conducting the impact analysis, ADM will conduct the following activities for the Grocer Program:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)

If ADM finds any deviations between the tracking data and application values, ADM will note and summarize these differences to Avista through periodic updates and the final report. Table 2-1 in Section 2.3.1 summarizes the sample sizes for each the document-based verification activity in the Grocer Program.

In addition, ADM will randomly select a subset of participant customers to survey for simple verification of installed measure, displayed in Table 2-2 ADM will include questions such as:

- Was the previous equipment functional?
- Is the newly installed equipment properly functioning?
- What is the efficiency and sizing of the newly installed equipment?

These questions will help ADM verify that the measure was documented accurately and that data collection activities are progressing smoothly for the program. This simple verification will help ADM more accurately estimate measure-level impacts using engineering algorithms.

### 5.9.2 Required Data

---

ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, and date of measure install
- Filled rebate application forms and applicable invoices

### 5.9.3 Impact Analysis

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All measures in the Grocer Program have applicable electricity and gas UES through the RTF and/or the Avista TRM. Table 5-16 summarizes the anticipated measures offered under this program and corresponding impact M&V methodology sources. ADM will apply the RTF or TRM UES values to the types and quantities of each measure, after applying adjustments from database review and verification surveys, if necessary.

*Table 5-16: Grocer Program UES Sources*

Measure	Impact Analysis Savings Section(s)
Refrigerator Case Lighting	RTF Commercial Grocery Display Case Lighting v1.2
ASH Controls	RTF Commercial Grocery Anti-Sweat Heater Controls v4.3
Door Gaskets	Avista TRM Gaskets for Reach-In and Walk-In Applications
Floating Head Pressure	RTF Commercial Grocery Floating Head Pressure Controls v2.1
Strip Curtains	RTF Commercial Grocery Strip Curtain v2.1
Walk-In ECM Controllers	RTF Grocery Walk-in Evaporator Fan ECM Controller v4.2
ECM Replacing Evaporator PS and PSC	RTF Com. Grocery Compressor Head Fan Motor Retrofit v4.2, Com. Grocery Walk-in ECM Retrofit v4.3, and/or Com Grocery Display Case Evap. Fan Motor Retrofit v5.2, depending upon application

### 5.9.4 Timing and Cadence

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This program is considered “low risk” and therefore will be evaluated once in the 2024-2025 evaluation period.

### 5.9.5 Technical Comments

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ADM provides no technical comments for this program's evaluation.

### 5.10 C&I Building Operator Certification Program

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The C&I Building Operator Certification Program is being offered by Avista in the 2024-2025 biannual period. This program is offered to encourage building operator certified (BOC) credentialed operators to save electricity and natural gas in buildings they manage while reducing electrical demand. The BOC program has consistently produced positive documented energy savings and has proved to be cost effective. Third party evaluators have assessed and documented the BOC's energy savings impacts<sup>26</sup>.

ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the Grocer Program in the section below. Table 5-16 lists eligible program measures and proposed impact savings sources.

ADM will use the BOC independent impact evaluation approved by the Idaho Public Utilities Commission and Washington Utilities and Transportation Commission to estimate verified savings for the program. ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the Grocer Program in the section below.

#### 5.10.1 Database Review & Verification

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Before conducting the impact analysis, ADM will conduct the following activities for the Building Operator Certification Program:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)

If ADM finds any deviations between the tracking data and application values, ADM will note and summarize these differences to Avista through periodic updates and the final report. Table 2-1 in Section 2.3.1 summarizes the sample sizes for each the document-based verification activity in the Building Operator Certification Program. Instead of conducting a survey for these participants, ADM will conduct in-depth interviews with a sample of program participants.

#### 5.10.2 Required Data

---

ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, and date of measure install
- Filled rebate application forms and applicable invoices

#### 5.10.3 Impact Analysis

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All measures in the Grocer Program have applicable electricity and gas UES through the RTF and/or the Avista TRM. Table 5-17 summarizes the anticipated measures offered under this program and corresponding impact M&V methodology sources. ADM will apply the RTF or TRM UES values to the

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<sup>26</sup> [https://www.theboc.info/wp-content/uploads/2020/08/2020-BOC-Energy-Savings-FAQ\\_1.0.pdf](https://www.theboc.info/wp-content/uploads/2020/08/2020-BOC-Energy-Savings-FAQ_1.0.pdf)

types and quantities of each measure, after applying adjustments from database review and verification surveys, if necessary.

*Table 5-17: C&I Building Operator Certification Program UES Sources*

Measure	Impact Analysis Savings Section(s)
Building Operator Certification – Electric	Energy Savings for the BOC Program Document <sup>27</sup>
Building Operator Certification – Natural Gas	

#### 5.10.4 Timing and Cadence

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This program is considered “high risk” and therefore will be evaluated each year in the 2024-2025 evaluation period.

#### 5.10.5 Technical Comments

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In the event that Avista wishes to conduct a more rigorous analysis to confirm the assumed and approved savings for the BOC program through the IPUC and WUTC, ADM will request monthly billing data to conduct a billing analysis across the population of participants in this program.

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<sup>27</sup> [https://www.theboc.info/wp-content/uploads/2020/08/2020-BOC-Energy-Savings-FAQ\\_1.0.pdf](https://www.theboc.info/wp-content/uploads/2020/08/2020-BOC-Energy-Savings-FAQ_1.0.pdf)

## 6. Pilot Program-Level EM&V Approaches

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ADM presents a summary of the pilot-specific impact evaluation work procedures for pilots presented in Avista's 2024 Natural Gas and Electric Energy Efficiency Annual Conservation Plans. ADM will work with Avista to adjust pilot-specific impact and sampling plans as additional information is received about pilot participation, pilot restrictions, measure offerings, implementation changes, and available data for each pilot.

### 6.1 Time-of-Use Pilot

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Per the RFP, at the conclusion of the first full year of the initial Time of Use pilot for Washington electric customers, (June 1, 2024, through May 30, 2025) ADM will provide a bill impact evaluation of the pilot participants. ADM will also make it a priority to include Named Community with the general population in all evaluation, planning, and communication activities. Additionally, ADM will provide verification and review of the Avista's Load Impact analysis for the pilot participants.

#### 6.1.1 Bill Impact Evaluation

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For this effort, ADM plans to analyze Avista interval consumption data to estimate the program impacts for treatment in the TOU Pilot. ADM proposes to estimate total kWh and kW impacts for Avista's participating residential customers recruited in this pilot period.

ADM will assess the load impacts for the various pilot groups through statistical analysis of the hourly usage data for the TOU Pilot. The goal of this plan will be to estimate the percentage reduction in peak demand and percentage reduction in overall usage/responsiveness (demand shift) to the pilot prices as well as the impacts to the Avista system and identification of potential persistence of impacts from year to year. The evaluation will be designed in such a way that the effort will be able to be conducted each year for the same pilot participants, the results also indicate persistence energy and load impacts year over year.

The intent of this task is to determine the achieved impacts of the Time-of-Use Pilot within the participant group and whether it would be reasonable to expand the program for customers in the Washington and Utah service territories.

ADM will use several types of data in the analysis, including the following:

- Metered data on hourly loads of treatment and control customers in the trial
- Hourly weather data
- Assessors' data on characteristics of houses occupied by trial treatment and control customers

ADM will use the cleaned hourly load data to prepare simple statistical and graphical comparisons of average loads under different conditions. These descriptive statistics will provide a summary of customer responses under different conditions.

Estimates of load impacts for each treatment will be reported according to four standardized formats segmented by customer type:

- Average kWh reduction per customer per impact hour (where the impact hour is the hour of interest for the evaluation, e.g., peak hours for TOU rates)
- Average percent energy reduction per impact hour
- Total energy conservation, measured as average kWh reduction per customer per month over all hours in that month
- Average percent energy reduction per month over all hours in that month
- Average peak demand impact on all event days
- Peak demand impacts by event day
- Persistence of impacts for consecutive event days
- Event day peak impacts
- Bill distribution impacts by season
- Daily price elasticity
- Inter-period substitution elasticity
- Average change in customer arrears between treatment and control groups
- Average change in number of disconnects between treatment and control groups

Each of the above estimates will also include the following elements:

- Its standard error;
- A p-value and/or confidence interval indicating statistical significance;
- The number of treatment customers, the number of control customers, and the total number of observations used in the analysis;
- A description of the dates and hours used in the analysis if it is a subset of the total amount of data collected; and
- A description of the customers used in the analysis if it is a subset of the total number of treatment and control customers.

ADM will work with Avista staff to determine the final methods to be used to estimate the load impacts according to the various metrics. As a guide in determining the methods to be used, ADM will use the report prepared by LBNL/EPRI on Quantifying the Impacts of Time-Based Rates, Enabling Technology, and Other Treatments in Consumer Behavior Studies: Protocols and Guidelines (July 2013).

ADM will work with personnel from Avista's Rates department to perform difference-of-means and difference-of-differences calculations on the hourly load data. These calculations will be performed such that results can be reported to the WUTC, per their requirements.

ADM will extend the descriptive statistics approach by estimating the parameters of a regression model of customer demand for electricity. The data for the regression analysis are in "panel" format, with time series (hourly) observations of electricity use pooled across cross-sectional observations (customers). ADM will use estimation procedures for the regression analysis that take account of both the time-series and the cross-sectional dimensions of the data.

For the bill impacts analysis, a two-phase regression modeling approach will be used. In the first phase of regression modeling, ADM will use the data for each site individually in single equation regression estimation. For the regression analyses, the dependent variable is average hourly demand (kW).

The analysis of the data for each individual customer provides a set of coefficients showing the responsiveness of customers' electricity use to changes in explanatory variables. Because there may be commonality in responsiveness among different groups of customers, a second level of regression analysis is undertaken to relate the responsiveness coefficients to household characteristics (e.g., house size, vintage). For example, it may be appropriate to conduct separate analyses, one for electric-heated homes and another for gas-heated homes.

ADM will apply standard statistical tests and regression diagnostics to evaluate the performance of the regression modeling and to screen models for implausible results. ADM will use the results from the model providing the best "fit" in the analysis of electricity savings.

### 6.1.2 Arrears

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ADM will also include a customer arrears analysis. ADM plans to aggregate data on customer bills, disconnects and arrearages, customer utility transactions, low-income and energy savings program enrollment, customer demographics, and address whether the Pilots impact electric service disconnections, and if so, to what extent. ADM will then compare the amount of arrears between pilot participation groups to determine if participation in the program impacted the customer's propensity to lead to a disconnect.

### 6.1.3 Customer Surveys

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ADM also anticipates conducting a survey effort to collect customer survey responses in terms of demographics, behaviors, and satisfaction. ADM anticipates that there is a plan for the following survey efforts:

- Customer pre-pilot survey
- Customer post-pilot survey

Assuming a survey will be deployed newly enrolled Pilot participants, ADM will conduct the follow up survey for these same participants after a full year of Pilot deployment to enable evaluators to compare pre- and post-Pilot deployment survey responses.

ADM will survey customer participants in order to gauge the impact of Pilot participation towards customer energy usage behaviors in response to pricing. Survey questions may include, but not be limited to:

- How participants plan to change their energy usage habits to reduce their energy costs
- Customer feedback on actions taken during the Pilot to reduce energy usage
- Identification of barriers that prevent participants to change the energy usage habits
- Other questions identified by either Avista or ADM during the term of the Pilots

This effort will help Avista and implementors separate and characterize and quantify bill impacts for low-income households and retired households.

The pilot will be open to a maximum of 500 residential customers on an opt-in basis. ADM will develop a sampling plan that aims to achieve a sampling precision of  $\pm 10\%$  with 90% statistical confidence – or "90/10 precision" – for households participating in the TOU Pilot during survey-based data collection

efforts. With a population size of 500, a sample size of 70 total survey completions will meet the 90/10 precision requirements for the TOU Pilot.

ADM anticipates conducting surveys as telephone, web, paper mail or mixed-phone/web/paper mail surveys. Survey efforts may require physical mail surveys to ensure representativeness. The selected sample participants will be offered a \$20 gift card incentive to participate in and complete the demographics and satisfaction survey. ADM will deploy the pre-participation surveys to the newly registered customers every two weeks in order to capture accurate pre-participation behaviors and beliefs.

The survey will address the following topics:

- What are customers' motivations for participating in the program (i.e., decrease monthly energy bill, decrease energy usage)
- What are customers' current behaviors towards energy conservation?
- Are customers' energy use schedules flexible? (i.e., retirees schedules tend to be less flexible than the working class)
- How familiar are customers with their new TOU rate?
- Are customers receiving educational materials based on actions to help respond appropriately to the TOU rates?
- What are customers' current behaviors/actions undertaken due to messaging from the program?
- Is there other information that customers would find more beneficial to receive in messaging?
- Did customers feel they saved a meaningful amount on their bills?
- What is the satisfaction among customers for participation in the program?
- What is the satisfaction among customers of Avista as a utility provider?
- Do customers have electric vehicles (EVs) and EV charging stations installed in their household?
- What are the pilot customers' demographics? (e.g., household income, occupancy, heating/cooling type)

ADM will employ the use of our in-house call center, which is dedicated solely to energy efficiency-related efforts and comprised fully of full-time ADM staff. This allows maximum transparency of evaluation management and data collection efforts.

The goal of the Pilot participant customer survey responses for the questions listed above is to identify whether there are differences in demand reduction potential across customer groups. Therefore, ADM will use the participant responses to conduct additional bill impact analysis by subgroup.

In the case that low-income customers do not benefit from the TOU pilot, this information will help identify the need for a rate subsidy for low-income customers. This information will be useful to Avista and Avista stakeholders on how to proceed with implementation of the TOU rates.

#### 6.1.4 Program Recommendations

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Per the RFP, at the conclusion of the 2025 Program year, ADM will assist Avista in recommendations for Time of Use (TOU)/ Peak Time Rebate (PTR) program design/modifications in anticipation of full program rollout for the 2026-2027 biennium.

ADM anticipates the program recommendations will allude to the following topics:

- Recommendations for revisions or additions to evaluation plan
- Recommendations for customer survey plan and implementation
- Recommendations for customer eligibility requirements, and recruitment targets
- Recommendations for customer incentive and reimbursement

ADM further details each of the above items in the subsection below.

### 6.1.5 Program Evaluation Plan

---

ADM shall provide recommendations for edits or additions to the existing pilot evaluation plan, if necessary, with the goal of estimating the load impacts for the Pilot participants through statistical analysis of the hourly usage data for both the TOU and PTR Pilots. ADM will review plans to ensure that these methods can be used year after year to conduct a comparison of pilot improvements, successes, and learnings. Load metrics to be quantified include peak, off-peak, mid-day discount, average daily conservation impacts, and estimated load shift, by season. ADM anticipates a sufficient plan must:

- Capture data sources, data collection, tracking and storing, Avista tasks and responsibilities and the tasks for third-party service providers
- Ensure all metrics from the M&R Plans are included, as well as how they will be measured from the data.
- Include a schedule of all EM&V activities.
- Include a customer arrears analysis. The EM&V Plan will include efforts to gather data on customer bills, disconnects and arrearages, customer utility transactions, low-income and energy savings program enrollment, customer demographics, and address whether the Pilots impact electric service disconnections, and if so, to what extent.
- Include a method to assess the Pilots' impacts on participant program choices, payment behavior, and energy use.
- Include a method to assess the Pilots' impacts on access to essential services.

### 6.1.6 Customer Survey Plan & Implementation

---

ADM will also recommend adjustments to Avista's pilot survey plan and instruments, as well as the implementation schedule. ADM will make recommendations to maximize survey responses, such as the timing of survey deployment, the incentive amount provided to customers for completing the survey, and the method in which the surveys are conducted (online, mixed mode, etc.) to ensure the best success for survey responses.

### 6.1.7 Customer Eligibility & Recruitment Targets

---

ADM shall help ADM develop a final list of customer eligibility requirements, utilizing industry best practices. ADM will consider the following:

- Customer home type: single-family, manufactured home, multifamily, etc.
- Multi-premise customers: allowing more than one premise to participate if customer has multiple homes or businesses on their account.

- Customers secondary residences: vacation properties, auxiliary dwelling units, residential units used for business.
- Landlords
- Customers with on-site generation: solar, net metering, batteries.
- In addition, ADM shall use insights from Milestone 1 to guide recruitment strategy for behaviors observed among Avista residential and nonresidential customers, including analyzing AMI data to determine which customers have the highest potential to offset their peak time energy usage.

ADM shall develop, with input from Avista, a recruitment strategy, utilizing industry best practices, to develop a recruitment strategy to meet the designed participation limits of each Pilot Program while supporting accepted statistically valid design principals, including:

- Determining participants that will be most successful. (As used in this context, “successful” is defined as a participant whose bill does not increase because of their participation in the TOU Pilot.)
- Determining participants that have the potential to shift loads for positive bill impacts.

#### 6.1.8 Customer Reimbursement Strategy

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ADM will analyze the extent to which a customer required reimbursement in the pilot evaluation period. ADM will accomplish this by calculating a monthly comparison between the participant’s monthly bill under the TOU Pilot (“TOU Bill”) versus what participant’s monthly bill would have been absent their participation (“Standard Bill”). The participant will receive a reimbursement at the end of the first year if their total annual TOU Bill is greater than their total Standard Bill.

ADM will also assist Avista with a recommended schedule for deploying reimbursement payments to customers and the messaging involved in the reimbursement notifications.

For this effort, ADM plans to analyze Avista interval consumption data to estimate the program impacts for treatment in the TOU Pilot. ADM proposes to estimate total kWh and kW impacts for Avista’s participating residential customers recruited in this pilot period.

ADM will assess the load impacts for the various pilot groups through statistical analysis of the hourly usage data for both the TOU Pilot. The goal of this plan will be to estimate the percentage reduction in peak demand and percentage reduction in overall usage/responsiveness (demand shift) to the pilot prices as well as the impacts to the Avista system and identification of potential persistence of impacts from year to year. The evaluation will be designed in such a way that the effort will be able to be conducted each year for the same pilot participants, the results also indicate persistence energy and load impacts year over year.

The intent of this task is to determine the achieved impacts of the Time-of-Use Pilot within the participant group and whether it would be reasonable to expand the program for customers in the Washington and Utah service territories.

ADM will use several types of data in the analysis, including the following:

- Metered data on hourly loads of treatment and control customers in the trial

- Hourly weather data
- Assessors' data on characteristics of houses occupied by trial treatment and control customers

ADM will use the cleaned hourly load data to prepare simple statistical and graphical comparisons of average loads under different conditions. These descriptive statistics will provide a summary of customer responses under different conditions.

Estimates of load impacts for each treatment will be reported according to four standardized formats segmented by customer type:

- Average kWh reduction per customer per impact hour (where the impact hour is the hour of interest for the evaluation, e.g., peak hours for TOU rates)
- Average percent energy reduction per impact hour
- Total energy conservation, measured as average kWh reduction per customer per month over all hours in that month
- Average percent energy reduction per month over all hours in that month
- Average peak demand impact on all event days
- Peak demand impacts by event day
- Persistence of impacts for consecutive event days
- Event day peak impacts
- Bill distribution impacts by season
- Daily price elasticity
- Inter-period substitution elasticity
- Average change in customer arrears between treatment and control groups
- Average change in number of disconnects between treatment and control groups

Each of the above estimates will also include the following elements:

- Its standard error;
- A p-value and/or confidence interval indicating statistical significance;
- The number of treatment customers, the number of control customers, and the total number of observations used in the analysis;
- A description of the dates and hours used in the analysis if it is a subset of the total amount of data collected; and
- A description of the customers used in the analysis if it is a subset of the total number of treatment and control customers.

ADM will work with Avista staff to determine the final methods to be used to estimate the load impacts according to the various metrics. As a guide in determining the methods to be used, ADM will use the report prepared by LBNL/EPRI on Quantifying the Impacts of Time-Based Rates, Enabling Technology, and Other Treatments in Consumer Behavior Studies: Protocols and Guidelines (July 2013).

ADM will work with personnel from Avista's Rates department to perform difference-of-means and difference-of-differences calculations on the hourly load data. These calculations will be performed such that results can be reported to the WUTC, per their requirements.

ADM will extend the descriptive statistics approach by estimating the parameters of a regression model of customer demand for electricity. The data for the regression analysis are in “panel” format, with time series (hourly) observations of electricity use pooled across cross-sectional observations (customers). ADM will use estimation procedures for the regression analysis that take account of both the time-series and the cross-sectional dimensions of the data.

For the bill impacts analysis, a two-phase regression modeling approach will be used. In the first phase of regression modeling, ADM will use the data for each site individually in single equation regression estimation. For the regression analyses, the dependent variable is average hourly demand (kW).

The analysis of the data for each individual customer provides a set of coefficients showing the responsiveness of customers’ electricity use to changes in explanatory variables. Because there may be commonality in responsiveness among different groups of customers, a second level of regression analysis is undertaken to relate the responsiveness coefficients to household characteristics (e.g., house size, vintage). For example, it may be appropriate to conduct separate analyses, one for electric-heated homes and another for gas-heated homes.

ADM will apply standard statistical tests and regression diagnostics to evaluate the performance of the regression modeling and to screen models for implausible results. ADM will use the results from the model providing the best “fit” in the analysis of electricity savings.

#### 6.1.9 Timing and Cadence

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This program is considered “high risk” and therefore will be evaluated each year in the 2024-2025 evaluation period.

#### 6.2 Peak Time Rebate Pilot

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For this effort, ADM plans to analyze Avista interval consumption data to estimate the program impacts for treatment in the PTR Pilot. ADM will estimate total kWh and kW impacts for Avista’s participating residential customers recruited in this pilot period.

ADM will assess the load impacts for the various pilot groups through statistical analysis of the hourly usage data for the PTR Pilot. The goal of this plan will be to estimate the percentage reduction in peak demand and percentage reduction in overall usage/responsiveness (demand shift) to the pilot prices as well as the impacts to the Avista system and identification of potential persistence of impacts from year to year. The evaluation will be designed in such a way that the effort will be able to be conducted each year for the same pilot participants, the results also indicate persistence energy and load impacts year over year.

The intent of this task is to determine the achieved impacts of the Peak Time Rebate Pilot within the participant group and whether it would be reasonable to expand the program for customers in the Washington and Idaho service territories.

ADM will use several types of data in the analysis, including the following:

- Metered data on hourly loads of treatment and control customers in the trial
- Hourly weather data

- Assessors' data on characteristics of houses occupied by trial treatment and control customers

ADM will use the cleaned hourly load data to prepare simple statistical and graphical comparisons of average loads under different conditions. These descriptive statistics will provide a summary of customer responses under different conditions.

Estimates of load impacts for each treatment will be reported according to four standardized formats segmented by customer type:

- Average kWh reduction per customer per impact hour (where the impact hour is the hour of interest for the evaluation, e.g., peak hours for PTR rates)
- Average percent energy reduction per impact hour
- Total energy conservation, measured as average kWh reduction per customer per month over all hours in that month
- Average percent energy reduction per month over all hours in that month
- Average peak demand impact on all event days
- Peak demand impacts by event day
- Persistence of impacts for consecutive event days
- Event day peak impacts
- Bill distribution impacts by season
- Daily price elasticity
- Inter-period substitution elasticity
- Average change in customer arrears between treatment and control groups
- Average change in number of disconnects between treatment and control groups

Each of the above estimates will also include the following elements:

- Its standard error;
- A p-value and/or confidence interval indicating statistical significance;
- The number of treatment customers, the number of control customers, and the total number of observations used in the analysis;
- A description of the dates and hours used in the analysis if it is a subset of the total amount of data collected; and
- A description of the customers used in the analysis if it is a subset of the total number of treatment and control customers.

ADM will work with Avista staff to determine the final methods to be used to estimate the load impacts according to the various metrics. As a guide in determining the methods to be used, ADM will use the report prepared by LBNL/EPRI on Quantifying the Impacts of Time-Based Rates, Enabling Technology, and Other Treatments in Consumer Behavior Studies: Protocols and Guidelines (July 2013).

ADM will work with personnel from Avista's Rates department to perform difference-of-means and difference-of-differences calculations on the hourly load data. These calculations will be performed such that results can be reported to the WUTC, per their requirements.

ADM will extend the descriptive statistics approach by estimating the parameters of a regression model of customer demand for electricity. The data for the regression analysis are in "panel" format, with time

series (hourly) observations of electricity use pooled across cross-sectional observations (customers). ADM will use estimation procedures for the regression analysis that take account of both the time-series and the cross-sectional dimensions of the data.

For the bill impacts analysis, a two-phase regression modeling approach will be used. In the first phase of regression modeling, ADM will use the data for each site individually in single equation regression estimation. For the regression analyses, the dependent variable is average hourly demand (kW).

The analysis of the data for each individual customer provides a set of coefficients showing the responsiveness of customers' electricity use to changes in explanatory variables. Because there may be commonality in responsiveness among different groups of customers, a second level of regression analysis is undertaken to relate the responsiveness coefficients to household characteristics (e.g., house size, vintage). For example, it may be appropriate to conduct separate analyses, one for electric-heated homes and another for gas-heated homes.

ADM will apply standard statistical tests and regression diagnostics to evaluate the performance of the regression modeling and to screen models for implausible results. ADM will use the results from the model providing the best "fit" in the analysis of electricity savings.

### 6.2.1 Arrears

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ADM will also include a customer arrears analysis. ADM plans to aggregate data on customer bills, disconnects and arrearages, customer utility transactions, low-income and energy savings program enrollment, customer demographics, and address whether the Pilot impact electric service disconnections, and if so, to what extent. ADM will then compare the amount of arrears between pilot participation groups to determine if participation in the program impacted the customer's propensity to lead to a disconnect.

### 6.2.2 Customer Surveys

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ADM also anticipates conducting a survey effort to collect customer survey responses in terms of demographics, behaviors, and satisfaction. ADM anticipates that there is a plan for the following survey efforts:

- Customer pre-pilot survey
- Customer post-pilot survey

Assuming a survey will be deployed newly enrolled Pilot participants, ADM will conduct the follow up survey for these same participants after a full year of Pilot deployment to enable evaluators to compare pre- and post-Pilot deployment survey responses.

ADM will survey customer participants in order to gauge the impact of Pilot participation towards customer energy usage behaviors in response to pricing. Survey questions may include, but not be limited to:

- How participants plan to change their energy usage habits to reduce their energy costs
- Customer feedback on actions taken during the Pilot to reduce energy usage
- Identification of barriers that prevent participants to change the energy usage habits

- Other questions identified by either Avista or ADM during the term of the Pilot

This effort will help Avista and implementors separate and characterize and quantify bill impacts for low-income households and retired households.

The pilot will be open to a maximum of 500 residential customers on an opt-in basis. ADM will develop a sampling plan that aims to achieve a sampling precision of  $\pm 10\%$  with 90% statistical confidence – or “90/10 precision” – for households participating in the PTR Pilot during survey-based data collection efforts. With a population size of 500, a sample size of 70 total survey completions will meet the 90/10 precision requirements for the PTR Pilot.

ADM anticipates conducting surveys as telephone, web, paper mail or mixed-phone/web/paper mail surveys. Survey efforts may require physical mail surveys to ensure representativeness. The selected sample participants will be offered a \$20 gift card incentive to participate in and complete the demographics and satisfaction survey. ADM will deploy the pre-participation surveys to the newly registered customers every two weeks in order to capture accurate pre-participation behaviors and beliefs.

The survey will address the following topics:

- What are customers’ motivations for participating in the program (i.e., decrease monthly energy bill, decrease energy usage)
- What are customers’ current behaviors towards energy conservation?
- Are customers’ energy use schedules flexible? (i.e., retirees schedules tend to be less flexible than the working class)
- How familiar are customers with their new PTR rate?
- Are customers receiving educational materials based on actions to help respond appropriately to the PTR rates?
- What are customers’ current behaviors/actions undertaken due to messaging from the program?
- Is there other information that customers would find more beneficial to receive in messaging?
- Did customers feel they saved a meaningful amount on their bills?
- What is the satisfaction among customers for participation in the program?
- What is the satisfaction among customers of Avista as a utility provider?
- Do customers have electric vehicles (EVs) and EV charging stations installed in their household?
- What are the pilot customers’ demographics? (e.g., household income, occupancy, heating/cooling type)

ADM will employ the use of our in-house call center, which is dedicated solely to energy efficiency-related efforts and comprised fully of full-time ADM staff. This allows maximum transparency of evaluation management and data collection efforts.

The goal of the Pilot participant customer survey responses for the questions listed above is to identify whether there are differences in demand reduction potential across customer groups. Therefore, ADM will use the participant responses to conduct additional bill impact analysis by subgroup.

In the case that low-income customers do not benefit from the PTR pilot, this information will help identify the need for a rate subsidy for low-income customers. This information will be useful to Avista and Avista stakeholders on how to proceed with implementation of the PTR rates.

### 6.2.3 Program Recommendations

---

Per the RFP, at the conclusion of the 2025 program year, ADM will assist Avista in recommendations for Time of Use (TOU)/ Peak Time Rebate (PTR) program design/modifications in anticipation of full program rollout for the 2026-2027 biennium.

ADM anticipates the program recommendations will allude to the following topics:

- Recommendations for revisions or additions to evaluation plan
- Recommendations for customer survey plan and implementation
- Recommendations for customer eligibility requirements, and recruitment targets
- Recommendations for customer incentive and reimbursement

ADM further details each of the above items in the subsection below.

### 6.2.4 Program Evaluation Plan

---

ADM shall provide recommendations for edits or additions to the existing pilot evaluation plan, if necessary, with the goal of estimating the load impacts for the Pilot participants through statistical analysis of the hourly usage data for both the TOU and PTR Pilots. ADM will review plans to ensure that these methods can be used year after year to conduct a comparison of pilot improvements, successes, and learnings. Load metrics to be quantified include peak, off-peak, mid-day discount, average daily conservation impacts, and estimated load shift, by season. ADM anticipates a sufficient plan must:

- Capture data sources, data collection, tracking and storing, Avista tasks and responsibilities and the tasks for third-party service providers
- Ensure all metrics from the M&R Plans are included, as well as how they will be measured from the data.
- Include a schedule of all EM&V activities.
- Include a customer arrears analysis. The EM&V Plan will include efforts to gather data on customer bills, disconnects and arrearages, customer utility transactions, low-income and energy savings program enrollment, customer demographics, and address whether the Pilots impact electric service disconnections, and if so, to what extent.
- Include a method to assess the Pilots' impacts on participant program choices, payment behavior, and energy use.
- Include a method to assess the Pilots' impacts on access to essential services.

### 6.2.5 Customer Survey Plan & Implementation

---

ADM will also recommend adjustments to Avista's pilot survey plan and instruments, as well as the implementation schedule. ADM will make recommendations to maximize survey responses, such as the timing of survey deployment, the incentive amount provided to customers for completing the survey,

and the method in which the surveys are conducted (online, mixed mode, etc.) to ensure the best success for survey responses.

## 6.2.6 Customer Eligibility & Recruitment Targets

---

ADM shall help ADM develop a final list of customer eligibility requirements, utilizing industry best practices. ADM will consider the following:

- Customer home type: single-family, manufactured home, multifamily, etc.
- Multi-premise customers: allowing more than one premise to participate if the customer has multiple homes or businesses on their account.
- Customers secondary residences: vacation properties, auxiliary dwelling units, residential units used for business.
- Landlords
- Customers with on-site generation: solar, net metering, batteries.
- In addition, ADM shall use insights from Milestone 1 to guide recruitment strategy for behaviors observed among Avista residential and nonresidential customers, including analyzing AMI data to determine which customers have the highest potential to offset their peak time energy usage.

ADM shall develop, with input from Avista, a recruitment strategy, utilizing industry best practices, to develop a recruitment strategy to meet the designed participation limits of each Pilot Program while supporting accepted statistically valid design principals, including:

- Determining participants that will be most successful. (As used in this context, “successful” is defined as a participant whose bill does not increase because of their participation in the PTR Pilot.)
- Determining participants that have the potential to shift loads for positive bill impacts.

For this effort, ADM plans to analyze Avista interval consumption data to estimate the program impacts for treatment in the PTR Pilot. ADM proposes to estimate total kWh and kW impacts for Avista’s participating residential customers recruited in this pilot period.

ADM will assess the load impacts for the various pilot groups through statistical analysis of the hourly usage data for both the PTR Pilot. The goal of this plan will be to estimate the percentage reduction in peak demand and percentage reduction in overall usage/responsiveness (demand shift) to the pilot prices as well as the impacts to the Avista system and identification of potential persistence of impacts from year to year. The evaluation will be designed in such a way that the effort will be able to be conducted each year for the same pilot participants, the results also indicate persistence energy and load impacts year over year.

The intent of this task is to determine the achieved impacts of the Time-of-Use Pilot within the participant group and whether it would be reasonable to expand the program for customers in the Washington and Utah service territories.

ADM will use several types of data in the analysis, including the following:

- Metered data on hourly loads of treatment and control customers in the trial

- Hourly weather data
- Assessors' data on characteristics of houses occupied by trial treatment and control customers

ADM will use the cleaned hourly load data to prepare simple statistical and graphical comparisons of average loads under different conditions. These descriptive statistics will provide a summary of customer responses under different conditions.

Estimates of load impacts for each treatment will be reported according to four standardized formats segmented by customer type:

- Average kWh reduction per customer per impact hour (where the impact hour is the hour of interest for the evaluation, e.g., peak hours for PTR rates)
- Average percent energy reduction per impact hour
- Total energy conservation, measured as average kWh reduction per customer per month over all hours in that month
- Average percent energy reduction per month over all hours in that month
- Average peak demand impact on all event days
- Peak demand impacts by event day
- Persistence of impacts for consecutive event days
- Event day peak impacts
- Bill distribution impacts by season
- Daily price elasticity
- Inter-period substitution elasticity
- Average change in customer arrears between treatment and control groups
- Average change in number of disconnects between treatment and control groups

Each of the above estimates will also include the following elements:

- Its standard error;
- A p-value and/or confidence interval indicating statistical significance;
- The number of treatment customers, the number of control customers, and the total number of observations used in the analysis;
- A description of the dates and hours used in the analysis if it is a subset of the total amount of data collected; and
- A description of the customers used in the analysis if it is a subset of the total number of treatment and control customers.

ADM will work with Avista staff to determine the final methods to be used to estimate the load impacts according to the various metrics. As a guide in determining the methods to be used, ADM will use the report prepared by LBNL/EPRI on Quantifying the Impacts of Time-Based Rates, Enabling Technology, and Other Treatments in Consumer Behavior Studies: Protocols and Guidelines (July 2013).

ADM will work with personnel from Avista's Rates department to perform difference-of-means and difference-of-differences calculations on the hourly load data. These calculations will be performed such that results can be reported to the WUTC, per their requirements.

ADM will extend the descriptive statistics approach by estimating the parameters of a regression model of customer demand for electricity. The data for the regression analysis are in “panel” format, with time series (hourly) observations of electricity use pooled across cross-sectional observations (customers). ADM will use estimation procedures for the regression analysis that take account of both the time-series and the cross-sectional dimensions of the data.

For the bill impacts analysis, a two-phase regression modeling approach will be used. In the first phase of regression modeling, ADM will use the data for each site individually in single equation regression estimation. For the regression analyses, the dependent variable is average hourly demand (kW).

The analysis of the data for each individual customer provides a set of coefficients showing the responsiveness of customers’ electricity use to changes in explanatory variables. Because there may be commonality in responsiveness among different groups of customers, a second level of regression analysis is undertaken to relate the responsiveness coefficients to household characteristics (e.g., house size, vintage). For example, it may be appropriate to conduct separate analyses, one for electric-heated homes and another for gas-heated homes.

ADM will apply standard statistical tests and regression diagnostics to evaluate the performance of the regression modeling and to screen models for implausible results. ADM will use the results from the model providing the best “fit” in the analysis of electricity savings.

#### 6.2.7 Timing and Cadence

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This program is considered “high risk” and therefore will be evaluated each year in the 2024-2025 evaluation period.

### 6.3 Hybrid Heat Pump Pilot

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Starting in 2024, Avista plans to conduct a pilot program to explore the differences between cold climate heat pumps and hybrid heat pumps, with a focus on learning more about the performance of each type. Avista defines a hybrid heat pump as an electric heat pump with natural gas backup heating. ADM will focus on determining the feasibility of adding these measures to the company’s efficiency programs.

The pilot will subsidize the installation costs of 12 heat pumps in total – six cold climate and six hybrid. In addition to the pilot’s primary goals, Avista hopes to learn more about the factors that influence customers (economic, environmental, behavioral, emotional) as they consider significant HVAC upgrades. In addition, ADM will conduct in-depth interviews with the 12 participants in order to learn more about perceived home comfort for each of these systems. The pilot will span two years in order to allow Avista to collect data over two cooling and two heating seasons, with a total budget of approximately \$500,000.

In addition to this pilot, Avista is also exploring a possible pilot to evaluate gas absorption heat pumps. This pilot is in preliminary planning phases but may move forward in the late spring or early summer of 2024. Avista will consult with its advisory group if it intends to move forward with this pilot. After the decision is made, ADM will work with Avista to develop a more comprehensive evaluation plan. In the meantime, ADM anticipates the following methodology to evaluate the measures in the Hybrid Heat Pump Pilot Program.

Table 6-1: Hybrid Heat Pump Pilot Measures

Measure	Impact Analysis Methodology
Hybrid heat pump	Billing Analysis
Gas absorption heat pumps	Billing Analysis
E Ductless heat pump (with existing FAF)	RTF UES, ResDHPonFAF_v3_1

ADM summarizes the program-specific and measure-specific impact analysis activities and requirements for the Hybrid Heat Pump Pilot Program in the section below.

### 6.3.1 Database Review & Verification

Before conducting the impact analysis, ADM will conduct the following activities for the Hybrid Heat Pump Pilot Program:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)
- Survey-based verification for a random subset of customers (Section 2.3.2)

ADM will work with Avista to determine a preliminary sampling plan once participation trends are better informed. During document-based verification, if any deviations between the tracking data and application values are found, ADM will communicate these differences to Avista through periodic updates and summarize deviations in the final report.

During survey-based verification, ADM will randomly select a subset of participant customers to survey for simple verification of installed measure and documentation of prior equipment. ADM will include questions such as:

- Was this hybrid heat pump a new construction, or did it replace another heat pump?
- Was the previous heat pump functional?
- Is the newly installed heat pump still properly functioning?
- What is the efficiency and sizing of the newly installed heat pump?

These questions will help ADM verify that the measure was collected and documented accurately and will allow ADM to calculate measure-level savings more accurately. In addition, in the event that billing analysis is infeasible due to low participation, this simple verification will help ADM more accurately estimate measure-level impacts for the other measures using engineering algorithms.

### 6.3.2 Required Data

ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, and date of measure install
- Filled rebate application forms, applicable invoices, and equipment certificates if available
- Monthly billed consumption data for participating customers and for similar, non-participating customers

### 6.3.3 Impact Analysis

ADM proposes to utilize the following impact evaluation methodologies to estimate verified net energy savings in the Hybrid Heat Pump Pilot Program:

- Billing Analysis with counterfactual group (IPMVP Option C)

ADM does not anticipate RTF UES are available for this measure – therefore, we propose a billing analysis to estimate verified savings for the measure. ADM proposes to measure verified net savings by conducting a billing analysis with a counterfactual group selected via propensity score matching. The methodology used to select the quasi-experimental counterfactual group and the methodology for linear regression billing analysis are summarized in further detail in the “Billing Analysis (IPMVP Option C)” section. ADM will isolate each unique measure and verify each participant included in the analysis did not also participate in other programs; therefore, ADM will be able to isolate the measure effects using the household’s billed consumption data.

ADM will summarize program-level savings by summing verified net energy savings for all projects in the program, separated and reported by state and fuel type.

#### 6.3.4 Timing and Cadence

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This program is considered “high risk” because it is a new pilot, and therefore will be evaluated each year in the 2024-2025 evaluation period.

#### 6.3.5 Technical Comments

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In the event that the required data is not available or sufficient to conduct a billing regression analysis, ADM will conduct a benchmarking analysis and literature review and apply the most reasonable savings estimates for the novel measure.

## 6.4 Building Operator IQ Pilot

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The Building Operator IQ (BEIQ) Pilot Program provides incentives and energy management services to commercial, industrial, and agricultural customers to implement energy efficiency measures, adjust and tune existing equipment, systems and behaviors in a Retrocommissioning-type program.

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 the BEIQ pilot.

ADM summarizes the program-specific impact analysis activities and requirements for the BEIQ pilot in the section below. These methodologies are similar to the Site-Specific program evaluation, described above in 5.1.

### 6.4.1 Sampling and Precision

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Depending upon participation levels, ADM may choose to analyze a census of projects. If participation exceeds approximately 10 projects, ADM will select a representative sample of projects to analyze and extrapolate pilot-level results from. For this, simple random sampling is not an effective sampling methodology as the CV values observed in business programs are typically very high because the distributions of savings are generally positively skewed. Often, a relatively small number of projects account for a high percentage of the estimated savings for the program.

To address this situation, we will use a sample design for selecting projects for the M&V sample that takes such skewness into account. With this approach, we select a number of sites with large savings for the sample with certainty and take a random sample of the remaining sites. To further improve the precision, non-certainty sites are selected for the sample through systematic random sampling. That is, a random sample of sites remaining after the certainty sites have been selected is selected by ordering them according to the magnitude of their savings and using systematic random sampling. Sampling systematically from a list that is ordered according to the magnitude of savings ensures that any sample selected will have some units with high savings, some with moderate savings, and some with low savings. Samples cannot result that have concentrations of sites with atypically high savings or atypically low savings. We will establish sample sizes to safely exceed  $\pm 10\%$  precision at 90% confidence (90/10 confidence precision).

### 6.4.2 Data Required

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ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, and date of measure install
- Filled rebate application forms and applicable invoices
- Individual project files and supporting documentation for sampled projects including:
  - a. Facility square footage, facility occupancy, detailed information on facility type, schedule of operations, list of dates in which facility was shut down or closed, information on efficiency measures installed
  - b. Changes in facility or building operations or production unrelated to program, but affecting energy consumption

- Facility billing data from two years prior to project installation through the time the data request is sent (typically 3 months to one year of post data)
- A list of all other energy savings measures installed at the facility which are not part of the BEIQ pathway.

### 6.4.3 Impact Analysis

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The goals and methods of the BEIQ Pilot aligns with a Retrocommissioning (RCx) program. Therefore, ADM proposes to evaluate energy savings for this program that aligns with the methodologies presented in the UMP chapter for RCx. This involves analyzing whole-facility energy consumption data for each facility to estimate observed savings through retrofitting projects. By evaluating energy consumption data on a facility-level, completed by comparing building energy usage before retrofitting with building energy usage after retrofitting, the evaluators are able to measure all individual equipment retrofit savings as well as capture all interactive effects resulting from a combination of measures being installed in a single facility. In addition, this method avoids costly monitoring efforts for a large volume and variety of equipment within a single facility.

ADM proposes to utilize the following impact evaluation methodology to estimate verified net energy savings in the BEIQ pilot:

- Facility-level Regression Analysis (IPMVP Option C)

ADM proposes to measure verified net savings by conducting a billing analysis which compares each facility's pre-retrofit meter consumption to the same facility's post-retrofit meter consumption. The methodology used for linear regression analysis are summarized in further detail in the "Facility-Level Regression Analysis (IPMVP Option C)" section. This analysis is a whole building analysis. Therefore, any retrofitting projects, along with non-retrofitting projects, that affect building energy consumption, will be included in this analysis. ADM proposes this analysis because it is an accurate method to quantify observed savings at the facility level and includes interactive effects of multiple energy efficiency measures. ADM will focus analysis efforts for the building's meters which comprise the retrofitted areas of the building.

For projects whose savings cannot be measured through billing analysis, a separate IPMVP option or options will be selected. See section 5.2.5 for details.

For facilities who have opted to install energy savings measures outside of the BEIQ Pilot pathway, ADM will conduct separate analyses of these measures using the appropriate IPMVP option and deduct these savings from the BEIQ project billing analyses.

ADM will summarize program-level savings by summing verified net energy savings for all projects in the program, separated and reported by state and fuel type.

### 6.4.4 Timing and Cadence

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This program is considered "high risk" because it is a new pilot, and therefore will be evaluated each year in the 2024-2025 evaluation period.

#### 6.4.5 Technical Comments

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ADM provides no technical comments for this program's evaluation.

### 6.5 Compressed Air Pilot

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Avista plans to launch the Compressed Air Pilot Program to nonresidential customers during its biannual period. ADM expects this pilot to offer direct installation of a programmable line isolation device that will automatically detect leaks in a compressed air line. This line isolation technology works by eliminating demand on the air compressor from air leaks or timer drains. The program applicant performs a pre and post logging around the install date to capture and quantify kWh savings.

Commercial customers who use Avista electricity to operate rotary screw compressors of at least 15 horsepower that are not turned off daily are eligible for this program. Customers must submit a completed application form, invoice and the pre and post logging report summarizing kWh savings and photos of actual install along with the compressor nameplate within 90 days are eligible to receive up to \$0.20/verified kWh savings.

ADM summarizes the expected program-specific and measure-specific impact analysis activities and requirements for the Compressed Air Pilot in the section below.

#### 6.5.1 Database Review & Verification

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Before conducting the impact analysis, ADM will conduct the following activities for the Compressed Air Pilot Program:

- Database review for program-level data fields (Section 2.2)
- Document-based verification for a random subset of rebates (Section 2.3.1)

ADM will select a subset of rebate applications to cross-verify tracking data inputs, to be determined once the pilot has launched and initial program tracking data is available. If ADM finds any deviations between the tracking data and application values, ADM will note and summarize these differences to Avista through periodic updates and the final report.

In addition, ADM will randomly select a subset of participant customers to survey for simple verification of installed measure to meet 90/10 confidence and precision requirements. ADM will include questions such as:

- How much horsepower is being controlled?
- Is the newly installed equipment properly functioning?

These questions will help ADM verify that the installed equipment was documented accurately and that data collection activities are progressing smoothly for the program. This simple verification will help ADM more accurately estimate unit-level savings using engineering algorithms.

#### 6.5.2 Impact Analysis

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ADM will utilize the following impact evaluation methodologies to estimate verified net energy savings in the Compressed Air Pilot Program:

- Deemed savings using RTF UES or Avista TRM values
- Partial/Full Measure Isolation (IPMVP Option A & B)

ADM will review engineering calculations for the projects completed in the Compressed Air Pilot Program. If any changes are necessitated during review, ADM will also apply adjustments in addition to adjustments from deviations are found between invoices and tracking data or if in-service rates deviate from 100% in verification surveys, if applicable. This methodology is summarized in further detail in Section 2.5.1, *Deemed Savings*.

ADM will also explore partial or full measure isolation, described in Section 2.5.2, Partially/Fully Measured Retrofit Isolation (IPMVP Options A & B). End-use metering will be used to obtain data that directly measures pre- or post-measure (or both) energy use for those specific end-uses affected by an energy efficiency measure. Having both the experience and the proper tools, ADM will provide end-use monitoring very cost effectively for this evaluation effort.

ADM will perform engineering reviews of Compressed Air Pilot Program projects to ensure methodology and inputs are sound and calculations have been carried out correctly. For a subset of high-savings projects, ADM will request project documentation and logging data to perform a secondary verification analysis.

Using the International Performance Measure Verification Protocol (IPMVP), ADM will develop a comparison of before and after energy consumption (pre and post install of compressed air isolation device). IVPMP's framework requires that certain energy logging activities happen at key points in this process and describes other important activities that much be included as part of the M&V impact analysis. ADM will analyze savings from air compressor system measures using custom analysis tools. We use the characteristics and monitoring data collected on-site to develop the air flow and kWh load profiles that are the inputs to our analytical tool. These data will include not only electrical load measurements for compressors and auxiliary equipment (e.g., dryers, fans, etc.) but also inlet and discharge pressure measurements to calculate flows and pressure measurements for the compressor, dryer, and other critical components of the air compression system. ADM will utilize our R-based script developed to help process large data sets (compressed air data can sometimes come in 1-second intervals) that sometimes accompany this measure.

### 6.5.3 Required Data

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ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, and date of measure install
- Rebate application forms and applicable invoices
- Individual project files, supporting documentation and logging data for any sampled projects

For this effort, ADM plans to analyze Avista interval consumption data to estimate the program impacts for treatment in the TOU Pilot. ADM proposes to estimate total kWh and kW impacts for Avista's participating residential customers recruited in this pilot period.

ADM will assess the load impacts for the various pilot groups through statistical analysis of the hourly usage data for both the TOU Pilot. The goal of this plan will be to estimate the percentage reduction in

peak demand and percentage reduction in overall usage/responsiveness (demand shift) to the pilot prices as well as the impacts to the Avista system and identification of potential persistence of impacts from year to year. The evaluation will be designed in such a way that the effort will be able to be conducted each year for the same pilot participants, the results also indicate persistence energy and load impacts year over year.

The intent of this task is to determine the achieved impacts of the Time-of-Use Pilot within the participant group and whether it would be reasonable to expand the program for customers in the Washington and Utah service territories.

ADM will use several types of data in the analysis, including the following:

- Metered data on hourly loads of treatment and control customers in the trial
- Hourly weather data
- Assessors' data on characteristics of houses occupied by trial treatment and control customers

ADM will use the cleaned hourly load data to prepare simple statistical and graphical comparisons of average loads under different conditions. These descriptive statistics will provide a summary of customer responses under different conditions.

Estimates of load impacts for each treatment will be reported according to four standardized formats segmented by customer type:

- Average kWh reduction per customer per impact hour (where the impact hour is the hour of interest for the evaluation, e.g., peak hours for TOU rates)
- Average percent energy reduction per impact hour
- Total energy conservation, measured as average kWh reduction per customer per month over all hours in that month
- Average percent energy reduction per month over all hours in that month
- Average peak demand impact on all event days
- Peak demand impacts by event day
- Persistence of impacts for consecutive event days
- Event day peak impacts
- Bill distribution impacts by season
- Daily price elasticity
- Inter-period substitution elasticity
- Average change in customer arrears between treatment and control groups
- Average change in number of disconnects between treatment and control groups

Each of the above estimates will also include the following elements:

- Its standard error;
- A p-value and/or confidence interval indicating statistical significance;
- The number of treatment customers, the number of control customers, and the total number of observations used in the analysis;
- A description of the dates and hours used in the analysis if it is a subset of the total amount of data collected; and

- A description of the customers used in the analysis if it is a subset of the total number of treatment and control customers.

ADM will work with Avista staff to determine the final methods to be used to estimate the load impacts according to the various metrics. As a guide in determining the methods to be used, ADM will use the report prepared by LBNL/EPRI on Quantifying the Impacts of Time-Based Rates, Enabling Technology, and Other Treatments in Consumer Behavior Studies: Protocols and Guidelines (July 2013).

ADM will work with personnel from Avista's Rates department to perform difference-of-means and difference-of-differences calculations on the hourly load data. These calculations will be performed such that results can be reported to the WUTC, per their requirements.

ADM will extend the descriptive statistics approach by estimating the parameters of a regression model of customer demand for electricity. The data for the regression analysis are in "panel" format, with time series (hourly) observations of electricity use pooled across cross-sectional observations (customers). ADM will use estimation procedures for the regression analysis that take account of both the time-series and the cross-sectional dimensions of the data.

For the bill impacts analysis, a two-phase regression modeling approach will be used. In the first phase of regression modeling, ADM will use the data for each site individually in single equation regression estimation. For the regression analyses, the dependent variable is average hourly demand (kW).

The analysis of the data for each individual customer provides a set of coefficients showing the responsiveness of customers' electricity use to changes in explanatory variables. Because there may be commonality in responsiveness among different groups of customers, a second level of regression analysis is undertaken to relate the responsiveness coefficients to household characteristics (e.g., house size, vintage). For example, it may be appropriate to conduct separate analyses, one for electric-heated homes and another for gas-heated homes.

ADM will apply standard statistical tests and regression diagnostics to evaluate the performance of the regression modeling and to screen models for implausible results. ADM will use the results from the model providing the best "fit" in the analysis of electricity savings.

#### 6.5.4 Arrears

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ADM will also include a customer arrears analysis. ADM plans to aggregate data on customer bills, disconnects and arrearages, customer utility transactions, low-income and energy savings program enrollment, customer demographics, and address whether the Pilots impact electric service disconnections, and if so, to what extent. ADM will then compare the amount of arrears between pilot participation groups to determine if participation in the program impacted the customer's propensity to lead to a disconnect.

#### 6.5.5 Customer Surveys

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ADM also anticipates conducting a survey effort to collect customer survey responses in terms of demographics, behaviors, and satisfaction. ADM anticipates that there is a plan for the following survey efforts:

- Customer pre-pilot survey

- Customer post-pilot survey

Assuming a survey will be deployed newly enrolled Pilot participants, ADM will conduct the follow up survey for these same participants after a full year of Pilot deployment to enable evaluators to compare pre- and post-Pilot deployment survey responses.

ADM will survey customer participants in order to gauge the impact of Pilot participation towards customer energy usage behaviors in response to pricing. Survey questions may include, but not be limited to:

- How participants plan to change their energy usage habits to reduce their energy costs
- Customer feedback on actions taken during the Pilot to reduce energy usage
- Identification of barriers that prevent participants to change the energy usage habits
- Other questions identified by either Avista or ADM during the term of the Pilots

This effort will help Avista and implementors separate and characterize and quantify bill impacts for low-income households and retired households.

The pilot will be open to a maximum of 500 residential customers on an opt-in basis. ADM will develop a sampling plan that aims to achieve a sampling precision of  $\pm 10\%$  with 90% statistical confidence – or “90/10 precision” – for households participating in the TOU Pilot during survey-based data collection efforts. With a population size of 500, a sample size of 70 total survey completions will meet the 90/10 precision requirements for the TOU Pilot.

ADM anticipates conducting surveys as telephone, web, paper mail or mixed-phone/web/paper mail surveys. Survey efforts may require physical mail surveys to ensure representativeness. The selected sample participants will be offered a \$20 gift card incentive to participate in and complete the demographics and satisfaction survey.

The survey will address the following topics:

- What are customers’ motivations for participating in the program (i.e., decrease monthly energy bill, decrease energy usage)
- What are customers’ current behaviors towards energy conservation?
- Are customers’ energy use schedules flexible? (i.e., retirees schedules tend to be less flexible than the working class)
- How familiar are customers with their new TOU rate?
- Are customers receiving educational materials based on actions to help respond appropriately to the TOU rates?
- What are customers’ current behaviors/actions undertaken due to messaging from the program?
- Is there other information that customers would find more beneficial to receive in messaging?
- Did customers feel they saved a meaningful amount on their bills?
- What is the satisfaction among customers for participation in the program?
- What is the satisfaction among customers of Avista as a utility provider?
- Do customers have electric vehicles (EVs) and EV charging stations installed in their household?

- What are the pilot customers' demographics? (e.g., household income, occupancy, heating/cooling type)

ADM will employ the use of our in-house call center, which is dedicated solely to energy efficiency-related efforts and comprised fully of full-time ADM staff. This allows maximum transparency of evaluation management and data collection efforts.

The goal of the Pilot participant customer survey responses for the questions listed above is to identify whether there are differences in demand reduction potential across customer groups. Therefore, ADM will use the participant responses to conduct additional bill impact analysis by subgroup.

In the case that low-income customers do not benefit from the TOU pilot, this information will help identify the need for a rate subsidy for low-income customers. This information will be useful to Avista and Avista stakeholders on how to proceed with implementation of the TOU rates.

#### 6.5.6 Program Recommendations

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Per the RFP, at the conclusion of the 2025 Program year, ADM will assist Avista in recommendations for Time of Use (TOU)/ Peak Time Rebate (PTR) program design/modifications in anticipation of full program rollout for the 2026-2027 biennium.

ADM anticipates the program recommendations will allude to the following topics:

- Recommendations for revisions or additions to evaluation plan
- Recommendations for customer survey plan and implementation
- Recommendations for customer eligibility requirements, and recruitment targets
- Recommendations for customer incentive and reimbursement

ADM further details each of the above items in the subsection below.

#### 6.5.7 Program Evaluation Plan

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ADM shall provide recommendations for edits or additions to the existing pilot evaluation plan, if necessary, with the goal of estimating the load impacts for the Pilot participants through statistical analysis of the hourly usage data for both the TOU and PTR Pilots. ADM will review plans to ensure that these methods can be used year after year to conduct a comparison of pilot improvements, successes, and learnings. Load metrics to be quantified include peak, off-peak, mid-day discount, average daily conservation impacts, and estimated load shift, by season. ADM anticipates a sufficient plan must:

- Capture data sources, data collection, tracking and storing, Avista tasks and responsibilities and the tasks for third-party service providers
- Ensure all metrics from the M&R Plans are included, as well as how they will be measured from the data.
- Include a schedule of all EM&V activities.
- Include a customer arrears analysis. The EM&V Plan will include efforts to gather data on customer bills, disconnects and arrearages, customer utility transactions, low-income and energy savings program enrollment, customer demographics, and address whether the Pilots impact electric service disconnections, and if so, to what extent.

- Include a method to assess the Pilots' impacts on participant program choices, payment behavior, and energy use.
- Include a method to assess the Pilots' impacts on access to essential services.

#### 6.5.8 Customer Survey Plan & Implementation

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ADM will also recommend adjustments to Avista's pilot survey plan and instruments, as well as the implementation schedule. ADM will make recommendations to maximize survey responses, such as the timing of survey deployment, the incentive amount provided to customers for completing the survey, and the method in which the surveys are conducted (online, mixed mode, etc.) to ensure the best success for survey responses.

#### 6.5.9 Customer Eligibility & Recruitment Targets

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ADM shall help ADM develop a final list of customer eligibility requirements, utilizing industry best practices. ADM will consider the following:

- Customer home type: single-family, manufactured home, multifamily, etc.
- Multi-premise customers: allowing more than one premise to participate if customer has multiple homes or businesses on their account.
- Customers secondary residences: vacation properties, auxiliary dwelling units, residential units used for business.
- Landlords
- Customers with on-site generation: solar, net metering, batteries.
- In addition, ADM shall use insights from Milestone 1 to guide recruitment strategy for behaviors observed among Avista residential and nonresidential customers, including analyzing AMI data to determine which customers have the highest potential to offset their peak time energy usage.

ADM shall develop, with input from Avista, a recruitment strategy, utilizing industry best practices, to develop a recruitment strategy to meet the designed participation limits of each Pilot Program while supporting accepted statistically valid design principals, including:

- Determining participants that will be most successful. (As used in this context, "successful" is defined as a participant whose bill does not increase because of their participation in the TOU Pilot.)
- Determining participants that have the potential to shift loads for positive bill impacts.

#### 6.5.10 Customer Reimbursement Strategy

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ADM will analyze the extent to which a customer required reimbursement in the pilot evaluation period. ADM will accomplish this by calculating a monthly comparison between the participant's monthly bill under the TOU Pilot ("TOU Bill") versus what participant's monthly bill would have been absent their participation ("Standard Bill"). The participant will receive a reimbursement at the end of the first year if their total annual TOU Bill is greater than their total Standard Bill.

ADM will also assist Avista with a recommended schedule for deploying reimbursement payments to customers and the messaging involved in the reimbursement notifications.

#### 6.5.11 Timing and Cadence

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This program is considered “high risk” because it is a new pilot, and therefore will be evaluated each year in the 2024-2025 evaluation period.

#### 6.5.12 Technical Comments

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ADM provides no technical comments for this program’s evaluation.

### 6.6 Pay for Performance Pilot

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The Pay for Performance Program is an incentive program that pays customers for actual energy savings at the meter. Energy savings can come from building retrofits and equipment upgrades, as well as from behavioral, operations and maintenance, and retro-commissioning activities.

The Pay for Performance Program pays annual incentives for all electricity/natural gas saved, rather than separate incentives for individual measures. Qualifying customers who implement whole-building energy retrofits will receive a set incentive rate for measurable savings that are achieved over the course of three years, with incentive payments made at the end of each year. Incentives are paid at \$0.08 per kWh and \$1.25 per therm.

This program is available for any Avista commercial customer who owns or operates buildings with at least 20,000 square feet of heated or cooled space and has consistent and measurable energy usage. Each building must have stable energy use over the past year and be metered separately, preferably with interval meters. To be eligible for this program, savings from planned improvements must be at least 10 percent of the building’s baseline kWh or therm consumption. Manufacturing/industrial processes are excluded under this program but may be eligible under the site-specific path. Customers submit a completed rebate form, and Avista establishes a usage baseline, approves the projects, and sends a contract for the project. After improvements are implemented, savings are measured against the baseline, and payments are made annually for three years if savings are met.

#### 6.6.1 Sampling and Precision

---

Depending upon participation levels, ADM may choose to analyze a census of projects. If participation exceeds approximately 10 projects, ADM will select a representative sample of projects to analyze and extrapolate pilot-level results from. For this, simple random sampling is not an effective sampling methodology as the CV values observed in business programs are typically very high because the distributions of savings are generally positively skewed. Often, a relatively small number of projects account for a high percentage of the estimated savings for the program.

To address this situation, we will use a sample design for selecting projects for the M&V sample that takes such skewness into account. With this approach, we select a number of sites with large savings for the sample with certainty and take a random sample of the remaining sites. To further improve the precision, non-certainty sites are selected for the sample through systematic random sampling. That is, a random sample of sites remaining after the certainty sites have been selected is selected by ordering

them according to the magnitude of their savings and using systematic random sampling. Sampling systematically from a list that is ordered according to the magnitude of savings ensures that any sample selected will have some units with high savings, some with moderate savings, and some with low savings. Samples cannot result that have concentrations of sites with atypically high savings or atypically low savings. We will establish sample sizes to safely exceed  $\pm 10\%$  precision at 90% confidence (90/10 confidence precision).

### 6.6.2 Data Required

---

ADM requires the following data to complete the analysis for this program:

- Program tracking data, including customer identifiers, address, and date of measure install
- Filled rebate application forms and applicable invoices
- Individual project files and supporting documentation for sampled projects including:
  - a. Facility square footage, facility occupancy, detailed information on facility type, schedule of operations, list of dates in which facility was shut down or closed, information on efficiency measures installed
  - b. Changes in facility or building operations or production unrelated to program, but affecting energy consumption
- Facility billing data from two years prior to project installation through the time the data request is sent (typically 3 months to one year of post data)
- A list of all other energy savings measures installed at the facility which are not part of the Pay for Performance pathway.

### 6.6.3 Impact Analysis

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The goals and methods of the Pay for Performance Pilot aligns with a custom or retrocommissioning program. Therefore, ADM proposes to evaluate energy savings for this program that aligns with the methodologies presented in the UMP chapter for RCx. This involves analyzing whole-facility energy consumption data for each facility to estimate observed savings through retrofitting projects. By evaluating energy consumption data on a facility-level, completed by comparing building energy usage before retrofitting with building energy usage after retrofitting, the evaluators are able to measure all individual equipment retrofit savings as well as capture all interactive effects resulting from a combination of measures being installed in a single facility. In addition, this method avoids costly monitoring efforts for a large volume and variety of equipment within a single facility.

ADM proposes to utilize the following impact evaluation methodology to estimate verified net energy savings in the Pay for Performance Pilot:

- Facility-level Regression Analysis (IPMVP Option C)

ADM proposes to measure verified net savings by conducting a billing analysis which compares each facility's pre-retrofit meter consumption to the same facility's post-retrofit meter consumption. The methodology used for linear regression analysis are summarized in further detail in the "Facility-Level Regression Analysis (IPMVP Option C)" section. This analysis is a whole building analysis. Therefore, any retrofitting projects, along with non-retrofitting projects, that affect building energy consumption, will be included in this analysis. ADM proposes this analysis because it is an accurate method to quantify

observed savings at the facility level and includes interactive effects of multiple energy efficiency measures. ADM will focus analysis efforts for the building's meters which comprise the retrofitted areas of the building.

For projects whose savings cannot be measured through billing analysis, a separate IPMVP option or options will be selected. See section 5.2.5 for details.

For facilities who have opted to install energy savings measures outside of the Pay for Performance Pilot pathway, ADM will conduct separate analyses of these measures using the appropriate IPMVP option and deduct these savings from the Pay for Performance project billing analyses.

ADM will summarize program-level savings by summing verified net energy savings for all projects in the program, separated and reported by state and fuel type.

#### 6.6.4 Timing and Cadence

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This program is considered "high risk" because it is a new pilot, and therefore will be evaluated each year in the 2024-2025 evaluation period.

#### 6.6.5 Technical Comments

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ADM provides no technical comments for this program's evaluation.

## 7. ADM Schedule and Management Plan

This section presents information on the ADM evaluation team’s proposed schedule and management plan. Table 7-1 presents our preliminary schedule for the impact and process evaluation efforts. During project initiation, ADM will work with Avista to develop and revise the schedule as needed. This schedule is proposed for the 2024 program year for the Washington Electric, Washington Natural Gas, Idaho Electric, and Idaho Natural Gas Evaluation Reports. A similar timeline will be developed for 2025 that meets 2025 program evaluation deadlines and 2025-specific deliverables set forth in the RFP. This will give ample time for meeting deliverables set forth in the RFP.

*Table 7-1: Proposed Schedule*

Activity	Time Period
Kickoff Meeting	One week subsequent to contract award
ADM submits draft 2024 impact and process EM&V Plan	Kick-off meeting + 4 weeks
ADM submits final 2024 impact and process EM&V Plan	Kick-off meeting + 6 weeks
ADM submits impact and process data request for Q1/Q2	Thursday, June 13, 2024
Avista fulfills impact and process data request for Q1/Q2	Thursday, June 27, 2024
ADM finalizes sampling plan for Q1/Q2	Thursday, July 4, 2024
ADM submits impact and process staff and trade ally interview guides for Q1/Q2	Thursday August 29, 2024
ADM submits impact and process participant survey instruments for Q1/Q2	Thursday August 29, 2024
ADM conducts impact and process survey data collection for Q1/Q2	Thursday August 29 - Monday October 28, 2024
ADM conducts preliminary impact desk reviews for Q1/Q2	Thursday August 29 - Monday October 28, 2024
ADM submits impact and process data request for full program year	Thursday, January 2, 2025
Avista fulfills impact and process data request for full program year	Monday, January 13, 2025
ADM adjusts impact and process sampling plan for full program year	Friday, January 17, 2025
ADM conducts impact and process survey data collection for full program year	Friday, January 17 - Friday, February 21, 2025
ADM conducts final impact desk reviews and billing analyses for full program year	Friday, January 17 - Monday, February 24, 2025
Perform cost-effectiveness analysis	Thursday, February 20 - Monday, February 24, 2025
Submit draft version of 2024 WA Electric & Natural Gas Impact Evaluation, 2024 WA Cost Effectiveness Analysis (Electric and Natural Gas)	Friday, February 28, 2025
Submit final version of 2024 WA Electric & Natural Gas Impact Evaluation, 2024 WA Cost Effectiveness Analysis (Electric and Natural Gas)	Saturday, March 15, 2025
Submit draft version of 2024 ID Electric & Natural Gas Impact Evaluation	Saturday, March 15, 2025

Activity	Time Period
Submit final version of 2024 ID Electric & Natural Gas Impact Evaluation	Tuesday, April 15, 2025
Submit draft version of 2025 WA Electric & Natural Gas Impact Evaluation, 2025 WA Cost Effectiveness Analysis (Electric and Natural Gas)	Saturday, February 28, 2026
Submit final version of 2025 WA Electric & Natural Gas Impact Evaluation, 2025 WA Cost Effectiveness Analysis (Electric and Natural Gas)	Sunday, March 15, 2026
Submit draft version of 2025 ID Electric & Natural Gas Impact Evaluation	Sunday, March 15, 2026
Submit draft version of 2025 WA & ID Process Evaluation	Sunday, March 15, 2026
Submit final version of 2025 ID Electric & Natural Gas Impact Evaluation	Wednesday, April 15, 2026
Submit final version of 2025 WA & ID Process Evaluation	Wednesday, April 15, 2026

ADM details the following proposed schedule for the TOU and PTR impact evaluation and recommendation deliverables.

*Table 7-2: Proposed TOU/PTR Schedule*

Activity	Time Period
ADM submits request for TOU & PTR billing data	Monday, June 2, 2025
ADM submits draft results of TOU & PTR impact analysis	Monday, September 22, 2025
ADM submits final results of TOU & PTR impact analysis	Wednesday, October 1, 2025
ADM submits draft PTR/TOU Full Program Design Recommendations	Sunday, March 15, 2026
ADM submits final PTR/TOU Full Program Design Recommendations	Wednesday, April 15, 2026

In addition to the above schedule, ADM commits to meeting and participating with advisory groups, subcommittees, and others as needed, in addition to presenting annual results at Avista’s convenience.

## 7.1 Team Members

ADM proposes an efficient organization for this project. The Project Manager, Melissa Kosla, will serve as a primary point of contact with Avista and will have overall responsibility for management of project activities. She will be responsible for ensuring the work is completed in a timely fashion and within budget.

The Project Manager will be supported by evaluation leads in planning and implementing all project tasks. We will have separate evaluation leads for the residential sector impact evaluation (Chris Johnson); the nonresidential sector impact evaluation (Zephaniah Davis); and the process evaluations of both sectors (Nathaniel Albers). The evaluation leads will directly supervise the planning and execution of data collection and analysis for their respective parts of the evaluation. Each impact lead will coordinate with the process evaluation lead in the development and programming of survey instruments and coordination with the call center. Zephaniah Davis also will serve as Deputy Project Manager and will be able to step in and carry out all project management activities (under the PIC’s supervision), if needed, in the Project Manager’s absence.

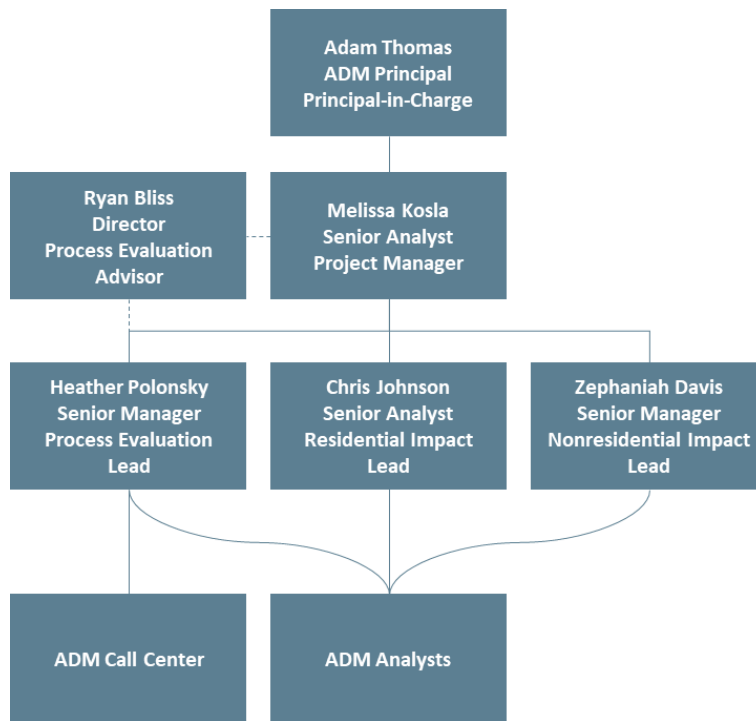
ADM has a deep reserve of analysts and data scientists capable of staffing this project. All have extensive experience in data analysis and survey programming. We have included resumes for several of these, all of whom are either located in Oregon or have done significant work in the Pacific Northwest.

To effectively manage the study and meet Avista’s research needs, the Project Manager will report to Principal-in-Charge, Adam Thomas. Adam is a Principal at ADM. In this role, he regularly reviews the status of the technical work with the Project Manager and works with him so that potential problems can be identified and avoided. He also works with the Project Manager to solve problems when they do arise and to ensure that the required administrative and technical support is being supplied. On the contractual side, Mr. Thomas ensures that contract costs are managed and that we provide the personnel and equipment needed to successfully conduct the project.

In addition, Ryan Bliss, an ADM Director with more than 37 years’ social science research experience, including 14 years’ experience in energy efficiency process evaluation research, will provide high-level advice and supervision of process evaluation activities.

ADM is accurate, thorough, and efficient in our evaluation work. ADM staff have deep expertise, e.g., Adam Thomas has conducted similar consulting activities for utility clients for 15-plus years, Heather has led survey development and deployment activities for dozens of clients per year, and Melissa Kosla and Chris Johnson have a combined 15-plus years of conducting technical billing analyses related to their roles in this evaluation project. Zephaniah Davis is a subject matter expert in nonresidential sector impact evaluation and has over 10 years of experience evaluating complex projects. The experienced, talented, motivated ADM team has all the skills to achieve a rigorous evaluation expertly and efficiently within this scope of work. Figure 7-1 shows our project organization.

Figure 7-1: Project Organization



## ■ Appendix B – Cost-Effectiveness Methodology

The cost-effectiveness evaluation of Avista's energy efficiency programs has been standardized to a significant degree in order to provide for greater transparency and understanding of the metrics. Avista has brought these standardized<sup>8</sup> approaches into the evaluation of the cost-effectiveness of its portfolio through a series of specific interpretations, approaches, and policies. The summarization of these key guidelines provides a greater insight into the evaluation and how to interpret the results.

The cost-effectiveness of energy efficiency programs can be viewed from a variety of perspectives, each of which leads to a specific standardized cost-effectiveness test. The list below outlines and describes the various perspectives.

1. **Total Resource Cost (TRC):** The perspective of the entire customer class of a particular utility. This includes not only what they individually and directly pay for efficiency (through the incremental cost associated with higher efficiency options) but also the utility costs that they will indirectly bear through their utility bill. When looking at the full customer population, incentives are considered to be a transfer between ratepayers and not 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 (incentive and non-incentive cost) of delivering the utility program. This is the UCT, also known as the program administrator cost (PAC) test.
3. **Participant Cost Test (PCT):** A participating customer's view of cost-effectiveness is focused upon reduced energy cost (at the customer's retail rate). Avista also includes the value of any non-energy benefits that they may receive. Incentives received by the customer offset the incremental cost 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 their own circumstances and voluntarily participate 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 rate. 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), the non-participant rarely benefits. This is the RIM, also known as the non-participant test.

Although Avista historically used the UCT as the primary cost effectiveness test for natural gas efficiency programs, the company transitioned to a modified TRC test, consistent with the council, as its primary cost-effectiveness test in 2024. Since 2024, Avista has relied on the

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<sup>8</sup>) California Standard Practice Manual: Economic Analysis of Demand Side Program and Projects

modified TRC as its primary cost-effectiveness test for evaluating existing and potential measures and programs, as well as when evaluating cost-effectiveness at the portfolio level. The modified TRC test includes all quantifiable non-energy impacts, a risk adder, and a 10 percent conservation benefit adder. All cost-effectiveness calculations assume a net-to-gross ratio of 1.0, consistent with the council’s methodology.

The following table summarizes Avista’s approach to calculating the four basic cost-effectiveness tests. The categorization and nomenclature provide clarity regarding each cost and benefit component. In addition to TRC and UCT cost tests, Avista also tracks the PCT and the RIM test for its natural gas program portfolio. The two latter tests provide insights into cost impacts for program participants as well as for ratepayers, which are important considerations for Avista’s program designs and evaluations. Please note that some of the values within the table below represent negative values.

**SUMMARIZATION OF STANDARD PRACTICE TEST BENEFITS AND COSTS**

	TRC	UCT	PCT	RIM
<b>Benefit Components</b>				
Avoided Cost of Utility Energy	\$	\$		\$
Value of Non-Utility Energy Savings	\$		\$	
Non-Energy Impacts	\$		\$	
Reduced Retail Cost of Energy			\$	
<b>Cost Components</b>				
Customer Incremental Cost	\$		\$	
Utility Incentive Cost		\$	(\$)	\$
Utility Non-Incentive Cost	\$	\$		\$
Imported Funds (tax credits, federal funding, etc)	(\$)		(\$)	
Reduced Retail Revenues				\$

A summary of some of the approaches by which Avista measures these values and how they are applied within Avista’s evaluation of cost-effectiveness is contained below.

**Avoided cost of utility energy:** The avoided cost of electricity and natural gas is based on the results of the most recent *Integrated Resource Plan (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 (T&D) 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 and T&D. 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.

The avoided cost of the natural gas *IRP* produces an annual and winter avoided therm value 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 upon the fuel specific to the measure (e.g., interactive impacts upon electric consumption by electric programs) as well as 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 (NEI):** 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 but critical audience. Avista sources its NEIs from regional and national studies, and NEI values are applied with adjustment factors for the company's service territory. NEI values currently range from \$0.08-\$0.00002/kWh.

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 the company 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 the participating customer's 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 feasible, 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:** These costs consist of all utility costs that are outside of the previously defined incentive costs. It 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 includes the value of imported funds (generally tax credits or governmental co-funding of programs) to be a reduction in the customer 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 purpose 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 for 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 purposes 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. Consequently, measures are generally expected to pass cost-effectiveness requirements barring justifiable exceptions. 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.

**Program:** Programs consist of one or more related measures. The relation among the measures may be based on technology (e.g., an 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 CAAs 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 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 the company’s ability to expand or contract the portfolio to meet the acquisition target. 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)
- Cost to perform conservation potential assessment studies (CPA)
- Evaluation, Measurement, and Verification engagements (EM&V)
- Funding of low-income educational outreach programs in Idaho
- 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. The company plan will create an annual locked Unit Energy Savings (UES) associated with the *Technical Reference Manual (TRM)* that will be updated on an annual basis. The savings will primarily be derived from the Regional Technical Forum (RTF) or previous impact evaluations.

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

### **Analytical Methodology Applicable to Low-Income Programs**

Avista has developed several analytical methodologies specific to the evaluation needs of the low-income portfolio. These include the (1) accommodation of incentive levels equal to the entire cost of the measure, including the cost of the baseline measure, and (2) 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 funds the full installed cost of an end-use service. For low-income programs delivered with Avista funding in partnership with CAAs, the participating customer may receive full funding of the end-use service. 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. The company 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 upon 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 CAA 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 upon them through CAA funds.

As a consequence of these two assumptions, the low-income portfolio accrues considerable

non-energy benefits.

The administrative reimbursement permitted to the CAA is considered to be a component of the measure cost. This amount reimburses the CAA for back-office costs that would, in a typical trade ally bid, be incorporated into the project invoice. For 2026, the admin reimbursement is 30 percent of the total allocated amount per agency.

## ■ Appendix C – Natural Gas Program Summary

Program	Therm Savings	NEI	Estimated Budget
<b>Low-Income Programs</b>			
Low-Income Programs	14,879	\$755,241	\$2,862,365
<b>Low-Income Programs Total</b>	<b>14,879</b>	<b>\$755,241</b>	<b>\$2,862,365</b>
<b>Residential Programs</b>			
Appliances	995	\$-	\$9,650
ENERGY Star Homes	-	\$-	\$-
Home Energy Reports	287,551	\$-	\$-
Home Insulation Program	34,264	\$6,589	\$1,119,318
Residential Midstream	200,138	\$75,578	\$1,529,875
Residential Windows	16,589	\$3,190	\$279,136
<b>Residential Programs Total</b>	<b>539,537</b>	<b>\$85,357</b>	<b>\$2,937,979</b>
<b>Commercial/Industrial Programs</b>			
Commercial/Industrial Midstream	29,859	\$762,226	\$188,816
Commercial/Industrial Shell	51,104	\$-	\$177,275
Site Specific	29,915	\$-	\$104,701
<b>Commercial/Industrial Programs Total</b>	<b>110,877</b>	<b>\$762,226</b>	<b>\$470,792</b>
<b>Other Program and Administrative</b>			
NEEA	6,600	\$-	\$551,691
CPA, EM&V	-	\$-	\$78,322
Third Party Implementation	-	\$-	\$1,134,913
Labor, Marketing, General Implementation	-	\$-	\$458,442
Outreach	-	\$-	\$14,000
Pilot Programs	-	\$-	\$421,988
<b>Total Other Program and Administrative</b>	<b>6,600</b>	<b>\$-</b>	<b>\$2,659,356</b>
<b>Total Natural Gas Budget</b>	<b>671,892</b>	<b>\$1,602,824</b>	<b>\$8,930,492</b>