BEFORE THE

IDAHO PUBLIC UTILITIES COMMISSION

CASE NO. IPC-E-23-10

IDAHO POWER COMPANY

DRAKE, DI
TESTIMONY

EXHIBIT NO. 4

Evaluation of NEEA Impacts Allocated to Idaho Power Company and Avista Utilities Within the State of Idaho

SUBMITTED TO: IDAHO POWER COMPANY & AVISTA UTILITIES

SUBMITTED ON: APRIL 6, 2023

SUBMITTED BY: ADM ASSOCIATES, INC.

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Exhibit No. 4
Case No. IPC-E-23-10
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1 Executive Summary

This report is a summary of the evaluation, measurement, and verification (EM&V) effort of the Northwest Energy Efficiency Alliance (NEEA) activities and energy impact estimates as it relates to savings allocated to Idaho Power Company (IPC) and Avista Utilities (Avista) within the state of Idaho for the program years 2017-2021. The evaluation was administered by ADM Associates, Inc (herein referred to as the "Evaluators").

The Evaluators collected data for the evaluation through review of NEEA codes and standards methodology documents, NEEA cost-effectiveness methodology documents, previously completed NEEA measure evaluations, application of prescriptive unit energy savings (UES), annual savings reports, and collection of historical funding invoices. The Evaluators estimated the energy impacts of the energy efficiency measures and codes and standards updates through application of Regional Technical Forum (RTF) prescriptive savings, International Energy Conservation Code (IECC) simulation models, and data documented from field studies. Table 1-1 through Table 1-3 summarizes NEEA's ex-ante electric savings (aMW) for the past 5 years (2017 through 2021) for Idaho Power Company electric savings in the state of Idaho, Avista electric savings in the state of Idaho, Avista gas savings in the state of Idaho, respectively.

Table 1-1 Summary of Idaho Power ID Verified Electric Savings

Year	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
2017	2.65	1.72	64.75%
2018	2.77	1.04	37.65%
2019	1.99	2.43	122.00%
2020	1.91	2.72	142.28%
2021	1.82	1.71	93.51%
Total	**11.15**	**9.61**	**86.23%**

Table 1-2 Summary of Avista ID Verified Electric Savings

Year	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
2017	0.60	0.31	51.19%
2018	0.57	0.36	63.33%
2019	0.43	0.50	115.22%
2020	0.41	0.48	118.44%
2021	0.39	0.40	103.32%
Total	**2.41**	**2.06**	**85.41%**

Table 1-3 Summary of Avista ID Verified Gas Savings

Year	Ex Ante Therms Savings	Ex Post Therms Savings	Realization Rate
2019	43,745	22,808	52.14%
2020	5,678	385	6.79%

Year	Ex Ante Therms Savings	Ex Post Therms Savings	Realization Rate
2021	152,881	152,881	100.00%
Total	**202,304**	**176,074**	**87.03%**

During this evaluation work, the Evaluators compared service territory share to funder share allocation. The Evaluators ultimately used service territory allocation methodology to estimate total verified savings and cost-effectiveness of efforts benefitting Idaho customers within Avista's and Idaho Power's service territories, as seen in the tables above. The tables present the average megawatt hours (aMW) and Therms verified to claim within the state of Idaho for each utility. The Evaluators estimated verified savings by multiplying verified net market units, verified UES, and verified savings allocation share.

The Evaluators concluded that the savings estimates for the 2017 through 2021 program years verified to be allocated to Idaho Power electric is 9.61 aMW at 86.23% realization rate. The verified Idaho electric savings for Avista during this period is 2.06 aMW at 85.41% realization rate. The verified Idaho gas savings for Avista during this period is 176,074 Therms at 87.03% realization rate.

The Evaluators also conducted cost-effectiveness testing for each measure, initiative, and program year. The Evaluators summarize the overall cost-effectiveness by program year. The Evaluators found that codes and standards efforts were cost effective for all program years, with cost-benefit ratios ranging between 8 to 49. The Evaluators believe that the cost effectiveness and the savings of the code efforts are currently overestimated, due to lack of estimation of NEEA influence over code updates. The Evaluators describe this caveat in detail under the Codes section of the report.

The Evaluators found that all efficiency measure efforts were not cost effective for all program years, with cost-benefit ratios ranging between 0 and 0.7. Therefore, Avista and Idaho Power funding towards NEEA remains cost effective due to codes and standards efforts. Further cost-effectiveness testing for each efficiency measure, standard, and code effort is further detailed in the results section below.

Table 1-4: Idaho Power Electric Idaho Overall Cost Effectiveness by Program Year

Program Year	UCT Costs[1]	UCT Benefits	UCT
2017	$2,532,792.41	$13,374,742.01	5.28
2018	$2,492,098.69	$9,900,643.72	3.97
2019	$2,491,376.81	$18,155,345.04	7.29
2020	$2,612,183.81	$20,639,160.48	7.90
2021	$2,762,562.35	$11,091,961.06	4.02
Total	**$12,891,014.08**	**$73,161,852.31**	**5.68**

[1] Due to carry over dollars between quarters and program years, the total annual funding amounts may not match with Idaho Power reported spend towards NEEA efforts.

Table 1-5: Avista Electric Idaho Overall Cost Effectiveness by Program Year

Program Year	UCT Costs[2]	UCT Benefits	UCT
2017	$576,173	$3,040,522	5.28
2018	$566,915	$4,279,882	7.55
2019	$510,076	$5,984,066	11.73
2020	$432,580	$5,237,060	12.11
2021	$480,617	$3,408,526	7.09
Total	**$2,566,361**	**$21,950,055**	**8.55**

Table 1-6: Avista Gas Idaho Overall Cost Effectiveness by Program Year

Program Year	UCT Costs[3]	UCT Benefits	UCT
2019	$154,261	$315,142	2.04
2020	$139,208	$6,048	0.04
2021	$157,375	$2,491,877	15.83
Total	**$450,844**	**$2,813,068**	**6.24**

As seen in the tables above, NEEA efforts by program year remained cost-effective using the Idaho Power and Avista avoided costs and updated verified Ex Post savings to demonstrate savings and cost-effectiveness in their respective Idaho service territories.

1.1 Evaluation Objectives

The Evaluators identified the following research objectives for the energy efficiency and codes and standards impact evaluations as it pertains to IPC and Avista within the state of Idaho:

1. Verify and validate the energy and demand (kWh, Therms) impacts attributable to NEEA activities taking the following into account:
    a. The savings calculation methodologies NEEA employs for claiming savings
    b. The allocation method of those savings to IPC And Avista
    c. The cost-effectiveness of those savings for IPC and Avista;
2. Interview NEEA, IPC, and Avista staff to understand the NEEA savings methodology, NEEA baseline creation for market transformation and energy saving impacts of NEEA efforts;

[2] Due to carry over dollars between quarters and program years, the total annual funding amounts may not match with Avista reported spend towards NEEA efforts.

[3] Due to carry over dollars between quarters and program years, the total annual funding amounts may not match with Avista reported spend towards NEEA efforts.

3. Report findings and observations. Make recommendations as applicable;
4. Review and comment on NEEA assumptions and methods for determining and calculating savings;
5. Review and verify the methodologies and claimed energy impacts that are attributable to IPC and Avista; and,
6. Complete reviews and verify calculations with 90/10 confidence and precision, where applicable
7. If applicable, propose alternate methods that would result in more accurately quantified and allocated savings.

This evaluation was requested from Idaho Power and Avista staff due to the Idaho Public Utilities Commission (IPUC or Commission) Order Number 35270 in case IPC-E-21-04 and Order Number 35129 in AVU-E-20-13/AVU-G-20-08. The Evaluators cite language from Order Number 35270 for which similar language was used in Order Number 35129:

> *"The Commission notes Staff's concern with NEEA claimed energy savings and directs the Company to conduct an independent EM&V to clarify the NEEA claimed savings. We agree it is concerning for NEEA to claim savings from electrical codes in jurisdictions outside of Idaho. We direct the Company to verify the accuracy of these claimed savings through an independent EM&V. If the savings from interjurisdictional codes and standards cannot be verified, then the method for claiming NEEA savings should be adjusted to remove non-Idaho electrical code savings. If NEEA is no longer cost-effective after an independent EM&V is conducted, the Company should reexamine its continued participation. (IPUC Order Nos. 35129 and 35270)*
>
> *To the extent possible, the Company may work with other Idaho regulated electric utilities that are conducting a similar EM&V to examine NEEA claimed savings." (IPUC Order No. 35270)*

1.2 NEEA Background

NEEA was established in 1997 by the energy efficiency community in Idaho, Oregon, Washington, and Montana. NEEA operates on the philosophy that the region can accomplish more energy savings than that of the sum of its individual organizations. The alliance works at a regional and national level to influence the supply chain and increase the market's ability to deliver energy efficiency at a larger scale.

NEEA claims savings for three types of programs:

1. Efficiency measures
2. Federal standards
3. Building codes

The methodology for calculating net market effects differs between each of the above program types. NEEA completes efforts for each of the above program types throughout the Northwest region to garner regional savings that benefit all utilities and customers throughout. This involves training and education for contractors, outreach, collaboration with large manufacturers and market actors, and maintaining an overall involvement in standards and codes updates to ensure maximum energy efficiency potential is reached.

NEEA plays a large and significant role in energy efficiency within the Northwest. Its contributions have amounted to large energy efficiency savings across the region. The goal of this evaluation work is to determine the energy efficiency benefits are benefitting Idaho customers directly. Although NEEA's work contributes to the entire region, how much of those savings are accrued within Idaho and how much of those savings affect the local Idaho grid?

The Evaluators' approached this project with those questions in mind as they verified energy efficiency savings attributable within the state of Idaho to each Avista and Idaho Power.

1.3 Data Provided

The Evaluators requested and received the following documentation from NEEA to facilitate this evaluation work:

- Allocation methodology documentation
- Cost effectiveness documentation
- 2017-2021 invoices for Avista electric, Avista gas, and Idaho Power electric
- 2017-2021 annual savings reports for Avista electric, Avista gas, and Idaho Power electric
- Idaho codes documentation, codes contracts completed, market progress evaluation reports, and logic models
- Consumer products, HVAC, water heating, next step homes, and federal standards UES methodology documentation
- Federal standards influence evaluation reports

1.4 Findings and Recommendations

The Evaluators offer the following findings and recommendations for the evaluation of NEEA efforts in Idaho.

1.4.1 Findings

- **Overall,** the Evaluators found that contribution to NEEA efforts for standards, and codes remained cost-effective across program years 2017 through 2021, with cost-benefit ratios ranging between 11.92 to 167.66, with the exception of one codes program in Avista Gas. However, the Evaluators found that all efficiency measure efforts were not cost effective for all program years, with cost-benefit ratios ranging between 0.0 and 0.7. Using the service territory methodology, measures and codes had overestimated savings accrued out-of-state and had underestimated savings accrued within Idaho. The Evaluators estimated savings using service territory allocation methodology, which led to realization rates for individual measures under 100% and over 100%; however, the overall effect of this change revealed NEEA efforts remained cost-effective for each Idaho Power electric, Avista electric, and Avista gas due to codes and standards savings.

General Findings

- **Finding #1:** Utilities that fund NEEA can choose whether savings are reported by allocation share methodology or service territory methodology. The allocation share methodology overrepresents out-of-state and out-of-service territory savings across measures, codes, and standards while simultaneously underrepresenting in-state and in-service-territory savings across measures, codes, and standards. However, the service territory methodology accurately represents benefits directed to Avista and Idaho Power customers within the state of Idaho.
- **Finding #2:** The data NEEA utilizes to estimate net market savings is available at resolutions that allow NEEA to estimate precise savings for each utility service territory.
- **Finding #3:** The Evaluators found that the methodology in which savings were estimated across measures were inconsistent. For some measures, service territory methodology was used, and for others, funder share allocation methodology was used.
- **Finding #4**: NEEA prioritizes cost-effective savings in terms of regional benefit. Therefore, savings and cost-effectiveness are distributed across the region evenly, despite observed distribution of savings across states. Although this philosophy has merit, more precise estimates of utility-level and program-level savings help NEEA's stakeholders relay relevant savings and cost-effectiveness results to their respective regulatory commissions. This remains critical, due to some state-level commission orders to pursue all cost-effective energy efficiency efforts.
- **Finding #5:** The interviews revealed that although the three parties fundamentally want to improve energy efficiency and increase market adoption of emerging technologies, their preferred approaches to this shared goal vary. Unlike the utilities, who strive to demonstrate the cost-effectiveness of their initiatives and investments on an annual or bi-annual cycle, NEEA operates on a five-year funding cycle, which is different than the typical annual or biannual utility planning cycle.
- **Finding #6:** NEEA's programs are designed with a broader constituency in mind than that of its member utilities. While the Idaho utilities' programs are targeted to produce benefits for their ratepayers, – NEEA is tasked with developing programs that need to consider what is best for the entire four-state region. At its core, NEEA's ethos assumes that changes made in one state will eventually spillover into another state and that in the long run, regional change will be realized.
- **Finding #7:** NEEA currently allocates code savings via funder share methodology, which estimates a proportion of total NEEA funding to each utility based on number of electric retail customers and overall load. Therefore, savings from code adoption in other states are in-part assigned to Idaho. The Evaluators found that out-of-state code building savings are currently being attributed to Idaho utilities. The Evaluators are skeptical that spillover from out-of-state code changes result in energy savings within the state of Idaho. Although the barriers to code adoption from one state to the next may be similar, there is no evidence to suggest that these learnings transfer to observable and measurable savings. NEEA has stated that starting in 2022, code savings will be allocated via service territory allocation.
- **Finding #8:**The NEEA Cost Effectiveness Advisory Committee (CEAC) meets quarterly with the NEEA objectives to provide space for discussion around results of recently completed

evaluation, progress of field studies, relevant updates to programs, and acceptance or questioning of NEEA methodology towards calculation of savings.

Efficiency Measure Findings

- **Finding #9:** The Evaluators estimated verified Ex Post aMW for the efficiency measures to display 39%, 52%, and 0% realization rates for Idaho Power electric, Avista electric, and Avista gas savings within the state of Idaho, respectively. The difference in claimed savings and verified savings is due to the change to using service territory allocation rather than funder share allocation. The efficiency measures category Ex Ante savings included savings for measures completed in Washington, Oregon, and Montana – therefore, for some measures, the funder share allocation methodology underestimated Idaho-specific savings while others overestimated out-of-state savings. The overall effect of this change resulted in a lower than 100% realization rate.
- **Finding #10:** The database review revealed that a variety of fields (measure life, UES) were empty across measure types due to lack of savings claimed for the measure, which made verification of values difficult and complicates tracking of a measure progress over time.
- **Finding #11:** The database review revealed that NEEA's current method for distribution of modeled naturally occurring baseline units between local program and NEEA efforts is not reasonable. A portion of energy efficient technology sales are due to naturally occurring baseline. NEEA nets out modeled naturally occurring baseline in order to avoid claiming savings for units that would have been sold had no program or NEEA-effort been provided within the market. However, the method in which these baseline units are netted out is not distributed equitably. For some measures, NEEA estimates that a large proportion of local program units are baseline, and therefore a larger proportion of the remaining net market effects is assigned to NEEA efforts. The Evaluators raise concern for this assumption, as it is unlikely locally incentivized, rebated measures display the same free ridership as non-incentivized measures in the region.
- **Finding #12:** The Evaluators reviewed the utilized UES via the Regional Technical Forum (RTF) workbooks, field study data, and simulation analysis findings and note no large concerns with NEEA UES methodology or market baseline assumptions.
- **Finding #13:** The Evaluators found that NEEA calculates cost-effectiveness of its portfolio using the total regional savings rather than the net market effects. The Evaluators determined that this methodology raises concern, and the NEEA cost-effectiveness tests currently account for all measure, standard, and code completions across the entire region, effectively double counting local program savings and simultaneously claiming naturally occurring baseline savings. Because Avista and Idaho Power calculate their own internal cost effectiveness tests, this finding does not impact Idaho Power or Avista reporting. However, the Evaluators highlight this finding, as NEEA savings allocation and cost allocation methods are not currently consistent with regulatory requirements.

Standards Findings

- **Finding #14:** The Evaluators estimated verified Ex Post aMW for the standards efforts to display 34% and 50% realization rates for Idaho Power electric and Avista electric within the state of Idaho, respectively. Avista gas did not claim any savings for standards. The difference between claimed savings and verified savings is due to the change to using service territory allocation rather than funder share allocation. A minor cause of discrepancy is due to corrected baseline units using influence evaluation values.
- **Finding #15:** NEEA contracts third-party evaluators to conduct "influence evaluations" for each standard, which summarizes NEEA's overall qualitative and quantitative influence towards federal standards updates. NEEA uses the quantitative assessment as an estimate of federal standards naturally occurring baseline. The Evaluators found that some of these influence scores were not integrated properly to estimate baseline units. The Evaluators also found more than half (13 of 25) federal standard measures lack influence evaluations.

Code Findings

- **Finding #16:** The Evaluators estimated verified Ex Post aMW for the code efforts to display 137%, 125%, and 87% realization rates for Idaho Power electric, Avista electric, and Avista gas savings within the state of Idaho, respectively. The difference between claimed savings and verified savings is due to the change to using service territory allocation rather than funder share allocation. Overall, the funder share allocation underestimated Idaho-specific code savings using the current NEEA policy of claiming 100% code after code is implemented.
- **Finding #17:** Currently, NEEA does not complete third-party evaluations of NEEA "influence" towards codes updates as is currently done for federal standards updates. Therefore, NEEA currently claims 100% savings for code-built homes. As summarized in the standards influence evaluations summarized in Table 3-35, NEEA influence towards standards ranges between 2.6% and 61%. If codes are evaluated similarly, and portray a similar range of influence, NEEA code savings could be significantly overrepresenting savings. NEEA's current policy is to report 100% of code-built residential and commercial building savings (while integrating compliance rates) for 10 years after the effective code update date. Currently, NEEA does not maintain a model to estimate naturally occurring baseline over time, as it does for its energy efficiency measures. Essentially, the current NEEA methodology assumes that there would be a 10-year lag in current residential and commercial building code if NEEA did not participate in code update efforts.
- **Finding #18:** The Evaluators reviewed simulation model methodology used by NEEA to estimate code savings and found that UES methodology for code savings do not present any concerns.

1.4.2 Recommendations

- **Recommendation #1:** The Evaluators recommend Avista and Idaho Power request NEEA to report annual savings via the service territory methodology for each measure claimed by NEEA for each Idaho Power electric, Avista electric, and Avista gas. (Based on Finding #1, #2, #3)

- **Recommendation #2:** The Evaluators recommend that Avista and Idaho Power request annual savings reports to include estimates of administrative costs, incentive costs, and non-incentive costs by service territory. This will allow each utility to calculate more accurate cost-effectiveness tests for each initiative to determine whether extension of funding is a viable option within each utility's regulatory environment. (Based on Finding #4)
- **Recommendation #3:** The Evaluators recommend that NEEA work with utilities to accurately produce service territory-level savings and to best serve each state's current regulatory environment and utility's localized concerns. (Based on Finding #5)
- **Recommendation #4:** The Evaluators recommend that NEEA track progress for each code change relative to administrative dollars spent towards state-level codes and associated energy savings accrued by each state-level code. With the 20-year market transformation in mind, the service-territory-level savings will still accrue over the 20-year horizon, however, using this methodology, actual market transformation effects of co-created savings will be more accurately tracked. (Based on Finding #6, #7)
- **Recommendation #5:** The Evaluators recommend that measure-level values are detailed as accurately as possible, and that each field is completed in the workbook to allow for year-over-year tracking of regional units, baseline units, retirement units, and unit energy savings values over time. (Based on Finding #10)
- **Recommendation #6** The Evaluators recommend that NEEA distribute naturally occurring baseline units more equitable between local program units and total regional units. (Based on Finding #11)
- **Recommendation #7**: In the case that cost effectiveness tests are completed using NEEA-reported savings, the Evaluators recommend that Avista and Idaho Power calculate cost-effectiveness using net market effects rather than total regional savings, as is consistent with current regulatory requirements to report gross savings that would not have occurred without program intervention. (Based on Finding #13)
- **Recommendation #8:** The Evaluators recommend that third-party evaluations are completed for the federal standards claimed by NEEA, as well as any federal standards in which NEEA hopes to claim savings for in the future. Using the quantitative estimate of NEEA influence, the Evaluators recommend that NEEA calculate a naturally occurring baseline for each standard. (Based on Finding #15)
- **Recommendation #9:** The Evaluators recommend an evaluation is completed for each code update to estimate NEEA's qualitative and quantitative influence towards the code update. (Based on Finding #17)

2 Impact Evaluation Approach

The primary objective of the impact evaluation was to determine ex-post verified net energy savings. This section describes the impact evaluation activities that performed for the evaluation of NEEA's net market savings impacts attributed to Idaho service territory as well as the partition of those Idaho

savings to IPC and Avista, respectively. The Evaluators summarize the general approach to validate the energy and demand impacts attributable to NEEA activities in relation to savings calculation methodologies for claiming energy savings, allocation of those savings to IPC and Avista, and cost-effectiveness of those savings for IPC and Avista.

The Evaluators used the following approaches to review and validate NEEA's energy savings assumptions associated with the efficiency measures, market transformation, and codes and standards efforts employed by NEEA. Each of these approaches are in accordance with the protocols defined by the International Performance Measurement and Verification Protocols (IPMVP) and the Uniform Methods Project (UMP). Table 2-1 summarizes the impact evaluation activities by initiative.

Table 2-1: Impact Evaluation Tasks by NEEA Activity

Initiative	Database Review	Document Verif.	Electric/Gas Impact Methodology
Efficiency measures	✓	✓	Deemed Savings / Engineering Algorithms
Codes and standards	✓	✓	

The M&V methodologies are activity-specific and determined by ex-ante methodology as well as relative contribution of a given activity to NEEA's overall energy efficiency impacts. The Evaluators reviewed 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 included the following:

- Northwest Power & Conservation Council Regional Technical Forum (RTF)
- Workpapers of previous NEEA measure savings estimate evaluations
- 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[4]
- International Performance Measurement and Verification Protocol (IPMVP) maintained by the Efficiency Valuation Organization (EVO) with sponsorship by the U.S. Department of Energy (DOE)[5]

All components of the data collection and analysis are available to stakeholders and will remain available through prudence review and investigation as required by the Idaho Public Utilities

[4] 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.

[5] Core Concepts: International Measurement and Verification Protocol. EVO 100000 – 1:2016, October 2016.

Commission subsequent to the evaluation period. Table 2-2 summarizes the measures, codes, and standards implemented by and claimed by NEEA between the 5-year period of 2017 through 2021.

Table 2-2: Summary of NEEA Initiatives

Sector	Initiative	Measure, Standard, or Code	Electric or Gas
Agriculture	Other Non-Residential Standards	Standard	Electric
Commercial	Building Operator Certification Expansion	Measure	Electric
	Commercial Code Enhancement	Code	Electric
	Commissioning Buildings	Measure	Electric
	Condensing Rooftop Units	Measure	Electric
	Desktop Power Supplies	Measure	Electric
	Efficient Rooftop Units	Measure	Gas
	Extended Motor Products	Measure	Electric
	Luminaire Level Lighting Controls	Measure	Electric
	Other Codes (Commercial)	Code	Electric/Gas
	Other Non-Residential Standards	Standard	Electric
	Other Strategic Energy Management	Measure	Electric
	Reduced Wattage Lamp Replacement	Measure	Electric
	Window Attachments	Measure	Electric
	XMP Pumps	Measure	Electric
Industrial	Certified Refrigeration Energy Specialist (CRES)	Measure	Electric
	Commissioning Buildings	Measure	Electric
	Drive Power	Measure	Electric
	Other Non-Residential Standards	Standard	Electric
	Other Strategic Energy Management	Measure	Electric
	Reduced Wattage Lamp Replacement	Measure	Electric
Residential	Ductless Heat Pumps	Measure	Electric
	Efficient Gas Water Heater	Measure	Gas
	Efficient Homes	Code	Electric
	Extended Motor Products	Measure	Electric
	Heat Pump Water Heaters	Measure	Electric
	Manufactured Homes	Measure	Electric
	Next Step Homes	Measure	Electric/Gas
	Other Codes (Multifamily)	Code	Electric
	Other Residential Standards	Standard	Electric
	Residential Lighting	Measure	Electric
	Residential New Construction	Code	Electric
	Residential New Construction/Next Step Homes	Measure	Electric/Gas
	Retail Product Portfolio	Measure	Electric
	Super-Efficient Dryers	Measure	Electric
	Televisions	Measure	Electric
	XMP Pumps	Measure	Electric

The Evaluators estimated savings for each of the initiatives listed in the table above by verifying total regional units, total local program units, total baseline units, and total retirement units are incorporated correctly, in addition to measure UES values. Once the net market units and UES values were verified, the Evaluators then verified that the most reasonable methods for allocating savings to the Idaho and utility service territory are incorporated to estimate savings for each Avista and IPC service territories.

2.1 Activity-Specific M&V

In this section, the Evaluators detail our evaluation activities to evaluate the following activities that result in energy impact savings from NEEA in Idaho:

- Efficiency Measures
- Standards
- Codes

2.1.1 Efficiency Measures

NEEA offers a variety of energy efficiency measures to residential and nonresidential customers in the Northwest region by working with manufacturers and retailers to lower barriers for customers to purchase and install energy efficiency measures. This effort allows NEEA the ability to identify opportunities to increase the overall efficiency of entire product categories, such as air conditioners, furnaces, and clothes washers and dryers. For the purpose of this report, we refer to the energy efficiency measures and the energy savings claimed through each of these measures in the ESRPP and measure initiatives as: “Efficiency Measures”.

One of the main objectives of this evaluation is to review and verify NEEA’s methodology for claiming energy and demand savings through the efficiency measures offered through various NEEA efforts. The Evaluators presents the following measure list for this activity in the table below.

Table 2-3: Summary of NEEA Efficiency Measures by Sector

Sector	Initiative
Commercial	Building Operator Certification Expansion
	Commissioning Buildings
	Condensing Rooftop Units
	Desktop Power Supplies
	Efficient Rooftop Units
	Extended Motor Products
	Luminaire Level Lighting Controls
	Other Strategic Energy Management
	Reduced Wattage Lamp Replacement
	Window Attachments
	XMP Pumps
Industrial	Certified Refrigeration Energy Specialist (CRES)
	Commissioning Buildings
	Drive Power
	Other Strategic Energy Management
	Reduced Wattage Lamp Replacement
Residential	Ductless Heat Pumps
	Efficient Gas Water Heater
	Extended Motor Products
	Heat Pump Water Heaters
	Manufactured Homes
	Next Step Homes
	Residential Lighting
	Residential New Construction/Next Step Homes
	Retail Product Portfolio
	Super-Efficient Dryers
	Televisions
	XMP Pumps

The Evaluators summarize the initiative-specific and measure-specific impact analysis activities and requirements for the Efficiency Measures in the section below.

2.1.2 Codes and Standards

NEEA has supported code activities in the Northwest states since its founding in 1997, principally by funding staff positions or organizations responsible for code adoption and education. NEEA's goals with these efforts are to encourage the adoption of more stringent residential and nonresidential energy codes and to improve energy code program adherence and effectiveness.

Energy codes function to lock into place energy efficiency measures that are commonly used within the building construction industry. This occurs by eliminating the option of having an efficiency less than that mandated by code for newly constructed buildings. This can effectively produce significant energy savings even when the code minimum is set at the market average efficiency by eliminating the option to install less-than-average efficient products still in the marketplace today.

One of the main objectives of this evaluation is to review NEEA's impact on adopted code and the associated claimed energy savings allocated by NEEA towards NEEA's energy codes and standards efforts, and furthermore, to verify the allocation of those estimated savings to each IPC and Avista.

Table 2-4: Summary of NEEA Codes & Standards Measures

Code/Standard	Initiative
Code	Commercial Code Enhancement
	Other Codes (Commercial)
	Efficient Homes
	Other Codes (Multifamily)
	Residential New Construction
Standard	Other Non-Residential Standards – Commercial
	Other Non-Residential Standards – Industrial
	Other Non-Residential Standards – Agricultural
	Other Residential Standards

The following sections detail the impact methods used for each of the codes and standards NEEA has implemented and in which NEEA claims energy efficiency savings.

2.2 Step 1: Database Review

Before conducting each impact analysis, the Evaluators conducted a database review for each of the measures. The Evaluators requested all available program tracking data from NEEA that pertains to the 2017 through 2021 program years and consolidated these datasets into one consistently formatted summary of NEEA's efforts and initiative impacts. This exists as a unified dataset with indicator variables for calendar year and for applicability to Avista, IPC, or both utilities.

This dataset was then reviewed thoroughly to identify and address any inconsistencies in formatting, data entry, formula entry, and functionality.

2.3 Step 2: Document-Based Verification

This section describes the Evaluator's general methodology for conducting document-based verification for NEEA's initiatives in which energy efficiency savings are achieved and quantified.

Documentation for this task will include documented measure specifications, UES workbooks, whitepapers, testing procedures, previous evaluations, logic models, and presentations that communicate details used to estimate Idaho-level savings for each measure. In the case that the Evaluators found any deviations between the sales data, model qualifications, UES values, engineering algorithms, or assumed input values, the Evaluators noted and summarize these differences in the aggregated workbooks.

2.4 Step 3: UES Review

To facilitate our review of savings calculations, the Evaluators reviewed and documented whether (1) NEEA's methodology used for the calculation was appropriate, (2) NEEA's assumptions used were reasonable and appropriate, and (3) NEEA's savings calculations were completed correctly. With these

findings, the Evaluators report observations as well as make recommendations to revise such methodologies.

The Evaluators employed the following approaches to complete impact evaluation activities for reviewing and evaluating NEEA estimated energy savings:

- Deemed Savings
- Engineering Algorithms

The Evaluators did not explore simulation model analysis or billing analysis, as reliable deemed savings estimates, field data, and technical reference manuals were readily available to verify savings estimates used in NEEA's analysis. In the following sections, we summarize the general guidelines and activities the Evaluators followed while conducting each of the above analyses.

2.5 Step 4: Market Transformation Baseline Review

One of the main objectives of this evaluation is to review and verify NEEA's methodology for baseline creation for NEEA's market transformation and energy savings impact efforts. The Evaluators interviewed NEEA staff to gain further context on the documentation, procedures, and assumptions used during baseline creation, and second, review such documentation and the application of the assumed values to each measure in which a market transformation baseline is created.

The Evaluators also reviewed, in detail, documentation, previous evaluations, and whitepapers, for each to gather more understanding of how NEEA calculates naturally occurring baseline for each of its measures, codes, and standards.

NEEA's product baselines represent the market share of qualified products that would exist at a given time in absence of NEEA's intervention in the market. NEEA develops baseline curves or forecasts to anticipate the proportions each qualified product market share will naturally occur long-term by employing available market data and assumptions.

2.6 Step 5: Staff Interviews

The Evaluators conducted thorough interviews with NEEA, IPC, and Avista staff to further understand the NEEA savings methodology for estimating measure and codes impact savings and the methodology and assumptions in creating the NEEA baseline for market transformation. As detailed below, the staff interviews addressed all the objectives identified in the RFP.

The following subsections present overviews of our approach to staff interviews, followed by information on how we identified and answered important research questions, how we approached data collection, and how we implemented these interviews.

Table 2-5 summarizes our data collection approaches for each initiative.

Table 2-5: Summary of Staff Interviews

Initiative	Staff / Implementers
Efficiency Measures	▪ 4 NEEA staff ▪ 2 IPC staff ▪ 2 Avista staff
Codes and Standards	

The Evaluators used the various information sources – program documentation review and staff interviews to provide convergent information to address the identified research questions. We made effective use of each source by identifying which sources will provide the most applicable information to each question, as shown in Table 2-6.

Table 2-6: Data Sources to Answer Research Questions

Process Evaluation Research Question	Documentation and Data	Staff
Are initiatives run per design and efficiently/effectively?	✓	✓
Is staffing/organization sufficient and appropriate?	✓	✓
What is the methodology for allocating co-created energy savings to Idaho Power Company, Avista, and other utilities in Idaho?	✓	✓
Are the methodologies employed for calculating and allocating savings documented and followed consistently across measures and initiatives?	✓	✓
What is the basis of the assumptions used in each the calculating and allocation of savings across measures and initiatives?	✓	✓
What is the methodology for NEEA's baseline creation for market transformation and energy savings impacts of NEEA's efforts?	✓	✓
Are the baseline creation methodologies followed consistently across initiatives and measures?	✓	✓
How has cost-effectiveness changed over the past years and why?	✓	✓
Are quality assurance procedures appropriate and effective?	✓	✓
Are management and implementation tools appropriate and effective?	✓	✓
Are program materials effective and complete?	✓	✓

2.7 Step 6: Cost-Effectiveness Testing

Finally, the Evaluators calculated each utility's cost-effectiveness, avoided energy costs, and implementation costs. We used our in-house-developed cost-effectiveness tool to provide cost-effectiveness assessments for the IPC and Avista Portfolios by NEEA energy savings activity. NEEA calculated cost effectiveness for the NEEA portfolio using avoided costs from the 7th Power Plan, a least-cost power plan for the Pacific Northwest created by the Northwest Power and Conservation Council and updated approximately every 6 to 7 years.

However, the Evaluators calculate cost-effectiveness assessments for this evaluation work using Idaho Power's and Avista's specific avoided cost relevant to each program year.

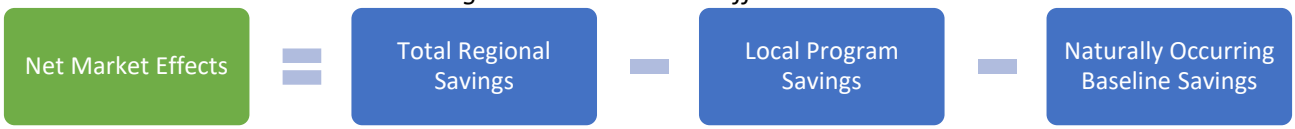
As Idaho utilizes the Utility Cost Test (UCT) to evaluate a program, the Evaluators determined the economic performance with UCT. This test assists with identifying avenues to improve cost-effectiveness, such as adjustments to measure incentive levels, administration spending, or adjustment to program offerings. Cost-effectiveness workbooks were built "ground-up", at the highest granularity level supported by the program data. The Evaluators calculated cost effectiveness at the measure-level, which was then aggregated to initiative- and portfolio-level values. This allows IPC and Avista to address individual NEEA offerings and potentially select lower-performing initiatives to consider for funding reductions or reallocations.

3 Evaluation Results

This section provides the results of the overall impact evaluation, as well as the results between efficiency measures and codes and standards measures. The Evaluators calculated the verified electric and natural gas savings estimated to reasonably claim as NEEA net market effects within the state of Idaho for each Avista and Idaho Power.

Net market effects are summarized by NEEA in the following figure:

Figure 3-1: Net Market Effects[6]



Market transformation is achieved through removing barriers from consumers, manufacturers, and the market so that consumers adopt these technologies at a faster pace than without these efforts. The following figure displays the philosophy behind NEEA's market transformation progress.

Figure 3-2: Illustration of Naturally Occurring Market Adoption Approach[7]

The Evaluators outline NEEA's general Ex Ante savings methodology steps as the following:

[6] NEEA Operational Guidelines for Estimating Electric Energy Savings, 2022.
[7] NEEA Operational Guidelines for Estimating Electric Energy Savings, 2022.

1. Total regional units are quantified using regional program and sales data
2. Local program units are quantified using local program data
3. Baseline units are quantified using market transformation baseline models
4. Retired units are quantified using market transformation baseline models
5. Net market units for the Pacific Northwest region are calculated using the above inputs
6. Net market units for the funding utility are allocated using service territory or funder share allocation methodology
7. Claimable net savings allocated to funding utilities are calculated by multiplying net market units by the measure-level UES

The Evaluators outline the above steps in each of the equations detailed below. Each equation input listed below were reviewed by the Evaluators to confirm that the estimates are reasonable for current use. The Evaluators also identify opportunities to improve estimates using currently available data.

NEEA calculates net market units to represent energy efficiency upgrades that would not have occurred without NEEA intervention in the Northwest. Net market units are calculated in a way that nets out upgrades completed due to local program intervention, upgrades completed due to naturally occurring baseline, and units estimated to retire. The net market units are calculated for each individual measure as follows:

Equation 3-1: Regional Net Market Units

$$Net\ Market\ Units_{Northwest\ Region} = Total\ Regional\ Units_{Northwest\ Region} - Local\ Program\ Units_{Northwest\ Region} - Baseline\ Units_{Northwest\ Region} - Retirement\ Units_{Northwest\ Region}$$

Where,

$Total\ Regional\ Units$ = The total number of measures installed within the northwest region (Idaho, Montana, Oregon, and Washington)

$Local\ Program\ Units$ = The total number of measures rebated by local programs, estimated using Energy Trust of Oregon, Bonneville Power Administration, and local utility program data

$Baseline\ Units$ = The estimated baseline units using the measure-level NEEA market transformation baseline models

$Retirement\ Units$ = The estimated retired units, also calculated using NEEA market transformation baseline models

In order to convert the net market units for the northwest region into net market units for the Idaho-specific region, an allocation method is utilized to allocate a portion of those savings to the Avista and Idaho Power utilities within the state of Idaho. The utilities are provided a choice as to whether savings are reported with one of the following two options:

- **Funder Share Allocation**: This methodology was developed by NEEA and allocates a percent share of total funding amounts to each utility. These values include inputs such as: total load growth forecasts, weighted retail customers by utility, weighted retail energy sales by utility,

and caps on funding share increases. Further details of this methodology are provided in Section 3.3.2.

- **Service Territory Allocation**: This methodology produces a percent share of total measure completes or new construction completes estimated to occur within the utility shareholder's utility. This value is aggregated using utility-provided data within the Northwest region, which provides resolution that allows NEEA to assign each project to a specific utility service territory. Further details of this methodology are provided in Section 3.3.1.

Further details of each allocation method are presented in Section 3.3. The following equation details how the service territory allocation value chosen above is incorporated to calculate the utility-specific net market units.

Equation 3-2: Service Territory Allocation of Savings

$$Net\ Market\ Units_{Utility\ Service\ Territory} = Net\ Market\ Units_{Northwest\ Region} * Service\ Territory\ Allocation_{Utility\ Territory}$$

The following equation details how the funder share territory allocation value chosen above is incorporated to calculate the utility-specific net market units.

Equation 3-3: Funder Share Allocation of Savings

$$Net\ Market\ Units_{Utility\ Service\ Territory} = Net\ Market\ Units_{Northwest\ Region} * Funder\ Share\ Allocation_{Utility\ Service\ Territory}$$

As depicted above, the Idaho-specific share of total Avista service territory net market units is estimated by multiplying against the estimated proportion of Idaho service territory within the Avista Utilities service territory. Further details are presented in Section 3.3.

Finally, the initiative-level savings are calculated by multiplying the net market units by the verified UES, by program year. NEEA references the Regional Technical Forum (RTF) UES for the majority of measures offered. The resulting equation is as follows:

Equation 3-4: Verified Ex-Post Idaho-Specific Savings

$$Verified\ Ex\ Post\ Savings = Net\ Market\ Units_{Utility\ Idaho\ Service\ Territory} * Verified\ UES$$

The verified Ex-Post savings are then divided by the NEEA Ex-Ante savings to calculate the resulting realization rate. The verified Ex-Post Idaho-specific savings and realization rate is calculated by initiative and sector for each individual year and 5-year period evaluated.

3.1 Ex Ante Savings

In this section, the Evaluators summarize the Ex-Ante savings estimated by NEEA and reported on an annual basis to Avista and Idaho Power.

Table 3-1: Summary of Idaho Power Electric Idaho Ex Ante Savings

Program Year	Ex-Ante Savings: Measures (aMW)	Ex-Ante Savings: Codes (aMW)	Ex-Ante Savings: Standards (aMW)	Ex-Ante Savings: Total (aMW)
2017	0.31	0.89	1.45	2.65
2018	0.40	1.23	1.15	2.77
2019	0.28	1.32	0.40	1.99
2020	0.39	1.12	0.41	1.91
2021	0.42	1.00	0.41	1.82
Total	**1.78**	**5.56**	**3.81**	**11.15**

Table 3-2: Summary of Avista Electric Idaho Ex Ante Savings

Program Year	Ex-Ante Savings: Measures (aMW)	Ex-Ante Savings: Codes (aMW)	Ex-Ante Savings: Standards (aMW)	Ex-Ante Savings: Total (aMW)
2017	0.06	0.18	0.37	0.60
2018	0.06	0.22	0.30	0.57
2019	0.06	0.28	0.09	0.43
2020	0.08	0.24	0.09	0.41
2021	0.08	0.21	0.09	0.39
Total	**0.34**	**1.13**	**0.94**	**2.41**

Table 3-3: Summary of Avista Gas Idaho Ex Ante Savings

Program Year	Ex-Ante Savings: Measures (Therms)	Ex-Ante Savings: Codes (Therms)	Ex-Ante Savings: Standards (Therms)	Ex-Ante Savings: Total (Therms)
2019	636	43,109	0	43,745
2020	0	5,678	0	5,678
2021	0	152,881	0	152,881
Total	**636**	**201,667**	**0**	**202,304**

One of the objectives of this evaluation was to review the proportional savings of measures, codes, and standards savings attributed to Avista and Idaho Power. During in-depth interviews, Avista and Idaho Power staff noted that they had noticed savings from codes and standards have increased in proportion to total savings over the years, whereas the proportion of savings from measures have decreased over time. The following figures summarize the proportional contributions of each the measures, codes, and standards Ex-Ante savings determined by NEEA between 2017 and 2021 for each utility. As seen below, the proportion of savings developed through code and standards efforts has slowly decreased across the 5-year time period, starting from 92% and ending at 77% for Avista and starting at 89% and ending at 77% for Idaho Power.

Figure 3-3: Contributions to Ex-Ante Avista Idaho Electric Savings by Measures, Standards, and Codes

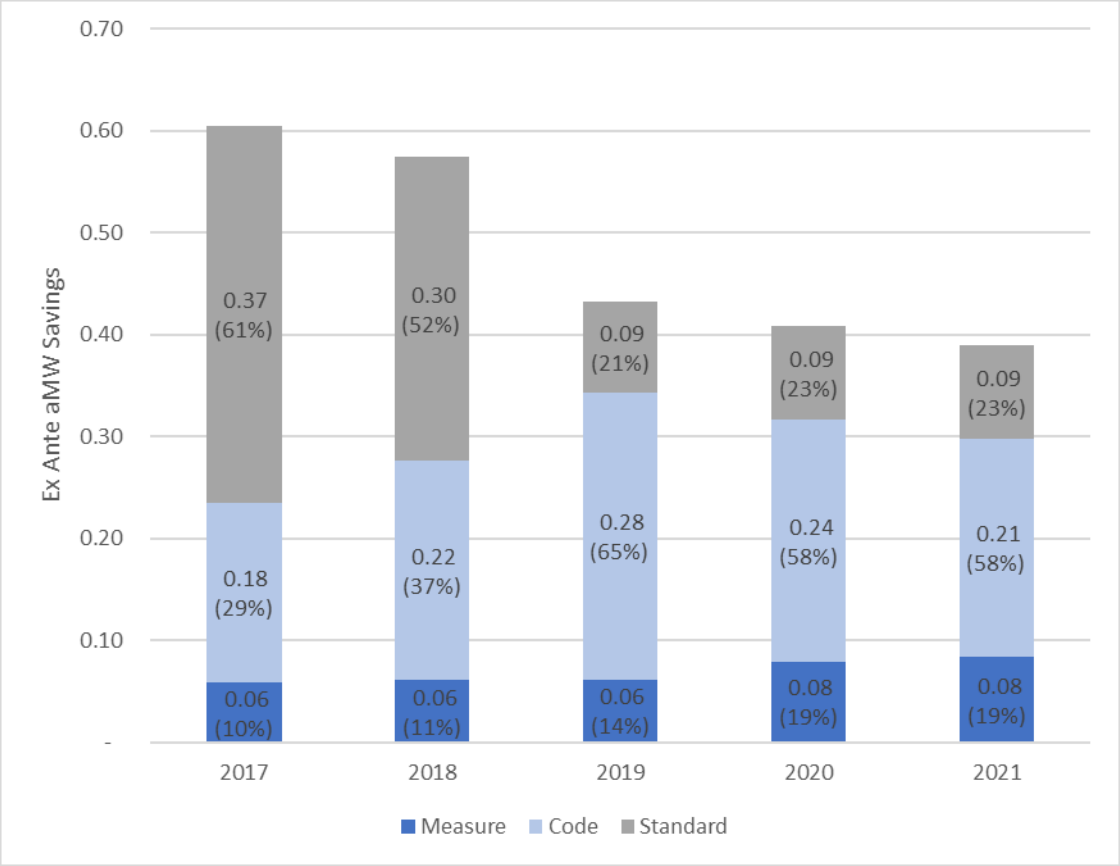
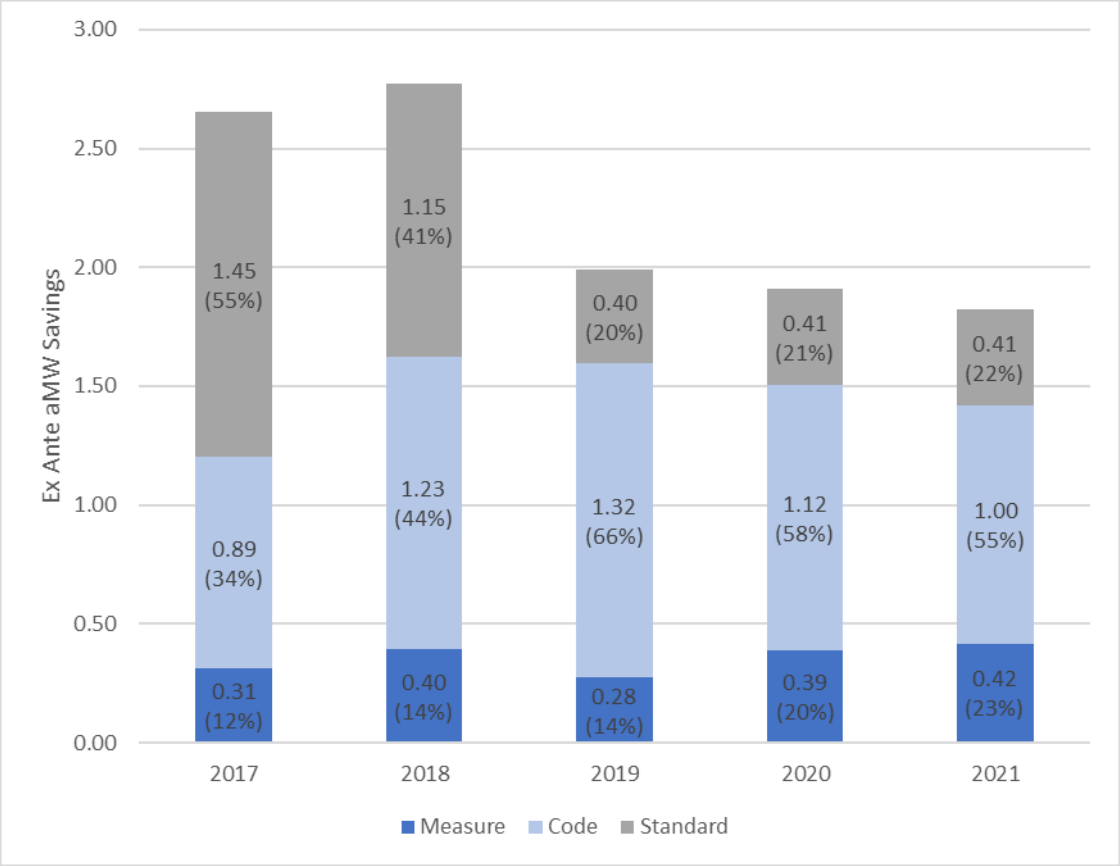


Figure 3-4: Contributions to Ex-Ante Idaho Power Idaho Electric Savings by Measures, Standards, and Codes



Although codes and standards contributions to savings are slowly decreasing over this 5-year evaluation period, the Evaluators note that a significant proportion of codes and standards savings originate from regional measure, standards, and code projects completed out-of-state. The Evaluators summarize the Ex-Ante savings categorized by state-level source of savings. The figures below depicts the total Ex-Ante savings attributed to Avista and IPC that had been accrued outside the state of Idaho under the funder share methodology versus the Ex-Post savings based on the service territory methodology.

Figure 3-5: Efficiency Measure Avista Idaho Electric Savings – WA/OR/MT Contribution to Ex-Ante (Funder Share) vs Ex-Post (Service Territory)

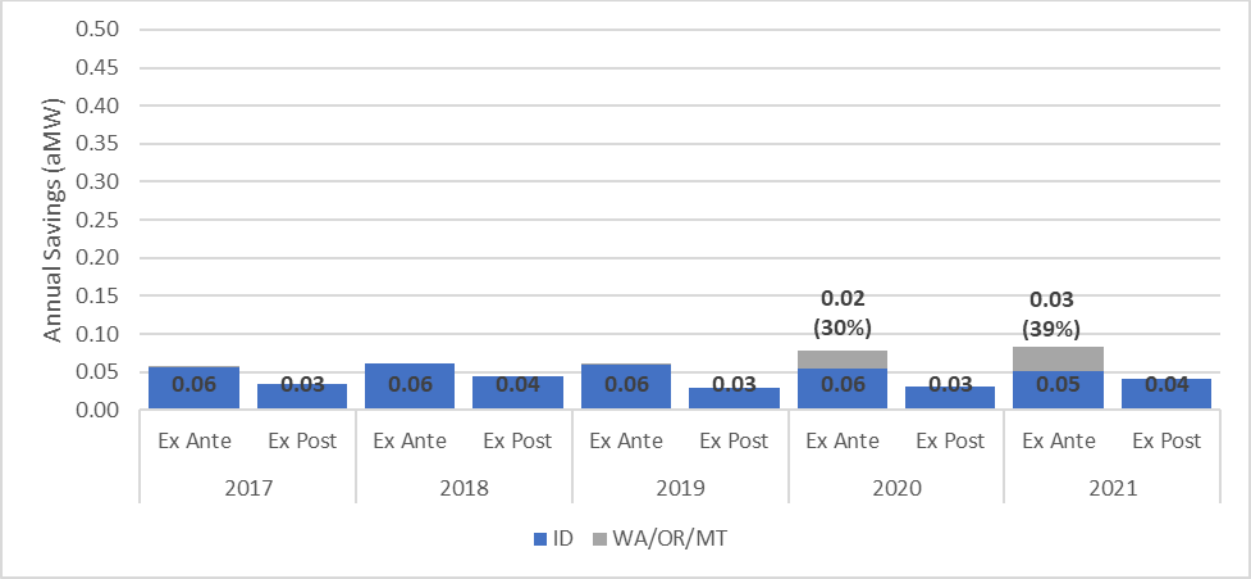


Figure 3-6: Code Avista Idaho Electric Savings – WA/OR/MT Contribution to Ex-Ante (Funder Share) vs Ex-Post (Service Territory)

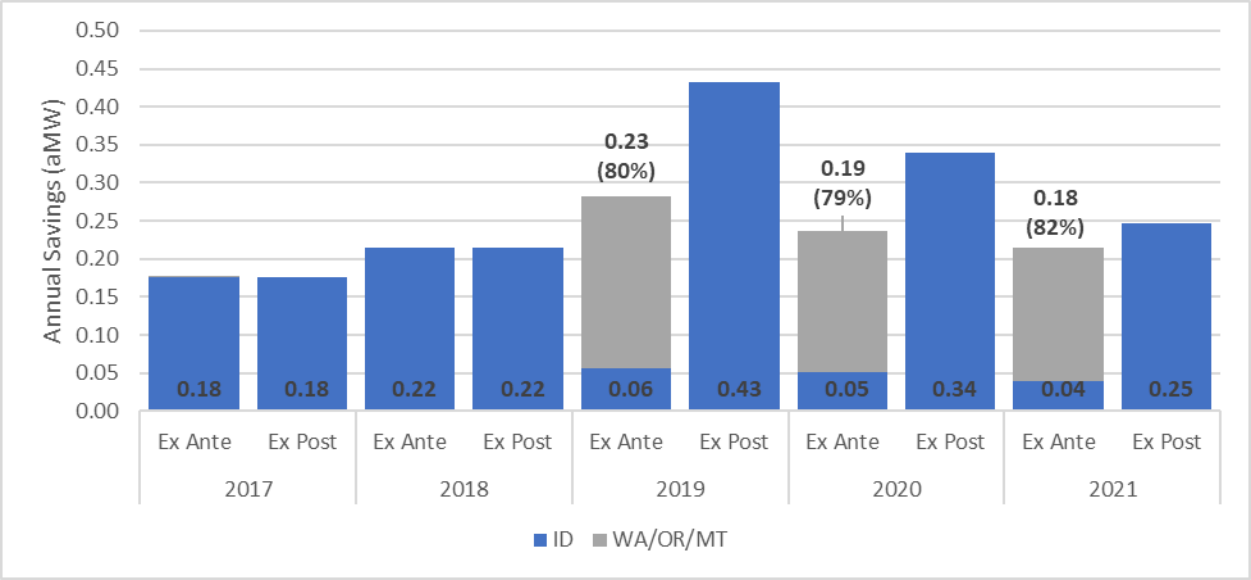


Figure 3-7: Standards Avista Idaho Electric Savings – WA/OR/MT Contribution to Ex-Ante (Funder Share) vs Ex-Post (Service Territory)

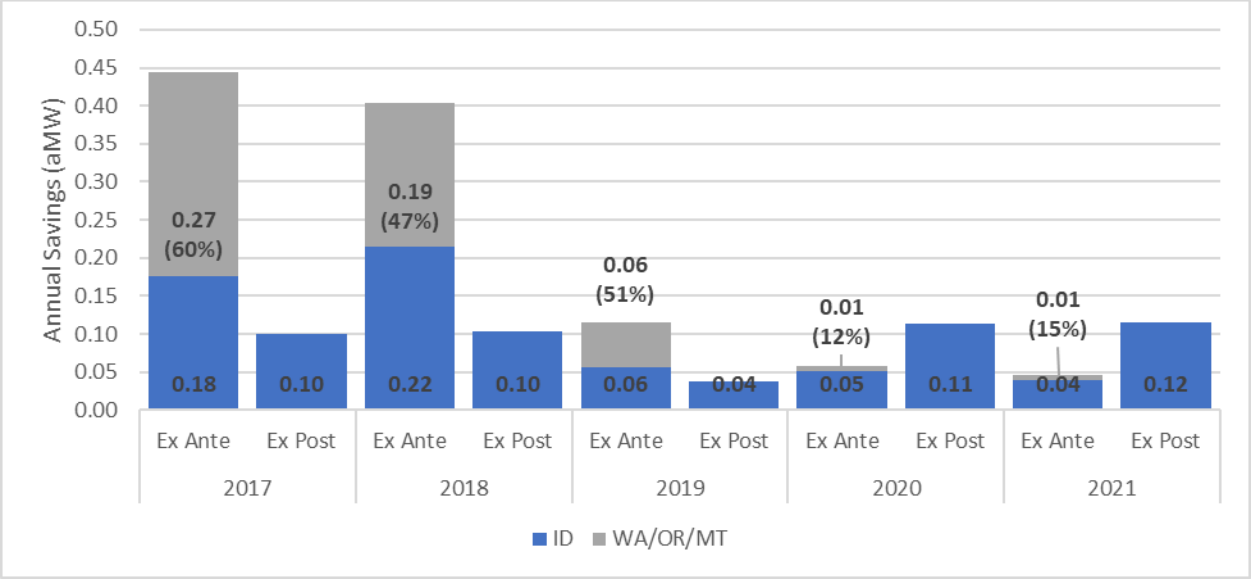


Figure 3-8: Efficiency Measure Idaho Power Idaho Electric Savings – WA/OR/MT Contribution to Ex-Ante (Funder Share) vs Ex-Post (Service Territory)

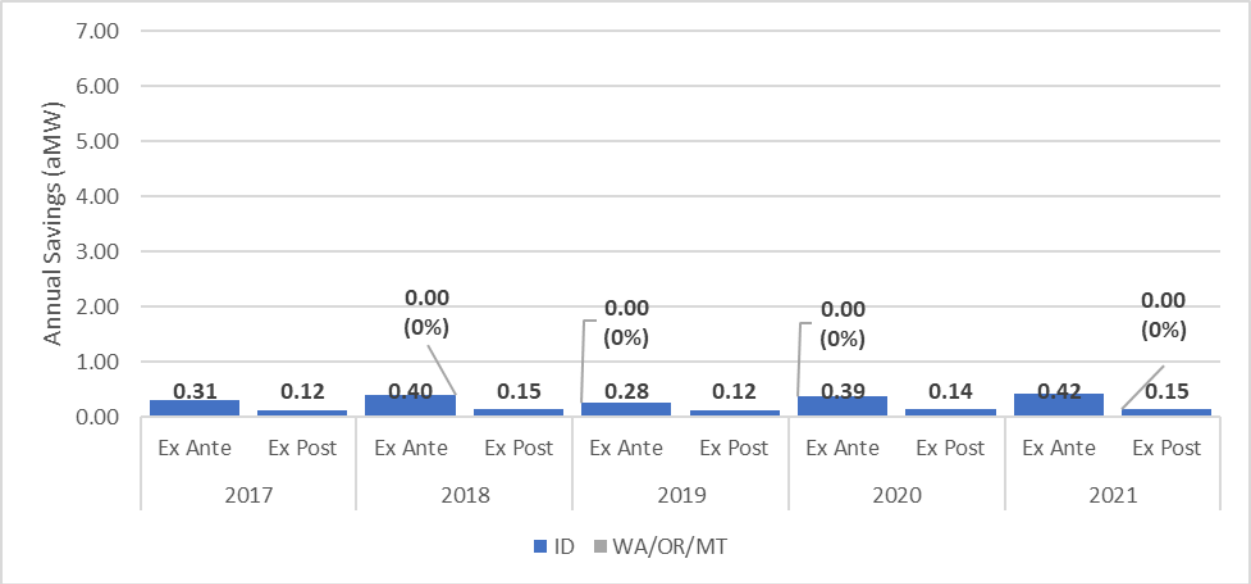


Figure 3-9: Code Idaho Power Idaho Electric Savings – WA/OR/MT Contribution to Ex-Ante (Funder Share) vs Ex-Post (Service Territory)

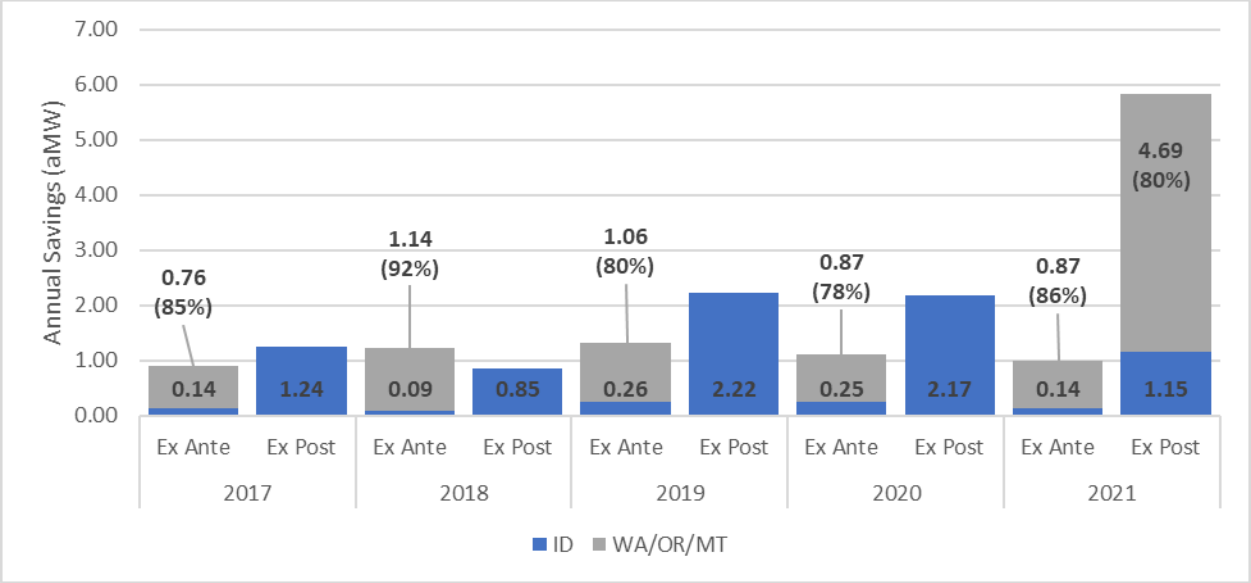


Figure 3-10: Standards Idaho Power Idaho Electric Savings – WA/OR/MT Contribution to Ex-Ante (Funder Share) vs Ex-Post (Service Territory)

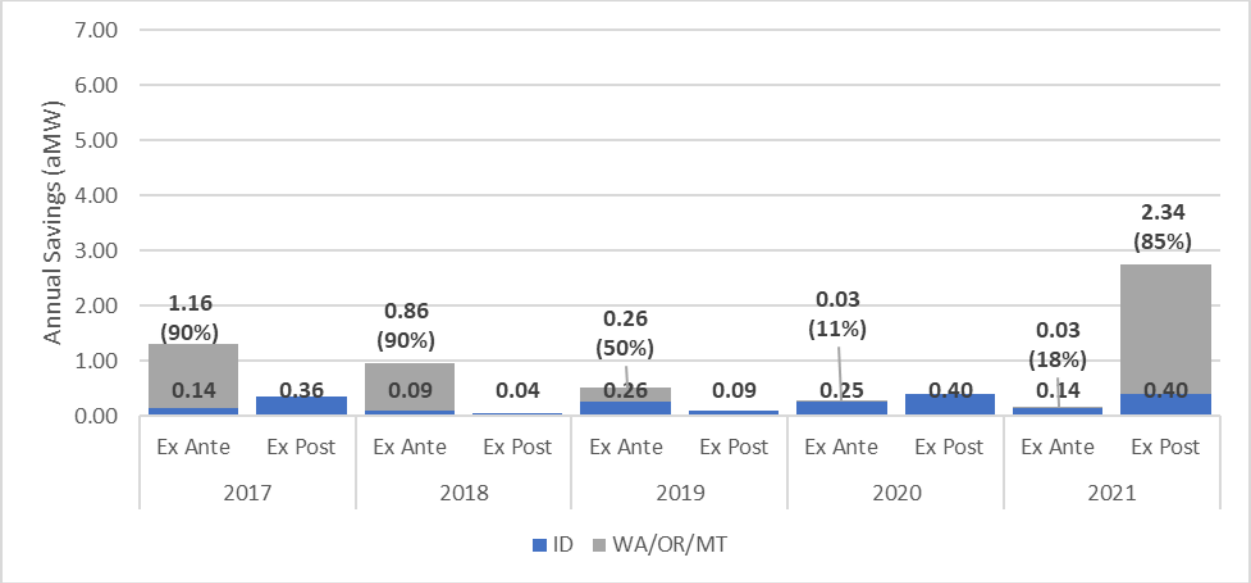


Figure 3-6 confirms that service territory allocation was utilized for 2017 and 2018 for Avista, which is portrayed by the lack of Washington, Oregon, or Montana-contributed savings towards Avista annual savings.

In addition, the proportion of code savings from out-of-state efforts are significantly higher than the proportion of measure or standards savings from out-of-state efforts. Therefore, code savings reported to Avista and IPC currently claim the majority of savings, (nearly 80% of savings) due to Washington,

Oregon, or Montana code change efforts and benefits by utilizing the funder share allocation methodology.

The trends seen in each of the figures above for each Avista and Idaho Power are similar, as expected, due to identical total regional units, total local program units, total baseline units, and total retirement units. The differences among the two utilities are determined solely through allocation methodology and values of each allocation methodology. Therefore, proportions of savings between the two should be similar, while magnitudes differ.

For Avista gas service territory in Idaho, NEEA-assigned Ex Ante savings consisted of almost entirely code savings, as seen in the figure below.

Figure 3-11: Efficiency Measure Avista Idaho Gas Savings – WA/OR/MT Contribution to Ex-Ante (Funder Share) vs Ex-Post (Service Territory)

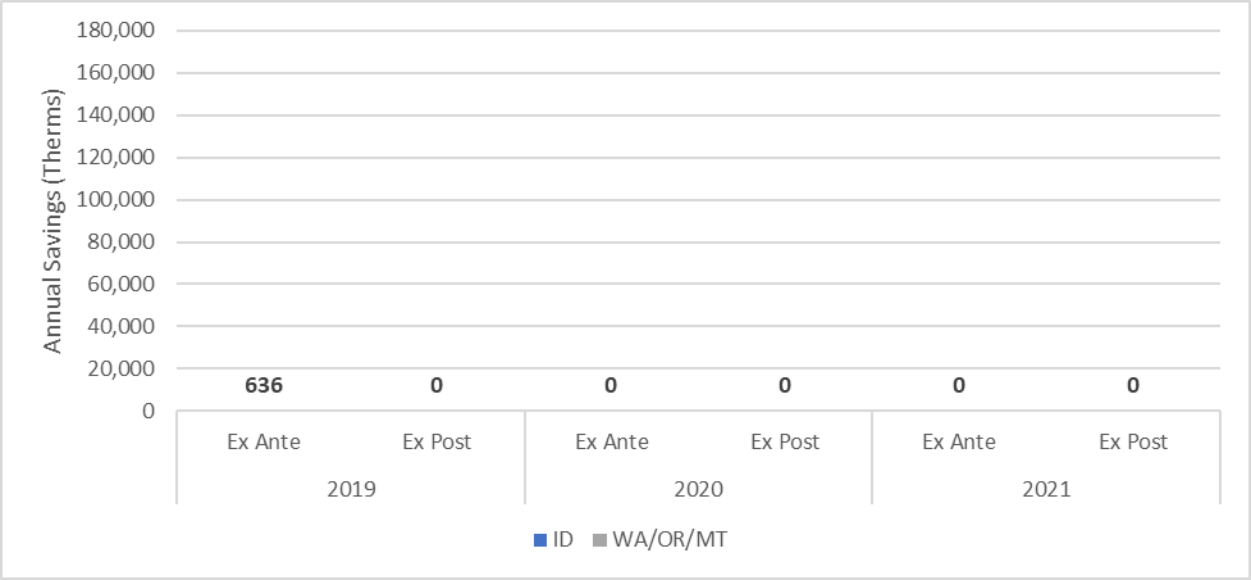
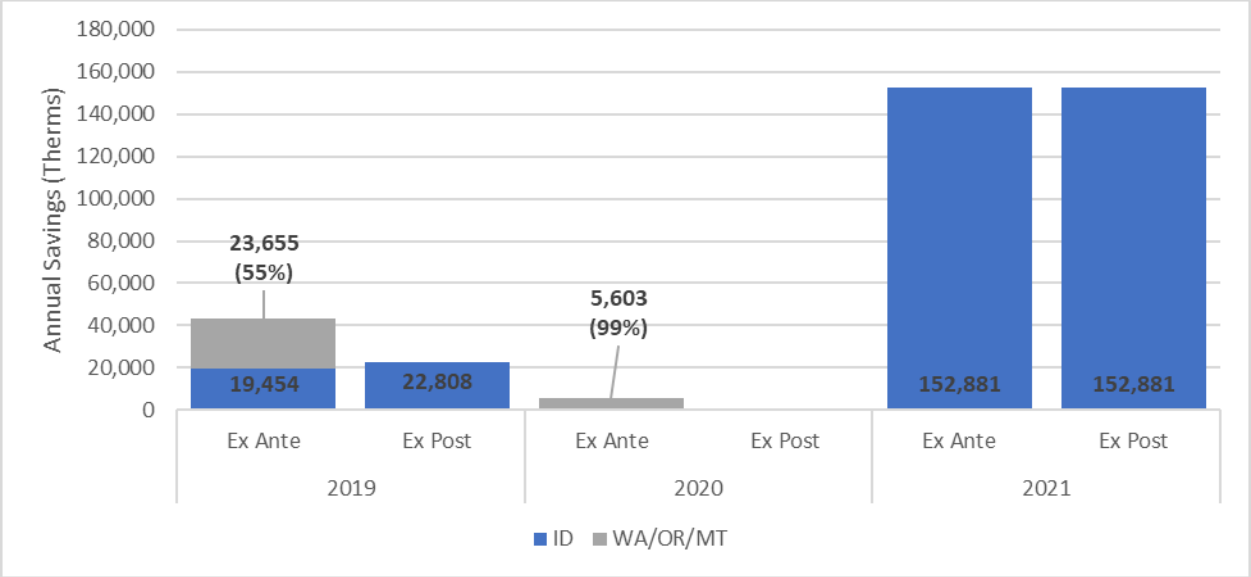


Figure 3-12: Code Avista Idaho Gas Savings – WA/OR/MT Contribution to Ex-Ante (Funder Share) vs Ex-Post (Service Territory)



The Avista gas measure savings reported by NEEA in 2019 consisted of no projects completed within the state of Idaho. Additionally, 55% and 99% of the code savings claimed consisted of projects originating outside the state of Idaho in 2019 and 2020, respectively. However, NEEA reported the 2021 annual savings via service territory methodology and therefore no savings were accrued outside the state of Idaho in 2021.

It is important to note the significant impact to savings that each the funder share methodology and service territory methodology contribute to overall savings for each of the measure, standards, and codes programs. In addition, the Evaluators note that inconsistencies among allocation methodology are seen within these two Idaho utilities, within service territories, within fuel types, and within initiatives.

3.2 Verified Ex Post Savings

In this section, the Evaluators summarize verified Ex Ante and Ex Post electric and gas savings for Avista and Idaho Power, along with realization rates across program years and NEEA initiatives.

3.2.1.1 Idaho Power Idaho Electric Verified Ex Post Savings

The Evaluators summarize the verified electric savings and realization rates for Idaho Power within the state of Idaho by program year in the table below.

Table 3-4: Summary of Idaho Power Idaho Electric Verified Ex Post Savings by Program Year

Year	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
2017	2.65	1.72	64.75%
2018	2.77	1.04	37.65%
2019	1.99	2.43	122.00%
2020	1.91	2.72	142.28%
2021	1.82	1.71	93.51%
Total	**11.15**	**9.61**	**86.23%**

Table 3-5 through Table 3-9 summarizes the Idaho Power Idaho verified electric savings and realization rates by initiative for each of the program years between 2017 and 2021. The Evaluators note that for the entirety of the report, the realization rates are based off more than two significant figures.

Table 3-5: PY2017 Summary of Idaho Power Electric Idaho Verified Ex Post Savings by Initiative

Measure, Standard, Code	Sector	Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Measure	Industrial	Certified Refrigeration Energy Specialist (CRES)	0.00	0.00	0.00%
Measure	Commercial	Commissioning Buildings	0.03	0.00	0.00%
Standard	Industrial	Drive Power	0.03	0.06	216.45%
Measure	Residential	Ductless Heat Pumps	0.06	0.00	6.72%
Code	Residential	Efficient Homes	0.35	0.60	172.50%
Measure	Residential	Heat Pump Water Heaters	0.10	0.01	5.68%
Measure	Commercial	Luminaire Level Lighting Controls	0.00	0.00	0.00%
Code	Commercial	Other Codes (Commercial)	0.38	0.34	90.56%
Code	Residential	Other Codes (Multifamily)	0.05	0.02	46.03%
Standard	Commercial	Other Non-Residential Standards	0.27	0.29	108.52%
Standard	Residential	Other Residential Standards	1.15	0.00	0.12%
Measure	Commercial	Reduced Wattage Lamp Replacement	0.03	0.06	198.85%
Code	Residential	Residential New Construction/Next Step Homes	0.11	0.26	245.22%
Measure	Residential	Retail Product Portfolio	0.02	0.02	75.23%
Measure	Residential	Super-Efficient Dryers	0.05	0.02	32.89%
Measure	Residential	Televisions	0.02	0.02	103.12%
Total			**2.65**	**1.72**	**64.75%**

Table 3-6: PY2018 Summary of Idaho Power Idaho Electric Verified Ex Post Savings by Initiative

Measure, Standard, Code	Sector	Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Measure	Commercial	Building Operator Certification Expansion	0.00	0.00	0.00%
Measure	Industrial	Certified Refrigeration Energy Specialist (CRES)	0.03	0.00	0.00%
Measure	Commercial	Commissioning Buildings	0.02	0.00	0.00%
Measure	Industrial	Commissioning Buildings	0.00	0.00	0.00%
Measure	Commercial	Desktop Power Supplies	0.15	0.11	73.13%
Standard	Industrial	Drive Power	0.02	0.00	0.00%
Measure	Residential	Ductless Heat Pumps	0.03	0.00	0.00%
Code	Residential	Efficient Homes	0.38	0.81	215.05%
Measure	Residential	Heat Pump Water Heaters	0.04	0.00	0.00%
Measure	Residential	Manufactured Homes	0.00	0.00	0.00%
Code	Commercial	Other Codes (Commercial)	0.62	0.00	0.00%
Code	Residential	Other Codes (Multifamily)	0.05	0.04	73.04%
Standard	Commercial	Other Non-Residential Standards	0.08	0.02	29.61%
Standard	Industrial	Other Non-Residential Standards	0.22	0.02	8.49%
Standard	Residential	Other Residential Standards	0.82	0.00	0.16%
Measure	Industrial	Other Strategic Energy Management	0.00	0.00	0.00%
Measure	Commercial	Other Strategic Energy Management	0.00	0.00	0.00%
Measure	Commercial	Reduced Wattage Lamp Replacement	0.05	0.00	0.00%
Measure	Industrial	Reduced Wattage Lamp Replacement	0.01	0.00	0.00%
Code	Residential	Residential New Construction/Next Step Homes	0.18	0.00	0.00%
Measure	Residential	Retail Product Portfolio	0.02	0.01	57.04%
Measure	Residential	Super-Efficient Dryers	0.05	0.03	65.20%
Measure	Residential	Televisions	0.00	0.00	104.70%
Total			**2.77**	**1.04**	**37.65%**

Table 3-7: PY2019 Summary of Idaho Power Idaho Electric Verified Ex Post Savings by Initiative

Measure, Standard, Code	Sector	Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Measure	Commercial	Commissioning Buildings	0.03	0.00	0.00%
Measure	Industrial	Commissioning Buildings	0.00	0.00	0.00%
Measure	Commercial	Desktop Power Supplies	0.01	0.01	79.15%
Standard	Industrial	Drive Power	0.01	0.00	11.90%
Measure	Residential	Ductless Heat Pumps	0.05	0.00	1.02%
Code	Residential	Efficient Homes	0.37	0.81	217.23%
Measure	Residential	Heat Pump Water Heaters	0.04	0.00	3.74%
Measure	Commercial	Luminaire Level Lighting Controls	0.00	0.00	0.00%
Measure	Residential	Manufactured Homes	0.00	0.00	0.00%
Code	Residential	Next Step Homes	0.21	0.47	225.25%
Code	Commercial	Other Codes (Commercial)	0.69	0.92	132.61%
Code	Residential	Other Codes (Multifamily)	0.04	0.02	38.13%
Standard	Commercial	Other Non-Residential Standards	0.08	0.03	40.51%
Standard	Industrial	Other Non-Residential Standards	0.23	0.00	0.00%
Standard	Residential	Other Residential Standards	0.07	0.06	81.29%
Measure	Industrial	Other Strategic Energy Management	0.00	0.00	0.00%
Measure	Commercial	Other Strategic Energy Management	0.00	0.00	0.00%
Measure	Commercial	Reduced Wattage Lamp Replacement	0.04	0.04	85.46%
Measure	Industrial	Reduced Wattage Lamp Replacement	0.01	0.01	85.46%
Measure	Residential	Retail Product Portfolio	0.01	0.00	6.92%
Measure	Residential	Super-Efficient Dryers	0.08	0.06	81.85%
Measure	Residential	Televisions	0.00	0.00	0.00%
Total			**1.99**	**2.43**	**122.00%**

Table 3-8: PY2020 Summary of Idaho Power Idaho Electric Verified Ex Post Savings by Initiative

Measure, Standard, Code	Sector	Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Measure	Industrial	Certified Refrigeration Energy Specialist (CRES)	0.00	0.00	0.00%
Measure	Commercial	Commissioning Buildings	0.03	0.00	0.00%
Measure	Industrial	Commissioning Buildings	0.00	0.00	18.80%
Measure	Commercial	Desktop Power Supplies	0.01	0.00	0.00%
Standard	Industrial	Drive Power	0.00	0.00	0.00%
Measure	Residential	Ductless Heat Pumps	0.06	0.00	5.17%
Code	Residential	Efficient Homes	0.32	0.89	281.70%
Measure	Residential	Extended Motor Products	0.01	0.00	5.00%
Measure	Commercial	Extended Motor Products	0.01	0.00	28.78%
Measure	Residential	Heat Pump Water Heaters	0.08	0.00	4.17%
Measure	Commercial	Luminaire Level Lighting Controls	0.01	0.01	56.71%
Measure	Residential	Manufactured Homes	0.01	0.00	0.00%
Code	Residential	Next Step Homes	0.22	0.50	222.51%
Code	Commercial	Other Codes (Commercial)	0.54	0.77	142.92%
Code	Residential	Other Codes (Multifamily)	0.04	0.02	41.94%
Standard	Commercial	Other Non-Residential Standards	0.09	0.04	43.64%
Standard	Industrial	Other Non-Residential Standards	0.23	0.30	128.37%
Standard	Agriculture	Other Non-Residential Standards	0.00	0.00	257.68%
Standard	Residential	Other Residential Standards	0.08	0.06	75.37%
Measure	Industrial	Other Strategic Energy Management	0.00	0.00	0.00%
Measure	Commercial	Other Strategic Energy Management	0.00	0.00	0.00%
Measure	Commercial	Reduced Wattage Lamp Replacement	0.04	0.04	105.76%
Measure	Industrial	Reduced Wattage Lamp Replacement	0.01	0.01	105.09%
Measure	Residential	Retail Product Portfolio	0.12	0.08	65.79%
Total			**1.91**	**2.72**	**142.28%**

Table 3-9: PY2021 Summary of Idaho Power Idaho Electric Verified Ex Post Savings by Initiative

Measure, Standard, Code	Sector	Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Measure	Commercial	Desktop Power Supplies	0.01	0.00	0.00%
Measure	Residential	Ductless Heat Pumps	0.05	0.00	2.96%
Code	Residential	Efficient Homes	0.27	0.60	223.90%
Measure	Residential	Heat Pump Water Heaters	0.10	0.00	4.18%
Measure	Commercial	Luminaire Level Lighting Controls	0.01	0.00	51.59%
Measure	Residential	Manufactured Homes	0.01	0.00	0.00%
Code	Commercial	Other Codes (Commercial)	0.40	0.46	113.98%
Standard	Commercial	Other Non-Residential Standards	0.10	0.04	43.48%
Standard	Industrial	Other Non-Residential Standards	0.24	0.30	128.37%
Standard	Agriculture	Other Non-Residential Standards	0.00	0.00	257.68%
Standard	Residential	Other Residential Standards	0.07	0.06	74.00%
Measure	Commercial	Reduced Wattage Lamp Replacement	0.02	0.02	105.99%
Measure	Industrial	Reduced Wattage Lamp Replacement	0.00	0.00	105.99%
Code	Residential	Residential New Construction	0.33	0.09	27.15%
Measure	Residential	Retail Product Portfolio	0.17	0.11	67.14%
Measure	Commercial	Window Attachments	0.00	0.00	0.00%
Measure	Residential	XMP Pumps	0.03	0.00	4.19%
Measure	Commercial	XMP Pumps	0.02	0.01	26.24%
Total			**1.82**	**1.71**	**93.51%**

3.2.1.2 Avista Idaho Electric Verified Ex Post Savings

The Evaluators summarize the verified electric savings and realization rates for Avista within the state of Idaho by program year in the table below.

Table 3-10: Summary of Avista Idaho Electric Verified Ex Post Savings by Program Year

Year	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
2017	0.60	0.31	51.19%
2018	0.57	0.36	63.33%
2019	0.43	0.50	115.22%
2020	0.41	0.48	118.93%
2021	0.39	0.40	103.32%
Total	**2.41**	**2.06**	**85.41%**

Table 3-11 through Table 3-15 summarizes the Avista Idaho verified electric savings and realization rates by initiative for each of the program years between 2017 and 2021.

Table 3-11: PY2017 Summary of Avista Idaho Electric Verified Ex Post Savings by Initiative

Measure, Standard, Code	Sector	Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Measure	Commercial	Commissioning Buildings	0.00	0.00	0.00%
Standard	Industrial	Drive Power	0.01	0.02	111.91%
Measure	Residential	Ductless Heat Pumps	0.01	0.00	10.20%
Code	Residential	Efficient Homes	0.09	0.09	100.00%
Measure	Residential	Heat Pump Water Heaters	0.03	0.02	68.73%
Measure	Commercial	Luminaire Level Lighting Controls	0.00	0.00	0.00%
Code	Commercial	Other Codes (Commercial)	0.07	0.07	100.00%
Code	Residential	Other Codes (Multifamily)	0.01	0.01	100.00%
Standard	Commercial	Other Non-Residential Standards	0.09	0.08	91.43%
Standard	Residential	Other Residential Standards	0.26	0.00	0.16%
Measure	Commercial	Reduced Wattage Lamp Replacement	0.00	0.00	98.27%
Code	Residential	Residential New Construction/Next Step Homes	0.01	0.01	96.99%
Measure	Residential	Retail Product Portfolio	0.00	0.00	42.21%
Measure	Residential	Super-Efficient Dryers	0.01	0.01	94.03%
Measure	Residential	Televisions	0.01	0.01	100.00%
Total			**0.60**	**0.31**	**51.19%**

Table 3-12: PY2018 Summary of Avista Idaho Electric Verified Ex Post Savings by Initiative

Measure, Standard, Code	Sector	Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Measure	Commercial	Commissioning Buildings	0.00	0.00	0.00%
Measure	Industrial	Commissioning Buildings	0.00	0.00	0.00%
Measure	Commercial	Desktop Power Supplies	0.02	0.02	100.00%
Standard	Industrial	Drive Power	0.01	0.01	100.00%
Measure	Residential	Ductless Heat Pumps	0.01	0.00	6.02%
Code	Residential	Efficient Homes	0.11	0.11	100.00%
Measure	Residential	Heat Pump Water Heaters	0.01	0.00	57.22%
Measure	Commercial	Luminaire Level Lighting Controls	0.00	0.00	N/A
Measure	Residential	Manufactured Homes	0.00	0.00	0.00%
Code	Commercial	Other Codes (Commercial)	0.08	0.08	100.00%
Code	Residential	Other Codes (Multifamily)	0.01	0.01	100.00%
Standard	Commercial	Other Non-Residential Standards	0.02	0.01	63.92%
Standard	Industrial	Other Non-Residential Standards	0.08	0.08	100.00%
Standard	Residential	Other Residential Standards	0.19	0.00	0.22%
Measure	Commercial	Other Strategic Energy Management	0.00	0.00	0.00%
Measure	Commercial	Reduced Wattage Lamp Replacement	0.00	0.00	98.89%
Measure	Industrial	Reduced Wattage Lamp Replacement	0.00	0.00	98.89%
Code	Residential	Residential New Construction/Next Step Homes	0.01	0.01	100.00%
Measure	Residential	Retail Product Portfolio	0.00	0.00	54.86%
Measure	Residential	Super-Efficient Dryers	0.01	0.01	93.09%
Measure	Residential	Televisions	0.00	0.00	99.98%
Total			**0.57**	**0.36**	**63.33%**

Table 3-13: PY2019 Summary of Avista Idaho Electric Verified Ex Post Savings by Initiative

Measure, Standard, Code	Sector	Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Measure	Commercial	Commissioning Buildings	0.01	0.00	0.00%
Measure	Industrial	Commissioning Buildings	0.00	0.00	0.00%
Measure	Commercial	Desktop Power Supplies	0.00	0.00	79.14%
Standard	Industrial	Drive Power	0.00	0.01	293.18%
Measure	Residential	Ductless Heat Pumps	0.01	0.00	4.01%
Code	Residential	Efficient Homes	0.08	0.12	154.66%
Measure	Residential	Heat Pump Water Heaters	0.01	0.00	43.16%
Measure	Commercial	Luminaire Level Lighting Controls	0.00	0.00	0.00%
Measure	Residential	Manufactured Homes	0.00	0.00	0.00%
Code	Residential	Next Step Homes	0.05	0.11	236.51%
Code	Commercial	Other Codes (Commercial)	0.15	0.20	133.91%
Code	Residential	Other Codes (Multifamily)	0.01	0.00	42.77%
Standard	Commercial	Other Non-Residential Standards	0.02	0.01	69.19%
Standard	Industrial	Other Non-Residential Standards	0.05	0.00	0.00%
Standard	Residential	Other Residential Standards	0.02	0.02	99.67%
Measure	Industrial	Other Strategic Energy Management	0.00	0.00	0.00%
Measure	Commercial	Other Strategic Energy Management	0.00	0.00	0.00%
Measure	Commercial	Reduced Wattage Lamp Replacement	0.01	0.00	30.55%
Measure	Industrial	Reduced Wattage Lamp Replacement	0.00	0.00	31.71%
Measure	Residential	Retail Product Portfolio	0.00	0.00	11.15%
Measure	Residential	Super-Efficient Dryers	0.02	0.02	109.48%
Total			**0.43**	**0.50**	**115.22%**

Table 3-14: PY2020 Summary of Avista Idaho Electric Verified Ex Post Savings by Initiative

Measure, Standard, Code	Sector	Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Measure	Industrial	Certified Refrigeration Energy Specialist (CRES)	0.00	0.00	0.00%
Measure	Commercial	Commissioning Buildings	0.01	0.00	0.00%
Measure	Industrial	Commissioning Buildings	0.00	0.00	41.60%
Measure	Commercial	Desktop Power Supplies	0.00	0.00	0.00%
Standard	Industrial	Drive Power	0.00	0.00	0.00%
Measure	Residential	Ductless Heat Pumps	0.01	0.00	9.35%
Code	Residential	Efficient Homes	0.06	0.10	161.42%
Measure	Residential	Extended Motor Products	0.00	0.00	0.00%
Measure	Commercial	Extended Motor Products	0.00	0.00	0.00%
Measure	Residential	Heat Pump Water Heaters	0.01	0.00	0.00%
Measure	Commercial	Luminaire Level Lighting Controls	0.00	0.00	0.00%
Measure	Residential	Manufactured Homes	0.00	0.00	0.00%
Code	Residential	Next Step Homes	0.05	0.06	134.25%
Code	Commercial	Other Codes (Commercial)	0.12	0.17	142.74%
Code	Residential	Other Codes (Multifamily)	0.01	0.00	52.83%
Standard	Commercial	Other Non-Residential Standards	0.02	0.01	63.24%
Standard	Industrial	Other Non-Residential Standards	0.05	0.08	157.01%
Standard	Agriculture	Other Non-Residential Standards	0.00	0.00	258.22%
Standard	Residential	Other Residential Standards	0.02	0.02	92.40%
Measure	Industrial	Other Strategic Energy Management	0.00	0.00	0.00%
Measure	Commercial	Other Strategic Energy Management	0.00	0.00	0.00%
Measure	Commercial	Reduced Wattage Lamp Replacement	0.01	0.00	27.67%
Measure	Industrial	Reduced Wattage Lamp Replacement	0.00	0.00	27.49%
Measure	Residential	Retail Product Portfolio	0.02	0.03	114.44%
Measure	Residential	Televisions	0.00	0.00	0.00%
Total			**0.41**	**0.48**	**118.4%**

Table 3-15: PY2021 Summary of Avista Idaho Electric Verified Ex Post Savings by Initiative

Measure, Standard, Code	Sector	Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Measure	Commercial	Commissioning Buildings	0.00	0.00	0.00%
Measure	Commercial	Desktop Power Supplies	0.00	0.00	0.00%
Measure	Residential	Ductless Heat Pumps	0.01	0.00	20.19%
Code	Residential	Efficient Homes	0.06	0.07	123.85%
Measure	Residential	Heat Pump Water Heaters	0.02	0.00	0.00%
Measure	Commercial	Luminaire Level Lighting Controls	0.00	0.00	0.00%
Measure	Residential	Manufactured Homes	0.00	0.00	0.00%
Code	Commercial	Other Codes (Commercial)	0.09	0.10	111.55%
Standard	Commercial	Other Non-Residential Standards	0.02	0.01	62.90%
Standard	Industrial	Other Non-Residential Standards	0.05	0.08	157.01%
Standard	Agriculture	Other Non-Residential Standards	0.00	0.00	258.22%
Standard	Residential	Other Residential Standards	0.02	0.02	102.71%
Measure	Commercial	Reduced Wattage Lamp Replacement	0.00	0.00	27.73%
Measure	Industrial	Reduced Wattage Lamp Replacement	0.00	0.00	27.73%
Code	Residential	Residential New Construction	0.07	0.08	112.68%
Measure	Residential	Retail Product Portfolio	0.03	0.04	112.24%
Measure	Commercial	Window Attachments	0.00	0.00	0.00%
Measure	Residential	XMP Pumps	0.01	0.00	0.00%
Measure	Commercial	XMP Pumps	0.00	0.00	0.00%
Total			**0.39**	**0.40**	**103.20%**

3.2.1.3 Avista Idaho Gas Verified Ex Post Savings

The Evaluators summarize the verified natural gas savings and realization rates for Avista within the state of Idaho by program year in the table below.

Table 3-16: Summary of Avista Idaho Gas Verified Ex Post Savings by Program Year

Year	Ex Ante Therms Savings	Ex Post Therms Savings	Realization Rate
2019	43,745	22,808	52.14%
2020	5,678	385	6.79%
2021	152,881	152,881	100.00%
Total	**202,304**	**176,074**	**87.03%**

Table 3-17 through Table 3-19 summarizes the Avista Idaho verified natural gas savings and realization rates by initiative for each of the program years between 2019 and 2021.

Table 3-17: PY2019 Summary of Avista Gas Verified Ex Post Savings by Initiative

Measure, Standard, Code	Sector	Initiative	Ex Ante Therms Savings	Ex Post Therms Savings	Realization Rate
Measure	Commercial	Condensing Rooftop Units	636	0	0.00%
Code	Residential	Next Step Homes	43,109	22,808	52.91%
Total			**43,745**	**22,808**	**52.14%**

Table 3-18: PY2020 Summary of Avista Gas Verified Ex Post Savings by Initiative

Measure, Standard, Code	Sector	Initiative	Ex Ante Therms Savings	Ex Post Therms Savings	Realization Rate
Code	Residential	Next Step Homes	5,678	385	6.79%
Total			**5,678**	**385**	**6.79%**

Table 3-19: PY2021 Summary of Avista Gas Verified Ex Post Savings by Initiative

Measure, Standard, Code	Sector	Initiative	Ex Ante Therms Savings	Ex Post Therms Savings	Realization Rate
Code	Residential	Residential New Construction	152,881	152,881	100.00%
Total			**152,881**	**152,881**	**100.00%**

3.3 Allocation Methodology Review

Allocation methodology review was a key component of this evaluation in this section. It is the method by which NEEA splits total regional net market transformation savings between each NEEA funding utility. The allocation methodology is applicable for each efficiency measure as well as for codes and standards. As described in the equations above, the allocation of savings is currently calculated using one of the following two methodologies:

- Service Territory Methodology
- Funder Share Methodology

Currently, NEEA allows the utility to choose which of the two methodologies is employed to calculate utility-level savings in the end-of-year annual reporting of savings.

Idaho Power had elected to report NEEA savings using funder share methodology, as indicated by NEEA annual reports between 2017 and 2021. Avista had elected to report NEEA savings using service territory methodology in 2017 and 2018. In 2019, Avista changed their preferred reporting to funder share methodology. However, NEEA continues to provide estimates of service territory share for each measure, despite allocation methodology chosen.

NEEA reports both the service territory allocation and the funder share allocation for each measure in each of NEEA's annual report of savings to each funder utility. During this evaluation work, the Evaluators compared service territory share to funder share allocation and ultimately used service territory allocation methodology to estimate total verified savings and cost effectiveness of efforts benefitting Idaho customers within Avista's and Idaho Power's service territories.

The Evaluators further summarize each methodology in the section below.

3.3.1 Service Territory Allocation

The service territory allocation methodology estimates the proportion of projects completed within a measure that can reasonably be allocated to a specific funding utility. This is completed by reviewing and aggregating the source data in a way that preserves the originating location of the projects, which can include zip code information, city information, county information, or state information.

The Evaluators were unable to review total regional and local program unit values reported by NEEA, as this data is provided to NEEA under individual non-disclosure agreements with local utilities, Energy Trust of Oregon, BPA, manufacturers, and market actors. However, the calculations reviewed confirm that the data NEEA aggregates for use in the annual savings reports contains fields that grant NEEA the ability to calculate service territory allocation based on either zip-code level data, county-level data, or state-level data. Therefore, it is possible to estimate net market units for smaller segments of the Northwest region, which can then be aggregated to the utility service territory for each utility that currently funds NEEA initiative efforts.

The benefit of this service territory method is that NEEA stakeholders can identify states or regions that are performing well and are cost-effective, and states or regions that are underperforming and are not cost-effective. This level of transparency assists NEEA staff and stakeholders by identifying real, unique barriers to energy efficiency in local regions. Once these areas and barriers are identified, work performed to remove these barriers benefits the entire region, while creating equitable benefits within the NEEA service territory.

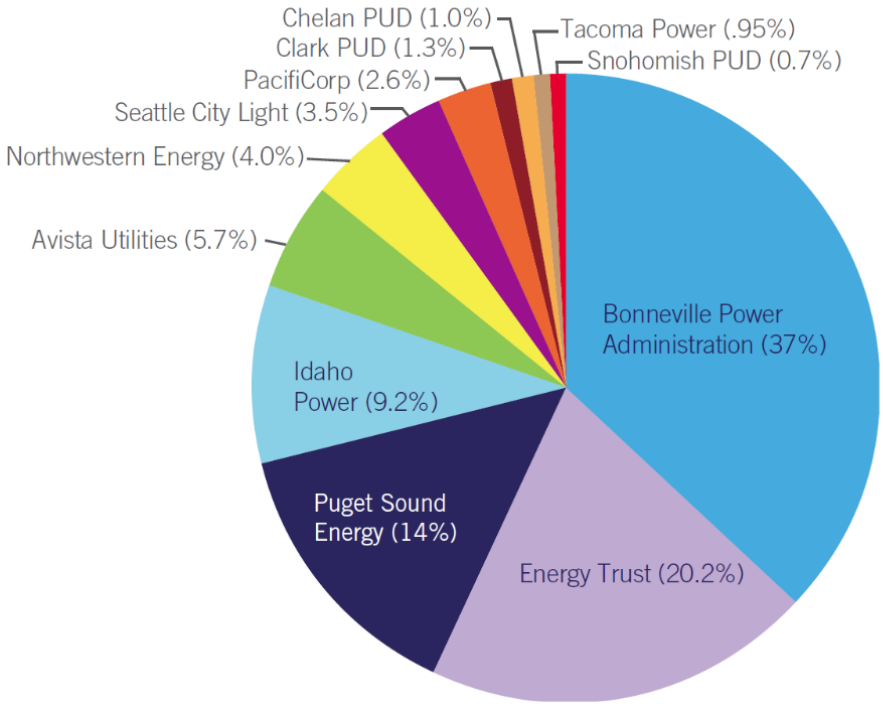
In order to report transparency of program benefits, it is necessary to estimate savings at a higher resolution than northwest regional savings. For example, it is recommended to report savings at the state-level, utility-level, or county-level, if source data permits. As the Evaluators have verified that such source data exists, the Evaluators recommend that NEEA utilize this resolution of data to more accurately estimate, track, and report savings to its stakeholders.

3.3.2 Funder Share Allocation

One of the main objectives for this evaluation was to review and validate NEEA's methodology for allocating co-created savings to Idaho Power Company and Avista Utilities. Currently, NEEA employs a "funder share" allocation method to allocate claimable savings to each Avista and IPC. NEEA staff describe the funder share allocation as a "core tenet" of how NEEA allocates savings. This funding mechanism was built 20 years ago. The following figure displays the current NEEA electric funding share by organization. It is worth noting that a large portion of the current NEEA funding share is owned by

Bonneville Power Administration, an organization that is not a utility, and therefore serves no electric customers directly. Despite lack of electric customers, this organization receives claimable energy efficiency savings through contribution to NEEA.

Figure 3-13: Current NEEA Electric Funding Share by Organization[8]



The calculation NEEA built to estimate the allocation share of funding to each utility is built on the following components and assumptions:

1. **A forecast of load growth**: Estimated load growth during funding cycle, determined by Pacific Northwest Utilities Conference Committee (PNUCC) and Northwest Power and Conservation Council.
2. **Number of retail customers**: Estimated by Energy Information Administration (EIA) Form 861 at the time of establishing funding shares for a funding period. A 12.5% weighting is applied to this value.
3. **Retail energy sales**: Native electricity sales to "bundled" retail customers as reported in the EIA Form 861. All wholesale "energy only" or "transmission only" sales are excluded. An 87.5% weighting is applied to this value.

[8] https://neea.org/resources/neea-current-funder-share-by-organization

4. **Cap on funding share increases**: To minimize the impacts to any one direct funder, a maximum 40% funder share growth cap is applied for each investor.

The funder share methodology above is founded on the following NEEA principles:

- Keep the alliance and collaboration between the funding utilities and regional market actors intact;
- Be fair and equitable to funders;
- Equitably distribute burden of cost and allocation of benefits;
- Incorporate number of utility customers and loads to address utilities dominated by few large industrial customers; and,
- Provide funding diversification.

These allocation shares are determined at the beginning of NEEA's 5-year program cycle and are invoiced to each utility on a quarterly basis. In the event that a funder is lost, the total funding amount is recalculated such that other funders' dollar amounts are unchanged and total funding is reduced. In the event that a funder is gained, the total funding amount is recalculated such that other funder's dollar amounts are unchanged and total funding is increased. The NEEA Board reviews the funder allocation methodology policy during the first year of each funding cycle.

The savings due to NEEA regional market transformation is allocated to utility stakeholders using each utility's current funding share (Washington, Oregon, Montana, and Idaho, combined). Therefore, since Avista contributed 5.7% of NEEA's funding to the total NEEA-region, Avista is allocated 5.7% of savings achieved through NEEA. To estimate Avista savings within the Avista's service territory in Idaho, NEEA allocates 30% of total Avista regional savings to Avista Idaho territory. To estimate Idaho Power savings within the Idaho Power service territory in Idaho, Idaho Power internally allocates 95% of savings to Idaho and 5% of savings to Oregon. The Evaluators followed these breakouts when allocating savings to the state of Idaho.

The following tables summarize the funder allocation share values between 2017 and 2021 assigned to Avista and Idaho to estimate savings within the state of Idaho.

Table 3-20: Avista Electric Funder Share

Business Plan	Avista Total Funding Share	Avista Idaho Funding Share*
2020-2024	5.65%	1.69%
2015-2019	5.77%	1.73%
2010-2014	5.56%	1.67%
Prior	3.95%	1.19%

*NEEA allocates 30% of overall Avista funder share to Avista service territory in Idaho

Table 3-21: Avista Gas Funder Share

Business Plan	Avista Total Funding Share	Avista Idaho Funding Share*
2019	15.63%	3.37%
2020-2021	12.04%	3.55%

*NEEA allocates 30% of overall Avista funder share to Avista service territory in Idaho

Table 3-22: Idaho Power Electric Funder Share

Business Plan	Idaho Power Total Funding Share	Idaho Power Idaho Funding Share*
2020-2024	9.23%	8.77%
2015-2019	8.01%	7.61%
2010-2014	8.67%	8.24%
Prior	6.42%	6.10%

*Idaho Power allocates 95% of overall Idaho Power funder share to the Idaho Power service territory in Idaho

The values presented in the tables above were cross verified by reviewing total annual dollars invoiced by NEEA to Avista and to IPC, as well as reviewing each NEEA annual savings report and associated funder share value attributed to each measure.

3.3.3 Allocation Methodology Findings and Recommendations

During this evaluation work, the Evaluators reviewed whether the high-level allocation strategy is reasonable for Idaho stakeholders and whether the funding share is accurately represented for each organization through documentation and invoices. Although the Evaluators were unable to cross-reference NEEA-aggregated sales and utility data due to non-disclosure agreements between NEEA and utility stakeholders in the Northwest region, we reviewed whether the funder share allocation method is reasonably estimates actual energy efficiency product uptake documented in sales data.

It is critical to understand that the funder share allocation methodology allocate a proportion of the costs of NEEA's efforts to be invoiced to the utility, despite initiative focus, initiative service, or customer/regional targeting. This means that savings from Washington are allocated to Montana, Idaho, and Oregon based on each utility's funder share. For Idaho, this methodology underestimates observed local service territory savings while simultaneously overestimating out-of-state energy savings.

In order to report transparency of initiative benefits, it is necessary to estimate savings at a higher resolution than northwest regional savings. For example, it is recommended to report savings at the state-level, utility-level, or county-level, if source data permits.

The Evaluators were unable to review total regional and local program unit values reported by NEEA, as this data is provided to NEEA under individual contract with local utilities, Energy Trust of Oregon, BPA, manufacturers, and market actors with NDA's. However, NEEA confirms that the data provided from each of these stakeholders includes data at the zip code-level resolution. Therefore, it is possible to estimate net market units by zip code, which can then be aggregated to the utility service territory for each utility that currently funds NEEA initiative efforts.

The Evaluators also estimated Idaho local program units using the service territory allocation share. This assumption assumes that the aggregated local program units from all utilities funding NEEA displays similar distribution to the total regional units distributed across the Pacific Northwest region. In the case that NEEA has utility-specific local program unit estimates, those values should be used instead.

The funder share methodology and the service territory methodology do not rely on the same inputs. For example, the funder share methodology attempts to estimate utility regional growth in demand requirements, number of customers, and retail energy sales. This is then applied to program savings, regardless of the actual observed geographic distribution of measure completes. However, the service territory methodology does not attempt to forecast future growth. Instead, it estimates the proportion of total project completions that actually occurred during the evaluation period in question by summarizing, to the highest detail possible with the data provided, the total aMW most likely to have been saved within the Idaho Power or Avista service territory for the specific program and measure in question.

Therefore, the funder share methodology and the service territory methodology do not share any relationship or interaction. The Evaluators are unable to estimate how selection of service territory allocation rather than funder share allocation would change the magnitude of savings for a program without additional information, such as the type of program being claimed, the regional distribution of measure completes in which savings are being claimed, and the utility service territory in which savings are being claimed. Each of these considerations have the ability to cause an increase or decrease in savings.

Based on the findings detailed above, the Evaluators present the following findings and recommendations based on our review of NEEA's allocation methodology:

Table 3-23: Summary of Allocation Share Findings and Recommendations

Findings	Recommendations
Finding #1: Utilities that fund NEEA can choose whether savings are reported by allocation share methodology or service territory methodology. The allocation share methodology overrepresents out-of-state and out-of-service territory savings across measures, codes, and standards while simultaneously underrepresenting in-state and in-service-territory savings across measures, codes, and standards. However, the service territory methodology accurately represents benefits directed to Avista and Idaho Power customers within the state of Idaho.	**Recommendation #1:** The Evaluators recommend Avista and Idaho request NEEA to report annual savings via the service territory methodology for each measure claimed by NEEA for Idaho Power electric, Avista electric, and Avista gas.
Finding #2: The data NEEA utilizes to estimate net market savings is available at resolutions that allow NEEA to estimate precise savings for each utility service territory.	
Finding #3: The Evaluators found that the methodology in which savings were estimated across measures were inconsistent. For some measures, service territory methodology was used, and for others, funder share allocation methodology was used.	

Findings	Recommendations
Finding #4: NEEA prioritizes cost-effective savings in terms of regional benefit. Therefore, savings and cost-effectiveness are distributed across the region evenly, despite observed distribution of savings across states. Although this philosophy has merit, more precise estimates of utility-level and program-level savings help NEEA's stakeholders relay relevant savings and cost-effectiveness results to their respective regulatory commissions. This remains critical, due to some state-level commission orders to pursue all cost-effective energy efficiency efforts.	**Recommendation #2:** The Evaluators recommend that Avista and Idaho Power request annual savings reports to include estimates of administrative costs, incentive costs, and non-incentive costs by service territory. This will allow each utility to calculate more accurate cost-effectiveness tests for each initiative to determine whether extension of funding is a viable option within each utility's regulatory environment.

Based on the findings and recommendations of allocation methodology above, the remainder of the report estimates Ex Post electric and natural gas savings for NEEA efforts using the *service territory methodology*. The service territory allocation values are estimated by NEEA using confidential program and sales data from various organizations within the Pacific Northwest. Although the Evaluators are unable to review or replicate these values, the Evaluators have reviewed NEEA's service territory allocation methodology and find the steps to be reasonable.

3.4 Cost Effectiveness Methodology Review

Although the Evaluators calculated cost effectiveness for this evaluation work independently from NEEA's cost effectiveness procedures and assumptions, the Evaluators provide in this section a comparison of cost effectiveness methodology between NEEA and Idaho Power and Avista.

In response to a request for cost effectiveness methodology documentation, NEEA delivered the following information:

- NEEA's 2021 portfolio cost effectiveness analysis
- NEEA's Electric Cost Effectiveness Operational Guidelines
- 2022 Q1 and Q2 Cost Effectiveness Advisory Committee PowerPoints summarizing NEEA introduction to savings and cost effectiveness procedures

Within NEEA's Electric Cost Effectiveness Operational Guidelines document, NEEA states:

> "NEEA's purpose is to look at the total societal impact of transforming a market to ensure that the regional investment is an appropriate use of funds for the long term. Working under this perspective NEEA considers all incremental quantifiable costs and benefits of the total regional savings achieved through transformation, regardless of who accrues them. Ultimately, NEEA, as a regional organization, is attempting to answer the question: "will costs to society be reduced relative to an alternate resource?"

The Evaluators note that NEEA's procedures to include total regional savings in NEEA's cost effectiveness calculations is in direct opposition to the RTF's Guidelines in which "costs and benefits should reflect the

differences between the efficient and baseline cases."[9] This methodology does not accurately represent the cost effectiveness of NEEA activities, rather, the cost effectiveness of NEEA activities in combination with naturally occurring baseline as well as locally incented measures through local utilities. NEEA's current cost effectiveness methodology essentially estimates the cost effectiveness of total current gross, non-incremental energy savings for the entire Northwest region, effectively double counting the benefits and costs already attributed to utilities. The Evaluators conclude that NEEA's current methodology for calculating cost effectiveness does not accurately reflect NEEA contributions.

In addition to the difference in methodology summarized above, the Evaluators compare and contrast NEEA's and Idaho Power and Avista cost effectiveness methodology in the table below. The NEEA Cost Effectiveness Methodology column indicates the methodology NEEA employs to calculate portfolio cost effectiveness for each planning period. The Idaho Power/Avista Cost Effectiveness Methodology column indicates the methodology the Evaluators employed to estimate cost effectiveness for NEEA-related activities in the Idaho Power and Avista service territories for this work.

Table 3-24: NEEA and IPC/Avista Cost Effectiveness Methodology Comparison

Input	NEEA Cost Effectiveness Methodology	Idaho Power/Avista Cost Effectiveness Methodology[10]
Cost Test	TRC	UCT
Benefits Included	■ Energy-related costs avoided by the utility ■ Capacity-related costs avoided by the utility, including generation, transmission, and distribution ■ Additional resource savings (non-energy benefits) ■ 10% conservation adder	■ Energy-related costs avoided by the utility ■ Capacity-related costs avoided by the utility, including generation, transmission, and distribution
Costs Included	■ Program overhead costs ■ Program installation costs ■ Incremental measure costs	■ Program overhead costs ■ Utility/program administrator incentive costs
Source of Avoided Costs	6th or 7th Power Plan	Avoided costs from each utility IRP
Scope of Costs/Benefits	Total Regional: includes gross costs and benefits within the total region, regardless of who accrues it, or how it is accrued. This includes units categorized as naturally occurring baseline units and local program units.	Net Market: includes net costs and benefits accrued by the utility's tracked. This includes only local program units with naturally occurring baseline removed.

[9] https://rtf.nwcouncil.org/rtf-operative-guidelines/

[10] Idaho Power and Avista methodology in regards to this evaluation.

Input	NEEA Cost Effectiveness Methodology	Idaho Power/Avista Cost Effectiveness Methodology[10]
Programs Included in Portfolio	Formally analyzed for each market transformation initiative in the Market Development phase, listed below (codes and standards are not included in NEEA cost effectiveness portfolio testing) 1. Efficiency Measures: a. Manufactured Homes b. Luminaire Level Lighting Controls c. Heat Pump Water Heaters d. Retail Product Portfolio	Analyzed for each measure, standard, or code in which net market effect savings are claimed, listed below: 1. Efficiency Measures 2. Standards 3. Codes
Period of Analysis	Calculated based on estimated portfolio savings during the 20-year planning horizon.	Calculated based on unit/savings achieved for each calendar year evaluated, separately.

As seen in the table above, the methodology employed by NEEA significantly differs from the methodology the Evaluators employed for both Idaho Power and Avista. The Evaluators aligned cost effectiveness methodology for Idaho and Avista to the procedures the utilities employ to report cost effectiveness of the utility portfolio to Idaho Commission each year. These methodologies portray large differences in inputs, scope of costs and benefit, definition of 'portfolio', and period of analysis. Because these large differences exist, the Evaluators recommend that Idaho Power and Avista continue to evaluate cost effectiveness of NEEA impacts internally, and separate from NEEA cost effectiveness results.

3.5 Utility Staff Interview Results

As part of this work, the Evaluators met with representatives from Idaho Power, Avista, and NEEA to discuss NEEA's market transformation work. The Evaluators also spoke with each of the Idaho utilities to gather additional information for the motivations for the evaluation of NEEA's initiatives. The conversations with the utility staff largely focused on:

- Utility staffs' concerns towards NEEA's services and methodology;
- Utility staffs' understanding of NEEA's current savings allocation and cost effectiveness models; and,
- Utility staffs' perceived benefits of NEEA's regional market transformation efforts.

The conversations with NEEA sought to better understand NEEA's operations; their baseline savings, savings allocation, and cost effectiveness models; as well as their opinions of the current market climate. This section summarizes the key findings from these interviews, highlighting areas of gaps in agreement or understanding across the three parties.

3.5.1 Cost Effectiveness Advisory Committee

Before summarizing the results of the staff interviews, the Evaluators find it necessary to outline the Cost-Effectiveness Advisory Committee (CEAC). The CEAC is a committee consisting of NEEA funding stakeholders with the objective of reviewing and advising NEEA staff on methods, data sources, and inputs for use in NEEA's cost-effectiveness analysis and savings reporting. The Committee, composed of NEEA funders and additional regional stakeholders, meets quarterly to track and review components of planned and completed market research and evaluation work. CEAC's responsibilities include:

1. Review and advise regarding NEEA cost-effectiveness and savings information to inform annual reporting
2. Review and advise regarding market transformation cost and savings measurement and estimation methods
3. Review evaluation findings that affect cost and savings information to inform annual regional tracking and reporting purposes
4. Work with your organization to provide NEEA staff with relevant incentive data for regional tracking and reporting purposes
5. Review and advise regarding new market research and evaluation methodologies

Avista staff and Idaho Power staff participate in the quarterly CEAC meetings.

NEEA provided the following documentation regarding the purpose of the CEAC and content of the CEAC meetings:

- **Cost Effectiveness Advisory Committee Charter:** Describes CEAC's purpose, responsibilities, membership, meeting schedule, and charter review schedule
- **Q1 and Q2 2022 CEAC meeting slides**

In addition, the Evaluators asked NEEA Staff, Avista staff, and Idaho Power staff to describe the purpose of CEAC, the content of CEAC meetings, the frequency of CEAC meetings, and thoughts as to how CEAC meetings can be improved.

The Cost Effectiveness Advisory Committee Charter document provided by NEEA supports NEEA's perspective regarding the purpose of CEAC meetings to be focused on reviewing and advising NEEA cost effectiveness and savings information towards annual reporting. In addition, the first slides in each of the 2022 CEAC meeting slides reiterate the direct responsibilities of the CEAC to review and advise NEEA on cost effectiveness and savings information used towards annual reporting. However, the slides following summarize year-over-year program market progress, forecasted number of units vs. actual number of units, and overall market growth for each measure, and co-created savings rather than the specific inputs and assumptions included in those values. The Evaluators reviewed each document for reference to codes and standards assumptions, however, mention of these topics were not included at detail greater than forecasted savings.

Although the Evaluators did not review all CEAC meeting slides from 2017 through 2022, the Evaluators asked NEEA and utility staff to describe CEAC's purpose and the content of CEAC meetings to build a

more complete narrative of CEAC understanding. Through these in-depth interviews, NEEA staff indicated that the meetings are provided to allow utilities to question and provide recommendations for assumptions, inputs, and results. However, the Evaluator found that utility staff described the CEAC meetings as informative.

3.5.2 Evaluation Motivation

Idaho Power and Avista launched an evaluation to test the cost-effectiveness of NEEA's market transformation services. Idaho Commission staff have noticed that an increasing portion of the shared savings the Idaho utilities receive from NEEA's efforts stem from Washington and Oregon based codes and standard changes. As a result, commission staff "*is concerned that NEEA claims savings it is not directly responsible for" and that "to support the continued funding of NEEA, an independent EM&V should be conducted to clarify the savings NEEA claimed plus the allocation and cost effectiveness of those savings to its member utilities based on the utilities' DSM avoided cost*" (IPUC Order Nos. 35129 and 35270). Utility staff noted that a large portion of their energy efficiency-related budget is devoted to NEEA – one that is continually increased year after year-- and "*if NEEA is no longer cost-effective after an independent EM&V is conducted, the [companies] should reexamine its continued participation*" (IPUC Order Nos. 35129 and 35270).

Both sets of utility staff stated that they recognize the value and importance of NEEA's regionally-focused philosophy and acknowledge that NEEA's model depends on collaboration from as many utilities as possible within the region to succeed. The utility staff noted that NEEA began as a regional effort that sought to increase the market power of the four states through an alliance; it was founded on the notion that *"if it's good for one area, it's good for all the areas and therefore the savings, the benefit of the program should be recognized regionally rather than to a specific jurisdiction or state"* (utility staff). According to NEEA staff, when combined into a four-state region, the Pacific Northwest represents 5% of the national US market; they emphasize that although 5% may seem low, *"with a consolidated, aggregated voice in that marketplace, it's pretty amazing what we've been able to ask from the national market actors"* (NEEA staff). Utility staff cited the residential and commercial building stock assessments and other regional research efforts NEEA manages are useful in their initiatives and analyses. However, utility staff indicated they are skeptical of NEEA's customer-focused initiatives, noting that these initiatives overlap with their own programs. Utility staff explained they would prefer NEEA to focus more on upstream programs and the manufacturer and distributor levels of the supply chain. In general, utility staff recognize NEEA's value and the importance of regional collaboration, and see to ensure Idaho residents are directly benefitting from NEEA's efforts.

3.5.3 NEEA's Market Transformation Model

NEEA staff explained that NEEA stemmed from the recognition that "*utility programs are seeking to influence consumer behavior, ultimately, which includes the whole supply chain that deliver those products and services to consumers. And if we're going to do that, we need to understand better what are the mechanisms that bring those products and services to market. What are the things that consumers think about when they're deciding to buy those things and what are the sort of other dimensions to the problem?"* (NEEA staff).

At its inception, NEEA achieved funding from various utilities from four states in the Pacific Northwest – Washington, Oregon, Idaho, and Montana – as well as support from those states' regulatory commissions, consumer groups, and trade associations. Since NEEA's original three-year pilot phase in the late 1990s, it has received approval and funding on a five-year cycle. NEEA depends on this longer funder circle, as market transformation work takes time (typically viewed on a 20-year cycle), therefore the benefits are not seen immediately.

When explaining their model, NEEA staff use a traditional S-curve to demonstrate the "diffusion of innovation theory" in which a new technology enters the market at the bottom end of the spectrum, is first adopted by a specific set of people known as "innovators," followed by "early adopters," and eventually hits the mainstream market and becomes standardized via code and standards changes. NEEA staff explain that their role is to accelerate market adoption and get new technologies into the mainstream market stage of the S-curve quicker. When NEEA conducts market transformation work, they focus in on what it will take *"to make market adopt [this product] at a high rate?...[we're] doing market characterization work, [we're] doing market test studies to see what kind of things [we] can do to help overcome barriers to market adoption"* (NEEA staff).

When forecasting their baseline market transformation calculations, NEEA works with third-party evaluators to collect data on current adoption rates and market trends. NEEA staff noted that they develop a baseline picture for every initiative in their portfolio and use this data to determine which initiative to move forward with. NEEA staff explained that throughout each five-year funding cycle they focus on a variety of technologies in all stages of the market transformation S-curve, noting that different technologies move through the curve, and ultimately the market adoption process, at varying speeds. Once NEEA decides which "energy savings opportunities" to focus on, they *"spend a lot of time and effort often getting the [measure] ready for market adoption in the mainstream market adoption, sort of the middle of the S-curve. But once the market takes off, [their] basic theory is that the market itself will drive that adoption because [they] have readied the market to do that"* (NEEA).

3.5.4 Defining Savings

Utility staff explained that NEEA uses a funder share savings model to allocate savings. Under this model, the utilities receive a proportion of savings equal to their share of NEEA's overall budget. Funder share amounts are determined by each utility's electric load, with higher load utilities contributing more money than lower load utilities. Funder share amounts are reviewed and approved each funding cycle by NEEA's CEAC.

Under NEEA's funder share and savings allocation model, it does not matter where the savings were garnered, and thus Idaho may receive savings that resulted from codes and standard changes that occurred in Washington or Oregon and not Idaho. Although the Idaho utilities staff understand why NEEA has structured their savings model in this way, they expressed concern that Idaho residents are not directly benefitting as much from NEEA's work, and simultaneously are funding efforts that are benefitting customers out-of-state rather than within Idaho, and as a result, NEEA may not be cost effective for Idaho. In IPUC Order No. 35270, Idaho Power "s*tated it believed customers benefited from its participation in NEEA but expressed that it had mentioned similar concerns to Staff's concerns in a past case, including its concerns about savings attributed to codes and standards, the allocation method*

of savings to customers, and cost effectiveness impacts from declining avoided cost in the current NEEA cycle;" this sentiment was echoed by Avista in IPUC Order No. 35129. Staff from both utilities noted that NEEA provides detailed data about where all their savings are coming from. Utility staff indicated that NEEA are very organized, and that each year, the utilities are provided an annual spreadsheet with detailed megawatt hour calculations and rolled up savings for each category. However, utility staff noted that there is a less transparency regarding how NEEA operationalizes their efforts and subsequently calculates those efforts into savings. Moreover, utility staff do not always agree with some of the assumptions NEEA includes in their cost-effectiveness models. For example, NEEA relies on winter capacity benefits for heat pumps, even though Idaho Power is a summer peaking utility. Additionally, NEEA uses total regional savings that includes baseline numbers, rather than net market effects.

Lastly, although Idaho Power and Avista staff are members of NEEA's CEAC, neither utility's staff feel empowered to question NEEA's cost effectiveness calculations during those meetings. Utility staff described the committee's quarterly meetings as a basic report out of their activities over the past few months, rather than an opportunity to discuss the models and assumptions. This sentiment contradicts NEEA's perception of the Cost Effectiveness Advisory Committee meetings. NEEA staff indicated that CEAC meetings are an opportunity for member utilities, regulators, and other stakeholders to review and question NEEA's saving assumptions:

> *"Every year every single input assumption to every savings claim that's reported to the utilities is reviewed by CEAC. That's a lot of work so I won't represent that everybody on the CEAC looks at every single assumption, but in theory, everything is open and available for comment and adjustment as needed."* (NEEA staff)

3.5.5 Emphasis on Codes & Standards

Referencing the Idaho Public Utilities Commission Order Nos. 35129 and 35270, one of the main impetuses of this evaluation has been the perceived shift away from measures and equipment upgrade programs towards codes and standards changes. When asked about this perceived shift, NEEA staff explained that their budget has remained consistent across their efforts and that codes and standards are one of the minority investments when comparing against all other NEEA efforts. One theory that could explain the disconnect between Idaho utilities' perception that there has been increased focus on codes and standards, rather than efficiency measures and emerging technologies, is the notion that much of the time and effort invested into the early stages of market transformation work does not result is substantial savings. It is feasible, that NEEA continues to invest the bulk of budget on the earlier stages of the market transformation S-curve, but that these savings are not realized until the codes and standards stage. When asked how they prioritize projects, NEEA staff noted that they consider the potential market transformation pathway for all proposed "energy savings opportunities" and prioritize those opportunities with clear paths. They explained that codes and standards changes are the clearest indicator of market transformation success, as codes and standards make the energy savings opportunities standard practice. Thus, NEEA tends to focus their work on energy savings opportunities that can ultimately result in codes and standards changes.

In addition to concerns that NEEA's work has shifted more towards codes and standards changes, the Idaho utilities expressed the most trepidation over the fact that much of NEEA's codes and standards

work is located outside of Idaho. As stated in the IPUC Order No. 35270, commission staff is "*concerned that NEEA claim[s] savings it was not directly responsible for producing"* and stated *"if savings from codes and standards are removed, NEEA would not be cost-effective.*" NEEA staff indicated *"[they] pay attention to what [they] call "regional equity", how do [they] have a balanced portfolio that has a chance of really delivering the allocation of savings back to the states, not down to the service territory"* (NEEA staff). They went on to explain that they focus on state and regional efforts, rather than service territory efforts, because markets are not that different between the states and there's a lot "*self-referencing between [their] states*" (NEEA staff).

Although NEEA's regional lens makes sense to the Idaho utility staff in theory, utility staff noted that this theory often falls short in practice. Idaho utility staff emphasized the contrasting political climate of their state versus that of Washington, Oregon, and Montana, noting that what works in one state may not work in another state.

When asked about the political differences across the state, NEEA recognized the varying political climates across their four member states and acknowledged the hesitancy towards codes and regulation environment currently present in Idaho. However, NEEA staff went on to explain that current political climate does not worry them, as politics constantly change and evolve: "*those political winds blow irrespective of kind of the code environment and the building construction industry"* (NEEA staff). Because of their future forward visioning and five-year cycle planning, NEEA focuses more on long-term engagement and relationship building among the construction and manufacturing industries, assuming that politics will eventually catch up with market demands. NEEA staff indicated that much of this long-term engagement and relationship building with construction and manufacturing industries involves training and education, meeting with builders, manufacturers, and enforcement personnel.

NEEA admitted that tracking and quantifying their code-based activities – like training, education, and outreach – is challenging. They noted "*it's an evolving piece*" and they have engaged third party evaluators to help them develop better and more effective metrics for these activities that focus more on actual behavioral changes that resulted from their activities, rather than just raw attendance and participation numbers.

3.5.6 Interview Findings and Recommendations

It is evident from these interviews that there is a disconnect between the Idaho utilities and NEEA's understanding of the purpose and expectations of NEEA's market transformation work.

> *"This disconnect between when NEEA's budget is being applied to the market and when we're seeing the benefits and being unable to report those benefits is one really key distinction between a traditional efficiency acquisition program and what we do in market transformation."* (NEEA staff)

The Evaluators present the following findings and recommendations based on our review of NEEA's allocation methodology:

Table 3-25: Summary of Allocation Share Findings and Recommendations

Findings	Recommendations
Finding #5: The interviews revealed that although the three parties fundamentally want to improve energy efficiency and increase market adoption of emerging technologies, their preferred approaches to this shared goal vary. Unlike the utilities, who strive to demonstrate the cost-effectiveness of their initiatives and investments on an annual or bi-annual cycle, NEEA operates on a five-year funding cycle, which is different than the typical annual or biannual utility planning cycle.	**Recommendation #3**: The Evaluators recommend that NEEA work with utilities to best serve each state's current regulatory environment and utility's localized concerns.
Finding #6: NEEA's programs are designed with a broader constituency in mind than that of its member utilities. While the Idaho utilities' programs are targeted to produce benefits for their ratepayers, – NEEA is tasked with developing programs that need to consider what is best for the entire four-state region. At its core, NEEA's ethos assumes that changes made in one state will eventually spillover into another state and that in the long run, regional change will be realized.	**Recommendation #4**: The Evaluators recommend that NEEA track progress for each code change relative to administrative dollars spent towards state-level codes and associated energy savings accrued by each state-level code. With the 20-year market transformation in mind, the service-territory-level savings will still accrue over the 20-year horizon, however, using this methodology, actual market transformation effects of co-created savings will be more accurately tracked.
Finding #7: NEEA currently allocates code savings via funder share methodology, which estimates a proportion of total NEEA funding to each utility based on number of electric retail customers and overall load. Therefore, savings from code adoption in Washington State are in-part assigned to Idaho. The Evaluators found that out-of-state code building savings are currently being attributed to Idaho utilities. The Evaluators are skeptical that spillover from out-of-state code changes result in energy savings within the state of Idaho. Although the barriers to code adoption from one state to the next may be similar, there is no evidence to suggest that these learnings transfer to observable and measurable savings. NEEA has stated that starting in 2022, code savings will be allocated via service territory allocation.	
Finding #8: The NEEA Cost Effectiveness Advisory Committee (CEAC) meets quarterly with the NEEA objectives to provide space for discussion around results of recently completed evaluation, progress of field studies, relevant updates to programs, and acceptance or questioning of NEEA methodology towards calculation of savings.	

The remainder of this report delivers the quantitative analysis of NEEA's claimable savings within the state of Idaho along with the associated cost effectiveness tests. The Evaluators balanced acknowledgments that NEEA's regional efforts provide intangible, and often difficult to quantify benefits to its member states, along with the recognition that the Idaho utilities want to invest their efforts into activities that are best for their customers within their service territories.

3.6 Impact Evaluation Results

In this section, the Evaluators summarize the verified savings for each Idaho Power and Avista for each program year between 2017 and 2021, summarized by:

- Efficiency measures
- Standards
- Codes

3.6.1 Efficiency Measures

The Evaluators reviewed savings attributed to the efficiency measures in each of the 2017 through 2021 annual NEEA reports to each Idaho Power and Avista. In the table below, the Evaluators summarize the energy efficiency measure initiatives NEEA has claimed savings for between 2017 and 2021.

Table 3-26: NEEA Code Initiatives

Sector	Initiative	Measures
Residential	Ductless Heat Pumps	Ductless heat pumps
	Heat Pump Water Heaters	Heat pump water heaters
	Retail Product Portfolio	Air purifiers Clothes washers Freezers Soundbars Televisions Window AC
	Super-Efficient Dryers	Clothes dryers
	Televisions	Televisions
	Manufactured Homes	HUD code/NEEM 2
	Residential Lighting	CFL bulb in existing LED bulb in existing
	Extended Motor Products	Residential hydronic heating circulation w/ EE ECM Residential circulator pumps with EE ECM/motor
	XMP Pumps	DHW ECM circulator
Commercial	Commissioning Buildings	Nonresidential new construction commissioning Retro commissioning commercial existing

Sector	Initiative	Measures
	Luminaire Level Lighting Controls	Luminaire level lighting controls
	Reduced Wattage Lamp Replacement	25W 4ft T8s 28W 4ft T8s
	Building Operator Certification Expansion	Building operator certification
	Desktop Power Supplies	ENERGY STAR desktop
	Other Strategic Energy Management	Strategic energy management
	Extended Motor Products	Commercial hydronic heating circulation w/ EE ECM Commercial circulator pumps with EE ECM/motor Commercial variable speed clean water pump
	Window Attachments	Commercial secondary windows
	XMP Pumps	DHW ECM circulator
Industrial	Certified Refrigeration Energy Specialist (CRES)	Savings from projects submitted by Certified Refrigeration Energy Specialists
	Commissioning Buildings	Nonresidential new construction commissioning Retro commissioning industrial existing
	Other Strategic Energy Management	Strategic energy management
	Reduced Wattage Lamp Replacement	25W 4ft T8s 28W 4ft T8s

NEEA claimed efficiency measure savings for measures completed in Washington, Oregon, Montana, and Idaho. Instead of claiming 100% savings for all efficiency measures completed in the region, NEEA nets out the number of measures completed through local utilities and naturally occurring baseline.

To calculate verified savings, the Evaluators verified local program units and baseline units were netted out correctly. Where discrepancies were identified, the Evaluators updated the Ex-Post formulas to correctly account for NEEA influence values.

The Evaluators also removed non-Idaho federal measure savings from all standards initiatives to estimate savings that benefit Idaho customers directly. Therefore, this section reports verified efficiency measure savings accrued within the state of Idaho only. The Evaluators summarize verified savings and cost effectiveness results in the tables below using service territory allocation methodology.

The sections below detail the reviews completed to estimate verified savings through NEEA code efforts:

- Impact methodology review
- Cost effectiveness results
- Findings and recommendations

3.6.1.1 Impact Methodology Review

In this section, the Evaluators summarize findings and recommendations for each of the following components towards verified impact results of NEEA's energy efficiency measures:

- Database and document review (Section 3.6.1.1.1)
- UES review (Section 3.6.1.1.2)
- Market transformation baseline review (Section 3.6.1.1.3)
- Funder share methodology review (Section 3.6.1.1.4)

3.6.1.1.1 Database and Document Review

The Evaluators reviewed the 2017-2021 annual savings reports for Avista electric, Avista gas, and Idaho Power electric to identify and address any inconsistencies with data tracking methods and opportunities to improve year-over-year tracking of NEEA efforts.

The Evaluators found during database review that a variety of fields are empty across measure types (for example, service territory share, UES, or comment, due to lack of savings claimed for the measure). This makes verification of values difficult and complicates tracking of a measure progress over time. The Evaluators summarize the missing values further in Appendix D. The Evaluators recommend that measure-level values are detailed as accurately as possible, and that each field is completed in the workbook, whether or not regional net units exist. This allows for year-over-year tracking of regional units, baseline units, retirement units, and unit energy savings values over time.

Additionally, the Evaluators found that for some measures, the net regional unit calculations were completed incorrectly. Therefore, the local program units, baseline units, and retirement units were incorrectly netted out of total regional net savings. For some measures, this change resulted in lower savings, and for others, this change resulted in higher savings.

The Evaluators also note that the distribution of baseline and retirement units differ across total regional units and local program units. That is, for some measures, NEEA estimates that a large proportion of local program units are baseline. The Evaluators raise concern for this assumption, as local program units are incentivized, and free ridership of programs is also tracked by local utilities. It is unreasonable to assume that locally incentivized, rebated measures display the same free ridership as non-incentivized measures in the region. Therefore, the Evaluators calculated verified net energy savings assuming that distribution of baseline units is equal, proportionally to each total regional units and local units. The Evaluators recommend, however, that NEEA integrate more accurate assumptions regarding free ridership to estimate baseline units within locally incentivized units.

3.6.1.1.2 UES Review

The Evaluators reviewed the following documents and spreadsheets for this evaluation work:

- 2017-2021 annual savings reports for Avista electric, Avista gas, and Idaho Power electric
- Regional Technical Forum (RTF) UES workbooks
- Consumer products UES methodology documentation
- Field studies completed
- Engineering algorithms utilized by NEEA

The Evaluators reviewed each document listed above in order to identify and address any inconsistencies in UES value application and engineering algorithms employed by NEEA to estimate total regional savings.

The Evaluators found that for the efficiency measures, the majority of measure UES are referenced from the RTF workbooks, weighted to regional climate zones, average household heating type, and average square footage. The majority of measure savings are also reviewed by third-party evaluators in order to verify correct per-unit savings allocation. Due to the high-level of third-party evaluator reviews conducted for each of the claimed efficiency measures, the Evaluators focused on the application of the UES values within the annual workbook rather than the validity of the UES themselves.

3.6.1.1.3 Market Transformation Baseline Review

Calculates a naturally occurring baseline for each initiative in order to track the market transformation of each product in order to follow the market transformation S-curve displayed in Figure 3-2. NEEA models the counterfactual scenario of market potential that demonstrates how the market would have progressed without NEEA and utility intervention. NEEA accomplishes this by conducting market characterization studies early in program design, conducting large customer survey efforts, and collecting data which identifies trends of current level of practice.

In the case that an event has occurred which has changed the market transformation of a product, for instance, a federal standard is implemented which updates the product's minimum efficiency, NEEA reconfigures the model which forecasts naturally occurring baseline.

The Evaluators found that third-party evaluations are completed for the majority of modeled measure market transformation baselines. The Evaluators reviewed the evaluation reports and concluded that the market transformation baseline is thoroughly reviewed and defended. Therefore, the Evaluators focused on how the market transformation baselines are integrated to the annual savings workbook rather than investigating the assumptions involved in the creation of the baseline itself.

3.6.1.1.4 Funder Share Methodology Review

As described in Section 3.3, the Evaluators calculated verified savings using the service territory allocation methodology. The service territory values were calculated by NEEA using confidential datasets from NEEA stakeholders. The Evaluators were unable to review the data or replicate the service territory values because the originating data is delivered to NEEA with non-disclosure agreements. The Evaluators used the service territory values as displayed in the NEEA annual workbooks.

The Evaluators note that NEEA calculated Ex Ante savings for energy efficiency measures using a mix of service territory share and funder share allocation for the measures it claims savings for. The rationality behind using one methodology over the other is unclear.

As described previously, the Evaluators conclude that the funder share methodology does not accurately reflect benefits claimed by Idaho utility customers. Therefore, the results displayed in this report reflect service territory savings. Additionally, the Evaluators recommend that Avista and Idaho Power request NEEA utilize service territory methodology for future NEEA annual savings reports in order to calculate energy savings and cost-effectiveness testing for the Commission.

3.6.1.2 Verified Ex Post Savings

The Evaluators summarize verified Ex Post efficiency measure savings results by utility, fuel type, and program year in the tables below. The Evaluators provide initiative-level savings in Appendix A.

Table 3-27: Summary of Idaho Power Idaho Electric Verified Ex Post Efficiency Measure Savings by Program Year

Year	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
2017	0.31	0.12	39.20%
2018	0.40	0.15	38.34%
2019	0.28	0.12	43.78%
2020	0.39	0.14	37.32%
2021	0.42	0.15	36.93%
Total	**1.78**	**0.69**	**38.78%**

The overall verified realization rate for Idaho Power measure efforts due to NEEA was 39%. The discrepancy between Ex Ante and Ex Post savings are largely due to the difference between funder share allocation and service territory share among measures. Funder share allocation for Idaho Power ranged between 6.42% and 9.23%, as displayed in Table 3-22. In contrast, the service territory allocation share ranged between 0% and 16% for individual measures. The overall impact of this change resulted in a low realization rate, indicating that the majority of claimed measure savings accrue outside the state of Idaho.

Table 3-28: Summary of Avista Idaho Electric Verified Ex Post Efficiency Measure Savings by Program Year

Year	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
2017	0.06	0.03	57.68%
2018	0.06	0.04	73.37%
2019	0.06	0.03	46.97%
2020	0.08	0.03	39.76%
2021	0.08	0.04	48.21%
Total	**0.34**	**0.18**	**52.11%**

The overall verified realization rate for Avista electric measure efforts due to NEEA was 52%. Similarly, the discrepancy between Ex Ante and Ex Post savings are also due to the difference between funder share allocation and service territory share among measures. Funder share allocation for Idaho Power ranged between 1.19% and 1.73%, as displayed in Table 3-22. In contrast, the service territory allocation share ranged between 0% and 19% for individual measures. The overall impact of this change resulted in a low realization rate, indicating that the majority of claimed measure savings accrue outside the state of Idaho.

Table 3-29: Summary of Avista Idaho Gas Verified Ex Post Efficiency Measure Savings by Program Year

Year	Ex Ante Therms Savings	Ex Post Therms Savings	Realization Rate
2019	636	0	0.00%
2020	0	0	N/A
2021	0	0	N/A
Total	**636**	**0**	**0.00%**

NEEA allocated natural gas savings to Avista within the Idaho region for the program year 2019. Program years 2020 and 2021 did not claim savings for any measure initiatives for Avista Idaho gas measures. In 2019, the only initiative NEEA claimed energy savings for was the condensing rooftop unit initiative. The condensing rooftop units initiative estimated 636 Therms allocated to Avista Idaho via the funder share methodology. However, the associated service territory allocation for these measure completes was zero, and therefore, 0 Therms savings are verified to have benefitted Idaho customers for this initiative.

3.6.1.3 Cost Effectiveness Results

The Evaluators found that NEEA calculates cost-effectiveness of its portfolio using the total regional savings rather than the net market effects. NEEA's rationality for this is the following:

> *"We use the Total Resource Cost test (TRC) to assess the cost effectiveness of a product. As mentioned in the guidelines, NEEA's purpose is to look at the total societal impact in a market to ensure that the regional investment is an appropriate use of funds for the long term. Working under this perspective, NEEA considers all incremental quantifiable costs and benefits of the total regional savings achieved through transformation, regardless of where or how they are accrued. This is achieved through a total, regional framework. As a result, we include data from naturally occurring baseline in order to capture the full spectrum of costs and benefits for society. Note that the savings rates and costs we use do account for pre-market intervention baseline estimates, similar to the approach the Regional Technical Forum uses."* (NEEA staff)

The Evaluators determined that this methodology raises concern, and the NEEA cost-effectiveness tests currently account for all measure, standard, and code completions across the entire region, effectively double counting local program savings and simultaneously claiming naturally occurring baseline savings. The Evaluators recommend that Avista and Idaho Power do not implement this methodology, and instead calculate cost effectiveness using the reported net market effects (which nets out local program savings and naturally occurring baseline savings).

Additionally, NEEA calculates cost-effectiveness using the current Power Plan, as stated in Section 2.7. The Evaluators calculated cost-effectiveness using Avista and Idaho Power avoided costs, rather than the avoided costs presented in the Power Plan

The Evaluators summarize verified cost effectiveness results in the tables below. Further detail of measure-level cost-effectiveness is provided in Appendix B.

Table 3-30: Idaho Power Electric Idaho Efficiency Measures Cost Effectiveness by Program Year

Program Year	UCT Costs	UCT Benefits	UCT
2017	$2,186,140.38	$466,619.15	0.21
2018	$2,151,016.22	$463,122.26	0.22
2019	$2,150,393.15	$448,341.19	0.21
2020	$2,215,102.95	$610,854.65	0.28
2021	$2,342,622.29	$602,148.92	0.26
Total	**$11,045,275.00**	**$2,591,086.18**	**0.23**

Table 3-31: Avista Electric Idaho Efficiency Measures Cost Effectiveness by Program Year

Program Year	UCT Costs	UCT Benefits	UCT
2017	$497,315	$166,784	0.37
2018	$489,324	$145,951	0.30
2019	$440,264	$140,466	0.32
2020	$366,823	$152,948	0.42
2021	$407,558	$166,540	0.41
Total	**$2,201,284**	**$772,688**	**0.35**

Table 3-32: Avista Gas Idaho Efficiency Measures Cost Effectiveness by Program Year

Program Year	UCT Costs	UCT Benefits	UCT
2019	$152,294	$0	0.00
2020	$126,061	$0	0.00
2021	$142,512	$0	0.00
Total	**$420,867**	**$0**	**0.00**

Although NEEA provided gas efficiency measure efforts in the form of condensing rooftop units and efficient gas water heaters, the Evaluators found that none of the savings were allocated within the Idaho service territory. Therefore, the costs for each program year were distributed entirely towards code savings, and efficiency measure cost effectiveness for Avista gas Idaho NEEA efforts is not applicable.

As seen in the tables above, all efficiency measure efforts were found to be not cost effective using Idaho Power's and Avista's avoided costs and updated verified Ex Post savings within the state of Idaho, as displayed by the annual measure UCT values ranging between 0.00 and 0.41.

3.6.1.4 Findings and Recommendations

Overall, the efficiency measures Ex Ante savings claimed savings for measures completed in Washington, Oregon, and Montana – therefore, some measures underestimated Idaho-specific savings,

while others overestimated out-of-state savings. The overall effect of this change resulted in a lower than 100% realization rate.

Based on the findings detailed above, the Evaluators present the following findings and recommendations based on our review of NEEA's efficiency measures:

Table 3-33: Summary of Efficiency Measure Findings and Recommendations

Findings	Recommendations
Finding #9: The Evaluators estimated verified Ex Post aMW for the efficiency measures to display 39%, 52%, and 0% realization rates for Idaho Power electric, Avista electric, and Avista gas savings within the state of Idaho, respectively. The difference in claimed savings and verified savings is due to the change to using service territory allocation rather than funder share allocation. The efficiency measures category Ex Ante savings included savings for measures completed in Washington, Oregon, and Montana – therefore, some measures underestimated Idaho-specific savings, while others overestimated out-of-state savings. The overall effect of this change resulted in a lower than 100% realization rate.	The Evaluators reference **Recommendation #1**: The Evaluators recommend Avista and Idaho request NEEA to report annual savings via the service territory methodology for each measure claimed by NEEA for each Idaho Power electric, Avista electric, and Avista gas.
Finding #10: The database review revealed that a variety of fields (measure life, UES) were empty across measure types due to lack of savings claimed for the measure, which made verification of values difficult and complicates tracking of a measure progress over time.	**Recommendation #5:** The Evaluators recommend that measure-level values are detailed as accurately as possible, and that each field is completed in the workbook to allow for year-over-year tracking of regional units, baseline units, retirement units, and unit energy savings values over time.
Finding #11: The database review revealed that NEEA's current method for distribution of modeled naturally occurring baseline units between local program and NEEA efforts is not reasonable. A portion of energy efficient technology sales are due to naturally occurring baseline. NEEA nets out modeled naturally occurring baseline in order to avoid claiming savings for units that would have been sold had no program or NEEA-effort been provided within the market. However, the method in which these baseline units are netted out is not distributed equitably. For some measures, NEEA estimates that a large proportion of local program units are baseline, and therefore a larger proportion of the remaining net market effects is assigned to NEEA efforts. The Evaluators raise concern for this assumption, as it is unlikely locally incentivized, rebated measures display the same free ridership as non-incentivized measures in the region.	**Recommendation #6:** The Evaluators recommend, that NEEA distribute naturally occurring baseline units more equitable between local program units and total regional units.
Finding #12: The Evaluators reviewed the utilized UES via the Regional Technical Forum (RTF) workbooks, field	

study data, and simulation analysis findings and note no large concerns with NEEA UES methodology or market baseline assumptions.	
Finding #13: The Evaluators found that NEEA calculates cost-effectiveness of its portfolio using the total regional savings rather than the net market effects. The Evaluators determined that this methodology raises concern, and the NEEA cost-effectiveness tests currently account for all measure, standard, and code completions across the entire region, effectively double counting local program savings and simultaneously claiming naturally occurring baseline savings. Because Avista and Idaho Power calculate their own internal cost effectiveness tests, this finding does not impact Idaho Power or Avista reporting. However, the Evaluators highlight this finding, as NEEA savings allocation and cost allocation methods are not currently consistent with regulatory requirements.	**Recommendation #7**: In the case that cost effectiveness tests are completed using NEEA-reported savings, the Evaluators recommend that Avista and Idaho Power calculate cost-effectiveness using net market effects rather than total regional savings, as is consistent with current regulatory requirements.

3.6.2 Standards

In the table below, the Evaluators summarize the federal standards NEEA has claimed savings for within Avista Idaho and Idaho Power Idaho annual reports between 2017 and 2021.

Table 3-34: NEEA Standards Initiatives

Sector	Initiative	Measure
Residential	Other Residential Standards	Battery chargers Clothes dryers Central AC Furnace fans Heat pumps Fluorescent lamp ballasts
Commercial	Other Non-Residential Standards	Air compressors Beverage vending machines Ceiling fan light kits Ceiling fans Commercial fryers Commercial PRSVs Commercial refrigeration equipment Commercial unitary ACs Electric motors External power supply Rooftop units Small electric motors Steam cookers Walk-in coolers/freezers Pumps Fluorescent lamp ballasts
Industrial	Drive Power	Motors
Industrial	Other Non-Residential Standards	Air compressors Pumps
Agriculture	Other Non-Residential Standards	Pumps

NEEA claimed federal standard savings for measures completed in Washington, Oregon, Montana, and Idaho. Instead of claiming 100% savings for all federal standard equipment measures completed in the region, NEEA completes an influence evaluation in which a third-party evaluator estimates the qualitative and quantitative influence NEEA contributed towards these federal standard updates. The quantitative value represents the percent of savings from the federal standard update that was influenced by NEEA. This value is incorporated in NEEA Ex-Ante calculations to estimate the baseline units. Therefore, if the influence evaluation concludes that NEEA contributed 3% of the code update energy savings, NEEA estimates that 97% of the total regional units for that measure is equivalent to the baseline regional units for the measure. The Evaluators reviewed and verified that these values were integrated correctly in NEEA workbooks. Where discrepancies were identified, the Evaluators updated the Ex-Post formulas to correctly account for NEEA influence values.

The Evaluators also removed non-Idaho federal standards savings from all standards initiatives to estimate savings that benefit Idaho customers directly. Therefore, this section reports verified federal standards savings accrued within the state of Idaho only.

The sections below summarize the reviews completed to estimate verified savings through NEEA code efforts:

- Impact methodology review
- Staff interview conclusions
- Cost effectiveness results
- Findings and recommendations

3.6.2.1 Impact Methodology Review

In this section, the Evaluators summarize findings and recommendations for each of the following components towards verified impact results of NEEA's federal standards:

- Database and document review (Section 3.6.2.1.1)
- UES review (Section 3.6.2.1.2)
- Market transformation baseline review (Section 3.6.2.1.3)
- Funder share methodology review (Section 3.6.2.1.4)

3.6.2.1.1 Database and Document Review

The Evaluators reviewed each of the supplemental documents provided by NEEA, which included the following:

- 2017-2021 annual savings reports for Avista electric, Avista gas, and Idaho Power electric
- Completed influence evaluations

The Evaluators reviewed each of the documents above to identify and address any inconsistencies with data tracking methods and opportunities to improve year-over-year tracking of NEEA efforts.

The Evaluators found during database review that a variety of fields are empty across code tracking data, similar to our finding for efficiency measure database review. The Evaluators summarize the missing values further in Appendix D. The Evaluators recommend that measure-level values are detailed as completely as possible.

The Evaluators found that naturally occurring baseline is calculated through "influence evaluations" completed by third-party evaluations (summarized in the following sections). The Evaluators found that the influence evaluation findings were not properly integrated into each standard savings estimate, thereby underestimating baseline units and overestimating overall net market effects.

3.6.2.1.2 UES Review

The Evaluators reviewed each of the unit energy savings (UES) values assigned to each federal standard in which savings are claimed by NEEA. NEEA utilizes UES values determined by third-party evaluators for each of the measures claimed. Each measure unit-level savings is weighted by heating and cooling zone across three housing types (single family, multifamily, and manufactured home), if applicable. These values are then multiplied by the net market units for each measure after netting out baseline units for each measure, described in further detail in 3.6.2.1.3.1. The Evaluators summarize the measure-level standards and UES methodologies employed by NEEA between 2017 and 2021 in the table below.

Due to the thorough third-party evaluations and estimates of UES verified for use by NEEA, the Evaluators do not note any concern for discrepancies with the standards UES values applied to estimate NEEA savings. Instead, the Evaluators focused on the rationality of NEEA's high-level application of regional units, baseline methodology, allocation methodology, and overall calculations for each Avista and Idaho Power.

3.6.2.1.3 Market Transformation Baseline Review

This section summarizes NEEA's methodology for estimating naturally occurring baseline for federal standards in which NEEA contributed.

NEEA does employ baseline models for federal standards updates. Alternatively, an "influence evaluation" is completed by a third-party evaluator, which summarizes NEEA's overall qualitative and quantitative influence towards federal standards updates, which result in energy savings. NEEA uses the quantitative assessment from each of these evaluations to estimate the proportion of total regional units to categorize towards naturally occurring baseline. Therefore, NEEA nets out any units that would have occurred in the absence of NEEA efforts towards increasing the energy efficiency of measures through standard updates.

In the section below, the Evaluators provide further detail of the integration of influence evaluations towards estimation of federal standards baseline units.

3.6.2.1.3.1 Influence Evaluation Review

The Evaluators reviewed third party independent evaluations of NEEA's "influence" towards updates in measure standards. The table below summarizes the third-party standards "influence evaluations" provided by NEEA.

Table 3-35: Summary of NEEA Standards Influence Evaluations

Standard	Third Party	Evaluation Completed	Qualitative Assessment	Quantitative Assessment
Beverage Vending Machines Standard Evaluation	TRC	2019	NEEA achieved most of the activities identified in NEEA's Codes & Standards logic mode. NEEA submitted comments in the public review process, including written comments and participation in public meetings.	20%
Ceiling Fan Standard Evaluation Report	TRC	2019	TRC found that NEEA engaged in most of the activities identified in NEEA's Codes and Standards. NEEA focused particularly on submitting comments in the public review process and participating in public meetings.	9%
Commercial and Industrial Pumps Standard Evaluation Report	TRC	2021	TRC found that NEEA engaged in most of the activities identified in NEEA's Codes & Standards logic model. NEEA participated in the Working Group, comments submitted in the public review process, including written comments and participation in public meetings.	24%
Commercial Pre-	TRC	2021	TRC found that NEEA engaged in most of the	4%

Standard	Third Party	Evaluation Completed	Qualitative Assessment	Quantitative Assessment
Rinse Spray Valves Standard Evaluation			activities identified in NEEA's Codes & Standards logic model. NEEA submitted comments in the public review process, including written comments and participation in public meetings.	
Commercial Refrigeration Equipment Evaluation	TRC	2018	TRC found that NEEA played a moderate role in the development and adoption of this standard. In the early stages of the standard development process, NEEA submitted independent comments on the test procedure.	15%
Commercial Unitary Air Conditioners Evaluation	TRC	2018	TRC found that NEEA engaged in several activities prescribed in the codes and standards logic model, particularly through the NEEA staff member's participation in the ASRAC Working Group.	19%
Electric Motors Evaluation	Cadmus	2016	The Motor Coalition, of which NEEA was a key member, heavily influenced the rulemaking, recommending expansion of the scope of the standard to cover all motors except specifically defined exceptions. NEEA was found to provide technical expertise to the Motor Coalition and served as a trusted voice in a negotiation process that has been contentious historically.	First year: 100% After first year: 61%
External Power Supply Evaluation	TRC	2017	Overall, TRC found that NEEA played a small role in the development and adoption of this standard. This is because there were a few barriers to this standard once the DOE removed battery chargers for separate regulation, manufacturer opposition to the EPS standard was minimal. In addition, NEEA's contribution to the federal process is generally to provide technical comments or analysis, but there were few technical needs for this standard.	2.60%
Fluorescent Lamp Ballasts Evaluation	TRC	2016	TRC believes that efficiency stakeholders had a "moderate to low" effect on this standard, and TRC translates this influence of all efficiency stakeholder efforts into a range between 12% and 24% of all energy savings from the standard.	23%
Residential Furnace Fans Evaluation	TRC	2018	TRC found that NEEA played a moderate role in the development and adoption of this standard. However, in the development of the test procedure, NEEA played a significant role.	15%
Small Electric	Cadmus	2016	The majority of the responding	33%

Standard	Third Party	Evaluation Completed	Qualitative Assessment	Quantitative Assessment
Motors Evaluation			manufacturer interviewees (5 of 6) said NEEA was "somewhat effective" or "very effective" in supporting the small motors standard adoption.	
Walk In Coolers Freezers Evaluation	TRC	2019	For the 2014 standard, TRC found that NEEA engaged in several activities prescribed in the codes and standards logic model, particularly through comments submitted in the public review process. For the 2017 standard, TRC found that NEEA engaged in several activities prescribed in the codes and standards logic model, particularly through comments submitted in the public review process.	2014: 12% 2017: 20%

As described above, NEEA makes use of the quantitative assessments from each of these evaluations as follows:

Equation 3-5: Standards Baseline Units Estimation

$$Baseline\ Units_{Standard} = Total\ Regional\ Units_{Standard} * Quantitative\ Assessment_{Standard}$$

First, NEEA uses the quantitative assessment percentage to estimate regional baseline units. Then, NEEA calculates net market units for the standard by netting out baseline units from the total regional units for the standard.

Equation 3-6: Net Market Units Estimation

$$Net\ Market\ Units_{Standard} = Total\ Regional\ Units_{Standard} - Baseline\ Units_{Standard}$$

This methodology ensures that NEEA only claims electric or gas savings towards a standard update resulted due to their participation and efforts in standard update meetings, proposals, and comments.

The Evaluators carefully reviewed each of the third-party evaluation reports above in order to identify whether these evaluations result in independent and reasonable quantitative assessments for estimating claimed savings. We considered the following key topics in our analysis:

- Evaluation indicated that NEEA staff attended standards update meetings
- Evaluation conducted interviews with NEEA Staff
- Evaluation conducted interviews with other parties participating in standards update meetings
- Evaluation reviewed NEEA-specific proposed changes to standards
- Evaluation reviewed and estimated NEEA-specific energy-savings changes dependent on NEEA-specific proposed changes only
- Evaluation qualitative assessment concluded that NEEA contributed a decent amount of effort towards standards updates
- Evaluation quantitative assessment estimated the percentage of savings contributed by each individual NEEA-specific change, supported by documentation that NEEA submitted as proposed changes to the standard
- Each evaluation is conducted consistently and thoroughly

Through careful review, the Evaluators determined that each of the influence evaluations were adequately conducted and that the resulting quantitative assessment for each standard is a sufficient way to estimate NEEA contributions and therefore claimable savings towards each measure. The Evaluators recommend that NEEA continue to complete independent third-party evaluations of NEEA influence towards standards.

The Evaluators note that 13 of the 25 federal standard measures lacked influence evaluations. The Evaluators summarize the federal standard measures in which a third-party evaluation has not been completed to estimate NEEA's quantitative influence towards updates in the table below.

Table 3-36: NEEA Measure-Level Standards

Sector	Initiative	Federal Standard
Residential	Other Residential Standards	Ceiling Fan Kits Residential Central AC Residential Heat Pumps Residential Heat Pump Water Heaters New Construction Heat Pump Water Heaters Battery Chargers Clothes Dryers
Commercial	Other Non-Residential Standards	Ceiling Fans Ceiling Fan Light Kits Commercial Air Compressors Steam Cookers Commercial Fryers
Industrial	Other Non-Residential Standards	Industrial Air Compressors

The Evaluators provide a summary of the contributions to standards and overall portfolio Ex-Ante and Ex-Post savings for the standards in which an influence evaluation was conducted vs. standards in which an influence evaluation was not conducted.

Table 3-37: Idaho Power Electric Standards Ex-Ante Savings by Influence Evaluation Completion

Program Year	Ex-Ante Standard Savings (aMW)	Ex-Ante Portfolio Savings (aMW)	Ex-Ante Standard Savings of Standards with Influence Evaluation (aMW)	Ex-Ante Standard Savings of Standards without Influence Evaluation (aMW)	Ex-Ante Standard Savings of Standards with Influence Evaluation (as % of Standards)	Ex-Ante Standard Savings of Standards without Influence Evaluation (as % of Standards)	Ex-Ante Standard Savings of Standards with Influence Evaluation (as % of Total)	Ex-Ante Standard Savings of Standards without Influence Evaluation (as % of Total)
2017	1.45	2.65	0.31	1.14	21%	79%	12%	43%
2018	1.15	2.77	0.35	0.80	30%	70%	13%	29%
2019	0.40	1.99	0.40	0.00	100%	0%	20%	0%
2020	0.41	1.91	0.41	0.00	100%	0%	21%	0%
2021	0.41	1.82	0.41	0.00	100%	0%	22%	0%
Total	**3.81**	**11.15**	**1.87**	**1.94**	**49%**	**51%**	**17%**	**17%**

Table 3-38: Idaho Power Electric Standards Ex-Post Savings by Influence Evaluation Completion

Program Year	Ex-Post Standard Savings (aMW)	Ex-Post Portfolio Savings (aMW)	Ex-Post Standard Savings of Standards with Influence Evaluation (aMW)	Ex-Post Standard Savings of Standards without Influence Evaluation (aMW)	Ex-Post Standard Savings of Standards with Influence Evaluation (as % of Standards)	Ex-Post Standard Savings of Standards without Influence Evaluation (as % of Standards)	Ex-Post Standard Savings of Standards with Influence Evaluation (as % of Total)	Ex-Post Standard Savings of Standards without Influence Evaluation (as % of Total)
2017	0.36	1.72	0.34	0.02	95%	5%	20%	1%
2018	0.04	1.04	0.04	0.00	100%	0%	4%	0%
2019	0.09	2.43	0.09	0.00	100%	0%	4%	0%
2020	0.40	2.72	0.40	0.00	100%	0%	15%	0%
2021	0.40	1.71	0.40	0.00	100%	0%	23%	0%
Total	**1.29**	**9.61**	**1.28**	**0.02**	**99%**	**1%**	**13%**	**0%**

Table 3-39: Avista Electric Standards Ex-Ante Savings by Influence Evaluation Completion

Program Year	Ex-Ante Standard Savings (aMW)	Ex-Ante Portfolio Savings (aMW)	Ex-Ante Standard Savings of Standards with Influence Evaluation (aMW)	Ex-Ante Standard Savings of Standards without Influence Evaluation (aMW)	Ex-Ante Standard Savings of Standards with Influence Evaluation (as % of Standards)	Ex-Ante Standard Savings of Standards without Influence Evaluation (as % of Standards)	Ex-Ante Standard Savings of Standards with Influence Evaluation (as % of Total)	Ex-Ante Standard Savings of Standards without Influence Evaluation (as % of Total)
2017	0.37	0.60	0.11	0.26	29%	70%	18%	43%
2018	0.30	0.57	0.12	0.18	39%	61%	20%	32%
2019	0.09	0.43	0.09	(0.00)	100%	0%	21%	0%
2020	0.09	0.41	0.09	0.00	100%	0%	23%	0%
2021	0.09	0.39	0.09	0.00	98%	2%	23%	0%
Total	**0.94**	**2.41**	**0.49**	**0.44**	**52%**	**47%**	**21%**	**18%**

Table 3-40: Avista Electric Standards Ex-Post Savings by Influence Evaluation Completion

Program Year	Ex-Post Standard Savings (aMW)	Ex-Post Portfolio Savings (aMW)	Ex-Post Standard Savings of Standards with Influence Evaluation (aMW)	Ex-Post Standard Savings of Standards without Influence Evaluation (aMW)	Ex-Post Standard Savings of Standards with Influence Evaluation (as % of Standards)	Ex-Post Standard Savings of Standards without Influence Evaluation (as % of Standards)	Ex-Post Standard Savings of Standards with Influence Evaluation (as % of Total)	Ex-Post Standard Savings of Standards without Influence Evaluation (as % of Total)
2017	0.10	0.31	0.09	-	95%	0%	31%	0%
2018	0.10	0.36	0.10	-	100%	0%	29%	0%
2019	0.04	0.50	0.04	-	100%	0%	7%	0%
2020	0.11	0.48	0.11	0.00	100%	0%	23%	0%
2021	0.12	0.40	0.11	0.00	98%	2%	28%	1%
Total	**0.47**	**2.06**	**0.46**	**0.00**	**98%**	**1%**	**22%**	**0%**

The Evaluators conclude that standards in which no influence evaluation was completed for contributed 1.94 aMW (51%) of total evaluation period Ex-Ante savings towards standards Idaho Power electric, which is equivalent to 17% of total Ex-Ante measure, code, and standards savings combined. The Evaluators conclude that standards in which no influence evaluation was completed for contributed 0.49 aMW (47%) of total evaluation period Ex-Ante savings towards standards for Avista electric, which is equivalent to 18% of total Ex-Post measure, code, and standards savings combined. No savings from standards were claimed for Avista gas measures.

However, after removing savings accrued in Oregon, Montana, and Washington by using the service territory allocation methodology, standards savings in which no influence evaluation was completed contributed less than 0.02 aMW (less than 1%) towards total Ex-Post savings for Idaho Power Electric, and 0.0 aMW (0%) towards Ex-Post savings for Avista electric.

This demonstrates that the standards that lack influence evaluations contributes the majority (over 50%) of standards Ex-Ante savings and that the integration of influence evaluations for the standards which lack them could drastically reduce savings for standards overall.

In order to ensure that only energy savings above market baseline is claimed by NEEA, the Evaluators recommend that third-party evaluations are completed for the federal standards claimed by NEEA in the table above, as well as any federal standards that NEEA claims savings for in the future. It is unreasonable to claim 100% of savings due to a federal standard update. Unless an evaluation is completed to quantify and validate NEEA influence towards federal standards updates, the savings should be categorized as naturally occurring baseline.

3.6.2.1.4 Funder Share Methodology Review

As described in Section 3.3, the Evaluators calculated verified savings using the service territory allocation methodology. The service territory values were calculated by NEEA using confidential datasets from NEEA stakeholders. The Evaluators were unable to review the data or replicate the service territory values because the originating data is delivered to NEEA with non-disclosure agreements. The Evaluators used the service territory values as-displayed in the NEEA annual workbooks.

The Evaluators note that NEEA calculated Ex-Ante savings for federal standards using funder share allocation. As described previously, the Evaluators conclude that the funder share methodology does not accurately reflect benefits claimed by Idaho utility customers. Therefore, the results displayed in this report reflect service territory savings. Additionally, the Evaluators recommend that Avista and Idaho Power request NEEA utilize service territory methodology for future NEEA annual savings reports in order to calculate energy savings and cost-effectiveness testing for the Commission.

3.6.2.2 Verified Ex Post Savings

The Evaluators summarize verified Ex Post federal standards savings results by utility, fuel type, and program year in the tables below. The Evaluators provide initiative-level savings in Appendix A.

Table 3-41: Summary of Idaho Power Idaho Electric Verified Ex Post Standards Savings by Program Year

Year	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
2017	1.45	0.36	24.70%
2018	1.15	0.04	3.88%
2019	0.40	0.09	23.49%
2020	0.41	0.40	97.88%
2021	0.41	0.40	98.46%
Total	**3.81**	**1.29**	**34.01%**

The overall verified realization rate for Idaho Power standards efforts due to NEEA was 34%. The Evaluators conclude this realization rate is due to two reasons: first, the Evaluators used the service territory allocation share to estimate Idaho savings. Second, the Evaluators identified and corrected any standards that lacked integration of influence evaluation quantitative estimates towards baseline units.

Table 3-42: Summary of Avista Idaho Electric Verified Ex Post Standards Savings by Program Year

Year	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
2017	0.37	0.10	26.87%
2018	0.30	0.10	34.85%
2019	0.09	0.04	41.00%
2020	0.09	0.11	124.51%
2021	0.09	0.12	125.13%
Total	**0.94**	**0.47**	**49.71%**

The overall verified realization rate for Avista electric standards efforts due to NEEA was 50%.

Table 3-43: Summary of Avista Idaho Gas Verified Ex Post Standards Savings by Program Year

Year	Ex Ante Therms Savings	Ex Post Therms Savings	Realization Rate
2019	0	0	N/A
2020	0	0	N/A
2021	0	0	N/A
Total	**0**	**0**	**N/A**

NEEA did not claim any standards gas initiatives in this timeframe.

3.6.2.3 Cost Effectiveness Results

The Evaluators summarize verified cost effectiveness results in the tables below. The Evaluator allocated 14% of electric costs to codes and standards for 2017-2019 and 15% of electric costs to codes and standards for 2020-2021. The Evaluator allocated 1% of gas costs to codes and standards for 2019 and 9% of gas costs to codes and standards for 2020-2021. The distribution of costs aligns with NEEA's

reported actual spending towards codes and standards. Further detail of measure-level cost-effectiveness is provided in Appendix B and further detail of NEEA cost breakdown is provided in Appendix C.

Table 3-44: Idaho Power Electric Idaho Standard Cost Effectiveness by Program Year

Program Year	UCT Costs	UCT Benefits	UCT
2017	$77,800.13	$1,173,841.02	15.09
2018	$17,010.57	$270,271.44	15.89
2019	$13,790.76	$529,252.85	38.38
2020	$61,513.62	$2,433,071.48	39.55
2021	$108,258.31	$2,168,234.69	20.03
Total	**$278,373.40**	**$6,574,671.48**	**23.62**

Table 3-45: Avista Electric Idaho Standard Cost Effectiveness by Program Year

Program Year	UCT Costs	UCT Benefits	UCT
2017	$28,374	$717,397	25.28
2018	$25,286	$708,443	28.02
2019	$5,458	$283,445	51.94
2020	$16,403	$871,386	53.12
2021	$23,256	$623,376	26.81
Total	**$98,777**	**$3,204,048**	**32.44**

NEEA does not provide any gas standards efforts in the Northwest region and therefore there is no cost-effectiveness testing completed for Avista Gas Idaho standards. As seen in the tables above, all standards efforts remained cost-effective using Idaho Power's and Avista's avoided costs and updated verified Ex Post savings within the state of Idaho.

3.6.2.4 Findings and Recommendations

Similar to the efficiency measures findings, NEEA claimed savings for measures completed in Washington, Oregon, and Montana – therefore, some measures underestimated Idaho-specific savings, while others overestimated out-of-state savings. The overall effect of this change resulted in a lower than 100% realization rate.

Based on the findings detailed above, the Evaluators present the following findings and recommendations based on our review of NEEA's federal standards measures:

Table 3-46: Summary of Federal Standards Findings and Recommendations

Findings	Recommendations
Finding #14: The Evaluators estimated verified Ex Post aMW for the standards efforts to display 34% and 50% realization rates for Idaho Power electric and Avista electric savings within the state of Idaho, respectively. The difference between claimed savings and verified savings is due to the change to using service territory allocation rather than funder share allocation. A minor cause of discrepancy is due to corrected baseline units using influence evaluation values.	The Evaluators reference **Recommendation #1**: The Evaluators recommend Avista and Idaho request NEEA to report annual savings via the service territory methodology for each measure claimed by NEEA for each Idaho Power electric, Avista electric, and Avista gas.
Finding #15: NEEA contracts third-party evaluators to conduct "influence evaluations" for each standard, which summarizes NEEA's overall qualitative and quantitative influence towards federal standards updates. NEEA uses the quantitative assessment as an estimate of federal standards naturally occurring baseline. The Evaluators found that some of these influence scores were not integrated properly to estimate baseline units. The Evaluators also found more than half (13 of 25) federal standard measures lack influence evaluations.	**Recommendation #8:** The Evaluators recommend that third-party evaluations are completed for the federal standards claimed by NEEA, as well as any federal standards in which NEEA hopes to claim savings for in the future. Using the quantitative estimate of NEEA influence, the Evaluators recommend that NEEA calculate a naturally occurring baseline for each standard.

3.6.3 Codes

In the table below, the Evaluators summarize the codes and new construction initiatives NEEA has claimed savings for within Avista Idaho and Idaho Power Idaho annual reports between 2017 and 2021.

Table 3-47: NEEA Code Initiatives Claimed in 2017-2021

Sector	Initiative	WA	OR	MT	ID
Residential	Efficient Homes	2009 WSEC 2012 WSEC 2015 WSEC	2009 Specialty 2011 Specialty 2012 Specialty	2003 IECC w MT amend. 2009 IECC w MT amend. 2012 IECC w MT amend.	2006 IECC 2009 IECC 2012 IECC w ID amend. 2006 WSEC 2009 WSEC 2012 WSEC
Residential	Next Step Homes	Above code SF/MF building ENERGY STAR MF Next Step Homes SF	Above code SF building ENERGY STAR SF/MF Next Step Homes SF	Above code SF/MF building ENERGY STAR SF 2018 IECC	Above code SF building ENERGY STAR SF/MF
Residential	Residential New Construction	WSEC 2015 MF WSEC 2018 MF WSEC 2018 SF	2011 Specialty SF 2011 Specialty MF 2017 Specialty MF	2018 IECC SF 2012 IECC w MT amend. MF 2018 IECC MF	2018 IECC SF ID HERS ID National ENERGY STAR Homes 2009 IECC MF 2012 IECC w Idaho amend. MF 2018 IECC MF
Residential	Other Codes (Multifamily)	2006 WSEC 2015 WSEC	2008 Or. Res Specialty 2011 Or. Res Specialty 2012 Or. Res Specialty 2017 Or. Res Specialty	2009 IECC 2012 IECC	2006 IECC 2009 IECC 2012 IECC
Commercial	Commercial Code Enhancement	2018 WSEC	N/A	N/A	N/A
Commercial	Other Codes (Commercial)	2012 WSEC 2015 WSEC 2018 WSEC	2019 OZERCC 2021 OZERCC	2012 IECC 2018 IECC	2006 IECC 2009 IECC 2012 IECC 2015 IECC

As displayed in the table above, NEEA claimed codes and new construction savings for new construction single family and multifamily homes constructed in Washington, Oregon, Montana, and Idaho. The Evaluators are unable to reasonably assign out-of-state savings to Idaho without an evaluation verifying that out-of-state code updates lead to market transformation effects in Idaho.

Additionally, the Evaluators recommend that influence evaluations are completed for each code update in order to estimate the proportion of savings NEEA may claim for its efforts towards building code updates, similarly to the NEEA influence evaluations completed for federal standards. It is likely that savings attributed to NEEA is currently being significantly overestimated, assuming that it is likely that

similar code updates would have naturally occurred without NEEA participation in code update meetings.

However, without NEEA influence evaluations completed for these code updates, the Evaluators assumed 100% code savings due to NEEA influence. The Evaluators did, however, remove non-Idaho code savings from all code initiatives to estimate savings that benefit Idaho customers directly. Therefore, this section reports verified code savings accrued within the state of Idaho only.

The sections below summarize the reviews completed to estimate verified savings through NEEA code efforts:

- Impact methodology review
- Cost effectiveness results
- Findings and recommendations

3.6.3.1 Impact Methodology Review

In this section, the Evaluators summarize findings and recommendations for each of the following components towards verified impact results of NEEA's code updates:

- Database and document review (Section 3.6.3.1.1)
- UES review (Section 3.6.3.1.2)
- Market transformation baseline review (Section 3.6.3.1.3)
- Funder share methodology review (Section 3.6.3.1.4)

3.6.3.1.1 Database and Document Review

The Evaluators reviewed each of the supplemental documents provided by NEEA, which included the following:

- 2017-2021 annual savings reports for Avista electric, Avista gas, and Idaho Power electric
- 2015 Idaho IECC UEC residential calculation approach
- 2018 Idaho IECC UEC commercial calculation approach
- Codes program logic model evaluations
- Codes and standards contracts, including NEEA employee roles and responsibilities towards the codes program
- Idaho energy code collaborative 5-year strategic plan
- 2018 Idaho field study
- Residential commercial codes logic models
- Codes program market progress evaluation reports

The Evaluators reviewed each of the documents above to identify and address any inconsistencies with data tracking methods and opportunities to improve year-over-year tracking of NEEA efforts.

The Evaluators found during database review that a variety of fields are empty across code tracking data, similar to our finding for efficiency measure database review. The Evaluators summarize the

missing values further in Appendix D. The Evaluators recommend that measure-level values are detailed as completely as possible.

Most importantly, the Evaluators found that NEEA claims 100% of code-built home and facility savings 10 years after the code is implemented. Although NEEA integrates a compliance rate referenced from recent field studies, the Evaluators conclude that it is unreasonable to claim that 100% of code-built homes occur due to NEEA and stakeholder efforts. Code development and progress also displays a naturally occurring baseline. However, NEEA does not estimate a market baseline for code initiatives.

In response to a data request for documents supporting code savings, NEEA delivered the following documentation:

- **Codes contracts:** A workbook summarizing each of the contracts in progress and completed in relation to code education and training, code proposals, code analysis, code sponsorship, and code reporting for the 2017 through 2021 years.
- **Market progress evaluation reports (MPER):** Reports summarizing the effectiveness of training and education activities and its associated outcomes
- **Savings methodology:** Documentation regarding IECC unit energy calculations approach for newly updates codes
- **Code development:** The history of Idaho's code adoptions of IECC over the last twenty years, an overview of code proposals NEEA funded or coordinated to have submitted, documentation of the process NEEA followed to prepare code proposals for 2018 IECC, including details of how NEEA commonly works with contractors to analyze and prepare code proposals that will benefit the Northwest, and documentation for how NEEA used the results of 2018 code proposals to prepare for the 2021 IECC code.
- **Field studies:** The 2015 Idaho residential field study report

The delivered documentation adequately summarizes NEEA's approach to collecting and submitting proposed changes to IECC codes, NEEA's scope for training and education within the region, estimation of total code-to-code savings, and compliance rates in the region.

The above documents support NEEA claimed savings for Idaho code changes by estimating gross energy savings differences between previously implemented IECC code and newly implemented IECC code, as well as estimating regional compliance rates for new construction. However, the documentation provided does not provide details or support NEEA's policy for claiming 100% of code savings as NEEA-generated savings, nor does it provide any evaluation requests or estimation of NEEA-specific quantitative contributions to code savings.

The Evaluators requested information, supporting documents, and/or evaluations of NEEA's contributions to support NEEA's policy to claim 100% of code savings. NEEA staff responded by stating the following:

> "[We claim] 100% of the amount of savings that we can measure through our code compliance studies. We have an ongoing building practices measurement where we go out into the field and find out how much of the code is being complied with. We don't assume 100% compliance. The

agreement for NEEA to be 100% attributable was a settlement between the 4 states about 10 years ago. This was decided upon by the Cost Effectiveness Advisory Committee. Where we are today is a direct result of the settlement. NEEA has played such a large role in the code making process that CEAC decided this was a reasonable way to address NEEA's part in the code making process. This was a stipulated agreement between NEEA and state regulators." (NEEA Staff)

The Evaluators asked NEEA staff how frequently this agreement is revisited and/or voted on. NEEA staff indicated that "every year, every single input assumption to every single savings claim is reviewed by CEAC. In theory, everything is open for comment and adjustment as needed. Which includes this 100% code savings factor."

The Evaluators conclude that although compliance rate is integrated into claimed savings, it is likely that code savings are significantly overestimated due to this lack of baseline value, assuming that it is likely that similar code updates would not have been made without NEEA participation in code update meetings. The Evaluators highlight this lack of support as a large concern moving forward for claiming code savings. However, without proper evaluation work completed, and without prior similar work to reference for literature review, the Evaluators assume 100% savings for this evaluation work, with the expectation and recommendation for NEEA to integrate a baseline for code savings through evaluation of NEEA contributions in future program years.

The Evaluators therefore recommend that an evaluation is completed for each code update to estimate NEEA's qualitative and quantitative influence towards the code update, which is currently completed for federal standard updates. This evaluation work will enable NEEA to estimate a baseline of homes that would have occurred without NEEA intervention in code meetings and updates. However, without NEEA influence evaluations completed for these code updates, the Evaluators assumed 100% code savings due to NEEA influence.

Finally, as previously stated, the Evaluators conclude that out-of-state code buildings are currently being attributed to Idaho utilities. The Evaluators are skeptical that spillover from out-of-state code changes result in energy savings within the state of Idaho. The Evaluators recommend that if NEEA continue to allocate out-of-state code savings to Idaho utilities, an evaluation is completed that defends such assumptions.

3.6.3.1.2 UES Review

The Evaluators reviewed each of the supplemental documents provided by NEEA, which included the following:

- 2017-2021 annual savings reports for Avista electric, Avista gas, and Idaho Power electric
- 2015 Idaho IECC UEC residential calculation approach
- 2018 Idaho IECC UEC commercial calculation approach
- 2018 Idaho field study
- Codes program market progress evaluation reports

The Evaluators reviewed each of the unit energy savings (UES) values assigned to each code update in which savings are claimed by NEEA. NEEA utilizes UES values determined by third-party evaluators for each of the code updates claimed. Each measure unit-level savings is weighted by heating and cooling zone across three housing types (single family, multifamily, and manufactured home), and across facility types for nonresidential code updates. These values are then multiplied by the net market units for each measure after netting out baseline units for each measure, described in further detail in 3.6.2.1.3.1.

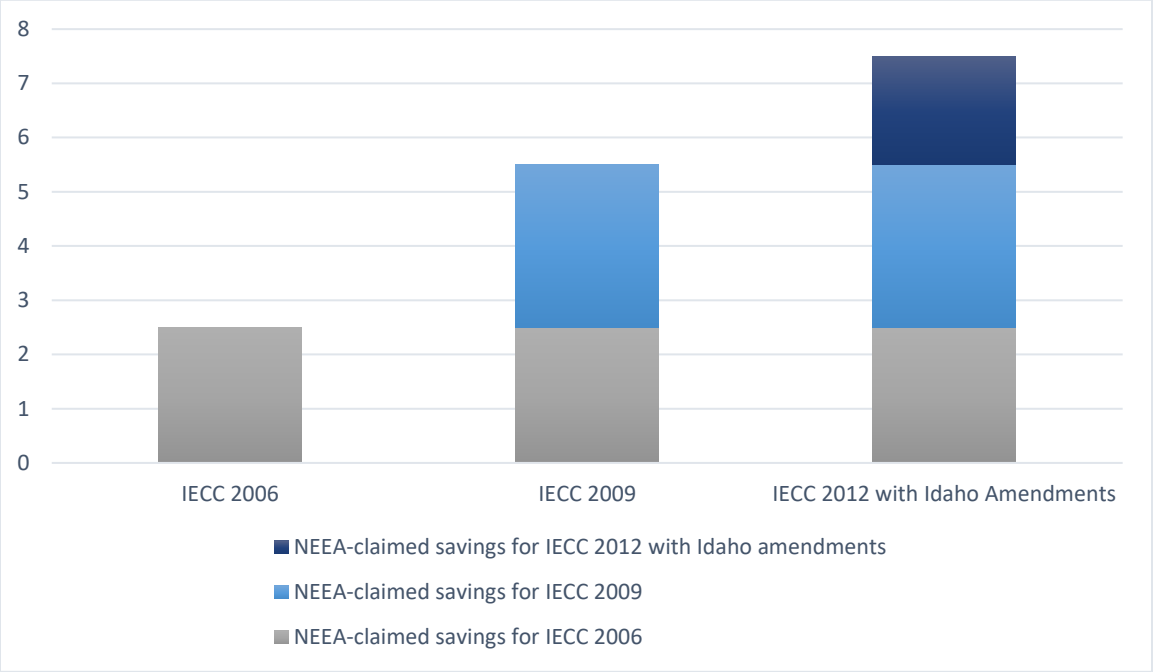
NEEA gathers the electric use, natural gas use, and total building area values developed by third-party evaluators to calculate the difference in energy use per square foot of building between code changes in IECC-code-built buildings.

Due to the thorough third-party evaluations and estimates of UES verified for use by NEEA, the Evaluators do not note any concern or discrepancies with the code's energy per square-foot values applied to estimate NEEA savings for code-built buildings. Instead, the Evaluators focused on the rationality of NEEA's high-level application of regional units, baseline methodology, allocation methodology, and overall allocation of savings for each Avista and Idaho Power.

3.6.3.1.3 Market Transformation Baseline Review

As described previously, NEEA claims savings for each IECC standard in Washington, Montana, Idaho, and Oregon. The current baseline for each of the IECC codes is the previously implemented IECC code. Therefore, to claim savings for residential buildings completed to meet IECC 2009 in Idaho, NEEA estimates the regional baseline as the total number of households built to prior code (IECC 2006). Similarly, to claim savings for residential buildings completed to meet IECC 2012 in Idaho with Idaho amendments, NEEA estimates the baseline regional units as the total number of households built to IECC 2009 code. The Evaluators provide the following figure to summarize NEEA's general methodology for claiming savings for code-built households in the Northwest region.

Figure 3-14: Example of Single-Family Code Savings Claimed by NEEA



*Proportions in figure above are not indicative of actual incremental savings

The Evaluators note that NEEA does not assume 100% compliance rate. NEEA savings calculations integrate observed code compliance rates for each state based on code compliance studies, which are completed every one or two years. Therefore, each of the IECC code update savings are weighted by actual compliance within each state using the most recent, third party-evaluated, state-level field study. Currently, NEEA currently assumes a compliance rate of 75% for Idaho. The Evaluators agree with this approach and recommend continuing to include compliance rates in order to prevent claiming savings from homes that are not 100% compliant.

The Evaluators note concern about specific code savings methodologies and policies currently implemented by NEEA:

- Currently, NEEA does not complete third-party evaluations of NEEA "influence" towards codes updates as is currently done for federal standards updates. Therefore, NEEA currently claims 100% savings for code-built homes. As summarized in the standards influence evaluations summarized in Table 3-35, NEEA influence towards standards ranges between 2.6% and 61%. If codes are evaluated similarly, and portray a similar range of influence, NEEA code savings could be significantly overrepresenting savings.
- NEEA's current policy is to report 100% of code-built residential and commercial building savings (while integrating compliance rates) for 10 years after the effective code update date. Currently, NEEA does not maintain a model to estimate naturally occurring baseline over time, as it does for its energy efficiency measures. Essentially, the current NEEA methodology assumes that there would be a 10-year lag in current residential and commercial building code if NEEA did not participate in code update efforts.
- NEEA currently allocates out-of-state code compliance savings to Idaho utilities. Similarly, NEEA currently allocates Idaho code compliance savings to out-of-state utilities. However, NEEA has

stated that starting in 2022, code savings will be allocated via service territory allocation. If this NEEA converts all code savings calculations to utilize service territory methodology, state-level code savings will be claimed only by utilities within the state. However, if NEEA continues to utilize funder share methodology for code savings, the Evaluators recommend that NEEA complete an evaluation which can demonstrate energy savings from out-of-state code updates can be realized across states, and specifically, within Idaho.

3.6.3.1.4 Funder Share Methodology Review

As described in Section 3.3, the Evaluators calculated verified savings using the service territory allocation methodology. The service territory values were calculated by NEEA using confidential datasets from NEEA stakeholders. The Evaluators were unable to review the data or replicate the service territory values because the originating data is delivered to NEEA with non-disclosure agreements. The Evaluators used the service territory values as displayed in the NEEA annual workbooks.

The Evaluators note that NEEA calculated Ex-Ante savings for code measures using a mix of service territory share and funder share allocation for the measures it claims savings for. The rationale behind using one methodology over the other is unclear.

As described previously, the Evaluators conclude that the funder share methodology does not accurately reflect benefits claimed by Idaho utility customers. Therefore, the results displayed in this report reflect service territory savings. Additionally, the Evaluators recommend that Avista and Idaho Power request NEEA utilize service territory methodology for future NEEA annual savings reports in order to calculate energy savings and cost-effectiveness testing for the Commission.

3.6.3.2 Verified Ex Post Savings

The Evaluators summarize verified Ex Post code savings results by utility, fuel type, and program year in the tables below. The Evaluators provide initiative-level savings in Appendix A.

Table 3-48: Summary of Idaho Power Idaho Electric Verified Ex Post Code Savings by Program Year

Year	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
2017	0.89	1.24	138.75%
2018	1.23	0.85	68.91%
2019	1.32	2.22	168.03%
2020	1.12	2.17	194.85%
2021	1.00	1.15	115.07%
Total	**5.56**	**7.63**	**137.25%**

The Evaluators emphasize that the savings from codes are likely overestimated due to lack of influence evaluations. The Evaluators pose that it is unreasonable to claim 100% of code savings due to NEEA participation in code update meetings. As stated previously, the Evaluators recommend that influence evaluations are completed for all code updates NEEA claims savings for. The resulting influence score will then be used to allocate a *portion* of total code savings towards NEEA efforts.

The overall verified realization rate for Idaho Power code efforts due to NEEA was 137%. Although the Evaluators zeroed out non-Idaho code savings, the Idaho service territory allocation share for Idaho code new construction completes outweighed the deficit created by out-of-state new construction completes. The funder share methodology overestimated out-of-state code savings while underestimating Idaho code savings.

The overall effect of this was a larger savings effect than estimated using the funder share allocation methodology. However, the Evaluators note again that these code savings are likely still overestimated due to lack of influence evaluation towards a naturally occurring baseline for code updates.

Table 3-49: Summary of Avista Idaho Electric Verified Ex Post Code Savings by Program Year

Year	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
2017	0.18	0.18	99.88%
2018	0.22	0.22	100.00%
2019	0.28	0.43	153.74%
2020	0.24	0.34	143.02%
2021	0.21	0.25	115.20%
Total	**1.13**	**1.41**	**125.40%**

The overall verified realization rate for Avista electric code efforts due to NEEA was 125%, also for the reasons listed above.

Table 3-50: Summary of Avista Idaho Gas Verified Ex Post Code Savings by Program Year

Year	Ex Ante Therms Savings	Ex Post Therms Savings	Realization Rate
2019	43,109	22,808	52.91%
2020	5,678	385	6.79%
2021	152,881	152,881	100.00%
Total	**201,667**	**176,074**	**87.31%**

The overall verified realization rate for Avista gas code efforts due to NEEA was 87%, also for the reasons listed above. A large portion of Ex Ante code savings accrued in 2019 and the large majority of Ex Ante code savings accrued 2020 due to Washington, Oregon, and Montana new construction projects. In 2021, NEEA claimed savings only for Idaho code updates. The overall realization rate across these program years for code gas saving is less than 100%.

3.6.3.3 Cost Effectiveness Results

The Evaluators summarize verified cost effectiveness results in the tables below. The Evaluator allocated 14% of electric costs to codes and standards for 2017-2019 and 15% of electric costs to codes and standards for 2020-2021. The Evaluator allocated 1% of gas costs to codes and standards for 2019 and

9% of gas costs to codes and standards for 2020-2021. The distribution of costs aligns with NEEA's reported actual spending towards codes and standards. Further detail of measure-level cost-effectiveness is provided in Appendix B and further detail of NEEA cost breakdown is provided in Appendix C.

Table 3-51: Idaho Power Electric Idaho Code Cost Effectiveness by Program Year

Program Year	UCT Costs	UCT Benefits	UCT
2017	$268,851.90	$11,734,281.85	43.65
2018	$324,071.89	$9,167,250.01	28.29
2019	$327,192.90	$17,177,751.00	52.50
2020	$335,567.24	$17,595,234.34	52.43
2021	$311,681.75	$8,321,577.44	26.70
Total	**$1,567,365.68**	**$63,996,094.65**	**40.83**

Table 3-52: Avista Electric Idaho Code Cost Effectiveness by Program Year

Program Year	UCT Costs	UCT Benefits	UCT
2017	$50,484	$2,156,341	42.71
2018	$52,305	$3,425,488	65.49
2019	$79,600	$7,331,020	92.10
2020	$49,354	$4,212,726	85.36
2021	$49,803	$2,618,611	52.58
Total	**$281,545**	**$19,744,185**	**70.13**

Table 3-53: Avista Gas Idaho Code Cost Effectiveness by Program Year

Program Year	UCT Costs	UCT Benefits	UCT
2019	$1,967	$315,142	160.23
2020	$13,147	$6,048	0.46
2021	$14,863	$2,491,877	167.66
Total	$29,977	$2,813,068	93.84

As seen in the tables above, all code efforts remained cost-effective using the Idaho Power and Avista avoided costs and updated verified Ex Post savings within the state of Idaho.

3.6.3.4 Findings and Recommendations

Similar to the efficiency measures findings, NEEA claimed savings for measures completed in Washington, Oregon, and Montana – therefore, some measures underestimated Idaho-specific savings, while others overestimated out-of-state savings. The overall effect of this change resulted in a higher than 100% realization rate.

Based on the findings detailed above, the Evaluators present the following findings and recommendations based on our review of NEEA's code initiatives:

Table 3-54: Summary of Code Findings and Recommendations

Findings	Recommendations
Finding #16: The Evaluators estimated verified Ex Post aMW for the code efforts to display 137%, 125%, and 87% realization rates for Idaho Power electric, Avista electric, and Avista gas savings within the state of Idaho, respectively. The difference between claimed savings and verified savings is due to the change to using service territory allocation rather than funder share allocation. Overall, the funder share allocation underestimated Idaho-specific code savings using the current NEEA practice of claiming 100% code savings for 10 years after code is implemented.	The Evaluators reference **Recommendation #1**: The Evaluators recommend Avista and Idaho request NEEA to report annual savings via the service territory methodology for each measure claimed by NEEA for each Idaho Power electric, Avista electric, and Avista gas.
The Evaluators reference **Finding #10** also applies for the codes review: The database review revealed that a variety of fields (measure life, UES) were empty across measure types due to lack of savings claimed for the measure, which made verification of values difficult and complicates tracking of a measure progress over time	The Evaluators reference **Recommendation #6:** The Evaluators recommend that measure-level values are detailed accurately and that each field is completed in the workbook to allow for year-over-year tracking of regional units, baseline units, retirement units, and unit energy savings values over time.
Finding #17: Currently, NEEA does not complete third-party evaluations of NEEA "influence" towards codes updates as is currently done for federal standards updates. Therefore, NEEA currently claims 100% savings for code-built homes. As summarized in the standards influence evaluations summarized in Table 3-35, NEEA influence towards standards ranges between 2.6% and 61%. If codes are evaluated similarly, and portray a similar range of influence, NEEA code savings could be significantly overrepresenting savings. NEEA's current policy is to report 100% of code-built residential and commercial building savings (while integrating compliance rates) for 10 years after the effective code update date. Currently, NEEA does not maintain a model to estimate naturally occurring baseline over time, as it does for its energy efficiency measures. Essentially, the current NEEA methodology assumes that there would be a 10-year lag in current residential and commercial building code if NEEA did not participate in code update efforts.	**Recommendation #9:** The Evaluators recommend an evaluation is completed for each code update to estimate NEEA's qualitative and quantitative influence towards the code update.
Finding #18: The Evaluators reviewed simulation	

Findings	Recommendations
model methodology used by NEEA to estimate code savings and found that UES methodology for code savings do not present any concerns.	

4 Appendix A: Verified Ex Post Savings by Initiative

This section summarizes the Evaluator's verified Ex Post savings for each Avista electric, Avista gas, and Idaho Power electric, parsed by program year, and initiative.

4.1 Efficiency Measures

This section summarizes the realization rates for efficiency measure savings.

4.1.1 Idaho Power Electric

This section summarizes the realization rates for Idaho Power electric measure verified savings.

Table 4-1: PY2017 Summary of Idaho Power Idaho Electric Verified Ex Post Efficiency Measure Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Certified Refrigeration Energy Specialist (CRES)	0.00	0.00	0.00%
Commissioning Buildings	0.03	0.00	0.00%
Ductless Heat Pumps	0.06	0.00	6.72%
Heat Pump Water Heaters	0.10	0.01	5.68%
Luminaire Level Lighting Controls	0.00	0.00	0.00%
Reduced Wattage Lamp Replacement	0.03	0.06	198.85%
Retail Products Portfolio	0.02	0.02	75.23
Super-Efficient Dryers	0.05	0.02	32.89%
Televisions	0.02	0.02	103.12%
Total	**0.31**	**0.12**	**39.20%**

Table 4-2: PY2018 Summary of Idaho Power Idaho Electric Verified Ex Post Efficiency Measure Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Building Operator Certification Expansion	0.00	0.00	0.00%
Certified Refrigeration Energy Specialist (CRES)	0.03	0.00	0.00%
Commissioning Buildings – Commercial	0.02	0.00	0.00%
Commissioning Buildings – Industrial	0.00	0.00	0.00%
Desktop Power Supplies	0.15	0.11	73.13%
Ductless Heat Pumps	0.03	0.00	0.00%
Heat Pump Water Heaters	0.04	0.00	0.00%
Other Strategic Energy Management – Industrial	0.00	0.00	0.00%
Other Strategic Energy Management - Commercial	0.00	0.00	0.00%
Reduced Wattage Lamp Replacement – Commercial	0.05	0.00	0.00%
Reduced Wattage Lamp Replacement - Industrial	0.01	0.00	0.00%
Retail Product Portfolio	0.02	0.01	57.04%
Super-Efficient Dryers	0.05	0.03	65.20%
Televisions	0.00	0.00	104.70%
Total	**0.40**	**0.15**	**38.34%**

Table 4-3: PY2019 Summary of Idaho Power Idaho Electric Verified Ex Post Efficiency Measure Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Commissioning Buildings – Commercial	0.03	0.00	0.00%
Commissioning Buildings - Industrial	0.00	0.00	0.00%
Desktop Power Supplies	0.01	0.01	79.15%
Ductless Heat Pumps	0.05	0.00	1.02%
Heat Pump Water Heaters	0.04	0.00	3.74%
Luminaire Level Lighting Controls	0.00	0.00	0.00%
Manufactured Homes	0.00	0.00	0.00%
Other Strategic Energy Management – Industrial	0.00	0.00	0.00%
Other Strategic Energy Management - Commercial	0.00	0.00	0.00%
Reduced Wattage Lamp Replacement - Commercial	0.04	0.04	85.46%
Reduced Wattage Lamp Replacement - Industrial	0.01	0.01	85.46%
Retail Product Portfolio	0.01	0.00	6.92%
Super-Efficient Dryers	0.08	0.06	81.85%
Televisions	0.00	0.00	0.00%
Total	**0.28**	**0.12**	**43.78%**

Table 4-4: PY2020 Summary of Idaho Power Idaho Electric Verified Ex Post Efficiency Measure Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Certified Refrigeration Energy Specialist (CRES)	0.00	0.00	0.00%
Commissioning Buildings - Commercial	0.03	0.00	0.00%
Commissioning Buildings - Industrial	0.01	0.00	18.80%
Desktop Power Supplies	0.01	0.00	0.00%
Ductless Heat Pumps	0.06	0.00	5.17%
Extended Motor Products - Residential	0.01	0.00	5.00%
Extended Motor Products - Commercial	0.01	0.00	28.78%
Heat Pump Water Heaters	0.08	0.00	4.17%
Luminaire Level Lighting Controls	0.01	0.01	56.71%
Manufactured Homes	0.01	0.00	0.00%
Other Strategic Energy Management – Commercial	0.00	0.00	0.00%
Other Strategic Energy Management - Industrial	0.00	0.00	0.00%
Reduced Wattage Lamp Replacement - Commercial	0.04	0.04	105.76%
Reduced Wattage Lamp Replacement - Industrial	0.01	0.01	105.09%
Retail Product Portfolio	0.12	0.08	65.79%
Total	**0.39**	**0.14**	**37.32%**

Table 4-5: PY2021 Summary of Idaho Power Idaho Electric Verified Ex Post Efficiency Measure Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Commissioning Buildings	0.00	0.00	0.00%
Desktop Power Supplies	0.01	0.00	0.00%
Ductless Heat Pumps	0.05	0.00	2.96%
Heat Pump Water Heaters	0.10	0.00	4.18%
Luminaire Level Lighting Controls	0.01	0.00	51.59%
Manufactured Homes	0.01	0.00	0.00%
Reduced Wattage Lamp Replacement - Commercial	0.02	0.02	105.99%
Reduced Wattage Lamp Replacement - Industrial	0.00	0.00	105.99%
Retail Product Portfolio	0.17	0.11	67.14%
Window Attachments	0.00	0.00	0.00%
XMP Pumps – Residential	0.03	0.00	4.19%
XMP Pumps – Industrial	0.02	0.01	26.24%
Total	**0.42**	**0.15**	**36.93%**

4.1.2 Avista Electric

This section summarizes the realization rates for Avista electric measure verified savings.

Table 4-6: PY2017 Summary of Avista Idaho Electric Verified Ex Post Efficiency Measure Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Commissioning Buildings	0.00	0.00	0.00%
Ductless Heat Pumps	0.01	0.00	10.20%
Heat Pump Water Heaters	0.03	0.02	68.73%
Luminaire Level Lighting Controls	0.00	0.00	0.00%
Reduced Wattage Lamp Replacement	0.00	0.00	98.27%
Retail Product Portfolio	0.00	0.00	42.21%
Super-Efficient Dryers	0.01	0.01	94.03%
Televisions	0.01	0.01	100.00%
Total	**0.06**	**0.03**	**57.68%**

Table 4-7: PY2018 Summary of Avista Idaho Electric Verified Ex Post Efficiency Measure Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Commissioning Buildings - Commercial	0.00	0.00	0.00%
Commissioning Buildings - Industrial	0.00	0.00	0.00%
Desktop Power Supplies	0.02	0.02	100.00%
Ductless Heat Pumps	0.01	0.00	6.02%
Heat Pump Water Heaters	0.01	0.00	57.22%
Manufactured Homes	0.00	0.00	0.00%
Other Strategic Energy Management – Commercial	0.00	0.00	0.00%
Reduced Wattage Lamp Replacement – Commercial	0.00	0.00	98.89%
Reduced Wattage Lamp Replacement – Industrial	0.00	0.00	98.89%
Retail Product Portfolio	0.00	0.00	54.86%
Super-Efficient Dryers	0.01	0.01	93.09%
Televisions	0.00	0.00	99.98%
Total	**0.06**	**0.04**	**73.37%**

Table 4-8: PY2019 Summary of Avista Idaho Electric Verified Ex Post Efficiency Measure Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Commissioning Buildings – Commercial	0.01	0.00	0.00%
Commissioning Buildings – Industrial	0.00	0.00	0.00%
Desktop Power Supplies	0.00	0.00	79.14%
Ductless Heat Pumps	0.01	0.00	4.01%
Heat Pump Water Heaters	0.01	0.00	43.16%
Luminaire Level Lighting Controls	0.00	0.00	0.00%
Manufactured Homes	0.00	0.00	0.00%
Other Strategic Energy Management – Industrial	0.00	0.00	0.00%
Other Strategic Energy Management – Commercial	0.00	0.00	0.00%
Reduced Wattage Lamp Replacement – Commercial	0.01	0.00	30.55%
Reduced Wattage Lamp Replacement – Industrial	0.00	0.00	31.71%

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Retail Product Portfolio	0.00	0.00	11.15%
Super-Efficient Dryers	0.02	0.02	109.48%
Total	**0.06**	**0.03**	**46.97%**

Table 4-9: PY2020 Summary of Avista Idaho Electric Verified Ex Post Efficiency Measure Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Certified Refrigeration Energy Specialist (CRES)	0.00	0.00	0.00%
Commissioning Buildings – Commercial	0.01	0.00	0.00%
Commissioning Buildings – Industrial	0.00	0.00	41.60%
Desktop Power Supplies	0.00	0.00	0.00%
Ductless Heat Pumps	0.01	0.00	9.35%
Extended Motor Products – Residential	0.00	0.00	0.00%
Extended Motor Products – Commercial	0.00	0.00	0.00%
Heat Pump Water Heaters	0.01	0.00	0.00%
Luminaire Level Lighting Controls	0.00	0.00	0.00%
Manufactured Homes	0.00	0.00	0.00%
Other Strategic Energy Management – Industrial	0.00	0.00	0.00%
Other Strategic Energy Management – Commercial	0.00	0.00	0.00%
Reduced Wattage Lamp Replacement – Commercial	0.01	0.00	27.67%
Reduced Wattage Lamp Replacement – Industrial	0.00	0.00	27.49%
Retail Product Portfolio	0.02	0.03	114.44%
Televisions	0.00	0.00	0.00%
Total	**0.08**	**0.03**	**39.76%**

Table 4-10: PY2021 Summary of Avista Idaho Electric Verified Ex Post Efficiency Measure Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Commissioning Buildings – Commercial	0.00	0.00	0.00%
Desktop Power Supplies	0.00	0.00	0.00%
Ductless Heat Pumps	0.01	0.00	20.19%
Heat Pump Water Heaters	0.02	0.00	0.00%
Luminaire Level Lighting Controls	0.00	0.00	0.00%
Manufactured Homes	0.00	0.00	0.00%
Reduced Wattage Lamp Replacement – Commercial	0.00	0.00	27.73%
Reduced Wattage Lamp Replacement – Industrial	0.00	0.00	27.73%
Retail Product Portfolio	0.03	0.04	112.24%
Window Attachments	0.00	0.00	0.00%
XMP Pumps – Residential	0.01	0.00	0.00%
XMP Pumps – Commercial	0.00	0.00	0.00%
Total	**0.08**	**0.04**	**48.21%**

4.1.3 Avista Gas

This section summarizes the realization rates for Avista gas measure verified savings.

Table 4-11: PY2019 Summary of Avista Idaho Gas Verified Ex Post Efficiency Measure Savings by Initiative

Initiative	Ex Ante Therm Savings	Ex Post Therm Savings	Realization Rate
Condensing Rooftop Units	636	0	0.00%
Total	**636**	**0**	**0.00%**

Table 4-12: PY2020 Summary of Avista Idaho Gas Verified Ex Post Efficiency Measure Savings by Initiative

Initiative	Ex Ante Therm Savings	Ex Post Therm Savings	Realization Rate
Condensing Rooftop Units	0	0	N/A
Efficient Gas Water Heaters	0	0	N/A
Total	**0**	**0**	**N/A**

Table 4-13: PY2021 Summary of Avista Idaho Gas Verified Ex Post Efficiency Measure Savings by Initiative

Initiative	Ex Ante Therm Savings	Ex Post Therm Savings	Realization Rate
Efficient Gas Water Heaters	0	0	N/A
Efficient Rooftop Units	0	0	N/A
Total	**0**	**0**	**N/A**

4.2 Standards

This section summarizes the realization rates for standards savings.

4.2.1 Idaho Power Electric

This section summarizes the realization rates for Idaho Power electric standards verified savings.

Table 4-14: PY2017 Summary of Idaho Power Idaho Electric Verified Ex Post Standards Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Drive Power	0.03	0.06	216.45%
Other Non-Residential Standards	0.27	0.29	108.52%
Other Residential Standards	1.15	0.00	0.12
Total	**1.45**	**0.36**	**24.70%**

Table 4-15: PY2018 Summary of Idaho Power Idaho Electric Verified Ex Post Standards Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Drive Power	0.02	0.00	0.00%
Other Non-Residential Standards – Commercial	0.08	0.02	29.61%
Other Non-Residential Standards – Industrial	0.22	0.02	8.49%
Other Residential Standards	0.82	0.00	0.16%
Total	**1.15**	**0.04**	**3.88%**

Table 4-16: PY2019 Summary of Idaho Power Idaho Electric Verified Ex Post Standards Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Drive Power	0.01	0.00	11.90%
Other Non-Residential Standards – Commercial	0.08	0.03	40.51%
Other Non-Residential Standards – Industrial	0.23	0.00	0.00%
Other Residential Standards	0.07	0.06	81.29%
Total	**0.40**	**0.09**	**23.49%**

Table 4-17: PY2020 Summary of Idaho Power Idaho Electric Verified Ex Post Standards Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Drive Power	0.00	0.00	0.00%
Other Non-Residential Standards – Commercial	0.09	0.04	43.64%
Other Non-Residential Standards – Industrial	0.23	0.30	128.37%
Other Non-Residential Standards – Agricultural	0.00	0.00	257.68%
Other Residential Standards	0.08	0.06	75.37%
Total	**0.41**	**0.40**	**97.88%**

Table 4-18: PY2020 Summary of Idaho Power Idaho Electric Verified Ex Post Standards Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Other Non-Residential Standards – Commercial	0.10	0.04	43.48%
Other Non-Residential Standards – Industrial	0.24	0.30	128.37%
Other Non-Residential Standards – Agricultural	0.00	0.00	257.68%
Other Residential Standards	0.07	0.06	74.00%
Total	**0.41**	**0.40**	**98.46%**

4.2.2 Avista Electric

This section summarizes the realization rates for Avista electric standards verified savings.

Table 4-19: PY2017 Summary of Avista Idaho Electric Verified Ex Post Standards Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Drive Power	0.01	0.02	111.91%
Other Non-Residential Standards	0.09	0.08	91.43%
Other Residential Standards	0.26	0.00	0.16%
Total	**0.37**	**0.10**	**26.87%**

Table 4-20: PY2018 Summary of Avista Idaho Electric Verified Ex Post Standards Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Drive Power	0.01	0.01	100.00%
Other Non-Residential Standards – Commercial	0.02	0.01	63.92%
Other Non-Residential Standards – Industrial	0.08	0.08	100.00%
Other Residential Standards	0.19	0.00	0.22%
Total	**0.29**	**0.10**	**34.85%**

Table 4-21: PY2019 Summary of Avista Idaho Electric Verified Ex Post Standards Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Drive Power	0.00	0.01	293.18%
Other Non-Residential Standards – Commercial	0.02	0.01	69.19%
Other Non-Residential Standards – Industrial	0.05	0.00	0.00%
Other Residential Standards	0.02	0.02	99.67%
Total	**0.09**	**0.04**	**41.00%**

Table 4-22: PY2020 Summary of Avista Idaho Electric Verified Ex Post Standards Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Drive Power	0.00	0.00	0.00%
Other Non-Residential Standards – Commercial	0.02	0.01	63.24%
Other Non-Residential Standards – Industrial	0.05	0.08	157.01%
Other Non-Residential Standards – Agricultural	0.00	0.00	258.22%
Other Residential Standards	0.02	0.02	92.40%
Total	**0.09**	**0.11**	**122.33%**

Table 4-23: PY2021 Summary of Avista Idaho Electric Verified Ex Post Standards Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Drive Power	0.00	0.00	N/A
Other Non-Residential Standards – Commercial	0.02	0.01	62.90%
Other Non-Residential Standards – Industrial	0.05	0.08	157.01%
Other Non-Residential Standards – Agricultural	0.00	0.00	258.22%
Other Residential Standards	0.02	0.02	102.71%
Total	**0.09**	**0.12**	**125.13%**

4.2.3 Avista Gas

NEEA did not claim any standards update savings for gas measures.

4.3 Codes

This section summarizes the realization rates for code savings. As stated in Section 3.6.3, the following results are presented with a caveat: currently, NEEA does not conduct influence evaluations for code updates. It is likely that these code savings are overestimated since a naturally occurring baseline is not integrated. However, without NEEA influence evaluations completed for these code updates, and with no literature to reference on similar code-based evaluations, the Evaluators assumed 100% code savings due to NEEA influence.

4.3.1 Idaho Power Electric

This section summarizes the realization rates for Idaho Power electric code verified savings.

Table 4-24: PY2017 Summary of Idaho Power Idaho Electric Verified Ex Post Code Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Efficient Homes	0.35	0.60	172.50%
Other Codes (Commercial)	0.38	0.34	90.56%
Other Codes (Multifamily)	0.05	0.02	46.03%
Residential New Construction/Next Step Homes	0.11	0.26	245.22%
Total	**0.89**	**1.24**	**138.75%**

Table 4-25: PY2018 Summary of Idaho Power Idaho Electric Verified Ex Post Code Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Efficient Homes	0.38	0.81	215.05%
Other Codes (Commercial)	0.62	0.00	0.00%
Other Codes (Multifamily)	0.05	0.04	73.04%

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Residential New Construction/Next Step Homes	0.18	0.00	0.00%
Total	**1.23**	**0.85**	**68.91%**

Table 4-26: PY2019 Summary of Idaho Power Idaho Electric Verified Ex Post Code Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Efficient Homes	0.37	0.81	217.23%
Next Step Homes	0.21	0.47	225.25%
Other Codes (Commercial)	0.69	0.92	132.61%
Other Codes (Multifamily)	0.04	0.02	38.13%
Total	**1.32**	**2.22**	**168.03%**

Table 4-27: PY2020 Summary of Idaho Power Idaho Electric Verified Ex Post Code Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Efficient Homes	0.32	0.89	281.70%
Next Step Homes	0.22	0.50	222.51%
Other Codes (Commercial)	0.54	0.77	142.92%
Other Codes (Multifamily)	0.04	0.02	41.94%
Total	**1.12**	**2.17**	**194.85%**

Table 4-28: PY2021 Summary of Idaho Power Idaho Electric Verified Ex Post Code Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Efficient Homes	0.27	0.60	223.90%
Other Codes (Commercial)	0.40	0.46	113.98%
Residential New Construction	0.33	0.09	27.15%
Total	**1.00**	**1.15**	**115.07%**

4.3.2 Avista Electric

This section summarizes the realization rates for Avista electric code verified savings.

Table 4-29: PY2017 Summary of Avista Idaho Electric Verified Ex Post Code Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Efficient Homes	0.09	0.09	100.00%
Other Codes (Commercial)	0.07	0.07	100.00%
Other Codes (Multifamily)	0.01	0.01	100.00%
Residential New Construction/Next Step Homes	0.01	0.01	96.99%
Total	**0.18**	**0.18**	**99.88%**

Table 4-30: PY2018 Summary of Avista Idaho Electric Verified Ex Post Code Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Efficient Homes	0.11	0.11	100.00%
Other Codes (Commercial)	0.08	0.08	100.00%
Other Codes (Multifamily)	0.01	0.01	100.00%
Residential New Construction/Next Step Homes	0.01	0.01	100.00%
Total	**0.22**	**0.22**	**100.00%**

Table 4-31: PY2019 Summary of Avista Idaho Electric Verified Ex Post Code Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Efficient Homes	0.08	0.12	154.66%
Next Step Homes	0.05	0.11	236.51%
Other Codes (Commercial)	0.15	0.20	133.91%
Other Codes (Multifamily)	0.01	0.00	42.77%
Total	**0.28**	**0.43**	**153.74%**

Table 4-32: PY2020 Summary of Avista Idaho Electric Verified Ex Post Code Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Efficient Homes	0.06	0.10	161.42%
Next Step Homes	0.05	0.06	134.25%
Other Codes (Commercial)	0.12	0.17	142.74%
Other Codes (Multifamily)	0.01	0.00	52.83%
Total	**0.24**	**0.34**	**143.02%**

Table 4-33: PY2021 Summary of Avista Idaho Electric Verified Ex Post Code Savings by Initiative

Initiative	Ex Ante aMW Savings	Ex Post aMW Savings	Realization Rate
Efficient Homes	0.06	0.07	123.85%
Other Codes (Commercial)	0.09	0.10	111.55%
Residential New Construction	0.07	0.08	112.68%
Total	**0.21**	**0.25**	**115.20%**

4.3.3 Avista Gas

This section summarizes the realization rates for Avista electric code verified savings.

Table 4-34: PY2019 Summary of Avista Idaho Gas Verified Ex Post Code Savings by Initiative

Initiative	Ex Ante Therm Savings	Ex Post Therm Savings	Realization Rate
Next Step Homes	43,109	22,808	52.91%
Total	**43,109**	**22,808**	**52.91%**

Table 4-35: PY2020 Summary of Avista Idaho Gas Verified Ex Post Code Savings by Initiative

Initiative	Ex Ante Therm Savings	Ex Post Therm Savings	Realization Rate
Next Step Homes	5,678	385	6.79%
Total	**5,678**	**385**	**6.79%**

Table 4-36: PY2021 Summary of Avista Idaho Gas Verified Ex Post Code Savings by Initiative

Initiative	Ex Ante Therm Savings	Ex Post Therm Savings	Realization Rate
Residential New Construction	152,881	152,881	100.00%
Other Codes (Commercial)	0.00	0.00	N/A
Total	**152,881**	**152,881**	**100.00%**

5 Appendix B: Cost Effectiveness Results

5.1 Efficiency Measures

This section summarizes the cost effectiveness tests for efficiency measure savings.

5.1.1 Idaho Power Electric

This section summarizes the cost effectiveness results for Idaho Power electric measures.

Table 5-1: PY2017 Idaho Power Electric Idaho Efficiency Measure Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Building Operator Certification Expansion - Commercial - Large	$0	$0	0.00
Certified Refrigeration Energy Specialist (CRES) - industrial	$0	$0	0.00
Commissioning Buildings - Commercial - Large	$0	$0	0.00
Ductless Heat Pumps - Residential	$76,441	$17,513	0.23
Heat Pump Water Heaters - Residential	$101,261	$28,386	0.28
Luminaire Level Lighting Controls - Commercial - Large	$0	$0	0.00
Reduced Wattage Lamp Replacement - Commercial - Large	$1,155,809	$235,198	0.20
Residential Lighting - Residential	$0	$0	0.00
Retail Product Portfolio - Residential	$273,673	$61,990	0.23
Super-Efficient Dryers - Residential	$275,738	$72,602	0.26
Televisions - Residential	$303,217	$50,931	0.17
Total	**$2,186,140**	**$466,619**	**0.21**

Table 5-2: PY2018 Idaho Power Electric Idaho Efficiency Measure Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Building Operator Certification Expansion - Commercial - Large	$0	$0	0.00
Certified Refrigeration Energy Specialist (CRES) - Industrial	$0	$0	0.00
Commissioning Buildings - Commercial - Large	$0	$0	0.00
Commissioning Buildings - Industrial	$0	$0	0.00
Desktop Power Supplies - Commercial - Large	$1,537,781	$241,160	0.16
Ductless Heat Pumps - Residential	$0	$0	0.00
Heat Pump Water Heaters - Residential	$0	$0	0.00
Manufactured Homes - Residential	$0	$0	0.00
Other Strategic Energy Management - Industrial	$0	$0	0.00
Other Strategic Energy Management - Commercial - Large	$0	$0	0.00
Reduced Wattage Lamp Replacement - Commercial - Large	$0	$0	0.00
Reduced Wattage Lamp Replacement - Industrial	$0	$0	0.00
Retail Product Portfolio - Residential	$121,903	$58,449	0.48
Super-Efficient Dryers - Residential	$453,479	$155,218	0.34
Televisions - Residential	$37,852	$8,294	0.22

Total	**$2,151,016**	**$463,122**	**0.22**

Table 5-3: PY2019 Idaho Power Electric Idaho Efficiency Measure Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Building Operator Certification Expansion - Commercial - Large	$0	$0	0.00
Certified Refrigeration Energy Specialist (CRES) - Industrial	$0	$0	0.00
Commercial Code Enhancement - Commercial - Large	$0	$0	0.00
Commissioning Buildings - Commercial - Large	$0	$0	0.00
Commissioning Buildings - Industrial	$0	$0	0.00
Desktop Power Supplies - Commercial - Large	$159,989	$17,355	0.11
Ductless Heat Pumps - Residential	$9,673	$1,973	0.20
Heat Pump Water Heaters - Residential	$23,768	$6,127	0.26
Luminaire Level Lighting Controls - Commercial - Large	$0	$0	0.00
Manufactured Homes - Residential	$0	$0	0.00
Other Strategic Energy Management - Industrial	$0	$0	0.00
Other Strategic Energy Management - Commercial - Large	$0	$0	0.00
Reduced Wattage Lamp Replacement - Commercial - Large	$675,913	$123,236	0.18
Reduced Wattage Lamp Replacement - Industrial	$167,547	$30,548	0.18
Residential Lighting - Residential	$0	$0	0.00
Retail Product Portfolio - Residential	$8,693	$2,510	0.29
Super-Efficient Dryers - Residential	$1,104,808	$266,593	0.24
Televisions - Residential	$0	$0	0.00
Total	**$2,150,393**	**$448,341**	**0.21**

Table 5-4: PY2020 Idaho Power Electric Idaho Efficiency Measure Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Building Operator Certification Expansion - Commercial - Large	$0	$0	0.00
Certified Refrigeration Energy Specialist (CRES) - Industrial	$0	$0	0.00
Commercial Code Enhancement - Commercial - Large	$0	$0	0.00
Commissioning Buildings - Commercial - Large	$0	$0	0.00
Commissioning Buildings - Industrial	$13,915	$1,780	0.13
Desktop Power Supplies - Commercial - Large	$0	$0	0.00
Ductless Heat Pumps - Residential	$48,160	$11,844	0.25
Extended Motor Products - Residential	$8,254	$2,381	0.29
Extended Motor Products - Commercial - Large	$61,653	$23,976	0.39

Heat Pump Water Heaters - Residential	$48,619	$14,973	0.31
Luminaire Level Lighting Controls - Commercial - Large	$82,678	$25,433	0.31
Manufactured Homes - Residential	$0	$0	0.00
Other Strategic Energy Management - Industrial	$0	$0	0.00
Other Strategic Energy Management - Commercial - Large	$0	$0	0.00
Reduced Wattage Lamp Replacement - Commercial - Large	$584,542	$126,571	0.22
Reduced Wattage Lamp Replacement - Industrial	$143,053	$30,975	0.22
Residential Lighting - Residential	$0	$0	0.00
Retail Product Portfolio - Residential	$1,224,230	$372,922	0.30
Super-Efficient Dryers - Residential	$0	$0	0.00
Televisions - Residential	$0	$0	0.00
Total	**$2,215,103**	**$610,855**	**0.28**

Table 5-5: PY2021 Idaho Power Electric Idaho Efficiency Measure Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Commissioning Buildings - Commercial - Large	$0	$0	0.00
Desktop Power Supplies - Commercial - Large	$0	$0	0.00
Ductless Heat Pumps - Residential	$23,906	$6,085	0.25
Heat Pump Water Heaters - Residential	$61,897	$16,483	0.27
Luminaire Level Lighting Controls - Commercial - Large	$65,807	$16,850	0.26
Manufactured Homes - Residential	$0	$0	0.00
Reduced Wattage Lamp Replacement - Commercial - Large	$309,492	$51,618	0.17
Reduced Wattage Lamp Replacement - Industrial	$61,851	$10,316	0.17
Retail Product Portfolio - Residential	$1,713,122	$465,264	0.27
Window Attachments - Commercial - Large	$0	$0	0.00
XMP Pumps - Residential	$17,362	$4,294	0.25
XMP Pumps - Commercial - Large	$89,185	$31,239	0.35
Total	**$2,342,622**	**$602,149**	**0.26**

5.1.2 Avista Electric

This section summarizes the cost effectiveness results for Avista electric measures.

Table 5-6: PY2017 Avista Electric Idaho Efficiency Measure Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Commissioning Buildings - Commercial - Large	$0	$0	
Ductless Heat Pumps - Residential	$18,720	$10,772	0.58

Heat Pump Water Heaters - Residential	$257,390	$99,636	0.39
Luminaire Level Lighting Controls - Commercial - Large	$0	$0	
Reduced Wattage Lamp Replacement - Commercial - Large	$22,674	$4,869	0.21
Retail Product Portfolio - Residential	$25,272	$5,313	0.21
Total	**$324,057**	**$120,589**	**0.37**

Table 5-7: PY2018 Avista Electric Idaho Efficiency Measure Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Building Operator Certification Expansion - Commercial - Large	$0	$0	
Certified Refrigeration Energy Specialist (CRES) - Industrial	$0	$0	
Commissioning Buildings - Commercial - Large	$0	$0	
Commissioning Buildings - Industrial	$0	$0	
Desktop Power Supplies - Commercial - Large	$270,624	$39,975	0.15
Ductless Heat Pumps - Residential	$5,821	$3,998	0.69
Heat Pump Water Heaters - Residential	$54,146	$26,752	0.49
Luminaire Level Lighting Controls - Commercial - Large	$0	$0	
Manufactured Homes - Residential	$0	$0	
Other Strategic Energy Management - Industrial	$0	$0	
Other Strategic Energy Management - Commercial - Large	$0	$0	
Reduced Wattage Lamp Replacement - Commercial - Large	$24,912	$6,871	0.28
Reduced Wattage Lamp Replacement - Industrial	$6,532	$1,801	0.28
Residential Lighting - Residential	$0	$13,096	
Retail Product Portfolio - Residential	$21,719	$7,552	0.35
Super-Efficient Dryers - Residential	$96,709	$43,964	0.45
Televisions - Residential	$8,861	$1,943	0.22
Total	**$489,324**	**$145,951**	**0.30**

Table 5-8: PY2019 Avista Electric Idaho Efficiency Measure Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Building Operator Certification Expansion - Commercial - Large	$0	$0	
Certified Refrigeration Energy Specialist (CRES) - Industrial	$0	$0	
Commissioning Buildings - Commercial - Large	$0	$0	
Commissioning Buildings - Industrial	$0	$0	
Desktop Power Supplies - Commercial - Large	$31,059	$3,631	0.12
Ductless Heat Pumps - Residential	$7,380	$3,902	0.53

Heat Pump Water Heaters - Residential	$53,241	$20,220	0.38
Luminaire Level Lighting Controls - Commercial - Large	$0	$0	
Manufactured Homes - Residential	$0	$0	
Other Strategic Energy Management - Industrial	$0	$0	
Other Strategic Energy Management - Commercial - Large	$0	$0	
Reduced Wattage Lamp Replacement - Commercial - Large	$46,915	$9,968	0.21
Reduced Wattage Lamp Replacement - Industrial	$12,068	$2,564	0.21
Residential Lighting - Residential	$0	$0	
Retail Product Portfolio - Residential	$2,721	$1,029	0.38
Super-Efficient Dryers - Residential	$286,880	$99,151	0.35
Televisions - Residential	$0	$0	
Total	**$440,264**	**$140,466**	**0.32**

Table 5-9: PY2020 Avista Electric Idaho Efficiency Measure Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Building Operator Certification Expansion - Commercial - Large	$0	$0	
Certified Refrigeration Energy Specialist (CRES) - Industrial	$0	$0	
Commissioning Buildings - Commercial - Large	$4,566	$588	0.13
Commissioning Buildings - Industrial	$0	$0	
Desktop Power Supplies - Commercial - Large	$0	$0	
Ductless Heat Pumps - Residential	$15,135	$9,700	0.64
Extended Motor Products - Residential	$0	$0	
Extended Motor Products - Commercial - Large	$0	$0	
Heat Pump Water Heaters - Residential	$0	$0	
Luminaire Level Lighting Controls - Commercial - Large	$0	$0	
Manufactured Homes - Residential	$0	$0	
Other Strategic Energy Management - Industrial	$0	$0	
Other Strategic Energy Management - Commercial - Large	$0	$0	
Reduced Wattage Lamp Replacement - Commercial - Large	$33,048	$8,262	0.25
Reduced Wattage Lamp Replacement - Industrial	$0	$0	
Residential Lighting - Residential	$0	$0	
Retail Product Portfolio - Residential	$314,074	$134,398	0.43
Super-Efficient Dryers - Residential	$0	$0	
Televisions - Residential	$0	$0	
Total	**$366,823**	**$152,948**	**0.42**

Table 5-10: PY2021 Avista Electric Idaho Efficiency Measure Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Certified Refrigeration Energy Specialist (CRES) - Industrial	$0	$0	
Commissioning Buildings - Commercial - Large	$0	$0	
Commissioning Buildings - Industrial	$0	$0	
Desktop Power Supplies - Commercial - Large	$0	$0	
Ductless Heat Pumps - Residential	$24,660	$15,454	0.63
Heat Pump Water Heaters - Residential	$0	$0	
Luminaire Level Lighting Controls - Commercial - Large	$0	$0	
Manufactured Homes - Residential	$0	$0	
Other Strategic Energy Management - Industrial	$0	$0	
Other Strategic Energy Management - Commercial - Large	$0	$0	
Reduced Wattage Lamp Replacement - Commercial - Large	$12,254	$2,801	0.23
Reduced Wattage Lamp Replacement - Industrial	$2,449	$560	0.23
Retail Product Portfolio - Residential	$368,195	$147,725	0.40
Window Attachments - Commercial - Large	$0	$0	
XMP Pumps - Residential	$0	$0	
XMP Pumps - Commercial - Large	$0	$0	
Total	**$407,558**	**$166,540**	**0.41**

5.1.3 Avista Gas

This section summarizes the cost effectiveness results for Avista gas measures.

Table 5-11: PY2019 Avista Gas Idaho Efficiency Measure Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Condensing Rooftop Units	$152,294	$0	0.00
Efficient Gas Water Heaters	$0	$0	N/A
Total	**$152,294**	**$0**	**0.00**

Table 5-12: PY2020 Avista Gas Idaho Efficiency Measure Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Condensing Rooftop Units	$126,061	$0	0.00
Efficient Gas Water Heaters	$0	$0	N/A
Total	**$126,061**	**$0**	**0.00**

Table 5-13: PY2021 Avista Gas Idaho Efficiency Measure Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Condensing Rooftop Units	$21,077	$0	0.00

Efficient Gas Water Heaters	$121,435	$0	0.00
Total	**$142,512**	**$0**	**0.00**

5.2 Standards

This section summarizes the cost effectiveness tests for standards savings.

5.2.1 Idaho Power Electric

This section summarizes the cost effectiveness results for Idaho Power standards.

Table 5-14: PY2017 Idaho Power Electric Idaho Standards Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Drive Power - Industrial	$14,017	$238,156	16.99
Other Non-Residential Standards - Commercial - Large	$63,494	$929,391	14.64
Other Residential Standards - Residential	$289	$6,294	21.76
Total	**$77,800**	**$1,173,841**	**15.09**

Table 5-15: PY2018 Idaho Power Electric Idaho Standards Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Drive Power - Industrial	$0	$0	0.00
Other Non-Residential Standards - Commercial - Large	$9,238	$129,369	14.00
Other Non-Residential Standards - Industrial	$7,263	$134,391	18.50
Other Residential Standards - Residential	$510	$6,512	12.76
Total	**$17,011**	**$270,271**	**15.89**

Table 5-16: PY2019 Idaho Power Electric Idaho Standards Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Drive Power - Industrial	$238	$5,290	22.21
Other Non-Residential Standards - Commercial - Large	$5,014	$155,648	31.04
Other Non-Residential Standards - Industrial	$0	$0	0.00
Other Residential Standards - Residential	$8,538	$368,315	43.14
Total	**$13,791**	**$529,253**	**38.38**

Table 5-17: PY2020 Idaho Power Electric Idaho Standards Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Drive Power - Industrial	$0	$0	0.00

Other Non-Residential Standards - Commercial - Large	$6,395	$194,435	30.40
Other Non-Residential Standards - Industrial	$46,092	$1,859,240	40.34
Other Non-Residential Standards - Commercial - Small	$50	$1,567	31.37
Other Residential Standards - Residential	$8,977	$377,830	42.09
Total	**$61,514**	**$2,433,071**	**39.55**

Table 5-18: PY2021 Idaho Power Electric Idaho Standards Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Other Non-Residential Standards - Commercial - Large	$11,346	$168,080	14.81
Other Non-Residential Standards - Industrial	$81,969	$1,682,475	20.53
Other Non-Residential Standards - Commercial - Small	$0	$0	0.00
Other Residential Standards - Residential	$14,943	$317,680	21.26
Total	**$108,258**	**$2,168,235**	**20.03**

5.2.2 Avista Electric

This section summarizes the cost effectiveness results for Avista standards.

Table 5-19: PY2017 Avista Electric Idaho Standards Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Drive Power - Industrial	$4,526	$53,952	11.92
Other Non-Residential Standards - Commercial - Large	$23,730	$661,032	27.86
Other Residential Standards - Residential	$118	$2,413	20.46
Total	**$28,374**	**$717,397**	**25.28**

Table 5-20: PY2018 Avista Electric Idaho Standards Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Drive Power - Industrial	$2,878	$37,923	13.18
Other Non-Residential Standards - Commercial - Large	$2,859	$64,760	22.65
Other Non-Residential Standards - Industrial	$19,449	$603,853	31.05
Other Residential Standards - Residential	$101	$1,907	18.97
Total	**$25,286**	**$708,443**	**28.02**

Table 5-21: PY2019 Avista Electric Idaho Standards Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Drive Power - Industrial	$1,149	$26,591	23.15
Other Non-Residential Standards - Commercial - Large	$1,913	$70,589	36.90

Other Non-Residential Standards - Industrial	$0	$0	
Other Residential Standards - Residential	$2,396	$186,265	77.75
Total	**$5,458**	**$283,445**	**51.94**

Table 5-22: PY2020 Avista Electric Idaho Standards Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Drive Power - Industrial	$0	$0	
Other Non-Residential Standards - Commercial - Large	$14,047	$695,980	49.55
Other Non-Residential Standards - Industrial	$0	$0	
Other Non-Residential Standards - Commercial - Small	$0	$0	
Other Residential Standards - Residential	$2,356	$175,406	74.45
Total	**$16,403**	**$871,386**	**53.12**

Table 5-23: PY2021 Avista Electric Idaho Standards Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Drive Power - Industrial	$0	$0	
Other Non-Residential Standards - Commercial - Large	$2,722	$47,891	17.59
Other Non-Residential Standards - Industrial	$17,002	$489,978	28.82
Other Non-Residential Standards - Commercial - Small	$16	$338	20.60
Other Residential Standards - Residential	$3,515	$85,169	24.23
Total	**$23,256**	**$623,376**	**26.81**

5.2.3 Avista Gas

There were no gas standards efforts completed by NEEA between 2017 and 2021.

5.3 Codes

This section summarizes the cost effectiveness tests for code savings.

As stated in Section 3.6.3, the following results are presented with a caveat: currently, NEEA does not conduct influence evaluations for code updates. It is likely that these code savings are overestimated since a naturally occurring baseline is not integrated. However, without NEEA influence evaluations completed for these code updates, and with no literature to reference on similar code-based evaluations, the Evaluators assumed 100% code savings due to NEEA influence.

5.3.1 Idaho Power Electric

This section summarizes the cost effectiveness results for Idaho Power codes.

Table 5-24: PY2017 Idaho Power Electric Idaho Codes Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Efficient Homes - Residential	$131,145	$6,357,207	48.47
Other Codes (Commercial) - Commercial - Large	$74,954	$2,335,114	31.15
Other Codes (Multifamily) - Residential	$5,311	$257,465	48.47
Residential New Construction/Next Step Homes - Residential	$57,442	$2,784,496	48.47
Total	**$268,852**	**$11,734,282**	**43.65**

Table 5-25: PY2018 Idaho Power Electric Idaho Codes Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Efficient Homes - Residential	$309,663	$8,759,652	28.29
Other Codes (Commercial) - Commercial - Large	$0	$0	0.00
Other Codes (Multifamily) - Residential	$14,409	$407,598	28.29
Residential New Construction/Next Step Homes - Residential	$0	$0	0.00
Total	**$324,072**	**$9,167,250**	**28.29**

Table 5-26: PY2019 Idaho Power Electric Idaho Codes Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Efficient Homes - Residential	$119,241	$7,245,659	60.76
Next Step Homes - Residential	$69,869	$4,245,586	60.76
Other Codes (Commercial) - Commercial - Large	$135,576	$5,534,205	40.82
Other Codes (Multifamily) - Residential	$2,506	$152,301	60.76
Total	**$327,193**	**$17,177,751**	**52.50**

Table 5-27: PY2020 Idaho Power Electric Idaho Codes Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Efficient Homes - Residential	$137,603	$8,160,111	59.30
Next Step Homes - Residential	$76,718	$4,549,508	59.30
Other Codes (Commercial) - Commercial - Large	$118,840	$4,742,908	39.91
Other Codes (Multifamily) - Residential	$2,406	$142,707	59.30
Total	**$335,567**	**$17,595,234**	**52.43**

Table 5-28: PY2021 Idaho Power Electric Idaho Codes Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Efficient Homes - Residential	$163,529	$5,047,965	30.87
Other Codes (Commercial) - Commercial - Large	$123,982	$2,527,467	20.39
Residential New Construction - Residential	$24,171	$746,146	30.87
Total	**$311,682**	**$8,321,577**	**26.70**

5.3.2 Avista Electric

This section summarizes the cost effectiveness results for Avista codes.

Table 5-29: PY2017 Avista Electric Idaho Codes Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Efficient Homes - Residential	$24,720	$1,300,997	52.63
Other Codes (Commercial) - Commercial - Large	$21,355	$623,326	29.19
Other Codes (Multifamily) - Residential	$2,490	$131,049	52.63
Residential New Construction/Next Step Homes - Residential	$1,919	$100,969	52.63
Total	**$50,484**	**$2,156,341**	**42.71**

Table 5-30: PY2018 Avista Electric Idaho Codes Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Efficient Homes - Residential	$26,671	$2,295,012	86.05
Other Codes (Commercial) - Commercial - Large	$19,900	$637,087	32.01
Other Codes (Multifamily) - Residential	$2,902	$249,716	86.05
Residential New Construction/Next Step Homes - Residential	$2,832	$243,673	86.05
Total	**$52,305**	**$3,425,488**	**65.49**

Table 5-31: PY2019 Avista Electric Idaho Codes Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Commercial Code Enhancement - Commercial - Large	$0	$0	
Efficient Homes - Residential	$17,357	$1,956,279	112.71
Next Step Homes - Residential	$16,810	$1,895,989	112.79
Other Codes (Commercial) - Commercial - Large	$29,567	$1,638,091	55.40
Other Codes (Multifamily) - Residential	$619	$69,796	112.71
Total	**$64,354**	**$5,560,155**	**86.40**

Table 5-32: PY2020 Avista Electric Idaho Codes Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Commercial Code Enhancement - Commercial - Large	$0	$0	
Efficient Homes - Residential	$15,245	$1,770,866	116.16
Next Step Homes - Residential	$9,239	$1,073,163	116.16
Other Codes (Commercial) - Commercial - Large	$24,233	$1,294,717	53.43
Other Codes (Multifamily) - Residential	$637	$73,981	116.16
Total	**$49,354**	**$4,212,726**	**85.36**

Table 5-33: PY2021 Avista Electric Idaho Codes Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Efficient Homes - Residential	$14,341	$772,522	53.87
Other Codes (Commercial) - Commercial - Large	$20,011	$1,013,693	50.66
Residential New Construction - Residential	$15,452	$832,395	53.87
Total	**$49,807**	**$2,618,614**	**52.57**

5.3.3 Avista Gas

This section summarizes the cost effectiveness results for Avista gas codes.

Table 5-34: PY2019 Avista Gas Idaho Codes Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Next Step Homes	$1,967	$315,142	160.23
Total	**$1,967**	**$315,142**	**160.23**

Table 5-35: PY2020 Avista Gas Idaho Codes Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Next Step Homes	$13,147	$6,048	0.46
Total	**$13,147**	**$6,048**	**0.46**

Table 5-36: PY2020 Avista Gas Idaho Codes Cost Effectiveness by Initiative

Initiative	UCT Costs	UCT Benefits	UCT
Residential New Construction - Residential	$14,863	$2,491,877	167.66
Other Codes (Commercial) - Commercial - Large	$0	$0	N/A
Total	**$14,863**	**$2,491,877**	**167.66**

6 Appendix C: NEEA-Allocated Costs

This section summarizes the total NEEA budget for the 5-year 2015-2019 and the 2020 to 2024 business plans. The proportion of NEEA-allocated funds is used to distribute Avista- and Idaho Power-provided NEEA funding between the efficiency measures, codes, and standards.

6.1.1 2014-2019 Business Plan

This section summarizes the actual costs reported by NEEA for the 2014 to 2019 5-year business plan.

Table 6-1: 2014 – 2019 5-Year Actual NEEA Costs

Primary Strategies	5-Year Electric Actual Costs	5-Year Natural Gas Actual Costs
Emerging technology	$10,534,740.00	$2,364,765.00
Effective Portfolio Execution	**$25,762,239.00**	**$3,619,888.00**
Building Envelope	**$698,671.00**	
Consumer Products	**$12,785,010.00**	**$394,407.00**
HVAC	**$6,702,005.00**	**$1,777,354.00**
Lighting	**$3,188,446.00**	
Motor-Driven Systems	**$1,525,470.00**	
New Construction	**$8,772,362.00**	**$400,000.00**
Water Heating	**$19,665,505.00**	**$1,777,800.00**
Enabling Infrastructure	**$10,819,593.00**	
LTMT	**$10,725,919.00**	
Codes & Standards	**$15,959,117.00**	**$102,923.00**
Market Intelligence	$9,518,708.00	$606,019.00
Convene and Collaborate	$9,149,857.00	$0.00
Administration	$21,276,009.00	$0.00
Allocate Shared Services	($3,012,494.00)	$2,533,527.00
Total	**$164,071,157.00**	**$13,576,683.00**

Highlighted in orange in the table above represents the total costs allocated to efficiency measures. Highlighted in light blue in the table above represents the total costs allocated to codes & standards. Based on the table provide above, the Evaluators distributed costs using the following methodology:

- Electric costs:
  - Efficiency measures capture 86% of shared category
  - Codes & Standards capture 14% of shared category
- Natural gas costs:
  - Efficiency measures capture 99% of shared category
  - Codes & Standards capture 1% of shared category

NEEA codes and standards contribute a minority of total funding from NEEA, however, based on the impact evaluation, codes and standards provides the majority of claimable savings by NEEA.

6.1.2 2020-2024 Business Plan

This section summarizes the actual costs reported by NEEA between 2020 and 2022 for the 2020 to 2024 5-year business plan.

Table 6-2: 2020-2022 Actual NEEA Costs

Primary Strategies	2020-2022 Electric Actual Costs	2020-2022 Natural Gas Actual Cost
Emerging Technology	$9,566.00	$1,958.00
Effective Portfolio Execution	**$74,149.00**	**$8,361.00**

Codes & Standards	**$13,292.00**	**$872.00**
Market Intelligence	$5,122.00	$488.00
Convene and Collaborate	$7,700.00	$0.00
Administration	$21,858.00	$0.00
Allocate Shared Services	-$4,715.00	$3,136.00
Total Core Activities	**$126,972.00**	**$14,815.00**

Highlighted in orange in the table above represents the total costs allocated to efficiency measures. Highlighted in light blue in the table above represents the total costs allocated to codes & standards. Based on the table provide above, the Evaluators distributed costs using the following methodology:

- Electric costs:
  - Efficiency measures capture 85% of shared category
  - Codes & Standards capture 15% of shared category
- Natural gas costs:
  - Efficiency measures capture 91% of shared category
  - Codes & Standards capture 9% of shared category

7 Appendix D: Summary of Missing Values

In this section, the Evaluators summarize the elements missing from the tracking data delivered by NEEA to estimate total regional and utility savings for each Idaho Power Electric, Avista Electric, and Avista Gas savings reports.

Table 7-1: Avista Electric Summary of Missing Values

Initiative	2017	2018	2019	2020	2021
Load shape	6 (11%)	23 (12%)	23 (12%)	25 (11%)	101 (100%)
Measure Life	7 (13%)	12 (6%)	0 (0%)	17 (8%)	0 (0%)
kWh/unit energy savings	2 (4%)	56 (30%)	61 (32%)	64 (29%)	43 (43%)
Total Regional Units	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Local Program Units	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
NEEA Baseline	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Retirements	6 (11%)	8 (4%)	13 (7%)	12 (5%)	14 (14%)
Retirements allocated to local programs	3 (5%)	9 (5%)	11 (6%)	10 (5%)	15 (15%)
Retirements allocated to baseline	9 (16%)	17 (9%)	23 (12%)	22 (10%)	29 (29%)
Initiative Start Year	55 (100%)	0 (0%)	0 (0%)	0 (0%)	101 (100%)

Table 7-2: Avista Gas Summary of Missing Values

Initiative	2019	2020	2021
Load shape	N/A	N/A	N/A

Measure Life	24 (100%)	25 (100%)	43 (100%)
Therm/unit energy savings	3 (13%)	0 (0%)	8 (19%)
Total Regional Units	0 (0%)	0 (0%)	0 (0%)
Local Program Units	0 (0%)	0 (0%)	0 (0%)
NEEA Baseline	0 (0%)	0 (0%)	0 (0%)
Retirements	24 (100%)	25 (100%)	43 (100%)
Retirements allocated to local programs	24 (100%)	25 (100%)	43 (100%)
Retirements allocated to baseline	24 (100%)	25 (100%)	43 (100%)
Initiative Start Year	24 (100%)	25 (100%)	43 (100%)

Table 7-3: Idaho Power Electric Summary of Missing Values

Initiative	2017	2018	2019	2020	2021
Load shape	14 (9%)	12 (11%)	23 (12%)	24 (11%)	101 (100%)
Measure Life	7 (4%)	8 (7%)	1 (1%)	17 (8%)	0 (0%)
kWh/unit energy savings	49 (31%)	0 (0%)	61 (32%)	64 (29%)	0 (0%)
Total Regional Units	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Local Program Units	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
NEEA Baseline	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Retirements	11 (7%)	3 (3%)	13 (7%)	12 (5%)	11 (11%)
Retirements allocated to local programs	8 (5%)	5 (5%)	11 (6%)	11 (5%)	3 (3%)
Retirements allocated to baseline	18 (11%)	7 (7%)	23 (12%)	22 (10%)	14 (14%)
Initiative Start Year	0 (0%)	0 (0%)	0 (0%)	0 (0%)	101 (100%)

The Evaluators imputed a likely load shape and appropriate measure life in cases in which the load shape or measure life was not defined by NEEA. For the line items missing kWh/unit or Therm/unit energy savings values, the Evaluators note that the number of units in which savings apply are zero do not affect savings, as the number of units claimed for those examples was zero. Although the total net market units for these measures are zero, and total net market effects are effectively zero, the Evaluators recommend that appropriate kWh/unit and Therm/unit energy savings values are still defined appropriately.

NEEA includes in the tracking data estimates of total retired units in the region. The Evaluators note that in some instances, total regional retirement units are defined in aggregate, whereas in other instances, local program retirement and baseline retirement units are defined. The Evaluators recommend that in any instances where local program, baseline, or total regional retirement units is above 0, that those retirement units are then categorized under the local program or baseline retirement units. This will help with tracking how retirement units are partitioned between each category, for each measure, over time.