Appendix E:

Response to 2018 Recommendations

Appendix E to the 2018 Washington Annual Conservation Report: 2018 Washington Impact Evaluation Recommendations and Statuses

Based on Cadmus' 3rd party evaluation of the 2018 PY results, Electric and Natural Gas Impact Evaluation Reports were delivered which provided the below outlined conclusions and recommendations. Avista has provided status updates for each recommendation.

Electric Impact

Nonresidential Conclusions and Recommendations

The Nonresidential sector achieved total interim verified electric energy savings of 32,835 MWh in PY 2018 with a combined realization rate of 100%. The Nonresidential sector also exceeded the combined Prescriptive and Site Specific program paths' electric savings goal of 20,981 MWh by 56%.

Although some individual project results varied, the overall Nonresidential sector performed strongly in PY 2018. Most of the projects Cadmus sampled for evaluation were well-documented and matched what we found during site visit verification.

Cadmus has three recommendations for improving the Nonresidential sector energy savings:

- Revisit the Prescriptive ENERGY STAR food service equipment calculator workbook and review the default assumptions for hours of use and pounds of food cooked per day. During two food service project verifications, the feedback provided by site contacts for these calculator inputs differed significantly from the calculator default values. We also recommend adjusting future rebate application forms to ask for site-specific hours of use and load estimates. Cadmus will review the RTF calculation methods to determine whether the deemed RTF values are more appropriate for these measures. RTF savings values will be more consistent with regional savings estimates.
    - **Status:** Avista will investigate this further as hours of use is currently not requested. This would require Avista to add variables to the prescriptive offerings. Avista is currently using average operating hours based on the CA DEER database, a program change could result in lower throughput and savings. Avista would like to seek Advisory Group input.
- Ensure that the final reported savings calculations reflect the most up-to-date project details, including post-installation verification photos, equipment submittals, and invoices. During two

project verifications, Cadmus found different installed equipment sizes, quantities, or performance ratings than used in the reported savings calculations.

Status: Finding differences in some of the projects verified is not uncommon as the customer may decide to alter their project scope, but in looking at the specific projects where these issues occurred, the majority were all site-specific multifamily HVAC projects where 80% efficiency furnaces were modeled when 95% efficiency was actually what was installed. This did not impact the kwh savings, only the therm penalty – where the therm penalty was actually less of an impact than modeled.

- For insulation measures, require additional supporting information about existing HVAC systems and their fuel sources to more accurately calculate potential energy savings. Supporting information could be in the form of electric and natural gas utility bills, equipment nameplate information, or on-site photos of HVAC equipment.

  Status: Avista will investigate this further. This can be difficult for prescriptive measures as we do not currently ask for anything more than the primary heating source and type of heating/cooling system. Avista certainly looks to find a balance as not all customers are going to know how to gather/provide specific efficiency information. Avista does watch the overall realization rate to make sure we are in alignment.

Residential Conclusions and Recommendations

Lighting measures account for a high percentage of Residential program path savings: Simple Steps, Smart Savings provides 73% of Residential savings, mostly through lighting measures, and MFDI provides 16% of savings, also mostly through lighting measures. The HVAC program accounts for 9% of savings, with Shell and ENERGY STAR Homes accounting for a combined 2% of Residential savings.

During the evaluation, Avista confirmed that the unit energy savings (UES) used to calculate reported savings for numerous Residential measures had not been updated to match 2018 TRM UES values. This was especially pronounced in the Residential HVAC program, where reported savings under-represented savings for heat pump measures. Under the direction of Avista, Cadmus adjusted reported savings for these measures to match the 2018 TRM UES values.

Cadmus offers three recommendations regarding Avista's Residential electric programs:

- Ensure that reported savings for all Prescriptive measures are calculated using current technical reference manual (TRM) or Regional Technical Forum (RTF) UES values.

  Status: Avista has updated its policy around verifying that savings values are updated annually to match the TRM. After it was discovered that the process that was being followed on an annual basis to update the residential program savings values in the Company's Customer Care & Billing (CC&B) system was inaccurate, Avista implemented a verification process and followed it for the 2019 PY to ensure accurate savings values are used.

- Continue to encourage adoption of efficient lighting through the Simple Steps, Smart Savings program. The Northwest Energy Efficiency Alliance *Residential Building Stock Assessment II* shows that roughly 40% of installed lamps in single family homes in Washington and Idaho are based either on incandescent or halogen technology.

  Status: Avista will continue to operate, pursue and promote this program through Simple Steps.

- The MFDI program has proven to be an efficient, effective mechanism for installing high-efficiency lighting and aerators in multifamily units. The Northwest Energy Efficiency Alliance *Residential Building Stock Assessment II* "Multifamily Buildings Report" estimated that 44% of lighting in multifamily units use incandescent or halogen technology. Cadmus recommends focusing on replacement of high-use, low-efficiency lamps where practical, to maximize program cost effectiveness while keeping savings high.

  Status: Avista agrees and will continue to operate the MFDI Program.

Low Income Conclusions and Recommendations

With a realization rate of 109% for electricity savings, the Low Income program achieved savings of 362,748 kWh in PY 2018, or about 50% of goal. The reported savings did not match the UES values listed in the Avista TRM, resulting in higher adjusted and interim verified savings. Reported program participation reached 113% of the participation goal. Cadmus recommends that Avista adjust its Low Income electric savings goals moving forward to better align with PY 2018 performance.

Cadmus understands that Avista relies on Community Action Program agencies and a tribal weatherization organization to deliver Low Income savings. Cadmus' PY 2019 evaluation activities will include a process review of the Low Income programs, which may help identify opportunities to improve program performance.

Status: Avista will continue to operate low income programs in the same manner for PY 2019 and await the PY 2019 evaluation.

Fuel Efficiency Conclusions and Recommendations

Nonresidential Site Specific and Multifamily Market Transformation Fuel Efficiency measures achieved interim verified savings of 1,406,586 kWh, yielding a 99% realization rate. The Multifamily Market Transformation Fuel Efficiency measures achieved only 41% of the electric energy savings goal of 3,183,708 kWh. Avista sent out an advertorial featuring multifamily developers operating in Washington and Idaho who were building apartments with lower heating costs through the direct use of natural gas. This advertorial ran from June through October 2018 in 12 publications. All but one of the multifamily participants started their project

before this advertorial was released, so it will likely lead to higher Multifamily Market Transformation program participation in PY 2019.

As stated in the *Nonresidential Conclusions and Recommendations* section, Cadmus recommends ensuring that the final reported savings calculations reflect the most up-to-date project details, including post-installation verification photos, equipment submittals, and invoices. During two project verifications, we found different installed equipment performances than those used in the reported savings calculations.

> **Status:** Finding differences in some of the projects verified is not uncommon as the customer may decide to alter their project scope, but in looking at the specific projects where these issues occurred, the majority were all site-specific multifamily HVAC projects where 80% efficiency furnaces were modeled when 95% efficiency was actually what was installed. This did not affect the kwh savings, only the therm penalty – where the therm penalty was actually less of an impact than modeled.

Residential Prescriptive Fuel Efficiency measures achieved interim verified savings of 9,969,704 kWh, yielding a 100% realization rate and achieving 80% of savings goal. Cadmus recommends that Avista update reported savings to use current TRM UES values, particularly for measures where the differences are especially notable, such as conversions to natural gas water heaters and conversions to natural gas wall furnaces.

> Status: Avista has updated its policy around verifying that savings values are updated annually to match the TRM.

For Low Income Fuel Efficiency measures, interim verified savings easily exceeded Avista's savings goals, achieving more than 250% of the savings target.

Natural Gas Impact

Nonresidential Conclusions and Recommendations

The Nonresidential sector achieved total interim verified natural gas energy savings of 100,205 therms in PY 2018 with a combined realization rate of 90%. The Nonresidential sector did not meet the combined Prescriptive and Site Specific program paths' natural gas savings goal of 137,381 therms by 27%.

Cadmus has two recommendations for improving the Nonresidential sector natural gas savings:

- Revisit the Prescriptive ENERGY STAR® food service equipment calculator workbook and review the default assumptions for hours of use and pounds of food cooked per day. During five food service project verifications, the feedback provided by site contacts for these calculator inputs differed significantly from the calculator default values. We also recommend adjusting future rebate application forms to ask for site-specific hours of use and load estimates. Cadmus will

review the Regional Technical Forum (RTF) calculation methods to determine whether the deemed RTF values are more appropriate for these measures. RTF savings values will be more consistent with regional savings estimates.

Status: Avista will investigate this further as hours of use is currently not requested. This would require Avista to add variables to the prescriptive offerings. Avista is currently using average operating hours based on the CA DEER database, a program change could result in lower throughput and savings. Avista would like to seek Advisory Group input.

- Confirm the time periods used for pre- and post-installation analysis periods when using utility billing regression analysis. Misaligning the billing periods can result in variance—sometimes a significant amount of variance—between reported and interim verified savings.

  Status: Avista investigated and found this was a pay-for-performance project, recognized the error and corrected.

Residential Conclusions and Recommendations

Interim verified natural gas savings show a realization of 102% on realized savings of 615,989 therms for Residential Prescriptive programs, which is 129% of the savings goal for the year. Reported savings for the MFDI program add 5,392 therms of savings.

The HVAC program accounts for most interim verified Residential natural gas savings—74%—followed by the Shell program with 24% of natural gas savings. Simple Steps, Smart Savings, MFDI, and ENERGY STAR Homes account for a combined 2% of savings, primarily through water-saving measures.

Avista confirmed during the evaluation that natural gas unit energy savings (UES) values for several measures throughout the portfolio mistakenly had not been updated to 2018 technical reference manual (TRM) values. Initially, the Shell natural gas program grossly underreported savings, which were based on 2017 TRM values. Under Avista direction, Cadmus adjusted reported savings for the Shell windows measures to use 2018 TRM values.

Cadmus offers three recommendations regarding Avista's Residential natural gas programs:

- Ensure that reported savings on Prescriptive measures are calculated using current TRM UES values or RTF methods. For Simple Steps, Smart Savings showerhead measures, Avista has moved to an RTF methodology for PY 2019, which Cadmus will also adopt for our evaluation.

  Status: Avista does not use RTF values for gas. With respect to how Avista calculates gas showerhead savings, meter counts are utilized (starting PY2019).

- Continue to encourage installations of high-efficiency natural gas equipment through the HVAC program, which provides nearly three-quarters of natural gas savings for residential programs.

The Northwest Energy Efficiency Alliance *Residential Building Stock Analysis II* estimates that roughly 70% of natural gas furnaces in Washington single-family homes and 50% in Idaho single-family homes have an AFUE under 90%, indicating plenty of remaining opportunity for savings.

Status: Avista will continue to pursue and encourage this program.

- Continue to emphasize windows measures through the Shell program, given their contribution of 24% of Residential program path natural gas savings.

  Status: Avista will continue to pursue and encourage this program. For PY 2019, Avista implemented the "most favorable fuel" methodology where the least penalized fuel dictates the incentive.

Low Income Conclusions and Recommendations

With a realization rate of 95% for natural gas savings, the Low Income programs achieved savings of 15,400 therms in PY 2018, or about 101% of goal. The reported savings did not match the UES values listed in the Avista TRM, resulting in a lower adjusted and interim verified savings. Reported program participation reached 82% of the participation goal.

Cadmus understands that Avista relies on Community Action Program agencies and tribal weatherization organization to deliver Low Income savings. Cadmus' PY 2019 evaluation activities will include a process review of the Low Income programs, which may help identify opportunities to improve program performance.

Status: Avista will continue to operate low income programs in the same manner for PY 2019 and await the PY 2019 evaluation.

Fuel Efficiency Conclusions

Nonresidential Site Specific and Multifamily Market Transformation Fuel Efficiency measures achieved interim verified natural gas penalties of 55,784 therms, yielding a 90% realization rate. The Multifamily Market Transformation Fuel Efficiency measures achieved only 44% of the natural gas penalty goal of 139,836 therms.

Cadmus recommends ensuring that the final reported savings calculations reflect the most up-to-date project details, including post-installation verification photos, equipment submittals, and invoices. During two project verifications, we found different installed equipment performances than those used in the reported savings calculations.

Status: Finding differences in some of the projects verified is not uncommon as the customer may decide to alter their project scope, but in looking at the specific projects where these issues occurred, the majority were all site-specific multifamily HVAC projects where 80% efficiency furnaces were modeled when 95% efficiency was actually

what was installed. This did not affect the kwh savings, only the therm penalty – where the therm penalty was actually less of an impact than modeled.

Residential Prescriptive Fuel Efficiency measures achieved interim verified natural gas penalties of 499,746 therms, yielding a 117% realization rate. Low Income Fuel Efficiency measures contributed natural gas penalties of 12,531 therms, with a realization rate of 93%.

Residential Prescriptive natural gas measures more than offset the natural gas penalty of Residential Prescriptive Fuel Efficiency measures, with interim verified natural gas savings of 615,989 therms. Similarly, Low Income natural gas measures also more than offset of Low Income Fuel Efficiency natural gas penalties, with interim verified savings of 15,400 therms.