Appendix A:

Response to 2016-2017 Recommendations

Appendix A to the 2018 Washington Annual Conservation Report: 2016 – 2017 Washington Impact Evaluation Recommendations and Statuses

Based on Nexant's 3rd party evaluation of the 2016-2017 biennial 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 Conclusions & Recommendations

6.3.1 Nonresidential Programs

The overall realization rate for the nonresidential portfolio is 83%. The realization rates ranged from 103% for the Small Business program down to 80% for the "Prescriptive Lighting" strata. Prescriptive Lighting was also the largest program in the nonresidential portfolio, with approximately 76% of the total gross verified savings for the portfolio. Avista discovered the inaccuracies in reported savings for many of the 2016 TLED lighting projects and acted quickly to fix the issue. Unfortunately, the projects impacted by the error composed a large portion of the overall reported savings for the biennium, therefore being a large driver in the portfolio-level realization rate. Looking past the TLED measure error, the evaluation team found that the processes Avista is utilizing for estimating and reporting energy savings for the nonresidential programs are predominantly sound and reasonable. The following subsections outline specific conclusions and recommendations for several of the nonresidential programs.

6.3.1.1 Site Specific Program

Conclusion: The Site Specific program constitutes more than 15% of the program energy shares (gross verified). Within the last 4 years, Avista has increased their level of quality assurance and review on projects that participate through the program. The evaluation team's analysis resulted in a 92% realization rate for the Site Specific program. The majority of the measure categories evaluated had realization rates close to or greater than 100%, with the exception of shell measures (63%) and interior lighting. The 88% realization rate found for interior lighting projects was predominately driven by inconsistencies in reported hours of use values. The overall program-level realization rate indicates that Avista's internal process for project review, savings estimation, and installation verification are working to produce high quality estimates of project impacts.

Recommendation: The evaluation team recommends that Avista continue to operate this program with the current level of rigor.

Status: Avista will continue to pursue conservation through its site specific programs.

Recommendation: It is recommended that Avista provide a greater level of review of reported hours of use for large lighting projects.

Status: Avista will place a higher scrutiny on the hours of use (HOU) turned in by physical space (area) rather than allowing one HOU value to be used for the entire facility on interior lighting projects with suspected greater than $25,000 incentives. Avista will make modifications to the pre-verification document to include a review of hours of use with the owner.

Recommendation: While the impact from the shell measures under the Site Specific program are minimal, Avista should further review its algorithm for cooling season savings achieved by insulation measures. The algorithm that Avista currently uses may be overstating the impacts of these replacements on air condition energy consumption.

Status: For the Non-Residential Shell program, Avista will review its documentation and have the calculation methods examined by the next evaluator[1].

6.3.1.2 Prescriptive Lighting Program

Conclusion: The Prescriptive Lighting program is the largest program in Avista's nonresidential portfolio, constituting more than 75% of the energy savings. The evaluation team's analysis resulted in an 80% realization rate for the Prescriptive Lighting program, predominately due to the inaccuracies in reported savings for many of the incented TLED measures in the 2016 program year. Avista discovered the inaccuracies at the end of 2016 and acted quickly to fix the issue. Unfortunately, the projects impacted by the error composed a large portion of the overall reported savings for the biennium, therefore being a large driver in the portfolio-level realization rate.

Two other contributing factors that impacted the realization rate for the Prescriptive Lighting program is the reporting of operating hours for participating nonresidential facilities and the interactive factors applied by Avista. The evaluation team did find several large projects reporting an incorrect hours of use value. In addition, in several evaluated projects, the evaluation team determined that a lower interactive factor be applied compared to the value utilized by Avista, based on both business type and building heating type.

Recommendation: It is recommended that for large projects and for projects with multiple different space types, that additional verification be conducted on the reported hours of use value. Avista could set a threshold based on the number of fixtures installed, facility/building type, and/or reported savings that triggers an additional level of verification.

Recommendation: It is recommended that Avista review the interactive factors applied by their team through its lighting savings estimation tool to ensure more accurate alignment with both business type and building heating type.

[1] The timing of the evaluation may have played into the low realization rate since the performance period one year before the evaluation experienced 83% of normal Cooling Degree Days (CDD) as opposed to the post measure period which was 110% of a normal CDD year. Many commercial customers who could have been included as non-participants by Nexant are not actually able to fully condition their environment in the cooling season which would have made it seem like they had no increase in use during higher CDD post measurement.

Status: The Company uses the RTF interactive factors on an average basis across its service territory and building types. We believe on average they give us appropriate results. As stated by Nexant, the low realization rate was attributed to an issue with certain prescriptive lighting measures in 2016 and action was taken to address the issue.

6.3.1.3 Prescriptive Other Programs

Conclusion: Avista's 'Prescriptive Other' Programs constitute just short of 5% of the overall savings for the nonresidential portfolio, with the Energy Smart Grocer program accounting for the majority of these savings. Lower than reported savings were found for a few sampled projects, but the majority of the evaluated savings were in-line with the reported savings value.

6.3.1.4 Small Business Program

Conclusion: The Small Business program in WA constituted just short of 4% of the total savings for the nonresidential portfolio. The evaluation team found a 103% realization for the program.

Conclusion: The Small Business program implementer has improved their tracking of decommissioned measures in the 2016-2017 biennium, in comparison to the 2014-2015 biennium, as shown by the evaluation team's calculated persistence rate of 98% for the measures included in the sample in the 2016-2017 biennium.

6.3.2 Residential Programs – Including Low Income

The overall realization rate for the residential portfolio is 89%. The realization rates for most programs approached or surpassed 100% with the exception of the Shell and Fuel Efficiency programs having the lowest realization rate (27% and 62% respectively). The evaluation team believes the cause for underachieving realization rates reflects a combination of over-stated reported savings and variation in customer consumption among programs. The following outlines specific conclusions and recommendations for the residential programs.

6.3.2.1 HVAC Program

Conclusion: The evaluation team found a 94% realization rate for the HVAC program. Profiling of program participants revealed high annual consumption during the pre-treatment period indicating a strong likelihood that these customers had electric resistance heating prior to their retrofit. This consumption profile supports application of RTF deemed savings for resistance heat conversion.

Recommendation: The evaluation team recommends Avista continue to update reported savings based on the most recent iterations of relevant RTF workbooks.

Status: Avista will continue to use RTF values for this program going forward.

6.3.2.2 Water Heat

Conclusion: For showerheads distributed through the Simple Steps program, Avista allocates 50% of its reported savings to electric savings and 50% to natural gas savings to account for homes that have different water heating fuel types.

Recommendation: The evaluation team recommends Avista update this allocation assumption to be based on representative water heater fuel type saturation. These data are available through the Regional Building Stock Assessment study; however, we recommend Avista base the allocation on data specific to its territory.

Status: Avista will use the number of customer meters specific to the Company's service territory to allocate electric vs. natural gas savings for showerheads. The Company is also discussing the merits around performing a Residential Appliance Saturation Study (RASS) which could provide meaningful information around fuel and appliance use throughout Avista's service territory.

6.3.2.3 Fuel Efficiency

Conclusion: The evaluation team found a low realization rate for the Fuel Efficiency program (62%). We believe this unchanged realization rate from the previous biennium is primarily the result of two issues:

- Reported savings for the 2016-2017 program cycle were on-average high as the program savings value was initially reduced in mid-Q2 2016 and then further reduced mid-Q1 of 2017 to be in alignment with evaluation results provided from the previous program cycle.

- Annual average household consumption was on average 18% lower for participants in the 2016-2017 program cycle relative to participants in the prior program cycle. If participant consumption had been similar to the previous biennium, the program realization rate would have been approximately 74%.

Recommendation: For future program cycles, we recommend Avista reduce their reported savings for the Fuel Efficiency program. Avista should look to the Low Income conversion deemed savings assumptions and consider better aligning assumptions used to estimate reported savings for Fuel Efficiency and the Low Income programs. Additionally, customer profiling will help gauge anticipated savings by understanding customers' annual consumption profile and the expected percent savings that can occur through implementation of the Fuel Efficiency program measures.

Status: Avista has updated its Fuel Efficiency program's savings values based on Nexant's suggested UES values. It also will sunset the residential Fuel Efficiency program in 2019 with the program's termination set for December 31, 2019.

6.3.2.4 Residential Lighting

Conclusion: The evaluation team found Avista's reported savings estimates for the Simple Steps lighting measures aligned with the Simple Steps deemed savings which in turn reflect values that align

with the specific product types by lumen bins in accordance with the most current BPA UES measure list.

6.3.2.5 Shell Program

Conclusion: The evaluation team found a low realization rate (27%) for shell rebate measures (windows and insulation). This finding is similar to the previous evaluation and indicates that reported savings values were too aggressive on average.

Recommendation: The evaluation team recommends Avista examine planning assumptions about per-home consumption, and percent reductions in heating and cooling loads from shell improvements. It may be that the percent reduction assumptions are sound, but they are being applied to an overstated assumption of the average electric HVAC consumption per home. Conversely, the assumed end-use shares may be accurate, but the end-use reduction percentage is inflated. This investigation should be conducted separately for electrically heated homes and dual fuel homes as the heating electric end-use share will be different.

Status: The values used were based off of RTF data. Avista will continue to use and update these values as they change.

6.3.2.6 Home Energy Reports Program

Conclusion: The evaluation team found no incremental savings were realized during the second year (2017) for the Home Energy Report behavioral program. The finding reflects Avista's decision to not re-fill drop-outs from the program treatment group.

Recommendation: If the Home Energy Reports Program is included within the Avista portfolio in future program cycles, the evaluation team recommends Avista continue to service the treatment group by enrolling new customers to replace drop-outs.

Status: Avista will take this into consideration should the Company ever decide going forward to reactivate the Home Energy Report Program. As of now, Avista no longer has a contract with Opower and is not conducting a HER program – the program ended in 2017.

6.3.2.7 Low Income Program

Conclusion: The Low Income program saw the fuel switching homes save significantly more electricity on average than homes that did not have a primary mechanical system converted from electricity to natural gas. The realization rate for the conversion measures was 110%, with homes saving an average of 7,600 kWh annually. The conservation measures achieved a much lower realization rate of 73%. The program overall achieved a 94% realization rate.

Recommendation: The evaluation team recommends re-evaluating the current reported savings assumption to attempt to better align the savings given the program's measure mix and customer profile for conservation measures. We also recommend comparing and attempting to align the fuel

conversion savings assumptions between the Low Income and Fuel Efficiency programs to achieve more consistent evaluated impacts.

Status: The Company re-evaluated the current reported savings assumptions for all fuel conversion measures. In that evaluation, the Company notes that measures in the Low-Income Conversion program primarily consisted of furnace conversions and "combo" conversions, which is a measure that includes a natural gas furnace and a natural gas water heater. As compared to the residential program evaluation conducted by Nexant, which was based heavily on water heaters as a standalone measure, the Low-Income conversion program savings achieved better aligned with the UES values forecasted by the Company. It should be noted, however, that The Company did remove natural gas water heater conversions from its portfolio as a stand-alone measure.

Natural Gas Impact Conclusions & Recommendations

6.3.1 Nonresidential Programs

The overall realization rate for the nonresidential portfolio is 103%. The realization rates ranged from 142% for the Commercial Insulation program down to 42% for the Energy Smart Grocer program. The evaluation team found that the processes Avista is utilizing for estimating and reporting energy savings for the nonresidential programs are predominantly sound and reasonable. The following subsections outline specific conclusions and recommendations for several of the nonresidential programs.

6.3.1.1 Site Specific Program

Conclusion: The Site Specific program constitutes more than 45% of the program energy shares (verified gross savings). Over the last 4 years, Avista has increased their level of quality assurance and review on projects that participate through the program. The evaluation team's analysis resulted in a 133% realization rate for the Site Specific program (conservation measures only).
Recommendation: The evaluation team recommends that Avista continue to operate the Sit Specific program with the current level of rigor.

6.3.1.2 Natural Gas Prescriptive Programs

Conclusion: Avista reported participation in four prescriptive natural gas programs in 2016-2017: Food Service Equipment, Commercial Insulation, Natural Gas HVAC, and Energy Smart Grocer. Strong realizations rates for most of these programs indicate that the Avista's deemed savings estimates for these measures are accurate and appropriate.

Recommendation: The evaluation team recommends that Avista continue to operate these programs with the current level of rigor.

Status: Avista will continue to pursue conservation through its prescriptive programs.

Conclusion: The Energy Smart Grocer program constituted about 6% of the nonresidential natural gas portfolio energy shares. The evaluation team found a realization rate of 42% for this program,

predominately due to a zero realization rate that was found for a few large projects in the sample, based on utility bill analysis.

Recommendation: The Energy Smart Grocer program is implemented by a third party. It is recommended that for large projects, Avista work more closely with the implementer to ensure accurate reporting.

Status: The Company is bringing all of the offerings previously being delivered through the ESG program in-house with the exception of refrigeration engineering specialties which Avista will take care of through a Request for Proposal (RFP) for professional services.

Recommendation: The evaluation team recommends that Avista consider using performance-based incentives for any measures that are estimated to achieve savings of 10% or more of annual natural gas consumption. For projects where eQuest model were employed by the implementer to estimate savings, Avista should verify that the baseline eQuest model was calibrated on a monthly basis for both gas and electric consumption.

Status: This option will be considered in the 2020-2021 Biennium. Avista will verify that the baseline eQuest model was calibrated on a monthly basis.

6.3.1.3 Small Business Program

Conclusion: The Small Business program in WA constituted approximately 11% of the total savings for the nonresidential portfolio. The evaluation team found a 106% realization for the program.

Conclusion: The Small Business program implementer has improved their tracking of decommissioned measures in the 2016-2017 biennium, in comparison to the 2014-2015 biennium, as shown by the evaluation team's calculated persistence rate of 98% for the measures included in the sample in the 2016-2017 biennium.

6.3.2 Residential Programs

The overall realization rate for the residential portfolio's conservation programs was 119% while the conversion programs achieved a 70% realization rate. The conversion programs all performed well with realization rates above 100% with the exception of the Shell and Low Income programs. The conversion programs low realization rates indicates the forecasted increase gas consumption was not realized. The following subsections outline specific conclusions and recommendations for several of the residential programs.

6.3.2.1 HVAC Program

Conclusion: The evaluation team found a realization of 133% at the program level. This is similar to the findings of the 2014-2015 evaluation which found a 125% realization rate for Washington. The findings are based on the analysis of 802 homes resulting in a relative precision of 6.8%.

Recommendation: Given that the realization rate is substantially higher than 100% and is associated with a low error bound, Avista should consider revising its reported savings values for measures within the program.

Status: Avista will use RTF values for this program going forward.

6.3.2.2 Water Heat

Conclusion: For showerheads distributed through the Simple Steps program, Avista allocates 50% of its reported savings to electric savings and 50% to natural gas savings to account for homes that have different water heating fuel types.

Recommendation: The evaluation team recommends Avista update this allocation assumption to be based on representative water heater fuel type saturation. These data are available through the Regional Building Stock Assessment study; however, we recommend Avista base the allocation on data specific to its territory.

Status: Avista will use number of customer meters specific to the Company's service territory to allocate electric vs. natural gas savings for showerheads. The Company is also discussing the merits around performing a Residential Appliance Saturation Study (RASS) which could provide meaningful information around fuel and appliance use throughout Avista's service territory.

6.3.2.3 Fuel Efficiency

Conclusion: The evaluation team found that the homes analyzed that converted from electric heat to a natural gas furnace showed an average weather normalized gas consumption increase of 328 therms per year resulting in a 70% realization rate. This impact and realization rate is very similar to findings from the prior evaluation (384 therms increased consumption with a 70% realization rate).

Recommendation: The evaluation team recommends Avista review its forecasted gas penalty for the Fuel Efficiency program. Based on two cycles of evaluation, the program appears to be over-estimating the actual impact.

Status: Avista has updated its Fuel Efficiency program's savings values based on Nexant's report. As stated earlier, the program has a termination date of December 31, 2019.

6.3.2.4 Shell Program

Conclusion: The evaluation team found a realization rate of 78% for shell program. These findings reflect reported savings are fairly well aligned for the program. However, there may be room for further refinement of savings assumptions for the reported values.

Recommendation: To refine the reported savings assumptions, we recommend Avista examine planning assumptions about per-home consumption, end-use load shares, and percent reductions in heating loads from shell improvements.

Status: Avista will refine its reported savings assumptions and will analyze savings with RTF figures.

6.3.2.5 Low Income Program

Conclusion: The verified savings for the gas conservation homes was very low relative to Avista's reported savings with a realization rate of 28%. This is a departure from the previous evaluation which found a realization rate of 101%. Moreover, the evaluation observed unexpected increases in consumption on average after the first year of the biennium. The conversion measures achieved a 75% realization rate indicating the program assumed too high of a gas penalty.

Recommendation: The evaluation team recommends that Avista maintain its current assumptions for conservation measures due to the diverging realization rates between the prior and current evaluations that appear to be driven by varying participant consumption profiles.

Status: Avista will maintain current assumptions for the low-income natural gas program and will evaluate and adaptively manage the program based on Cadmus' evaluation results following the closure of the 2019 program year.