

# 2023 Electric Integrated Resource Plan

## Appendix G – Distributed Energy Resource Potential Assessment Scope of Work



**Avista RFP No. R-XXXXX**

**Distributed Energy Resource Potential Assessment  
Statement of Work**

**12/27/2022**

- 1. Purpose.** Avista desires to utilize a third-party Consultant to conduct a Distributed Energy Resource (“DER”) potential assessment (“Study”) to determine a reasonable potential of new generation, storage, and controllable load impacts on a localized basis. This study is required by the Washington Utility and Transportation Commission (“WUTC”) as part of the conditions of Avista’s Clean Energy Implementation Plan<sup>1</sup>.
- 2. Overview – Project Summary.** This Statement of Work (“SOW”) details the scope of work to be provided by the Consultant (the “Services”) and deliverables to be created (the “Deliverables”) for the Study (as used in this SOW, the Services and Deliverables will be referred to, collectively, as the “Project”).
- 3. Scope of Work.**

Consultant shall conduct an analysis to identify the customer potential for each DER type for Avista’s Washington service territory on a geographic basis and deliver results in a report document. Data should be provided in the most granular aggregation available, i.e. census block and for each Avista electric feeder in Washington state. DER is defined in WAC 480-100-605 as:

*Distributed energy resource means a non-emitting electric generation or renewable resource or program that reduces electric demand, manages the level or timing of electricity consumption, or provides storage, electric energy, capacity, or ancillary services to an electric utility and that is located on the distribution system, any subsystem of the distribution system, or behind the customer meter, including conservation and energy efficiency.*

For the purposes of this study, the following DERs will be considered. Avista will separately address energy efficiency and demand response.

- Electric Vehicles
  - Residential and commercial charging for Class 1 through 8 on-road vehicles at designated residence and commercial facility locations.
  - Public charging and in-route dedicated commercial fleet charging for Class 1 through 8 on-road vehicles, including along major travel corridors.
- New Generation & Storage
  - Residential and Commercial Solar.
  - Residential and Commercial Storage.
  - Other Renewables (i.e. wind, small hydro, fuel cell, ICE).

---

<sup>1</sup> Avista will include a Distributed Energy Resources (DERs) potential assessment for each distribution feeder no later than its 2025 electric IRP. Avista will develop a scope of work for this project no later than the end of 2022, including input from the IRP TAC, EEAG, and DPAG. The assessment will include a low-income DER potential assessment. Avista will document its DER potential assessment work in the Company’s 2023 IRP Progress Report in the form of a project plan, including project schedule, interim milestones, and explanations of how these efforts address WAC 480-100-620(3)(b)(iii) and (iv).

## **I. Electric Vehicles**

For each Washington census block, an assessment of electric vehicle demand shall be estimated for every 5 years beginning in 2025 through 2050. The assessment shall consider all on-road vehicle class types,<sup>2</sup> classes 1 through 8, with charging estimates at facility or residence locations at the feeder level, as well as high-power public and in-route fleet charging locations at the feeder level. The number of vehicles by vehicle class, census block, feeder, and time period is required. In developing EV adoption forecasts, they shall be consistent with state policy mandates such as light-duty (class 1 and 2) vehicles reaching 50% sales penetration by 2030 and 100% by 2035. The best available literature shall be used to develop a probable electrification forecast for medium and heavy-duty vehicles, Class 3-8<sup>3</sup> as a baseline scenario. The forecast should consider potential growth in both residential and commercial customers. EV forecasts should include a second scenario for feeders within Highly Impacted or Vulnerable Population<sup>4</sup> areas where the light duty vehicle forecast is not restricted by economic disadvantages, as assisted aid or economic incentives for EV purchases could occur. Forecasts shall include aggregated hourly load usage for each vehicle type per month and weekday, with charging locations at the facility/residence and public/in-route fleet locations.

## **II. New Generation & Storage**

Avista requires an assessment for potential customer-owned solar, storage, and other renewable generation by census block and distribution feeder, for every 5 years beginning in 2025 through 2050. Avista expects the forecast to include an expected case forecast considering existing policies and cost/pricing outlooks for the customer demographics and building potential- the analysis shall consider future customer electrification possibilities impacting its demand. The analysis shall include a second scenario where Highly Impacted or Vulnerable Population areas are no limited to financial constraints as financial assistance or incentives for DER's could occur for the populations. Deliverables shall include, for each scenario, the capacity of each technology and annual energy estimates for generation resources. For storage resources the assumed usable duration in hours of capacity shall be stated.

## **III. Data Availability and Assumptions**

Avista will provide: GIS data of the geographic location of each feeder and customer within the Washington Avista service area; electric and natural gas monthly billing data for each service point (if required); and, if necessary, Avista's current forecasts for system electric vehicles. Other data will be available on a case by case basis, such as loading and daily load curves by feeder. There are approximately 241 feeders to be evaluated consisting of urban, suburban, and rural areas in eastern Washington.

Avista will provide average and peak monthly electric and natural gas usage for each service point (if required). Avista expects this study will take into account customer demographic, income, use, property limitations, and any other factors discovered within the project research. Avista will provide its current forecasts for system electric vehicles and building electrification if necessary. Other data will be available on a case by cases basis, such as feeder level loads, intra-month level customer load, daily load curves by feeder, as rooftop solar

---

<sup>2</sup> Vehicle class types, relevant to the project, are described as battery electric vehicles and plug-in electric vehicles for each local charging classifications by the U.S. Department of Energy and U.S. Department of Transportation (further information for makes and models in these classification are listed on the Department's website).

<sup>3</sup> See for example, the National Renewable Energy Laboratory, "Decarbonizing Medium- and Heavy-Duty On-Road Vehicles" (2022), accessible at <https://www.nrel.gov/docs/fy22osti/82081.pdf>

<sup>4</sup> These communities are described as Named Communities, a locational map of these communities in provided in Appendix A.

viability, etc as well as certain information from Avista’s commercial customer database that may be useful in identifying vehicle fleet sizes and locations.

4. **Deliverables.** Consultant shall use commercially reasonable efforts to complete all analyses and provide the resultant Report by June 1, 2024, unless otherwise agreed to by the Parties. Avista strongly opposes the use of acronyms and requests the Report to contain a minimal amount as possible.

Task 1	<p>(a) A survey of other utility or other entity efforts to conduct similar DER potential studies, including EV adoption and load forecasts at the feeder level. The study shall include comparison of the other utility’s size, rates, climate, and customer demographics.</p> <p>(b) A summary of best practices in development of future adoption for new DER technologies.</p> <p>(c) An overview of Avista’s current DER resources (i.e., 2022 baseline).</p> <p>Deliverable: Report document outlining the findings in above items. <b>(Due date: July 2023)</b></p>
Task 2	<p>(a) A detailed explanation of the methodology, systems, and process used to develop the forecasts for each DER, related scenarios, and electric vehicles. Include validation of methodology with actual data (use historical data).</p> <p>(b) A description of the methodology used to develop the electric vehicle forecasts for Class 1-8 vehicles by quantity per feeder location, and hourly load shapes at commercial facilities and residential homes for Class 1-8 on-road vehicles. In particular, a credible method identifying current non-EV vehicle locations at the feeder level, with future electrification scenarios at these locations including growth potential of overall fleet size must be demonstrated. A description of the methodology used to develop load shapes for public and in-route fleet high speed charging locations for Class 1-8 EVs must also be provided. Each type of EV will have unique charging patterns and load profiles, most often with charging occurring at more than one location. All assumptions and methodologies used to develop the various load profiles of each of the class 1 through 8 vehicles must be clearly indicated. For example, a certain portion of residential class 1 and 2 EV’s electrical load will occur at the residential “home” location, a portion at work for some EVs commuting to a work facility with charging available, DC fast charging when taking longer trips, etc. The format of the outputs from these forecasts and load shapes must be specified, in a form that is directly usable for Avista’s System Planning Department.</p> <p>Deliverable: Report document with above information. <b>(Due date: September 2023)</b></p>
Task 3	<p>(a) Matrix including each feeder and the quantity of each electric vehicle by class 1 through 8, for both scenarios.</p> <p>(b) An aggregated hourly load shape for each vehicle class, by weekday and month, as well as average charging session load shape showing kW for each hour of the day, for each vehicle class (see Appendix C for examples). Load shapes for public and in-route fleet high speed charging locations for Class 1-8 EVs must also be provided for each feeder showing the hourly load at each location by vehicle class. These load shapes assume uninfluenced charging behavior (no TOU rate or other DR programs or technologies are applied).</p> <p>(c) A second matrix is required for feeders within Named Communities.</p> <p><b>(Draft December 2023, Final February 2024)</b></p>
Task 5	<p>(a) Matrix including each feeder and the amount of DER resources in kW and/or kWh for each resource type by year and customer class- example shown in Appendix B.</p>

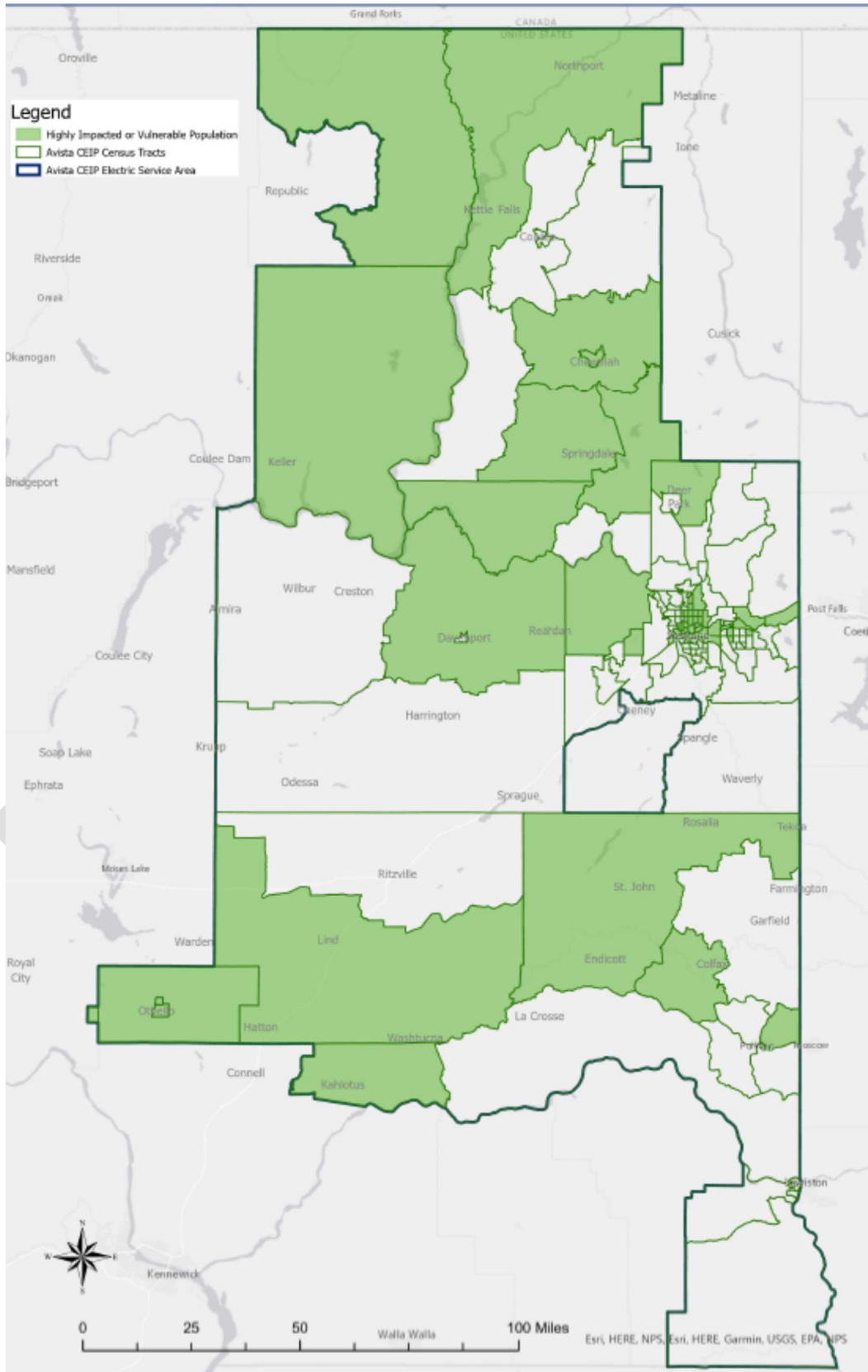
	<p>(b) The summary shall also include an estimated portion of the resource opportunity providing ancillary services<sup>5</sup> along with adjustments for higher potential due to income limits from named communities.</p> <p><b>(Draft March 2024, Final May 2024)</b></p>
Task 6	<p>Present draft results of the study to Avista’s Advisory Committees for comment and questions. Advisory committees may include: Electric Integrated Resource Planning Technical Advisory Committee, Energy Efficiency Advisory Group, Distribution Planning Advisory Group, and the Joint EVSE Stakeholder Group</p> <p><b>(Q1 2024<sup>6</sup>)</b></p>
Task 7	<p>(a) Final report document including tasks 1 through 6,  (b) Summary of comments and suggestions from non-Avista parties and how they are addressed in the final report,  (c) Recommendations for future studies,  (d) Documentation of methods and procedures to transition Avista to be able to update these forecasts for future use.</p> <p><b>(Draft due April 1, 2024, with the final report due June 1, 2024)</b></p>

DRAFT

<sup>5</sup> Ancillary services include the resource’s ability to provide regulation, load following, operating reserves, voltage support.

<sup>6</sup> Future meetings could be remote or in person. Bids should not consider any travel time in preparation of this bid and will be additional cost borne by Avista on a case-by-case basis depending on the need for in person presentations.

## Appendix A Locations of Named Communities



Appendix B

<b>Feeder Name</b>	<b>State</b>	<b>Customer Class</b>	<b>Year</b>	<b>Technology/ Resource</b>	<b>Load Impact (kW)</b>	<b>Load Impact (kWh)</b>	<b>Ancillary Services (kW)</b>
12F4	WA	Residential	2025	Solar	0.5	12,000	0.05

DRAFT

## Appendix C

Uninfluenced Daily Residential Load Profile (aggregated)  
 For Class 1 Electric Vehicles  
 From EVSE Pilot final report (2019), p. 54

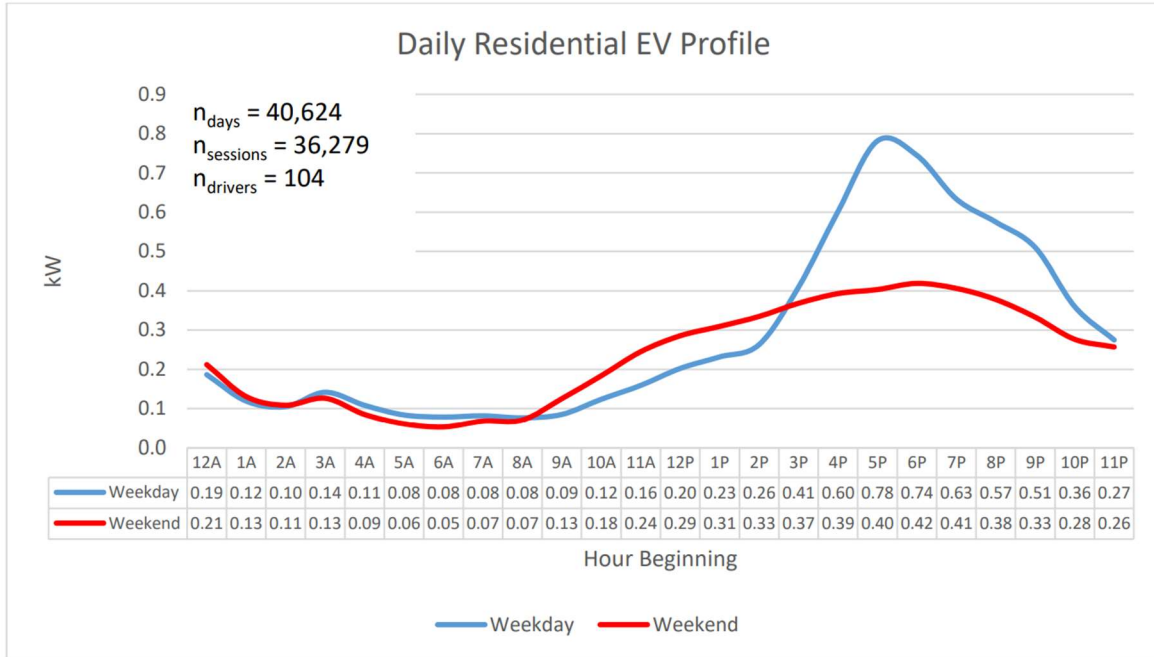
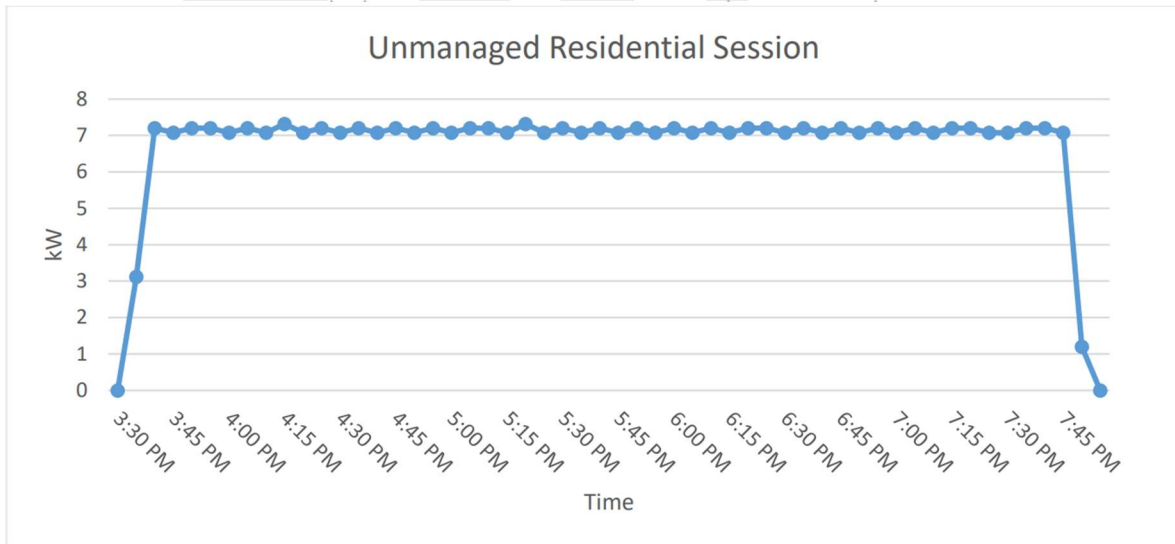


Figure 41. Residential EV aggregate load profile

Unmanaged Residential EV charging session  
 From EVSE Pilot final report (2019), p. 83





DRAFT