



Work Plan for Avista's Solar Plus Storage for Resilient Communities

November 28, 2023

Background

As a result of Avista's 2022 General Rate Case (GRC),¹ the Company agreed to work with its Energy Assistance Advisory Group (EAAG) to identify a new renewable energy project, or projects, for the direct benefit of low-income customers or customers residing in Named Communities. Avista discussed project opportunities that support the GRC requirements with its EAAG during its July 2023 meeting. Ultimately, the EAAG advocated for Avista to partner with a non-profit organization that supports low-income customers to provide solar plus battery storage. As a result of input from the EAAG, Avista and the Martin Luther King Jr Family Outreach Center (MLK Center), with approval from the City of Spokane, are funding a neighborhood resiliency community microgrid that will provide shelter and resources during extreme weather events.

Solar plus Storage for Resilient Communities

MLK Center Description

The MLK Center is a non-profit, community-based social service center located in the East Central District of Spokane, one of the most ethnically diverse neighborhoods in Spokane County, which is also an Avista Named Community.² The MLK Center was created over 40 years ago and has a year-round mission of providing food bank services, childcare, and support for families with a goal of strengthening community connections. The improvements to the MLK Center will provide additional value to the neighborhood and the communities the non-profit (501c3) serves. The following image is of the MLK Center.

¹ Docket UE-220053 et al, - Final Order 10/04, ¶ 103.

² Named Communities consist of Highly Impact Communities and Vulnerable Populations as defined in WAC 480-100-605.



The MLK Center does not currently have any backup power or solar generation at the location. Data collected in a study titled “Addressing Extreme Heat in Spokane, Washington”³ demonstrates the impacts temperatures can have in urban environments, such as where the MLK Center is located. Areas with a greater concentration of paved surfaces and emissions experience higher average temperatures at street level than areas with less development. In Spokane, most of the city’s urban heat islands are concentrated in the North along the Highway 2 Corridor and the East into Spokane Valley. Residents of these areas are also some of the city’s poorest. Mitigating urban heat islands in Spokane and beyond may have positive benefits in closing gaps in income inequality experienced by vulnerable communities.

The solar and storage project will be implemented utilizing the concepts integral to the Clean Energy Implementation Plan (CEIP), with strategic decisions that will maximize benefits for Named Communities within Avista’s service area and helping to ensure that all customers, especially those most vulnerable, receive the information, communication, and support they need related to power outages, extreme heat risk, and safety. This project is one example of how Avista is developing local clean energy infrastructure including roof top or community solar.

³ Addressing Extreme Heat in Spokane, WA by Owen Hart UVA Frank Batten School of leadership for public policy April 2022.

During normal operations, the installed solar panels will help power the MLK Center with any excess energy delivered to the grid providing net metering credits. During an outage, the batteries can back up the delivery of electricity from Avista's distribution grid. The microgrid, solar panels, and batteries will provide backup power storage for the community center during unplanned outages such as windstorms, extreme heat events, or fire, etc. The project also includes a new roof system and energy efficiency updates to the building's heating ventilation and air conditioning equipment. These improvements/replacements will provide the center with a common space for community members in need of heating and cooling during emergencies. This building will be listed with the City of Spokane's critical infrastructure and will provide support for customers who have medical power dependencies, as well as other vulnerable customer needs.

Community partners

Community partners for this project include Avista, the MLK Center, the City of Spokane, and secured funding in the amount of \$1,500,000 from the Department of Commerce to complete this project. As described in further detail below, Avista is committing up to \$1,400,000 in funds for this project from its Named Communities Investment Fund (NCIF), energy efficiency tariff rider, connected communities fund, and electric vehicle (EV) charging and transportation budget.

Avista's program design goal for the MLK Center is to gain knowledge that will help in future program design for programs that provide technical assistance to privately financed or non-profit organizations with properties that integrate on-site renewable generation, energy storage, and EV charging. Through first-hand experience and empirical data, the Company anticipates it will model upfront and ongoing costs and benefits to community renewable energy programs, such as community solar plus storage, while overcoming clean energy access barriers impacting nearly half of customers who rent or have low incomes while strengthening Avista's power grid.

Solar Analysis

To maximize the benefits for the MLK Center, the project aims to install the largest allowable net-metering solar installation allowed, a 99 kW solar array. A PVWatts calculator was used to size the solar array and produce estimates for kWh production. The proposed array and battery energy storage system will provide significant benefits to the MLK Center through reduced energy bills and provide added energy resiliency. Using Avista's solar estimator tool, the solar array will

provide an estimated savings of \$12,120 annually, which will go a long way in reducing the financial impact of the center's electric bill. Additionally, the solar array will also provide sustainability benefits in the form of significant CO2 reductions, which has meaningful environmental & health benefits. Finally, with the added resiliency benefits, the MLK Center can be relied on for emergency shelter essentials during times of crisis.

A battery energy storage system analysis tool was used to run several studies to evaluate the size requirements of the battery storage. The analysis used the projected solar production and historical 15-minute maximum load from the 2021 (load was significantly lower during the 2022 summer due to multiple air-conditioning failures, which left the community center without cooling during the summer months). Outages were simulated on June 29th, which corresponded with the community center's maximum load and coincided with the 2021 heat dome event. An additional simulation of an outage was performed for December 13th to analyze the impact of low solar output conditions. Initial results indicated that a large battery, between one and two megawatt-hours, would be required to serve the building during an outage (depending on the percentage of building load served). Given the size of the MLK Center, the desire is to be able to provide twenty-four-hour backup with restricted loading and eight or more hours with full building loading. The battery energy storage system selected for this analysis was rated for 500 kW – 1100 kW.

Microgrid Design

Based on the battery size required to supply the desired resilience, the complexity of owning and operating such a battery would be burdensome to the MLK Center. Instead, a microgrid framework was proposed whereby Avista would own and operate the battery and provide resiliency during a grid outage. This microgrid design has similarities to one previously deployed by Avista on the Washington State University Spokane campus. A new breaker will be installed to act as a point of common coupling (PCC) between the distribution system and the microgrid. During normal operation, electricity would be served to the microgrid through the PCC. When a grid outage is detected, the PCC breaker can isolate the microgrid from the distribution grid, allowing the battery to form an island to continue to provide electrical service to the microgrid. The high-level components of the microgrid include the PCC breaker, the battery storage system, an EV charging station, the MLK Center building, and the new solar array being installed. A microgrid controller

will be deployed to manage the operation of the microgrid while islanded and while grid connected to provide grid services.

Energy Efficiency

An Avista energy audit was performed March 3, 2023, and an Energy Star recommissioning evaluation was completed in September 2023. Specifically, these audits were conducted to determine potential measures that could be implemented and identify energy efficiency improvements that could be carried out to conserve energy.

Several improvement opportunities were identified, the retro commissioning on the HVAC will be the first stage in the building upgrade process and will identify all the energy flows in the MLK Center and produce a method for planning upgrades that increase energy savings. The controls system is due for replacement and with the selected upgrade model, all components work synergistically to optimize the facility. This state-of-the-art control system self-learns and informs the units when they need to turn on based on historic analytics so the facility will be at optimal operating temperature during scheduled occupancy.

The energy efficiency evaluation uncovered that only the renovated areas and additions to the facility implemented efficient LED fixtures. The remainder of the facility fixtures still utilized T8 fluorescent lamps. There is significant opportunity to reduce energy consumption by retrofitting any fluorescent fixtures with more efficient TLED lamps and/or replacing the existing fluorescent fixtures with brand new LED fixtures. Fixtures and lamps will be replaced where needed to increase energy efficiency within the building.

The facility is still equipped with vintage double-pane windows throughout the original areas of the building, some whose window seals have failed (evident by condensation/fogginess inside panes). Several of the windows have been vandalized with bullet holes that further reduced their thermal performance. The windows will be upgraded to double-pane glass in the offices on the north side of the building and the cafeteria.

Outreach

The proposed project was presented to members of Avista's Equity Advisory Group (EAG) and EAAG for their feedback. The EAG provides an equity lens to Company initiatives with consideration for Named Communities. The MLK Center project is in alignment with an initiative identified by the EAG that recommends the Company direct NCIF funds to focus and support efforts on improving energy efficiency for schools, community centers, and other places that support individuals in Named Communities. The feedback from these groups was favorable for the MLK Center project with a recommendation to include educational sessions for adults and youth that frequent the facility so they may learn about the efficiency benefits along with career opportunities for clean energy.

Avista utilizes a variety of communication channels to connect with customers to provide information on company news and initiatives. Activities such as telephone town hall meetings or in-person informational/educational sessions for the residents of the neighborhood will provide a way to share the details of the project with the intended benefits. The Company uses telephone townhall technology to educate customers about Avista programs, such as wildfire resiliency efforts. Avista has great success in reaching its customers through these telephone townhall efforts and may use this technology to reach customers residing in this neighborhood to provide education pertaining to the work being completed at the MLK Center. Telephone town hall meetings can broadcast in Spanish and other languages to help bridge language gaps.

The MLK Center project will be featured on the Company website and shared through a variety of channels that may include Avista’s newsletter, social media, customer email, and educational materials that can be distributed through the MLK Center or other community partners.

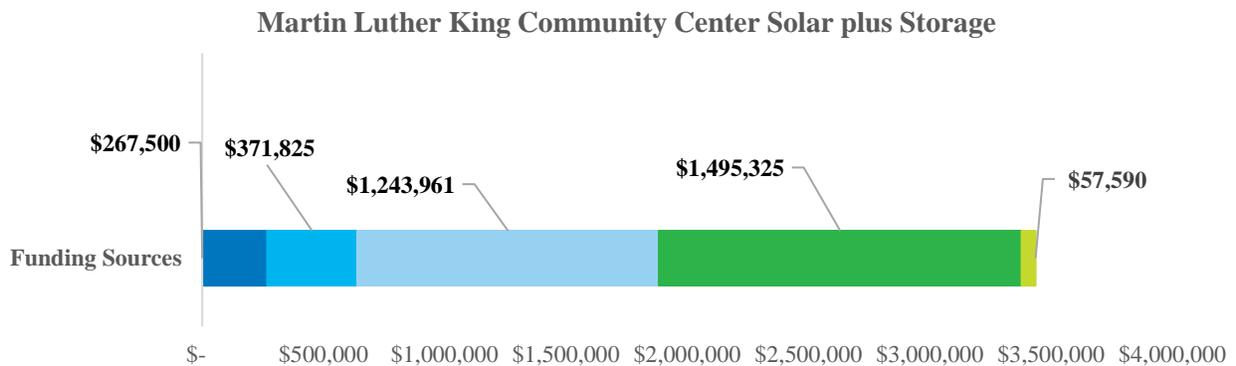
Environmental Benefits

Energy produced by this solar electric system will offset emissions from power plants. This solar system will offset an estimated:

219490.41 lbs./year of carbon dioxide (CO2)	of	87.14 lbs./year of sulfur dioxide (SO2)	233.71 lbs./year of nitrogen oxides (NOx)
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MLK Center Funding

Connected Communities	\$267,500	Microgrid system design
Connected Communities (Department of Energy)	\$371,825	Microgrid installation labor, BESS installation labor
Named Communities Resilience Fund	\$1,243,961	Roof System, Outreach, Battery Energy Storage System
Department of Commerce	\$1,495,325	Solar, Battery Install, Interconnection, Load Control
Named Community Energy Efficiency Fund	\$57,590	LED lighting conversion, Window replacement,



Major Milestones and Dates

Avista anticipates the following activities to take place throughout the 2024 and 2025 fiscal years. Project milestones are subject to change depending on product availability. The MLK Center solar plus storage initiative is currently scheduled to conclude in June of 2025.

Solar Plus Storage Tentative Timeline	
<u>Task</u>	<u>Target Date</u>
Energy Efficiency Improvements	October - December 2023
RFP for Battery Energy Storage System (BESS)	December 2023
Progress Report to Department of Commerce	January 2024
Full Roof Replacement	April 2024
Solar Array Installation	May 2024
Progress Report to Department of Commerce	July 2024
Customer engagement	July – August 2024
BESS Delivery & Installation	October 2024
Solar plus storage Microgrid Commissioning	June 2025

Proposed Timeline

