Project Profile

Components:

- 1 MW/1.4 MWh – Lithium-Ion Battery Energy Storage System with MESA* compliant battery management system
- 500 kW AC Solar Array with Smart Inverters
- V2G – Vehicle-to-Grid System
- Microgrid Control System and Building Energy Management System
- Clean Energy Center

*MESA: Modular Energy Storage Architecture, mesastandards.org

Use Cases:

- Grid Resiliency and Disaster Recovery
- Renewable Energy Integration
- Grid Support & Ancillary Services
- V2G Integration

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Project Overview:
The PUD is building a microgrid that will include a Clean Energy Center, just east of the Arlington Airport. A microgrid is localized generation and load that is normally connected to the grid but can be isolated or disconnected to operate independently. The project is supported by a $3.5 million grant from the Washington Clean Energy Fund.

What will this project do?
This Microgrid will demonstrate how various clean energy technologies – such as solar, battery storage, and electric vehicles – can work together to help with renewable energy integration and grid resiliency (disaster recovery). The system will provide electricity to critical PUD facilities that can be used in the event of a disaster such as a large-scale earthquake. The PUD is anticipating the growth of electric vehicles (especially fleet vehicles) so it is important to learn about their impact. By including vehicle-to-grid (V2G) technology, the PUD will test how these mini batteries can be another source of electric storage to benefit the overall grid and the Microgrid.

What will this grant demonstrate?
The project will demonstrate how energy storage in combination with a renewable energy resource and a microgrid control system can be utilized for disaster recovery and grid resiliency as well as renewable energy integration and grid support. In addition, the project will demonstrate how intelligent solar PV controllers and vehicle-to-grid (V2G) systems can benefit the grid.

Milestones:
2018-2019: Design & Phase I site work
2019: Solar Array
2019-2020: Clean Energy Center
2020 Q3: Battery Energy Storage & Microgrid Control System procurement
2020 Q4: Start-up, commissioning & report
2021-2033: Operation & study
**Challenges**
This project will explore the challenges of using a microgrid to provide renewable energy integration (solar) as well as grid support while at the same time be ready to seamlessly provide electricity during power outages due to storms, earthquakes or other natural disasters.

**Lessons Learned**
The University of Washington studies and reports will look at the economics of microgrids, energy storage and solar in the Pacific Northwest. In addition, the project will explore the feasibility of using V2G technology.

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**Arlington Microgrid Contributors**

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<th>Snohomish County PUD</th>
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<tr>
<td>WA Dept of Commerce</td>
<td>Financial Partner – CEF2 Grant</td>
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<tr>
<td>University of Washington</td>
<td>Contract – Modeling, Data Analysis &amp; Reports</td>
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<td>Burns &amp; McDonnell</td>
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<td>Mitsubishi Electric</td>
<td>Contract – V2G - Equipment and Support</td>
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<td>A&amp;R Solar</td>
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<td>ABB Power Grids</td>
<td>Contract – Battery and Controls Supply</td>
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<td>PUD Substation Crews</td>
<td>Battery &amp; Controls Install</td>
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**The Arlington Microgrid** is an exciting project that brings together community solar, energy storage, V2G and advanced control systems to demonstrate grid resiliency and renewable energy integration through a microgrid. This project enables the PUD to implement new technologies that will be foundational in serving our customers now and in the future.

— Jason Zyskowski, PUD Assistant General Manager, Facilities, Generation, Power, Rates & Transmission Mgmt.

**About the PUD** – Snohomish County PUD serves one of the fastest-growing counties in the Pacific Northwest, delivering electricity to over 350,000 customers and water to about 21,000 customers. It’s currently the second largest public utility in the Pacific Northwest. The PUD has developed two energy storage systems in Everett, WA, with the third system planned for Arlington in 2020.