Arlington Battery Energy Storage System

COMMISSIONING AND DECOMMISSIONING PLAN

Ameresco Project # 1008707
17601 63rd Ave. NE
Arlington, WA 98223
February 3, 2025

1 Commissioning Plan

1.1 Project Description

Ameresco will be installing a 25MW Battery Energy Storage System (BESS) project (Arlington BESS) at the Snohomish PUD District #1 (the District) site. The BESS system is comprised of 38 Tesla Megapack 2XL batteries with 12 associated transformers, an auxiliary transformer, and a Plant Control House.

To create the BESS system, each battery measuring 28.87 ft (W) × 9.14 ft (H) × 5.41 ft (D) will be installed in groups of one (1), two (2), and four (4). Each group will have its own transformer and concrete pad and will be spaced 15 feet between groupings. The BESS will interconnect via four circuits to the adjacent Crosswinds substation. Power is transmitted at 12.47 kV to District switchgear at the substation.

Ameresco will also provide site improvements including grading, subterranean drainage with biofiltration, roads, foundations, lighting, fencing auxiliary power and more as needed to operate the facility. The entire BESS will be enclosed by chain link fencing to match the adjacent substation. Underground conduit will connect the BESS to transformers.

The commercial life of the facility is expected to be 25 years. At the end of commercial life, Ameresco will cease operations and decommission the facility including necessary demolition and site reclamation. To the greatest degree possible, decommissioning will attempt to maximize the recycling of all BESS components.

1.2 Commissioning Process Overview

Commissioning is a quality control process that verifies that the customer's project requirements and expectations have been achieved. The commissioning process verifies that the BESS has been properly installed through installation inspections, equipment startups, and testing. The purpose of the commissioning plan is to provide direction for the commissioning process during construction and implementation of the BESS. The plan will identify what equipment and systems will be commissioned.

It will also identify parties involved in the commissioning process, roles of the involved parties, commissioning documentation to be generated, and inspections and tests to be performed.

At all times the Project Developer/Manager (PM) will be the primary point of contact, The PM will be responsible for redirecting commissioning documentation as necessary. The PM will be responsible for coordinating site access and contractor personnel during all commissioning activities.

1.3 Participants and Responsibilities

Participant	Role	Contact Information
Ameresco, Inc.	Project Manager (PM)/Construction Manager (CM)	Scott Wentworth (510) 684-7684
Ameresco, Inc.	Commissioning Authority (CxA)	Warren Harrison (510) 982-3559
Power Engineers, Inc.	Engineer (EOR)	(208) 788-3456
Tesla	Manufacturer	(512) 516-8177 (do not use for emergencies)
Trimark	Manufacturer	(813) 873-2402
Snohomish PUD	Customer/Utility	(425) 783-1000

Responsibilities

Project Manager (PM)/Construction Manager (CM):

- Coordinate site access and scheduling
- Distribute documentation between all parties including, but no limited to:
  - TESLA Commissioning Documentation
  - Design Documentation
  - CxA Documentation
  - Miscellaneous Manufacturer Documentation
- Complete the following tests:
  - Insulation resistance test
  - Hi-Potential test
- Support CxA inspections
- Support witness test and any other utility required tests
- Support TESLA start-up and commissioning activities
- Coordinate contractors to resolve deficiencies list items

Commissioning Authority (CxA):

- Generate commissioning plan
- Generate and complete inspection sheets (with support from CM and/or Electrical Contractor)
    - Electrical Enclosures Inspections
    - Communication Equipment Inspection
    - Photo Documentation
- Review the following test results:
    - Insulation resistance "megger" test data (from CM)
    - High-Potential "hi-pot" test data (from CM)
    - Factory transformer test data
    - TESLA Startup/Commissioning Documentation
- Support CM with witness test and any other utility requirements
- Complete TESLA prestart up Checklist (with support from CM and/or Electrical Contractor)
- Support TESLA during all their start-up and commissioning activities (with support from CM and/or Electrical Contractor)
- Generate and maintain master deficiencies list
    - Answer questions and provide clarifications related to items on the deficiencies list

Engineer of Record (EOR):

- Provide complete plans and specifications for a fully operational ESS system including support and monitoring systems.
- Provide design clarifications
    - Including review of items related to EOR on master deficiencies list

Manufacturer/OEM (TESLA):

- Provide all completed start up and commissioning documentation
- Conduct start-up and commissioning activities (with support from CxA and CM)

1.4 Commissioning Process

During construction, the CxA will generate the commissioning plan which will provide direction for the commissioning process. Due to the nature of a BESS project, the manufacturers (TESLA & Trimark) shall provide their own start up and commissioning outline documentation. The CxA will work hand in hand with the manufacturers to ensure all proper testing, start-up and documentation is completed.

The PM/CM will complete construction and required testing with support from their electrical subcontractor(s).

The CxA will review testing documentation from the PM/CM. The CxA will conduct an inspection of each component of the project to ensure conformity with the design documents. The CxA will generate a master list of findings, which will provide direction for deficiency resolution as well as track status of required testing.

Following mechanical completion of the project contractor startups will occur finalizing in component commissioning by the contractor/OEM with CxA and PM oversight. Normal and emergency operations of the components will be checked for proper response and alarming.

After successful startup of all equipment permission to operate for testing will be requested from the District. This portion of Commissioning, sometimes referred to as AC start up, final checks of equipment operating parameters will be made prior to first time operation and functional testing of the system charge, discharge, and emergency shutdowns will be tested. Communications and Data Acquisition or SCADA systems will be checked for proper data collection. All data will be collected on appropriate test forms or mediums to be reviewed by the design team.

With the system operational and able to be successfully demonstrated to operational staff training will be scheduled. Equipment IOM's and training agendas will be submitted to the design team and reviewed concurrently by the CxA. Upon approval by the design team, they will be issued to the operations staff for review and be available during training. Additionally local emergency response team training g and site familiarity will be conducted.

Upon successful training key staff or agencies will be identified to assume the following roles:

1. Monitoring of site operational conditions and alarms
2. Emergency response contact
3. Subject matter contact
4. Operations and maintenance contact
5. Owner/operator
6. Equipment provider technical information contact

1.5 Project Documentation

The commissioning process will utilize project drawings and specifications as the Basis of Design, these guides set the standards to which project performance will be tested to. Project documents will identify equipment specifications and performance, sequences of operation in all modes, safety features, and related codes and standards.

2 Commissioning Activities

2.1 Overview

Pre-Construction
The Design team will provide progress documents for review by the CxA and District, comments will be incorporated in future submissions.

Construction
Contractors will submit schedules and submittals and participate in construction progress meetings. The project Developer, Engineer of Record, District, and CxA will participate in construction meetings as necessary along with reviewing submittals.

Initial contractor testing such as Insulation resistance testing and fall of potential will be scheduled far enough in advance to allow for observation by the Developer, Engineer, owner, or CxA. Test forms will be generated by the CxA to properly document the testing.

When equipment has been installed, wired, and checked by the installing contractors against the design documents the CxA will conduct an inspection of the entire system and document the conditions found

and any deficiencies, a report will be issued to all parties and any deficiencies will be corrected. Reinspection's or photo documentation will be used to close out open issues.

Equipment Start Up
Following the initial inspection and close out of open deficiencies equipment start ups will be scheduled, installing contractors and OEM's will conduct and document start ups based on equipment requirements. During this time frame, initial powering up of equipment will occur, but only after any required safety testing has passed inspection/review by the Authority Having Jurisdiction (AHJ).

Equipment testing
After successful start up and with permission of the owner system testing will be scheduled. Testing will include all modes of operation as well as communications, both normal and emergency. This testing will be collaborative with the CxA working with the OEM's and installing contractors. A Functional Performance test outline will be generated and issued for review prior to being utilized to guide and record the testing and results. All systems will be tested including Battery management, Fire and heat monitoring, protective systems within the BESS as well as collocated distribution equipment.

2.2 Fire Safety Feature Commissioning

The Tesla Megapack 2/XL is equipped with a number of fire safety features designed to mitigate the propagation of a battery failure or prevent the failure from occurring altogether. These protections are aligned with the NFPA 855 requirements, as well as the 2021 International Fire Code §1207 Electrical Energy Storage Systems.

2.2.1 Deflagration Control Commissioning

Each Megapack 2/XL is provided with an integral and proprietary explosion mitigation system (deflagration control). This explosion mitigation system is comprised of numerous pressure sensitive (overpressure) vents located at the top of the Megapack and a sparker system; working in conjunction to ignite any flammable gasses that could be generated within the unit during a failure event.

The Megapack 2 XL is provided with twenty-six (26) overpressure vents and 12 sparkers. Any overpressures generated from the ignition of flammable gasses within the unit will be relieved via the nearest pressure-sensitive vents and routed upwards, protecting the Megapack's structural integrity and preventing any hazardous pressure build-up within. The sparkers are located throughout the Megapack at various heights and continuously operate to ensure that any flammable gas build-up is ignited early – limiting the concentration of flammable gas within the unit and activating the pressure-sensitive vents to create a natural ventilation pathway to the exterior. During commissioning, the Tesla Megapack performs a self-test on each component of this system and reports a PASS/FAIL status.

2.2.2 Battery Management System

An integrated Battery Management System (BMS) monitors key datapoints such as voltage, current, and state of charge (SOC) of battery cells, in addition to providing control of corrective and protective actions in response to any abnormal conditions. Each battery module is equipped with a dedicated BMS, with a Megapack-level bus controller supervising output of all modules at the AC bus level. Critical BMS sensing parameters include battery module over / under voltage, cell string over / under voltage, battery module over temperature, temperature signal loss, and battery module over current.

In the event of any abnormal conditions, the BMS will generally first raise an information warning, and then trigger a corresponding corrective action should certain levels be reached. At commissioning, a SCADA commissioning procedure is followed to ensure that all data points are visible and mapped correctly.

2.2.3 Fire Detection

Thermal sensors within the Megapack are monitored by the BMS – anomalies are immediately transmitted to Tesla's 24/7 Operations Center, and Ameresco's operations center for immediate response. Communications are tested and verified upon commissioning.

2.2.4 Site Controller and Monitoring

The Tesla Site Controller provides a single point of interface to control and monitor the entire energy storage site. It hosts the control algorithm that dictates the charge and discharge functions of the battery system units, aggregating real-time information and using the information to optimize the commands sent to each individual Megapack unit.

The Megapack 2/XL is supported by Tesla's 24/7 Operations Center, which is designed to support the global fleet of energy storage products. In conjunction with Ameresco's local operation center, the Megapack 2/XL has 24/7 remote monitoring, diagnostics, and troubleshooting capabilities. In the event of an emergency, this information becomes available to a Subject Matter Expert (SME) responsible for the system to inform emergency response personnel.

2.2.5 Fire Suppression Systems

NFPA 855 and the 2021 IFC Chapter 12 both require fire control and suppression systems to be provided in certain installation conditions for battery ESS. These fire suppression systems, however, are typically required for rooms, areas within buildings, and "walk-in" units when installed outdoors. All components of the Tesla Megapack 2/XL are housed in a cabinet-style enclosure, with access for maintenance provided via enclosure doors that cannot be physically entered by any person.

The installation codes and standards, thus, would not consider the Tesla Megapack 2/XL walk-in container, occupied building, or structure as defined by NFPA 855 and IFC. The Tesla Megapack 2/XL does not rely on any external or internal fire suppression systems to limit cascading thermal runaway. Additional bespoke testing and subsequent fire modeling has indicated that the Megapack's passive construction provides a robust thermal resistance from the impacts of an adjacent Megapack during a large-scale failure.

2.2.6 Electrical Fault Protection Devices

Multiple levels of passive and active electrical protections are provided for the Megapack 2/XL. At the battery module level, overcurrent protection is provided for each module in the form of single use fusible links, providing interruption of overcurrent in the battery module in the case of an abnormal electrical event. Inverter modules, which are installed at each of the battery modules, are equipped with both DC protection via high-speed pyrotechnic fuse for passive or active isolation of battery module, as well as dedicated AC contactor and AC fuses should an abnormal electrical event occur at the inverter module on the AC side of the circuit.

Additionally, the Megapack 2/XL is equipped with DC ground fault detection system and AC circuit breaker with ground fault trip settings for distribution system protection. During commissioning, the Tesla Megapack performs a self-test on each component of this system and reports a PASS/FAIL status.

2.3 Record of Commissioning

Upon completion of commissioning, a record of completion for the Tesla Megapack commissioning, SCADA commissioning, electrical commissioning, and utility commissioning is provided to Ameresco, and can be made available to any relevant AHJ.

3 Operations and Maintenance

3.1 Overview

Battery Units
The units will be maintained by Tesla the original equipment supplier as such no additional training with regard to operations and maintenance will be provided.

Site Operating system
The site operating system will be maintained by Trimark original equipment supplier as such no additional training with regard to operations and maintenance will be provided.

Transformers
Ameresco, the project Developer will utilize its in house Operations and Maintenance Group to maintain the transformers, and switch gear. Standard turn over documents will be provided, and they will be provided a site interdiction prior to project close out with the installing contractors and OEM's.

4 Decommissioning Plan

4.1 Decommissioning and Recycling at End of Project Life

4.1.1 INTRODUCTION

The decommissioning of the Arlington BESS Project includes the removal of all components associated with the Project and the restoration of the Project site to as close to its original condition as possible. This plan is to provide detail on that process, with supporting time frames or milestones, after operations have ceased.

4.1.2 PRE-PROJECT SITE CONDITION

The project site includes partial development of a 25.69-acre parcel located at 17601 63rd Ave. NE in Arlington, Washington, located east of the Arlington Airport. This BESS will be constructed in the area that was formerly occupied by the four northernmost rows of the existing solar array. The footprint of this project is approximately 1.5 acres.

4.1.3 Decommissioning Expectations

Ameresco expects to meet the same exacting standards during both construction and deconstruction of the BESS. This will include but may not be limited to:

- Environmentally appropriate methods of deconstruction will be applied, including the recycling of as much equipment as can be done within a reasonable timeframe
- Excellent standards of Health and Safety adhered to; and
- All laws and regulations will be followed including local, state, and federal.

4.1.4 Decommissioning Preparation

Pre-closure activities and reclamation planning includes:

- Set up and document a Site-specific health and safety plan and determine the specific sequence and procedures to be followed.
- Complete an analysis of the project materials and their composition to identify those specific components that can be recycled. For items that can't be recycled, determine what the most appropriate method of disposal will be.
- Identify specific recycling facilities and disposal sites for materials.
- Coordinate with local officials to develop plans for the transportation of materials and equipment to and from the site.
- Secure any municipal demolition or electrical permits necessary.
- Develop specifications for demolition and reclamation.
- Develop training for the personnel who will manage and perform the actual work, and document appropriately.
- A full assessment of the local zoning requirements, permitting needs and applicable environmental regulations, to ensure the compliance of the final plans.

4.1.5 Disassembly and Demolition

Site decommissioning and equipment removal is estimated to take up to 16 weeks. Access roads, fencing, some electrical power, and other facilities may temporarily remain in place for use by the decommissioning workers as needed before they too are removed. A plan for de-energizing portions of the facility to allow safe decommissioning and formal lock-out and tag-out procedures will be implemented. This will ensure all electrical components are placed and maintained in a safe condition for demolition activities prior start of work.

The decommissioning will begin with the de-energization of the Project by qualified electricians. Next, any hazardous or regulated materials shall be removed (in this case, this is minimal – the mineral oil from the transformers is not considered hazardous). Various components will be removed from the site, including batteries, steel foundation tie-ins, concrete pads, inverters and transformers.

These activities will take place in approximately the inverse order to which they were installed. Excavation of the conduit trenched to the connection point be discussed with the District, but we anticipate it will be required for the removal of foundations, piping, and utilities.

Demolition debris will be placed in temporary onsite storage area(s) pending final transportation and disposal and/or recycling according to the procedures listed below. Stockpiled on-site waste will be transported off site for recycling or waste. All aspects of the decommissioning process will be in compliance with all applicable federal, provincial and municipal laws.

The decommissioning procedure found in Section 8 of the Tesla Megapack 2 XL Operation and Maintenance Manual will be used to determine specific decommissioning steps and procedure.

4.1.6 Site Restoration

All electrical equipment and cabling will be removed from the site. Above-ground concrete pads will be demolished and materials removed from site or disposed of at the preference of the District.

4.1.7 Project Quality Control and Documentation

During the entire decommissioning process, from planning to site monitoring, the project will be subject to quality control and documentation. Ameresco will ensure the effective execution of the decommissioning plan through project oversight and quality assurance. Additionally, the decommissioning process will be documented and progress reported to the District.

4.2 Decommissioning and In the Event of Emergency

4.2.1 Post-Incident Response

In the event of a critical failure such as a battery failure, the Tesla Emergency Response Guidance and guidelines within the Megapack 2XL Operation and Maintenance Manual are to be followed. Per section 8.4.1 of the Megapack 2XL Operation and Maintenance Manual, the Megapack 2XL battery unit is not to be approached post-incident until the following occurs:

If not already present on site or contacted, contact technical support for guidance prior to any interaction with the Megapack 2XL – Emergency Number: +1 650-681-6060.

Once all immediate risks have been mitigated, follow these steps to determine whether Megapack is safe to approach:

1. Isolate the Megapack 2XL as required per Isolating Megapack from Upstream AC Sources on page 42. Of the Megapack 2XL Operation and Maintenance Manual.
2. Ensure that there have been no visible signs of risks (such as smoke, flames, suspicious odor) for 12 hours.
3. From a distance, use a thermal imaging camera to determine that the damaged Megapack 2XL's temperatures have decreased to safe enough levels to touch and that there is no evidence of cell vent gases.
4. From a safe distance, use a hydrogen meter to validate that no vented gases are present.

4.2.2 Performing Diagnostics

Once the Megapack 2XL is deemed safe to approach, diagnostics can begin.

WARNING: Megapack diagnostics must only be performed by authorized Service Providers.

Diagnosing the Megapack 2XL aims at evaluating its status and determining how to handle the damaged unit until recycling, and as a result whether, for example, to disassemble and ship its sub-components to various recycling facilities, or not disassemble and ship to a single recycling facility. This process generally begins with a visual inspection of the unit in order to establish an initial plan that may evolve during the inspection.

Subsequent steps generally proceed as per below:

1. Once Megapack 2XL temperatures are deemed touch-safe and no hydrogen gas is detected, you may begin to physically interact with the system.
2. Take electrical measurements of the Megapack 2XL System to determine if any faults are present.
3. If faults are found to be present, these must be cleared before proceeding with decommissioning.

4.2.3 Preparing Damaged Equipment for Transport

After performing diagnostics, Tesla will determine the best and safest way to handle the equipment and transport it to a recycling facility. Transportation regulations can vary by region. The shipper must always comply with the applicable regulations in the region in which Megapack 2XL will be transported.

Following Tesla's diagnostics, Tesla may establish that disassembly of battery modules is necessary in order to safely transport the equipment back to a recycling facility. Tesla may also determine that battery modules must be discharged for safe transportation.

In this case, the following should be performed:

1. Identify whether energy is still stored in Megapack 2XL battery cells.
2. Discharge all detected energy per Tesla-approved methods.
3. Once all energy is removed from the Megapack 2XL System, disassembly and shipping can commence.

4.2.4 Disposal/Recycling of Damaged Modules

When a damaged Tesla product must be decommissioned, we request that it be returned to a Tesla facility for disassembly and further processing. Contact Tesla with any questions regarding recycling of damaged equipment.

4.2.5 Transportation of Battery Modules

Full details on the transportation of Battery modules can be found in the latest version of Megapack 2XL Transportation and Storage Guidelines.