Project Description

Puyallup Battery Energy Storage System (BESS) Project

AUGUST 2024

Prepared for:

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Printed on 30% post-consumer recycled material.

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
Applicant	Prologis Energy LLC
BESS	battery energy storage system
City	City of Puyallup
HVAC	heating, ventilation and air conditioning systems
NFPA	National Fire Protection Association
PCS	power conversion system
Project	Puyallup Battery Energy Storage System
PSE	Puget Sound Energy
SCADA	supervisory control and data acquisition

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1 Introduction

Prologis Energy LLC (Applicant) proposes to construct and operate the Puyallup Battery Energy Storage System (Project) on approximately 0.1 acres at 1601 Industrial Park Way, Puyallup, WA 98371. The site is located entirely within the jurisdiction of the City of Puyallup (City) and is zoned ML - Limited Manufacturing per the City's Zoning.

The following Project description has been prepared to provide an overview of the proposed facilities to better help inform the City on the Project components, features, and measures being put in place by the Applicant to ensure the Project is safe and reliable.

Battery storage devices do not generate any air emissions or harmful radiation and involve little to no fire risk when properly designed, installed, tested, and operated. Battery storage systems contain protection and control features, including battery management systems that shut down when operational environments are anything less than optimal.

The Project includes a battery energy storage system (BESS) with associated power conversion systems (PCSs), perimeter fence, metering equipment, landscaping improvements, and supervisory control and data acquisition (SCADA) system.

The Project site is located in a manufacturing area within a strip of land that is graded with some vegetation at the northeastern end of the parcel (see attached preliminary site plans), and it is the intent of the applicant to rely on the existing underlying permit allowable uses within the manufacturing zone to construct and operate the Project. Land uses to the north include public facilities, to the west and east consist of warehousing/manufacturing and to the south includes general commercial across the Puyallup River. The parcel is immediately adjacent, on its south side, to a paved road, N Levee Road, and the Puyallup River.

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2 Project Objectives

Washington's Clean Energy Transformation Act (Senate Bill 5116), was implemented on May 7, 2019; it sets ambitious goals for eliminating non-renewable energy resources from its energy grid by 2045. A key factor in meeting this goal is greater implementation of energy storage, as many renewable energy sources have variable peak energy generation quantities throughout the day. Grid energy storage technologies provide for multiple applications, such as energy management, backup power, load leveling, frequency regulation, voltage support, and grid stabilization. Importantly, not every type of storage is suitable for every type of application, motivating the need for a portfolio strategy for energy storage technology. As noted by the U.S. Department of Energy, "energy storage can reduce the need for major new transmission grid construction upgrades as well as augment the performance of existing transmission and distribution assets." Furthermore, "energy storage will also play a significant role in emergency preparedness and increasing overall grid resilience" (USDOE 2013).

The proposed Project will provide Pierce County and the State of Washington with a reliable, economically sound development to receive, store, and discharge electricity from the Puget Sound Energy (PSE) electric grid. Construction of the Project will accomplish the following objectives:

- Establish an innovative method to reliably capture and manage renewable energy in an economically feasible and commercially financeable manner.
- Accommodate increasing amounts of intermittent renewable energy generation that often is not available during the early evening when energy demand is often highest.
- Provide economic benefit to the City, the region, and the state through construction jobs, property and sales taxes, construction and maintenance services, and increased energy efficiency and reliability.
- Use a commercially proven and established energy storage technology that is efficient, has low maintenance requirements, and is recyclable.
- Assist Washington in meeting its goal of having an electricity supply free of greenhouse gas emissions by 2045, as required by Washington's Clean Energy Transformation Act (Senate Bill 5116), effective May 7, 2019.
- Provide the region with a battery energy storage facility with the ability to meet the challenges of integrating additional renewable energy sources into the grid and interruptions in service by allowing renewable energy to be stored on site and providing residents with power when needed.

In addition to these benefits to the region and state, specific benefits to the City are shown below:

- Annual property tax revenues would be payable to the City from the Project.
- Local benefits would accrue to the City from having the storage facility located within the City. While this helps the entire region, it would also benefit the City by maintaining the reliability and resiliency of the grid locally.
- The Project would provide significant economic benefits without burdening local transportation infrastructure, sewage infrastructure, or public services.

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3 Project Characteristics

The Project will be composed of batteries installed in purpose-built enclosures designed for aesthetic compatibility with the surrounding industrial area. The enclosures will have battery storage racks, with relay and communications systems for automated monitoring and managing of the batteries to ensure design performance. A battery management system will be provided to control the charging/discharging of the batteries along with temperature monitoring and control of the individual battery cell temperature with an integrated cooling system. Batteries operate with direct current (DC) electricity that must be converted to alternating current (AC) for compatibility with the existing electric grid. Power inverters to convert between AC and DC, along with PCSs to step up the voltage, will be included.

The proposed facility will provide a service to the regional electric grid by receiving energy (charging) from the PSE electric transmission system, storing energy on site, and then later delivering energy (discharging) back to the regional grid. Following construction, the proposed use will not create emissions to air, will not require sanitary facilities, and will not require water.

3.1 Battery Energy Storage System

The BESS would include multiple self-contained, prefabricated container units in a parallel configuration. There would be no internal open space available for entry or occupation, and all battery cabinets would be fully accessible from the exterior of the enclosure via external doors.

Each enclosure unit would have a fire rating in conformance local fire authority fire permit and City standards. Each unit would also be equipped with heating, ventilation, and air conditioning (HVAC) systems for thermal management of the batteries. Power to the HVAC would be provided through a connection to local grid. The BESS would be unmanned, and operational control would be performed off site. Operational staff would also perform periodic inspections and maintenance as necessary.

This system would be powered from a remote uninterruptable power supply, as well as a redundant battery backup local to each cabinet. Only batteries that are UL Certified and that include built-in fail safes designed specifically to prevent thermal runaway and the spread of fire would be used. The batteries proposed were required to go through UL 9540A testing per National Fire Protection Association (NFPA) 855 (Standard for the Installation of Energy Storage Systems) at the cell, module, and unit level. Therefore, not only are the batteries tested at an individual level (i.e., cell level), they are additionally tested at the unit level with all their components as they will be installed in a real-world installation. The Applicant will meet with the local building and fire officials to verify that the proposed vendor, model, and fire protection system to be installed are in compliance with local code.

3.2 Power Conversion Systems, Auxiliary Power, and System Control

PCSs will be located adjacent to the BESS enclosures. These PCSs will convert the electricity from AC to DC (and vice-versa) and step up the electricity delivered to the Project's interconnection and main on-site transformer. The proposed PCSs will have integrated battery charge and discharge management, as well as temperature-controlled liquid-cooling systems. The area adjacent to the PCSs will also include required metering equipment for PSE. The

PCS equipment will be utilized to support a distribution feeder that is required to ensure that the installation does not take up existing capacity on distribution lines. This also helps ensure reliability (i.e., a dedicated feeder is less likely to be impacted by problems in other parts of the system).

From the PCS equipment, cabling will be run to the BESS enclosures. All outside electrical equipment will be housed in the appropriate National Electrical Manufacturers Association rated enclosures and screened from view, to the extent possible, on all sides. All on-site outside electrical cabling will be run underground.

The Applicant uses only industry-standard, nationally (and internationally) recognized equipment. These PCSs are unattended, stand-alone units that operate in all conditions. They operate in both a charge mode and a discharge mode. They are UL Listed for bi-directional use and are monitored and controlled remotely. There will be on-site disconnects in the case of an emergency or unscheduled maintenance. They are robust in their design and are designed to last more than 30 years with proper preventive maintenance, scheduled maintenance, and occasional major overhauls.

Telecommunication Facilities

The Project will also require telecommunication facilities to meet the communication requirements for interconnecting and communicating with the PSE facilities and to support remote Project operations monitoring. The Project will use local exchange carrier services for telecommunication to support remote monitoring requirements. The Project will connect to telecommunication fiber-optic lines owned and managed by local telecommunication providers.

The SCADA system is critical to PSE utility interconnection and for the proper operation and maintenance of the Project. The SCADA system uses proprietary software; a fiber-optic transmission system; a telephone, radio, and/or microwave communication network; and other means of communication such as radio links and phase loop communication systems. The SCADA system functions as a remote start, stop, reset, and tag out for the facility, thus minimizing the labor and site diagnostic information generated from the panels. The SCADA system will also allow for fully centralized operation of the Project to meet all PSE and utility interconnection requirements.

Site Access

The Project site can be accessed from Industrial Park Way off of N Levee Road No new roads will be required to provide access to the Project site.

3.3 Perimeter Fence

The perimeter of the Project would be enclosed by a 6-foot-tall chain-link fence. Access to the BESS site would be through 3 foot wide gates. The purpose of the fence would be to prevent unauthorized access to the site and comply with City fencing regulations.

3.4 Construction

Construction would be primarily composed of the following activities:

- **Site Preparation:** The site would be prepared for construction with grading and paving required.

- **Electrical Work and BESS Container Installation:** Following site preparation, electrical work will be completed to connect the BESS enclosures to the PCS structures. The enclosure modules would be off-loaded and installed using cranes, boom trucks, forklifts, rubber-tired loaders, and other small- to medium-sized construction equipment, as needed.

Site preparation and construction will occur in accordance with all federal, state, and City zoning codes and requirements. All applicable federal, state, and local requirements and best management practices will be incorporated into the construction activities for the Project site. Beginning work on the Project site will involve preparing the land for installation of the BESS-related infrastructure, access driveways, and temporary construction staging areas.

The construction contractor will be required to incorporate best management practices consistent with the City zoning to reduce potential impacts related to construction of the proposed Project. Prior to initial construction mobilization, pre-construction surveys will be performed and sediment and erosion controls will be installed in accordance with state and City guidelines. Stabilized construction entrances and exits will be installed at driveways to reduce tracking of sediment onto adjacent public roadways.

Dust-minimizing techniques will be employed, such as application of water and dust suppressants. Earthworks, excavators, water trucks, haul vehicles, and graders may all be used to perform grading. Land-leveling equipment, such as a trench roller and tamping ram, will be used to even the surface of the ground and to compact the upper layer of soil to a value recommended by a geotechnical engineer for structural support. Soil movement from grading will be balanced on the site.

Trenching will be required for placement of underground electrical and communication lines and may include the use of trenchers, backhoes, excavators, haul vehicles, compaction equipment, and water trucks. After preparation of the site, the pads for structures will be prepared per geotechnical engineer recommendations.

During this work, multiple crews will be working on the site with various equipment and vehicles, including vehicles for transporting the batteries and other equipment. As the BESS enclosures are constructed, the electrical collection and communication systems will be installed. The wiring will connect to the appropriate electrical and communication terminations and the circuits will be checked and commissioned prior to operation.

Schedule

The Project is anticipated to be built over an approximately 3-month timeframe. Estimated durations of construction activities are presented below in Table 1. It is anticipated that the work would be completed in 8- or 10-hour shifts, with a total of five shifts per week (Monday–Friday). Overtime and weekend work would be used only as necessary to meet scheduled milestones or accelerate schedule and would comply with applicable Washington labor laws.

Table 1. Estimated Construction Activity Durations

Construction Activity	Duration
(1) Site preparation	2 weeks
(2) Battery/container installation	4 weeks
(3) Power conversion systems, auxiliary power, and system control	4 weeks
(4) Perimeter wall and landscaping	4 weeks

Traffic

Delivery of material and supplies would reach the Project through on-road truck delivery through Industrial Park Way. The majority of the truck deliveries would be for the battery enclosures, inverters, and transformer material, as well as any concrete or aggregate material that may be required for foundations.

Water Use

During construction of the proposed Project, water will be required for common construction-related purposes, including but not limited to dust suppression, soil compaction, and grading. Dust-control water may be used during ingress and egress of on-site construction vehicle equipment traffic and during the construction of the energy storage equipment. A sanitary water supply will not be required during construction, because restroom facilities will be provided by portable units to be serviced by licensed providers. During the 3-month construction period, the water used is anticipated to be purchased from the local water purveyor.

Solid and Nonhazardous Waste

The Project site will produce a small amount of solid waste from construction activities. This may include paper, wood, glass, plastics from packing material, waste lumber, insulation, scrap metal and concrete, empty nonhazardous containers, and vegetation waste. These wastes will be segregated, where practical, for recycling. Non-recyclable wastes will be placed in covered dumpsters and removed on a regular basis by a certified waste-handling contractor for disposal at a Class III (nonhazardous waste) landfill.

Hazardous Materials

The hazardous materials used for construction will be typical of most construction projects of this type. Materials will include small quantities of gasoline, diesel fuel, oils, lubricants, solvents, detergents, degreasers, paints, ethylene glycol, dust palliatives, herbicides, and welding materials/supplies. A hazardous materials business plan will be prepared to manage materials during construction. The hazardous materials business plan will include a complete list of all materials used on site and information regarding how the materials will be transported and in what form they will be used. This information will be recorded to maintain safety and prevent possible environmental contamination or worker exposure. During Project construction, material safety data sheets for all applicable materials present at the site will be made readily available to on-site personnel.

Hazardous Waste

Small quantities of hazardous wastes will most likely be generated over the course of construction. These wastes may include waste paint, spent construction solvents, waste cleaners, waste oil, oily rags, waste batteries, and spent welding materials. Workers will be trained to properly identify and handle all hazardous materials. Hazardous waste will be either recycled or disposed of at a permitted and licensed treatment and/or disposal facility. All hazardous waste shipped off site for recycling or disposal will be transported by a licensed and permitted hazardous waste hauler.

3.5 Operations and Maintenance Activities

Typical operations and maintenance activities that will occur on the Project site during operation include, but are not limited to, liaison and remote monitoring administration and reporting; semi-annual and annual services;

remote operations of batteries, PCSs, and site security and management; additional communication protocols; and repair and maintenance of the BESS and other Project facilities. The electrical equipment, HVAC, fire protection systems, and security will be automated and monitored remotely. In-person inspections will be included as needed, as part of a security contract. The site will be unoccupied but will be visited periodically through the year for equipment inspections, monitoring and testing, and maintenance as needed. Batteries and various components will be replaced or renewed as necessary to ensure optimal performance. The operations and maintenance activities will be completed by one to two employees, who will visit the site regularly.

Solid and Nonhazardous Waste

The Project will produce a small amount of waste associated with maintenance activities, which could include broken and rusted metal, defective or malfunctioning electrical materials, empty containers, and other miscellaneous solid waste, including the typical refuse generated by workers. Most of these materials will be collected and delivered back to the manufacturer or to recyclers. Non-recyclable waste will be placed in covered dumpsters and removed on a regular basis by a certified waste-handling contractor for disposal at a Class III landfill.

Hazardous Materials

Limited amounts of hazardous materials will be used on the site during operations, including diesel fuel, gasoline, and motor oil for vehicles; mineral oil to be sealed within the transformers; and lead-acid-based batteries for emergency backup. Appropriate spill containment and cleanup kits will be maintained during operation of the Project. A spill prevention control and countermeasures plan will be developed for site operations.

Hazardous Waste

Fuels and lubricants used in operations will be subject to the spill prevention control and countermeasures plan to be prepared for the proposed Project. Solid waste, if generated during operations, will be subject to the material disposal and solid waste management plan to be prepared for the proposed Project.

Security

The proposed Project will be fenced to help prevent access by the public. An access gate will be installed on the east side of the Project site adjacent to the existing driveway. Limiting access to the Project site will be necessary both to ensure the safety of the public and to protect the equipment from potential theft and vandalism.

Fire Safety

With growing concerns of the potential hazards associated with lithium-ion battery storage, the proposed BESS system would be built with safety features at the forefront of the design process. Each battery cabinet will have its own aerosol fire suppression system integral to its construction. This system will be powered from a remote uninterruptable power supply, as well as a redundant battery backup local to each cabinet. Cabinets will also be equipped with a port on the top side to enable the fire department to fill any container needed with water without opening the main door. All batteries are required to go through UL 9540A testing per NFPA 855 at the cell, module, and unit level. This means that the batteries are tested at an individual level (i.e., cell level) and at the unit level, testing all components as they will be installed in a real-world situation. Fire risk is extremely low with the system's capability to automatically identify and isolate any electrical or thermal issues prior to a fire starting. All energy

storage devices and hardware will be acquired from reputable suppliers. The installation will be reviewed by a fire protection engineer with input from the local Fire Marshall, and will comply with all NFPA 855 standards.

3.6 Decommissioning

At the end of the Project's life, the BESS would be recycled as described in the following section. Most parts of the proposed system are recyclable. Batteries include lithium-ion, which degrades but can be recycled or repurposed. Battery enclosures include steel or aluminum, with concrete foundations that can also be recycled. Local recyclers are available, and metal and scrap equipment and parts that do not have free-flowing oil may be sent for salvage.

Fuel, hydraulic fluids, and oils would be transferred directly to a tanker truck from the respective tanks and vessels. Storage tanks and vessels would be rinsed and transferred to tanker trucks. Other items that are not feasible to remove at the point of generation, such as lubricants, paints, and solvents, would be kept in a locked utility structure with integral secondary containment that meets applicable requirements for hazardous waste storage until removal for proper disposal and recycling. It is anticipated that all oils and batteries would be recycled at an appropriate facility. Site personnel involved in handling these materials would be trained to properly handle them. Enclosures used to store hazardous materials would be inspected regularly for any signs of failure or leakage. Transportation of the removed hazardous materials would comply with applicable regulations for transporting hazardous materials.

4 Regulatory Setting

The proposed facility would be required to comply with all applicable regulatory provisions, including but not limited to the following:

- City of Puyallup Code, including:
  - International Building Code
  - International Mechanical Code
  - National Electrical Code
  - International Energy Conservation Code

4.1 Hazardous Materials Management

The facility will be required to prepare a hazardous materials business plan for its construction and operations in compliance with applicable regulations. The hazardous materials that are anticipated to be used at the Project site are safe under normal handling and operating conditions. Each individual BESS enclosure will be monitored and controlled to ensure safe and efficient operations, and every BESS enclosure will be equipped with an integrated fire suppression system and ventilation, as well as gas, heat, and smoke detection and alarms. The system will be designed, constructed, and operated pursuant to the most recently adopted fire code.

The following hazardous materials are anticipated to be present at the Project site during construction, operation, and decommissioning of the Project site:

- Petroleum such as Diesel No. 2 or gasoline may be stored on site during construction to fuel construction equipment, though it is not anticipated to be stored on site during the operation of the site.
- Lithium-ion batteries commonly contain the heavy metals cobalt, copper, and nickel, as well as other trace heavy metals depending on the location of the source of the mined components. The exact components will be provided when the batteries are sourced closer to construction. These materials are fully encased and contained in the battery modules, and will be fully removed from the site when the Project is decommissioned.

4.2 Air Quality

The Project would not increase long-term operational criteria air pollutant emissions. The Project would collect and store energy but would not itself be a source of air pollutant emissions. The Project would not increase operational mobile source emissions as minimal vehicle trips would be added by the Project. Emissions of criteria pollutants during construction would be minimal for all construction phases for all pollutants and construction activities would be required to implement standard measures as required by City grading permit to minimize air emissions during construction.

4.3 Fire Protection

The Applicant will use battery storage systems that are NFPA 855 compliant and UL Certified and that include built-in failsafe and cooling systems designed to prevent thermal runaway and the spread of fire. A fire protection system will be installed to automatically shut down the affected battery storage components and prevent the spread of the

fire to the other battery storage modules. The City will have review and approval rights for the facility fire protection and suppression plans. The review/approval by the authority having jurisdiction will cover all applicable design, construction, and testing requirements of NFPA 855.

4.4 Environmental Setting

Biological Resources

The U.S. Fish and Wildlife Service Information for Planning and Consultation database was reviewed to determine the potential for special-status wildlife and plant species to occur in the Project site and in the vicinity (USFWS 2021a). The Washington Department of Fish and Wildlife website (WDFW 2024a), the Washington Priority Habitats and Species Program data set (WDFW 2024b), and the Washington Natural Heritage Program (WDNR 2024) were also consulted for specifics regarding listed species, protected habitat, and any potential habitat conservation plans.

- **Suitable Habitat.** Based on aerial imagery, suitable habitat is unlikely to be present for special-status or listed species on the Project site. The site may be suitable for nesting migratory bird species due to the abundance of suitable nesting sites, consisting of landscaping and large buildings, present on site. The Information for Planning and Consultation database search lists bald eagles (*Haliaeetus leucocephalus*) as likely being present in the project area (see discussion below).
- **Listed Species.** According to the Information for Planning and Consultation database search, there is potential for North American wolverine (*Gulo gulo luscus*; federally threatened [FT]), marbled murrelet (*Brachyramphus marmoratus*; FT), yellow-billed cuckoo (*Coccyzus americanus*; FT), streaked horned lark *(Eremophila alpestriis strigata*; FT), northwestern pond turtle (*Actinemys marmorata*; proposed threatened), monarch butterfly (*Danaus plexippus*; Candidate), and bull trout (*Salvelinus confluentus*; FT) to occur on the Project site (USFWS 2021a). Due to the amount of development on and adjacent to the site, wolverine is unlikely to be present due to the lack of natural wildlife corridors and suitable habitat. Additionally, no old growth forests, prairies, scrub, riparian patches, or sandbars are present within the Project site to facilitate nesting of the listed bird species. No habitat is present to support bull trout breeding or migration because no streams are located within the Project site. Due to the overall lack of suitable habitat based on a review of aerial imagery, it is unlikely any of the species listed above will be present and/or be directly impacted by the Project.
- **Critical Habitat.** No critical habitat is designated within the Project site boundary. Additionally, no priority habitat is designated within the Project site boundary.
- **U.S. Fish and Wildlife Service Migratory Birds.** There is a potential for migratory birds to occur, and standard protections for nesting species will need to be incorporated into the Project, including a survey of any landscaping trees to be impacted.
- **Wetlands and Waters.** The site does not intersect any wetlands mapped by the National Wetlands Inventory. The parcel does intersect with FEMA Flood Hazard Zone X - Area with Reduced Flood Risk Due To Levee and is adjacent to Zone AE – Floodway along the Puyallup River to the south.

Noise

The Project site is in an area surrounded by industrial uses and roadways, with Industrial Park Way adjacent to the site to the west and N Levee Road to the south. Consequently, noise sources affecting noise levels on site and in

the Project site vicinity include traffic. Operational noise levels will likely be compatible with existing noise in the area and will likely not exceed allowable noise limits.

5 Representative Project Photos

Photo 1. Overview of typical battery energy storage system (BESS) containers.

Photo 2. Aerial view of a typical BESS Project site.

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Attachment A

Site Plans