

# WEST POINT TREATMENT PLANT

*Power Quality Improvement Project*

## **Frequently Asked Questions**

*Last updated June 2022*

### **About power quality at West Point**

#### ***What are the power disruptions that affect the West Point Treatment Plant?***

Most power disruptions are in the form of “voltage sags”. A voltage sag at the plant is like the lights in our homes flickering. A power outage at the plant is the same as our homes losing all power. When the power is disrupted, equipment protects itself by shutting down to prevent long-term damage.

#### ***Why does a sag in power cause untreated wastewater to go into Puget Sound?***

Most of the time, the plant can handle incoming wastewater and stormwater until the power returns. However, when power disruptions occur during heavy rain, there isn’t always enough room to handle incoming flow. When this happens, the plant is designed to direct the mixture of stormwater and wastewater through an emergency bypass pipe and discharge it directly to the Puget Sound. This is a necessary measure to protect the staff working within the plant and to prevent the high performing, vital plant equipment from flooding.

#### ***Aren’t these disruptions very short? Why does this have such a big impact?***

Even a brief disruption causes the plant’s pumps to turn off. Turning off automatically protects the pumps from long-term damage. When the pumps stop, West Point operators must manage and restart the equipment. This project is designed to keep power flowing to equipment, even in the case of a disruption in the system.

#### ***How much power is needed to keep operations going at West Point Treatment Plant?***

A lot. Operating West Point requires about the same amount of power as it takes to power 11,000 homes.

#### ***How often do power quality problems happen?***

In the past 20 years, West Point diverted combined stormwater and wastewater into Puget Sound 15 times (as of Feb. 21, 2021) because Seattle City Light power disruptions caused

equipment shutdowns when the plant was operating at or near capacity. More than half of these bypasses – 53 percent – occurred over the past five years.

## **Identifying a power quality solution**

### ***What are the options for improving the power quality to prevent untreated flows into Puget Sound?***

As part of this project, the technical team examined five feasible technologies in detail, and they assessed seven approaches for using these five technologies. Some approaches involved creating alternate power sources or setting up batteries that could kick in when voltage sags occur.

### ***What is the approach this project is taking to improve power quality at West Point?***

The most efficient, cost-effective technology that meets the project’s requirements is called an online, uninterruptible power supply, or online UPS. The power will be supplied by a large battery system.

### ***How did the team decide that the online, uninterruptible power supply (UPS) was the best solution?***

When examining each approach, the team asked, “Does this solution address voltage sags? Does this solution support short-term outages?” The online UPS stood out as the clear solution. The team also considered a number of criteria, including each solution’s cost, space needed, time needed, and response time (the time between when the technology senses the sag to the time voltage is fully restored).

### ***How does the battery power supply work?***

Think of a laptop computer, with its charger plugged into the wall. The charger is continuously supplying power to the laptop’s battery, which is in turn supplying power to the laptop. When the power goes out (or the charger is unplugged), the laptop works without interruption because it’s getting power from its battery. At the West Point Treatment Plant, we are designing a system based on the same principles. The region’s power system will keep the batteries charged, and during momentary voltage sags, they’ll keep the treatment plant’s systems going until full power is restored.

## **Designing and building a power quality solution**

### ***How quickly can this solution be put in place?***

Compared with the other potential solutions we looked at; this one has a short timeline. It is estimated that it can be installed and started up by 2024. The project team is working nimbly and with great urgency to put this solution to work – while ensuring safety and sustainability.

***Where will the new battery system be located?***

King County maintains a long-time commitment to the community to contain the footprint of the West Point Treatment Plant. So, the project team needed to identify a location within the existing plant for the battery system and its support features, such as fire suppression, maintenance access, heating, ventilation, and air conditioning. After exploring whether to distribute the new equipment to multiple locations around the plant, the team concluded that using a single building would be more space efficient. Working with plant staff, the team identified a mostly unused building that will be removed to make space for a new building.

***What are the benefits of building the new building?***

The building that houses the batteries will be strong enough to support the significant weight of the batteries — and have the capacity for the accompanying transformers, switchgear and electronics. Constructing a new building also gives us the opportunity to design for the future, incorporating sustainability features and energy-efficient design. The new building will comply with current codes and be seismically sound.

***How are King County and the City of Seattle working together to advance this project and get a solution in place as soon as possible?***

The Seattle City Council’s Land Use and Neighborhoods Committee proposed an ordinance that provides a framework to review the application for construction of a new building at West Point needed to house the battery solution. In December 2021, Seattle City Council approved the legislation.

***What is the timeline for construction?***

We expect to install and begin using the equipment by 2025. Work to demolish the existing structure and make room for the new battery building begins in the summer of 2022.

***Once construction begins, how will it affect nearby homes and businesses and visitors to Discovery Park?***

Construction will take place within West Point’s boundaries during daytime hours on weekdays. Neighbors may notice an increase in truck traffic and may hear typical construction noise or see materials stockpiled. Crews will work safely and efficiently to get the job done with minimal impacts to neighbors and park visitors.