

Frequently Asked Questions

Last updated January 2022

About power quality at West Point

Q: What are the power disruptions that affect the West Point Treatment Plant?
A: Most power disruptions are in the form of voltage sags. To put it simply, a voltage sag is similar to the lights in our homes flickering, and a power outage would be equivalent to losing all power in our homes. When the power is disrupted, equipment protects itself by shutting down to prevent long-term damage.

Q: Why does a sag in power cause untreated wastewater to go into Puget Sound?
A: 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.

Q: Aren't these disruptions very short? Why does this have such a big impact?
A: It is true that voltage sags may be momentary, but they cause our equipment to turn off and require West Point operators to 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.

Q: How much power is needed to keep operations going at West Point Treatment Plant?
A: Many of us are familiar with the energy needs of a home or apartment. It takes a lot more energy to safely clean wastewater than keep the lights and appliances on in a residence. The existing West Point Treatment Plant peak demand is equal to the power needs of 11,000 homes.

Q: How often do power quality problems happen?
A: In the past 20 years, the West Point Treatment Plant 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.

King County's priorities and actions

Q: How is King County addressing this power quality issue?
A: On Feb. 25, 2021, King County Executive Dow Constantine transmitted legislation to the King County Council and signed an emergency declaration that would authorize funding to provide West Point with

more reliable power in response to increasing power disruptions. The declaration directed King County to look at either modifying on-site power generation at West Point or using a large battery system to help buffer the power supply – allowing plant equipment to continue operating during power disruptions. This work is expected to be completed quickly because of the declaration of emergency.

Q: How is King County making innovations in the design and construction of this project?
A: King County is thinking creatively to expedite this project without sacrificing quality. Working nimbly to compress design and construction task coordination has allowed the county to significantly shrink the project timeline.

Identifying a power quality solution

Q: What are the options for improving the power quality to prevent untreated flows into Puget Sound?
A: 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.

Q: What is the approach this project is taking to improve power quality at West Point?
A: The most efficient, cost-effective technology that meets the project's requirements is called an online, uninterruptible power supply, or online UPS.

Q: How did the team decide that the online, uninterruptible power supply was the best solution?
A: 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).

Q: How does the online, uninterruptible power supply work?
A: 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

Q: How quickly can this solution be put in place?
A: 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.

Q: Where will the new battery system be located?
A: King County maintains a long-time commitment to the community to contain the growth 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.

Q: What are the benefits of building the new building?
A: 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.

Q: 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?
A: 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. After a County briefing, the Committee voted to move the legislation forward. In December 2021 Seattle City Council approved the legislation. Read about this process.

Q: What is the timeline for construction?
A: It is expected that the new system can be installed and started up by 2024. An important step, starting in summer 2022, will be to demolish the existing structure to make room for the new building. In the meantime, the project will be procuring supplies and preparing for demolition of the existing building.

Q: Once construction begins, how will it affect the homes and businesses nearby, and visitors to Discovery Park?
A: Construction will take place within the boundaries of the treatment plant and is expected to take place 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 try to complete the work as quickly and efficiently as possible and to minimize the impacts to neighbors and park visitors.