Protecting Public Health and the Environment®

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A JOINT VENTURE

Passaic Valley Sewerage Commission (PVSC) Resiliency Program

Standby Power Generation Facility Project

July 22, 2021

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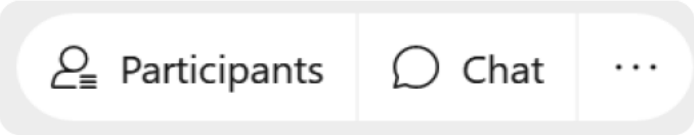
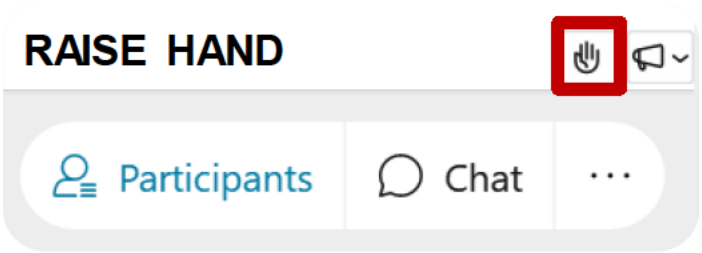
Meeting Logistics

WEBEX CONTROL BAR

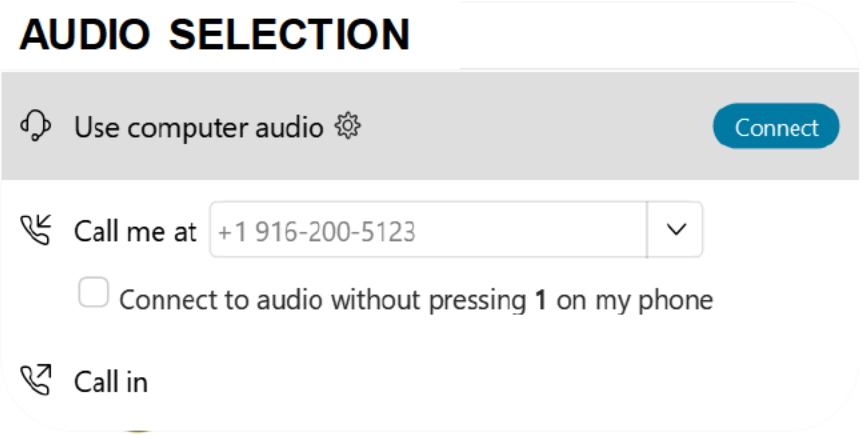


MUTED / OFF

RAISE HAND



AUDIO SELECTION



TO BE UNMUTED

Click the "Raise Hand" button or ask to be unmuted in the "Chat" box

ISSUES HEARING AUDIO?

Re-join using "Call me" Audio Selection

NEED CLOSED CAPTIONS IN ENGLISH, SPANISH, OR PORTUGUESE?

bit.ly/PVSC_Captions_English
bit.ly/PVSC_Captions_Portuguese
bit.ly/PVSC_Captions_Spanish

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Online Poll

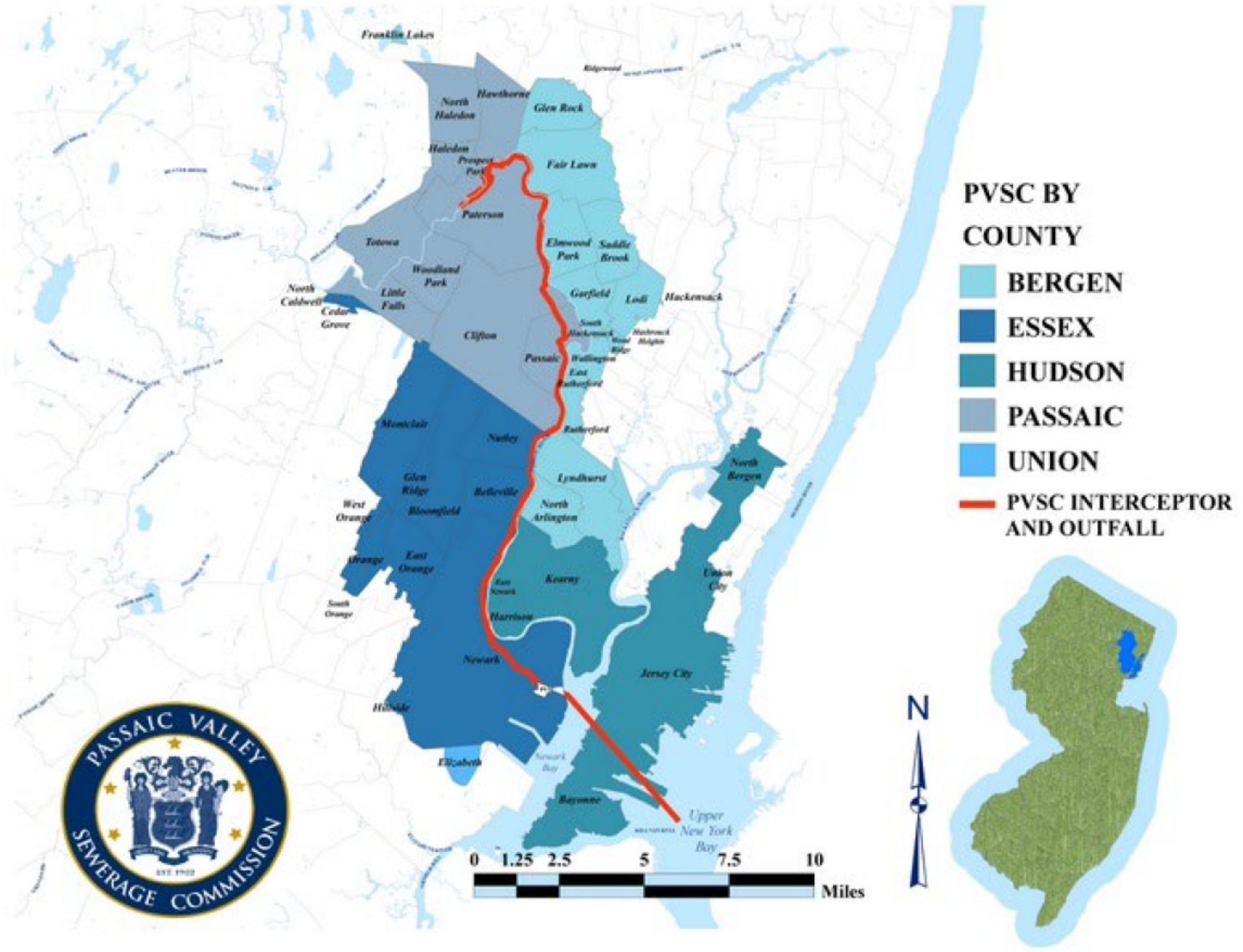
Go to www.menti.com and use the code 92 03 73 0

What about the standby power generation facility brings you here today?

Agenda

1. PVSC and Newark Bay Wastewater Treatment Plant (WWTP)
2. Hurricane Sandy Impacts and Resiliency Plans
3. SPGF Purpose, Need, and Requirements
4. Renewable Energy Technology Evaluation
5. Proposed Standby Power Generation Facility
6. Proposed SPGF and Public Health
7. Potential Daily Renewable Solutions
8. Next Steps

PVSC & Newark Bay WWTP



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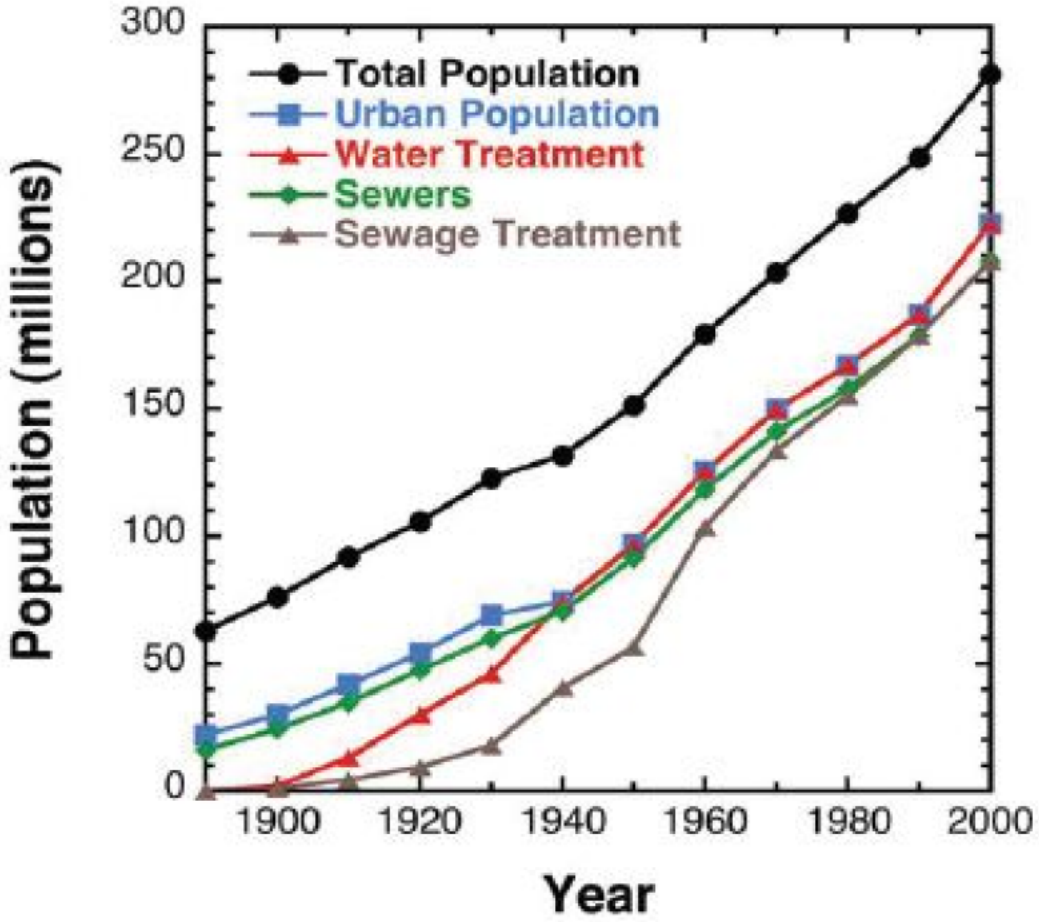
PVSC & Newark Bay WWTP

PVSC's Newark Bay Wastewater Treatment Plant (WWTP) is the **single most important piece of infrastructure** in the State of New Jersey when it comes to protecting **public health**.

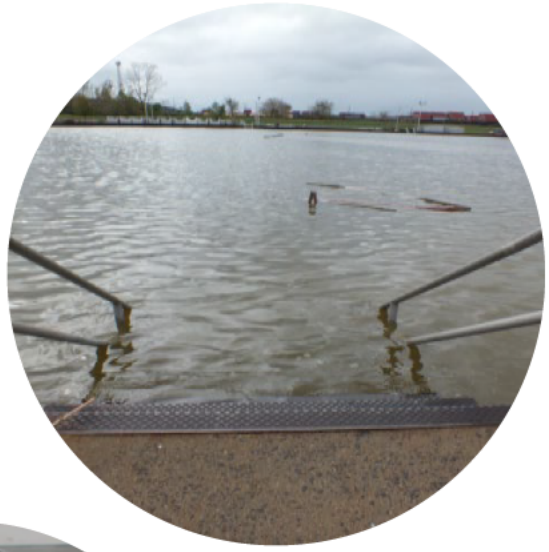


Source: *The National Academies of Sciences , Engineering, and Medicine*

Hurricane Sandy Impacts

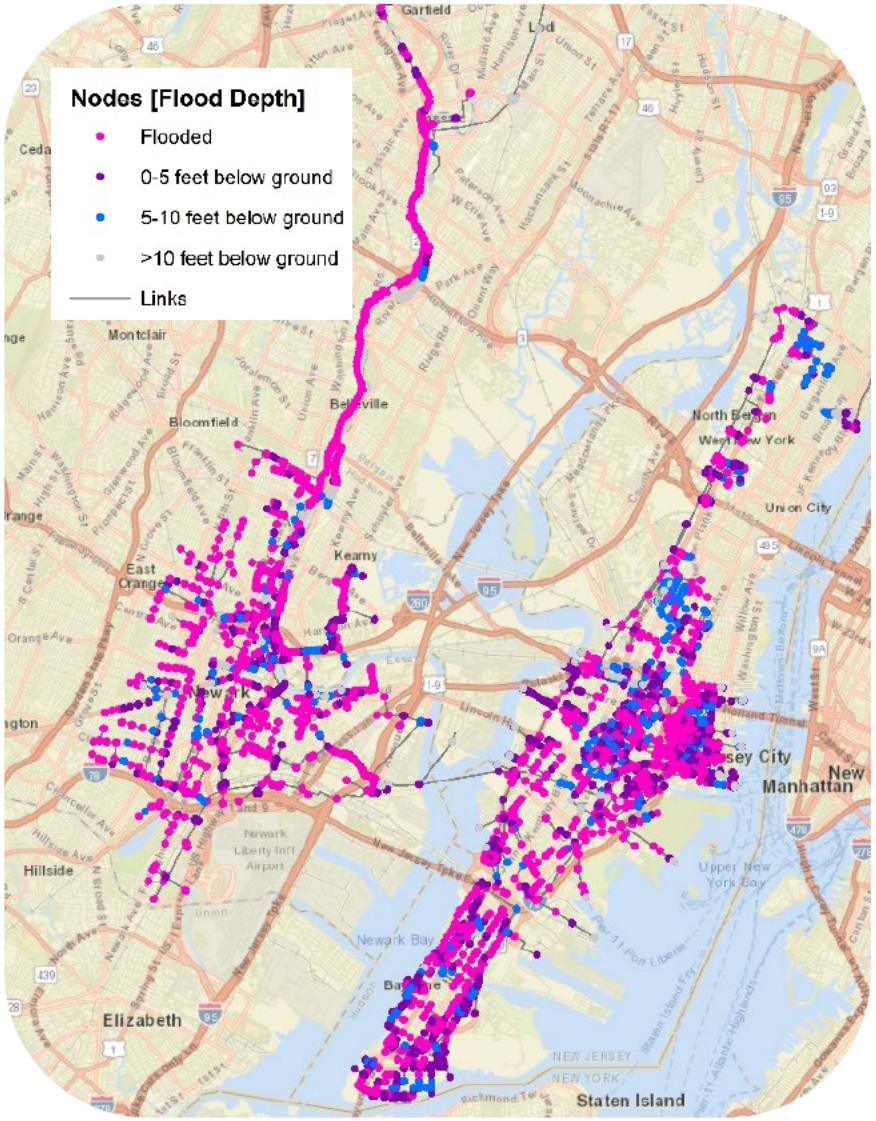
Source: US Army Corps of Engineers

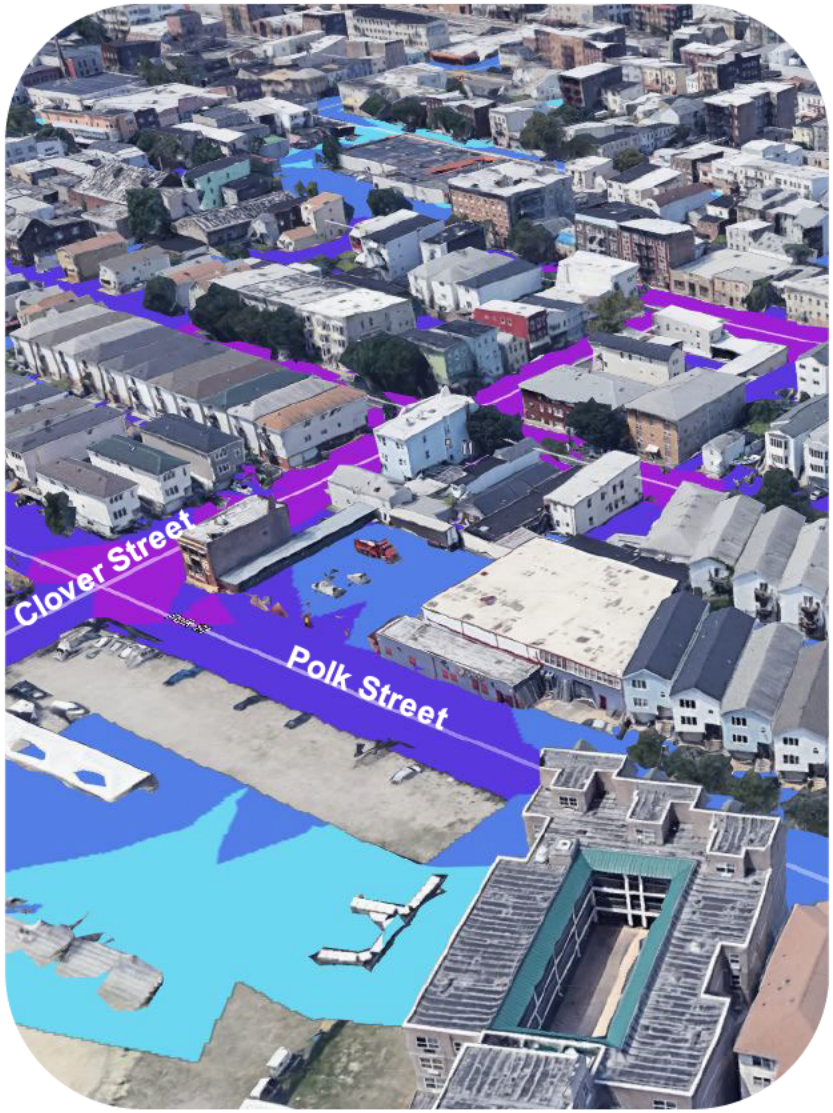
Hurricane Sandy Impacts



FEMA's Benefit Cost Analysis (BCA) estimated the lost of treatment capability at PVSC's WWTP to cause an estimated $4.1 billion in negative economic impacts to the region.

Climate Change Impacts

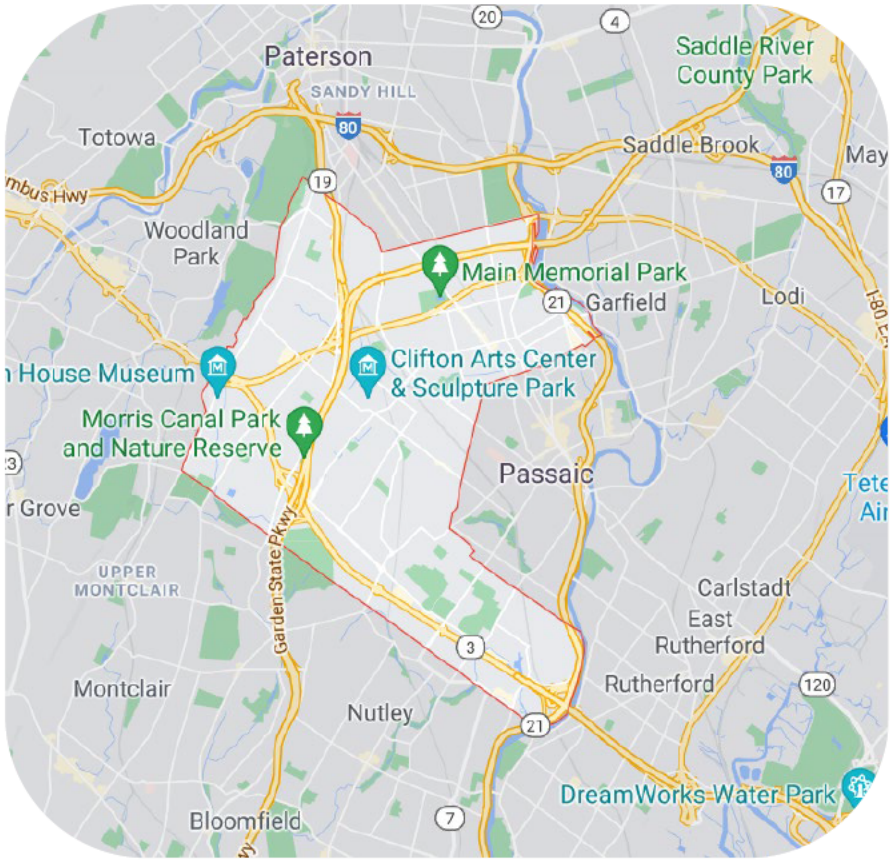




Resiliency Program

A reliable power supply is critical to maintaining plant operations and thus protecting public health and the environment.

SPGF Purpose & Need



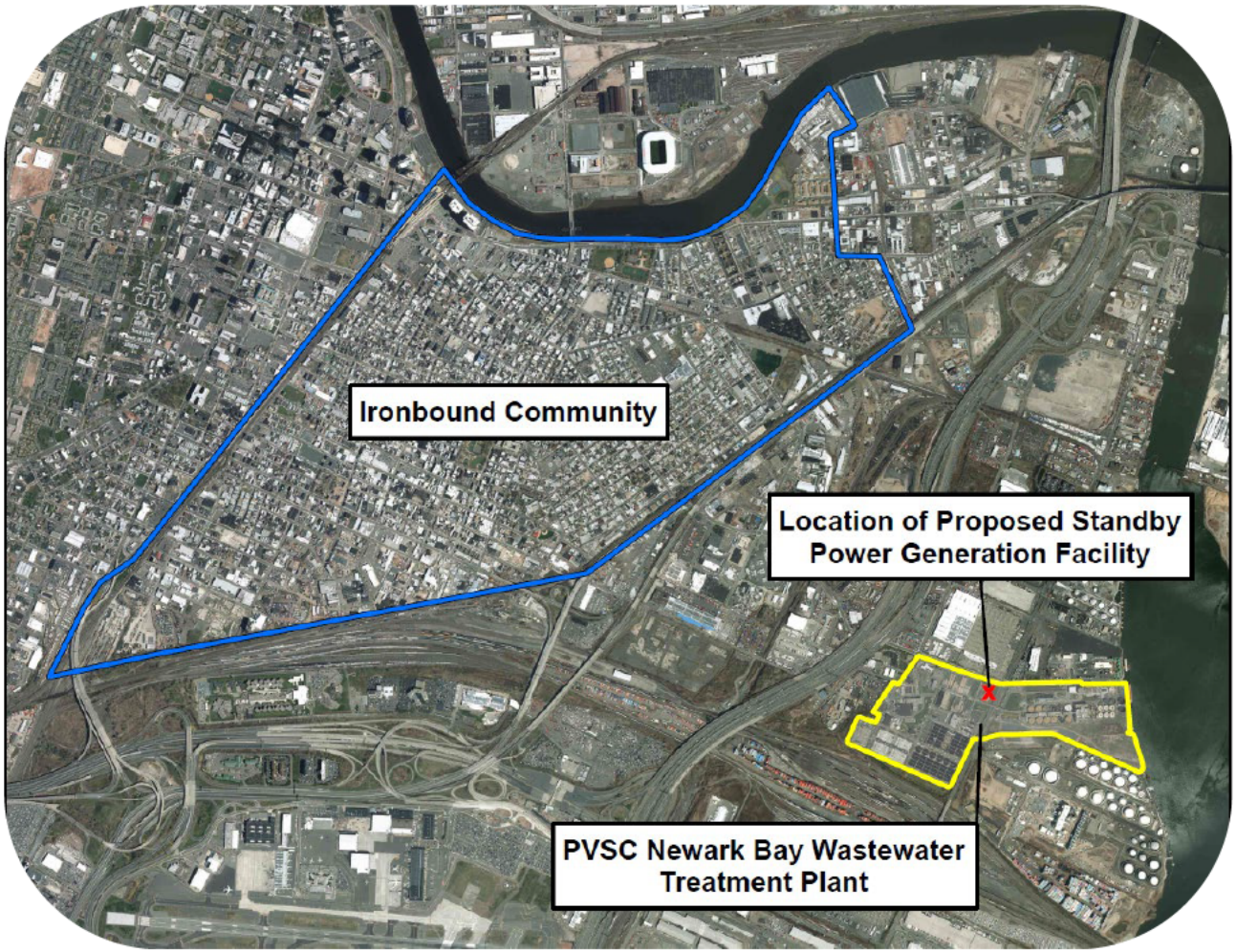
Clifton, New Jersey
Source: Google Maps

Purpose: Provide on-site emergency power to PVSC's wastewater treatment processes.

Need: The wastewater treatment plant needs its entire electric load supported so that it can function even with the loss of electrical supply.

SPGF Requirements

- On-Site Power
- Space Available
- Power Entire Plant
- Weather-Proof



Online Poll

Go to **www.menti.com** and use the code **92 03 73 0**

What technologies do you think need to be evaluated for the standby power generation facility?

Renewable Energy Technology: Battery Only

Source: Teslarati

11,424 MWh needed → **6 MWh per battery container** → **1,904 battery containers required** → **14 acres of storage space**

Renewable Energy Technology: Solar

Photovoltaic (PV) panels at 59 locations → **10.6 MW power supplied** → **31% of power required**

Renewable Energy Technology: Wind

Source: National Geographic

PVSC average wind speed of 5.5 m/s if at 260 feet

Wind speeds of 6.5 m/s required for wind turbines

FAA prohibits turbines over 360 feet tall near Newark

Renewable Energy Technology: Hybrid

Solar + Wind + Battery

Discussion

Proposed SPGF

3

Combustion turbine generators (CTGs)

2

Black start engine generators (BSGs)

2

Fire pump engines (FPE)

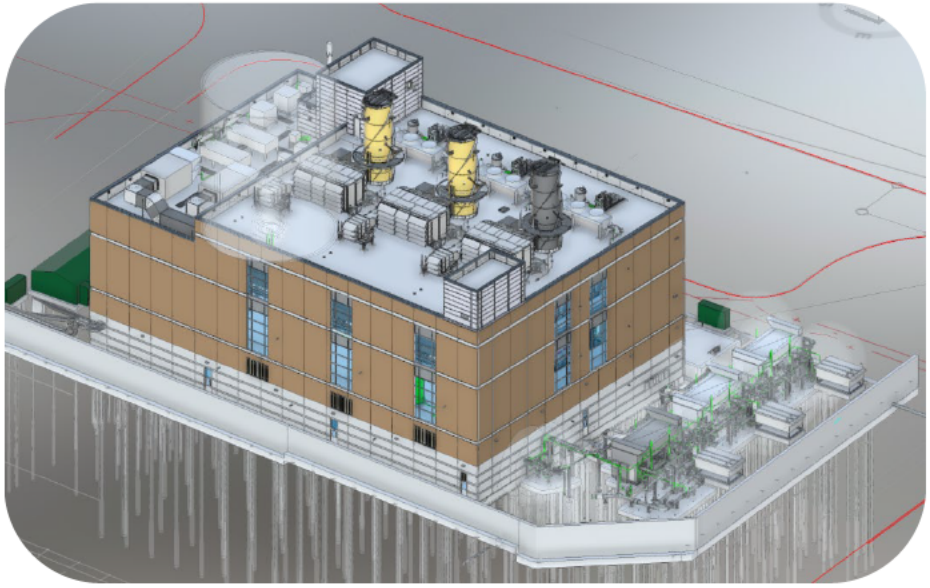
Proposed SPGF

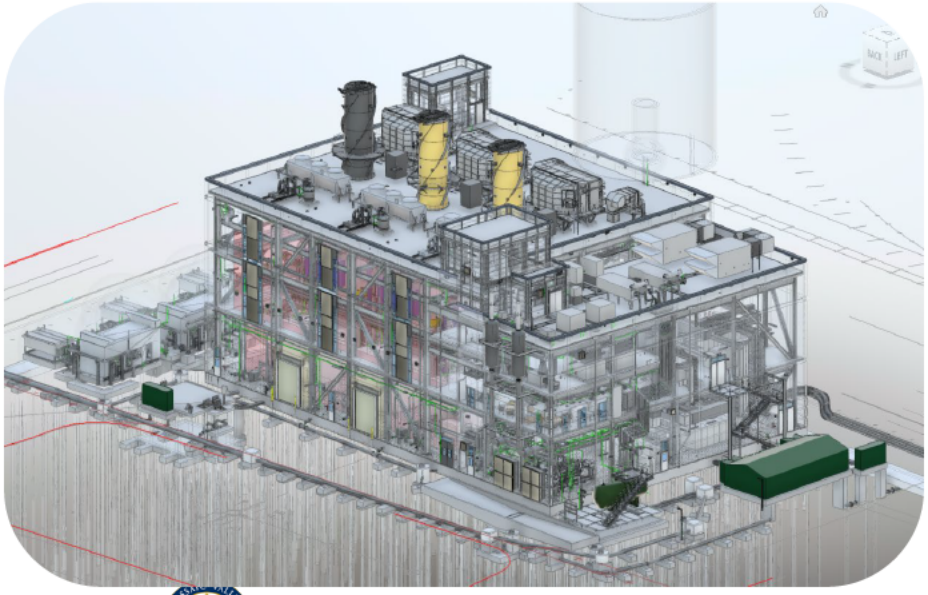
Emissions below applicability thresholds

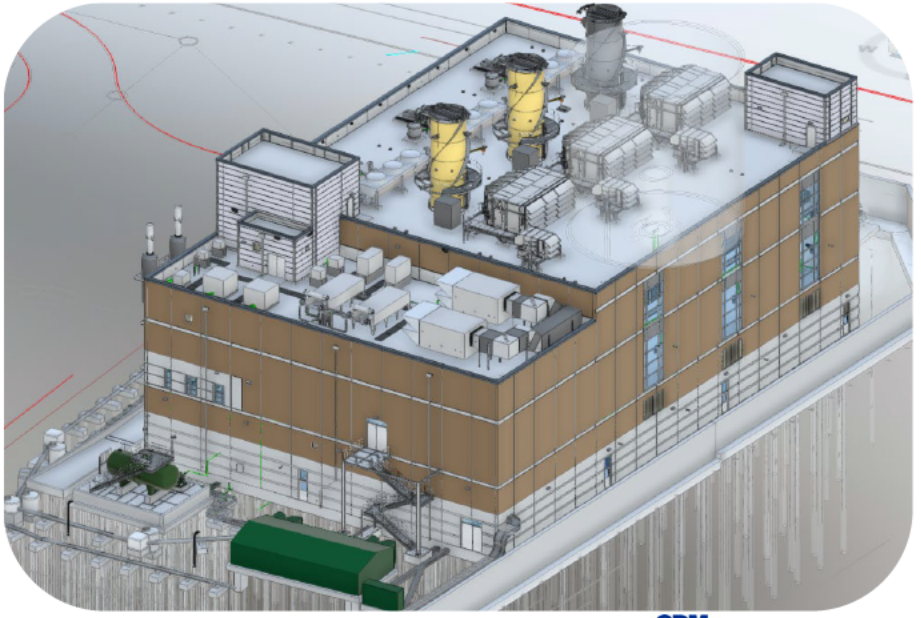
State-of-the-art air pollution control equipment

Designed to support future hydrogen power options

Proposed SPGF







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CTG Proposed Operating Scenarios

Scenario	Annual Operation Hours (1 CTG)	Annual Operation Hours (2 CTG)	Annual Operation Hours (3 CTG)
Emergency	Unrestricted	Unrestricted	N/A
Testing/ Maintenance	100	200	300
Demand Response	12	24	N/A
Storm Preparation Mode	480	960	N/A

Without a storm, would run a maximum of 324 hours annually

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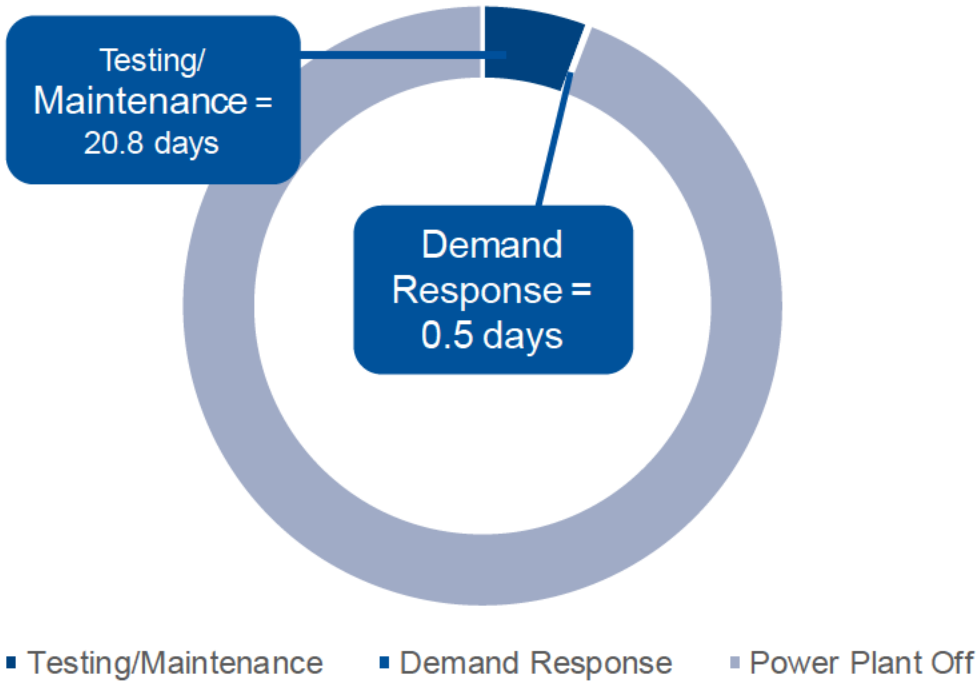
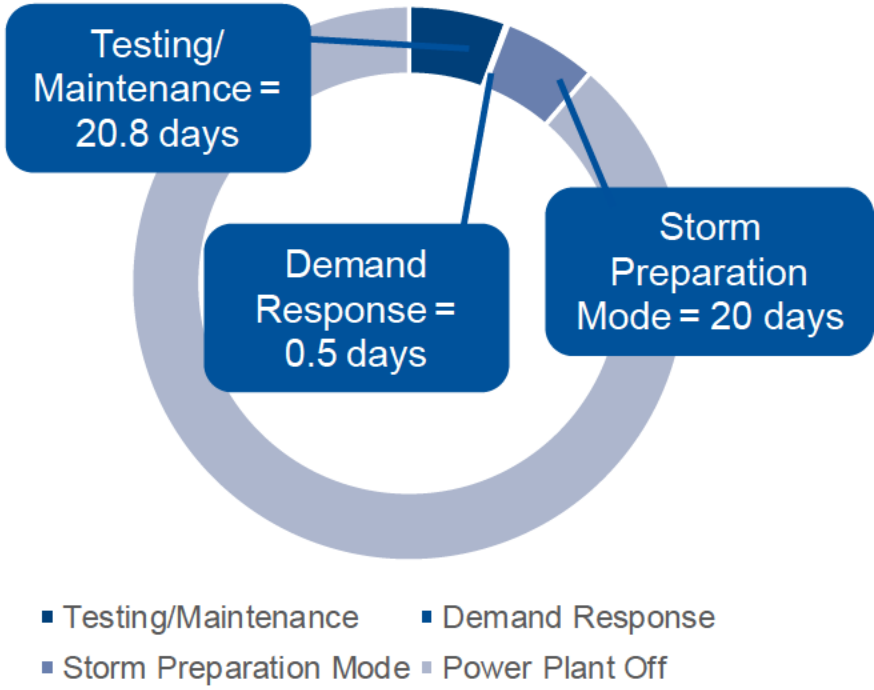
SPGF Operating Days – Non-Emergency

Annual Operating Days
(No Storm Prep)



Power Plant Off = 344 days

Annual Operating Days
(With Maximum Storm Prep)



Power Plant Off = 324 days

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SPGF Emissions

Pollutant	Significant Net Emission Increase Threshold*	Project Total Emission Increase Without Storm Preparation Mode*	Project Total Emission Increase With Storm Preparation Mode*
Carbon Monoxide	100	2.07	4.37
Nitrogen Oxides	25	0.53	2.27
Particulate Matter	15	0.71	2.86
Sulfur Dioxide	40	0.17	0.69
Total Suspended Particulate Matter	25	0.71	2.87
Volatile Organic Compounds	25	0.41	1.39

SPGF & Public Health

SPGF & Public Health

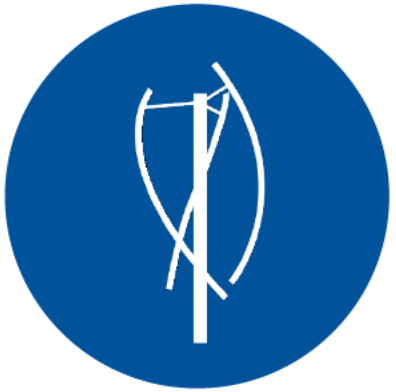
1. Cannot cause/contribute to an exceedance of a state/federal ambient air quality standard.
2. Must comply with all applicable air regulatory requirements/emission limits.
3. Must comply with control technology standards.
4. Must have negligible incremental inhalation health risk or include measures to mitigate risk.

Discussion

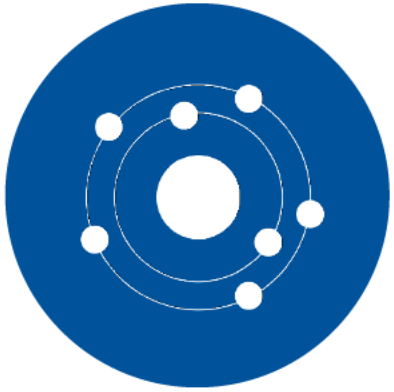
Potential Daily Renewable Solutions

Solar Panels on Flood Walls

Low-Head Hydro-Generators



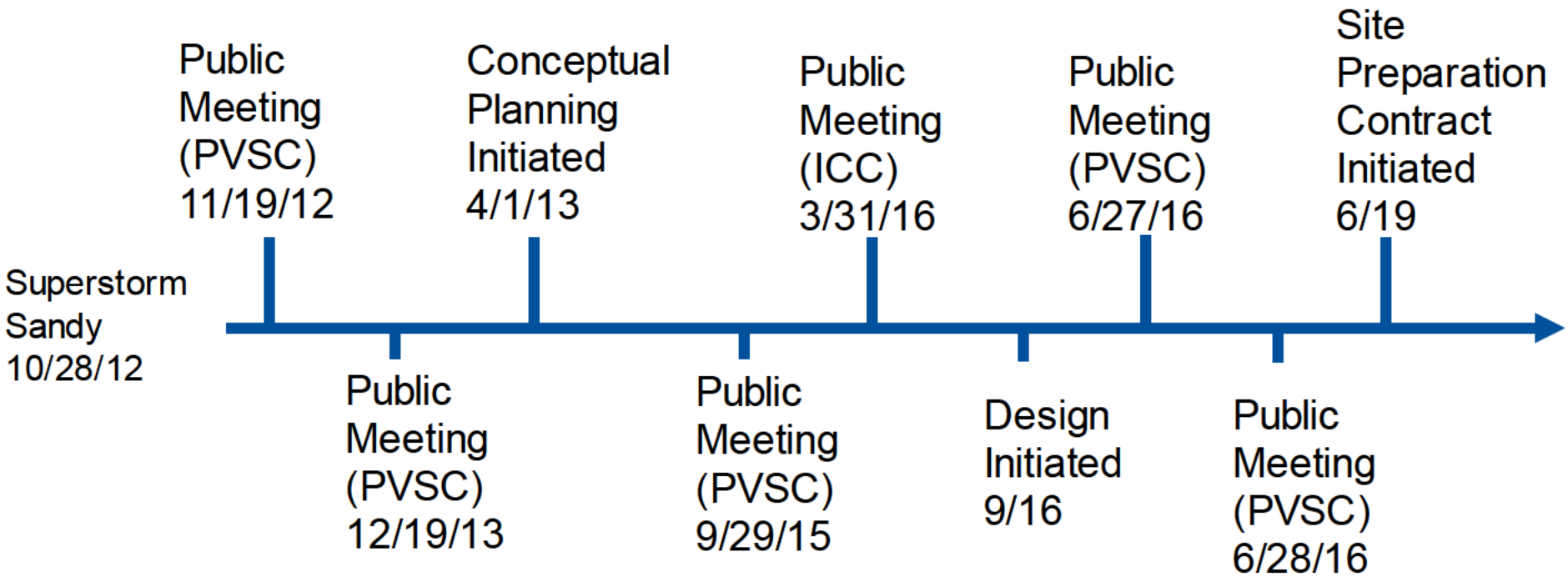
Vertical Axis Wind



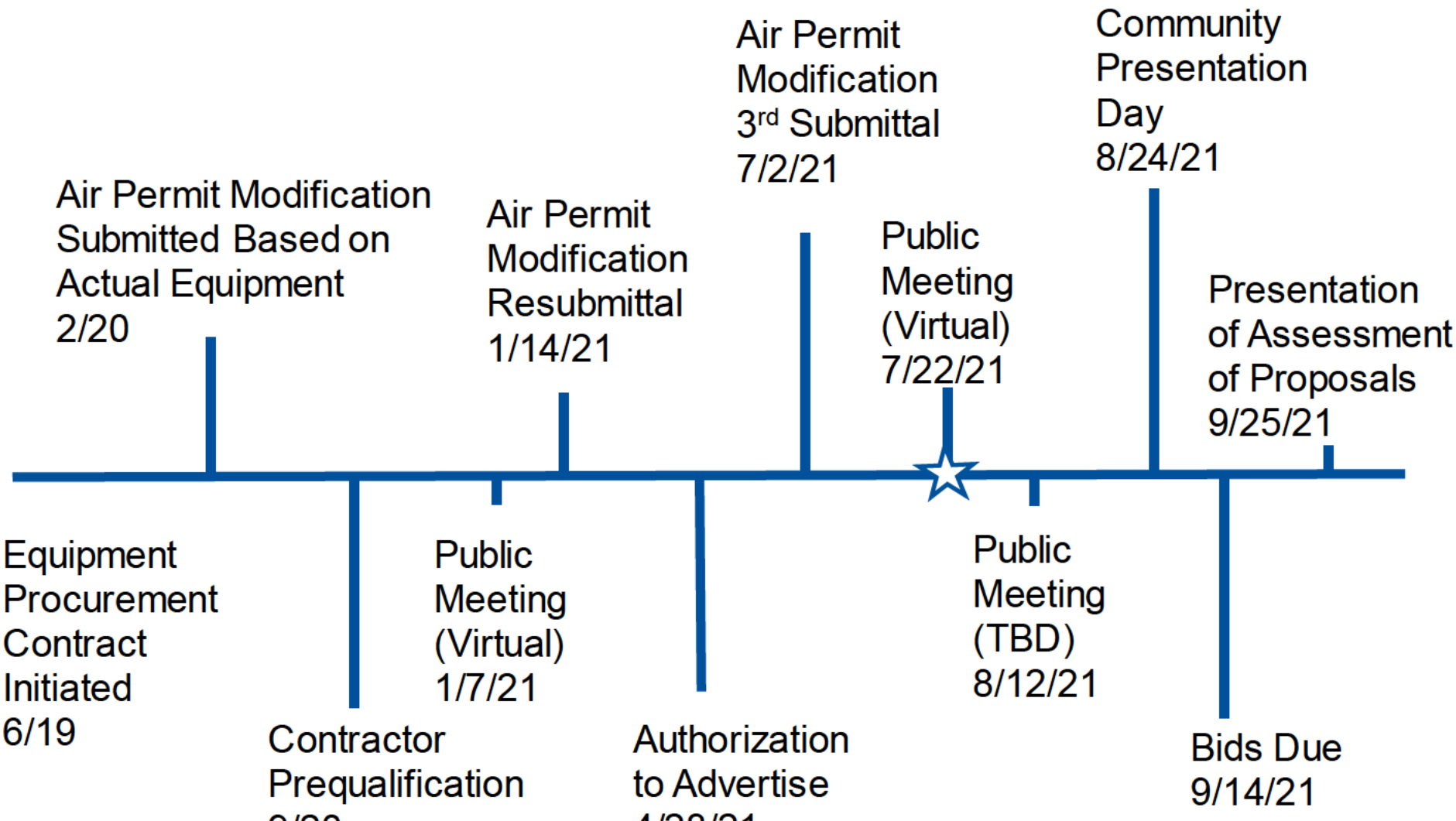
Nitrogen Storage

Hydrogen Fuel

Project Timeline



Project Timeline



Next Steps

Alternate Workshop
August 12

Community
Presentation Day
August 24

Presentation of
Assessment of
Proposals
September 23

Discussion

Email Comments:
clerksoffice@pvsc.com