P.I.O.N.E.E.R.®

POWER INFORMATION NEEDED TO EXPEDITE EMERGENCY RESPONSE

Power P.I.O.N.E.E.R.® is a powerful new situational awareness tool that provides real time, automated alerts when emergency power or HVAC is threatened in a facility equipped with P.I.O.N.E.E.R.'s advanced, remote monitoring technology. P.I.O.N.E.E.R. stands for Power Information Needed to Expedite Emergency Response.

In addition to its automated alerts, P.I.O.N.E.E.R. provides a secure, cyber-protected online dashboard where authorized personnel can view detailed information about unfolding mechanical threats, low fuel levels or dangerously rising temperatures in patient care areas. The highly detailed information available on the dashboard can help facility personnel and service providers diagnose mechanical problems remotely that may not be readily apparent based on a visual inspection of failing equipment. Real time Dashboard updates from response personnel keep officials in the chain of command apprised of response efforts and help inform resource deployment decision making.

Early warning of a threat to emergency power and dangerously rising temperatures in patient care facilities would allow government agencies to quickly engage with impacted facilities and their service providers to help address any impediments to rapid response by service personnel. This early warning will also enable expedited deployment of government generators and when possible, accelerated power restoration. The early warning provided by P.I.O.N.E.E.R. also provides a valuable head start in any evacuation planning that may be needed.

The loss of emergency power in a single-generator hospital or skilled nursing facility treating patients depending on ventilators during a power outage would represent a life-threatening emergency as staff would have only a few hours of ventilator battery life before they would need to manually ventilate patients during the race to replace a failed generator or transfer patients to another facility.

The failure of emergency power in single-generator hospitals and nursing homes is not a remote threat. In August 2020, Hurricane Isaias knocked power out to a skilled nursing facility operated by Little Sisters of the Poor in Pawtucket, RI. The facility's 42-year-old generator kicked on immediately but after two hours of operation, a failed cooling system triggered a catastrophic and irreversible failure of the decades-old generator, plunging the facility into initial darkness before battery operated lanterns were placed in patient rooms. An emergency evacuation brought 11 elderly residents relying on electric-powered oxygen concentrators and CPAP machines to nearby facilities.

The next month, after Hurricane Laura struck Louisiana, the municipal-run electric utility in Abbeville, LA asked Abbeville General Hospital to go on generator power to reduce load on a seriously strained system. The hospital's only generator stopped operating due to a major mechanical failure, forcing the hospital back on the questionable municipal power source. Five electricity-dependent patients were quickly evacuated while the hospital scrambled to locate a backup generator.

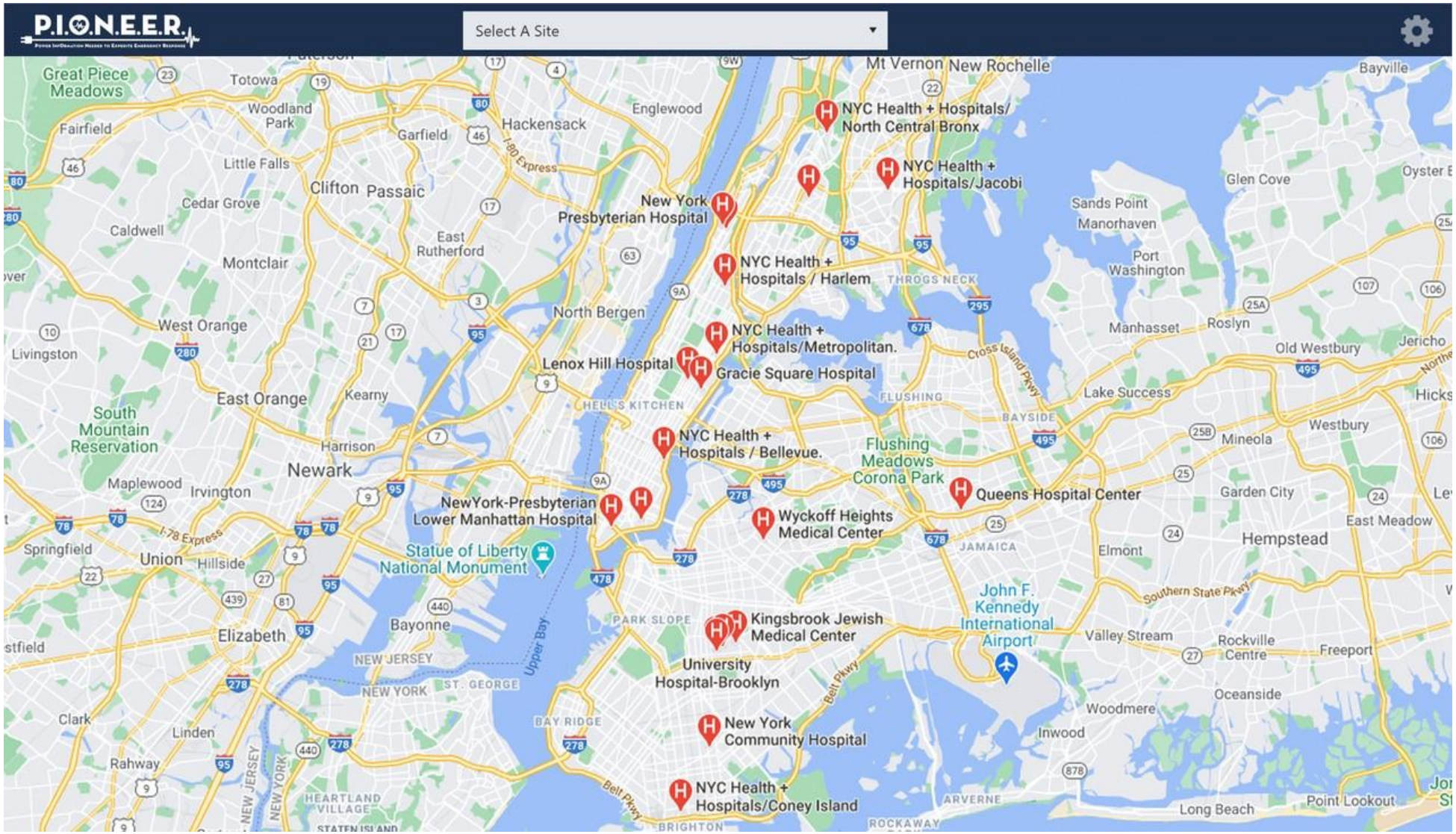
Initial P.I.O.N.E.E.R. deployments are slated for Los Angeles County's single-generator hospitals using HHS Hospital Preparedness Program funding given the recent resumption of Public Safety Power Shutoffs, pre-emptive steps taken by Southern California Edison to reduce the risk of wildfires sparked by live transmission lines.

Power P.I.O.N.E.E.R. was developed by Powered for Patients as part of Department of Homeland Security-funded project. Subsequent editions of P.I.O.N.E.E.R. are slated for release in late 2021 and beyond. Among the most impactful features of P.I.O.N.E.E.R. 2.0 will be its real time, manual reporting and status update capability which will allow every hospital and skilled nursing facility to leverage the power of P.I.O.N.E.E.R., including those that have not installed P.I.O.N.E.E.R.'s remote monitoring technology. Full details on the capabilities of P.I.O.N.E.E.R. 1.0 and subsequent editions are included in the table below.

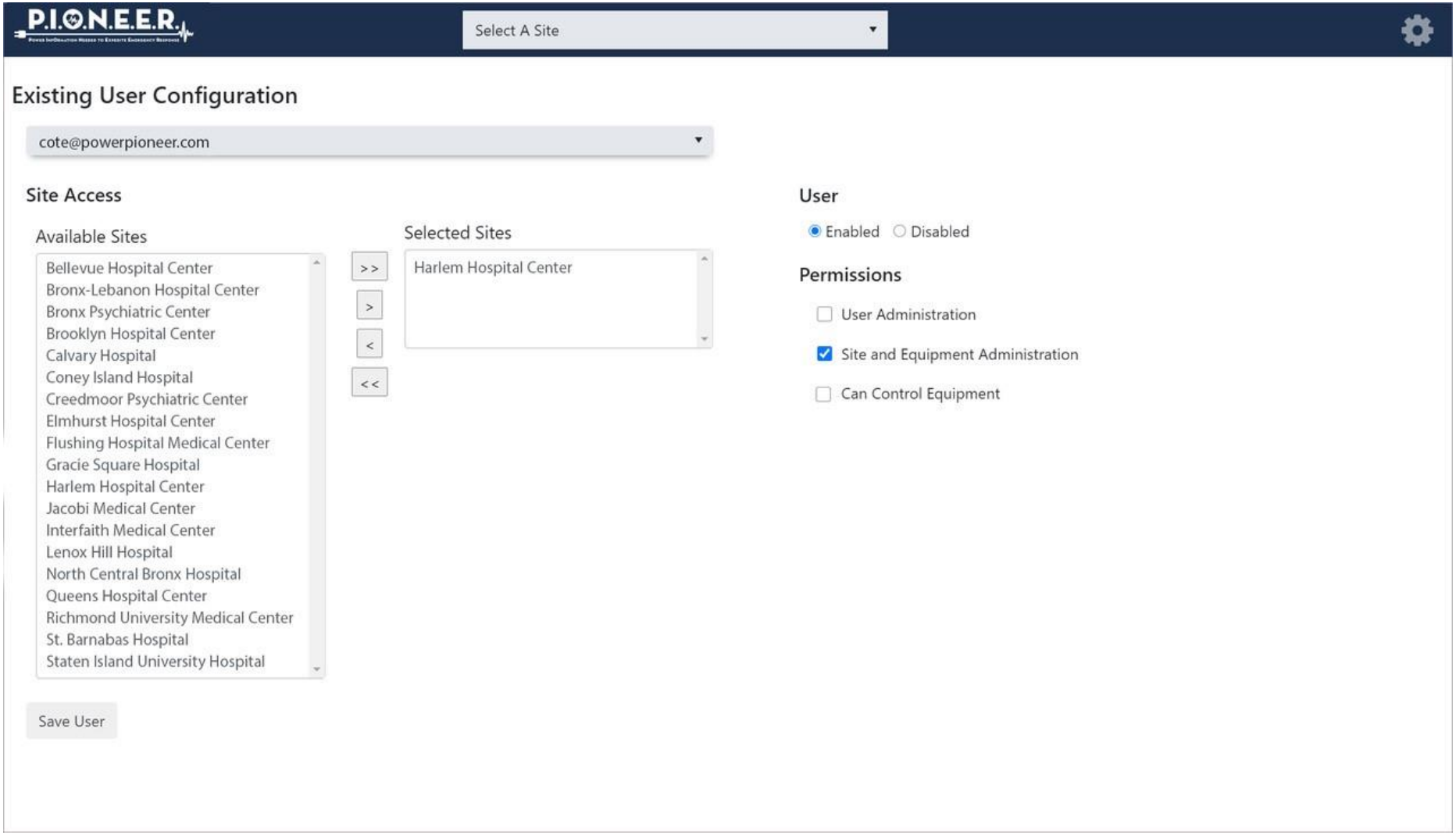
The automated, real time alerts provided to designated government officials through deployment of P.I.O.N.E.E.R. 1.0 to the single-generator hospitals and skilled nursing facilities licensed to provide ventilator care would provide powerfully enhanced situational awareness of facilities where patients are most vulnerable to emergency power failures. Widespread use of P.I.O.N.E.E.R. 2.0 by all of hospitals and skilled nursing facilities, along with other critical infrastructure relying on emergency power, would give government officials unprecedented visibility into emergency power threats, significantly enhancing government's ability to protect patients and citizens city dependent on other vital services that rely on emergency power during outages such as water and wastewater treatment facilities and 911 call centers.

Capability	P.I.O.N.E.E.R. 1.0	P.I.O.N.E.E.R. 2.0 Late 2021	P.I.O.N.E.E.R. 3.0 2022
Facilitated Incident Response Coordination by P.I.O.N.E.E.R. Personnel	✓	✓	✓
Automated SMS Text and Email Threat Alerts to designated individuals	✓	✓	✓
Secure, cyber-protected Dashboard	✓	✓	✓
Status update capabilities for response personnel	✓	✓	✓
View-only capabilities for state and federal officials	✓	✓	✓
P.I.O.N.E.E.R. data accessible through existing building management systems	✓	✓	✓
Manual threat reporting and expanded status update capabilities		✓	✓
Integration of multiple FDD providers into Dashboard		✓	✓
P.I.O.N.E.E.R. Integration with HHS Protect System, CDC's Red Sky and other government situational awareness platforms		✓	✓
P.I.O.N.E.E.R. Integration with Existing Emergency Management Dashboard Systems, i.e., WebEOC			✓
Ingestion of fuel levels and fuel consumption rate data from standalone fuel monitoring systems outside Fault Detection & Diagnostic systems connected to emergency power systems, i.e., Veeder-Root, Scully, etc.			✓
Pilot deployment of P.I.O.N.E.E.R. to homes of severely disabled Americans relying on ventilators and using standby emergency power systems to sustain operation of ventilators during power outages			✓
Alignment of P.I.O.N.E.E.R. with GIS mapping software to enable P.I.O.N.E.E.R. data points to be represented through different GIS visualization tools			✓

View of P.I.O.N.E.E.R. dashboard following secure login showing New York City hospitals



View of Existing User Configuration tab on P.I.O.N.E.E.R. dashboard. This sample page shows a number of New York City hospitals registered in the system and demonstrates how an individual hospital can be selected to enable permissions to be set for all system users authorized to view information about that hospital. In this example, Harlem Hospital Center has been selected for the permissions authorization process. During the actual set up process, an authorized user's email address would have been entered into the system prior to this step, enabling it to appear in the drop down menu of users for whom permissions could be assigned.



For more information about the Power P.I.O.N.E.E.R.® Tool or Powered for Patients, contact Project Director Eric Cote at 401-374-8500 cote@poweredforpatients.org