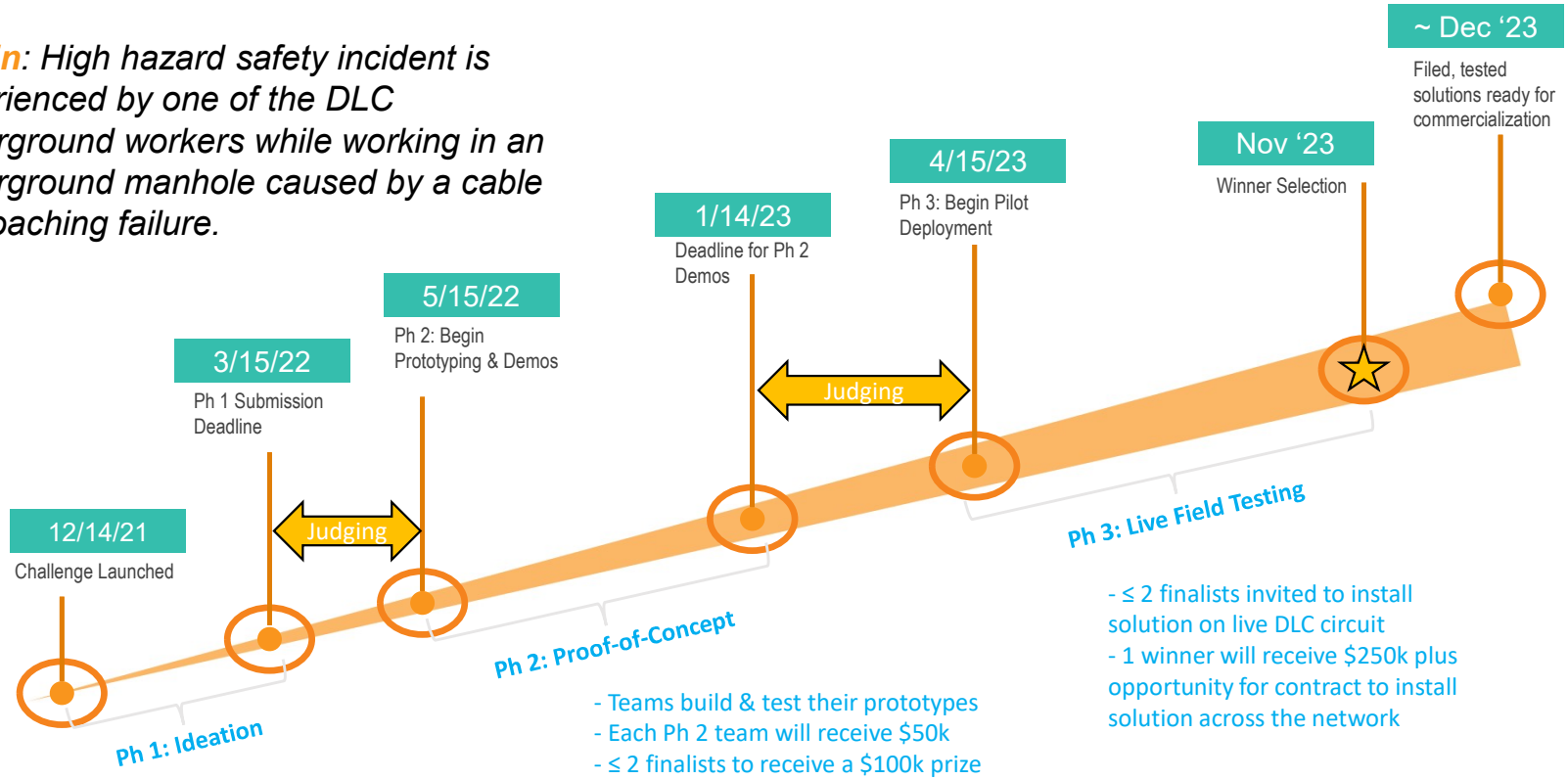
Timeline

Challenge Timeline

***Origin**: High hazard safety incident is experienced by one of the DLC underground workers while working in an underground manhole caused by a cable approaching failure.*



- Solvers submit detailed technical proposal
- ≤ 5 semi-finalists selected to receive $10k prize money & invited to Ph 2

- Teams build & test their prototypes
- Each Ph 2 team will receive $50k
- ≤ 2 finalists to receive a $100k prize & invited to Ph 3

- ≤ 2 finalists invited to install solution on live DLC circuit
- 1 winner will receive $250k plus opportunity for contract to install solution across the network

Reach and Coverage

The Global Reach

The challenge was released to the world on December 13, 2021, via HeroX, a crowdsourcing platform. We have received input from **31 Teams** and **221 Innovators** across **28 Countries** and **6 continents**. This enabled us and our partners to identify solutions that would not have been found in a traditional setting.

Media Coverage of the Challenge

INTELLIGENT UNDERGROUNDING

T&DWorld

Duquesne Light Company Crowdsources Underground Monitoring

July 10, 2024

Duquesne Light Company conducts an open innovation challenge, crowdsourcing proposals from around the world, to improve underground cable monitoring.

Kartik Ganjoo, Josh Gould, Dave Montz, Richard Saporito

THE BUSINESS JOURNALS

PITTSBURGHINNO

PUBLIC UTILITIES FORTNIGHTLY

Crowdsourcing Underground Distribution Reliability

yahoo!

Duquesne Light seeks innovative solutions to underground electrical cable challenges

Innovative Utility Partnerships Making Underground Electrical Grid Stronger and Safer

Duquesne Light Company, ComEd and Pacific Gas and Electric identifying unique ways to enhance underground infrastructure and improve worker and public safety

DEI DailyEnergyInsider

Your Resource for Energy Policy and News

Duquesne Light launches competition to find ways to better monitor electrical cables

Open Innovation Challenges with Josh Gould, Head of Duquesne Light Innovation Center

Challenge Phases

Phase 1 – Ideation

In December 2021, DLC partnered with HeroX to open a general call for proposals from any interested party around the world. Responses ranged from a two-man team based out of a garage in Pennsylvania to established companies in the utility and electric technology field. In all, 31 teams submitted proposals for consideration.

Each pitch consisted of an elevator pitch style video describing the technical approach, why they believe their technology is superior and where the solution originated from; a team resume; an explanation of the solution; the usability of the solution for the end customer; any maintenance requirements; what installation would look like; expected costs; and the development plan for the solution over the lifecycle of the challenge.

The partners, alongside DLC subject matter experts from Advanced Grid Solutions, Distribution Engineering, Transmission Planning and the Environment, Health and Safety, judged the submissions, and advanced five teams on to Phase Two.

Phase 2 – Lab Testing

The next phase involved lab-based, simulated testing to better understand the technical capabilities of the technologies. The five Phase One winners submitted a testing plan and proposed a mid-point milestone for the judges to measure progress. DLC sent each of the teams the requested materials and commonly used underground electrical cables.

The teams then tested their proposed solutions in a simulated environment and sent back a video of the testing process, results and refined information on their proposal, including the installation procedure, maintenance requirements and costs, as well as a development plan for Phase Three — Pilot Deployment.

Phase Two submissions were judged by a panel of DLC SMEs and challenge partners to whittle down the field to two Phase Three finalists.

During this phase, Pacific Gas & Electric departed the challenge due to other commitments and Exelon stepped up their involvement, bringing in subject matter experts (SMEs) from three other operating companies in addition to Commonwealth Edison.

Phase 3 – Pilot Deployment

After simulating the proposed technology in a lab setting, the finalists piloted the proposed solutions on three miles of a heavily loaded underground distribution network.

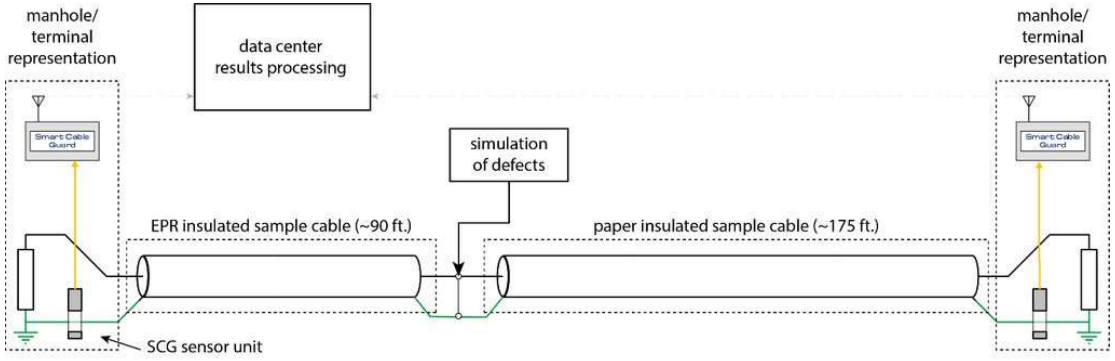
Both finalists performed a circuit walkthrough with DLC crews, marked maintenance holes for entry and determined the equipment and workforce needs to support the installation.

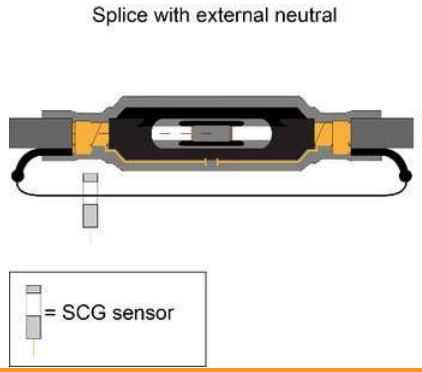
After both teams completed the installation process and the technology was monitored for a minimum of two weeks, they shared a summary of the successes and lessons learned from the deployment and provided updates on the usability, maintenance, installation and costs of the solution.

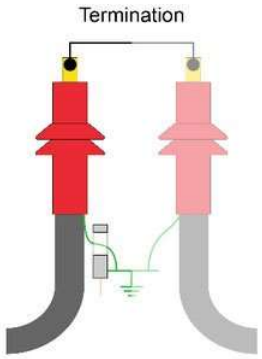
Challenge Winner – DNV's Smart Cable Guard

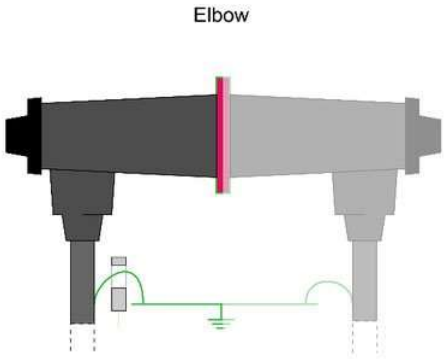
Technology Overview

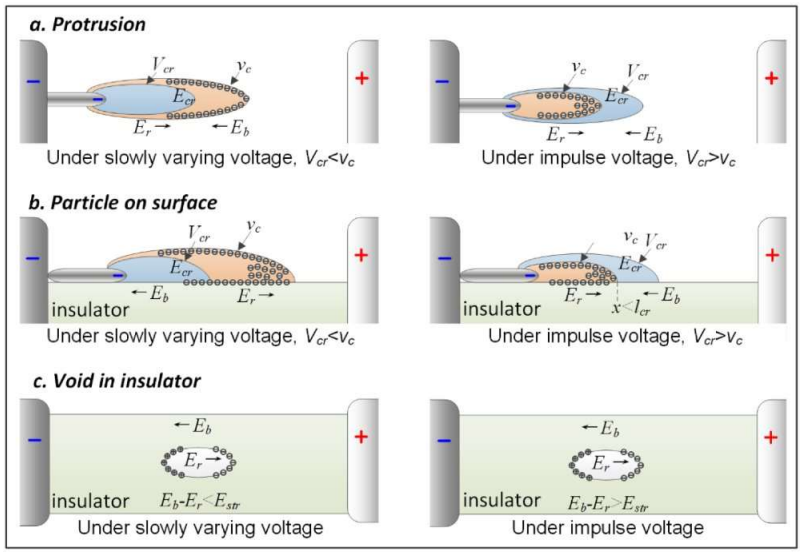
DNV's Smart Cable Guard system detects partial discharges (PD) along an electrical cable via one sensor unit at one end of a cable and another at the other end of the cable. The PD's are analyzed by software and an alert is sent.







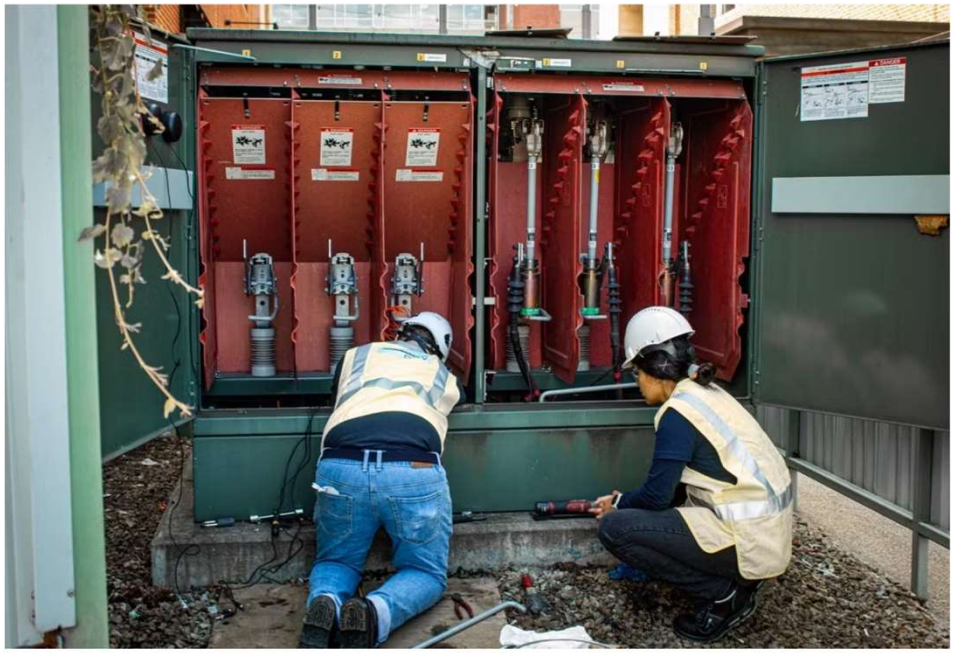




PD's occur on protrusions, surface particles, and voids

Installation Locations

Installation Locations



Monitoring Output

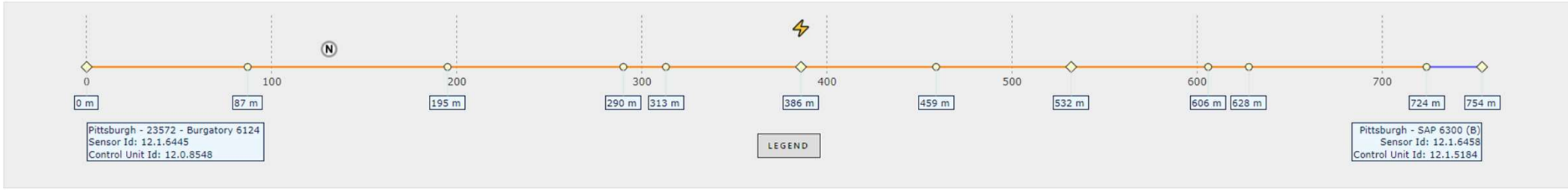
Circuit details

Circuit name : Pittsburgh - 23572 - Burgatory 6124 -- SAP 6300 (B)
Region : Default
Customer : Duquesne Light Co.
Operational status :
SCG warning(s) :
Fault location :

View SCG warning/fault chart

Circuit components

Show location in: Meters



Cable configuration

Other sensors connected to control unit 12.0.8548
12.1.6419 Pittsburgh - 23572 - Burgatory 6124 -...
12.1.6427 Pittsburgh - 23572 - Burgatory 6124 -...

Other sensors connected to control unit 12.1.5184
12.1.6448 Pittsburgh - 23572 - Burgatory 6124 -...
12.1.6459 Pittsburgh - 23572 - Burgatory 6124 -...