

EPIC

SYMPOSIUM

Wildfire Prevention Technologies

Moderator: **David Erne**

Presenters: **Dr. Brian Chen, Brian D'Agostino, Dr. Larry Dale**





Panel



Dr. Larry Dale

Staff Scientist
Lawrence Berkeley National Laboratory



Brian D'Agostino

Director of Fire Science and Climate Adaptation
San Diego Gas & Electric



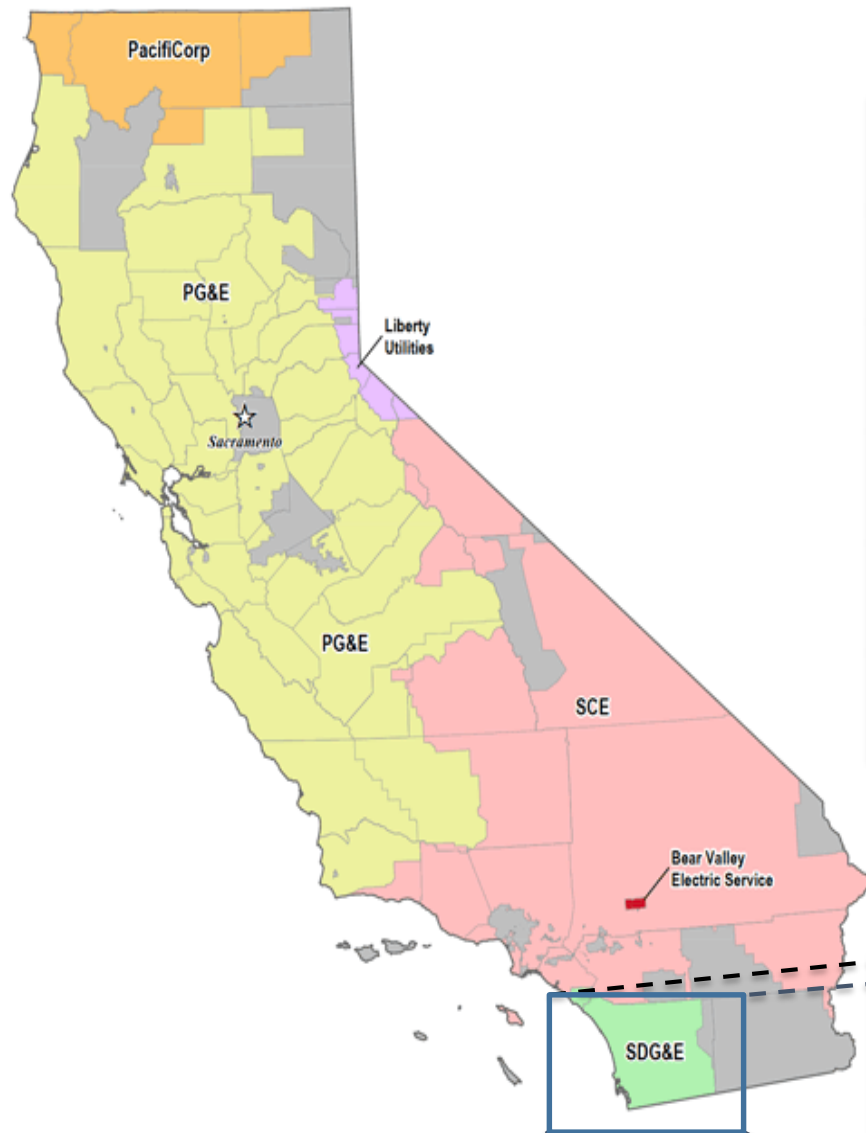
Dr. Brian Chen

Principal Manager of Grid Resiliency and Public Safety
Southern California Edison

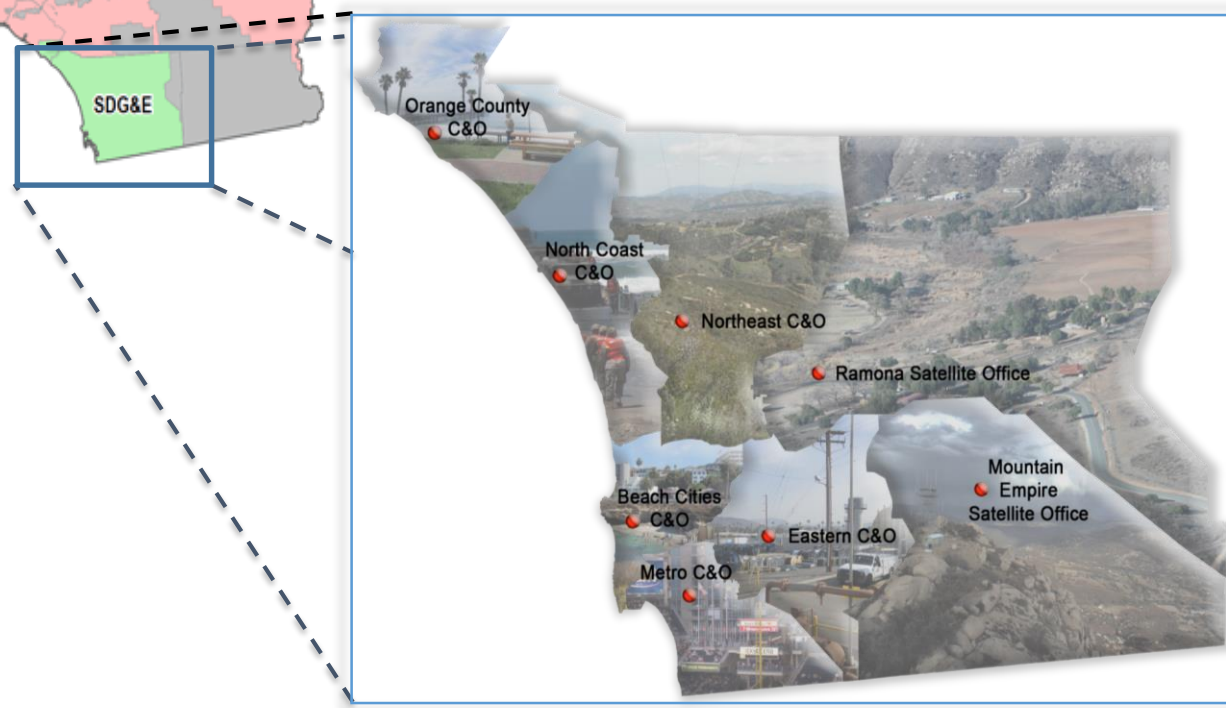


**EPIC Symposium
SDG&E's Wildfire Preparedness
February 19, 2019**

SDG&E Service Territory



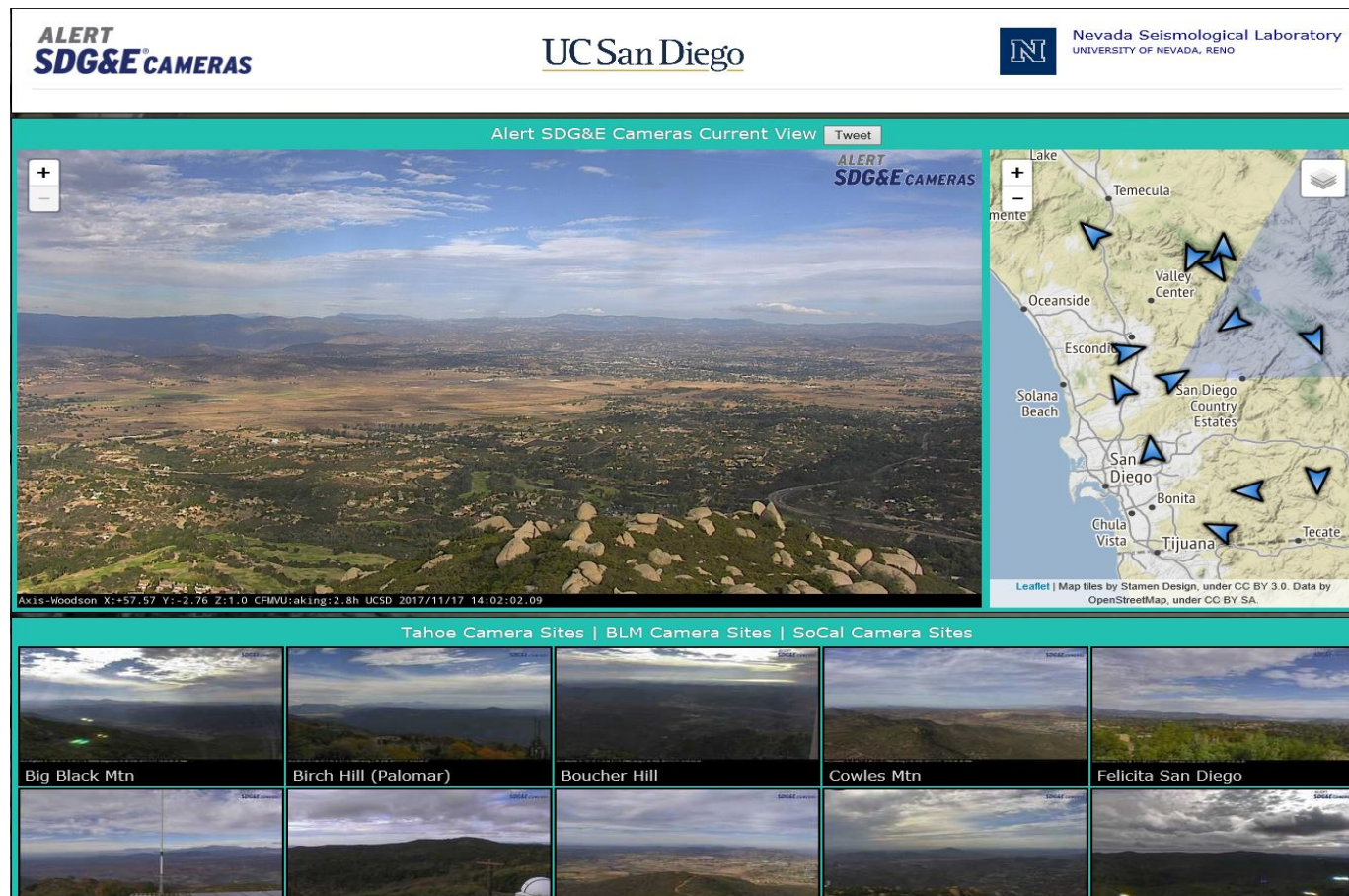
	Distribution	Transmission
Substations	136	20
Poles/Structures	208,970	14,330
Circuits	1,033	237
Circuit Miles	17,000+	1,970+
OH Circuit Miles	6,500+	1,800+



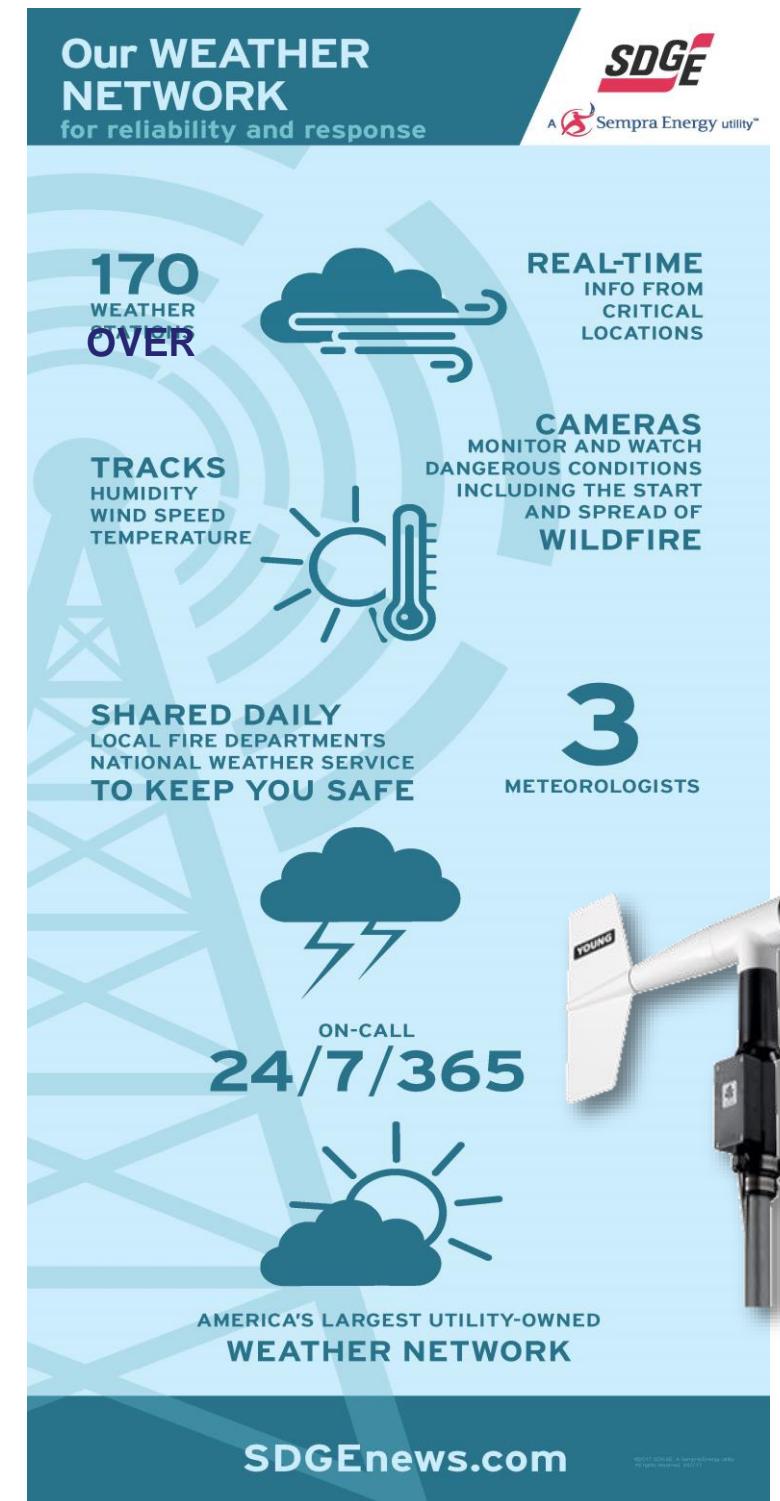
- 4,100 Square Miles
- ~2,350 Square Miles in High Fire Threat District (HFTD)
- 1.4 Million Electric Meters
- ~4,100 Employees

Situational Awareness

Premier Weather Network of 177 Weather Stations



- SDG&E operates America's most granular utility-owned weather network with over 200,000 pieces of weather data collected daily
- Future steps include additional installations in coastal canyons and Wildland Urban Interface areas
- Weather stations in high risk areas are being rebuilt with latest technology
- Over 100 high definition cameras improve fire detection with 16 Pan-Tilt-Zoom Alert SDG&E cameras in service and additional installations planned for 2019



Our WEATHER NETWORK
for reliability and response

170 WEATHER OVER

REAL-TIME INFO FROM CRITICAL LOCATIONS

TRACKS HUMIDITY WIND SPEED TEMPERATURE

CAMERAS MONITOR AND WATCH DANGEROUS CONDITIONS INCLUDING THE START AND SPREAD OF WILDFIRE

SHARED DAILY LOCAL FIRE DEPARTMENTS NATIONAL WEATHER SERVICE TO KEEP YOU SAFE

3 METEOROLOGISTS

ON-CALL 24/7/365

AMERICA'S LARGEST UTILITY-OWNED WEATHER NETWORK

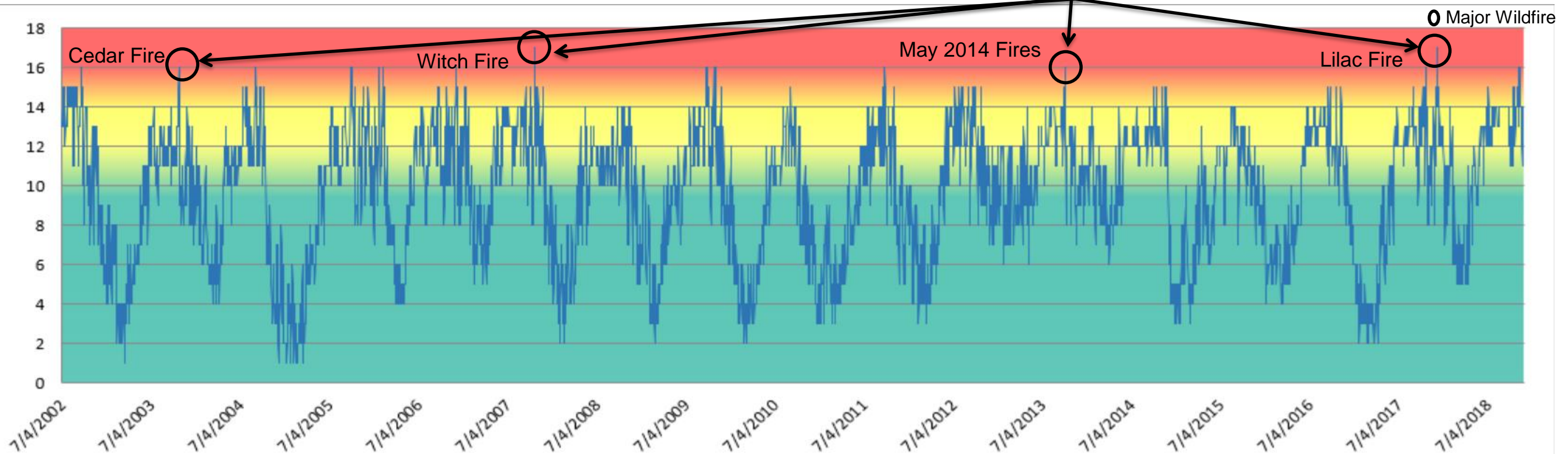
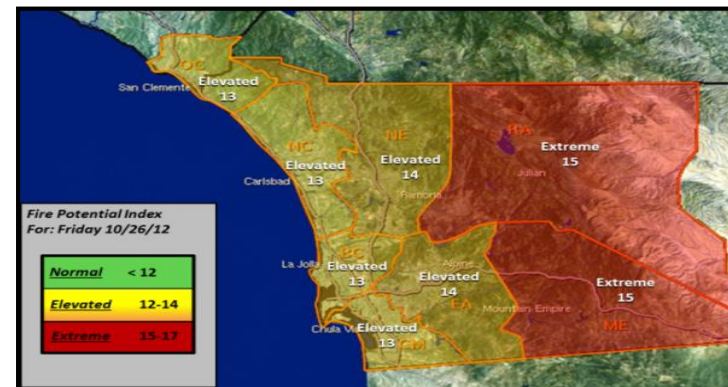
SDGEnews.com

Fire Potential Index (FPI) Enables Greater Risk Understanding

A planning and decision support tool, which has been back-tested, developed by SDG&E to communicate the wildfire potential on any given day, classifying the fire potential within each of its 8 operating districts

- A seven-day forecast product, produced daily
- Incorporates weather, live fuel moisture, dead fuel moisture, and greenness of the annual grasses
- Used to inform operational decisions, work restrictions, resource allocation

	Thu 10/25	Fri 10/26	Sat 10/27	Sun 10/28	Mon 10/29	Tue 10/30	Wed 10/31	Thu 11/01
ME	Normal 11	Extreme 15	Elevated 13	Elevated 12	Normal 11	Normal 11	Normal 11	Normal 10
RA	Normal 11	Extreme 15	Elevated 13	Elevated 12	Normal 11	Normal 11	Normal 11	Normal 10
EA	Normal 10	Elevated 14	Elevated 12	Normal 11	Normal 11	Normal 10	Normal 10	Normal 10
NE	Normal 10	Elevated 14	Elevated 12	Normal 11	Normal 11	Normal 10	Normal 10	Normal 10
OC	Normal 10	Elevated 13	Normal 11	Normal 11	Normal 10	Normal 9	Normal 9	Normal 9
NC	Normal 10	Elevated 13	Normal 11	Normal 11	Normal 10	Normal 9	Normal 9	Normal 9
BC	Normal 10	Elevated 13	Normal 11	Normal 11	Normal 10	Normal 9	Normal 9	Normal 9
CM	Normal 10	Elevated 13	Normal 11	Normal 11	Normal 10	Normal 9	Normal 9	Normal 9



System Design and Operations

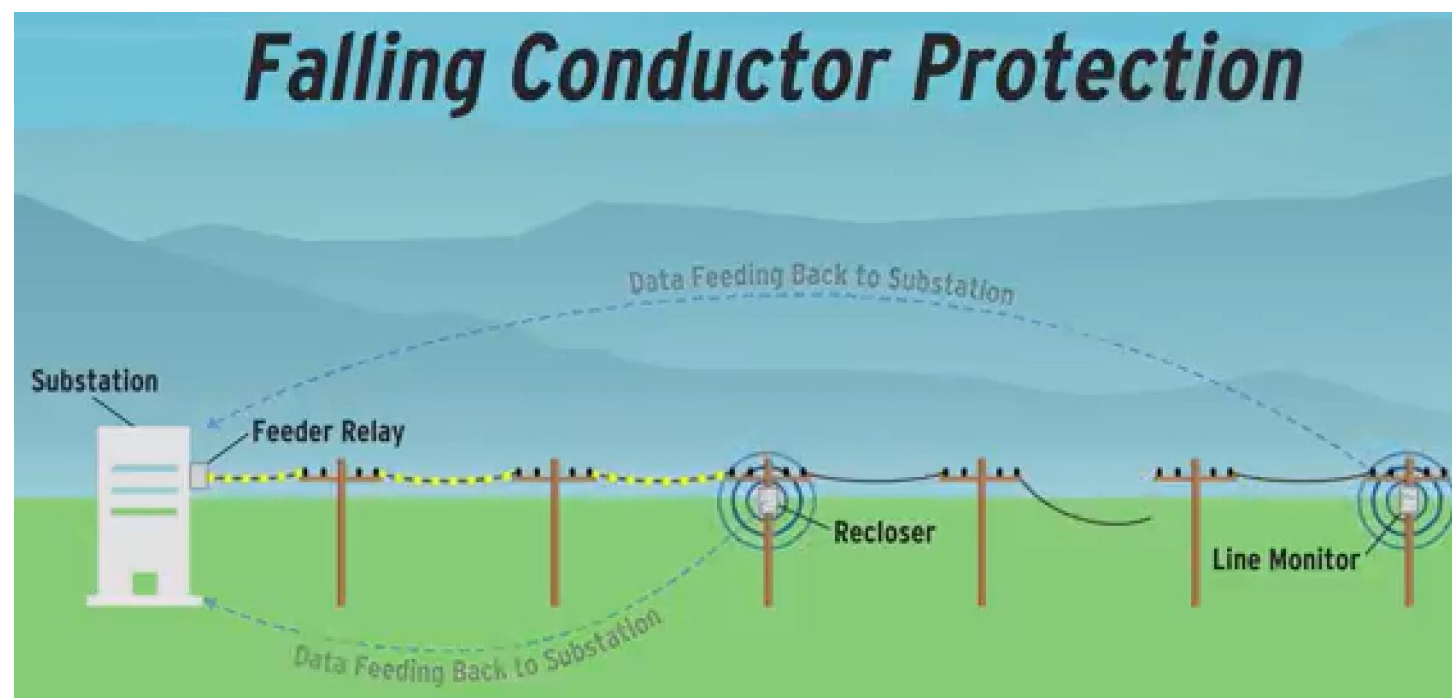
Advanced Electric System Protection

Protection Philosophy

- Three types of protection functions in SDG&E's automated reclosers:
 - Normal Profile: Protects circuits under normal conditions.
 - Sensitive Profile: Relay is very fast and incredibly sensitive in order to isolate faults faster than normal profile.
 - Sensitive Ground Fault: This setting detects high impedance faults which largely result from downed conductors.

Protective Devices

- Sensitive Profile and Sensitive Ground Fault Protection**
 - Over 270 distribution circuit automated reclosers in the HFTD have the capability for sensitive profile and sensitive ground fault protection
- Falling Conductor Protection**
 - Developing technology to de-energize conductors prior to hitting the ground
 - As part of SDG&E's fire hardening efforts, devices are being installed to enable the future deployment of falling conductor technology

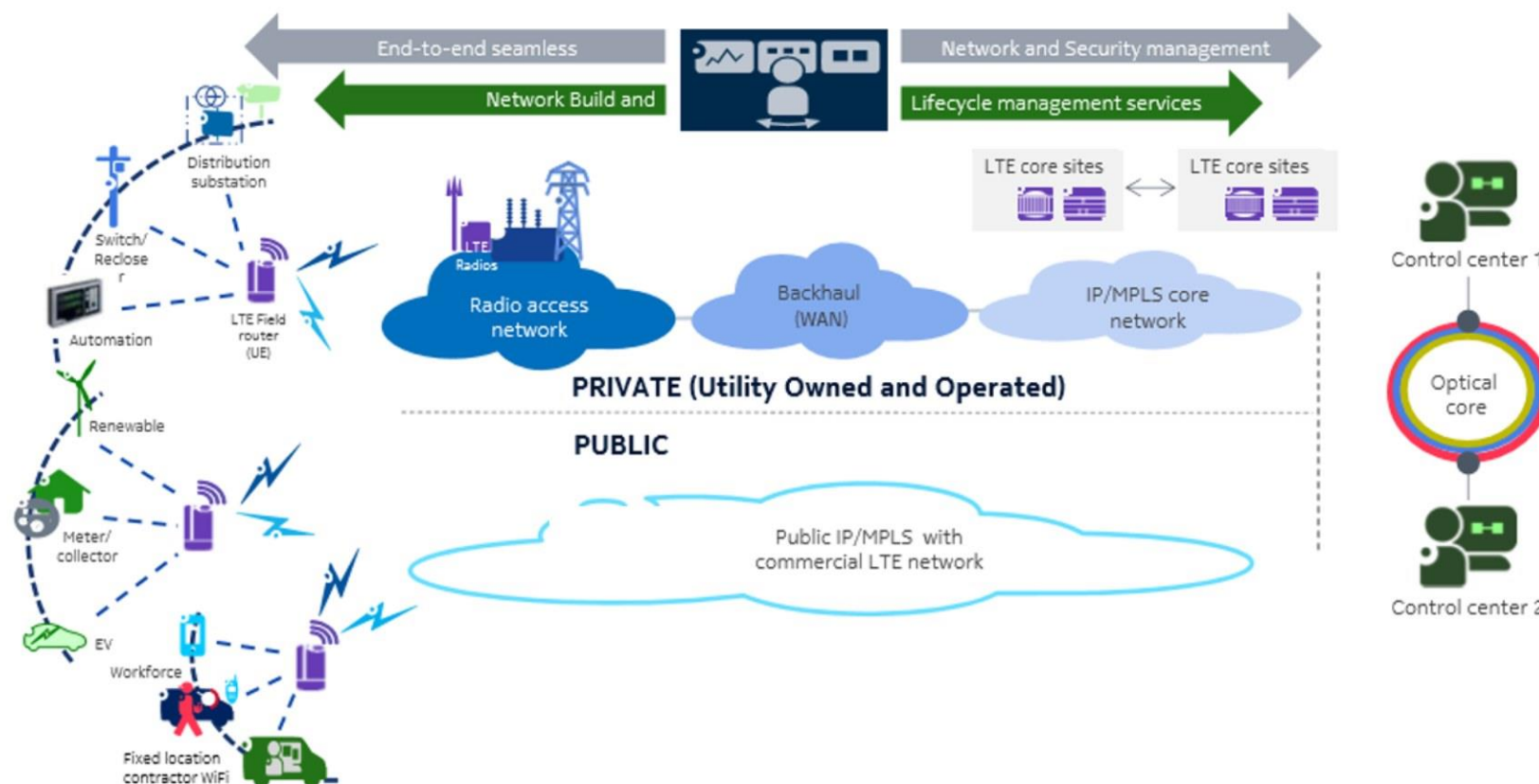


System Design and Operations

Private LTE Communications

Developing a wireless communication infrastructure for increased reliability and system coverage, enhanced security, and remote access capabilities.

- Providing wider system coverage allowing for additional remote intelligent devices to manage the grid
- Improved network availability and reliability for mobile workforce and electric and gas infrastructure
- Increased network bandwidth allowing for remote access of electric equipment and reduction in truck rolls
- Enhanced cyber security capabilities for remote management and automation
- Standardized technology that enables of grid services and expanded network coverage (Falling conductor, SCADA, Push to Talk, DERMS, Microgrids, DER, etc.)



Questions?