SCE Santa Barbara County Emergency Generator Project

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In Dec. 2015, SCE installed 41 emergency generators (a total of 79.5 MW) at 3 existing substations in Santa Barbara County.

These emergency generators were installed in response to SCE’s El Niño planning efforts following the prediction of severe storms during the Winter and Spring months of 2015-16 (Dec.-Apr.)
Presentation Outline

- El Niño Planning Efforts
- Project Need
- Siting Issues
- Regulatory Review
- Air Quality Permits
- Proposition 65
- Conclusions
El Niño Overview

- El Niño is a warming of the eastern Pacific Ocean that causes abnormal weather around the world.
- In August 2015, NOAA predicted that the 2015 El Niño “could be among the strongest in the historical record dating back to 1950.”
- Severe storms and higher than normal rainfall were predicted for California.
Governor Brown issued an Emergency Proclamation (Executive Order B-36-15):

- Accelerated Approvals of Water Projects by State and Regional Water Boards
- Provided Funding ($5 million) for Reliable Drinking Water Projects
- Expedited CEC Power Plant Applications Related to Wildfire Damage
- Facilitated Efforts to Capture Water from Storms
- Suspended CEQA Compliance for Activities Required to Implement Directives

All Southern California cities, counties, and first responders initiated emergency storm preparations
SCE is the “Load Serving Entity” for:

- 15 million people in 186 cities, 15 counties, and 13 Native American reservations in Southern California
- Delivers electricity to 5 million customer accounts
- Covers 50,000 square miles of service area
SCE El Niño Planning Efforts

- Conducted a system wide El Niño hazard analysis
- Created an El Niño specific emergency response plan and initiated an Incident Command System during this period
- Set up specialized “on call” response teams in each area
- Tasked meteorologists with predicting heavy storms
- Coordinated and ran multiple drills internally and with state, county and city emergency response organizations
- Inventoried & stockpiled repair & response equipment at key locations
- Positioned berms/sandbags around at risk equipment
- Conducted preventative maintenance
Reliability Concerns in SCE’s Santa Barbara Service Area

- The Area is served power by two 220 kV lines
  - SCE’s hazard analysis identified these lines as being at risk from El Niño
  - Both lines are located on the same towers, creating risk of simultaneous outage
  - Towers located in hilly terrain where landslides caused by heavy rainfall create heightened risks
  - The Santa Barbara System is geographically isolated from the rest of SCE’s service area, which limits SCE’s ability to deliver power through alternate routes
  - Existing back-up power sources are not adequate to serve the entire area
La Conchita Landslides

- 1995 – No deaths
- 2005 – 10 deaths


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SCE’s Santa Barbara Approach

- Assessed transmission corridor for landslide risk areas
- Inspected towers and conducted preventative maintenance
- Implemented pre-storm preventive mitigation including sandbags, berms, plastic sheeting and tying footings together
- Created a backup plan to replace the entire 250 MW winter peak load in the event of transmission line loss
Potential Impacts if 220 kV Transmission Lines are Lost

If an outage of both lines were to occur, all 82,700 metered customers in South Santa Barbara County would lose power until emergency electrical power could be delivered to the area.

Service disruption would initially affect all customers, including critical services (e.g. hospitals, schools, universities, traffic lights and street lights).

Rolling blackouts would then follow until repairs could be made.

A rain-induced landslide could limit access for transmission line/tower repair or replacement for up to several weeks.
Pre-planning vs. Emergency Deployment of Generation

**Challenges**

- Emergency exemptions do not apply
- Permits, regulatory approvals and standard filings are required
- Would the installation be a “Stationary Source?”

**Benefits**

- Sufficient time for planning, equipment procurement and installation
- Lag time until electrical service would be fully restored reduced from weeks to hours
Generator Siting Issues

- Space
- Surrounding land uses
- Generation type
- Fuel type
SCE Deployment Locations

- Gaviota Substation
- Goleta Substation
- Isla Vista Substation
Goleta Substation

- 24 - 2 MW diesel generators
- Agricultural area w/ scattered homes
Gaviota Substation

- 6 - 2 MW diesel generators
- 5 - 1.5 MW diesel generators
- Industrial area, adjacent oil infrastructure
Isla Vista Substation

- 6 - 2 MW diesel generators
- Residential development on two sides
Regulatory Agency Meetings

- State Agencies
  - California Air Resources Board

- Regional
  - Santa Barbara County:
    - Office of Emergency Management
    - Air Pollution Control District
    - Office of Planning & Development
    - Fire Department
  - City of Goleta
  - City of Santa Barbara Fire Dept.
Air Quality Permitting Determinations

- No local air permits required
  - Santa Barbara APCD specific rules
- Federal PSD, NSR, Title V, NSPS, NESHAPs, MACT and “Stationary Source” definitions do not apply
- If >50 MW at a site, CEC and CPUC approval may have been needed
Portable Equipment Registration Program (PERP) Issues

- Tier 4 vs. “flex engines”
- Out-of-state engines require PERP registration to test
- Engines cannot be used for “power production into the grid, except to maintain grid stability during an emergency event or other unforeseen event that affects grid stability”
- Engines in the aggregate may not interfere with the attainment or maintenance of any CA or Federal ambient air quality standard

Source: Cummins, Power topic #9010 | Technical information from Cummins Power Generation (11/10)
Other Permits & Filings

- Coastal Development Permit
  - California Environmental Quality Act (CEQA)
  - Noise
- Fire Code (NFPA, CFC)
- Fire Prevention Plan
- SPCC
- SWPPP
- Hazardous Materials Business Plan
Health Risk Assessment

- California has two regulations that require HRAs of toxics in various circumstances:
  - AB2588 – an Assembly Bill adopted in 1987
  - Proposition 65 – Statewide Ballot Initiative in 1986

- AB2588 is required for permitting new sources and on-going reporting requirements
  - No permitting, so AB2588 did not apply

- Prop 65 requires notifications for potential exposure => needed to be addressed
Proposition 65 Regulation

- **Safe Drinking Water and Toxics Enforcement Act of 1986** -- Prohibition on contaminating drinking water

- Requires warning before exposure to a list of >900 chemicals known to the State of CA to cause:
  - Cancer
  - Reproductive toxicity

- Prop 65 allows for civil penalties up to $2,500/day per violation; >$1MM per year

- Prop 65 most recently amended in September 2016
Proposition 65 Requirements

- No person in course of doing business (10 or more employees)
  - Shall knowingly and intentionally expose any individual
  - Must give *clear and reasonable warning* to such individual, unless the exposure poses *no significant risk*
- Cancer risk threshold of 10 in a million
- Prop 65 “safe harbor” levels have been established – No Significant Risk Levels (NSRLs) and Maximum Allowable Dose Levels (MADLs)
- Somewhat different than AB2588 Acute and Chronic Hazard Indices
Manufacturers’ equipment data sheets obtained for each of the generator models

Particulate emissions were modeled as a surrogate for Diesel Particulate Matter (DPM)

All potential toxics (TACs) modeled, not just DPM

Many TAC emissions factors outdated or unavailable

- When TAC factors not available, used NSRLs and MADLs developed based on a literature review for a prior study
- Recent diesel fuel analyses were used to calculate SO₂, Hg, Pb, and Cd factors
Project Modeling Methodology

- AERMOD and HARP2 used per OEHHA 2015 Guidance
- The individual DPM constituents (Cd, Cr\(^{+6}\), Pb) evaluated for the reproductive endpoint
- Assessed on-site worker, residential and off-site worker risks
  - Cancer Risk (adjusted to account for short exposure period)
  - Reproductive Risk, including MADLs
  - Acute and Chronic Hazard Risk (AB2588)
Risk Notifications

- Published notifications in two newspapers in English & Spanish
- Supplemented with individual letters to sensitive receptors such as schools
- Risk isopleths determined for each substation
- Mailed letters to all addresses where potential impacts might occur
Proposition 65 Newspaper Warning Elements

- Noted the El Niño prediction and SCE taking extra actions to prepare for the possibility of outages
- Explained backup diesel generators being staged at substations to provide temporary power in the event of an emergency
- Identified that diesel exhaust contains chemicals known to CA to cause cancer, birth defects & other reproductive harm, including gases & fine particles
- Notifications done in compliance with Prop 65
Actual Rainfall in 2015-2016

Santa Barbara - Annual Rainfall (Stn # 234)
1900 - 2016
(Mean Annual Rainfall = 18.33 inches)

The End Result

- Rainfall was less than average, and no outages occurred
- Except for testing, the engines were not operated and hence no exposures occurred
- Removal of Engines Delayed due to Nesting Birds!
Conclusions

- There are advantages and disadvantages to pre-planning vs. emergency deployment
- A careful regulatory review is important, since regulations like Proposition 65 may not normally need to be dealt with
- Meet with agencies to minimize surprises
- Even in California, the weather can be unpredictable
- Even with careful planning, little things (like a bird’s nest) can create big problems
Questions?

Thank you!

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