PMAPS MANCHESTER 1824 2022

Climate Adaptation in Transmission Planning

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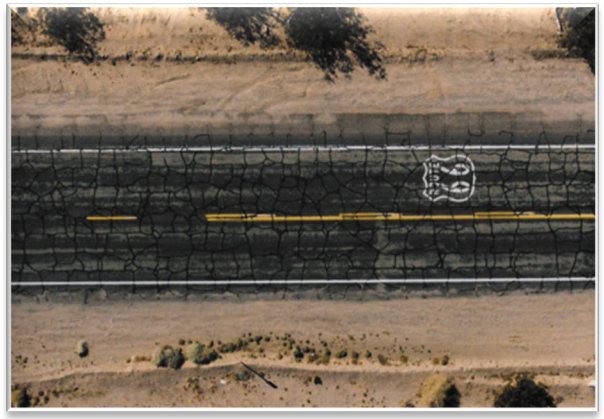
Outline

- CAVA Analytical Framework
- Vulnerable and At-Risk Assets due to Climate Hazards
- Potential Adaptations Strategies
- Findings and Next Steps

Climate Exposure Trends and Potential Impacts on the Electrical System



Extreme Heat

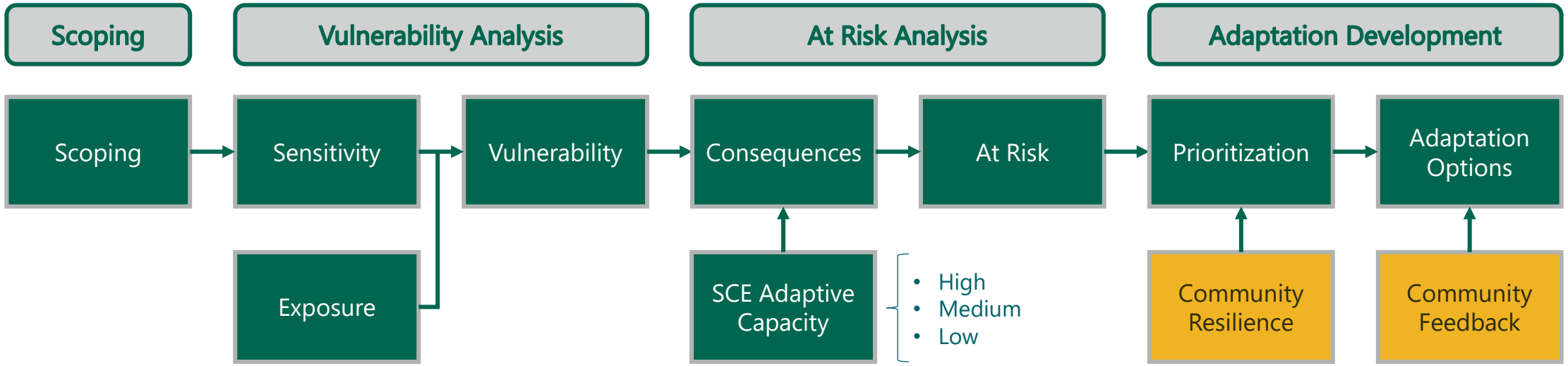
Wildfire

Precipitation

Sea Level Rise

Cascading Events

Climate Adaptation Vulnerability Assessment (CAVA) Analytical Framework

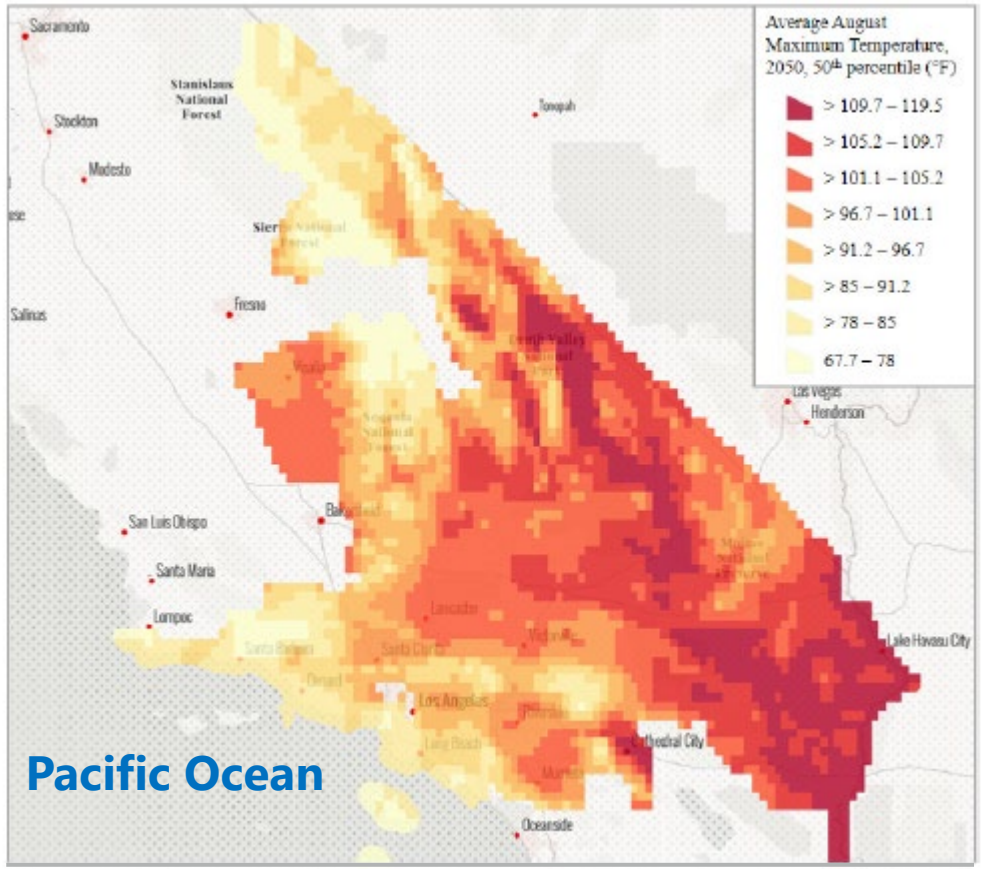


CAVA Analysis

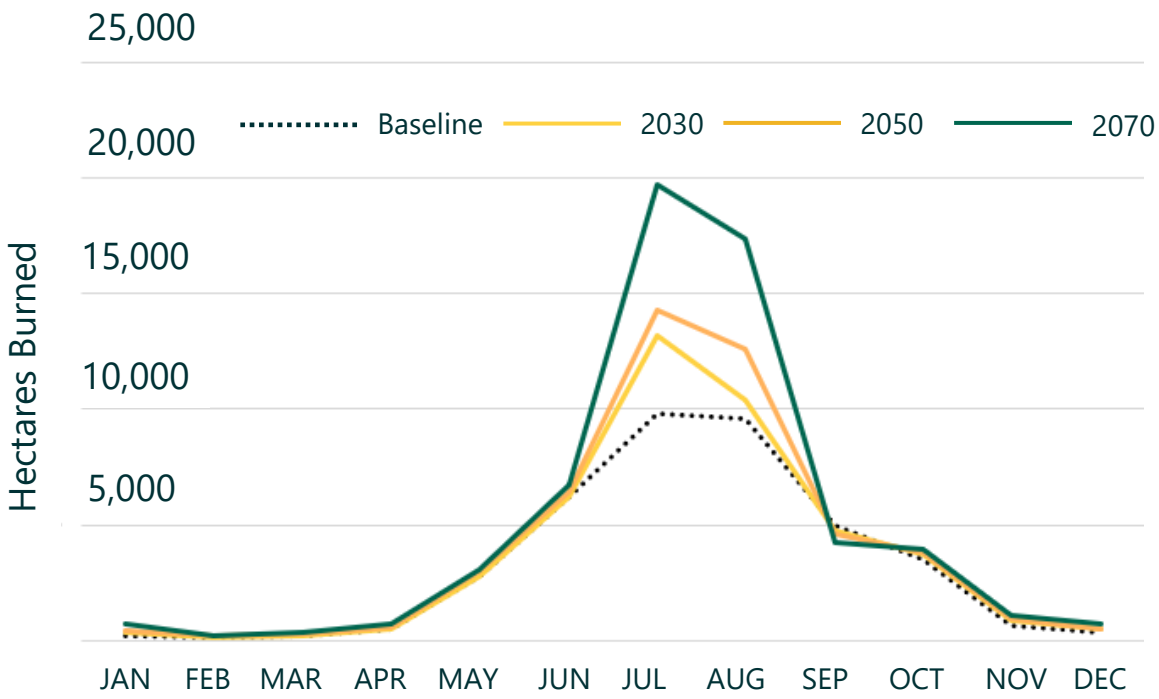
Post-CAVA Integration

Temperature and Wildfire Projections

Average August Maximum Temperature 2050, 50th Percentile



Average Hectares Burned by Month, Baseline - 2070



Vulnerable and At-Risk Assets due to Extreme Temperature and Wildfire

Climate Hazard	Assets	Results
Extreme Temperature	Transmission Overhead Power Lines (500 kV & 220 kV)	64 of 268 (24%) transmission circuits **vulnerable** to Extreme Temperature by 2050
		19 out of 64 vulnerable transmission circuits **at-risk of consequence** by 2050
Wildfire	Transmission Overhead Power Lines (500kV & 220 kV)	69 of 268 (26%) transmission circuits **vulnerable** to Extreme Temperature by 2050
		5 out of 33 transmission corridor outage scenarios **at-risk of consequence** by 2050

Vulnerable and At-Risk Assets due to other Climate Hazards

Climate Hazard	Assets	Results
Precipitation & Flooding	Transmission Substations (500 kV & 220 kV)	10 of 89 transmission substations **vulnerable** of 100-year flood plain
		3 out of 10 vulnerable transmission substations **at-risk of consequence** due to flooding
Sea Level Rise	Transmission Substations (500 kV & 220 kV)	5 transmission substations **vulnerable** to sea level rise event with 100-year coastal storm
		0 out of 5 vulnerable transmission substations **at-risk of consequence** due to sea level rise
Debris Flow	Transmission Substations (500 kV & 220 kV)	9 out of 89 transmission substations **vulnerable** to debris flow
		2 out of 9 vulnerable transmission substations **at-risk of consequence** due to debris flow

Potential Adaptations Strategies

Climate Hazard	Potential Risk	Potential 2025-2028 Adaptation Strategies
Wildfire	Transmission Outages	• Increased inspections, vegetation management, and tower clearing to reduce likelihood of fire damage • Expand remote inspection technology (e.g., satellite imagery)
Precipitation/ Flooding	Substation Outages	• Construction of floodwalls to reduce likelihood of flood related outages
All	Climate Science Gaps	• Studies to better understand nature of climate risk in areas of highest impact to SCE AOS

Key Findings

- SCE's CAVA identifies both near-term and longer-term climate change driven physical risks to its assets, operations, and services.
- The assessment identifies potential near-term adaptation options that could be implemented prior to 2030 to address these near-term climate change risks.
- Regulatory coordination is needed in the load forecast to reflect impacts of both climate change and future electrification beyond 2030 to inform future transmission investments.
- Climate science needs to continue to evolve so it can address electric utilities' risk and planning needs.

Next Steps

- Future vulnerability assessments will incorporate the latest and best available climate science to provide better insights for SCE to use in planning and refining its climate adaptation strategies.
- Future assessments will incorporate the impact of climate change on current infrastructure planning programs' scope and budgets.
- Continue engagement with vulnerable communities and increase transmission resiliency.

Questions

References

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