

Substation Thermal and Electrification Load-model (STEEL)

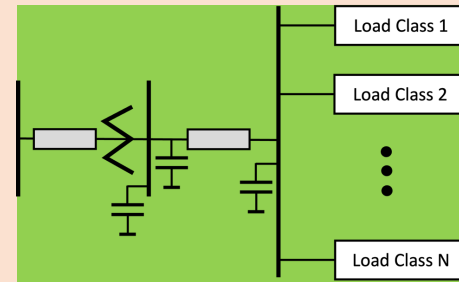
Team STEEL, Principal: Dr. Bernie Lesieutre

Goal: Generate Substation and Feeder Load Profiles

- Include Weather Sensitivities
- Estimated Electrification

Impact: Improve Resiliency to Extreme Weather Events and Prepare for Trends in Electrification of Energy.

Approach: Mirror WECC Composite Load Model Structure



The number of distinct load classes is determined from analysis of data.

Map to WECC Composite Load Model

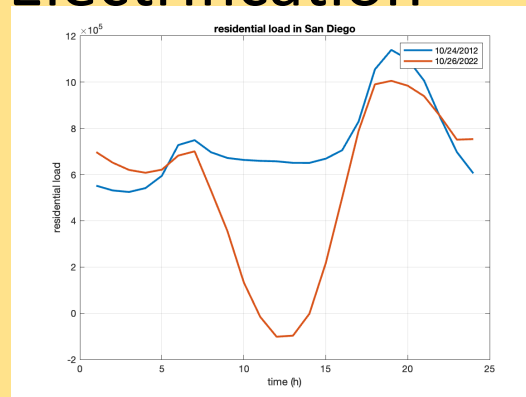
Develop dynamic weather-sensitive models for each load class:

- Physics-based model structure
- Performance-based model/machine learning

Goal: Estimate Level of Electrification

- Electric Vehicles
- Electric Heating/Cooling
- Electric Appliances
- Solar Power

Use historic load data to identify trends in electrification



Increased Solar Generation

TEAM STEEL: Dr. Lesieutre

- Expert in Load Modeling, Long-term contributor to NERC LMTF, WECC LMTF and MVS
- Expert in analysis of large-scale power system data
- Expert in programming: developer of a real-time system monitoring system using streaming PMU data
- Professor, IEEE Fellow

