

Southern California Edison
***WSD-001 – Resolution WSD-001 to Establish Procedures for the Wildfire Safety Division's
Review of 2020 Wildfire Mitigation Plans Pursuant to PUC Sections 8386 and 8386.3***

DATA REQUEST SET W S D - S C E - 0 0 2

To: WSD
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Job Title: Senior Advisor – Enterprise Risk Management
Received Date: 3/5/2020

Response Date: 3/10/2020

Question 051 (SCE-43895-D-443):

A. Item Index [For CPUC tracking purposes. Please reference this item index with the response provided.]

SCE-43895-D-443

B. Request Type

Request for additional specificity or clarification regarding information submitted in WMP or maturity survey

C. Relevant section of WMP (if applicable)

5.3.2 Situation Awareness and Forecasting

D. Relevant question in Maturity Survey (if applicable)

NA

E. Relevant meeting or call (if applicable)

NA

F. Specific Data request

Provide a complete event set for any Monte-Carlo fire simulations with a log of input conditions and both fire domain and risk-exposure metrics.

Response to Question 051 (SCE-43895-D-443):

SCE interprets this data request to mean provide the data inputs and fire simulation information used to develop REAX scores for locations within High Fire Threat Districts (HFTD) in SCE's service territory.

REAX engineering developed a 20-year (1999-2018) fire weather climatology using a Weather Research and Forecasting (WRF) model to recreate historical days of fire weather significance across SCE's service territory. REAX identified 900 fire weather days, which were later distilled to the most severe 40 days for a given location within SCE's service territory. Based on this data, REAX engineering developed high-resolution (2 km) hourly gridded fields of relative humidity, temperature, dead fuel moisture, and wind speed/direction as inputs to a Monte Carlo-based fire modeling analysis.

REAX engineering conducted fire modeling within CPUC HFTD in SCE's service territory with the addition of a ½ mile buffer. In this fire modeling analysis, REAX engineering randomly distributed hundreds of thousands of ignitions within a 100 m buffer surrounding SCE's overhead facilities. For each ignition location, one of the days from fire weather climatology described above was also selected randomly. For each combination of ignition location and time of ignition, fire progression was modeled for 6-hours. For each modeled fire, potential impacts to structures were quantified using structure density data from the 2010 Census. Fire area and fire volume (spatial integral of fire area and flame length) were also tabulated and recorded. This process was repeated across SCE's service territory for hundreds of thousands of combinations of ignition location and time of ignition.

Outputs from this Monte Carlo fire modeling analysis were post-processed to quantify risk as the product of probability and consequence. Fire volume is used here as a proxy for probability because rapidly spreading fires are more likely to escape initial containment efforts than slowly developing fires. Consequence (or impact) is quantified as the number of structures within a modeled fire perimeter. To limit the order of magnitude of risk scores to $\sim 10^4$, risk was calculated as $0.001 \times \text{fire volume} \times \text{impacted structures}$.

While SCE does not have access to the underlying weather and vegetation data used to develop these REAX scores, SCE can provide the model outputs from this analysis, along with a corresponding description of these outputs:

- "fire_area.tif" Fire area (acres) at 30 m resolution
- "fire_area_smoothed.tif" Fire area (acres) at 30 m resolution with smoothing kernel
- "fire_area_300m.tif" Fire area (acres) resampled to 300 m resolution
- "fire_area_1000m.tif" Fire area (acres) resampled to 1000 m resolution
- "fire_volume.tif" Fire volume (acre-ft) at 30 m resolution
- "fire_volume_smoothed.tif" Fire volume (acre-ft) at 30 m resolution with smoothing kernel
- "fire_volume_300m.tif" Fire volume (acre-ft) resampled to 300 m resolution
- "fire_volume_1000m.tif" Fire volume (acre-ft) resampled to 1000 m resolution
- "impacted_structures.tif" Number of impacted structures at 30 m resolution
- "impacted_structures_smoothed.tif" Number of impacted structures at 30 m resolution with smoothing kernel
- "impacted_structures_300m.tif" Number of impacted structures resampled to 300 m resolution
- "impacted_structures_1000m.tif" Number of impacted structures resampled to 1000 m resolution
- "structure_risk.tif" Product of fire volume and impacted structures at 30 m resolution
- "structure_risk_smoothed.tif" Product of fire volume and impacted structures at 30 m resolution with smoothing kernel
- "structure_risk_300m.tif" Product of fire volume and impacted structures resampled to 300 m resolution
- "structure_risk_1000m.tif" Product of fire volume and impacted structures resampled to 1000 m resolution