Southern California Edison
2023-UPS – 2023-UPS

DATA REQUEST SET E S - D R - E U P - 2 4 - 0 4

To: Energy Safety
Prepared by: Kyle Ferree
Job Title: Senior Advisor
Received Date: 7/5/2024

Response Date: 7/15/2024

Question 01.a-n:
Please provide information requested as it pertains to Electrical Undergrounding Plan (EUP) reliability modeling.

Below are several scenarios for a limited model of Outage Program Risk. For each scenario, please comment on the expected time it would take SCE to develop the model and any major concerns with using said model for EUP purposes. For each case, if there is a significant difference in the difficulty of performing the separate, collective, and ablation analyses, please specify which analyses are more difficult and why. If there is a difference at the system and portfolio level for any of the listed scenarios, please explain why. If there are any significant differences in the development of the PSPS (Public Safety Power Shutoff) and Fast Trip models and settings for any scenario, please indicate which cases and explain why.

a. A model that examines a mitigation on a single isolatable circuit segment at a time and computes likelihoods of PSPS/Fast Trip activation and the consequences of PSPS/Fast Trip activation to customers on that segment alone based purely on back casting historical data.
b. The same as (a) but using projected weather/climate factors.
c. A model that examines a single mitigated isolatable circuit segment at a time and computes likelihoods of PSPS/Fast Trip activation being called on that isolatable circuit segment and the consequences of PSPS/Fast Trip activation on that isolatable circuit segment and 'downstream' customers based purely on back casting historical data.
d. The same as (c) but using projected weather/climate factors.
e. Same as (a), but also includes likelihood of the segment being de-energized due to a PSPS/Fast Trip activation event on an upstream circuit segment.
f. Same as (e) but using projected weather/climate factors.
g. Same as (c), but also includes likelihood of the segment being de-energized due to an upstream PSPS/Fast Trip activation event.
h. Same as (g) but using projected weather/climate factors.
i. Same as (e) but also considering all other proposed EUP Projects.
j. Same as (f) but also considering all other proposed EUP Projects.
k. Same as (g) but also considering all other proposed EUP Projects.
l. Same as (h) but also considering all other proposed EUP Projects.
m. A model with similar levels of granularity, specificity, and accuracy as the WDRM (Wildfire Distribution Risk Model)
n. Is there a modeling gap between Scenario (l) and (m)? If so, please explain what factors or features are absent in scenario (l).

Response to Question 01.a-n:
SCE has not taken steps to develop these new models and does not wish to speculate on the time and effort required. SCE does not currently plan to participate in the EUP process and therefore cannot speak to concerns with using the models for that purpose.

Southern California Edison
2023-UPS – 2023-UPS

DATA REQUEST SET E S - D R - E U P - 2 4 - 0 4

To: Energy Safety
Prepared by: Kyle Ferree
Job Title: Senior Advisor
Received Date: 7/5/2024

Response Date: 7/15/2024

Question 02. a-i:
Please provide information requested as applicable as it pertains to hybrid projects.

a. In PG&E's May 29th, 2024 comments on draft guidelines, PG&E described a "hybrid" approach or "hybrid distribution hardening" as "a circuit segment that is hardened using a combination of covered conductor, undergrounding, and/or line removal with remote grid" Please confirm whether or not SCE has similar recommended definitions or provide a corresponding SCE-specific definition with any changes.

b. Does SCE have a similar approach where a circuit segment is hardened using a combination of covered conductor, undergrounding, and/or line removal with remote grid?

c. In SCE's aggregation of potential hybrid distribution hardening, is there a definitive list of alternative mitigations that could potentially be included in a designated percentage of non-undergrounding work?

d. Can SCE elaborate on how and why a circuit segment would become a hybrid distribution hardening project? Please explain the process of scoping a such a project and provide an example that illustrates how and why other mitigations were chosen over undergrounding.

d1 Is the reason for using an alternative mitigation always due to a better cost/risk performance, a physical limitation (such as a river crossing or granite), a combination of both, or some other factor? Please explain.

d2 Is there a distinction between how an alternative mitigation will be reported on the EUP if the alternative mitigation is included because of cost/risk performance versus a physical limitation?

e. Provide a .xlsx document that details undergrounding and "hybrid" projects from a recent workplan(s) covering at least 3 years of planned work. Provide the name of the planning document(s) and the years it covers. For each isolatable circuit segment included in the workplan(s) report information in the table below.

f. Provide a general cost comparison, per mile replaced, of each individual mitigation option (e.g. underground, covered conductor, other).

g. For the anticipated projects, how many isolatable circuit segments are typical on a given circuit?

h. Are there instances of planned projects in which only a portion of the circuit segment is undergrounded without required overhead hardening work or wildfire mitigation improvements on the remainder of the overhead section(s) of the circuit segment?

i. Provide specific details and examples on how seeking rate recovery through an alternate regulatory process, such as the GRC, for non-undergrounded portions would affect an undergrounding project. Is there a potential for construction delays, and if so, how long would these delays last? Are there scenarios where SCE would have to return to a circuit segment to construct overhead hardening portions separately?

Field Name	Description	Unit/Datatype
Total Circuit Segment Miles	Length of isolatable circuit segment before mitigation	Miles
Total Constructed Miles	Number of miles of new infrastructure to be energized	Miles
Total Miles Undergrounded	Number of miles of underground infrastructure to be energized	Miles
Overhead Removed	Number of miles of overhead line deenergized upon completion	Miles
Covered Conductor Installed	Number of miles of covered conductor to be installed	Miles
Other Mitigations	Provide brief description of other mitigation efforts or devices installed that are associated with this project	Text
Justification for Alternative Mitigation	Provide brief description for each hybrid project including the reason undergrounding is not used on entire circuit segment and alternative mitigations are chosen (e.g. better cost/risk performance, physical limitations, or any other reasons).	Text
Other Mitigations Miles	Add a field for each alternative mitigation to be used and indicate the number of miles of overhead line it will be applied to or replace	Miles
Total Un-Mitigated Circuit-Miles on Circuit Segment	Number of miles of original, un-mitigated, circuit segment line after completion of project	Miles
Subprojects	Number of total subprojects created within this Project.	Integer
Underground Subprojects	Number of undergrounding subprojects	Integer
Covered Conductor Subprojects	Number of covered conductor subprojects	Integer

Other Mitigation Subprojects	Add a field for each alternative mitigation to be used and indicate the number of subprojects associated with it	Integer
Secondary Lines	Will secondary distribution lines be undergrounded as part of this project?	Boolean
Service Lines	Will service lines be undergrounded as part of this project?	Boolean
Fast Trip Settings	Will Fast Trip settings be added to this circuit segment?	Boolean

Response to Question 02. a-i:

a. Because SCE is not planning to participate in the EUP process, we do not have a recommendation for the definition of hybrid projects.
b. Notwithstanding SCE's plans to not participate in this process, SCE's hardening strategy treats a single circuit segment (poles) with targeted undergrounding (TUG) or covered conductor (WCCP), not both. If TUG and WCCP projects are in close proximity or even on the same overall circuit, they would be scoped, designed and constructed as separate projects.
c. See answer to Q02.b. SCE does not have "hybrid" projects as described in question 2a.
d. See answer to Q02.b. SCE does not have "hybrid" projects as described in question 2a.
e. See answer to Q02.b. SCE does not have "hybrid" projects as described in question 2a.
f. See answer to Q02.b. SCE does not have "hybrid" projects as described in question 2a.
g. See answer to Q02.b. SCE does not have "hybrid" projects as described in question 2a.
h. See answer to Q02.b. SCE does not have "hybrid" projects as described in question 2a.
i. See answer to Q02.b. SCE does not have "hybrid" projects as described in question 2a.

Southern California Edison
2023-UPS – 2023-UPS

DATA REQUEST SET ES-D R - E U P - 2 4 - 0 4

To: Energy Safety
Prepared by: Kyle Ferree
Job Title: Senior Advisor
Received Date: 7/5/2024

Response Date: 7/15/2024

Question 03. a-h:
Please provide information requested as it pertains to SCE subprojects.

a. Based on SCE's February 13, 2024 DR-EUP-24-01 response, "sub-projects" are established in the Project Initiation Form (PIF) in the initiation phase of SCE's Timeline of Undergrounding Work . For the purposes of this program, is there a requirement that every subproject consists of line undergrounding or an alternative mitigation? Is it possible that a subproject would only include line maintenance, equipment replacement, or other line improvements that may not, by themselves, be considered a wildfire mitigation alternative?
b. Would all undergrounding work within a project, one isolatable circuit segment, be consolidated into a single subproject, or could there be multiple undergrounding subprojects within a single circuit segment?
c. Would a subproject always consist of one contiguous line segment, or could a subproject include multiple, disconnected sections? For example, could one subproject consist of covered conductor installation on miles 2-3, and miles 6-7 of a circuit segment?
d. In a subproject, which has a continuous section to be undergrounded, would it be likely (or even possible) that this continuous undergrounded section would be broken into subproject(s)? If so, is there a minimum or maximum length of the subproject?
e. In a "hybrid project," which has discontinuous sections to be undergrounded, would each of the discontinuous undergrounded portions always be recorded as a separate subproject?
f. Would there be cases where "hybrid projects" would be created? For example, could one subproject have 4 miles of undergrounding and 1 mile of covered conductor on a 10-mile circuit? Alternatively, would this hypothetical project be split into multiple subprojects based on mitigation type?
g. Provide details on how risk apportioning is handled for a project with multiple mitigation types. Is the apportionment assigned before or after normalization? Does SCE combine the risk reduction and reliability improvements for each mitigation separately from each other? Can SCE provide normalized values per mile for each mitigation before blending into overall circuit segment values?
h. Does SCE anticipate any problems with reporting the subprojects with respect to the Cost-Benefit Analysis defined through CPUC proceeding R.20-07-013?

Response to Question 03. a-h:
a. SCE notes that its response to DR-EUP-24-01 does not reference sub-projects and we apologize for any confusion caused. In common practice, SCE develops a Project Initiation Form (PIF) for one type of mitigation (e.g., undergrounding or covered conductor, etc.). The

PIF could be broken up into smaller work orders (TDs), which may be similar to what is described as "sub-projects". Typically, those TDs in the same PIF will be one type of mitigation.

b. See Q03.a.
c. See Q03.a.
d. See Q03.a.
e. See Q03.a.
f. See Q03.a.
g. See Q03.a.
h. See Q03.a.

Southern California Edison
2023-UPS – 2023-UPS

DATA REQUEST SET E S -D R - E U P - 2 4 - 0 4

To: Energy Safety
Prepared by: Kyle Ferree
Job Title: Senior Advisor
Received Date: 7/5/2024

Response Date: 7/15/2024

Question 04. a-b:
Please provide information requested as it pertains to SCE project and sub-project IDs.

a. Suppose an isolatable circuit segment currently has an undergrounding project planned for development on it. If this isolatable circuit segment is modified, for example by installation of a new device which splits it into multiple isolatable circuit segments, how does SCE track the Project which previously was slated for installation?

a1 Does the project become split into multiple new projects?

a2 Do the subprojects inside that isolatable circuit segment get renamed, redeveloped, reassigned, or otherwise changed?

a3 How would the above change if an Isolatable Circuit Segment was modified in some other substantial way, e.g. by new construction, removal of a recloser, or substantial restructuring of the Isolatable Circuit Segment?

b. Does completing an undergrounding project ever cause a change to the underlying Circuit Protection Zones, i.e. change the customers and/or general geographic area served by the Isolatable Circuit Segment, either by splitting the Circuit Protection Zone into multiple new Circuit Protection Zones or by otherwise changing the topology?

b1 If so, how frequently does this cause a change of this type, e.g. every time, most times, rarely, never? What factors affect the likelihood of this type of change?

b2 Do the answers to either of the questions in c1 change when we distinguish between fully undergrounding (100% UG), "hybrid" projects (>80% UG), and other projects (<80% UG)?

Response to Question 04. a-b:

a. This scenario seems unlikely based on SCE's experience. SCE has not witnessed such an occurrence because once targeted undergrounding is selected as the mitigation for a portion of a circuit, other mitigations that restructure the circuit generally are not separately scoped.
b. SCE does not have circuit protection zones.