

**PUBLIC ADVOCATES OFFICE DATA REQUEST:
CALADVOCATES-SDGE-2023WMP-07
SDG&E RESPONSE**

**Date Received: April 5, 2023
Date Submitted: April 10, 2023**

GENERAL OBJECTIONS

1. SDG&E objects generally to each request to the extent that it seeks information protected by the attorney-client privilege, the attorney work product doctrine, or any other applicable privilege or evidentiary doctrine. No information protected by such privileges will be knowingly disclosed.

2. SDG&E objects generally to each request that is overly broad and unduly burdensome. As part of this objection, SDG&E objects to discovery requests that seek “all documents” or “each and every document” and similarly worded requests on the grounds that such requests are unreasonably cumulative and duplicative, fail to identify with specificity the information or material sought, and create an unreasonable burden compared to the likelihood of such requests leading to the discovery of admissible evidence. Notwithstanding this objection, SDG&E will produce all relevant, non-privileged information not otherwise objected to that it is able to locate after reasonable inquiry.

3. SDG&E objects generally to each request to the extent that the request is vague, unintelligible, or fails to identify with sufficient particularity the information or documents requested and, thus, is not susceptible to response at this time.

4. SDG&E objects generally to each request that: (1) asks for a legal conclusion to be drawn or legal research to be conducted on the grounds that such requests are not designed to elicit facts and, thus, violate the principles underlying discovery; (2) requires SDG&E to do legal research or perform additional analyses to respond to the request; or (3) seeks access to counsel’s legal research, analyses or theories.

5. SDG&E objects generally to each request to the extent it seeks information or documents that are not reasonably calculated to lead to the discovery of admissible evidence.

6. SDG&E objects generally to each request to the extent that it is unreasonably duplicative or cumulative of other requests.

7. SDG&E objects generally to each request to the extent that it would require SDG&E to search its files for matters of public record such as filings, testimony, transcripts, decisions, orders, reports or other information, whether available in the public domain or through FERC or CPUC sources.

8. SDG&E objects generally to each request to the extent that it seeks information or documents that are not in the possession, custody or control of SDG&E.

9. SDG&E objects generally to each request to the extent that the request would impose an

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undue burden on SDG&E by requiring it to perform studies, analyses or calculations or to create documents that do not currently exist.

10. SDG&E objects generally to each request that calls for information that contains trade secrets, is privileged or otherwise entitled to confidential protection by reference to statutory protection. SDG&E objects to providing such information absent an appropriate protective order.

II. EXPRESS RESERVATIONS

1. No response, objection, limitation or lack thereof, set forth in these responses and objections shall be deemed an admission or representation by SDG&E as to the existence or nonexistence of the requested information or that any such information is relevant or admissible.

2. SDG&E reserves the right to modify or supplement its responses and objections to each request, and the provision of any information pursuant to any request is not a waiver of that right.

3. SDG&E reserves the right to rely, at any time, upon subsequently discovered information.

4. These responses are made solely for the purpose of this proceeding and for no other purpose.

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The following questions relate to your 2023-2025 WMP submission, unless indicated otherwise.

Vegetation Management (VM)

QUESTION 1

SDG&E's 2022 WMP stated that a planned enhancement for Initiative 7.3.5.2 ("Detailed inspections and management practices for vegetation clearances around distribution electrical lines and equipment") was to "Explore the use of the WiNGS-Planning risk model to evaluate the effectiveness of vegetation management operations risk models to support future prioritization and implementation of tree trimming."¹ There is no mention of this sort in SDG&E's 2023 WMP submission.

- a) Did SDG&E conduct the above-mentioned exploration in 2022?
- b) If the answer to subpart (a) is "yes," please provide SDG&E's conclusions regarding the use of the WiNGs-Planning risk model for the abovementioned purpose.
- c) If the answer to subpart (a) is "no," please explain why not.
- d) If the answer to subpart (a) is "no," does SDG&E plan to conduct the abovementioned exploration?
- e) If the answer to subpart (d) is "yes," please state when SDG&E intends to do so.

RESPONSE 1

SDG&E objects to the request on the grounds set forth in General Objections 3 and 9. Subject to and without waiving the foregoing objections, SDG&E responds as follows:

- a) Yes, SDGE evaluated the application of WiNGS-Planning risk model for the user case of prioritizing vegetation operational activities.
- b) The conclusion is that WiNGS Planning model alone is not the best approach for identifying the trees or vegetation management areas that need to be prioritized for routine or non-routine inspections or tree trims, nor is it the best approach for informing relative risk for trees at the asset or circuit section.

The purpose of the WiNGS Planning model is to identify the best deployment of underground and covered conductor for long term risk strategy. The WiNGS-Planning model includes limited

¹ SDG&E's 2022 WMP, p. 286.

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vegetation inventory data points for identifying trees with strike potential based including tree height, which is one of variables to the system during extreme weather conditions.

To predict where tree risks and hazard conditions are more likely to occur, annual tree inspection and tree trimming records are the key data inputs to train the machine learning model. Vegetation management mitigates all observed hazardous conditions impacting the electrical system, and trees identified with an urgent condition are prioritized for the tree trimming or removal activities.

Therefore, SDGE's conclusion is that the independent model developed by Logic20/20 that incorporates attributes collected from operational activities is a superior approach to determine the prioritization and implementation of tree trimming. See response in Question 3 for additional details regarding this model. The first iteration of such an independent model was completed in 2022.

c) N/A

d) N/A

e) N/A

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QUESTION 2

SDG&E’s 2022 WMP stated regarding initiative 7.3.5.16 (“Removal and remediation of trees with strike potential to electric lines and equipment”) (hereinafter “this initiative”), SDG&E plans to further evolve this program over the next 10 years by leveraging enhanced VRI and WiNGS-Planning modeling data to develop a more strategic approach to identify areas of high risk and prioritization of mitigation efforts. SDG&E will also utilize LiDAR to improve its assessment of hazard trees.²

- a) Does the above statement still represent SDG&E’s plans for this initiative?
- b) If the answer to subpart (a) is “no,” please describe how SDG&E’s plans for this initiative have changed since February 2022.
- c) If the answer to subpart (a) is “yes,” please provide SDG&E’s progress to date on implementing the plans described in the quote above.

RESPONSE 2

- a) Yes. However, as mentioned in 1 b), SDG&E anticipates that the independent model that is designed to incorporate all tree related attributes and additional environmental attributes is a superior approach to assess trees with strike potential. Once such a model is established, vegetation management does not rule out use of the application of WiNGS Planning model when it needs to prioritize segments within the risk areas indicated by the independent model. The overall risk or a particular risk score from the WiNGS Planning model might be considered during this risk-based decision-making process. SDG&E is still assessing the overall modeling and prioritization strategy of its vegetation management operations.
- b) N/A
- c) SDG&E provides progress for the development of independent vegetation contact risk model below.
 - *Vegetation Tree Contact Risk Model with the San Diego Supercomputing Center.* This model development leverages tree attributes collected from operational vegetation management activities and meteorology data such as wind gust and soil moisture in an effort to predict future vegetation contact given predicted weather conditions. The developers are currently integrating overhead conductors into the model and analyzing the model performance. SDG&E anticipates a first iteration of this model sometime near the end of 2023.

² SDG&E’s 2022 WMP, p. 300.

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- *LiDAR data implementation to enhance operational and vegetation contact risk modeling.*
SDG&E processed LiDAR data for 10 HFTD circuits in 2022 as proof of concept. In 2023, SDG&E is evaluating the methods and efforts to process the remaining circuits in the HFTD so that LiDAR data can be integrated into risk modeling. The timeline is not determined yet.

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QUESTION 3

SDG&E states on p. 6 of its 2023 WMP, “The Company [SDG&E] engaged a third-party to review the off-cycle schedule to determine whether there were advantages to modify the schedule based on a risk comparison of the Vegetation Management Areas (VMAs).”

- a) Please describe the scope, schedule, and methodology of the abovementioned third-party review.
- b) Please identify who conducted the abovementioned third-party review.
- c) When was the abovementioned third-party review completed?
- d) Please provide the results of the abovementioned third-party review.
- e) Please provide any documents generated from the abovementioned third-party review (e.g. reports, workpapers, etc.).
- f) Has SDG&E incorporated any findings or recommendations from the abovementioned third-party review into the methodology of its off-cycle patrol scheduling?
- g) If the answer to subpart (f) is “yes,” please describe how SDG&E has done so.
- h) If the answer to subpart (f) is “no,” please explain why not.

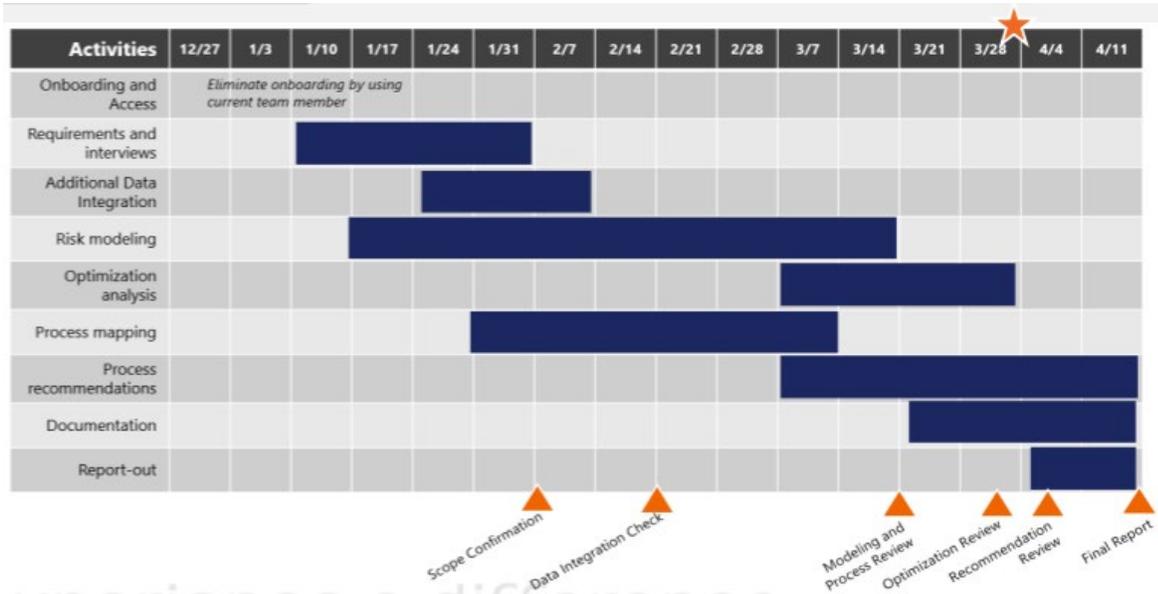
RESPONSE 3

a) Scope: The scope was to utilize historical vegetation management data (inspection and trimming inspection records) and produce a risk-based approach to better inform the timing of non-routine HFTD vegetation inspections. The analysis used historical vegetation activity data (inspections and trims) to generate influential variables that capture a tree’s characteristics, growth patterns, and past activity. The scores produced from the model were then used to aggregate the level of influential variables up to the VMAs or segments to generate a risk-based approach to scheduling.

Schedule: Below is the timeline and schedule that was used to deliver the work:

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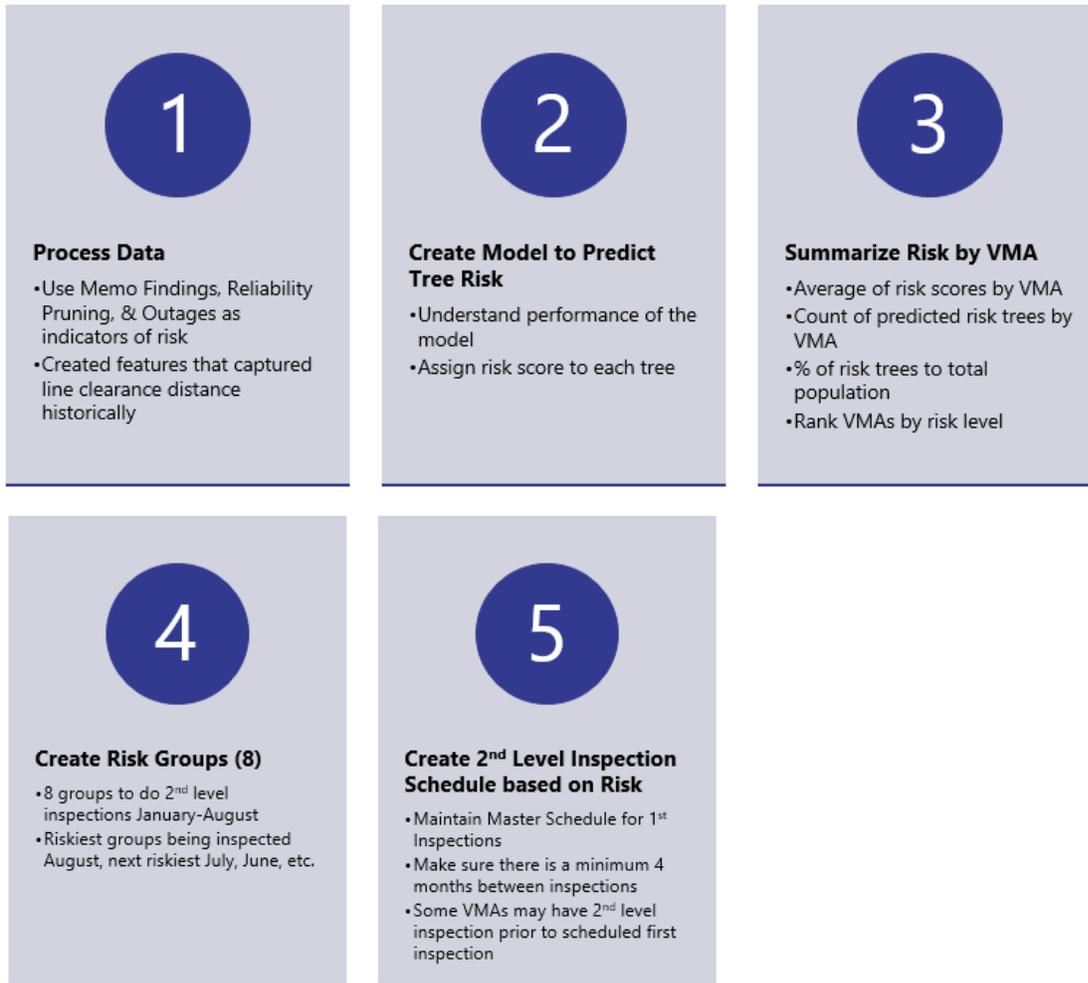
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Methodology: Below are the steps that were taken to deliver the analysis:

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b) Logic 20/20 is a business and technology consulting firm headquartered in Seattle, Washington.

c) The review was completed at the end of 2022.

d) Please see attachment titled, “SDGE_WMP-07 Q.3”.

e) Please see attachment titled, “SDGE_WMP-07 Q.3”.

f) Yes.

g) This was the first iteration of a predictive model to prioritize inspection schedules. SDG&E intends to incorporate some of the recommendations from this study beginning in 2023. SDG&E plans to conduct the off-cycle patrol activities in the higher risk-ranked VMAs closer to the start of peak fire season (September 1), and to schedule the remaining HFTD VMA patrols in the

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preceding months to create parity in the schedule and without conflicting with other Vegetation Management activities in those same months.

h) N/A

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QUESTION 4

SDG&E states on p. 252 of its 2023 WMP, “The fuels management activity³ is currently not included in this application [Epoch] at this time.”

- a) Why is the fuels management activity not included in the Epoch application?
- b) Could inclusion of fuels management activity in the Epoch application improve the activity’s efficacy?
- c) Does SDG&E intend to include fuels management activity in the Epoch application at a later date?
- d) If the answer to subpart (c) is “yes,” please specify when SDG&E intends to include fuels management activity in Epoch.
- e) If the answer to subpart (c) is “no,” please explain why not.

RESPONSE 4

SDG&E objects to the request on the grounds set forth in General Objections 3 and 9. Subject to and without waiving the foregoing objections, SDG&E responds as follows:

- a) The development of the PowerWorks work management system and Epoch preceded the inception of the fuels management program by several years and, therefore, was not originally designed to accommodate this activity. Doing so would require a substantial software upgrade to the work management system including the creation of new electronic work order types for this activity, the development of new electronic activity forms, development of new invoicing integrations, and additional system user credentialing of contractors not currently working in Epoch.
- b) The inclusion of the fuels management activity in the Epoch application alone would not necessarily improve the efficacy of this activity. It may help create efficiencies in this activity over time as the program grows, more pole structures are added to the population of work sites, and if/where repeated, annual work creates a maintenance cycle.
- c) SDG&E may explore the feasibility and potential benefits for future integration of this activity within Epoch, but has not yet decided if this is a necessary enhancement given the effort and potential cost.

³ Initiative WMP.497 as discussed in Section 8.2.3 in SDG&E’s 2023 WMP

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- d) SDG&E does not have a date at this time when this activity may be included in Epoch.
- e) See c) and d) above.

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QUESTION 5

SDG&E states on p. 252 of its 2023 WMP, “In general, a 15 percent sample [of vegetation management activities] is selected to be performed after activities are completed.”

- a) Please state the basis for choosing a sampling rate of 15 percent for vegetation management activities, as opposed to a higher sampling rate.
- b) Provide any supporting documentation for the choice of a 15% sampling rate, in the context referenced above.

RESPONSE 5

- a) SDG&E uses a 15% random rate as the baseline for auditing its vegetation management activities because it considers this an acceptable and representative sample of the population of completed work to reflect contractor performance. Vegetation management audit results do not yield a high percentage of fail rates that may otherwise inform of the need for a higher sample percentage rate, therefore, a 15% sample was selected. Increasing audit sample size for all activities would also require an increase in the number of audit resources at additional rate-payer expense.
- b) Please see SDG&E’s 2023-2025 Wildfire Mitigation Plan (<https://www.sdge.com/2023-wildfire-mitigation-plan>) , Table 8-18 on page 312 for audit result findings.

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QUESTION 6

SDG&E states on p. 252 of its 2023 WMP, “Vegetation Management performs a QA/QC audit (WMP.505) on a percentage of all activities. In general, a 15 percent sample is selected to be performed after activities are completed.”

- a) Please describe the procedure for the QA/QC audit that is performed on a 15 percent sample of vegetation management activities, referenced above.
- b) Please explain how SDG&E determines whether a particular VM worksite/project passes or fails the QA/QC audit referenced above.
- c) Please describe what happens if a particular VM worksite/project fails the audit referenced above.
- d) Does SDG&E analyze the results of these QA/QC audits by contractor to evaluate or compare the performance of VM contractors?

RESPONSE 6

- a) SDG&E utilizes Scheduling Work Orders (SWO) generated in in the SDG&E work management tool called CityWorks server. The SWO is unique to the Vegetation Management Area (VMA), and all assets (trees or poles) within the work order. City Works uses a randomizer to generate the audit sample population. The SWO is assigned to the contractor for issuance to the field auditor(s). The field auditor receives the assigned work via a dispatch work order (DWO) on their Mobil Data terminal (MDT). Each asset to be audited has a work point that links to the electronic record. Each audit asset is evaluated in the field and updated in the system as a pass or fail.
- b) Within Epoch, each audit asset has tabs and drop-down selections to identify pass or fail, and with additional codes such as insufficient clearance, debris left on site, no trim performed, and or poor trimming to document reason for failure to meet SDG&E scope of work, state and regulatory compliance, and arboricultural and industry standards.
- c) Failed assets within the SWO are recorded and returned to the contractor for review and correction. Audit failures not disputed by the contractor are re-worked at no additional cost to SDG&E.
- d) Yes, SDG&E reviews the completed audit results internally and meets regularly with contractors to further review the audit result. The meetings cover trends, recognize positive performance, and discuss actionable items on identified areas for improvement.

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QUESTION 7

SDG&E states on p. 261 of its 2023 WMP that detailed vegetation inspections “are scheduled and performed using a system of geographic VMA. The service territory is comprised of 133 VMAs.”

How does SDG&E decide the boundaries for its vegetation management areas?

RESPONSE 7

The VMA boundaries are static and were delineated variably using city boundaries, SDG&E Districts, roads, and a relative parity in the dispersal of inventory tree units located within. The service territory is further delineated by jurisdictional and fire designation areas including the SRA, LRA, and HFTD. These areas determine which rules and regulations apply. Each VMA has a unique three-digit number. The first digit identifies the SDG&E District. The second digit identifies whether a VMA is located within the State Responsibility Area (SRA). If the second digit is 5 or higher, it is within the SRA. The third digit is the sequential numeric assignment of the VMAs when first created.

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QUESTION 8

SDG&E states on p. 264 of its 2023 WMP, “During the post-trim QA/QC audit activity, an audit contractor performs a cursory vegetation inspection of all overhead lines within each VMA.”

- a) Please explain how a cursory inspection is performed on “all overhead lines within each VMA” as referenced above, while only a 15% sample of work is audited.
- b) Please describe the procedure that audit contractors use to perform a “cursory vegetation inspection of all overhead lines” as referenced above.

RESPONSE 8

a) The cursory inspection during the post-trim audit activity consists of a visual assessment of trees in proximity to the overhead lines to verify vegetation clearance will hold compliance for the remainder of the VMA annual cycle. Data is not collected for trees not being audited unless it is determined the tree requires work due to vegetation clearance or presents a hazardous condition to the overhead line. Trees that require work will first be evaluated to see if the work was assigned during the trim activity. If so, the tree is failed for the audit and returned to the tree contractor for corrective action. If the tree was not part of the original work assigned, the auditor would enter the information and submit a follow-on work order to prune the tree. The cursory inspection is performed simultaneously with the VMA 15% sample of work being audited.

- b) Please response to a).

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QUESTION 9

SDG&E states on p. 264 of its 2023 WMP that since its 2022 WMP submission it “Engaged with a third party to study the correlation between enhanced tree trim clearances and reduction of vegetation-caused outages.”

- a) Please describe the scope, goals, analytical methods, and duration of the abovementioned third party study.
- b) Please identify who conducted the abovementioned third-party study.
- c) Has the abovementioned third-party study been completed?
- d) If the answer to subpart (c) is “yes,” please provide the results of the study.
- e) If the answer to subpart (c) is “yes,” please provide any documents generated by the study (e.g. reports, workpapers, etc.)
- f) If the answer to subpart (c) is “no,” please state when SDG&E expects the study to be complete.

RESPONSE 9

- a) Please see SDG&E’s 2023-2025 Wildfire Mitigation Plan "*Areas for Continued Improvement and Required Progress of the IOUs’ 2022 WMP Update Progression of Effectiveness of Enhanced Clearances Joint Study*”, beginning on page 930. The same is also addressed in Appendix D: Areas for Continued Improvement SDGE-22-20 “*Progression of Effectiveness of Enhanced Clearances Joint Study*”, on page 534.
- b) Third-party vendor, *EPRI*, was hired in 2022 to conduct the study.
- c) This multi-year study is not yet completed.
- d) N/A
- e) N/A
- f) This study is scheduled to be completed by the end of 2025.

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QUESTION 10

SDG&E states on p. 264 of its 2023 WMP that since its 2022 WMP submission it “Continued engagement with the San Diego Supercomputing Center (SDSC) to study the relationship between expanded clearances and reduction in tree-related outages.”

- a) Is the abovementioned study the same study referred to in Question 9?
- b) If the answer to subpart (a) is “no,” please explain how it differs from the study referred to in Question 9.
- c) If the answer to part (a) is “no,” please respond to parts (a) and (c) - (f) of the previous question (Question 9), but with respect to the SDSC study instead of the third-party study.

RESPONSE 10

- a) Yes. The reference cited above should have been the ongoing study being performed by *EPRI* with the joint IOU’s.
- b) N/A
- c) N/A

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QUESTION 11

SDG&E states on p. 265 of its 2023 WMP that a change it may implement to its detailed vegetation inspections is to “Further integrate and operationalize land-based (vehicle and personnel) LiDAR, satellite imagery technology, and risk analyses into detailed inspection activities and decision-making.”

- a) How does SDG&E plan to integrate LiDAR into detailed inspection activities and decision-making?
- b) How does SDG&E plan to integrate satellite imagery technology into detailed inspection activities and decision-making?
- c) How does SDG&E plan to integrate risk analyses into detailed inspection activities and decision-making?
- d) How does SDG&E expect the above-mentioned integrations will improve its detailed inspections activities and decision-making?

RESPONSE 11

SDG&E objects to the request on the grounds set forth in General Objections 3 and 9. Subject to and without waiving the foregoing objections, SDG&E responds as follows:

- a) SDG&E processed LiDAR data for 10 HFTD circuits in 2022 as proof of concept. In 2023, SDG&E is evaluating the methods and efforts to process the remaining circuits in the HFTD so that LiDAR data can be integrated into risk modeling. This data will provide additional situational awareness to capture the holistic picture of the vegetation conditions to inform the detailed inspections in HFTD.
- b) SDG&E is exploring the use of satellite imagery to assess the power of satellite data to inform near-real time risk, planning, monitoring, and operations across the entire service territory with preliminary use cases in vegetation encroachment, tree-strike, and change detection (e.g., per-pole and per-span risk). This proof of concept will explore the potential for a one-stop-shop for multiple Enterprise use cases with state-of-the-art, cost-effective, feasible, and scalable satellite data and workflows.
- c) LiDAR and satellite imagery may improve SDG&E’s risk modeling capabilities with the inclusion of additional data related to clearance history, strike tree population, environmental conditions, topography, soil moisture, species diversity, etc. Information from these technologies may also assist in analyses and planning. For field inspection activities, SDG&E is exploring how information from these technologies may improve decision making. This may include the addition of risk-ranking information for the inspector within the electronic record that indicates

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relative risk at the specific tree asset level, and/or where the tree is located. Such information may be helpful in deciding whether a tree requires work, the scope of work, and the prioritization.

d) See c) above.

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QUESTION 12

SDG&E states on p. 265 of its 2023 WMP that a change it may implement to its detailed vegetation inspections is to “Further integrate VRI into inspection activities for the HFTD.”

- a) How does SDG&E intend to further integrate VRI into inspection activities for the HFTD?
- b) How does SDG&E anticipate further integrating VRI into inspection activities for the HFTD will improve its inspection activities going forward?

RESPONSE 12

SDG&E objects to the request on the grounds set forth in General Objections 3 and 9. Subject to and without waiving the foregoing objections, SDG&E responds as follows:

- a) As mentioned in Question 1, Logic20/20’s independent model is designed to support inspection activities. The Vegetation Risk Index (VRI) is a situational awareness tool, not a risk model, that categorizes circuits and transmission lines based on tree species, tree height, tree count, and historical vegetation-related outages. With the VRI now available within the mobile application (Epoch), Vegetation Management field users will continue to use VRI as an additional tool in conjunction with the data outputs from Logic20/20’s model to inform where risk levels are relatively higher, and where additional VM work may be prudent.
- b) SDG&E is working with San Diego Super Computing Center to develop the predictive that incorporates wind conditions to better refine the risk score that can inform vegetation field inspections in HFTD.

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QUESTION 13

SDG&E states on p. 265 of its 2023 WMP that a change it may implement to its detailed vegetation inspections is to “Further engage third party study on risk modeling at the tree asset and span level” (*sic*).

- a) Please describe the scope, goals, analytical methods, and duration of the abovementioned study.
- b) What are the anticipated outputs of the abovementioned study?
- c) How does SDG&E anticipate utilizing the outputs of the abovementioned study its vegetation risk modeling or VM work prioritization?

RESPONSE 13

SDG&E objects to the request on the grounds set forth in General Objections 3 and 9. Subject to and without waiving the foregoing objections, SDG&E responds as follows:

a) Scope: One potential application of the model outlined in Question 3 is to support the detailed inspection activities by displaying the key features trained in the model in Epoch.

Goals: Such data variables would serve as a situational awareness tool to help inspectors to make informed decisions on the follow-up work.

Analytical method: The model is trained using logistical regression methods. Features that are informational to inspection activities are identified by vegetation management. They will be aggregated at VMA or segment level. The final method is currently under evaluation.

The duration of this implementation is planned to be by the end of the 2023-2025 WMP cycle.

- b) Anticipated outputs of this model application include the display of frequency of hazard trees, memos, and outages, as well as wind gusts and other environmental data points in Epoch.
- c) As mentioned in a), these data points generated from the predictive model could potentially be used to inform the prioritization of the hazard and memo trees during routine inspections.

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QUESTION 14

SDG&E states on p. 266 of its 2023 WMP regarding its off-cycle inspection activities, The VMA ranking provides input for generating the off-cycle HFTD schedule, which evenly distributes labor across the first 8 months of the year, provides time between the detailed and off-cycle inspections, and places the riskiest areas to be inspected closest to fire season.

- a) How does VMA ranking generate or influence SDG&E's off-cycle HFTD inspection schedule?
- b) What inputs other than VMA ranking, to the off-cycle HFTD inspection schedule exist?

RESPONSE 14

SDG&E objects to the request on the grounds set forth in General Objections 3 and 9. Subject to and without waiving the foregoing objections, SDG&E responds as follows:

- a) Using historic, aggregated tree asset level data to rank HFTD VMAs may assist with informed-decision making when scheduling the order of off-cycle inspections activities in advance of peak fire season. For example, tree conflict avoidance may best be achieved by performing the off-cycle inspection activity of the highest-ranked VMAs in the fall-summer timeframe so these circuits can be trimmed in advance of September, generally considered the beginning of peak Santa Ana and wildfire risk season in SDG&E's service territory.
- b) Additional inputs to the off-cycle HFTD inspection schedule include the relative time period between the routine schedule of the other vegetation management activities, contractor resource allocation, and the ability to combine off-cycle patrols with other concurrent VM activities.

**PUBLIC ADVOCATES OFFICE DATA REQUEST:
CALADVOCATES-SDGE-2023WMP-07
SDG&E RESPONSE**

**Date Received: April 5, 2023
Date Submitted: April 10, 2023**

END OF REQUEST