PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

February 8, 2021

TO:
Meredith Allen, Director Regulatory Affairs
Pacfic Gas and Electric Company
77 Beale St.
San Francisco, CA 94177

SUBJECT: Audit of PG&E's Implementation of their Enhanced Vegetation Management Program in 2020

The Wildfire Safety Division (WSD) of the California Public Utilities Commission (CPUC) has completed and enclosed the audit report of PG&E's enhanced vegetation management (EVM) program that was conducted from October 21, 2020 through February 5, 2021.

During the audit, the WSD reviewed PG&E-provided data and conducted inspections, which the WSD compared to the representations PG&E made in its 2020 Wildfire Mitigation Plan (WMP). A copy of the itemized audit findings is enclosed. By electronic copy PG&E must submit an Enhanced Vegetation Management Audit Response & Corrective Action Plan no later than February 23, 2021.

Submit your response to wildfiresafetydivision@cpuc.ca.gov and MaryBeth Farley at Marybeth.Farley@cpuc.ca.gov. Although PG&E has been given 15 days to respond, it has a continuing obligation to comply with its Wildfire Mitigation Plan (WMP); therefore, the response period does not alter this continuing duty.

Thank you for your courtesy and cooperation throughout the audit process. If you have any questions concerning this audit, please contact MaryBeth Farley at Marybeth.Farley@cpuc.ca.gov, with a copy to wildfiresafetydivision@cpuc.ca.gov.

Sincerely,

MaryBeth Farley

Marybeth Farley
Program & Project Supervisor, North Region
Compliance Branch
Wildfire Safety Division
California Public Utilities Commission



California Public Utilities Commission

Wildfire Safety Division's

Audit Report on PG&E's Implementation of their Enhanced Vegetation Management Program in 2020

February 8, 2021

Wildfire Safety Division's Audit Report on PG&E's Implementation of their Enhanced Vegetation Management Program in 2020

1 INTRODUCTION

On October 21, 2020, the Wildfire Safety Division (WSD) initiated an audit of Pacific Gas & Electric Company's (PG&E) Enhanced Vegetation Management (EVM) program as detailed and described in Section 5.3.5.15 of their conditionally approved 2020 Wildfire Mitigation Plan (WMP), with the conditional approval subsequently ratified by the Commission on June 11, 2020.

This audit examines:

- PG&E's communication with the WSD regarding the data underlying its prioritization approach for its EVM work
- Inconsistencies between the various prioritization data PG&E has submitted to the WSD (in September 2020, December 2020, and January 2021)
- PG&E's prioritization of EVM work
- EVM defects identified through the WSD's inspections
- PG&E's communications to the WSD, including regarding the resolution of EVM defects identified through the WSD's inspections

During the audit, the WSD reviewed PG&E-provided data and conducted inspections, which the WSD compared to the representations PG&E made in its 2020 WMP.

2 DOCUMENTS REVIEWED

To complete this audit, the WSD reviewed the following records and documents:

1. PG&E 2020 Wildfire Mitigation Plan
2. PG&E Wildfire Risk Prioritization Calculation User Guide
3. PG&E Wildfire Risk Assessment Prioritization Calculations for Distribution and Transmission
4. PG&E Wildfire Risk Assessment Prioritization Output-EVM
5. PG&E 2020 Quarterly Advice Letters
6. PG&E EVM Progress Reports for locations worked with applicable miles complete for Q1, Q2, and Q3 2020
7. PG&E Wildfire Mitigation Plan Final Resolutions
8. RES WSD-002 Final Guidance Resolution
9. GO 95, Rule 18
10. PG&E_Inspection_Tracking_as of December 18, 2020
11. PG&E Defect Remedies as of December 4, 2020
12. PG&E Response Letter to MJ-PG&E-026
13. PG&E Defect Disposition Summary as of December 4, 2020
14. RES WSD-012 Wildfire Mitigation Plan Compliance Process
15. WSD Inspection Reports

16. WSD Defect Tracking Dashboard
17. Customer Incident Management System (CIMS) as managed by Consumer Affairs Branch (CAB), CPUC
18. PG&E Data Request Response to DR WSD 001 RVOM.20201231, including attachments, as provided to WSD on January 13, 2021

3 THE WSD'S AUDIT FINDINGS

Finding 1: PG&E failed to communicate its use of a new Risk Overlay Model and has provided the WSD with conflicting information regarding when different risk prioritization models were utilized

As context, PG&E stated in section 4.3 of its 2020 WMP that for 2020 it estimated a "10% reduction in vegetation-caused, equipment failure and animal-caused ignitions from the 2019 level"[1] due to planned work that was prioritized by risk. However, due to insufficient detail in PG&E's 2020 WMP regarding its "prioritization approach/methodology to determine spending and deployment of human and other resources,"[2] the Commission imposed conditions on its approval of PG&E's 2020 WMP. Condition Guidance-3, as detailed in Resolution WSD-002, identified a lack of risk modeling to inform decision-making. PG&E was instructed in Condition ii of Guidance-3, to "Identify all wildfire risk analyses it currently performs (including probability and consequence modeling) to determine which mitigation is targeted to circuits and assets where initiatives will provide the greatest benefit to wildfire risk reduction."[3] PG&E failed to identify its wildfire risk analyses on multiple occasions; the remainder of Finding 1 reviews PG&E's communications with WSD regarding its EVM risk prioritization models.

In April 2020, PG&E provided the WSD with its Wildfire Risk Assessment Prioritization Output for System Hardening. In the accompanying User Guide, PG&E noted that the same type of Wildfire Risk Assessment Prioritization Output model was being used as an input for EVM. The WSD requested the EVM Wildfire Risk Assessment Prioritization Output in July.[4] The EVM Wildfire Risk Assessment Prioritization Output was received in September 2020, and the WSD used this Wildfire Risk Assessment Prioritization Output to determine its EVM inspection activities for Fall 2020.

In October 2020, the WSD notified PG&E of multiple EVM defects[5] that had been identified through other, non-EVM inspections (i.e., conducted in response to a customer complaint in a High Fire-Threat District (HFTD) and a Public Safety Power Shutoff (PSPS) device installation inspection in HFTD). PG&E's response to the WSD-identified defects included the following statement:

[1] PG&E 2020 Wildfire Mitigation Plan, Section 4.3, page 4-22.
[2] Per Section 5.3.1 of the 2020 WMP Guidelines.
[3] Per WSD-002, Guidance-3, Condition ii.
[4] Requested via informal email data request (see Table 1 for details on WSD-PG&E communications).
[5] Per WSD-012, the Wildfire Mitigation Plan Compliance Process defines a defect as 'any condition noted that is inconsistent with the WMP initiatives or CPUC General Orders'.

> In 2020, we replaced the 2019 EVM risk-based model with a refined Risk Value Overlay methodology model that incorporates impacts from other wildfire programs, including previous wildfires, capacity, reliability, prior-year PSPS and safety. Based on this analysis, the two locations identified in the Inspection Report are not currently planned for EVM work and thus there is no defect.[6]

The WSD requested the refined Risk Value Overlay methodology model from PG&E and received a response on December 4, 2020 that included the Risk Value Overlay model. Based on the conflicting information received from PG&E regarding its EVM prioritization model, and which model was used over the course of 2020, the WSD issued a data request to PG&E on December 31, 2020. The timeline in Table 1 below details the communications between the WSD and PG&E regarding PG&E's EVM risk prioritization model.

Table 1. Timeline: PG&E's Communication with the WSD Regarding PG&E's EVM Prioritization Model

	Date	Event
1	April 6, 2020	PG&E sent an email to the WSD with a Risk Prioritization User Guide (Word document) for all WMP applicable categories (System Hardening, EVM, Enhanced Inspections for Transmission and Distribution) and Risk Prioritization Output (Excel file) for System Hardening. This email was sent per ongoing PSPS meetings for 2020 WMP activity planning.
2	July 15, 2020	The WSD emailed PG&E requesting the EVM Risk Prioritization Output that was referenced in the Risk Prioritization User Guide (received April 6, 2020) and in the Tree Assessment Tool User Guide, as well as PG&E's EVM work planning documentation per division and for the service territory as a whole.
3	July 21, 2020	PG&E emailed the WSD and did not provide the Risk Prioritization Output referenced in the Risk Prioritization User Guide, but did provide another file, the Tree Species Prioritization per Division.
4	September 28, 2020	The WSD emailed PG&E with a second request for the EVM Risk Prioritization Output.
5	September 29, 2020	PG&E emailed the WSD and provided the EVM Risk Prioritization Output (Excel file, date stamped 02/23/19). The Excel file included a risk-ranked[7] list of 696 feeders[8] and identified the Tier 2/3 OH miles for each feeder.
6	October 23, 2020	The WSD emailed PG&E the agenda for the October 28, 2020 WSD-PG&E meeting, and referenced the EVM Risk Prioritization Output and vegetation management progress in the following agenda item: 1. *Provide clarification on the percentage of total EVM work that was completed in the top 100 on the risk prioritization list.* a. *What percentage of the total EVM work has been completed in the top 100 locations on the Risk Prioritization Spreadsheet?*

[6] Source: PG&E Response Letter to MJ-PG&E-026.
[7] The Wildfire Risk Assessment Prioritization Output uses risk scores for three factors (likelihood of failure, likelihood of fire spread and consequence, and ease of egress in affected area) to calculate a consolidated risk score and risk tier for each feeder. The consolidated risk score is used to rank the feeders, with 1 being the highest risk feeder in PG&E's territory. Source: Risk Prioritization User Guide, provided by PG&E April 6, 2020.
[8] PG&E defines a feeder as "A circuit having as its primary purpose the distribution of electric energy." Source: PG&E Glossary, https://www.pge.com/includes/docs/pdfs/shared/customerservice/nonpgeutility/electrictransmission/handbook/glossary.pdf

		b. *If the percentage is near 60% outside the top 100, why is EVM work being scheduled for these lower priority areas?*
7	October 28, 2020	In the October 28, 2020 meeting, PG&E provided a verbal response, stating that the plan for 2020 was to perform work in top quartile feeders. PG&E did not provide a clear response regarding the percentage of completed work, or where work was being completed.
8	November 10, 2020	The WSD received an email response from PG&E disputing an October 22, 2020 inspection report the WSD had filed which identified EVM defects found in Tier 2/3 HFTD areas. In the response, PG&E stated that it had replaced the EVM Risk Prioritization Output with "a refined Risk Value Overlay methodology model," and that based on the data in said model, "the two locations identified in the Inspection Report are not currently planned for EVM work and thus there is no defect." This communication is the first instance the WSD was informed of the Risk Value Overlay model.
9	November 10, 2020	In the November 10, 2020 meeting, PG&E verbally responded to questions about the EVM Risk Prioritization Output stating that the Risk Prioritization Output for EVM was built in 2018 to determine 2019 work areas and was not accurate to depict 2020 prioritization/work plans. The WSD responded that PG&E's statement was new information to the WSD and is therefore misleading to the WSD's prior understanding of risk model work. PG&E was expected to identify its accurate and up to date risk models per the RCP and failed to do so. As the EVM Risk Prioritization Output was the only file received by the WSD, the WSD assumed it was accurate.
10	November 20, 2020	The WSD emailed PG&E the agenda for the November 25, 2020 WSD-PG&E meeting, which included: 1. *Provide 2020 Risk Model Overlay from PGE Response_MJ-PGE-026 and 11/10 Initiative call for EVM prioritization use in place of Wildfire Risk Assessment Output (10 min).* a. *Explain when this process began use, and where/when this was communicated to WSD for use in place of the Output originally used for project prioritization tracking.*
11	November 25, 2020	In the November 25, 2020 meeting, PG&E referenced the 2018 model was used for EVM work planning for 2020 work. PG&E did not answer the WSD's question about the Risk Value Overlay model.
12	December 4, 2020	PG&E provided a written follow-up response to the November 25, 2020 meeting via email and included an attachment labeled 'Work Planning Circuit Ranking.' The WSD has since confirmed that this attachment was the file they were referring to as the Risk Value Overlay Model.
13	December 31, 2020	The WSD issued a data request to PG&E requesting, among other information: • An explanation of why two different models were provided to the WSD, and dates for when each model was used to work plan • A user guide for the Risk Value Overlay Model • Supporting documentation showing PG&E staff's use of the Risk Value Overlay Model • 2020 YTD EVM work completed

In PG&E's response to the December 31, 2020 data request on January 13, 2021, PG&E clarified its use of the two different models as follows:

> […] the 2018 Wildfire Risk Assessment Prioritization Output [received by the WSD in September 2020] was the only wildfire risk prioritization model

> used for 2019 and 2020 work planning across multiple wildfire mitigation initiatives.
>
> For limited purposes and to facilitate comparison across other risk categories, additional risk scores for Capacity, Reliability, Public Safety Power Shutoff (PSPS) and Safety were incorporated into the 2018 Wildfire Risk Assessment Prioritization Output and used by the Enhanced Vegetation Management (EVM) program to inform the 2020 work selection. This additional data and its integration with the 2018 Wildfire Risk Assessment Prioritization Output was referred to as the Risk Value Overlay Model [received by the WSD in December 2020].[9]

The WSD's understanding of this statement is that PG&E used the Wildfire Risk Assessment Prioritization Output as the primary input to PG&E's 2020 EVM work planning, but also used the Risk Value Overlay Model to inform 2020 work. Based on this understanding, Finding 4 in this audit examines PG&E's completed work in 2020 relative to the prioritization set out in both the Wildfire Risk Assessment Prioritization Output and the Risk Value Overlay Model.

Due to PG&E's failure to notify the WSD in a timely manner of its use of a new Risk Value Overlay prioritization methodology, and due to the conflicting information PG&E has provided regarding its risk prioritization models, PG&E has insufficiently provided requested information to the WSD as required by Guidance-3 in WSD-002.[10] As required by Guidance-3, a Class A (highest priority) condition, PG&E's Remedial Compliance Plan (RCP) was due 45 days after the issuance of Resolution WSD-002. PG&E submitted its RCP on July 27, 2020, and in that document PG&E did not identify the wildfire risk analysis (the Risk Value Overlay Model) that it was using as an input into its EVM work planning.

Given PG&E's repeated pattern of behavior of providing incomplete information, and not fully explaining the data that it provides to the WSD despite multiple requests from the WSD (as explained in this finding), the WSD has based the other findings in this audit report on the WSD's interpretation of the data provided by PG&E. Any assumptions the WSD has had to make have been identified throughout the report.

Finding 2: The WSD has received three different EVM prioritization models from PG&E (in September 2020, December 2020, and January 2021) and finds that these three data submissions contain inconsistencies and conflicting information

The WSD has now received three different data submissions with EVM prioritization from PG&E:

- Received September 2020:
  - Excel file: *Wildfire Risk Assessment Prioritization Output_Consolidated_190223_vF.xlsx*, referred to throughout the remainder of this audit report as the "September model"
- Received December 2020:
  - Excel file: *Q2_Atch 1 2020 Work Planning Circuit Ranking.xlsx*, referred to throughout the remainder of this audit report as the "December model"
- Received January 2021:

[9] PG&E Data Request Response, received by WSD January 13, 2021.
[10] Per WSD-002, Guidance-3, Condition ii: "Identify all wildfire risk analyses it currently performs (including probability and consequence modeling) to determine which mitigation is targeted to circuits and assets where initiatives will provide the greatest benefit to wildfire risk reduction."

- PDF: *Non-CaseDiscovery_DR_WSD_003-Q01-10.pdf*
- Excel file: *Non-CaseDiscovery_DR_WSD_003-Q01-10Atch 01.xlsx*
- Excel file: *Non-CaseDiscovery_DR_WSD_003-Q01-10Atch 02.xlsx,* referred to throughout the remainder of this audit report as the "January model"
- Excel file: *Non-CaseDiscovery_DR_WSD_003-Q01-10Atch 03.xlsx*

Finding 2A: The three models contain different terminology

"Feeder" vs. "Circuit"
In the September model, PG&E refers to "feeders,"[8] while in the December model and the January model, PG&E refers to "circuits."[11] The WSD has assumed for the purposes of this audit report that the two terms refer to the same thing. For the remainder of this report, the WSD uses the term "circuits," even if "feeder" is the term used in PG&E's data (e.g., the term "circuit" is used when discussing the September model).

Mileage
In the September model, PG&E refers to "Tier 2/3 OH Miles." In the December model, PG&E refers to "OH Miles." In the January model, PG&E refers to "HFTD Miles from KPMG," and "Circuit Miles."

Finding 2B: The total number of circuits included in each model differs

As seen in Table 2, the total number of circuits included within each model differs substantively.

Table 2. Count of Circuits in Three Models Received from PG&E

	Model		
	September	December	January
Number of circuits	696	3360	795

Finding 2C: Risk score rankings and total circuit mileage, data that the WSD considers integral to risk-based work planning, is inconsistent across models

The risk score rankings in the three models differ substantively, and therefore the work priority of the circuits changes depending on which model is referenced. While the risk score rankings in the December and January models are aligned for the highest risk circuits, the risk score rankings start to diverge for lower risk circuits. See Table 3 below, which includes the top 20 highest risk circuits according to the January risk score ranks, as well as three lower risk circuits to demonstrate the divergence of the rankings in the December and January models.

[11] PG&E defines a circuit as "A conducting part through which an electric current is intended to flow." Source: PG&E Glossary, https://www.pge.com/includes/docs/pdfs/shared/customerservice/nonpgeutility/electrictransmission/handbook/glossary.pdf

Table 3. Sample of Differing Risk Score Ranks in Three Models Received from PG&E (Sorted by January Rankings)

	Risk score rank		
Circuit	September	December	January
PUEBLO 2103	107	1	1
APPLE HILL 2102	276	2	2
PINE GROVE 1102	90	3	3
MOLINO 1102	10	4	4
EL DORADO PH 2101	8	5	5
SILVERADO 2104	86	6	6
HICKS 2101	540	7	7
RINCON 1101	57	8	8
PLACERVILLE 2106	103	9	9
CASTRO VALLEY 1104	575	10	10
SANTA ROSA A 1111	235	11	11
WYANDOTTE 1103	112	12	12
DUNBAR 1101	174	13	13
STELLING 1110	295	14	14
PUEBLO 2102	34	15	15
STANISLAUS 1702	4	16	16
SAN RAFAEL 1108	266	17	17
BRUNSWICK 1106	13	18	18
WOODSIDE 1104	332	19	19
CASTRO VALLEY 1106	190	20	20
...			
HIGGINS 1110	302	500	430
PERRY 1101	121	805	591
RESERVATION ROAD 1101	81	952	635

As additional context see Table 4 below, which includes the top 20 highest risk circuits according to the September risk score ranks.

Table 4. Sample of Differing Risk Score Ranks in Three Models Received from PG&E (Sorted by September Rankings)

	Risk score rank		
Circuit	September	December	January
MIWUK 1701	1	63	63
WOODACRE 1101	2	184	180
MONTE RIO 1113	3	44	44
STANISLAUS 1702	4	16	16
ORO FINO 1102	5	42	42
MIWUK 1702	6	57	57
WOODSIDE 1101	7	174	171
EL DORADO PH 2101	8	5	5
MIDDLETOWN 1101	9	66	66
MOLINO 1102	10	4	4
ORO FINO 1101	11	25	25
BRUNSWICK 1105	12	23	23
BRUNSWICK 1106	13	18	18
FITCH MOUNTAIN 1113	14	39	39
MONTE RIO 1112	15	167	164
SALT SPRINGS 2102	16	62	62
BRUNSWICK 1103	17	33	33
WEST POINT 1101	18	72	72
CHALLENGE 1102	19	151	148
FORESTHILL 1101	20	51	51

The three models also contain three different data points for total miles for each circuit. The "Tier 2/3 OH Miles" (September model) and the "HFTD Miles from KPMG" (January model) are equivalent for each circuit, but that data point differs from "OH Miles" (December model) and "Circuit Miles" (January model). See Table 5 below for an example of the differing mileage data points for two circuits (the #1 and #2 circuits according to the January model's risk score rankings).

Table 5. Sample of Differing Circuit Miles in Three Models Received from PG&E

	Total Mileage			
Circuit	September "Tier 2/3 OH Miles"	December "OH Miles"	January "HFTD miles from KPMG"	January "Circuit Miles"
PUEBLO 2103	47.19	78.62	47.19	45.34
APPLE HILL 2102	336.47	348.20	336.47	333.78

Finding 3: The WSD has identified concerns in the methodology used to arrive at the final risk score rankings provided in the December model

In the December 31, 2020 data request, the WSD requested that PG&E provide a user guide, if available, for the December model. PG&E replied:

> The Risk Value Overlay Model is the spreadsheet provided to WSD on December 4, 2020 and does not have a User Guide. The overall risk is calculated by taking the scores from five different risks (Wildfire, Capacity, Reliability, PSPS and Safety) and averaging them out to produce an overall score at the circuit level.[12]

The WSD reviewed the scores in the December model and has identified two concerns about the methodology used to arrive at the overall risk score rankings:

- The five different risks (Wildfire, Capacity, Reliability, PSPS, Safety) are all weighted equally to arrive at a simple average for the Overall Score. The WSD is concerned that weighting each of these factors equally may not fully account for overall risk.
- Based on the WSD's interpretation of the December model, the scale for the Safety score appears to be inverted relative to the other four scores. While all five scores appear to be on a 0-100 scale, the Safety score seems to consider a score of 100 to be the lowest risk, while the other scores consider a score of 100 to be the highest risk. Given that the overall risk score is calculated using a simple average, this scale inversion therefore skews the averages and, as a result, the Overall Score rankings. See Figure 1 below for a screenshot of the scores for the five highest risk circuits (the Safety score has been highlighted in yellow).

Figure 1. Screenshot, December Model: Scores for Top 5 Ranked Circuits

Circuit Name	Overall Score	Wildfire Score	Capacity Score	Reliability Score	PSPS Score	Safety Score
PUEBLO 2103	53.39	100	81.212	21.596	62.619	1.519
APPLE HILL 2102	53.03	100	28.889	38.07	97.185	1
PINE GROVE 1102	52.73	100	46.667	27.969	87.752	1.273
MOLINO 1102	52.59	100	55.556	38.672	67.227	1.519
EL DORADO PH 2101	52.48	100	13.714	58.527	88.861	1.289

Due to these observations around the methodology used, the WSD is concerned that the risk score rankings in the December model may not be accurate. Given that the risk score rankings in the January model appear to be directionally aligned with the December model risk score rankings, this also opens questions on the validity of the January model rankings.

Finding 4: PG&E appears to not be sufficiently prioritizing or reducing the risk of wildfire ignition in the implementation of its EVM initiative

In Sections 4.3 and 5.3.1.1 of PG&E's 2020 WMP, PG&E specified the purpose and use of risk prioritization for its planning for effective fire prevention activities, and in Section 4.3 stated that one of the factors in the estimated 10% reduction in ignitions was the risk prioritization of work.[1] The WSD finds that PG&E is not using the risk scoring in any of the three models provided to the WSD to drive/workplan its EVM initiative activities and therefore appears to not be sufficiently

[12] PG&E Data Request Response, received by WSD January 13, 2021.

prioritizing or reducing the risk of wildfire ignition while implementing its EVM initiative. While PG&E has noted it has accomplished its WMP goal of completing 1,800 miles of work, the WSD finds that the completed work has not been sufficiently prioritized by risk.

The WSD has assessed the EVM work PG&E completed on the top 20 highest risk circuits (per both the September and January rankings), and the work in totality, and finds that PG&E has not appropriately prioritized the highest risk circuits. Among the top 20 circuits identified as the highest risk per the September model risk score rankings, four did not have any work completed in 2020 (see Table 6 for completed work by circuit; circuits with no work completed are highlighted in red).

Table 6. Miles of Completed Work, Top 20 Highest Risk Circuits (September Model Rankings)

Circuit	Risk score rank		Miles of Completed Work, as of January 3, 2021
	September	January	
MIWUK 1701	1	63	0.66
WOODACRE 1101	2	180	7.85
MONTE RIO 1113	3	44	0.65
STANISLAUS 1702	4	16	3.60
ORO FINO 1102	5	42	0.57
MIWUK 1702	6	57	1.56
WOODSIDE 1101	7	171	6.98
EL DORADO PH 2101	8	5	4.51
MIDDLETOWN 1101	9	66	19.68
MOLINO 1102	10	4	0.14
ORO FINO 1101	11	25	1.32
BRUNSWICK 1105	12	23	1.43
BRUNSWICK 1106	13	18	7.30
FITCH MOUNTAIN 1113	14	39	1.90
MONTE RIO 1112	15	164	0.18
SALT SPRINGS 2102	16	62	0.00
BRUNSWICK 1103	17	33	0.87
WEST POINT 1101	18	72	0.00
CHALLENGE 1102	19	148	0.00
FORESTHILL 1101	20	51	0.00
		Total:	59.19

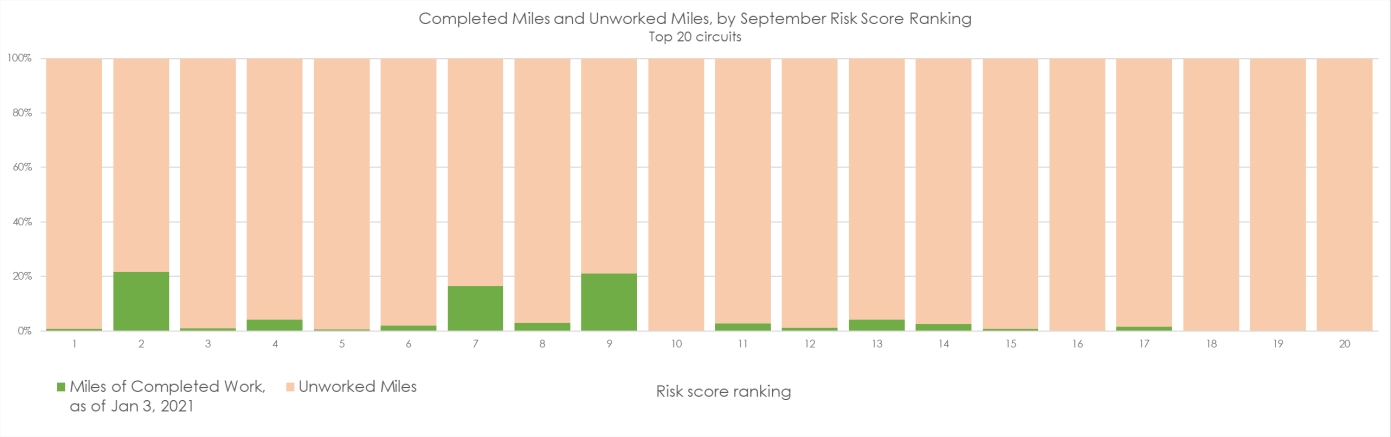
Among the top 20 circuits identified as the highest risk in the January model risk score rankings, nine did not have any work completed in 2020 (see Table 7 for completed work by circuit; circuits with no work completed are highlighted in red).

Table 7. Miles of Completed Work, Top 20 Highest Risk Circuits (January Model Rankings)

Circuit	Risk score rank		Miles of Completed Work, as of January 3, 2021
	September	January	
PUEBLO 2103	107	1	0.87
APPLE HILL 2102	276	2	28.93
PINE GROVE 1102	90	3	0.45
MOLINO 1102	10	4	0.14
EL DORADO PH 2101	8	5	4.51
SILVERADO 2104	86	6	38.89
HICKS 2101	540	7	0.00
RINCON 1101	57	8	0.00
PLACERVILLE 2106	103	9	0.00
CASTRO VALLEY 1104	575	10	0.00
SANTA ROSA A 1111	235	11	0.60
WYANDOTTE 1103	112	12	0.00
DUNBAR 1101	174	13	2.04
STELLING 1110	295	14	0.00
PUEBLO 2102	34	15	4.41
STANISLAUS 1702	4	16	3.60
SAN RAFAEL 1108	266	17	0.00
BRUNSWICK 1106	13	18	7.30
WOODSIDE 1104	332	19	0.00
CASTRO VALLEY 1106	190	20	0.00
		Total:	91.72

Furthermore, the WSD would expect to see a substantial proportion of the total miles for the highest risk circuits prioritized in PG&E's EVM work. However, this observation was not found in the data provided. As shown in Figure 2 for the top 20 circuits in the September model, and in Figure 3 for the top 20 circuits in the January model, a significant proportion of the total miles for these high priority circuits remains unworked.

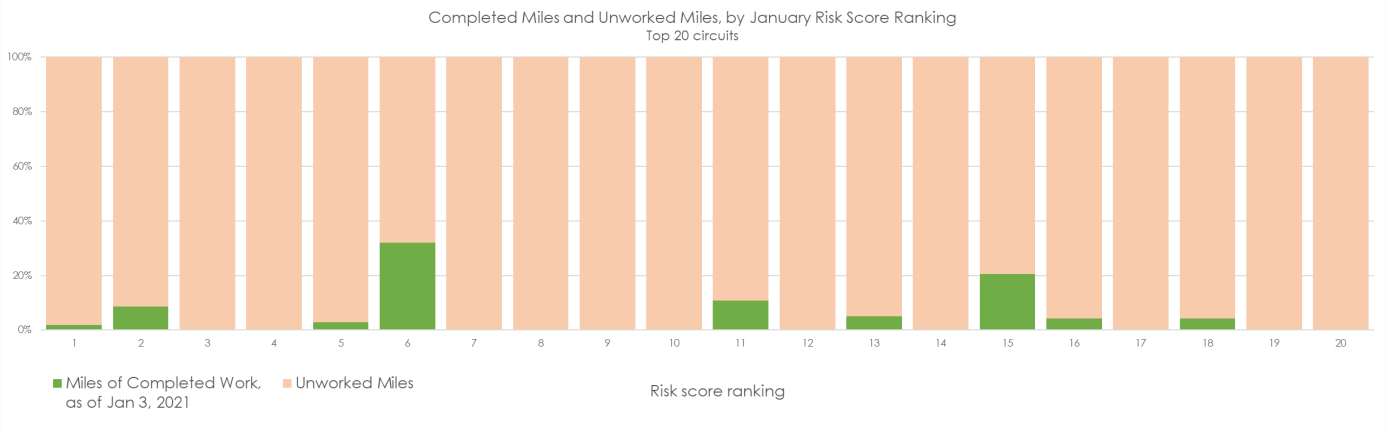
Figure 2. Miles Completed and Unworked Miles, Top 20 Circuits (September Model Rankings)[13]



[13] Unworked Miles is based on the following calculation: HFTD Miles From KPMG - Miles of Completed Work as of January 3, 2021.

Of the Top 20 ranked circuits from the September model shown above, the average percentage of completed work miles over "HFTD Miles from KPMG" cited in the January model (equivalent to "Tier 2/3 OH Miles" cited in the September model) is 4.2%.

Figure 3. Miles Completed and Unworked Miles, Top 20 Circuits (January Model Rankings)[13]



Of the Top 20 ranked circuits from the January model shown above, the average percentage of completed work miles over "HFTD Miles from KPMG" cited in the January model (equivalent to "Tier 2/3 OH Miles" cited in the September model) is 4.5%.

Regardless of which model's risk scores the WSD uses to assess PG&E's EVM work, the WSD finds that PG&E did not allocate the resources it would expect to see dedicated to completing EVM work for the 20 highest risk circuits (see Table 8).

Table 8. Work Completed on Top 20 Circuits as Proportion of Total Work Completed (September and January Model Rankings)

	Miles of Work Completed, as of January 3 2021	Work completed as % of total
Top 20 circuits, September risk rankings	59.19	3.2%
Top 20 circuits, January risk rankings	91.72	4.9%
All circuits	1877.94	

Looking at the full set of 161 circuits for which work was performed in 2020, the low prioritization of the highest risk circuits is notable. See Figure 4 below for the miles completed vs. miles unworked for all 161 circuits ranked by September risk score from left to right with work completed in 2020. Figure 5 below shows the miles completed in 2020 vs. miles unworked for all 161 circuits ranked by January risk score from left to right.

Figure 4. Miles Completed and Unworked Miles, 161 Circuits with Work Performed in 2020, September Risk Score Rankings[14]

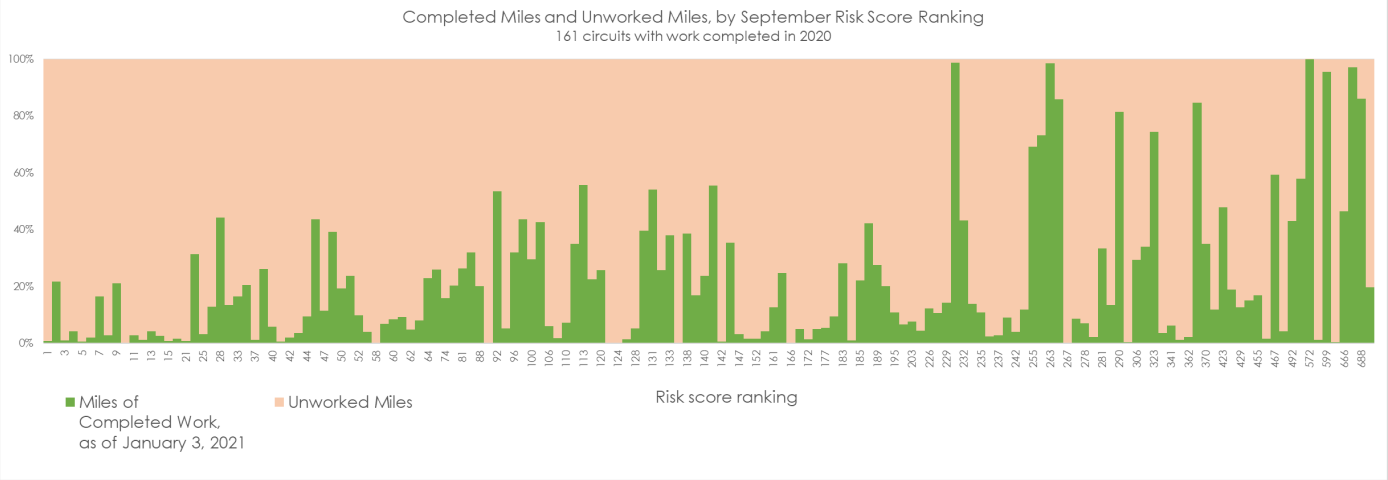
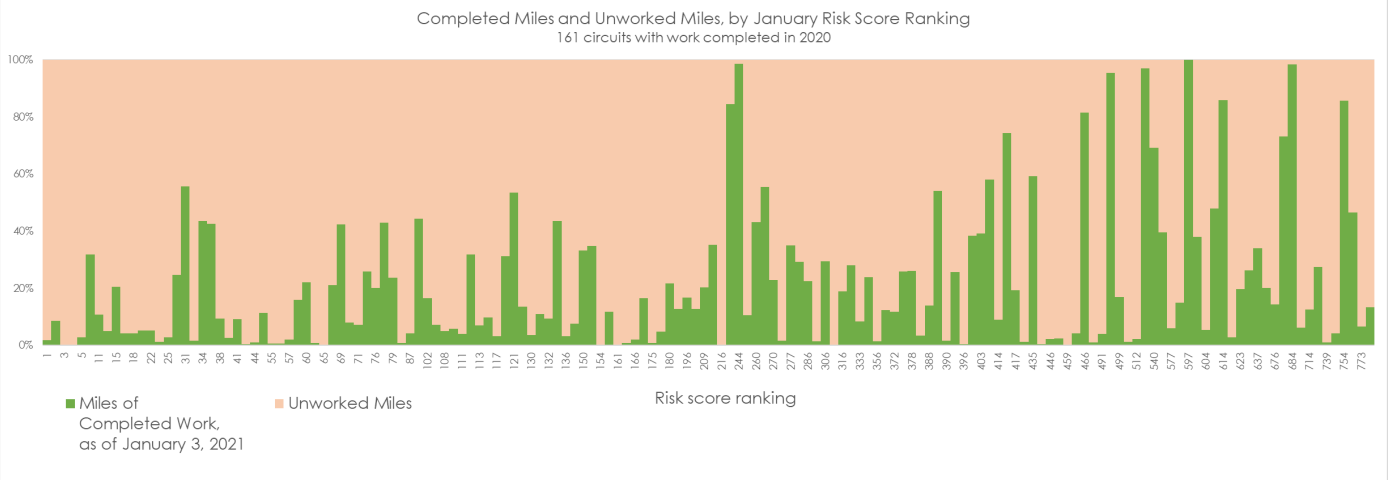


Figure 5. Miles Completed and Unworked Miles, 161 Circuits with Work Performed in 2020, January Risk Score Rankings[15]



By performing incomplete EVM on the circuits identified as highest risk and allocating resources instead to conducting EVM on lower risk circuits, PG&E is not reducing risk as planned in its WMP.

Finding 5: PG&E's January 13, 2021 data request response does not provide confidence that PG&E's risk prioritization activities are being effectively operationalized

In Question 5 of the December 31, 2020 data request, the WSD asked PG&E how PG&E staff were meant to use the December model data to plan work according to HFTD areas, given that the December model does not specify Tier 2/3 OH miles. PG&E did not provide an answer to this

[14] Risk rankings shown on horizontal axis reflect September model rankings. Note: Not all ranked circuits have work complete thus rankings are greater than 161.
[15] Risk rankings shown on horizontal axis reflect January model rankings. Note: Not all ranked circuits have work complete thus rankings are greater than 161.

question, which is an inadequate response to a data request. Furthermore, in Question 6 of the data request, the WSD requested supporting documentation about field operations, and in PG&E's response it stated that "Each region was given a total year-end mileage target… with identified circuits that needed to be worked."[16] The WSD's interpretation of the response to Question 6, and the lack of response to Question 5, is that PG&E is using metrics such as regional targets to plan and prioritize EVM work, instead of the risk metrics the WSD believed PG&E to be using.

The responses provided to the December 31, 2020 data request do not give the WSD confidence that PG&E's staff are equipped with the information necessary to prioritize and execute EVM work according to risk.

Finding 6: The WSD documented four EVM defects through inspections, three of which remain open/unresolved

Through the WSD's ongoing audits and inspections, the WSD has conducted 306 vegetation management inspection activities and identified four EVM-specific defects,[5] three of which remain open/unresolved (see Table 9 and Table 10 below). Approximately 40% of identified EVM defects are classified by the WSD as severe.[17] PG&E has been notified of these defects and has provided a response.

The WSD sought to validate PG&E's reported data[18] over the course of its inspection and audit activities. Through its inspections, the WSD found evidence that PG&E's reporting was inaccurate on four occasions, resulting in EVM defects. WSD staff performed two EVM inspections on work PG&E documented in its inspection tracking reports as complete, to find that one site was not complete, and the other had not started.[19] In another inspection, the WSD staff requested PG&E to verify vegetation clearances were met per customer compliant received. PG&E inspector notified the WSD that clearances were met and provided photos. The WSD did not agree with PG&E's assessment given photos provided and verified in the field that EVM scope was not met per HFTD in two locations, and documented the location as containing defective conditions.[20] PG&E disputed the WSD's assessment, noting that EVM work was not yet planned and therefore could not be out of compliance. However, WSD staff determined from PG&E's EVM Collector App that EVM work had taken place on that circuit but neglected this segment. See the Appendix in Section 5 for further details on the identified EVM defects.

[16] PG&E Data Request Response, received by WSD January 13, 2021.
[17] Per WSD-012, WSD defects are classified in the same manner as GO95; a severe defect presents an immediate risk of high potential impact to safety or reliability and requires the utility to take corrective action immediately.
[18] PGE_Inspection Tracking_12.18.2020_CONF.
[19] WSD Inspection Report EC-PG&E-015, and AS-PG&E-037.
[20] WSD Inspection Report MJ-PG&E-026.

Table 9. Summary of the WSD's Vegetation Management Inspection Activities for PG&E EVM Work

Total WMP5[21] inspection activities	Total EVM defects found	Severe defects	Moderate defects	Minor defects
306	4[22]	3	1	0

Table 10. Summary of Open/Unresolved and Closed/Resolved WSD-Identified Defects for PG&E EVM Work

Defect status	Total defects found	Severe defects	Moderate defects	Minor defects
Open/Unresolved	3	3	0	0
Closed/Resolved	1	0	1	0

Finding 7: PG&E has not communicated adequately with the WSD regarding circumstances including but not limited to: defect resolution (PG&E has corrected seven WSD-identified defects that were documented as disputed/unresolved without notifying the WSD), data requests, or city-impacting clearing projects

In seven past instances, PG&E has not communicated correction of outstanding defects to the WSD,[23] giving the WSD an unclear understanding of which defects are open and closed. These instances have included situations in which PG&E initially disagreed with the WSD's findings but corrected the defect without notifying the WSD.

Going forward, PG&E should communicate all correction of defects to the WSD, so that the WSD can accurately track open and closed defects. PG&E should especially communicate its decisions on handling of disputed defects after the initial disagreement with the WSD. In the past, the WSD has found 7/39 instances in which PG&E has disagreed with a defect but chose to correct the defect without notifying the WSD.[24]

Separately, in PG&E's response to the December 31, 2020 data request, PG&E did not provide a response to Question 5, in which the WSD asked PG&E how PG&E staff were meant to use the December model data to plan work according to HFTD areas, given that the December model does not specify Tier 2/3 OH miles. PG&E's failure to provide an answer to a data request question is an inadequate response.

Finally, two large scale city clearing projects for EVM were not communicated to the WSD by PG&E. The WSD was involved in conflicts between local government and PG&E regarding city-approved plans for fire mitigation activities that the WSD was not notified of for project auditing/inspecting of compliance until near completion.

[21] WMP5 is the inspection activity code for Vegetation Management and Inspections in HFTD.
[22] WSD Defect Tracking Dashboard as of January 15 2020.
[23] Per WSD implemented 10-business day response requirement for upon receipt of inspection reports.
[24] Sources: PG&E Q4_Atch1WSD Data Request _Defect Disposition Summary, as of December 4, 2020.

Per conference calls in April and May between the WSD and PG&E, it was communicated and verified using a shared project template that all WMP activity sites for WMP applicable work (complete and in progress) should be on the list for the WSD's activity tracking and visiting. This list was updated by PG&E and shared with the WSD biweekly.

On two separate occasions, WSD staff were informed by concerned community members regarding significant projects for fire mitigation that had been planned or in progress for several months but were not documented in PG&E's biweekly WMP activity submission to the WSD. Per each project, the WSD had to obtain information such as project plans and PG&E communication materials. The WSD held briefing calls with PG&E and conducted onsite visits to learn that vegetation clearing and system hardening work taking place at the time was communicated to local governments and citizens for fire prevention purposes but was communicated to the WSD as building capacity and/or resiliency of local circuits instead. This misinformation constitutes a finding in this audit.

4 CONCLUSION AND CORRECTION ACTION FOR FINDINGS SPECIFIED IN THIS AUDIT

The WSD has compiled the following seven findings in this audit of PG&E's implementation of their EVM program in 2020:

Finding	
1	PG&E failed to communicate its use of a new Risk Overlay Model and has provided the WSD with conflicting information regarding when different risk prioritization models were utilized
2	The WSD has received three different EVM prioritization models from PG&E (in September 2020, December 2020, and January 2021) and finds that these three data submissions contain inconsistencies and conflicting information
3	The WSD has identified concerns in the methodology used to arrive at the final risk score rankings provided in the December model
4	PG&E appears to not be sufficiently prioritizing or reducing the risk of wildfire ignition in its implementation of its EVM initiative
5	PG&E's January 13, 2021 data request response does not provide confidence that PG&E's risk prioritization activities are being effectively operationalized
6	The WSD documented four EVM defects through inspections, three of which remain open/unresolved.
7	PG&E has not communicated adequately with the WSD regarding defect resolution (PG&E has corrected seven WSD-identified defects that were documented as disputed/unresolved without notifying the WSD), data requests, or large scale clearing projects.

PG&E must submit an Enhanced Vegetation Management Audit Response & Corrective Action Plan no later than February 23, 2021 addressing the above findings. The response and corrective action plan must include the following elements:

1. A clear description of the specific location within PGE's 2021 Wildfire Mitigation Plan that will detail its 2021 EVM initiatives;

2. A summary of the key differences between PG&E's 2020 EVM risk prioritization effort, its planned 2021 EVM risk prioritization for 2021 EVM projects and how the 2021 prioritization will target the highest risk areas;
3. A complete and detailed list of planned 2021 EVM projects;
4. A description of how the list in #3 ensures PG&E is targeting the circuits with highest risk first;
5. A detailed explanation of the methodology underlying the scores in the December model (see Finding 3 for context);
6. A description of the circumstances that contributed to PG&E's failure to adequately prioritize the highest risk circuits in EVM in 2020, including a detailed explanation that lists any and all factors that led to the decision to not prioritize the top 20 circuits with zero work completed (based on both the September and January risk score rankings);
7. A description of the circumstances that contributed to PG&E management's inconsistent reporting on the use and implementation of its risk modeling;
8. A definitive, signed statement from PG&E's Vice President of Regulatory Affairs committing to notifying the WSD whenever a defect is corrected, even if PG&E is actively disputing the defect but chooses to remedy it for any reason; and
9. A definitive, signed statement from PG&E's Vice President of Regulatory Affairs committing to providing complete and thorough responses to the WSD's requests for work plans, including all wildfire mitigation-related projects, regardless of internal project categorization.

This audit report is specific only to WSD inspections and audit analysis conducted to date, as of January 15, 2020, and does not certify that all other EVM work performed by PG&E in 2020 has been done satisfactorily. The WSD preserves the right and authority to conduct further EVM inspections and audits.

5 APPENDIX: DETAILED EVM WORK PRIORITIZATION INSPECTION FINDINGS

The WSD has performed 306 "WMP5" vegetation inspection activities for PG&E to date (see Table 11 below for definitions), which includes inspections performed in response to PG&E's self-reported EVM work and inspections performed in areas where PG&E has not yet conducted EVM work.

Table 11. Definitions: Appendix

Term	Definition
Activity code	This code represents the General Order, PRC Code, or WMP Category inspected
Activity units	Units are used to quantify the activity inspected
WMP5	Vegetation Management and Inspections activity code in HFTD. For WMP5 number of activity units, inspections document only one unit per initiative inspected

Among the 306 WMP5 inspection activities performed for PG&E to date, 45 defects were identified (four specific to EVM, 41 specific to vegetation management). Detailed inspection

findings for three open EVM defects are below; PG&E has received notice of these defects and has provided its response to the WSD. See Finding 6 for EVM defect context.

The Narrows 1101 circuit has one open, severe defect:

1. QA/QC results show poor performance of the current vegetation management program. (see Figure 6 below).



Figure 6. Narrows 1101 defect

The Oakland K-1101 circuit has two open, severe defects:

1. Vegetation management to achieve clearances around electric lines and equipment (see Figure 7 below).



Figure 7. Oakland K-1101 defect #1

2. Vegetation management to achieve clearances around electric lines and equipment (see Figure 8 below).



Figure 8. Oakland K-1101 defect #2