

# Enhanced Vegetation Management (EVM)

CALIFORNIA PUBLIC UTILITIES COMMISSION  
ENHANCED OVERSIGHT AND ENFORCEMENT PROCESS

PUBLIC WORKSHOP

November 8, 2021



- 01 EVM Corrective Action Plan (CAP) Elements**
- 02 Updated 2021 EVM Scope (Elements 3, 4, 5 and 6)**
- 03 2021 EVM Progress to Date (Element 3)**
- 04 Communication with Employees and Contractors (Element 5)**
- 05 Development of 2022 EVM Workplan (Element 3)**
- 06 Impact and Duration of Corrective Action Plan (Element 13)**

# Topic 1: EVM CAP Elements





# EVM CAP Elements

Today's workshop aligns with our 90-Day Update\* and the elements highlighted below.

01 ✓	Details of the circumstances that contributed to PG&E's failure to adequately prioritize the highest risk lines in its EVM work in 2020	08 ✓	Description of the circumstances that contributed to PG&E's inconsistent reporting on its risk modeling and risk ranking lists
02 ✓	Details on how PG&E determines where to target EVM in the next 90 days	09 ✓	Verification of that the risk model being used to prioritize EVM is as set forth in the company's report
03	<b>Projects for the calendar year of the reporting date and the EVM plan for the subsequent calendar year, when available</b>	10 ✓	Verification that the company will target a majority of EVM to the highest risk circuit protection zones first in the next 90 days
04	<b>A description of how the list in item 3 above ensures PG&amp;E is prioritizing powerlines with highest risk first</b>	11 ✓	Verification that PG&E targeted a substantial majority of EVM to the highest risk circuit protection zones first in the prior 90 days
05	<b>Decision-making and documentation work evaluation, prioritization revision and communication</b>	12 ✓	Verification that PG&E has communicated information, targets and internal decisions to EVM personnel
06	<b>Rationale for any planned EVM work that does not target powerlines with highest risk first</b>	13	<b>A proposed timeline for ending the required reporting including milestone goals and a targeted percentage of high-risk powerline circuits to be completed by those dates</b>
07 ✓	Any changes to associated risk models occurring over the prior 90 days or planned for the subsequent 90 days	14 ✓	A description of how the proposed Corrective Action Plan will complement and not undermine PG&E's compliance activities

\*Filed November 4, 2021.

# Topic 2: Updated 2021 EVM Scope



# Drivers of 2021 EVM Scope Change

Since submitting our CAP on May 6 and our first 90-Day Update on August 4, we have updated our 2021 EVM Scope of Work following three guiding principles.

1

## Continuous Validation

Our **internal coordination and communication** are allowing us to address potential oversights and incorporate them into the existing workplan.

2

## Community Commitments

We may perform work on CPZs outside of the 1-n ranking approach **to complete work under an approved permit or otherwise fulfill a previously made commitment in HFTD areas.**

3

## New Ignition Data

We are **tracking vegetation-related events and ignitions in real time**, thoroughly investigating and making informed decisions on adding those CPZs to the plan.



# August 90-Day Update CPZ Additions

DRIVERS

1 2

The 2021 EVM Scope was finalized April 23 and was updated in the 90-Day Update submitted on August 4 to include one additional CPZ and five commitments.






CPZ	Remaining EVM Miles*	Risk Tranche	Tree-Weighted Rank
<b>① CONTINUOUS VALIDATION</b>			
SAN JOAQUIN #2 1103circuit_breaker	67	<= 10%	40
<b>② COMMUNITY COMMITMENTS</b>			
GIRVAN 11011330**	31	<= 10%	97
BELL 1107	5	<= 10%	103
SILVERADO 210478268	6	<= 10%	243
SAN LUIS OBISPO 1107V60	16	>20 - 30%	650
WISHON 1101circuit_breaker	5	>20 - 30%	827

\*Data is rounded.

\*\*Included in the original scope and escalated to ensure completion in 2021 (Federal Court Commitment).

As a result of 2021 ignitions, and as included in the 90-Day Update submitted on November 4, five additional CPZs were added to the 2021 EVM Scope of Work.

**PROCESS**

- 
**Did the CPZ have a vegetation-related ignition?**
- 
**Is the CPZ in the top 20% of the work plan and outside of the current year's scope?**
- 
**What was the assessment by the Public Safety Specialist for the CPZ where the ignition occurred?**
- 
**Did the 'extent of condition patrol' indicate additional risk within that CPZ?**
- 
**Develop recommendation for Wildfire Risk Governance Steering Committee review**

CPZ	Remaining EVM Miles*	Risk Tranche	Tree-Weighted Rank
<b>3 NEW IGNITION DATA</b>			
EL DORADO PH 210126000	33	<= 10%	116
GIRVAN 11021028	18	<= 10%	317
COLUMBIA HILL 1101circuit_breaker	39	>10 - 20%	467
GEYSERVILLE 110137454	6	>10 - 20%	470
BRUNSWICK 110350070	27	>10 - 20%	531

\*Data is rounded.





# Updated 2021 EVM Scope of Work

The 2021 EVM Scope of Work includes these additional five CPZs.

	2021 EVM SCOPE OF WORK		
	May 6	Aug. 4	Nov. 4
Total Risk Ranked CPZs	99	100	105
CPZs with Community Commitments/Permits	0	4	4
Total CPZs in 2021 EVM Scope of Work	99	104	109
Total Miles in 2021 EVM Scope of Work*	2,400	2,522	2,646

\*Data is rounded.

# Topic 3: 2021 EVM Progress to Date



# 2021 EVM Progress to Date

We continue to exceed the goals set forth in the May 6 CAP and continue to make substantial progress towards the December 31 goal of 1,800 miles.

Date	Miles*		Percentage Completion of 1,800 Mile Goal	
	CAP Goal	Actual	CAP Goal	Actual
June 1	210	415	11%	23%
September 1	850	1,034**	47%	57%
December 31	1,800	-	100%	-



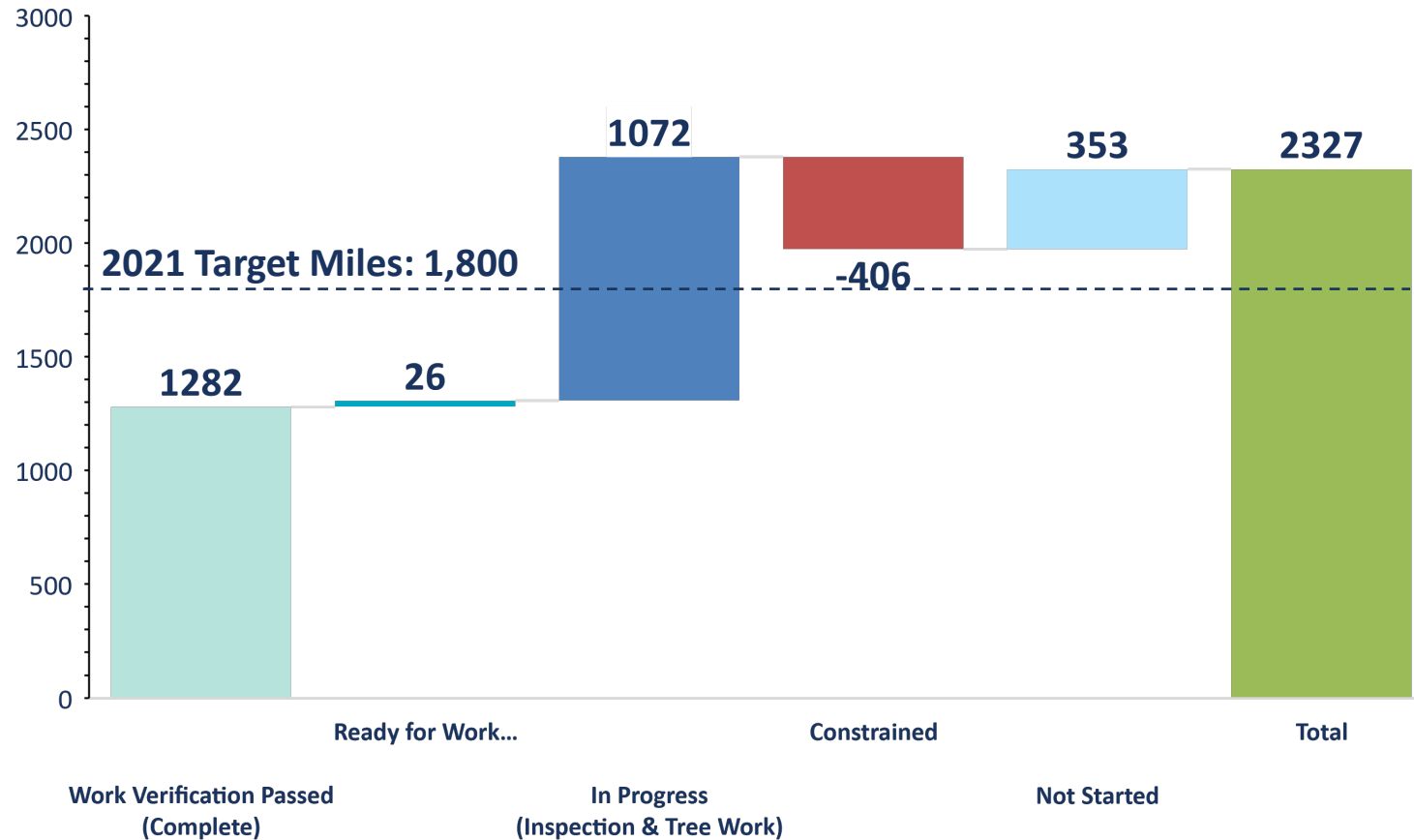
\*Data is rounded.

\*\*Data as of September 30, 2021: 1,282.



# EVM Progress to Date

The majority of our work was performed on the highest risk CPZs, exceeding our goal of performing at least 80% of our work in the top 20% risk miles.



EVM Risk Distribution YTD*		
Risk Tranche	Work Verified Miles**	% of Total Work Verified Miles**
<= 10%	1,228	96%
<= 20%	18	1%
> 20 – 30%	16	1%
> 30 – 40%	6	< 1%
> 40 – 50%	8	< 1%
> 50%	5	< 1%
<b>TOTAL</b>	<b>1,282***</b>	<b>100%</b>

\*Data as of September 30, 2021.

\*\*Data is rounded and may result in an approximate three-mile variance.

\*\*\*These miles include 1,198 miles on the CPZs in our 2021 Scope of Work and 84 additional carry-over miles of EVM work on CPZs outside the 2021 EVM Scope of work.

More than 260 previously constrained miles have been resolved as of September 30 through our proactive efforts:



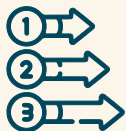
Onboarded more than 120 **dedicated resources for consistent and timely documentation and resolution of constraints**



Updated customer collateral (door hangers, phone script, IVR message, postcards, letters) **for proactive customer outreach**



Utilized environmental team to develop and issue **several programmatic environmental releases to construction**



Developed clear **definition and process for resolution of constraints**

Remaining constrained miles as of September 30:

CATEGORY	MILES
Customer Refusals or Non-Contacts	197
Land or Environmental Hold	209
Permitting	1
Fire Impacts	0
<b>TOTAL</b>	<b>406*</b>

Of the 406 constrained miles, approximately 324 are within the top 1,800 miles (data is rounded).\*\*

\*Total constrained mileage may be lower than the sum of individual constraint categories due to some segments containing multiple constraint types.

\*\*Constraint miles are not audited by PG&E's Internal Audit department because constraints move in and out as they are identified and resolved.

\*\*\*To date, work has been performed on approximately 26,000 trees associated with the 406 constrained miles. There are an additional 27,000 trees where work is planned to be performed and 63,000 trees where work can only be performed after the constraints are addressed. The completion of all of these trees is required for the completion of the 406 constrained miles. These are approximate numbers of trees and miles that have not been reviewed by Internal Audit.

# Topic 4: Communicating with Employees and Contractors



We are leveraging a lean operating system to drive transparency, operational efficiencies and accelerated problem-solving to deliver on objectives.



## VISUAL MANAGEMENT

Leveraging ground-level metrics to pinpoint **focus areas with clear objectives**



## OPERATING REVIEWS

Enabling data-informed decisions, **aligning daily on KPIs, actions and focus areas** and highlighting best practices



## PROBLEM SOLVING

Conducting field visits to gather **frontline feedback** and focusing on daily, **actionable problem-solving sessions**



## STANDARD WORK

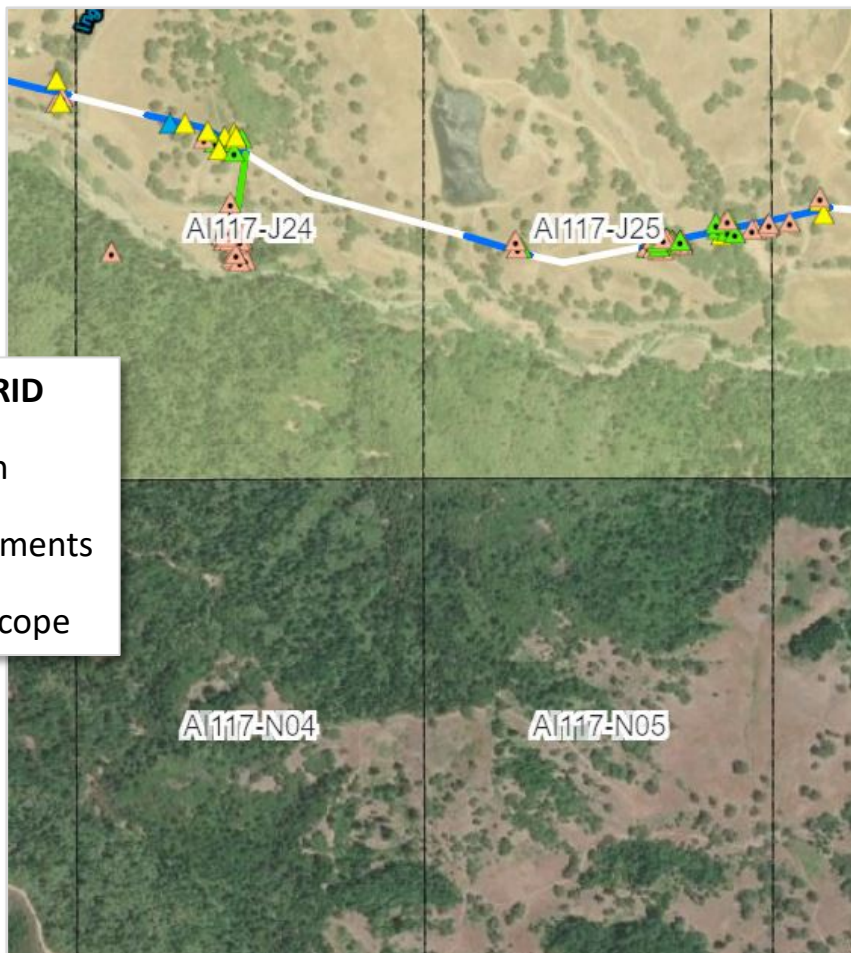
Using a **risk-based workplan** to focus on the highest-risk circuits and mitigate wildfire risks






EVM Command Center

# Controls for Releasing and Managing Work to Contractors

Dedicated PG&E personnel manage the EVM Scope of Work daily and how work is released and assigned to contractors.





**12 UNIFIED GRID**

-  CPZ Plan
-  Commitments
-  Not in Scope

## Overview

**Only the 2021 EVM Scope of Work approved by the WRGSC\* is mapped into ArcGIS Collector.**

- The Unified Grid is color-coded and places a boundary on in-scope work
- Vegetation points are mapped and coded by status
- PG&E releases work to contractors by changing status
  -  → 
  - For example: HOLD → RELEASE
- This limits the contractor's work area to in-scope CPZs

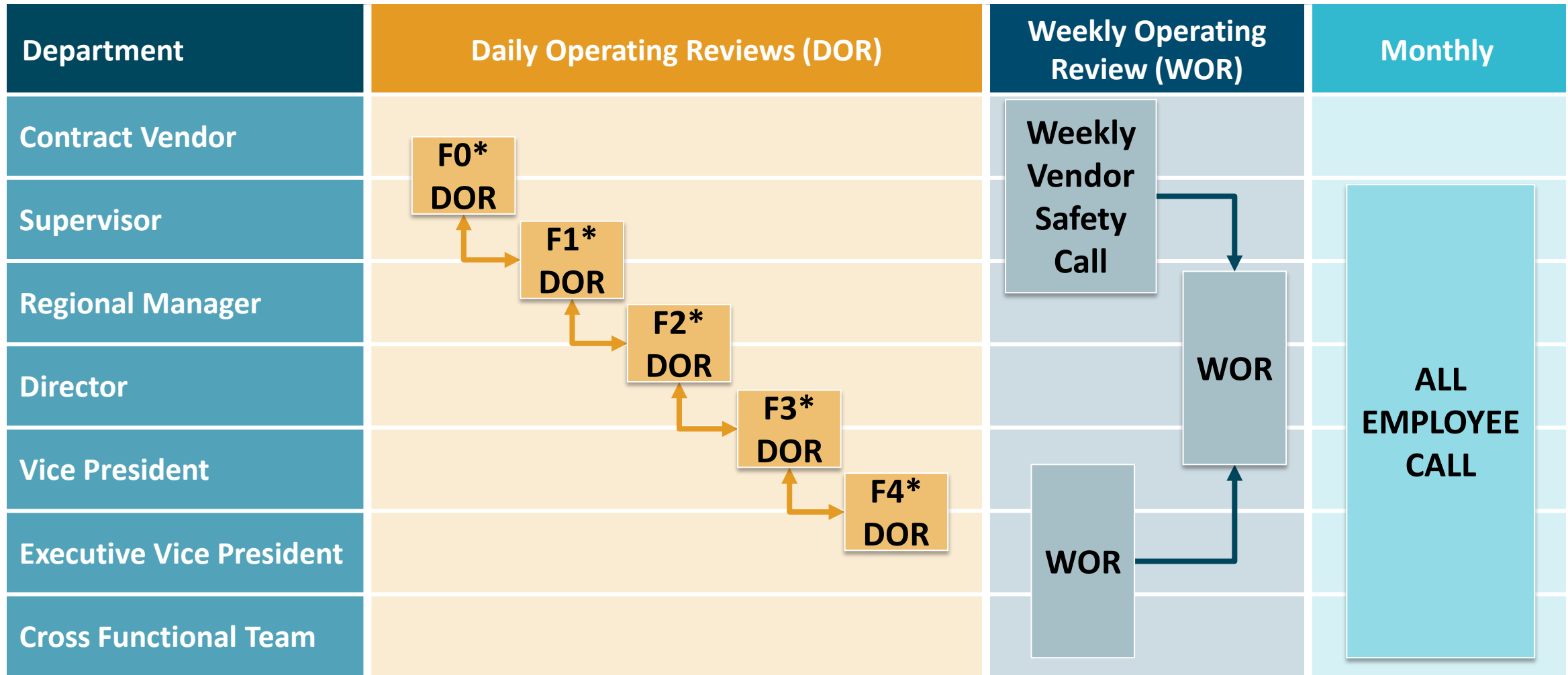
\*Wildfire Risk Governance Steering Committee.





# Communicating with Co-Workers and Contractors

PG&E's lean operating system is designed to drive more effective and responsive decision-making, enable radical transparency of work execution to plan, reduce obstacles and deliver better outcomes for customers.



\*F0 through F4 is a functional level within the organization.

Some of the measures included in this presentation are contemplated as additional precautionary measures intended to further reduce the risk of wildfires.

Using lessons learned from the CAP, we are constantly evaluating our EVM work to self-identify and resolve issues expeditiously.

## EVM Re-Patrols

In mid-June 2021, a procedural gap in encroachment criteria was identified by a Work Verification (WV) Manager and immediate actions were taken.

- Execution and WV **work was suspended**, the gap was shared with teams and procedural **expectations were reset**
- Vegetation Management **training is currently being updated** to include the procedure requirements
- WV **re-patrolled all completed EVM miles** from August 2020 through June 2021 to verify compliance



## Tree Assessment Tool (TAT) Programming

In the February 2021 Version 9 TAT release, a coding misalignment yielded an incorrect score in the TAT, causing an incorrect determination of 'do not abate' for conifers with a lean that is greater than five degrees. We have undertaken the following actions to address this issue:

- **Immediate TAT Update**
- **TAT Code Review**
- **Stakeholder Engagement**
- **Vegetation Point Re-Inspection**
- **Release Testing Protocol**



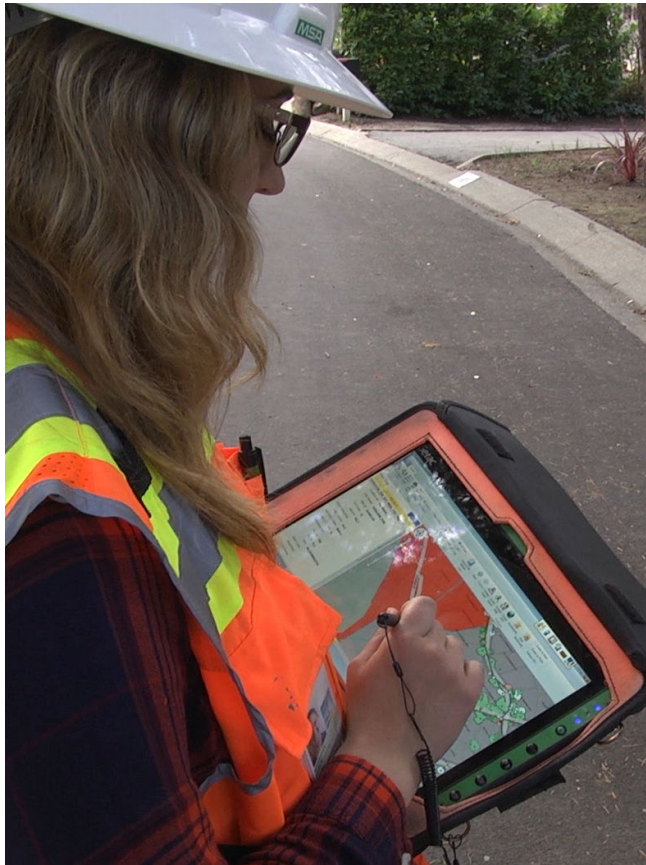
*\*For context, while each execution issue needs to be addressed, the total number of miles impacted by these two issues is still being evaluated but is relatively small as compared to the more than 1,200 miles of EVM work performed through September 30, 2021.*

# Topic 5: Development of 2022 EVM Workplan



# 2022 EVM Scope of Work Development

We have developed a preliminary 2022 EVM Scope of work which was reviewed and approved on October 27. This Scope of Work will include two tranches of work:



## In-Progress Work from 2021

- **Remaining in-progress CPZs** from the 2021 EVM Scope of Work
- **Constrained CPZs** that have been or will be resolved



## 2022 Risk-Ranked CPZs

- The second tranche is the **next approximately 2,700\*** miles of CPZs from the 2021 Tree Weighted Prioritization Risk Model
- Any **additional scope as identified and approved by the WRGSC** may change or expand the 2022 workplan

*\*The 2022 EVM Scope of Work target will not include all 2,700 miles, but these miles will be used in determining the target number of miles in our 2022 plan. The target number of miles in our 2022 EVM Scope of Work will be provided in our 2022 Wildfire Mitigation Plan.*

# Topic 6: Impact and Duration of CAP



# Corrective Action Plan Timeline

**June 23**  
CPUC Public Workshop

**May 6**  
CAP  
Submitted

**Jun. 21**  
**Goal Exceeded**  
542.9 miles  
completed  
96% in the top 20%  
of risk-ranked CPZs

**Aug. 4**  
90-Day  
Update  
Submitted

**Sept. 30**  
**Goal Exceeded**  
1,282 miles  
completed  
97% in the top 20%  
of risk-ranked CPZs

**Nov. 4**  
90-Day  
Update  
Submitted

**Dec 31, 2021**  
1,800 high-risk miles,  
100% completion

**June 1:** EVM  
Command  
Center  
Opened

**July 30, 2021**  
CPUC, OEIS  
EVM  
Command  
Center visit

**Aug. 5**  
NorthStar EVM  
Command  
Center visit

**Jan. 2022**  
CPUC and OEIS  
verification of 2021  
completed work

**Feb. 2022**  
Proposed end of  
required reporting

**PG&E Milestones**

**External Engagement**

*Some of the measures included in this presentation are contemplated as additional precautionary measures intended to further reduce the risk of wildfires.*

# Public Comment and Questions



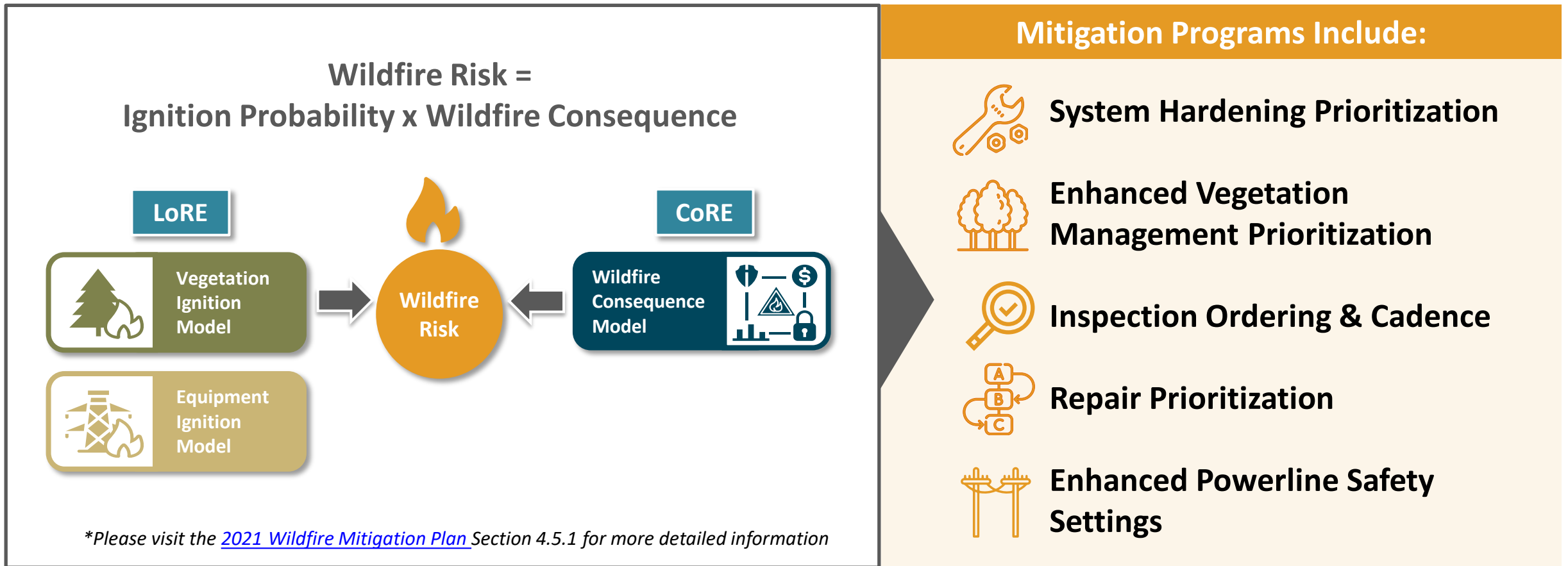
# APPENDIX





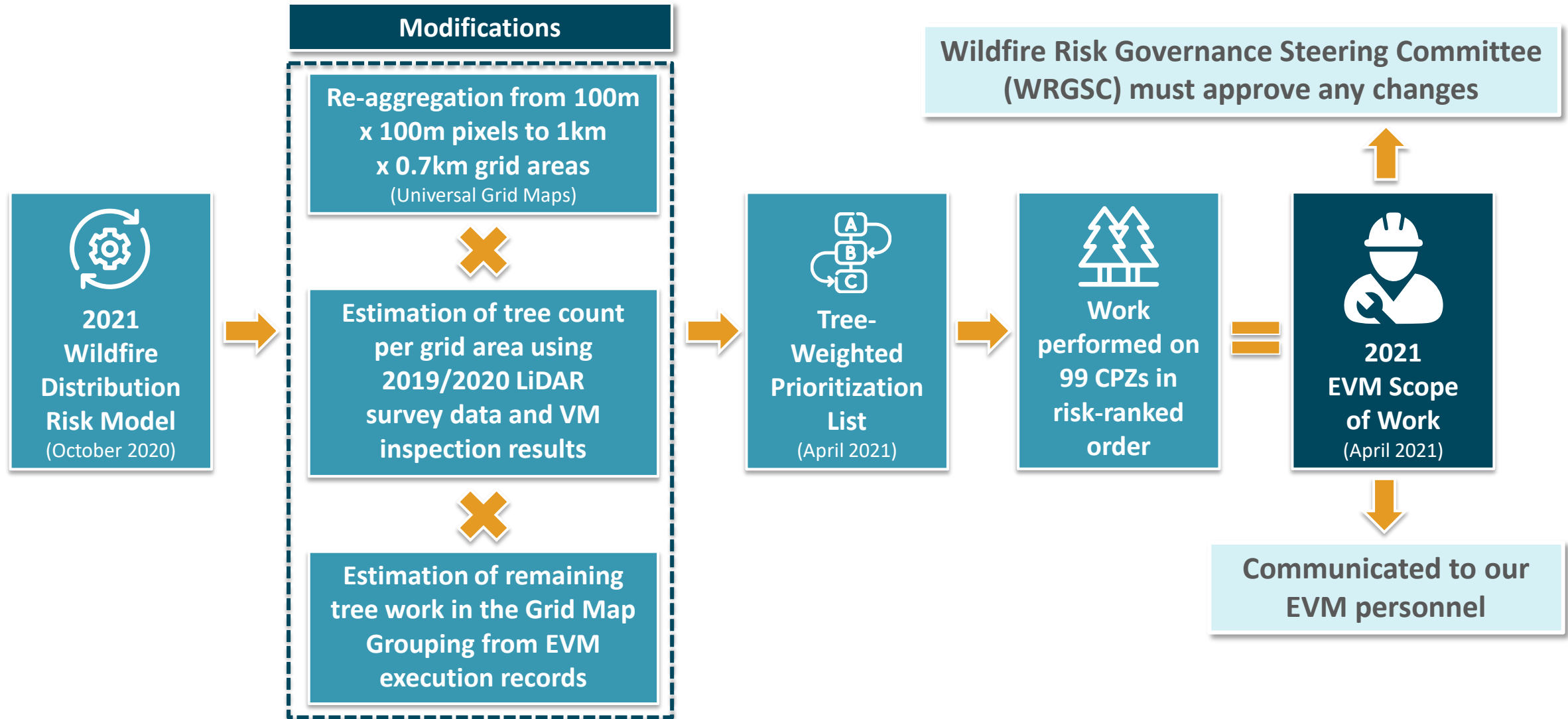
# 2021 Wildfire Risk Model (Element 2)

Our 2021 wildfire risk modeling framework is used to assess the probability of an ignition, or Likelihood of Risk Event (LoRE), and the Consequence of Risk Event (CoRE)\*. This framework helps us target our Enhanced Vegetation Management work and other wildfire safety efforts.



# Development of the 2021 EVM Scope (Element 5)

This year we used a new, state-of-the-art risk model to create a scope of work that addresses the highest risk circuits first.



## 2019 and 2020 Commitments

- In 2019 and 2020 we made commitments to cities, counties and agencies to conduct work in areas that had high risk rankings under previous risk models but may not reflect the highest risk Circuit Protection Zones (CPZs) based on the EVM tree-weighted prioritization list
- Given the lead time necessary to obtain permits and the amount of work already undertaken with these cities, counties, and agencies to obtain approval for EVM work, we decided to continue with these commitments
- We may perform work on CPZs outside of our 1-n ranking approach to take advantage of a permit or otherwise fulfill a community commitment (these are a small percentage of the total EVM miles in 2021)

**These commitments will not affect our goal of 80% of the EVM work being performed in the top 20% risk miles**



## Process for PG&E officer verification.

ELEMENT	
7	Changes to risk, wildfire consequence or vegetation models in the last or next 90 days
9	Risk model, data sets and vegetation management records used to prioritize EVM alignment with report
10	Targeting substantial majority of EVM work to the highest risk CPZs in the next 90 days
11	Targeting substantial majority of EVM work to the highest risk CPZs in the last 90 days

VERIFICATION	
	<p><b>Conducted by Sumeet Singh, Senior Vice President and Chief Risk Officer</b> using:</p> <ul style="list-style-type: none"> <li>✓ Wildfire Risk Governance Steering Committee</li> <li>✓ Internal audit and validation</li> <li>✓ Daily operating reviews</li> </ul>

**In addition to Elements 7, 9, 10 and 11, Element 12 also receives officer verification.**

## ELEMENT

**12**

### Verification that PG&E:

- Communicates information and internal decisions regarding the 2021 project list and prioritization of work
- Ensures personnel is aware of where to target EVM work in the next 90 days

## COMMUNICATION/COORDINATION

**Daily, weekly and quarterly meetings with our vegetation management team to review:**

- ✓ The 2021 EVM Scope of Work
- ✓ Work progress, including 90-day progress reports
- ✓ Forecasting remaining miles
- ✓ Any approved changes by the WRGSC to the 2021 EVM Scope of Work
- ✓ Any concerns and challenges on how WRGSC-approved changes may impact progress
- ✓ Incorporation of lessons learned

## VERIFICATION



**Conducted by Sumeet Singh, Senior Vice President and Chief Risk Officer**



# Lessons Learned from 2020 (Elements 1 and 8)

LESSONS LEARNED	ACTIONS WE ARE TAKING IN 2021
<b>Carry-Over Work from 2019</b>	<ul style="list-style-type: none"><li>Ensuring that any work carrying over from 2021 into 2022 will be based on the risk-informed 2021 EVM Scope of Work</li></ul>
<b>Use of the Wildfire Risk Model combined with Other Factors</b>	<ul style="list-style-type: none"><li>Focusing primarily on risk by using the 2021 Wildfire Distribution Risk Model and the EVM tree weighted prioritization list</li></ul>
<b>2020 EVM Goal of 50% of work on top 50% of highest risk lines</b>	<ul style="list-style-type: none"><li>Performing work on the highest risk ranked CPZs and focusing at least 80% of our EVM work on the top 20% of the highest risk CPZs</li></ul>
<b>Inconsistent Reporting and communication gaps</b>	<ul style="list-style-type: none"><li>More centralized decision making and oversight through the Wildfire Risk Governance Steering Committee</li><li>Adoption of new tracking processes</li><li>Implementation of daily and weekly operating reviews to improve rigor and visibility of execution</li></ul>