

**Wildfire Risk Governance Forum
November 13, 2020**





Safety


Earthquake
Duck, Cover & Hold

Emergency Plan & Exit Strategy
Have a plan for yourself and your household

24/7 Nurse Care Line
If you experience a work-related discomfort or injury, call [REDACTED] and notify your supervisor.


Wash your hands!


Wear a Mask


Practice social Distancing

Meeting Agenda

Date: 11/13/2020

Desire Outcomes: TBD

Meeting Agenda				
	What - Content	Who - Facilitator(s)	Slide Number	Duration
1	TBD			
2				
3				

Decision and Action Item Review





Key Wildfire Risk Model Governance Forum Decision

Governance Forum Decision Approval Process



Workstream	Decision	Description	Approval Vote	Date
Risk Models	Adoption of the 2021 wildfire risk model for mitigation deployment	<ul style="list-style-type: none">Adopt the proposed ignition model for vegetation ignition and technology for 2021 EMU workAdopt the proposed ignition model for equipment ignition and technology for 2024 system hardening work	<ul style="list-style-type: none">ApprovedApprovedApprovedNot Present	10/30/2020



Key Decision – Adoption of the 2021 Risk Model for Mitigation Deployment

Approval Status: **Approved**

Decision Detail

The approval is for moving from the 2018 wildfire risk model to the 2021 wildfire risk model to inform system hardening, enhance vegetation management and inspections. These changes included:

- Update to vegetation ignition model (LoRe)
- Update to conductor model (LoRe)
- Update to consequence (core)

Concerns and Mitigations

- Inclusion of non-447D areas requested in the next model iteration
- Inclusion of Egress model requested in the next model iteration
- Resource availability to complete "hot risk informed planned work" was challenged
- Detailed description of variables in particular "non-burnable areas" requested
- The ability to calculate tree density within piweb was challenged

Approvals

Approved
Approved
Approved
Approved
Abstain – Not Present

Action Items and Validations

Adoption of the 2021 wildfire risk model for mitigation deployment Deep dive risk model session	Completed - Adopt the proposed ignition model for vegetation ignitions and Technosylva for 2021. OVM work Completed - Adopt the proposed ignition model for equipment ignitions and Technosylva for 2021. System hardening work
Risk models comparison	Completed - Detailed risk comparison between the 2018 risk model and 2021 risk model to highlight improvement of CP2s (Targeting top 100 circuits or CP2s)
Deep dive risk model session	Completed - Hold a Deep Dive Session with (1) the Federal Monitor and (2) the Operational Closure
Model process documentation	In Process - Bring the Model Process Level documentation to this forum for an official approval
Egress Consideration	Road Mapped - Factor in Egress into process for selecting the protection zones to be worked

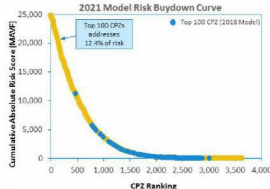
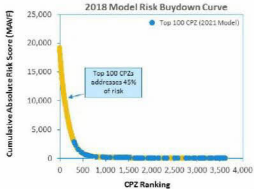
Action Items from 11/09/2020 (Federal Monitor Meeting)

Workstream	Action Item	Description	Responsible party	Resolution	Date
Risk Models	Risk models comparison WGR – 10/29/2020	Identify any risk areas outside of NPTD Model in the next iteration of the DA Model	[REDACTED]	Road Mapped – This will be added as an enhancement to the model road map	XXX
Risk Models	Risk Model Enhancement	Incorporate 2018/19 DAH data and queries data in the next iteration of the DA Model	[REDACTED]	Road Mapped – This will be added as an enhancement to the model road map	XXX
Risk Models	Risk Model Enhancement	Include Egress on the connectivity side for the next iteration of the DA Model	[REDACTED]	Road Mapped – This will be added as an enhancement to the model road map	XXX
Risk Models	Model Documentation	Area to be added to charts on slide 22 (ppt. 11/09/2020) will be Risk Model for new Phase 11	[REDACTED]	Completed	11/18/2020



Risk Model Action Items

Workstream	Action Item	Description	Responsible party	Resolution	Date
Risk Model	4-63-models comparison WGR - 10/30/2020	Create risk comparison between the 2018 risk model and 2021 risk model to highlight movement of CPZs. The getting top 100 (results of CPZs)	[Redacted]	Complete - See the Risk Model Followup Section	11/3/2020



Key Takeaways

- No CPZs in the top 100 overlap
- This will result in significant change to the prioritization and expected risk buydown of mitigations
- The 2018 risk results were not distance weighted, where the 2021 prioritization included a distance factor.

 Risk Model Action Items


Workstream	Action Item	Description	Responsible party	Resolution	Date
NSR Model	Deep dive risk model session WDR-15/16/2020	NSR's Deep Dive session with (1) the Federal Monitor and (2) the Operational Observer	[Redacted]	Complete - Meetings have been scheduled for 11/8 & 11/12	11/12/2020

Updates

- First Deep Dive session held on Monday 11/10/2020 at 1:00pm PST
- Second session will be held on Thursday 11/12/2020 at 12:30pm PST

Risk Model Action Items					
Workstream	Action Item	Description	Responsible Party	Resolution	Date
risk model	risk model contributors	provide a detailed description of the top model contributors	[REDACTED]	Complete - Targeted for inclusion in open data release	11/13/2020

Vegetation Model - Contributors Description		Conductor Model - Contributors Description	
Variable	Description	Variable	Description
Tree height	Maximum tree height, in meters, for each 100m x 100m pixel area using the distribution grid	Nonflammable area	land cover description similar to imperviousness that includes surfaces that typically don't ignite when a spark occurs
100-hour fuel	The dead fuel moisture data from GRDMET	Daily precipitation, mean	The average daily precipitation from the GRDMET dataset
Vapor pressure deficit	The average vapor pressure deficit from the GRDMET dataset	Conductor material, acsr	Aluminum conductor steel-reinforced
Windy-summer-day-pct	Percentage of days that have high frequency of gusts	Estimated conductor age	Number of years since the installation year
WU	High fuel/moisture district	Max tree height	Maximum tree height, in meters, for each 100m x 100m pixel area using the distribution grid
Precipitation	The average daily precipitation from the GRDMET dataset	Reliability Program score	Score with more than three calls per phase
Impervious	Impervious ground cover (i.e. non-flammable)	Vapor pressure deficit, mean	The average vapor pressure deficit from the GRDMET dataset
Specific humidity	The average specific humidity from the GRDMET dataset	Conductor size 2	Conductor size 2
Burn index	An derived variable based off of the geographical and topographical aspects of a location	Conductor size 4	Conductor size 4
Wind max	The maximum wind velocity a height of 10 meters from the RealTime Mesoscale Analysis (RTMA) dataset at a resolution of 2.5km	100-hour fuel, mean	The dead fuel moisture data from GRDMET
Temperature	The average temperature from the GRDMET dataset	Max temperature, mean	The average maximum temperature from the GRDMET dataset
Windy-summer-day-pct	Percentage of days that have a high percentage of days with high average wind speed	Wind speed, mean	The average wind velocity a height of 10 meters from the RealTime Mesoscale Analysis (RTMA) dataset at a resolution of 2.5km
Local topography	The topographic position index (TPI) was extracted from a USGS digital elevation model (DEM) at 100-meter resolution	Local topography	The topographic position index (TPI) was extracted from a USGS digital elevation model (DEM) at 100-meter resolution
1000-hour fuel	The dead fuel moisture data from GRDMET		
Energy release	land use/cover [REDACTED]		

 **Risk Model Action Items**

Workstream	Action Item	Description	Responsible Party	Resolution	Date
Risk Models	Model process documentation	Bring the Model Process Level Documentation to this forum for an official approval	[REDACTED]	In Process Targeted for inclusion in deep dive accounts	11/20/2020

1 User Guide
Model procedure and details will be provided in the user guide to the forum for review at the 11/20 session

Risk Model Action Items

Workstream	Action Item	Description	Responsible party	Resolution	Date
Wildfire Governance Charter	Charter update	Update charter to include review of broader set of WFP risk reduction activities and projects (see slide).	[Redacted]	Completed. Risk Charter has been updated, included in attached materials.	11/05/2020

See updated slide for the updated wildfire governance Charter

Meeting Purpose:

Drive decision making on:

- Risk reduction: Review alignment of the top-level risk board to use to guide the work. Provide a focus to review key risk board assumptions and associated reports.
- Work:
 - Discuss completion/consolidation of the highest priority risk mitigation work (associated with investments, asset, strategy and operational needs; guide charter is needed)
 - Discuss the approval work plans completed and the quality of the completed work is monitored.

Key Deliverables:

- Integrate individual wildfire mitigation action items into a single governance session
- Identify key focus on system hardening, operational response management, inspections and repairs and will expand into other areas of wildfire and PPS mitigation work
- Meeting topics and supporting material will adjust based on discussion and request from Working Directors.

Attendees:

- Chief Risk Officer
- Working Members:
 - VP Asset, Risk Management & Community Wildfire Safety Program
 - VP Major Projects and Programs, Electric Operations
 - VP Wildfire Safety and Public Engagement
- VP Chief Audit Officer

Resource Members:

- Sr. Director, Electric Asset Strategy
- Sr. Director, Major Programs & Project Delivery
- Sr. Director, Risk Management
- Director, CIP & MIP

Workstream Lead:

- System Hardening Director, Distribution Strategy
- Enhanced Inspection Management, Director, Regulatory Management
- Inspections & Repairs Manager, Transmission Standards

Facilitator:

- Sr. Director, Risk - Special Projects

How Decisions are Made:

- Detail of voting mechanism used for an attendance for decisions to be made
- A simple majority vote by attending committee members
- No transfer. Chair hold the tie-break vote.

Meeting Logistics:

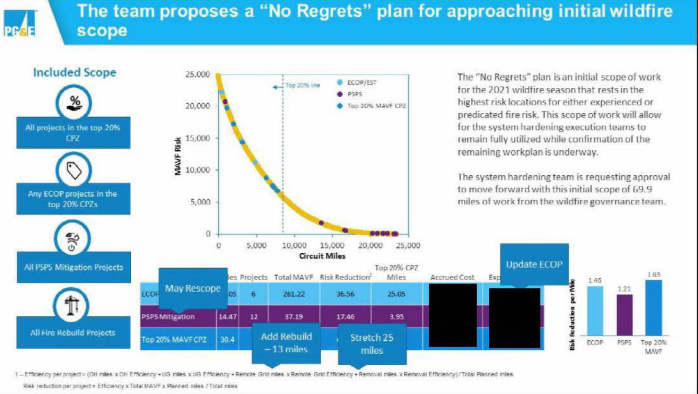
- Frequency/Duration: Weekly (every Friday)
- Details:
 - Pre-read materials sent 1 day before meeting.
 - Action items included in following meeting material
- Agenda: Sr. Director, Risk - Special Projects to approve final agenda.

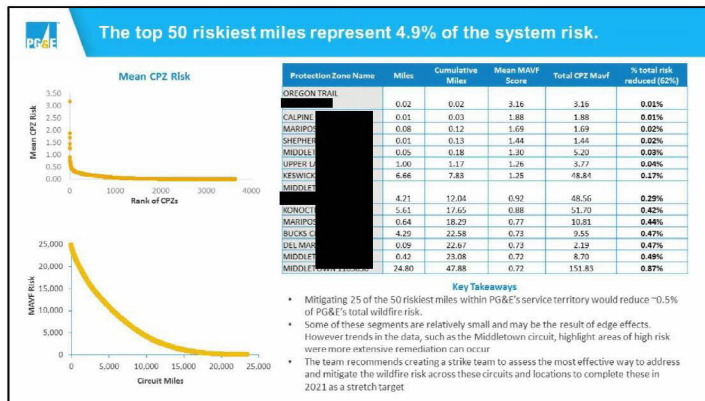
11

System Hardening



Together, Building
a Better California







**Need to show data on Top CPZ that got hit
in 2019 and 2020 PSPS Events on the Risk Curve
As well as a table of those CPZ, similar to the
Top 50 miles, may not have it for this week
But we need to mention it**



The scope for the 2020 Rebuild is focused in XXXX

On a GIS Map and on a Tableau Dashboard – I can get [REDACTED]

[REDACTED] started on both once I have the order numbers.

*Yes of course. I can have [REDACTED] Work with you
Tableau has GIS Views.*

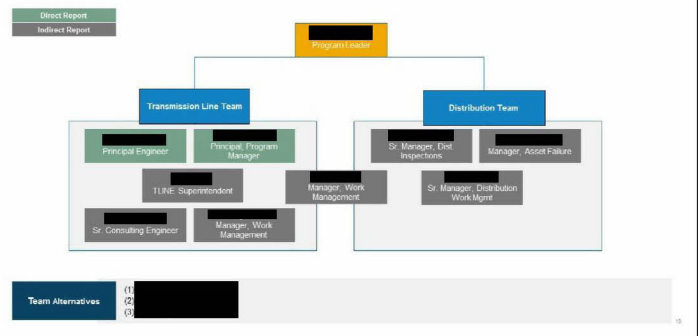
Overhead Inspections



Together, Building
a Better California



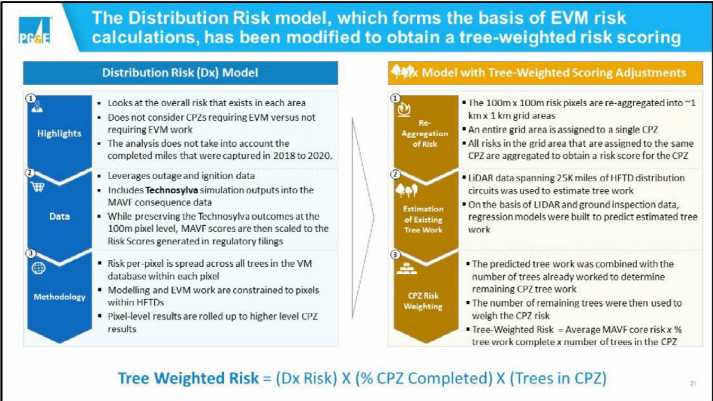
The inspections team is requesting the following structure to support the execution of the defined scope



Enhanced Vegetation Management

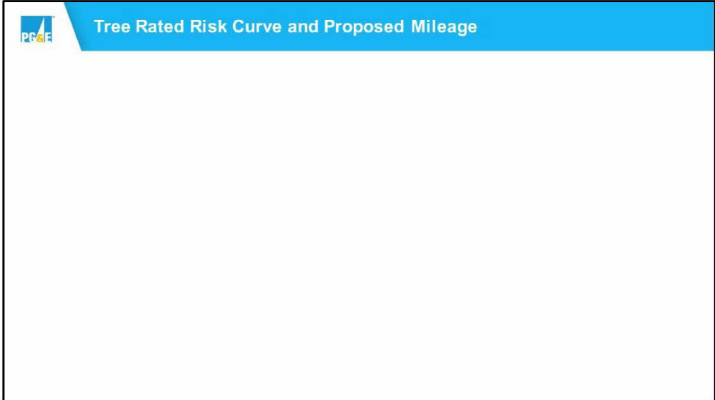


Together, Building
a Better California

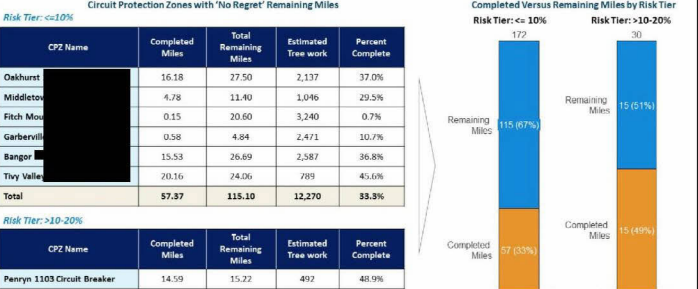




Tree Rated Risk Curve and Proposed Mileage



EVM is requesting approval to commence work on ~130 'no regret' miles that have existing work underway



While the full EVM 2021 work plan is being discussed, the EVM team seeks an approved scope for work starting in December that includes 130 miles prior to the approval of the full 2021 work plan

2021 EVM Highlights

Key Features and Scope Areas

Circuit Protection Zones (CPZs)

- The 2021 plan incorporates the **concept of the CPZ** – a term coined by the Asset Strategy team
- CPZs are being used because they are **tied to isolation devices** on circuits, and in the case of PSPS events, indicate a way to isolate a circuit from a certain point

Plan rationale

- The 2021 LVM plan has been prepared with the intent that:
 - The plan **avoids any System Hardening projects** in 2021
 - The plan focuses on CPZs that have between **60-90% completion** in line with maintaining EVM scope within the routine program

Scope


- The plan targets **190,000 trees** and **2,300 miles** of distribution circuits
- The plan envisions a **pre-inspection of between 831-904K trees**, **tree work of an estimated 159-195K trees** and **removal of an estimated 100-133K trees**
- The current plan has been prepared on the basis of a tree-based weighted analysis of risk across CPZs to take into account tree work already completed – a variable that is missing from the Dix model

Regional Distribution of Targeted Mileage (miles)

Region	Miles	Percentage
Bay Area	1,606	22%
Central Coast	949	13%
Central Valley	1,241	17%
North Coast	1,061	17%
North Valley	2,190	30%
Sierra	2,153	29%
Total	7,300	100%

Other Considerations

- Plan Inputs:** The plan has been prepared on the basis of work completed and risk from the VM Wildfire Risk Model
- The plan overlaps with inputs from local subject matter experts (SMEs), prior inspections and local customer/agency contacts
- Regions:** Plan targets have been balanced with respect to a 12 year plan across each of the regions
- Estimated cost:** A direct cost of [redacted] is estimated for pre-inspection and tree work spend
- CPZ Inclusion:** CPZs have been included on the basis of the following confidence levels:
 - CPZs where tree work has been **60 percent** completed and have been identified for further LVM work
 - CPZs where more than **90 percent** of the work has been completed are not targeted as there are other environmental or access issues that are the source of risk and cannot be mitigated by additional EVM work


 Action Items					
Workstream	Action Item (Initial Date)	Description	Responsible party	Resolution	Date
Enhanced Vegetation Management	EVM Risk Buydown Curve WGR – 11/9/2020	Plot and show the 1130 miles (80-90% Carry Over Work that needs to be finished) on the EVM – 22 Strike Tree and Overhang (Weighted) Risk Buydown Curve	Support – [Redacted]	In Process – Current scope is being plotted against the current risk buydown curve	11/13/2020
Enhanced Vegetation Management	EVM programs timeframes WGR – 11/9/2020	Determine the overall time frame and pace for the EVM program when Strike Potential Trees are factored into the 2200 miles of WFTD Circuits. Understand which of the 2200 miles need EVM work	[Redacted]	In Process – Forecast program time is being developed alongside tree weighted risk	11/13/2020
Enhanced Vegetation Management	EVM programs and resources WGR – 11/9/2020	Provide a full picture of all vegetation management work, outside of just the enhanced vegetation management.	[Redacted]	In Process – Review of other programs underway	TBD
Enhanced Vegetation Management	System hardening and EVM work overlay WGR – 11/9/2020	Evaluate the areas that are being targeted by system hardening to align for operational efficiencies between the two programs. Dependency on 2021 SH Work Plan	[Redacted]	In Process – Current scoping appears to not have operational efficiencies with hardening	11/13/2020
Enhanced Vegetation Management	Trees density statistic WGR – 11/9/2020	Show tree density from the 2018 and 2020 work. Provide tree density number per mile proposed as we show future work 2021, 2022	Support – [Redacted]	Not Mapped – LICAD tree density will be examined for inclusion in future risk modeling	TBD

25

Action Items and Next Steps



Together, Building
a Better California

 Action Items					
Workstream	Action Item (Initial Date)	Description	Responsible Party	Resolution	Date
Enhanced Vegetation Management	FVM Risk Reduction Curve WGR - 11/1/2020	Plot and show the 120 miles/90 90% Carry Over Work that needs to be included on the DM - Q2 (Sens Tree and Overhang (Weighted) Risk Reduction Curve	[Redacted]	In Process - Current scope is being plotted against the current risk laydown curve	11/19/2020
Enhanced Vegetation Management	FVM programs timeframes WGR - 11/1/2020	Determine the overall time frame and pace for the FVM programs when Sinks Potential Trees are factored into the 23000 miles of W12 Circles Underland which of the 29500 miles need FVM work	[Redacted]	In Process - Dependent on prioritization decision	11/26/2020
Enhanced Vegetation Management	FVM programs and roadwork WGR - 11/1/2020	Provide a full picture of all vegetation management work, outside of just the enhanced vegetation management.	[Redacted]	In Process - Review of other programs underway	11/26/2020
Enhanced Vegetation Management	System hardening and FVM work overlay WGR - 11/2/2020	Evaluate the areas that are being targeted by system hardening to align for operational efficiencies between the two programs. Dependency on 2021 SR Work Plan	[Redacted]	In Process - Current scoping appears to not have operational efficiencies with hardening	Dependent on SR plan
Enhanced Vegetation Management	Tree density statistic: WGR - 11/1/2020	Show Tree Density from the 2018 and 2020 Work. Provide tree density number per mile processed as we show future work 2021, 2022	[Redacted]	Road Mapped - UTM tree density will be examined for inclusion in future risk modeling	TBD



Action Items (Cont'd)

Workstream	Action Item	Description	Responsible Party	Resolution	Date
Risk Models	Risk models comparison WGR - 10/30/2020	Compare risk comparison between the 2018 risk model and 2021 risk model to highlight movement of CRs (Targeting top 100 in units w/ EFS).	[REDACTED]	Completed	11/11/2020
Risk Models	Deep dive risk model session WGR - 10/30/2020	Hold a Deep Dive Session with (1) the Federal Monitor and (2) the Operational Observer.	[REDACTED] to be part of the meeting	Completed	11/11/2020
Risk Models	Risk model contributors	Highlight contributors to the risk model.	[REDACTED]	Completed	11/11/2020
Risk Models	Model process documentation	Bring the Model Process doc to documentation to this for use for an official approval.	[REDACTED]	In Process - Targeted for inclusion in deep dive sessions.	11/20/2020
Risk Models	Egress Consideration	Factor in Egress into process for selecting the protection zones to be worked.	[REDACTED]	Road Mapped - Egress has been considered as a future enhancement for the risk model.	11/09/2020
Offshore governance Charter	Charter update	Update charter to include review of broader set of WP risk reduction activities and project oversight.	[REDACTED]	Complete - Risk charter has been updated, included in attached materials.	11/09/2020



Action Items from 11/09/2020 (Federal Monitor Meeting)

Workstream	Action Item	Description	Responsible Party	Resolution	Date
Risk Models	Risk Model Comparison WGR: 10/30/2020	Include high risk areas outside of MFD in the next iteration of the Du Model	[Redacted]	Road Mapped - This will be added as an enhancement to the model roadmap	11/23/20
Risk Models	Risk Model Enhancement	Incorporate 2019 LIDAR data and species data in the next iteration of the Du Model	[Redacted]	Road Mapped - This will be added as an enhancement to the model roadmap	11/23/20
Risk Models	Risk Model Enhancement	Include signs on the consequence side for the next iteration of the Du Model	[Redacted]	Road Mapped - This will be added as an enhancement to the model roadmap	11/23/20
Risk Models	Model Documentation	Asa to be added to the team alpha 22 Sept 11.09.2020 Wildlife Risk Model Review Final v3	[Redacted]	Completed	11/23/20



Past Action items

Workstream	Action Item	Description	Responsible party	Resolution	Date
Inspection	Inspection Workstream Owner	Schedule meeting to identify the owner of the inspection and/or repair workstream		Completed – inspection lead identified	10/21/2020
Risk model	Risk Model Deep Dive	The risk model needed further detailed discussion before voting and approval could take place		Completed – Follow up session held 10/27. Detail on the risk model was provided in advance of 10/30 approval meeting.	10/23/2020
RIM	RIM review meeting	Schedule additional meeting for RIM review		Completed – Follow up meeting was held on 11/05	11/05/2020
Governance meetings	Meeting updates	Update meeting to be 90 minutes		Completed – future meetings updated – effective 11/13	11/05/2020
Governance meetings	Adj. [redacted] to future meetings	[redacted] to be added to future meetings to provide additional direction from audit		Completed – [redacted] has been added to all future governance meetings.	10/23/2020



Upcoming Review Agenda Items

11/20/2020

- Final Decision on System Hardening Plan (If feasible)
- Initial Review into Inspections 2021 Plan
- Initial Review into Repairs 2021 Plan
- Close out Completed Action Items

12/01/2020

- Final Decision on EVM 2021 Plan (If feasible)
- Decision Items needed for Inspections 2021 Work Plan
- Close out Completed Action Items

12/08/2020

- Decision needed on Inspection. Initial views of 2021 Work Plan
- Decisions needed on Repairs 2021 Work Plan
- Tier 1 – Overhead Conductor Replacement Discussion

31

Appendix



Together, Building
a Better California

 Key Wildfire Risk Model Governance Forum Decision				
Workstream	Decision	Description	Approval Vote	Date
Risk Models	Adoption of the 2021 wildfire risk models for mitigation deployment	<ul style="list-style-type: none"> Adopt the proposed ignition model for vegetation ignitions and Technology for 2021 PDM work Adopt the proposed ignition model for equipment ignitions and Technology for 2022 System Rendering work 	<ul style="list-style-type: none"> Approved Approved Approved Not Present 	10/20/2020



Key Decision – Adoption of the 2021 Risk Model for Mitigation Deployment

Approval Status: **Approved**

Decision Detail

The approval is for moving from the 2018 wildfire risk model to the 2021 wildfire risk model to inform system hardening, enhance vegetation management and inspections. These changes included:

- Update to vegetation ignition model (LoRe)
- Update to conductor model (LoRe)
- Update to consequence (core)

Concerns and Mitigations

- Inclusion of non-447D areas requested in the next model iteration
- Inclusion of Egress model requested in the next model iteration
- Resource availability to complete "hot risk informed planned work" was challenged
- Detailed description of variables in particular "non-burnable areas" requested
- The ability to calculate tree density within pswh was challenged

Approvals

Approved
Approved
Approved
Approved
Abstain – Not Present

Action Items and Validations

Adoption of the 2021 wildfire risk model for mitigation deployment Deep dive risk model session	Completed - Adopt the proposed ignition model for vegetation ignitions and Technosys for 2021 O&M work Completed - Adopt the proposed ignition model for equipment ignitions and Technosys for 2021 System Hardening work
Risk models comparison	Completed - Detailed risk comparison between the 2018 risk model and 2021 risk model to highlight improvement of CP2s (Targeting top 100 circuits or CP2s)
Deep dive risk model session	In Process - Hold a Deep Dive Session with (1) the Federal Monitor and (2) the Operational Closure
Model process documentation	In Process - Bring the Model Process Level Documentation to this forum for an official approval
Egress Consideration	In Process - Factor in Egress into process for selecting the protection zones to be worked

