

Wildfire Risk Governance Committee
System Hardening Project Approvals

February 25, 2021

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PG&E System Hardening Strategy

Two (2) potential go-forward strategies for System Hardening have been contemplated:

Recommended

1

RSE Optimized Risk Buy-down

Objective: Reduce the most amount of risk possible, informed by the RSE score, within the GRC planning period.

Pros:

- Looks towards the long term as climatic risk is worsening
- Significantly lower residual risk for hardened segments addressed and additional risk reduction benefits (i.e., PSPS, ingress/egress) due to proportion of undergrounding likely

Cons:

- Reduced total miles addressable based on time constraints due to proportion of underground
- Due to operational time requirements of undergrounding, some high risk areas may not be mitigated in the near term and must be addressed by other risk mitigation programs (e.g., EVM)

2

Accelerated Risk Buy-down

Objective: Reduce the most amount of overall risk as quickly as possible.

Pros:

- Facilitates risk reduction across the broader service territory (i.e., more miles addressed) based on higher proportion of OH hardening

Cons:

- Residual risk may require "go-backs" with a different mitigation strategy
- Minimal reduction of other risks (e.g., PSPS) not accounted for in current risk modeling

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Key Decision – Approve the PG&E System Hardening Strategy

Approval Status **Pending**

Decision Detail

Approval of the recommended PG&E System Hardening Strategy.
Option 1: Reduce the most amount of risk possible, informed by the RSE score, within the GRC planning period.

Concerns and Mitigations

Approvals

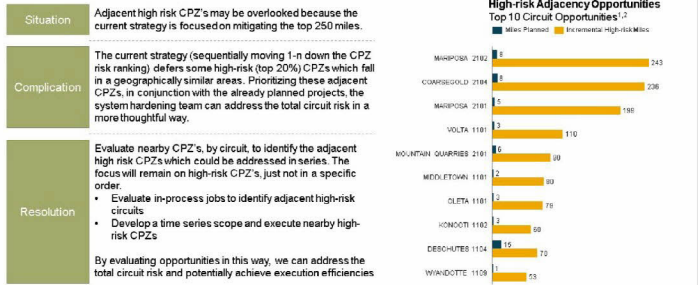
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Action Items and Validations

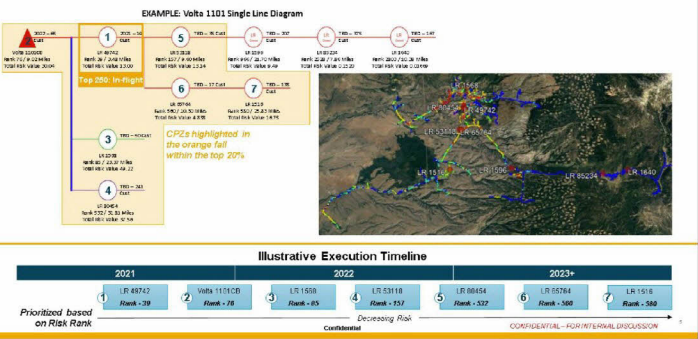
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System Hardening can target the riskiest 250 miles, while executing a multi-year plan to address adjacent high risk (top 20%) CPZs within the circuit



Illustrative: Approved project for Volta 110149742 sits on a circuit with six (6) other CPZs that fall within the top 20%



There is an opportunity to maximize risk reduction from "on-hold" jobs where PG&E has already expended resources to scope and estimate

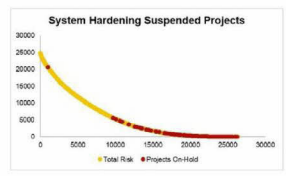
Situation Based on the updated 2021 risk model, a significant quantity of scoped / estimated work has been placed on hold to prioritize higher risk segments.

Complication Certain segments of these on-hold projects contain higher risk segments (equivalent to the top 20% MAVF), even though the entire CPZ does not meet the top 20% threshold. These segments of CPZ's can be surgically targeted for system hardening in the highest risk locations to accelerate risk buy-down and achieve greater mileage in the near term.

Resolution Evaluate the on-hold project list to identify high risk segments for targeted mitigation:

- Review project locations overlaid with risk scores
- Establish risk threshold for targeted mitigation (Recommended threshold is 0.1055 – equivalent to top 20% Mean MAVF score)
- Refine scope / estimates to address only the highest risk portions of the project

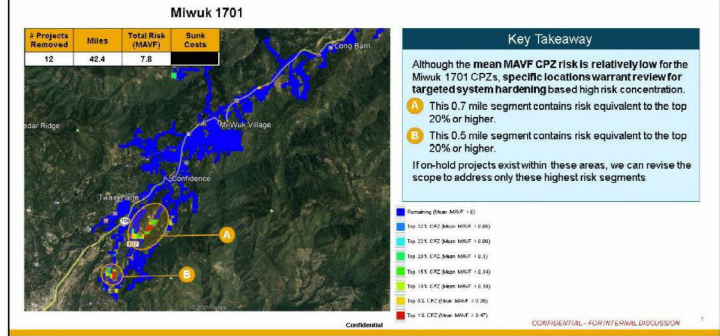
This strategy will maximize risk reduction in areas which have already expended resources in estimating / scoping and accelerate mileage capture in the near term



# Projects Removed	Miles	On-hold Project Risk (MAVF)	Sunk Costs
478	1,384	1,104	

Represents on-hold projects as of 1/13/2021

Illustrative: Miwuk 1701 has no CPZs that fall within the high-risk category (top 20%), however revisions to "on-hold" projects might be able to address targeted areas of risk



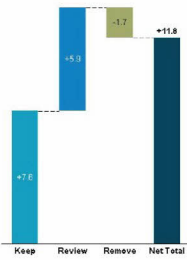
Key Decision – Approval to Expand Scope Prioritization and Approve Overarching System Hardening Strategy

Approval Status	Pending																
Decision Detail	Approvals																
Seeking approval to expand the System Hardening Targeting Strategy to include: <input type="checkbox"/> The top 20% riskiest CPZs in circuits where projects are already being scoped <input type="checkbox"/> High risk sub-segments of the on-hold projects, which have equivalent risk scores to the top 20% CPZs	<table border="1"><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table>																
Concerns and Mitigations	Action Items and Validations																
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Request to reconsider specific in-construction projects from the on-hold project list and remove from some approved project list (net impact of +11.8 miles)

Workplan Change Request Summary



Request to Keep (7.6 mi)

Add back projects which were previously placed on-hold based on work expended:

- In construction (been started), missed during initial inventory of in construction work – 2 jobs, 5.2mi
- In construction (not started), significant effort to secure permit and relationships at risk – 1 job, 0.5mi
- In construction would that would complete an upstream mainline – 1 job, 1.6mi
- Pending, significant permitting effort which could damage relationships if not executed – 3 jobs, 2.4mi

Request to Review (5.9 mi)

Confirm the decision to place projects on-hold given efforts expended and other factors:

- Pending, significant effort expended to secure easements – 1 job, 3.25mi
- Pending, significant effort expended to secure permit – 1 job, 1.1mi
- Pending, Complete a mainline for previously executed phases – 1 job, 1.5mi

Request to Remove (1.7 mi)

Remove from existing project list based on dependencies identified:

- Review of land requirements will require project redesign or imminent domain – 1 job, 1.7mi

- Project level details on following slide -

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Workplan change request details - 11 projects added (13.5 mi) and 2 projects removed (3.3 mi)

Order	Miles	Project	Risk Rank	Rationale/Details
Proposed to Keep	1.44	CWSP-PH08BROYE1103-180202-PH 2.6	2,521 (61%)	Significant progress: 17 poles installed
	1.75	CWSP-STANISLAUS 1702-LR1888-PH 1.2	3,386 (66%)	Significant progress: 17 poles installed and SAP issues ongoing project at UPRR status
	0.45	RECON 2200 FT-MARIE CANYON-DUNBAR 100	1,794 (49%)	Permit: The past several years of discussion with the CDWR and messaging that the work is critical to the wildfire plan. PG&E also developed a mitigation plan and will be on the hook for implementation regardless of whether or not this project moves forward
	1.57	CWSP-BRUNSWICK 1109-LR5078-PH 2.9	2,144 (52%)	Completed: CPZ Phase 2 of 5 of system hardening work on the CPZ. Other phases have been approved or construction (Phases 1&2 are 75% complete)
	0.51	RECON-SIPWAG COMP ONE, TEN MILE FT BRAGO	2,140 (50%)	Permit: Anticipate local developed permit approval in early 2021, which took 2 years to obtain. Public hearing and emergency statutory exemption under CEQA already
	1.90	OH RECONDUCTOR ROW ROY 2129-99200417	3,249 (80%)	Permit: Applied for Coastal Development Permit with the Santa Cruz County and have been working with them for a few last year. Permits expected by 11/21/21, and anticipate severe detriment to relationships with CDWR and Santa Cruz if project is cancelled
Proposed to Remove	1.75	CWSP-STANISLAUS 1702-LR1888-PH 2.8	2,386 (64%)	Easement: 5 of 6 easements acquired [REDACTED] and 4th easement underway [REDACTED]
	1.40	PPSP-Clayton 2315 - CB	1,719 (48%)	Easement: 5 easements accepted or nearing acceptance
	1.06	HAUF MOONBAY 1102- FUCO 12467 REPL OH	2,874 (72%)	Permit: USFWS permit received with 180 day to acquire
	1.53	CWSP-MIYUKI 702-LR6018-PH 1.1	2,217 (51%)	Complete Mainline: finalize mainline hardening completed on either side via other projects
Remove	(1.72)	CWSP-MIYUKI 701-COB-PH 1.5	2,392 (62%)	Issue Identified: location removed during land review that will require redesign of the project or imminent easements have been pursuing land rights since summer of 2020.

Note: Full notes from project management team available in appendix

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Key Decision – Approval of workplan change request

Approval Status **Pending**

Decision Detail

Seeking approval / confirmation of onhold projects which have been placed on hold at request of this committee in light of additional information shared.
 ADD 7 projects for 7.6 miles
 CONFIRM 4 projects for 5.9 miles
Removed projects which no longer make sense based on new information / other projects which have been placed on hold:
 REMOVE 1 project for 1.7 miles

Concerns and Mitigations

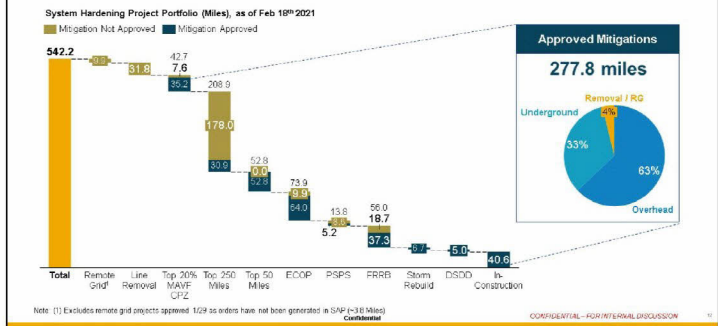
Approvals

Action Items and Validations

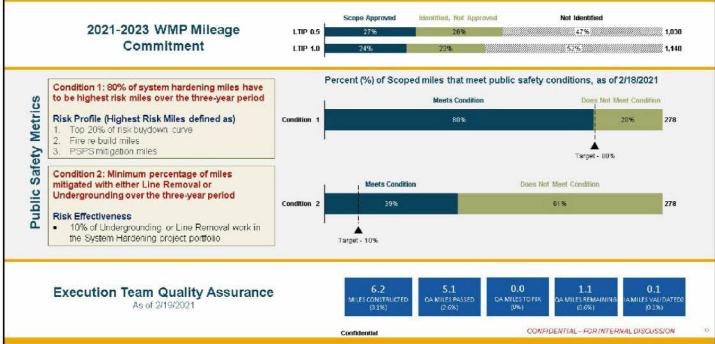
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System Hardening Status – Total Portfolio And Approved Mitigations



System Hardening Status – Progress Towards WMP Commitments and Public Safety Metrics



Today's discussion will include various mitigation recommendations for decision and inform (25.3 miles total)

The following projects have recommended mitigations:

Order No.	CPZ	Work Bucket	Total MAVF Core Risk Value	Mean MAVF Core Risk Rank	Recommendation	WGC Request
WGC Decision (7.83 miles)						
1	Wildwood 11011454	Top 250 Miles	0.4188	52	CH	DECISION
WGC Inform (17.45 miles)						
2	Middletown 11011549	ECOP - Top 20%	0.1594	414	HYBRID	INFORM
3	Brunswick 1110CB	PSPS	0.0064	2134	UG	INFORM
4	Placerville 21061104	REMS	0.0064	2131	REMOTE GRID	INFORM
5	Mountain Quarries 21016963	Top 250 miles	0.4353	45	HYBRID	INFORM
6	Bangor 1101CB	PSPS	0.1938	355	UG	INFORM

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Decision: Top 50 Miles - Wildwood 1101 - LR 1454 - PM (7.83 Miles)

Mitigation Decision Tree

	Key Questions	Outcome
PFS	Is this an area that is impacted directly by PFSFS (+6 Frequency of >1,200 Cust Impact)?	Y N 1 event, 18 Cust Impact
	Are there any critical customers within zone necessary to protect?	Y N
	Is OH hardening an acceptable mitigation using distribution line exclusion?	Y N N/A
PSS	Is the area being considered for HFRA Add/Remove?	Y N
	Ingress/Egress concerns identified by PSS professionals cannot be mitigated by utilizing intumescent wrapped or composite poles.	Y N
Time Spike	Moderate (8-14) or High (15+) strike tree potential areas in the segment.	Y N 3 spans Moderate
	Are there any significant dependency or conductivity limitations in the areas of impact? (Threshold: 2+ year incremental delay)	Y N 5m 1s time, oversized resin, significant release
FSD	Does the CPZ meet ECOP threshold (>25% structures warrant replacement) and result in a more timely mitigation method preferred (e.g., CH)?	Y N
	If alternatives not within a 100% range, is there additional benefit to choosing an alternative that is not the top ranked RSE?	Y N
EABDP		DH Preferred

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Decision: Top 50 Miles - Wildwood 1101 - LR 1454 - PM (7.83 Miles)

Wildwood 1101 (7.83 miles)		No System Hardening	Overhead Hardening	Under-Grounding	Hybrid
Project Scope Risk Reduction After Mitigation		-	8.95	17.85	10.10
Project Scope Residual Risk Value		12.90	4.99	0.13	2.80
Overall Miles Installed		7.83 Existing OH	7.93	9.64	9.94
Overall Miles Removed		-	-	-	-
OH System Hardening Cost		0.00 mile	-	-	-
UG System Hardening Cost		0.00 mile	-	-	-
Line Removal Cost		0.00 mile	-	-	-
Total Capital Cost (\$M @ Class D)		-	-	-	-
Average O&M Cost (per year)		-	-	-	-
NPV @ 6.5% discount rate		-	-	-	-
Supporting Detail for Recommended Alternative: EDR: LR 1454 (101-04100)					
Primary Filter	\$ NPV per unit of risk (\$/M)		Satisfactory	Satisfactory	Satisfactory
Filter	PSS Inference (Ingress/Egress/fire history)		Satisfactory	Satisfactory	Satisfactory
Secondary Filter	Strike Tree Potential (8 Priority, 4.6/m)	High Fall-In Risk	Moderate Fall-In Risk	No Fall-In Risk	Moderate Fall-In Risk
Filter	Ingress / Egress	Non-satisfactory	Satisfactory	Satisfactory	Satisfactory
Filter	PSPS Mitigation (10 costs * 1 event)	18 (0%)	18 (0%)	18 (0%)	18 (0%)
Filter	Execution timeline (2021, 2022, 2022+)		2021	2022+	2022+
Filter	Other (Operational Considerations, etc.)		Recommended		
<p>Public Safety Specifics: (Shasta Tehama Col., Palmdale to Hwy 56 Tehama mile mark 2.42. Mainly grass/low woodland dense brush with interspersed patches of conifers/gray pines. Fuel loading of brush can be very dense on all northern aspects and drainage feet within the drainage. Some portions of Cottonwood Creek. Difficult terrain.) Pileup spot 103 - 7.2 mile NW of Redding Road 3.0MP. Pileup 10 Wildfire Tree Potential: Moderate. Risks to mitigate tree snags toward on 3 spans with tree removal. Ingress Considerations: Palmdale Hwy 56 main routes for trees and response. Satisfactory mitigation with overhead hardening and tree removal. Risk Mitigation Item: Execution Timeline (Land/Use/Cultural/Contractability): Frog and fish issues. Buffer Zone for work, Monitoring BLM land, Minor Cultural. 78-80% fieldwork. Gas Tr. line easement along much of route requires hand clearing. Overhead route limits visibility. Relocation of overhead assets requires entering Caltrans ROW with significant increase in circuit miles that is 25% minimum.</p>					

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Key Decision – Approval of workplan change request

Approval Status **Pending**

Decision Detail

Approved of recommended (mitigation/Overhead Hardening) for Wildwood 11011454 (PM) [REDACTED]

Additional details available: [EDRS Link \(2021.0453\)](#)

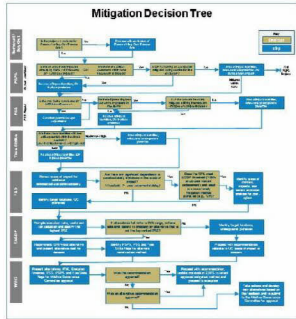
Concerns and Mitigations

Approvals

[REDACTED]	

Action Items and Validations

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	Key Questions	Outcome
PSFS	Is this an area that is impacted directly by PSFS (+6 Frequency of >1,200 Cust Impact)?	Y N 2 events 309 custs
	Are there any critical customers within zone necessary to protect?	Y N High Tree Strike Risk
PSB	Is OH hardening an acceptable mitigation using distribution line exclusion?	Y N
	Is the area being considered for HFRA Add/Remove?	Y N
Tree Strike	Ingress/Egress concerns identified by PSC professionals cannot be mitigated by utilizing intumescent wrapped or composite poles.	Y N
	Moderate (6-14) or High (15+) strike tree potential areas in the segment.	Y N High
FSD	Are there any significant dependency or constructability limitations in the areas of impact? (Threshold: 2+ year incremental delay)	Y N
	Does the CPZ meet ECOP threshold (+25% structures warrant replacement) and result in a more timely mitigation method preferred (e.g., CH)?	Y N
EASOP	If alternatives fall within a 100% range, is there additional benefit to choosing an alternative that is not the top ranked RCE?	Y N
		Hybrid Preferred

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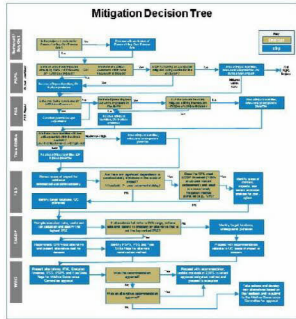
Inform: ECOP Top 20% – Middletown 1101 - LR 548 - H12 Ph2 - PM

	Middletown 1101 (9.46 miles)	No System Hardening	OH Hybrid-UG Preferred	Hybrid-UG-Hybrid Alt 1	UG-Oh-Oh Alt 2
Project Scope Risk Reduced After Mitigation			14.32	13.44	12.90
Project Scope Risk/Total Risk Value	16.40	2.08	2.08	2.96	2.80
Overall Miles Installed	9.46 Existing CH		8.49	9.62	2.79
Overall Miles Removed	-		1.08	1.08	1.08
CH System Hardening Cost	risk-mile				
UG System Hardening Cost	risk-mile				
Lane Removal Cost	risk-mile				
Total Capital Cost (SAACE Class B)					
Average O&M Cost (per year)					
NPV @ 6.5% discount rate					
\$ NPV per unit of risk (RIS)					
Primary Filter					
PSS Preference (Ingress/Egress/Fire history)			Satisfactory	Non-satisfactory	Non-satisfactory
Strike Tree Potential		High Fall-In Risk	Low Fall-In Risk	High Fall-In Risk	High Fall-In Risk
Ingress / Egress		Non-satisfactory	Satisfactory	Non-satisfactory	Non-satisfactory
Secondary Filter					
PSS Mitigation (BOS cuts * 2 events)		618 (9%)	618 (9%)	618 (9%)	618 (9%)
Execution timeline (2021, 2022, 2022+)			2022	2022	2022
Other (Operational Considerations, etc.)			Recommended		Accessibility Issues

Supporting Details Recommended Alternative (BRR) Link: [2021-11-01-1101](#)

- Public Safety Benefits:** The "best" option for the project is the one that results in the lowest overall risk to the public. This is determined by the total number of fatalities and injuries over the 100-year period. The "best" option is the one that results in the lowest overall risk to the public. This is determined by the total number of fatalities and injuries over the 100-year period.
- Strike Tree Potential:** A strike tree potential analysis was performed for the project. The results of the analysis are as follows:
 - High Fall-In Risk: 618 (9%)
 - Low Fall-In Risk: 618 (9%)
 - High Fall-In Risk: 618 (9%)
 - High Fall-In Risk: 618 (9%)
- Execution Timeline:** Work required during the city year(s) is as follows:
 - 2021: 0 days
 - 2022: 0 days
 - 2022+: 0 days
- Other Operational Considerations, etc.:** There are no other operational considerations for this project.
- Note:** The cost of the project is \$1,000,000. The cost of the project is \$1,000,000.

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	Key Questions	Outcome
PSPS	Is this an area that is impacted directly by PSPS (+6 Frequency or +1,200 Cust Impact)?	Y N 18 events
	Are there any critical customers within zone necessary to protect?	Y N
	Is OH hardening an acceptable mitigation using distribution line exclusion?	Y N N/A
FSS	Is the area being considered for HFRA Add/Remove?	Y N HFRA removal approved, project would not be created
	Ingress/Egress concerns identified by PSS professionals cannot be mitigated by utilizing transients, wrapped or composite poles.	Y N
Tree Strike	Moderate (6-14) or high (15+) strike tree potential areas in the segment.	Y N Based on Alternative plans
FSD	Are there any significant dependency or constructability limitations in the areas of impact? (Threshold: 2+ year incremental delay)	Y N
	Does the CPZ meet ECOP threshold (±25% threshold: variant replacement) and result in a more timely mitigation method preferred (e.g., OH)?	Y N
EISDP	If alternatives fall within a 100% range, is there additional benefit to choosing an alternative that is not the top ranked RPE?	Y N

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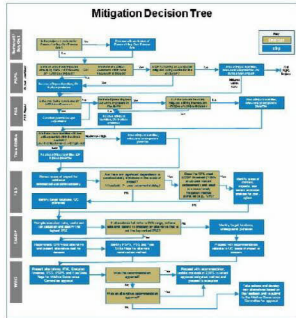
Inform: PSPS - Brunswick 1110 - LR 94768 - PM [REDACTED] - Morgan Ranch

	Brunswick 1110 (0.34 miles)	No System Hardening	Overhead Hardening	Under-Grounding	Hybrid
Project Scope Risk Reduced After Mitigation		0.026	0.02	0.04	0.03
Project Scope Residual Risk Value		0.026	0.01	0.00	0.01
Overall Miles Installed		0.34 Existing O&M	0.34	0.05	0.30
Overall Miles Removed		-	-	-	0.12
O&M System Hardening Cost	Ask-mile	-	-	-	-
UG System Hardening Cost	Ask-mile	-	-	-	-
Line Removal Cost	Ask-mile	-	-	-	-
Total Capital Cost (AAEC Class 5)					
Average O&M Cost (per-year)					
NPV @ 6.0% discount rate					
Primary Filter	\$ NPV per unit of risk (RSE)		Satisfactory	Satisfactory	Satisfactory
Secondary Filter	P&S Preference (Ingress/egress/fire history)		Satisfactory	Satisfactory	Satisfactory
	Strike Tree Potential	High Fall-in Risk	High Fall-in Risk	No Fall-in Risk	Moderate Fall-in Risk
	Ingress / Egress	Satisfactory	Satisfactory	Preferred	Satisfactory
	PSPS Mitigation (178 cuts + 10 events)	2024 (0%)	2024 (0%)	2024 (0%)	2024 (0%)
	Execution Timeline (2021, 2022, 2022+)		2021	2022	2022+
	Other (Operational Considerations, etc.)				
				Recommended	

Supporting Detail for Recommended Alternative (RSE Ranking 2021-2022+)

- Public Safety Specialist:** Each pole broken up between grass and residential landscaping. Population density is considered moderate to heavy. There is no fire history around this project area. Preference for action to be taken based on increased risk of ignition on tagged equipment.
- Strike Tree Potential:** No total strike tree potential in the OPE.
- Ingress Considerations:** Main routes of travel for ingress and egress would be Sierra College Drive. Ingress and egress into and out of the area by way of Sierra College Drive or Ridge Road would not be an issue.
- PSPS Mitigation:** If HRA removal is approved would eliminate PSPS shutdowns.
- Execution Timeline (Land/Line/Cultural/Constructability):** UG hardening could be accomplished by 12/31/2021. Spotted civil near project area.
- Note:** 0.34 miles of project represents the project miles for the alternative (O&M included) versus in Tier 2 area. Min. inspector O&M scope is only 0.021 mi for preferred scope in Tier 1 area.

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	Key Questions	Outcome
PFS	Is this an area that is impacted directly by PFS (6 Frequency of >1,200 Cust Impact)?	Y N 15 events 16 cust impact
	Are there any critical customers within zone necessary to protect?	Y N N/A
	Is OH hardening an acceptable mitigation using distribution line exclusion?	Y N N/A
PSS	Is the area being considered for HFRM Add/Remove?	Y N
	Ingress/Egress concerns identified by PSS professionals cannot be mitigated by utilizing intumescent wrapped or composite poles.	Y N
Time Spike	Moderate (6-14) or High (15+) strike tree potential areas in the segment.	Y N Moderate (6-14)
	Are there any significant dependency or constructability limitations in the areas of impact? (Threshold: 2+ year incremental delay)	Y N
FSD	Does the CPZ meet ECOP threshold (>25% structures warrant replacement) and result in a more timely mitigation method preferred (e.g., OH)?	Y N
	If alternatives fall within a 100% range, is there additional benefit to choosing an alternative that is not the top ranked RCE?	Y N
EASOP		Remote Grid Preferred

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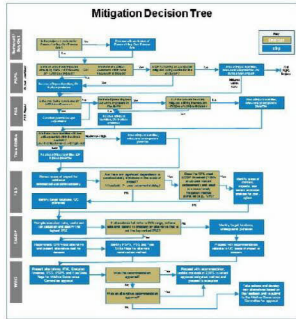
Inform: REMG – Placerville 2106 - LR 1104 - PM

Placerville 2106 (0.70 miles)		No System Hardening	Overhead Hardening	Under-Grounding	Remote Grid
Project Scope Risk Reduced After Mitigation		0.02	0.02	0.03	0.03
Project Scope Residual Risk Value		0.00	0.01	0.00	0.00
Overall Miles Installed		0.70 Existing OH	0.7	0.7	0
Overall Miles Fiberopted		-	-	-	0.70
OH System Hardening Cost	Prk-mile	-	-	-	-
UG System Hardening Cost	Prk-mile	-	-	-	-
Line Removal Cost	Prk-mile	-	-	-	-
Total Capital Cost (AAEE Class 5)					
Average O&M Cost (per year)					
NPV @ 6.5% discount rate					
Primary Filter	\$ NPV per unit of rise (RSE)		Non-satisfactory	Satisfactory	Satisfactory
Filter	P&S Preference (Ingress/Aggress/Fire History)		Non-satisfactory	Satisfactory	Satisfactory
Secondary Filter	Strike Tree Potential	Moderate (6-14)	Moderate Fall-In Risk	No Fall-In Risk	Low Fall-In Risk
Filter	Ingress / Egress	Non-satisfactory	Non-satisfactory	Satisfactory	Satisfactory
Filter	PPSP Mitigation (1 cuts + 15 events)	68 (6%)	68 (6%)	94 (65%)	17 (25%)
Filter	Execution timeline (2021, 2022, 2022+)		2021	2022+	2022
Filter	Other (Operational Considerations, etc.)				Recommended

Supporting Detail for Recommended Alternative (EDRS Link: 2020-22386)

- Public Safety Specialist:** The fault types for this project area were not noted on the previously held field scoping meeting. Population density for this project area is all considered low to moderate fire risk to low risk areas.
- Strike Tree Potential:** Moderate (6-14) tree strike potential in this segment supports UG or Remote Grid hardening is required.
- Ingress/Egress Considerations:** No major ingress concerns.
- PPSP Mitigation:** Items are understood allow PPSP mitigation.
- Execution Timeline (2021/2022/2022+):** No known construction or ETS constraints.

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	Key Questions	Y	N	Outcome
PPS	Is this an area that is impacted directly by PPS (+6 Frequency or +1,200 Cust Impact)?	Y	N	
	Are there any critical customers within zone necessary to protect?	Y	N	
	Is OH hardening an acceptable mitigation using distribution line exclusion?	Y	N	N/A
PSS	Is the area being considered for HFRM Add/Remove?	Y	N	
	Ingress/Egress concerns identified by PSS professionals cannot be mitigated by utilizing intumescent wrapped or composite poles.	Y	N	Ingress/Egress route limited
Tree Strike	Moderate (6-14) or High (15+) strike tree potential areas in the segment.	Y	N	Moderate tree strike potential
	Are there any significant dependency or connectivity limitations in the areas of impact? (Threshold: 2+ year incremental delay)	Y	N	
FSD	Does the CPZ meet ECOP threshold (+25% structures warrant replacement) and result in a more timely mitigation method preferred (e.g., OH)?	Y	N	
	If alternatives fall within a 100% range, is there additional benefit to choosing an alternative that is not the top ranked RCE?	Y	N	Hybrid acceptable for Egress/Ingress and Tree Risk
				Hybrid Preferred

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Inform: PSPS - Mountain Quarries 2101 - TS 6953 - PM

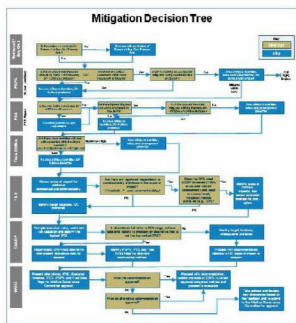
Mountain Quarries 2101 (372 miles)	No System Hardening	Overhead Hardening	Under-Grounding	Hybrid
Project Scope Risk Reduced After Mitigation		15.65	24.99	22.27
Project Scope Residual Risk Value	25.247	9.59	0.26	2.98
Overall Miles Installed	5.72 Existing O&H	5.72	6.36	5.96
Overall Miles Removed	-	-	-	-
O&H System Hardening Cost	Risk-mile	-	-	-
UG System Hardening Cost	Risk-mile	-	-	-
Line Removal Cost	Risk-mile	-	-	-
Total Capital Cost (AAEE Class B)				
Average O&M Cost (per year)				
NPV @ 6.5% discount rate				
Primary Filter				
\$ NPV per unit of risk (RSE)				
PSS Preference (Ingress/Egress/Fire history)		Non-satisfactory	Satisfactory	Satisfactory
Secondary Filter				
Strata Tree Potential	High Fall-in Risk	Moderate Fall-in Risk	No Fall-in Risk	Low Fall-in Risk
Ingress / Egress	Non-satisfactory	Non-satisfactory	Satisfactory	Satisfactory
PSPS Mitigation (6S cuts + 7 event)	488 (9%)	488 (9%)	488 (9%)	488 (9%)
Execution timeline (2021, 2022, 2022+)		2021	2022+	2022
Other (Operational Considerations, etc.)				
				Recommended

Supporting Detail for Recommended Alternative (ERR) Meeting (01-18-2023):

- Public Safety Specialist:** Used in the project area are grass, oak woodland and gray pines with presence of brush and scrub oak. Fuel loading is low in the project area, but transitions to heavy in some of the brush fields located in the adjacent canyon to the south. The topography is valley, foothills, and ridge top at approximately 3000 ft elevation. There have been no recent fires, however, project area is surrounded by major fires from the Trailhead Fire (2016), the Mammoth Fire (2009) and the Otter Fire (2006).
- Strata Tree Potential:** 214 total strata tree potentials in the CPZ.
- Ingress Considerations:** Main roads are Hwy 126 and Hwy 49. Both roads are two lanes paved with no shoulders that would be quickly become impassable in the event of an asset evaluation or rapidly expanding wildfire incident.
- PSPS Mitigation:** 7 operations for PSPS in last 10 years. Approximately 4 miles to get to power source to accommodate PSPS resiliency.
- Execution Timeline (Land/Cultural/Community):** California red-legged frog targeted pre-activity survey may be required for Overland UG section of the project.

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Inform: PSPS – PM# [REDACTED] – Bangor 1101 CB - Microgrid



	Key Questions	Outcome
PSPS	Is this an area that is impacted directly by PSPS (≥4 Frequency or >1,200 Cust Impact)?	Y N Over 1200 cust.
	Are there any critical customers within zone necessary to protect?	Y N Fire Department, Silcocks Community Center
PES	Is On hardening or scragtable mitigation using distribution line exclusion?	Y N N/A
	Is the area being considered for IFRRA Add/Remove?	Y N
The Storm	Ingress/Egress concerns identified by PEG professionals cannot be mitigated by utilizing arduose/entrapped or composite poles.	Y N
	Moderate (6-14) or high (15+) strike from potential areas in the segment.	Y N
FSD	Are there any significant dependency or constructability implications in the areas of impact? (Threshold: 2+ year nonresidential delay)	Y N
	Does the CP2 meet FCCP threshold (>25% structures warrant replacement) and result in a more timely mitigation method preferred (e.g. On)?	Y N
EISDP	If alternatives fall within a 100% range, is there additional benefit to choosing an alternative that is not the top ranked RSE?	Y N ALL UG Preferred

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Inform: PSPS – PM# [REDACTED] – Bangor 1101 CB - Microgrid

	Bangor 1101 (0.57 mile)	No System Hardening	Overhead Hardening	Under-grounding
Project 1000 Risk Reduction After Mitigation			6.82	1.00
Project Scope Residual Risk Value		1.01	0.98	0.01
Overall Miles Installed		0.57 Existing OH	0.57	0.00
OH System Hardening Cost	[REDACTED] risk-mile	-	[REDACTED]	[REDACTED]
UG System Hardening Cost	[REDACTED] risk-mile	-	[REDACTED]	[REDACTED]
Line Removal Cost	[REDACTED] risk-mile	-	[REDACTED]	[REDACTED]
Total Capital Cost				
Average O&M Cost (per year)				
NPV @ 6.2% discount rate				
\$ NPV per unit of risk (RSE)				
Primary Filter				
PSS Preference (Ingress/egress/fire history)		Satisfactory	Satisfactory	Preferred
Strike Tree Potential		Low Fall-In Risk	Low Fall-In Risk	N/A
Ingress/Egress – Preferred option		Satisfactory	Satisfactory	Preferred
Secondary Filter				
PSPS Mitigation (2021 Customers * 1 event)		2621 (0%)	2621 (0%)	2572 (1.9%)
Execution timeline (2021, 2022, 2022+)		-	2022	2022
Other (Operational Considerations, etc.)		Fire Department, Islais, S, community center	Fire Department, Islais, S, community center	Fire Department, Islais, S, community center
				Recommended
Supporting Detail for Recommended Alternative (DIRS Routing 2021-2022):				
<ul style="list-style-type: none"> Public Safety Specialist: Fuel types in the Bangor area consist with grass, oak woodland, mixed shrub and scattered conifers, primarily Gray Pines. The large fires in the Bangor have been driven under two primary factors, mid-summer fuel/epidemiology driven fires such as the Dwydes and Wall, and, wind driven, fall period fires such as the October Wind Complex fire of 2017. Strike Tree Potential: 15 total strike potential trees in the CD, LOW (0-5) tree strike potential. Egress Considerations: ingress and egress for first responders and residents, depending upon fire location and spread would be by one or more roadways. PSPS Mitigation: Project is currently keeping critical customers such as the fire department, health building, and community center energized during a PSPS event. Execution Timeline (Land/Bio/Cultural/Contractability): OH hardening will require coordination with transmission line. Monitoring may be required for UG trenching. Field work is anticipated to take less than 1 week. Water: battery microgrid will be installed in the substation to keep critical customers energized. 				

Workplan change request details - 11 projects added (13.5 mi) and 2 projects removed (3.3 mi)

Order	Project	National details
	CWSP - PINE GROVE 1102 - UR122 - PH 2.6	<ul style="list-style-type: none"> 15 poles installed Recommended that this project be moved to "Keep" status
	CWSP - STANISLAUS 1709-UR1008-PH 1.2	<ul style="list-style-type: none"> 15 poles installed SWP issued and keeping this project in UNDC status Request to move to "Keep" status
	RECON 2300 FT - NURS CANYON - DUNBAR 1111	<ul style="list-style-type: none"> Obtaining this permit required several years of discussion with the CDFW and messaging that the work is critical to the wildlife plan. POSE also developed a mitigation plan and will be on the hook for implementing and paying for it regardless of whether or not this project moves forward. Request to move to "Keep" status
	CWSP - BRUNSWICK 1103-UR0070- PH 2.3	<ul style="list-style-type: none"> PH comments bid to keep 2.1, 2.2, 2.4, and 2.5 Request to move to "Keep" status All of these projects are in UNDC 2.1, 2.2, and 2.5 are "Keep" complete Requesting that this project (Phase 2.3) be moved to "Keep" status with the other phases.
	RECON-6 SPANS CAMP CINE TEN MILE FT 59A9G	<ul style="list-style-type: none"> This is a project for which we have applied for a Coastal Development Permit with the Agency and have been on public hearing on the project already. It is anticipated that the permit will be issued in early 2021. This permit took 2 years to obtain, and many meetings with the agency that it has contributed to the critical nature of the work. The agency has recently agreed to use an emergency discretionary restriction under CEQA to approve the project, with the understanding that the Agency CEQA process would prevent our ability to perform critical habitat work. Request to move to "Keep" status
	SH RECONDUCTOR - ROE ROY 2105 - 9826C7117	<ul style="list-style-type: none"> This is a project for which we have applied for a Coastal Development Permit with the Santa Cruz County and have been working with them for a few business days in progress with Santa Cruz since late 2019. CDPA permit was delivered Aug 2020. Permit is expected by 11/21/21. We do not have a relationship with CDPA and Santa Cruz to cancel the project. Request that this project be moved to "Keep" status to preserve relationship with CDPA and Santa Cruz county.
	SH RECONDUCTOR - ROE ROY 2105 - 9827C2118	<ul style="list-style-type: none"> This is a project for which we have applied for a Coastal Development Permit with the Santa Cruz County and have been working with CDPA on work within critical habitat on their property. Both agencies have been engaged on the project for the last year. In progress with Santa Cruz since mid-2019. CDPA permit was delivered Aug 2020. Permit is expected by 11/21/21. Request that this project be moved to "Keep" status to preserve relationship with CDPA and Santa Cruz county.

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Workplan change request details - 11 projects added (13.5 mi) and 2 projects removed (3.3 mi)

Order	Project	Rationale; details
Request to Reorder	CVSP-SUNNIS/ALUS 1702-LR189B-PH 2-B	<ul style="list-style-type: none"> 3 assessments have been requested for this project All assessments reviewed with an attached comment No other critical reasons to consider keeping this project Want to confirm the "Remove" status in light of assessment status
	PGSP - Clayton 2215 - CB	<ul style="list-style-type: none"> 3 assessments - 1 with city of Walnut Creek all terms accepted - 1 with Dave Int. Dislike some language clarifications still underway - 1 should be signed - 1 with a commitment to carry a amount accepted just head terms finalized No other critical reasons to consider keeping this project Want to confirm the "Remove" status in light of assessment status
	HAAP MOON BAY 1162 - FUCO12467 REFL OH	<ul style="list-style-type: none"> OCARL assessment received and work has begun Want to confirm "Remove" status give the notice of the late lead permit
	CVSP-M WUK 1762-LR601B-PH 1-1	<ul style="list-style-type: none"> This Phase 1 1 is a tentative that sits in between Phase 1 2 and 1 3 both of which we make sure what have been submitted Want to confirm the "Remove" status in light of the tentative work performed on the phases on each end of this portion of roadway
Remove	CVSP-M WUK 1760-OCARL-PH 1-1	<ul style="list-style-type: none"> in COVID and only 5 poles installed 1 has been moved during the time that will require redesign of the project or permit domain. Have over 1 year of land right since summer of 2020 Suggest that this project be moved to the remove list and we have OC other 4 poles around the existing line if practical or remove the poles and close off the project.
	CVSP-BRUNSWICK 1103-LR220B-PH2	<ul style="list-style-type: none"> PH 1 team was told to keep this phase but told to remove Phase 1 [redacted] Phase 3 [redacted] & Phase 4 - [redacted] No work has started on phase 2 Suggest that other all phases are moved to "Yield" status or more phase 2 to "Remove" status.

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