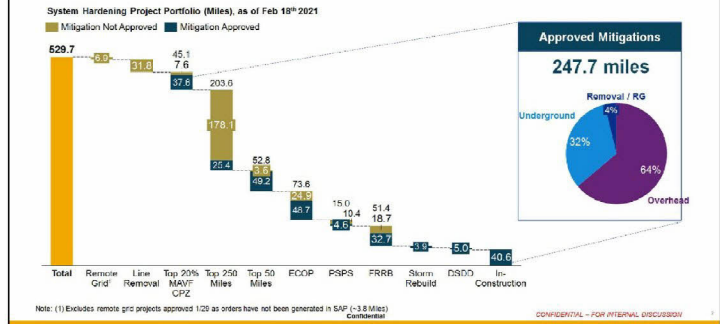


Wildfire Risk Governance Committee
System Hardening Project Approvals

February 18, 2021

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System Hardening Status – Total Portfolio And Approved Mitigations



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

2021-2023 WMP Mileage Commitment



Public Safety Metrics

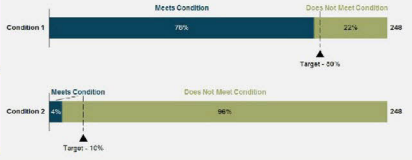
Condition 1: 80% of system hardening miles have to be highest risk miles over the three-year period

Risk Profile (Highest Risk Miles defined as)
 1. Top 20% of risk buydown curve
 2. Fire re-build miles
 3. PISPS mitigation miles

Condition 2: Minimum percentage of miles mitigated with either Line Removal or Undergrounding over the three-year period

Risk Effectiveness
 • 10% of Undergrounding or Line Removal work in the System Hardening project portfolio

Percent (%) of Scoped miles that meet public safety conditions, as of 2/18/2021



Execution Team Quality Assurance
As of 2/12/2021



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Today's discussion will include various mitigation recommendations

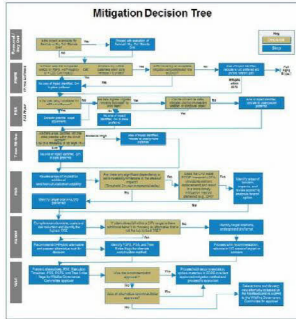
The following projects have recommended mitigations:

Order No.	CPZ	Work Bucket	Total MAVF Core Risk Value	Mean MAVF Core Risk Rank	Recommendation	WGC Request	
WGC Inform (33.43 miles)							
1	[REDACTED]	Middletown 1101548	ECOP Top 20%	10.33	474	Hybrid: OH 1-2.58 mi UG 3-73 mi	Inform
2	[REDACTED]	Middletown 1101548	ECOP Top 20%	12.7	474	Hybrid: OH 2.57 mi UG 11.53 mi	Inform
3	[REDACTED]	Wyandotte 1109702710	PSPS – Customer Resiliency	1.69	216	Hybrid: OH 0.16 mi UG 0.47 mi	Inform
4	[REDACTED]	Pueblo 2102 LR792	ECOP	2.28	951	OH/DER: OH 2.03 mi Remove 1.31 mi	Inform
5	[REDACTED]	Kirker 2104442850	Top 250 miles	18.44	21	UG/DER: UG 2.12 mi Remove 3.24 mi	Inform
6	[REDACTED]	Tidewater 210614072	Top 50 miles	19.6	18	Hybrid: OH 1.28 mi UG 2.41 mi	Inform

-Plus, a follow up on remote grid alternatives for Keswick 11011586-

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	Key Questions	Outcome
PPS	Is this an area that is impacted directly by PPS (+6 Frequency or >1,200 Cust Impact)?	Y N 2 events \$8 cust impact
	Are there any critical customers within zone necessary to protect?	Y N N/A
PSS	Is O+ hardening an acceptable mitigation using distribution line exclusion?	Y N N/A
	Is the area being considered for HFRA Add/Remove?	Y N N/A
Time Strike	Ingress/Egress concerns identified by PSS professionals cannot be mitigated by utilizing intumescent wrapped or composite poles.	Y N Hybrid addresses Ingress/Egress
	Moderate (6-14) or high (15+) strike tree potential areas in the segment.	Y N Low
PSD	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 RSE?	Y N Ingress/Egress preference & PPS benefits
		Hybrid Preferred

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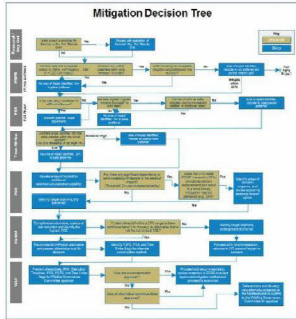
Inform: ECOP Top 20% - Middletown 1101 - LR 548 - H12 Ph1 - PM

Middletown 1101 (4.13 miles)		No System Hardening	Overhead Hardening	Under-Grounding	Hybrid
Project Scope Risk Reduced After Mitigation		6.78	10.82		9.17
Project Scope Residual Risk Value		10.99	4.15	0.11	1.76
Overall Miles Installed		4.13 Existing OH	4.13	7.78	5.31
Overall Miles Removed		-	-	-	-
OH System Hardening Cost		-	-	-	-
UG System Hardening Cost		-	-	-	-
Line Removal Cost		-	-	-	-
Total Capital Cost (AAEC Class 5)		-	-	-	-
Average O&M Cost (per year)		-	-	-	-
NPV @ 6.5% discount rate		-	-	-	-
NPV per unit of risk (RSE)		-	-	-	-
Primary Filter	PSS Preference (Ingress/egress/fire history)		Non-satisfactory	Satisfactory	Satisfactory
Secondary Filter	Strike Tree Potential	Low Full In Risk	Low Full In Risk	No Full In Risk	Low Full In Risk
Secondary Filter	Ingress / Egress	Non-satisfactory	Non-satisfactory	Satisfactory	Satisfactory
Secondary Filter	PSPS Mitigation (34 casts * 2 events)	68 (0%)	68 (0%)	84 (50%)	17 (25%)
Secondary Filter	Execution Timeline (2021, 2022, 2024)		2021	2022+	2022
Other (Operational Considerations, etc.)					
Recommended					

Supporting Detail for Recommended Alternative (EIS Link: [2021-04-06](#))

- Public Safety Consideration:** The Task Force for this project area mostly consisted of grassy oak woodland interspersed with patches of brush and gray pine conifer. Fuel loading is mostly light in areas of the 2016 Valley Fire due to the regrowth, however some areas (mostly on the north end of the project) will still fire moderate heavy fuel loading where the areas of Whispering Pines to Pine Grove Cobb and Old Pine have left uncut. Regulator details for this project area is at [considerations](#), [light](#), [medium](#), [fire](#), [discussions](#) (page 1026) (last updated by the project community on 04/06/2021) 2 miles East of the project and Cobb-Pine Grove (page 1020) located at the North end of the project area.
- Weather Tree Potential (LOW):** There is no potential for this segment that requires OH hardening is required.
- Ingress/Egress Considerations:** Ingress concern. First responders would respond to a fire in this area using HWY 178 making it a very important access/egress route. If this route were compromised fire suppression and evacuation efforts would be significantly hampered. Additionally, if the fire was in Cobb, Pine Grove or Whispering Pines, fire resources and other emergency services responding from Middletown or Napa County would have to take an alternate route resulting in a significantly delayed response if HWY 178 were compromised.
- PSPS Mitigation:** Some PSPS mitigation potential. To achieve additional PSPS reductions, additional source-site access would have to be installed.
- Execution Timeline (Low/Medium/High):** Work required during the dry season May 15 - Oct 15 and/or bi-monthly Project activities along OR-175 within the Caltrans ROW will require a Caltrans Encroachment Permit. Upon review by Caltrans, additional cultural resource protection measures may be required. No EF-5 constraints.

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	Key Questions	Outcome
PPS	Is this an area that is impacted directly by PPS (>6 Frequency or >1,200 Cust Impact)?	Y N 2 events 424 cust impact
	Are there any critical customers within zone necessary to protect?	Y N N/A
	Is O= 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 Hybrid addresses Ingress/Egress
Time Strike	Moderate (6-14) or high (15+) strike tree potential areas in the segment.	Y N High - Hybrid address risk
	Are there any significant dependency or constructability limitations in the areas of impact? (Threshold: 2+ year incremental/delay)	Y N
PSD	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 fall within a 100% range, is there additional benefit to choosing an alternative that is not the top ranked RSE?	Y N Ingress/Egress & tree strike preference
EASOP		Hybrid Preferred

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Inform: ECOP Top 20% - Middletown 1101 - LR 548 - H12 Ph3 - PM

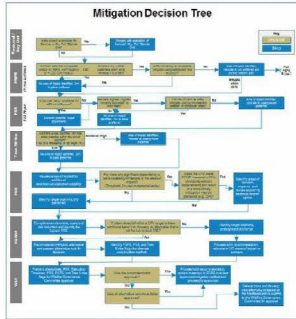
Middletown 1101 (7.33 miles)	No System Hardening	Overhead Hardening	Under-Grounding	Hybrid
Project Scope Risk Reduced After Mitigation	-	7.88	12.58	11.72
Project Scope Residual Risk Value	12.70	4.83	0.13	0.98
Overall Miles Installed:	7.33 Existing OH	7.33	14.70	14.10
Overall Miles Removed:	-	-	-	-
CH System Hardening Cost	1.5k-mile	-	-	-
UG System Hardening Cost	1.5k-mile	-	-	-
Line Removal Cost	1.5k-mile	-	-	-
Total Capital Cost (AAEE Class 5)	-	-	-	-
Average O&M Cost (per year)	-	-	-	-
NPV @ 5.5% discount rate	-	-	-	-
\$-NPV per unit of risk (RSE)	-	-	-	-
Primary Filter:				
PSS Preference (Ingress/Aggress/fire history)		Non-satisfactory	Satisfactory	Satisfactory
Strike Tree Potential	High Fall-In Risk	High Fall-In Risk	No Fall-In Risk	Low Fall-In Risk
Ingress / Aggress	Non-satisfactory	Non-satisfactory	Satisfactory	Satisfactory
Secondary Filter:				
PSPS Mitigation (P13 routes * 2 events)	424 (9%)	424 (9%)	424 (9%)	424 (9%)
Execution timeline (2021, 2022, 2022+)		2021	2022+	2022
Other (Operational Considerations, etc.)				
				Recommended

Supporting Detail for Recommended Alternative (EDRS Link: 2021-05-05-03):

- Public Safety Impacts:** The fall zone for this project area mostly consists of grassy oak woodland interspersed with patches of brush and grey pine cooler. Fuel loading is mostly light in areas of the 2015 Valley Fire fuel load with little response, however some areas directly on the North end of the project will still find fuel load to be heavy fuel loading where the areas of VPIs along Pine Grove/Cable and Oak Hill near fall zones. Potential density for the project area is to consider weight for Light fuel load with Middletown (pop 1229) adjacent being the largest community located approximately 2 miles East of the project and Oak/Pine Grove (pop 600) located at the North end of the project area.
- Strike Tree Potential:** High (1-10) tree strike potential in the segment requires CH hardening is necessary.
- Ingress/Aggress Considerations:** Major ingress concern. First responder would respond to fire in this area using HWY 175 making it a very important access/egress route. If this route were compromised this suppression operation effectiveness would be significantly hampered. Additionally, if fire was in Cable, Pine Grove or Whitcomb/Pine, fire resources and other emergency services responding from Middletown or Oak Grove would have to take an alternate route resulting in a significantly delayed response (P13) if response not possible.
- PSPS Mitigation:** No mitigation potential due to limited scope of this hardening project. To achieve PSPS reductions, additional scope including Phase 1 & 2 of this zone would have to be included.
- Execution Timeline:** Landfill/Outfall/Contaminability Work required during the dry season (May 15 - Oct 15) during non-maturing Project activities along SR 175 within the Caltrans ROW will require a Caltrans Encroachment Form. Upon review by Caltrans, additional cultural resource protection measures may be required. No EFC constraints.

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Inform: PSPS Customer Resiliency - PM [REDACTED] - Wyandotte 1109702710 -
Mooretown Rancheria



	Key Questions	Outcome
PSPS	Is this an area that is impacted directly by PSPS (+6 Frequency or >1,200 Cust Impact)?	Y N 0 events
	Are there any critical customers within zone necessary to protect?	Y N Feather Falls Casino
	Is O+ 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 Lower Wyandotte Rd
Tree Strike	Moderate (6-14) or high (15+) strike tree potential areas in the segment.	Y N Low 0-5
	Are there any significant dependency or constructability limitations in the areas of impact? (Threshold: 2+ year incremental/delay)	Y N
PSD	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 RSE?

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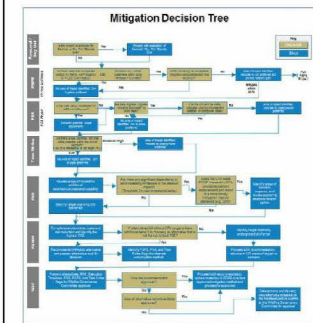
**Inform: PSPS Customer Resiliency - PM [REDACTED] – Wyandotte 1109702710 –
Mooretown Rancheria**

Wyandotte 1109 (0.17 miles)	No System Hardening	Overhead Hardening	Under-Gridding	Un/ord	
Project Scope Risk Reduced After Mitigation	-	1.05	1.67	1.51	
Project Scope Residual Risk Value	1.69	0.84	0.02	0.18	
Overall Miles Installed	0.37 Existing OH	0.37	0.64	0.64	
Overall Miles Removed	-	-	-	-	
OH System Hardening Cost	risk-mile	-	-	-	
UG System Hardening Cost	risk-mile	-	-	-	
Line Removal Cost	risk-mile	-	-	-	
Total Capital Cost (P&L Class 5)	-	-	-	-	
Average O&M Cost (per year)	-	-	-	-	
NPV @ 6.8% discount rate	-	-	-	-	
Primary Filter	\$ NPV per unit of risk (RSE)	Non-satisfactory	Non-satisfactory	Preferred	Preferred
	PSS Preference (logness/logness/fire history)	Non-satisfactory	Non-satisfactory	Preferred	Preferred
Secondary Filter	Strike Tree Potential	Moderate Fall-in Risk	Low Fall-in Risk	No Fall-in Risk	Low Fall-in Risk
	Ingress / Egress	Non-satisfactory	Non-satisfactory	Preferred	Preferred
	PSPS Mitigation (119 events * 9 event)	10/1 (0%)	10/1 (0%)	36 (96%)	36 (96%)
	Execution Timeline (2021, 2022, 2022+)	2021	2022	2022	2022
	Other (Operational Considerations, etc.)	Casino/Tribal	Casino/Tribal	Casino/Tribal	Casino/Tribal
					Recommended

Supporting Detail for Recommended Alternative (EDS Routing 2021_0844):

- Public Safety Specialist: High frequency of fire in area, grassy oak woodland and mixed brush. This project is rural with mix of residential neighborhoods.
- Strike Tree Potential: Low (D-5) tree fall-in risk after overhead hardening work.
- Figure Considerations: Lower Wyandotte Rd is primary route for citizens and fire responders. 1 existing and recent half of project runs close to route. Underground preferred in this area.
- PSPS Mitigation: Primary focus of project to exclude from PSPS areas serving Feather Falls Casino and Mooretown Reservation through traditional Distribution Primary source.
- Execution Timeline (Land/Bio/Cultural/Constructability): Mooretown Rancheria tribal trust land and possible BIA involvement. Close to wetlands and aquatic features. Beetle and frog.

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	Key Questions	Outcome
PPS	Is this an area that is impacted directly by PPS (+6 Frequency or >1,200 Cust Impact)?	Y N 14 events 266 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 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 Strike	Moderate (6-14) or high (15+) strike tree potential areas in the segment.	Y N OH/DER addressee risk
	Are there any significant dependency or constructability limitations in the areas of impact? (Threshold: 2+ year incremental/delay)	Y N
PSD	Does the CPZ meet ECOP threshold (>25% structures warrant replacement) and result in a more timely mitigation method preferred (e.g., CH)?	Y N 15/22 (68%)
	If alternatives fall within a 100% range, is there additional benefit to choosing an alternative that is not the top ranked RSE?	Y N
EASOP		OH/DER Preferred

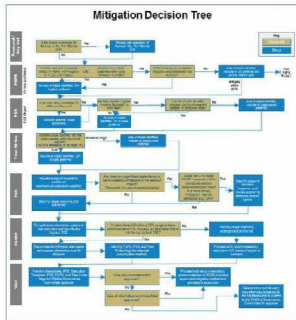
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Inform: ECOP - Pueblo 2102 LR792 PM (3.34 miles)					
	Pueblo 2102 (2.03 miles)	No System Hardening	Overhead Hardening Line Removal & DER	Under-Grounding	Hybrid
Project Scope Risk Reduced After Mitigation			1.75	2.26	1.63
Project Scope Residual Risk Value		2.28	0.53	0.02	0.65
Overall Miles Installed	3.34 Existing OH		2.03	3.06	3.34
Overall Miles Removed	-	-	1.31	-	-
OH System Hardening Cost (\$1.8M/risk-mile mitigated)	-	-			
UG System Hardening Cost (\$6.1M/risk-mile mitigated)	-	-			
Line Removal Cost (\$1.05M/risk-mile mitigated)	-	-			
Total Capital Cost (AAFC Class 5)					
Average O&M Cost (\$/yr/mi)					
NPV @ 6.8% discount rate					
Primary Filter	5 NPV per unit of risk (RSE)		Satisfactory	Satisfactory	Satisfactory
	PSP Preference (Ingress/egress/fire history)		Satisfactory	Satisfactory	Satisfactory
	Strike tree Potential	High Fall-In Risk	Low Fall-In Risk	No Fall-In Risk	Low Fall-In Risk
Secondary Filter	Ingress / Egress	Satisfactory	Satisfactory	Satisfactory	Satisfactory
	PSP Mitigation (13 customers * 14 events)	266 (0%)	196 (24%)	266 (0%)	266 (0%)
	Execution Timeline (2021, 2022, 2022+)		2022	2022+	2022
	Other (Operational Considerations, etc.)		DER, Line removal		

Supporting Detail for Recommended Alternative: DER Link (2021-2022)

- Public Safety Specialist:** Work area near or through, Denville. Two major trees since 10/10/2016. 2) Prework on the job are in the corner and have the tree on the eastern aspects of the steep slope in the portion of the Mayaguan mountain range. This work is in an area with a high level of exposure to wind, lightning, and small diameter trees in the area. Use appropriate safety.
- Strike Tree Potential:** 37 potential strike trees. LOW TO 5% risk to the potential. In this report it does not suggest to cut trees to be cut.
- Egress Considerations:** There are two main routes of travel in this area. 1) Trinity/Dixie/Chickadee/Grain road 2) Mt. Venable Road (Barnwood Rd). Both of these travel routes will be used from all directions. All roads are narrow but have county roads with many segments having steep slopes through heavy vegetation. This does allow a chance to evacuate away from an incoming fire but that will be a responsibility for incoming responders. Some roads may be impacted at multiple points having segments without any access.
- NPV Mitigation:** Consideration to DER, for cut and 2 essential customer service segments.
- Execution Timeline (Land/Use/Cultural/Constructability):** Tree habitat, possible fire restrictions outside of work zone, limited crews during nesting season, Multiple waterways, Cultural constraints - survey and monitoring. DER - multiple crews required.
- Operational considerations:** All DER on preferred OH for 5 customers and 1.31 miles line removal.



	Key Questions	Outcome
PSPS	Is this an area that is impacted directly by PSPS (>6 Frequency or >1,200 Cust Impact)?	Y N
	Are there any critical customers within zone necessary to protect?	Y N
PSS	Is O+ hardening an acceptable mitigation using distribution line exclusion?	Y N N/A
	Is the area being considered for HFRA Add/Remove?	Y N West of Kirker Pass Road
Tree Strike	Ingress/Egress concerns identified by PSS professionals cannot be mitigated by utilizing fluorescent wrapped or composite poles	Y N Ingress / Egress concerns
	Moderate (6-14) or high (15+) strike tree potential areas in the segment.	Y N
FSD	Are there any significant dependency or constructability limitations in the areas of impact? (Threshold: 2+ year incremental delay)	Y N Future Capacity Constraint
	Does the CPZ meet EDCP threshold (>25% structures warrant replacement) and result in a more timely mitigation method preferred (e.g., OH)?	Y N
EASCP	If alternatives fall within a 100% range, is there additional benefit to choosing an alternative that is not the top ranked RSE?	Y N Operational Consideration: Ingress/Egress
	Confidential	CONFIDENTIAL Under-grounding

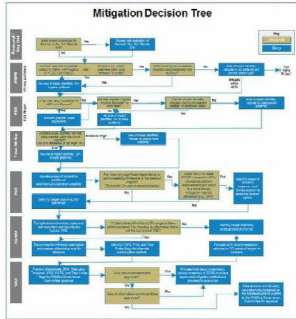
Inform: Top 250 Miles – PM# [REDACTED] – Kirker 2104 – LR 442850

Kirker 2104 (5.04 miles)		No System Hardening	Overhead Hardening	Under grounding	Hybrid
Project Scope Risk Reduced After Mitigation		15.94	15.94	18.37	15.50
Project Scope Residual Risk Value		18.44	2.50	0.07	2.88
Overall Miles Installed		5.04 Existing OH	5.04	5.36	5.36
OH System Hardening Cost		risk-mile			
UG System Hardening Cost		risk-mile			
Line Removal Cost		risk-mile			
Total Capital Cost					
Average O&M Cost (per year)					
NPV @ 6.8% discount rate					
\$ NPV per mile of risk (RSE)					
Primary Filter	PSS Preference (Ingress/egress/fire history)	Non-Satisfactory	Non-Satisfactory	Satisfactory	Satisfactory
Secondary Filter	Strike Tree Potential	Moderate Fall-In Risk	Low Fall-In Risk	Low Fall-In Risk	Low Fall-In Risk
	Ingress/Egress – Preferred option	Non-Satisfactory	Non-Satisfactory	Satisfactory	Satisfactory
	PSS Mitigation (22 customers * 10 events)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	Execution Timeline (2021, 2022, 2022+)		2022	2022+	2022

Supporting Detail for Recommended Alternative (EDRS Reading [2021.06.01](#)):

- Public Safety Specialist: Fuel type in the area is grass, with an occasional grassy/brush/woodland fuel model. There is a small amount of brush where Somerville road and Nortonville road intersect.
- Strike Tree Potential: 70 total strike potential trees in the COZ, LOW (0-5) tree strike potential in this segment.
- Egress Considerations: Kirker Pass road is a main travel route for citizens to commute between Pittsburg/Artoch and Clayton Valley. This is the main access route for emergency responders in the area, there are no other side roads or exits in the area.
- PSS Mitigation: No critical / essential customer in this segment. To achieve PSS reductions, must move forward any of the proposed work except for the all overhead option.
- Execution Timeline (Land Use/Cultural/Constructability): Work may be required during dry season and/or bio-wintering. CA tree tagged for habitat, CA tiger salamander, San Joaquin Kit Fox, and Alameda Whiptail; Pre activity survey for cultural constraints, US options include additional cost for essonments, traffic control, night work due to heavy vehicle traffic during the day. Area is near the Black Diamond Mine Regional Park.
- Note: Cost of OH harder @ UG cable is more than the hybrid because it includes the cost of the remote grid.

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	Key Questions	Y	N	Outcome
PSPS	Is this an area that is impacted directly by PSPS (>6 Frequency or >1,200 Cust Impact)?	Y	N	
	Are there any critical customers within zone necessary to protect?	Y	N	
PSS	Is O+ hardening an acceptable mitigation using distribution line exclusion?	Y	N	N/A
	Is the area being considered for HFRA Add/Remove?	Y	N	West of Kirker Pass Road
Tree Strike	Ingress/Egress concerns identified by PSS professionals cannot be mitigated by utilizing fluorescent wrapped or composite poles	Y	N	Ingress / Egress concerns
	Moderate (6-14) or high (15+) strike tree potential areas in the segment.	Y	N	
FSD	Are there any significant dependency or constructability limitations in the areas of impact? (Threshold: 2+ year incremental delay)	Y	N	Future Capacity Constraint
	Does the CPZ meet ECOP threshold (>25% structures warrant replacement) and result in a more timely mitigation method preferred (e.g., OH)?	Y	N	
EASCP	If alternatives fall within a 100% range, is there additional benefit to choosing an alternative that is not the top ranked RSE?	Y	N	Operational Consideration: Ingress/Egress
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Inform: Top 50 Miles - PM [REDACTED] – Tidewater 2106 LR 14072

	Tidewater 2106 (3.67 miles)	No System Hardening	Overhead Hardening	Under-grounding	Hybrid
Project Scope Risk Reduced After Mitigation			12.72	19.40	16.99
Project Scope Residual Risk Value	19.6	6.88	0.20	2.71	
Overall Miles Installed	3.67 Existing OH		3.59	4.17	3.69
Overall Miles Removed	-	-	0.38	-	-
OH System Hardening Cost	[REDACTED] risk-mile	-	[REDACTED]	[REDACTED]	[REDACTED]
UG System Hardening Cost	[REDACTED] risk-mile	-	[REDACTED]	[REDACTED]	[REDACTED]
Line Removal Cost	[REDACTED] risk-mile	-	[REDACTED]	[REDACTED]	[REDACTED]
Total Capital Cost	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Average O&M Cost (per year)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
NPV @ 6.8% discount rate	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
5 NPV per unit of risk (BSF)	-	-	-	-	-
Primary Filter					
PSS Preference (ingress/ingress/fire history)		Non-Satisfactory	Non-Satisfactory	Satisfactory	Satisfactory
Strike Tree Potential		Low Fall-In Risk	Low Fall-In Risk	N/A	Low Fall-In Risk
Secondary Filter					
Ingress/Egress – Preferred option		Non-Satisfactory	Non-Satisfactory	Satisfactory	Satisfactory
PSPS Mitigation (23 Customers * 0 events)		0 (0%)	0 (0%)	0 (0%)	0 (0%)
Execution timeline (2021, 2022, 2022+)		-	2022	2022+	2022

Supporting Detail for Recommended Alternative REDRS Routing [2021-08-23-20](#)

- Public Safety Specialist: Fuel type in the area is grass, with an occasional grass/oak/woodland fuel model. The communities of Clayton and Pittsburg/Antioch to the southwest and northeast respectively have a population density that would be considered high with multiple single family and multi-family residences.
- Strike Tree Potential: 55 total strike potential trees in the CZ, LOW (0-5) tree strike potential in this segment.
- Egress Consideration: Silver Pass road is a main travel route for citizens to commute between Pittsburg/Antioch and Clayton Valley. This is the main access route for emergency responders in the area, there are no other side roads or exits in the area.
- PSPS Mitigation: No critical / essential customers in this segment.
- Execution Timeline (and Bio/Cultural/Conservation) work may be required during dry season and/or bio-monitoring. CA red-legged frog habitat. CA tiger salamander. & San Joaquin kit fox. Pre-activity survey for cultural constraints. East Bay Regional Park District may delay ERTC release by 3-8 months; UG & Hybrid option include additional cost for assessments, traffic control, night work due to heavy vehicle traffic during the day. Area is near the Black Diamond Mine Regional Park.

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Inform: CWSP Top 50 miles – PM# [REDACTED] – Keswick 1101 Fuse 2407

	Keswick 1101	No System Hardening	Overhead Hardening	Under-grounding	Remote Grid (0% RI)	Remote Grid (65% RI)	Remote Grid (70% RI)
Project Scope Risk Reduced After Mitigation	-	6.11	9.76	9.37	9.37	9.37	9.37
Project Scope Residual Risk Value	9.8019231	3.75	0.10	0.49	0.49	0.49	0.49
Overall Miles Installed	Unknown	1.47	1.47	1.47	1.47	1.47	1.47
Overall Miles Removed	-	-	-	-	-	-	-
OH System Hardening Cost	[REDACTED]	-	-	-	-	-	-
UG System Hardening Cost	[REDACTED]	-	-	-	-	-	-
Line Removal Cost	[REDACTED]	-	-	-	-	-	-
Remote Grid Cost	[REDACTED]	-	-	-	-	-	-
Total Capital Cost	[REDACTED]	-	-	-	-	-	-
Average O&M Cost (per year)	[REDACTED]	-	-	-	-	-	-
NPV @ 6.2% discount rate	[REDACTED]	-	-	-	-	-	-
Primary Filter							
\$ NPV per unit of risk (RSE)	-	(\$0.54M) – 1 st	(\$.99M) – 3 rd	(\$.87M) – 2 nd	(\$1.06M) – 4 th	(\$1.74M) – 5 th	(\$1.74M) – 5 th
PSS Preference (Ingress/egress/line history)	Not Satisfactory	Not Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory
Secondary Filter							
Strike Tree Potential	Low Fall-in Risk	Moderate Fall-in Risk	N/A	N/A	N/A	N/A	N/A
Ingress/Egress - Preferred option	Not Satisfactory	Not Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory
PSS Mitigation (30 Customers = 0 events)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Execution Timeline (2021, 2022, 2022+)	-	2021	2021	2022	2022	2022	2022

Supporting Data for Recommended Alternative EDIS Reading (011-00001)

- Public Safety Specialist (PSS) reports are consistent with grass, brush, and tree removal practices of conductors. Fuel loading can be very light to heavy in places; however, fuels have been significantly reduced in the project area due to the 2018 fire fix.
- Strike Tree Potential: Some areas contain trees in the OH, UG, or UG+OH areas. In this segment, the PSS does not suggest a hardening is required. However, the tree area data model was taken in 2019, after the Carr fire. If a tree is removed from the area, it is the only route of travel for reaching the tower. If a tree is removed, the route to the tower will be cut off in the community. The residents will have to either shelter in place or evacuate to get to work, which is not a good option. The PSS does not suggest a hardening is required. However, the tree area data model was taken in 2019, after the Carr fire.
- Execution Timeline (2021, 2022, 2022+): The project area is a high-risk area. The PSS does not suggest a hardening is required. However, the tree area data model was taken in 2019, after the Carr fire.

Inform: CWSP Top 50 miles – PM# [REDACTED] – Keswick 1101 LR 1586

Current State	OH Hardening	Remote Grid	Alternative 3	Alternative 4																																																		
<p>Existing service provided by single Dk line over difficult terrain to facilities on hilltop. Current load is 200 kW to existing customers, cell towers</p>	<p>Harden the section of section of line running to hilltop customers, 1.5 miles.</p>	<p>Standard Remote Grid. PV/ES/LPG Primary Voltage. Line cost and risk optimized</p>	<p>Minimum Renewable Fraction PV/ES/LPG Primary Voltage</p>	<p>100% Fossil Fuel Remote Grid LPG (FC and Diesel Considered)</p>																																																		
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<p>Other Considerations</p> <ul style="list-style-type: none"> Moderate / High tree strike potential in the larger area Accessibility and safety concerns for field teams attempting to service or inspect the section of line Two TOL sections totaling 0.5 line miles, each in EOL, removed from scope 	<p>Other Considerations</p> <ul style="list-style-type: none"> Tree strike risk mitigated by 1 D.A.C.R. wire Accessibility and safety concerns for field teams attempting to service or inspect the section of line <p style="text-align: center;">Recommended</p>	<p>Other Considerations</p> <ul style="list-style-type: none"> PV land req't not feasible Low RSE creates cost recovery risk given CPUC guidance (Resolution pending) 	<p>Other Considerations</p> <ul style="list-style-type: none"> PV land req't at risk, needs site study Low RSE, cost/recovery risk OH contribution with medium risk to portfolio performance 	<p>Other Considerations</p> <ul style="list-style-type: none"> Air Quality permit risk GHG contributions with high risk to portfolio due to CPUC reporting req't Fuel storage and logistics hazards (requent delivery) Fuel cost risks uncertain Infeasible qty of 12 / CNG Supply not established OSM support not clear Fuel price change risk 																																																		
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