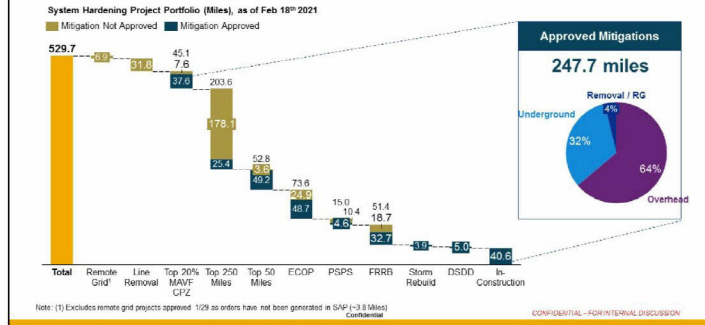


**Wildfire Risk Governance Committee**  
**System Hardening Project Approvals**

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**

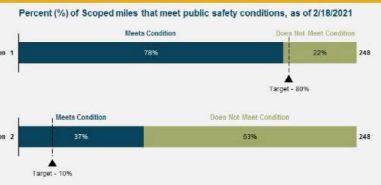
**Risk Profile (Highest Risk Miles defined as)**

1. Top 20% of risk buydown curve
2. Fire re build miles
3. PG&E 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



Execution Team Quality Assurance  
As of 2/12/2021



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Today's discussion will include various mitigation recommendations

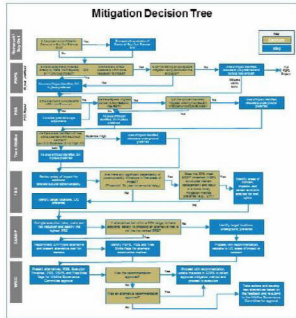
The following projects have recommended mitigations:

Order No.	CPZ	Work Bucket	Total MAVF Core Risk Value	Mean MAVF Core Risk Rank	Recommendation	WGC Request	
<b>WGC Inform (33.43 miles)</b>							
1	[REDACTED]	Middletown 1101548	ECOP Top 20%	10.93	474	Hybrid OH-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
PSPS	Is this an area that is impacted directly by PSPG (-8 Frequency or >1,200 Cust Impact)?	Y N 2 events 68 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
PPS	Is the area being considered for HFRA Add/Remove?	Y N N/A
	Ingress/Egress concerns identified by PGG professionals cannot be mitigated by utilizing intumescent wrapped or composite poles.	Y N Hybrid addresses Ingress/Egress
Tree Strike	Moderate (8-14) or High (15+) strike tree potential areas in the segment.	Y N Low
	Are there any significant dependency or constructability limitations in the areas of impact? (Threshold: 2+ year incremental delay)	Y N N/A
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 N/A
	Does the CPZ meet ECOP threshold (<25% structures warrant replacement) and result in a more timely mitigation method preferred (e.g., OH)?	Y N N/A
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 & PSPS benefits
		Hybrid Preferred

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

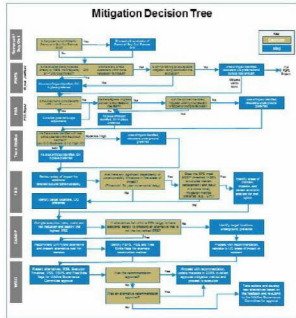
Middletown 1101 (4.18 miles)		No System Hardening	Overhead Hardening	Under-Grounding	Hybrid
Project Scope Risk Reduced After Mitigation		5	6.78	10.82	9.17
Project Scope Residual Risk Value		10.99	4.15	0.11	1.76
Overall Miles Installed		4.13 Existing OH	4.13	7.78	6.31
Overall Miles Removed		-	-	-	-
OH System Hardening Cost		0/mile	-	-	-
UG System Hardening Cost		0/mile	-	-	-
Line Removal Cost		0/mile	-	-	-
Total Capital Cost (AAEC Class 5)		-	-	-	-
Average O&M Cost (per year)		-	-	-	-
NPV @ 5.5% discount rate		-	-	-	-
NPV per unit of risk (RSE)		-	-	-	-
<b>Primary Filter</b>	<b>PSS Preference (Ingress/egress/fire history)</b>		Non-satisfactory	Satisfactory	Satisfactory
	Strike Tree Potential		Low Full-In Risk	No Full-In Risk	Low Full-In Risk
	Ingress / Egress	Low Full-In Risk	Non-satisfactory	Satisfactory	Satisfactory
<b>Secondary Filter</b>	<b>PSPS Mitigation (84 cuts * 2 events)</b>	68 (8%)	68 (8%)	84 (50%)	17 (25%)
	Execution timeline (2021, 2022, 2022+)		2021	2022+	2022
	Other (Operational Considerations, etc.)				

*Recommended*

**Supporting Detail for Recommended Alternative (EDRS Link [\[Link\]](#)):**

- Public Safety Specialist:** The fuel base for this project area is mostly composed of grassy oak woodland interspersed with patches of brush and pine. Fuel loading is mostly light in areas of the 2015 Valley fire burn area with little regrowth, however some areas (mostly on the north end of the project) will still find medium to heavy fuel loading where the grass of Whipspring Pines to Post Oak/Cobb and Oak/Pine areas left unburned. Population density for this project area is all considered light to medium with Middletown (pop. 1500-Medium) being the largest community located approximately 2 miles east of the project and Cobb/Pine Grove (pop. 1000) located at the north end of the project area.
- Strike Tree Potential:** Low (0-5) tree strike potential in this segment does not require OH hardening is required.
- Ingress/Egress Considerations:** Major ingress concern. First responders would respond to a fire in this area using HWY 175 making it a very important access/egress route. If this route were compromised the suppression and evacuation efforts would be significantly hampered. Additionally, if the fire was in Cobb/Pine Grove or Whipspring Pines, fire resources and other emergency services responding from Middlesex or Nass County would have to take an alternate route resulting in a significantly delayed response if HWY 175 were not available.
- PSPS Mitigation:** Some PSPS mitigation potential. To achieve additional PSPS reductions, additional source-risk scope would have to be included.
- Execution Timeline (if available/Cultural Considerability):** Work required during the dry season (May 15 - Oct 15) to reduce burn potential. Project activities along RR 175, within the Caltrans DCO will require a Caltrans Encroachment Permit. Upon review by Caltrans, additional cultural resource protection measures may be required. No EFS constraints.

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	Key Questions	Outcome
PSPS	Is this an area that is impacted directly by PSPG (+8 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 OH hardening an acceptable mitigation using distribution line exclusion?	Y N N/A
PPS	Is the area being considered for HFRA Add/Remove?	Y N N/A
	Ingress/Egress concerns identified by PGG professionals cannot be mitigated by utilizing intumescent wrapped or composite poles.	Y N Hybrid addresses Ingress/Egress
Tree Strike	Moderate (8-14) or High (15+) strike tree potential areas in the segment.	Y N High - Hybrid addresses risk
	Are there any significant dependency or constructability limitations in the areas of impact? (Threshold: 2+ year incremental delay)	Y N N/A
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 N/A
	Does the CPZ meet ECOP threshold (+25% structures warrant replacement) and result in a more timely mitigation method preferred (e.g., OH)?	Y N N/A
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 & tree strike preference
		Y N Hybrid Preferred

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

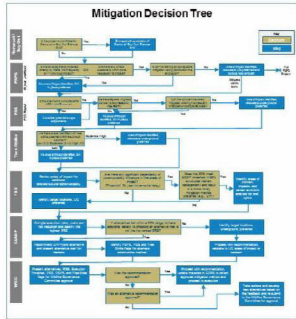
Middletown 1101 (7.33 miles)	No System Hardening	Overhead Hardening	Under-Grounding	In-bid
Project Scope Risk Reduced After Mitigation	12.70	7.88	12.58	11.72
<b>Project Scope Residual Risk Value</b>	<b>12.70</b>	<b>4.83</b>	<b>0.15</b>	<b>0.88</b>
Overall Miles Installed	7.33 Existing OII	7.33	14.70	14.10
Overall Miles Removed	-	-	-	-
OII System Hardening Cost	-\$k/mile	-	-	-
UG System Hardening Cost	-\$k/mile	-	-	-
Line Removal Cost	-\$k/mile	-	-	-
<b>Total Capital Cost (AAACE Class 5)</b>	-	-	-	-
Average O&M Cost (per year)	-	-	-	-
NPV @ 5.5% discount rate	-	-	-	-
\$ NPV per unit of risk (RSE)	-	-	-	-
<b>Primary Filter</b>				
PSS Preference (Ingress/egress/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 / Egress	Non-satisfactory	Non-satisfactory	Satisfactory	Satisfactory
<b>Secondary Filter</b>				
PSPS Mitigation (213 cuts * 2 events)	424 (0%)	424 (0%)	424 (0%)	424 (0%)
Execution timeline (2021, 2022, 2022+)		2021	2022+	2022
Other (Operational Considerations, etc.)				

**Supporting Detail for Recommended Alternative (EDRS Link: [2021-04-09](#))**

- Public Safety Consideration:** The fall zone for this project area mainly consists of grass oak woodland interspersed with patches of brush and grass pine cover. Fuel loading is mostly light to base of the 2015 Valley fire burn scar with little regrowth, however some areas (mainly on the North end of the project) will still find medium to heavy fuel loading where the areas of thinning Phase 1 Pine Grove/COP and Old Pines were left uncut. Population density for this project area is also considered light to light/medium with the closest being the target community located approximately 2 miles East of the project and CSD/Pine Grove (pop 1000) located at the North end of the project area.
- Strike Tree Potential:** High-in-risk area zones present in this segment suggests UG hardening is necessary.
- Ingress/Egress Consideration:** Major egress concern. First responders would respond to a fire in this area using HWY 171 making a very important access/egress route. If this route were compromised the suppression and evacuation efforts would be significantly hampered. Additionally, if the fire was in COP, Pine Grove or Unsprung Pines, fire resources and other emergency services responding from Modoc/Joseph County would have to take an alternate route resulting in a significantly delayed response if HWY 171 were not possible.
- PSPS Mitigation:** No mitigation potential due to limited scope of this hardening project. To achieve PSPS reductions, additional scope (including Phases 1 & 2 of this zone) would have to be included.
- Execution Timeline & Available Cultural Considerability:** Work required during the fire season (May 15 - Oct 31) under nonendangered project activities along OR 171, within the CalFire RCD will require a Caltrans Encroachment Permit. Upon review by Caltrans, additional cultural resource protection measures may be required. No EPS constraints.

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	Key Questions	Outcome
PSPS	Is this an area that is impacted directly by PSPS (-8 Frequency or >1,200 Cust Impact)?	Y N 9 events
	Are there any critical customers within zone necessary to protect?	Y N Feather Falls Casino
	Is OH hardening an acceptable mitigation using distribution line exclusion?	Y N N/A
PPS	Is the area being considered for HFRA Add/Remove?	Y N
	Ingress/Egress concerns identified by PPS professionals cannot be mitigated by utilizing intumescent wrapped or composite poles.	Y N Lower Wyandotte Rd
Tree Strike	Moderate (8-14) 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
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 RSE?	Y N Hybrid provides Egress/Ingress and PSPS benefit
EASOP		Hybrid Preferred

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

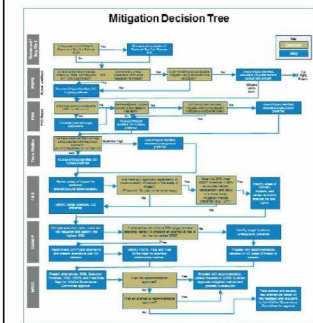
Wyandotte 1109 (0.17 miles)	No System Hardening	Overhead Hardening	Under-Grounding	Hybrid
Project Scope Risk Reduced After Mitigation		1.05	1.57	1.21
<b>Project Scope Residual Risk Value</b>	<b>1.69</b>	<b>0.64</b>	<b>0.02</b>	<b>0.18</b>
Overall Miles Installed	0.37 Existing OH	0.37	0.64	0.64
Overall Miles Removed	-	-	-	-
OH System Hardening Cost	18k-mile			
UG System Hardening Cost	18k-mile			
Line Removal Cost	18k-mile			
Total Capital Cost (RACE Class 5)				
Average O&M Cost (per year)				
NPV @ 6.8% discount rate				
<b>Primary Filter</b>				
\$ NPV per unit of rise (RSE)				
PSS Preference (Ingress/Egress/Fire History)	Non-satisfactory	Non-satisfactory	Preferred	Preferred
<b>Secondary Filter</b>				
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 custs * 9 event)	1071 (9%)	1071 (9%)	36 (96%)	36 (96%)
Execution timeline (2021, 2022, 2022+)	2021	2021	2022	2022
Other (Operational Considerations, etc.)	Casino/Tribal	Casino/Tribal	Casino/Tribal	Casino/Tribal
				<b>Recommended</b>

**Supporting Detail for Recommended Alternative (DNS Routing [REDACTED]):**

- 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 (0-5) tree fall-in risk after overhead hardening work.
- Egress Considerations: Lower Wyandotte Rd is primary route for citizens and first responders. 1. crossing and second half of project route close to route, underground preferred in this area.
- PSPS Mitigation: Primary focus of project to exclude from PSPS area serving Feather Falls Casino and Mooretown Reservation through traditional Distribution Primary source.
- Execution Timeline (Land/Risk/Cultural/Constructability): Mooretown Rancheria tribal trust land and possible IBA involvement. Close to wetlands and aquatic features. Beetle and frog.

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Inform: ECOP - Pueblo 2102 LR792 PM (3.34miles)



	Key Questions	Outcome
PSPS	Is this an area that is impacted directly by PSPS (<math>\pm 8</math> 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
PSS	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 PSS professionals cannot be mitigated by utilizing intumescent wrapped or composite poles.	Y N
	Moderate (<math>8-14</math>) or High (<math>15+</math>) strike tree potential areas in the segment.	Y N OH/DER addresses risk
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 (<math>\pm 25\%</math> structures warrant replacement) and result in a more timely mitigation method preferred (e.g., OHT)?	Y N 16/22 (68%)
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 OH/DER Preferred

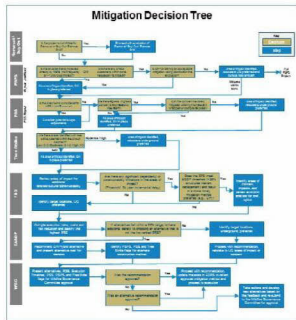
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Inform: ECOP - Pueblo 2102 LR792 PM (3.34 miles)					
	Pueblo 2102 (2.98 miles)	No System Hardening	Overhead Hardening Line Removal & DFR	Under-grounding	Hybrid
Project Scope Risk Reduced After Mitigation	-	-	1.75	2.26	1.63
Project Scope Residual Risk Value	2.28	0.58	0.02	0.63	0.63
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 (\$6.3M/risk-mile mitigated)	-	-	-	-	-
Line Removal Cost (\$106k/risk-mile mitigated)	-	-	-	-	-
Total Capital Cost (ACE Class 5)	-	-	-	-	-
Average O&M Cost (per year)	-	-	-	-	-
NPV @ 6.8% discount rate	-	-	-	-	-
Primary Filter: \$ NPV per unit of risk (RSE)	-	-	-	-	-
Filter: P&S 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
Ingress / Egress	-	Satisfactory	Satisfactory	Satisfactory	Satisfactory
P&S Mitigation (18 customers * 1.6 events)	-	266 (0%)	286 (26%)	266 (0%)	266 (0%)
Execution Timeline (2021, 2022, 2022*)	-	-	2022	2022*	2022
Other (Operational Considerations, etc.)	-	-	DLR, line removal	-	-

**Supporting Detail for Recommended Alternative: BDRS Link (0221-0450)**

- Public Safety Specialist:** Work area of four miles, Dikeville. Two major transmission lines (2102/792) are in the area. The eastern aspect of the steep slopes in this portion of the Maple Creek mountain range. This specific project area contains steep and level exposures resulting in possible windblown tree-fall risks, specifically, and small vertical blocks in the area. Low population density.
- Strike Tree Potential:** 10 potential at 100 feet (10%) tree fall potential in this segment does not suggest UG hardening is required.
- Egress Considerations:** There are two main routes of travel in this area: 1. Through Dry Creek/Dikeville Grade road. 2. An Under Road Reservoir Rd. Both of these travel routes will be used from all directions. All travel routes are narrow with low capacity. There is a significant crossing through the area. This is a critical crossing and requires a high level of attention. There are no other routes of travel in this area.
- P&S Mitigation:** Customer service to DLR, installation of essential customer with same team.
- Execution Timeline (Land/Use/Cultural/Constructability):** Frog habitat, possible fall restrictions outside of work zone. Limited crews during nesting season. Multiple waterways. Cultural constraints - survey and monitoring. Dirt road - multiple access points.
- Operational Considerations:** Add DFR on Reservoir CR for 1 customer and 1.31 miles line removal.



	Key Questions	Outcome
PSPG	Is this an area that is impacted directly by PSPG (+8 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
FSS	Is the area being considered for HFRAAdd/Remove?	Y N West of Kirker Pass Road
	Ingress/Egress concerns identified by PSS professionals cannot be mitigated by utilizing intransient, wrapped or composite poles.	Y N Ingress / Egress concerns
Tree Strike	Moderate (6-14) or high (15+) strike tree potential areas in the segment.	Y N
	Are there any significant dependency or constructability limitations in the areas of impact? (Threshold: 2+ year incremental delay)	Y N Future Capacity Constraint
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
	EASDP	If alternatives fall within a 100% range, is there additional benefit to choosing an alternative that is not the top ranked RSE?

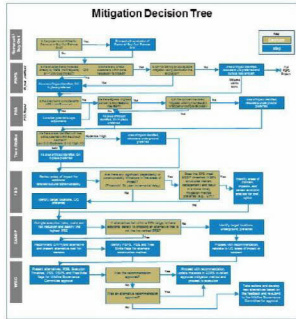
Inform: Top 250 Miles – PM# [REDACTED] – Kirker 2104 – LR 442850

Kirker 2104 (5.04 miles)		No System Hardening	Overhead Hardening	Under grounding	Hybrid
Project Scope Risk Reduced After Mitigation		-	15.54	18.37	15.56
Project Scope Residual Risk Value		16.44	2.50	0.07	2.88
Overall Miles Installed		5.04 Existing OH	5.04	5.56	5.56
OH System Hardening Cost		-	-	-	-
UG System Hardening Cost		-	-	-	-
Line Removal Cost		-	-	-	-
Total Capital Cost		-	-	-	-
Average O&M Cost (per year)		-	-	-	-
NPV @ 6.2% discount rate		-	-	-	-
\$ NPV per unit of risk (RSE)		-	-	-	-
Primary Risk	PSS Preference (Ingress/egress/fire history)	Non-Satisfactory	Non-Satisfactory	Satisfactory	Satisfactory
	Strike Tree Potential	Moderate Fall-in Risk	Low Fall-in Risk	Low Fall-in Risk	Low Fall-in Risk
Secondary Risk	Ingress/Egress – Preferred option	Non-Satisfactory	Non-Satisfactory	Satisfactory	Satisfactory
	PPS Mitigation (% Customers * 0 events)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	Execution timeline (2021, 2022, 2022+)	-	2022	2022+	2022

Supporting Detail for Recommended Alternative (LDRS Routing [Link](#)):

- Public Safety Specialist: Fuel type in the area is grass, with an occasional grass/oak wood/leaf litter fuel model. There is a small amount of brush where Somerville road and Nortonville road intersect.
- Strike Tree Potential: 76 total strike potential trees in the CR2, LDW (B-5) tree strike potential in this segment.
- Ingress Considerations: Kirker Pass road is a main travel route for citizens to commute between Pittsburg/Jericho 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.
- PPS Mitigation: No critical / essential customers in this segment. To achieve PPS reductions, must move forward any of the proposed work except for the all overhead option.
- Execution Timeline (Land Use/Cultural/Coverability): Work may be required during dry season and/or biomonitoring. Cultural: logged frog habitat, CA tiger salamander, San Joaquin kit fox, and Alameda Whiptail; Pre-activity survey for cultural constraints; UG options include additional cost for easements, 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 harden & UG cable is more than the hybrid because it includes the cost of the remote grid.

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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
	Are there any critical customers within zone necessary to protect?	Y N
FSS	Is OH hardening an acceptable mitigation using distribution line exclusion?	Y N N/A
	Is the area being considered for HFRAAdd/Remove?	Y N West of Kirker Pass Road
Tree Strike	Ingress/Egress concerns identified by PSS professionals cannot be mitigated by utilizing intransient 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 EGOIP threshold (>25% structures warrant replacement) and result in a more timely mitigation method preferred (e.g., OH)?	Y N
EASDP	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 Hybrid

Inform: Top 50 Miles - PM [REDACTED] – Tidewater 2106 LR 14072

	Tidewater 2106 (3.67 miles)	No System Hardening	Overhead Hardening	Undergrounding	Hybrid
Project Scope Risk Reduced After Mitigation	-	-	11.72	15.40	16.89
Project Scope Residual Risk Value	19.6	6.88	0.20	2.71	
Overall Miles Installed	3.67 Existing OH	-	3.39	4.17	3.69
Overall Miles Removed	-	-	0.38	-	-
O&I System Hardening Cost	[REDACTED] risk-mile	-	-	-	-
UG System Hardening Cost	[REDACTED] risk-mile	-	-	-	-
Line Removal Cost	[REDACTED] risk-mile	-	-	-	-
Total Capital Cost	-	-	-	-	-
Average O&M Cost (per year)	-	-	-	-	-
NPV @ 6.8% discount rate	-	-	-	-	-
NPV per unit of risk (RSE)	-	-	-	-	-
<b>Primary Filter</b>					
PSS Preference (Ingress/egress/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
<b>Secondary Filter</b>					
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 (ERS Routing)**

- Public Safety Specialist: Fuel type in the area is grass, with an occasional grass/oak woodland fuel model. The communities of Clayton and Pittsburg/Airtoch to the southwest and northeast respectively have a population density that would be considered high with multiple single family and multifamily residences
- Strike Tree Potential: 35 total strike potential trees in the CRZ, LOW (0-5) tree strike potential in this segment.
- Egress Considerations: Kinkler Pass road is a main travel route for citizens to commute between Pittsburg/Airtoch 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 residential customers in this segment.
- Execution Timeline(s) and/Reliability/Constructability: Work may be required during dry season and/or biomonitored, 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 3-6 months; UG & Hybrid option include additional cost for easements, traffic control, night work due to heavy vehicle traffic during the day. Areas near the Black Diamond Mine Regional Park



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

	Keswick 1101	No System Hardening	Overhead Hardening	Under-grounding	Remote Grid (0% BS)	Remote Grid (0% BS)	Remote Grid (70% BS)
Project Scope Risk Reduced After Mitigation	-	-	6.11	9.76	9.37	9.37	9.37
Project Scope Residual Risk Value	9.8619291	-	9.75	0.10	0.49	0.49	0.49
Overall Miles Installed	Unknown	-	1.47	1.47	-	-	-
Overall Miles Removed	-	-	1.47	1.47	1.47	1.47	1.47
CH System Hardening Cost	-	-	-	-	-	-	-
UG System Hardening Cost	-	-	-	-	-	-	-
Line Removal Cost	-	-	-	-	-	-	-
Remote Grid Cost	-	-	-	-	-	-	-
Total Capital Cost	-	-	-	-	-	-	-
Average O&M Cost (per year)	-	-	-	-	-	-	-
NPV @ 6.8% discount rate	-	-	-	-	-	-	-
<b>Primary Filter</b>	<b>\$ NPV per unit of risk (RSE)</b>	-	-	-	-	-	-
	<b>PSS Preference (Ingress/egress/fire history)</b>	Not Satisfactory	Not Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory
<b>Secondary Filter</b>	<b>Strike Tree Potential</b>	Low Fall-in Risk	Moderate Fall-in Risk	N/A	N/A	N/A	N/A
	<b>Ingress/Egress – Preferred option</b>	Not Satisfactory	Not Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory
	<b>PSPS Mitigation (0 Customers = 0 events)</b>	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	<b>Execution Timeline (2021, 2022, 2022+)</b>	-	2021	2022+	2022	2022	2022

**Summary Detail for Recommended Alternative (DRS) Route 2021-2022+:**

- Public Safety Impacts:** Full response is considered in this table, and team had patch report confirm. Full loading can be very tight to heavy in peaks however, full have been significantly reduced in the project area during the 2024 Con Fnc.
- Strike Tree Potential:** No local service potential exists in the CH, CH (0-1) tree or beyond in this segment does not suggest UG hardening is required. However, the tree or line is located in 2024, after the Con Fnc.
- Egress Considerations:** Iron Mountain road is the only route of travel for evacuating the few residents living north of the project. If evacuation route to the south without off in the community, the resident will have to either shelter in place or take a route to the south, either through the project area or through the mountain road.
- PSPS Mitigation:** No mitigation needed starts in the scope of this hardening project. No critical/essential customers in this segment. To achieve PSPS reduction, additional scope would have to be included.
- Fire and/or Cultural/Coverability:** Risk mitigation and fire and/or cultural impact regarding MFCP included habitat within the project area will be repaired or replaced during the construction or decommissioning. Numerous cultural resources reported to survey locations, additional road, line, BSM and other related projects.

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. Lifetime cost and risk optimized.</p>	<p>Minimum Renewable Fraction PV/ES/LPG Primary Voltage.</p>	<p>100% Fossil Fuel Remote Grid (PG and Diesel Considered).</p>																																																		
<p><b>Economic Considerations</b></p> <table border="1"> <tr><td>Capital Costs</td><td>-</td></tr> <tr><td>Avg. O&amp;M Costs</td><td></td></tr> <tr><td>NPV (@ 6.8%)</td><td></td></tr> <tr><td>Risk Reduction</td><td></td></tr> <tr><td>RSE</td><td></td></tr> </table>	Capital Costs	-	Avg. O&M Costs		NPV (@ 6.8%)		Risk Reduction		RSE		<p><b>Economic Considerations</b></p> <table border="1"> <tr><td>Capital Costs</td><td></td></tr> <tr><td>Avg. O&amp;M Costs</td><td></td></tr> <tr><td>NPV (@ 6.8%)</td><td></td></tr> <tr><td>Risk Reduction</td><td></td></tr> <tr><td>RSE</td><td></td></tr> </table>	Capital Costs		Avg. O&M Costs		NPV (@ 6.8%)		Risk Reduction		RSE		<p><b>Economic Considerations</b></p> <table border="1"> <tr><td>Capital Costs</td><td></td></tr> <tr><td>Avg. O&amp;M Costs</td><td></td></tr> <tr><td>NPV (@ 6.8%)</td><td></td></tr> <tr><td>Risk Reduction</td><td></td></tr> <tr><td>RSE</td><td></td></tr> </table>	Capital Costs		Avg. O&M Costs		NPV (@ 6.8%)		Risk Reduction		RSE		<p><b>Economic Considerations</b></p> <table border="1"> <tr><td>Capital Costs</td><td></td></tr> <tr><td>Avg. O&amp;M Costs</td><td></td></tr> <tr><td>NPV (@ 6.8%)</td><td></td></tr> <tr><td>Risk Reduction</td><td></td></tr> <tr><td>RSE</td><td></td></tr> </table>	Capital Costs		Avg. O&M Costs		NPV (@ 6.8%)		Risk Reduction		RSE		<p><b>Economic Considerations</b></p> <table border="1"> <tr><td>Capital Costs</td><td></td></tr> <tr><td>Avg. O&amp;M Costs</td><td></td></tr> <tr><td>NPV (@ 6.8%)</td><td></td></tr> <tr><td>Risk Reduction</td><td></td></tr> <tr><td>RSE</td><td></td></tr> </table>	Capital Costs		Avg. O&M Costs		NPV (@ 6.8%)		Risk Reduction		RSE	
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<p><b>Other Considerations</b></p> <ul style="list-style-type: none"> <li>Moderate / High tree strike potential in the target area</li> <li>Accessibility and safety concerns for field teams attempting to service or inspect the section of line</li> <li>Two TOL sections totaling 0.5 line miles, each to EOL, removed from scope</li> </ul>	<p><b>Other Considerations</b></p> <ul style="list-style-type: none"> <li>Tree strike risk mitigated by 1 DACTAR wire</li> <li>Accessibility and safety concerns for field teams attempting to service or inspect the section of line</li> </ul> <p style="text-align: center;"><b>Recommended</b></p>	<p><b>Other Considerations</b></p> <ul style="list-style-type: none"> <li>PV land req't not feasible</li> <li>Low RSE creates cost recovery risk given CPUC guidance (Resolution pending)</li> </ul>	<p><b>Other Considerations</b></p> <ul style="list-style-type: none"> <li>PV land req't at risk, needs site work</li> <li>Low RSE, cost recovery risk</li> <li>CHG contribution with medium risk to portfolio performance</li> </ul>	<p><b>Other Considerations</b></p> <ul style="list-style-type: none"> <li>Air Quality permit risk</li> <li>GHG contributions with high risk to portfolio due to CPUC reporting req't</li> <li>Fuel storage and logistics hazards (requent delivery)</li> <li>Fuel cell risks: untested, infeasible qty of H<sub>2</sub> / CHG</li> <li>Supply not established</li> <li>OSM support not clear</li> <li>Fuel price change risk</li> </ul>																																																		
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