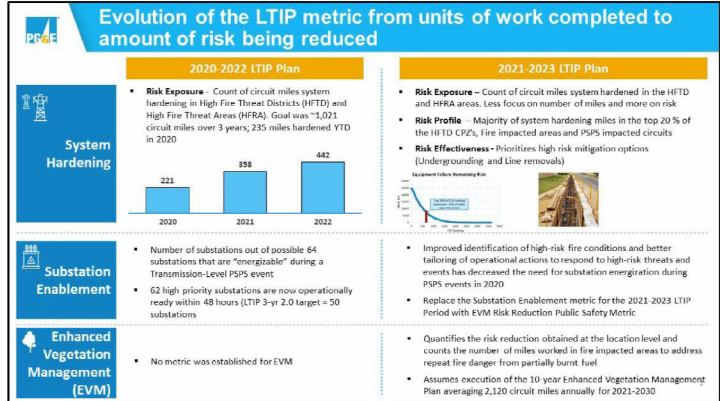


**Public Safety
Long Term Incentive Plan (LTIP)
Target Setting**

November 15, 2020





Risk Model and Risk Quantification

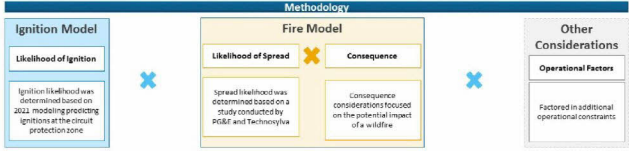
J. Smith

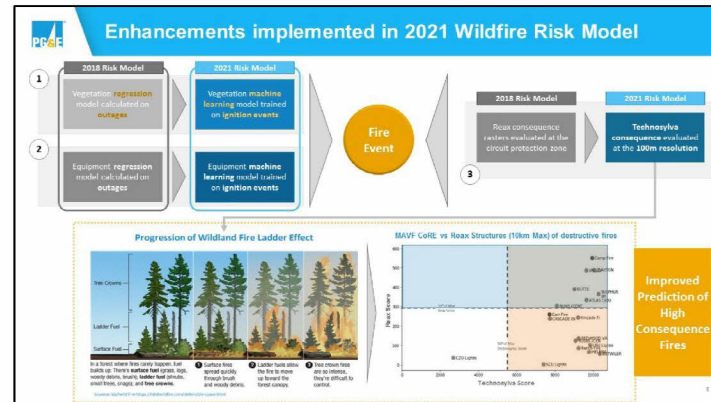
Wildfire Risk Models calculates risk units in CPUC framework

- | | |
|---|--|
| <p>LoRE</p> <ul style="list-style-type: none"> The likelihood of a risk event (LoRE) is the relative frequency of a specific risk event occurring. In the case of wildfire risk, this is the relative likelihood of a ignition occurring. | <p>CoRE</p> <ul style="list-style-type: none"> The consequence of a risk event (CoRE) is the average impact of the risk should it materialize across key metrics (Safety, Reliability, Financial). In the case of wildfire risk, consequence contains serious injuries, fatalities, property damage, and impacts to reliability. |
|---|--|

Risk = LoRE X CoRE

- Risk is the product of the likelihood and consequence of a risk event.
- This method produces an expected value of impact across the consequence metrics, and when combined results in a multi-attribute score that can inform risk based decision making.

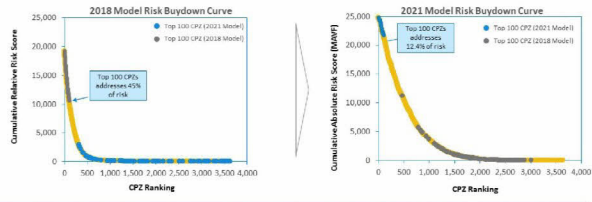






Risk models provide risk buydown curves to guide workplan

The risk buydown curve shows the amount of risk that can be addressed with every subsequent mile or CPZ that is mitigated. This view shows the relative magnitude of potential projects and can compare impacts of programs with varied effectiveness. The visualization helps to highlight the consolidation of risk by mile as you move down the prioritization list.



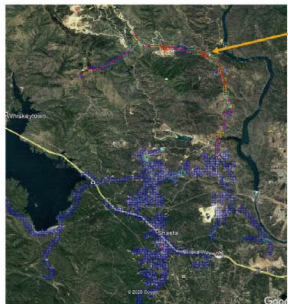
System Hardening Risk Buydown curves highlight the significant shift of where the top 100 CPZ's are between the two models

Project Example

1. 2024



Project Example: Keswick 11011586 Circuit Protection Zone



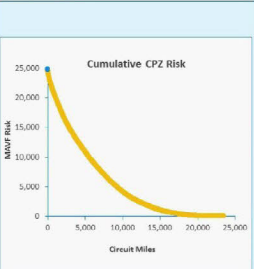
Keswick 11011586 Circuit Protection Zone

- 6.6 Miles in total, the 100m X 100m squares are the absolute risk values for each section of that protection zone
- The total protection zone absolute risk score is 48.84 risk units (sum of all the 100m squares along the circuit)
- Average risk score of all the squares gives the CPZ mean risk score of 1.25

Keswick (6.6 Miles)	No System Hardening	Overhead Hardening	Under-grounding	50-50 Oh / UG
Total CPZ Risk Score After Mitigation	48.84	30.28	48.35	39.32
Total CPZ Residual Risk Value	48.84	10.56	0.49	9.52
Overall Miles	6.6			
OH System Hardening (\$/mile)	\$-			
UG System Hardening (\$/mile)	\$-			
Total Cost	\$-			
Simple Risk Spend Efficiency	n/a	2.8675	1.6650	1.9857

Keswick Net Present Value (NPV)	100% Overhead Hardening	100% Under-grounding
NPV @ 7% discount rate		
\$ NPV per unit of risk		

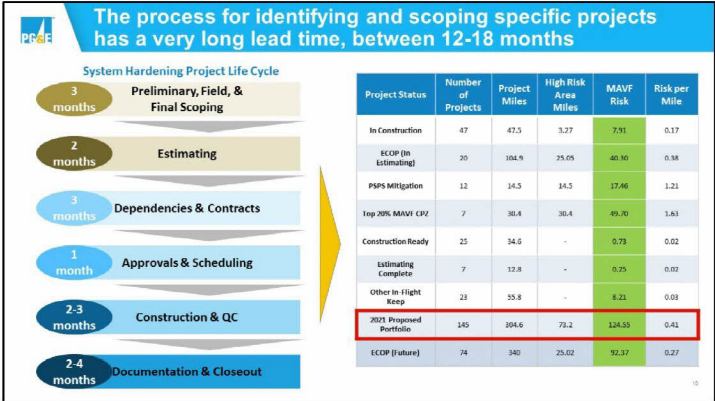
The top 50 riskiest miles represent 4.9% of the system risk.



Protection Zone Name	Miles	Cumulative Miles	Mean MAUP Score	Total CPZ MAUP	% total risk reduced (52%)
OREGON TRAIL 1109LJ991	0.02	0.02	3.16	3.16	0.01%
CALPINE 1144276-G	0.01	0.03	1.88	1.88	0.01%
MARIPOSA 210190130	0.08	0.12	1.69	1.69	0.02%
SHEPHERD 2111688294	0.01	0.13	1.44	1.44	0.02%
MIDDLE TOWN 1109L8	0.06	0.19	1.30	3.20	0.03%
UPPER LAKE 11010CB	1.00	1.17	1.26	5.77	0.04%
KESWICK 11011586	6.66	7.83	1.25	48.84	0.17%
MIDDLETOWN 110130N50	4.71	12.04	0.92	48.56	0.23%
KONOCTI 1102965078	5.61	17.65	0.88	51.70	0.42%
MARIPOSA 2102241564	0.64	18.29	0.77	10.81	0.44%
BUCKS CREEK 11010CB	4.29	22.58	0.72	3.55	0.47%
SIL MANS 2106278446	0.09	22.67	0.74	4.38	0.47%
MIDDLETOWN 1102CB	0.42	23.08	0.72	8.70	0.48%
MIDDLETOWN 1103830	24.80	47.88	0.72	151.83	0.87%

Key Takeaways

- Mitigating 25 of the 50 riskiest miles within PG&E's service territory would reduce ~0.5% of PG&E's total wildfire risk.
- Some of these segments are relatively small and may be the result of edge effects. However trends in the data, such as the Middletown circuit, highlight areas of high risk where more extensive remediation can occur.
- The team recommends creating a strike team to assess the most effective way to address and mitigate the wildfire risk across these circuits and locations to complete these in 2021 as a stretch target.



Target Setting

11/20/2014

PG&E Approach to the 2021 work plan attempts to balance with maximized risk reduction

Conditions

- Risk Exposure Expanded**
 - All 25,000 HTD miles were evaluated within the 2021 Risk Model
- Risk Proportion Focused**
 - Majority of system hardening miles in the top 20% of the HTD CPZ's, remaining in Fire impacted and PSPS impacted CPZ's (Fire rebuild)
 - 2021 is a transition year given risk model enhancements and evolution
- Risk Effectiveness Enabled**
 - Prioritizes high risk mitigation options (Undergrounding and Line removals)
 - 5%, 10% and 15% of Undergrounding work in the System Hardening project portfolio in 2021, 2022 and 2023, respectively

2021 System Hardening Workplan

Recommendation

Use the 2021 wildfire risk model to inform the prioritization of project scoped work, while maximizing the amount of efficient system hardening that can be completed before wildfire season 2022. Additional resources not used to complete this plan will be assigned to address the backlog of CC tags in the HTD. The workplan will focus on:

Included in Scope:	Additional Review: (Complete partial CPZ)	
<ul style="list-style-type: none"> CPZ currently in construction CPZ in the top 20% of Highest Risk CPZs ECOP and PSPS Projects 	<ul style="list-style-type: none"> Construction ready projects Remaining concrete projects awaiting dependencies 	
Highest Risk Area Miles: 73.2	Miles Addressed: 206.4	MAWP Reduced: 124.55 (0.3%)

Alternatives

Alternative 1	Alternative 2
<p>Focus exclusively on the highest risk area miles, and address excess resources to complete HTD SC tags and other non-hardening capital work</p> <p>Included in Scope:</p> <ul style="list-style-type: none"> Current scope of highest risk area miles 	<p>Maximize the amount of system hardening work that can be completed by carrying over all construction ready work for 2022</p> <p>Included in Scope:</p> <ul style="list-style-type: none"> All current construction ready 2021 system hardening projects
Highest Risk Area Miles: 73.2	Highest Risk Area Miles: 7.2
Miles Addressed: 73.2	Miles Addressed: 254.18
Risk Reduced: 150.79 (0.4%)	Risk Reduced: 30.27 (0.1%)

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The LTIP targets for system hardening are set based on 2021 risk area miles and program funding assumptions

Program Funding

- Forecast of wildfire Mitigation capital spend (bulk of which is System Hardening) in 2021 consistent with the Settlement for the 2020-2022 GRC. 2022 forecast escalates 2021 by 15% and 2023 forecast escalates 2021 by 30%.

Unit Costs

- Assume [redacted] per circuit miles of Overhead SW work and [redacted] for Underground work

Program Duration

- Execution of the 13-year plan focusing on top 20% CPZs by 2032

System Hardening LTIP Targets

	LTIP 0.5	LTIP 1.0	LTIP 2.0
2021	305	320	350
2022	350	368	403
2023	396	416	455
2021-2023	1,051	1,103	1,209

Targets are miles of system hardening work for specific risk-prioritized work

The total mileage of the proposed 2021 Project Portfolio was set as the threshold goal (LTIP 0.5) for 2021, 2022 and 2023 LTIP 0.5 goals reflect escalation of program funding level. The target and stretch goals (LTIP 1.0, 2.0) were set as 5% and 15% higher, respectively.



The LTIP targets for EVM are set based on work to be completed over the remaining ten years of the program

Program Funding
 • Forecast of [redacted] spend on EVM program in 2021, 2022 and 2023 respectively (in alignment with POR)

Unit Costs
 • Assume [redacted] per tree or [redacted] per miles of EVM work*

Program Duration
 • Assumes execution of the 12-year Enhanced Vegetation management Plan (2019-2030)

Enhanced Vegetation Management LTIP Targets

	LTIP 0.5	LTIP 1.0	LTIP 2.0
2021	2,120	2,226	2,438
2022	2,120	2,226	2,438
2023	2,120	2,226	2,438
2021-2023	6,360	6,678	7,314

Targets are miles of EVM work for specific risk-prioritized work.
 The total mileage of the proposed 2021 Project Portfolio was set as the threshold goal (LTIP 0.5) for 2021. The target and stretch goals (LTIP 1.0, 2.0) were set as 5% and 15% higher, respectively.

*Basis: 1" EVM work [redacted] resulting 1500 trees and 2,250 miles