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# COMMENTS OF THE GREEN POWER INSTITUTE ON THE PACIFICORP 2026-2028 BASE WILDFIRE MITIGATION PLAN

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The Green Power Institute (GPI), the renewable energy program of the Pacific Institute for Studies in Development, Environment, and Security, provides these *Comments of the Green Power Institute on the PacifiCorp 2026-2028 Base Wildfire Mitigation Plan*.

## Introduction

GPI performed a review of the PacifiCorp 2026-2028 Base Wildfire Mitigation Plan (WMP) with a focus on Risk Methodology and Assessment; Wildfire Mitigation Strategy; Grid Design, Operations, and Maintenance; and Vegetation Management with respect to how these issues affect the PacifiCorp electrical system.

PacifiCorp has a relatively small customer base of 47,000+ customers distributed across 11,000+ sq miles, 63 percent of which is within the Tier 2 and 3 HFTD, not including its newly identified HFRA circuits. A total of 810 overhead distribution circuit miles are in the HFTD. PacifiCorp reports having rebuilt 256 miles of bare conductor with covered conductor and plans an additional 360 miles of line rebuild over the 3-year 2026-2028 WMP cycle, 222 miles of which are scoped for the HFTD. If PacifiCorp completes its 2026-2028 WMP line rebuild scope of work as planned, it will have converted an estimated 59 percent of its HFTD overhead distribution system to covered conductor by the end of the cycle. This overhead distribution system rebuild does not include planned or completed work in the HFRA or outside the HFTD. If PacifiCorp can maintain its planned overhead distribution system rebuild rate in the HFTD (~222 miles per 3 years), it can complete its HFTD overhead distribution system rebuild within the next 8 years. This offers a relative grid hardening benchmark with other SMJUs.

As PacifiCorp advances its overhead system rebuild efforts it must improve its understanding of wildfire and outage risk on its overhead distribution system as well as mitigation effectiveness and advance its risk-informed mitigation strategy.

Our comments and recommendations cover the following topics:

- Risk Methodology and Assessment: Improve the link between risk and mitigations and risk-informed mitigation selection and prioritization.
- Risk Methodology and Assessment: Improve outage driver tracking.
- Risk Methodology and Assessment: Risk Assessment and Methodology: Improve consistency and precision of risk modeling terminology and definitions.
- Risk Methodology and Assessment: Probability of ignition given an outage methodology.
- Risk Methodology and Assessment: Wind and Terrain/Fuel driven fire consequence quantification should be reviewed, revised, and validated, including regarding compatibility with a cost-benefit risk assessment framework.
- Wildfire Mitigation Strategy: Report on its PSPS and PEDS risk model in the annual WMP update.
- Wildfire Mitigation Strategy: Convert the HFRA to polygons.
- Wildfire Mitigation Strategy: PacifiCorp's risk reduction assessment and investment strategy must consider PSPS and PEDS.
- Wildfire Mitigation Strategy/Grid Design, Operations, and Maintenance: Provide a detailed description of how undergrounding is selected compared to overhead line rebuild and establish an annual target for planned undergrounding miles.
- Wildfire Mitigation Strategy: Prioritization based on Fuel/Terrain risk.
- Wildfire Mitigation Strategy: Ingress / Egress.
- PSPS / Grid Design, Operations, and Maintenance: PacifiCorp should substantiate how its mitigation initiative will reduce the impacts of PSPS.
- Grid Design, Operations, and Maintenance: Develop a plan for reducing PEDS outage frequency, scale, scope, duration, and/or consequence.

- Grid Design, Operations, and Maintenance: Report on pilot program targets, location, and timeline.
- Grid Design, Operations, and Maintenance: Provide a timeline with milestones for proposed programs and pilots.
- Grid Design, Operations, and Maintenance: Require PacifiCorp to mitigate expulsion arrestor risk.
- Vegetation Management and Inspections: Report on the outcomes of the "Enhanced Overhang Reduction Pilot."
- Vegetation Management and Inspections: Develop standards for wood and slask removal.
- Vegetation Management and Inspections: Develop a plan to establish vegetation management partnerships in its California Territory.
- Vegetation Management and Inspections: Order PacifiCorp to establish a method that allows for work order age tracking and trend assessments as well as work order prioritization.

**Risk Methodology and Assessment: Improve the link between risk and mitigations and risk-informed mitigation selection and prioritization.**

PacifiCorp's risk assessment improvement plan states:

> Portfolio Optimization and Grid Hardening Recommendations
> Problem Statement: While PacifiCorp's planning model currently shows wildfire risk and relative RSE values, it does not have a function to recommend mitigations or optimize a grid hardening portfolio.
>
> Planned improvement: PacifiCorp will onboard a mitigation decision making framework to indicate the optimal mitigation per project. The mitigation decisions will optimize parameters such as risk reduction, cost, program efficacy, annual construction targets, and budget constraints.[1]

[1] PacifiCorp 2026-2028 WMP, p. 116.

Upstream issues addressed herein include major gaps in outage/failure event and ignition driver tracking. These ongoing data gaps lead to a lack of awareness of wildfire risk drivers on PacifiCorp's California system. Its resulting risk model ascribes equal risk to all assets,[2] does not include a probability of ignition given a failure and appears to combine drastically different consequence metrics for fuel versus wind driven fires with questionable scaling. Updates to its consequence quantification method, including planned monetization, may result in large changes in risk distribution. The downstream impacts are made clear in the 2026-2028 WMP – PacifiCorp is lacking a functional understanding of asset and location-specific risk and mitigation effectiveness, which appears to be manifesting in the deficit of a well-defined risk-informed mitigation strategy. For example, the lack of any criteria for selecting undergrounding versus overhead system hardening suggests a rift between risk assessment and mitigation strategy. Another example is the statement that ignition risk reduction from covered conductor installation will reduce PSPS risk by association.

PacifiCorp must quickly improve its understanding of risk and mitigation effectiveness for specific wildfire and outage risk drivers. Subsequent comments address specific points of concern across critical WMP sections.

**Risk Methodology and Assessment: Improve outage driver tracking.**

PacifiCorp lists Risk: Unknown, Risk Driver: Unknown as the top risk driver in the HFTD (percent of ignitions in the HFTD 24%).[3] This highlights a substantive gap in its awareness of risk drivers.

The same table identifies eighteen "equipment/facility failure or damage" risk drivers that are not tracked, including but not limited to fuses, capacitors, splices, and conductors. Other not tracked risk divers include wire-to-wire contact and protective device operation. Failure to track these risk drivers will hinder PacifiCorp's ability to determine asset-based risk and the effectiveness of grid hardening and proactive replacement programs on risk reduction. While PacifiCorp may overhaul its HFTD-sited overhead distribution system within the decade, its lack of

[2] Ibid p. 89.
[3] Ibid p. 34-38.

understanding of risk drivers may impede its risk reduction assessment and the optimization of risk mitigation selection and prioritization. It may also limit PacifiCorp's ability to develop an understanding of age and usage-based asset failure events (e.g. overloading, temperature) that are relevant to long-term risk management as existing and new assets age.

"Vegetation contact" risk drivers that are tracked are limited to "within" versus "outside" the clearance zone and "Other." PacifiCorp does not track vegetation contact risk drivers for blow-in, fall in-branch failure, fall in-root failure, fall in-trunk failure, and grow-in. These risk drivers are relevant to specific vegetation management activities as well as grid hardening selection and localized risk reduction. For example, fall in risk drivers may be linked to factors such as forest health and density, which can be mitigated with a range of approaches such as targeted hazard and fall-in tree removal, partnerships for fuels management projects alongside the utility right of way, and high impedance fault detection and mitigations (e.g. DCD, REFCL).

Its WMP states "The top risk driver is Unknown, which is indicative of an unknown risk in the field that PacifiCorp will seek to clarify and understand in order to categorize appropriately."[4] . GPI is concerned that PacifiCorp will not achieve this objective during the 3-year WMP cycle. It has yet to remedy the issue after 5+ years of modern WMP filings and fails to provide an actionable plan in its 2026-2028 WMP.

Tracking a wide range of specific outage and ignition risk drivers is the current utility best practice. PacifiCorp should be ordered to begin tracking all outage/failure event and ignition drivers, including for CPUC-reportable and non-reportable ignitions. It should establish a qualitative target and plan to reduce the number of "unknown" classified outage and ignition events. GPI recommends issuing PacifiCorp an ACI that requires it to (*i*) begin tracking all "Not Tracked" risk drivers no later than Q4 2026, (*ii*) provide a plan to update its methodology, with a timeline and milestones, and (*iii*) report on its progress in the next annual WMP Update.

[4] Ibid.

**Risk Methodology and Assessment: Improve consistency and precision of risk modeling terminology and definitions.**

PacifiCorp's Section 5 planning risk model documentation appears to utilize definitions that are inconsistent with standardized OEIS terms. For example, "risk" is commonly defined as likelihood of risk event (LoRE) times consequence of risk event (CoRE), or probability of ignition (PoI) times consequence. However, PacifiCorp uses the term "risk" in alternative contexts, such as Wind risk and fuel/terrain risk equations that include terms for fire simulation outcomes. These equations do not include a LoRE or PoI component and appear to be more similar to consequence values (CoRE).[5]

In another example, "ignition likelihood" is defined as a Probability of Fault ranging from 0-1, while Burn Likelihood is referred to as a Probability of Ignition.[6] This terminology is not synonymous—it essentially redefines otherwise standardized OEIS terms and is confusing. Probability of ignition is commonly defined as probability of a fault (p(f)) times the probability of an ignition given a fault (p(i|f)). Burn probability is a third, and distinct term, defined as the likelihood that an ignition becomes a wildfire. While other Utility methods assume a burn probability of 1 in risk modeling, PacifiCorp generates a burn likelihood in the range of 0-1 based on environmental conditions (e.g. dryness, wind). PacifiCorp does not appear to have a "probability of ignition given a fault" term, which captures differences in energy release from different fault drivers (e.g. wire down versus transformer failure).

The distinction between an outage event, an ignition event, and the likelihood of an ignition becoming a wildfire based on burn probability is relevant and functional—CPUC-reportable and non-reportable ignitions are distinct from an outage, should be specifically tracked as a function of outage/failure risk driver, and therefore can serve as a unique risk model input. Mashing these terms together or conflating them, as in PacifiCorp's WMP, obfuscates model interpretation and can also hinder incorporating unique datasets into risk model design or using the data to validate the model (e.g., outage versus ignition versus wildfire events).

[5] Ibid. p. 55.
[6] Ibid, p. 75.

In both examples, the terminology usage deviates from OEIS wildfire risk model component definitions. At best, this makes it challenging to follow PacifiCorp's model design description and to compare it with other utility models as well as the OEIS risk model framework. At worst, its demonstrates a misunderstanding of risk model design and meaning. GPI recommends requiring PacifiCorp to adopt the common OEIS definitions and re-write its Section 5 risk model description based on those definitions. PacifiCorp may need to introduce new terms to describe its risk model but should avoid redefining existing OEIS terms. PacifiCorp should demonstrate a clear understanding of its risk model components, including how it aligns with OEIS defined terms and other utility risk models.

**Risk Methodology and Assessment: Probability of ignition given an outage methodology.**

PacifiCorp's response to PC-23B-20 "Lessons Learned from Past Wildfires" acknowledges that not all outage/failure risk drivers have the same probability of ignition given a failure, stating:

> For root cause analysis, the company has completed engineering investigations that have found certain conditions or equipment that may be more susceptible to energy release that could lead to an ignition event. For example, an incident that occurred last year involved an arrester failure that was an expulsion type arrester that emitted sparks when it operated. Replacing the expulsion type arrester with non-expulsion arrester could have prevented failure and would not have emitted sparks due to being non-expulsion.[7]

However, its risk model does not appear to include a variable for probability of ignition given a failure. Its design appears to assume that the probability of ignition given a failure is 1, or that all failures/outages lead to an ignition (outages = ignitions), but not all outages/ignitions lead to a wildfire that requires suppression. We interpret this to mean that PacifiCorp's model assumes that where an outage or failure event takes place is a more critical indicator of risk compared to the specific outage driver. It essentially skips the "outage causing an ignition" step and defines PoI more similar to the likelihood of an "outage becoming a wildfire."

PacifiCorp should clarify whether and how it includes probability of ignition given a failure/outage in its risk planning model and if not, why not. It should provide a justification for

[7] Ibid. p. 523.

its model design, define any assumptions regarding probability of ignition given a failure, and/or provide a plan for developing this risk model term.

**Risk Methodology and Assessment: Wind and Terrain/Fuel driven fire consequence quantification should be reviewed, revised, and validated, including regarding compatibility with a cost-benefit risk assessment framework.**

PacifiCorp's WMP Section 5 defines "Wildfire risk" in two locations, and "Wildfire Consequence" in one location. "Wildfire Risk" is first defined according to two fire types "Wind Risk" and "Fuel/Terrain Risk," which are the sum of six fire simulation attributes times assigned attribute weights; there does not appear to be a LoRE term.[8] The second definition of "Wildfire Risk" is also stated as equal to Wildfire LoRE x Wildfire CoRE.[9] "Wildfire Consequence" is defined as:

> WC=(SUM((Att1(Percentile*Weighting)), (Att2(Percentile*Weighting)), (Att3(Percentile*Weighting)), (Att4((Percentile*Weighting)), (Att5(Percentile*Weighting)))[10]

Our best guess is that the first definition of "Wildfire Risk," broken into wind versus terrain/fuel fires, is synonymous with the "Wildfire Consequence" term. PacifiCorp should improve the clarity of Section 5. Duplicative and confusing terminology usage should be remedied.

We proceed under the assumption that "Wind Risk" and "Fuel/Terrain Risk" are "Wildfire Consequence" terms.[11] Based on this assumption, GPI has multiple concerns.

- Wind driven fire consequence/"risk" includes population impacted and buildings destroyed but does not include fire size/acres burned. Fuel/terrain fire consequence includes fire size potential, but not population or structure impacts. This is not logical. Consequences of both fire types can include population impacts (fatalities and injury), building loss, and acres burned. Population and building loss may also be critical attributes for linking granular risk to the WUI. PacifiCorp should review, validate and

[8] Ibid. p. 73.
[9] Ibid. p. 81.
[10] Ibid. p. 78.
[11] Ibid, Figure PAC 5-4, p. 73.

adjust its method to consistently capture these foundational consequence attributes for all fire types.

- The consequence/risk attributes do not have the same units, are not logically scaled, and therefore cannot be aggregated. For example, it is illogical to add a fatality count to a wildfire rate of spread value. This has no functional meaning. The applied attribute weights also do not appropriately account for consequence scaling between attributes such as buildings destroyed and population impacted (e.g. see scaling between monetized buildings destroyed and value of a statistical life in IOU risk models). PacifiCorp's wildfire risk scores only offer a version of risk ranking with minimal meaning. It risk scores and ranking are subject to large changes if it revises its risk function, which it should.
- There is no basis or justification for each attribute weight. For example, it is not apparent why a weight of 0.25 for population impacts is an appropriate multiplier independently, or in relation to a 0.3 weighted rate of spread metric. Since the attributes are not in the same units, or on the same scale, it is difficult to understand how these weights manifest in the final Wildfire Risk score and distribution. More importantly, it is not clear that these weights correctly identify wildfire risk and risk distribution.
- Terms included in the consequence/"risk" equation are not monetizable. For example, wildfire "rate of spread" cannot be converted to a specific cost. This will conflict with PacifiCorp's stated plans to implement a cost-benefit methodology based on monetization of wildfire consequences (e.g. Value of a Statistical Life). [12]
- Based on the attributes included in the wildfire consequence metric, it is not clear how the Wildfire Risk score (LoRE x CoRE) will be correctly scaled relative to a PSPS and PEDS Risk score (LoRE x CoRE). Aggregating these scores into an Overall Risk score requires scaled, unitless risk scores or a consistent risk score unit (e.g USD). Comparing or adding its wildfire and outage risk scores could incorrectly suggest higher outage risk versus wildfire risk. It is not apparent that the wildfire consequence/"risk" equation is compatible with the in development PSPS and PEDS risk quantification method.

[12] Ibid p. 53.

PacifiCorp should be required to justify or remedy each of the above issues and validate its model output. We strongly suggest that a third party should review PacifiCorp's risk model prior to its application for HFRA identification and mitigation selection/prioritization/scheduling.

**Risk Assessment and Methodology: Report on its PSPS and PEDS risk model in the annual WMP Update.**

Outage risk increases with PEDS deployment and residual risk will persist over the long-term where PEDS and PSPS are a complementary mitigation for hardened overhead systems. An understanding of outage risk is therefore increasingly important for directing optimized PSPS and PEDS outage risk mitigation investments, such as a grid automation, sectionalizing, and DER programs.

PacifiCorp anticipates completing its PSPS and PEDS risk model by the 2023-2025 WMP cycle.[e.g.13] Since the WMP Updates require utilities to report on risk model methodology changes, the new model will presumably be presented in the 2027 WMP Update filed in 2026. However, we remain concerned that PacifiCorp does not provide a more comprehensive timeline for completing and reporting on its first iteration of an outage risk model. GPI recommends issuing a revision notice that requires PacifiCorp to provide a timeline with milestones for its Outage risk model development process. An ACI should require PacifiCorp to provide a detailed update on its outage risk model including a description of the in-progress method, in the 2027 WMP Update filing (due 2026) if it has not yet completed the model. This will ensure that PacifiCorp minimally provides a progress report on its outage risk model in 2026 in the event that is does not meet its 2023-2025 WMP cycle target.

**Risk Assessment and Methodology: Convert the HFRA to polygons.**

PacifiCorp identifies some circuits located outside of the HFTD as qualifying for a risk informed HFRA. Risk model design concerns aside, HFRA are not necessarily synonymous with circuit risk model outputs and are typically defined as polygons versus circuits, similar to HFTD polygons.[14] Assets within an HFRA polygon could automatically qualify for elevated wildfire

[13] Ibid p. 70.
[14] E.g. PG&E 2026-2028 WMP p. 100.

risk-informed actions, such as grid hardening and/or more frequent inspections. This includes any new distribution or transmission system assets or expansion projects, not just exiting circuit miles. These are distinguishing factors between HFRA and modeled risk on existing circuit miles. We recommend PacifiCorp consider how it might convert circuit-specific risk outside the HFTD into HFRA polygons. However, we further recommend deprioritizing this work and first focusing on its risk model development. GPI anticipates that additional guidance for HFRA definition may be in scope within a new CPUC proceeding and/or should be aligned with IOU methods and existing HFTD definitions.

**Wildfire Mitigation Strategy: PacifiCorp's risk reduction assessment and investment strategy must consider PSPS and PEDS.**

PacifiCorp's WMP states:

> Initially, this estimate of risk reduction will include only line rebuilds and system hardening through covered conductor, undergrounding, and related capital investments to account for the higher upfront cost and longer lead time of those projects. Later, based on evaluation of the work completed, lessons learned from peer utilities, and best practices for quantifying overall risk reduction identified through participation in joint IOU working groups, this overall risk reduction estimate may include operational controls like ESS/PEDS or PSPS and programmatic activities like more frequent equipment inspections and accelerated correction timelines or vegetation management.

PacifiCorp must include PSPS and PEDS in its risk reduction assessment slated for the 2026-2028 WMP. PSPS and PEDS are complimentary mitigations in an overhead system hardening package. PSPS events on an optimally designed overhead hardened system offer targeted wildfire risk mitigation on the highest risk days. These mitigations work in tandem to achieve risk reduction at a reduced cost compared to undergrouding, which comes at a premium cost to mitigate against the highest risk conditions 100 percent of the time regardless of actual conditions. PEDS offer a similar operational risk management backup to the engineering mitigation provided by overhead grid hardening. To appropriately compare overhead and undergrouding system risk reduction, overhead risk mitigations must be considered as a package that includes grid hardening and operational mitigations. Effective and efficent Undergrounding also requires an understanding of PSPS and PEDS risk to minimize the likelihood that customers served on undergrounded lines could experience PSPS and PEDS events triggered on upstream

overhead lines. PacifiCorp should be ordered to consider both wildfire and outage risk in its risk mitigation strategy and to consider operational controls as part of a holistic overhead mitigation package and in comparison to underground line rebuild projects.

**Wildfire Mitigation Strategy/ Grid design, Operations, and Maintenance: Provide a detailed description of how undergrounding is selected compared to overhead line rebuild and establish an annual target for planned undergrounding miles.**

PacifiCorp's WMP offers no risk-informed or cost-benefit method for selecting between undergrounding versus overhead hardening with Covered Conductor. For example, the WMP states:

> Problem Statement: While PacifiCorp's planning model currently shows wildfire risk and relative RSE values, it does not have a function to recommend mitigations or optimize a grid hardening portfolio.[15]

PacifiCorp also fails to provide any basis for selecting undergrounding versus overhead line rebuild for a given location or where it plans to underground. This is unacceptable. The WMP is the primary location for justifying its overall wildfire mitigation strategy and location-specific mitigation selections. While not a cost approval process, the WMP also informs the GRC and serves as a critical document in determining the reasonableness of WMP capital investments. As an SMJU, PacifiCorp will not be submitting an alternative SB 884 EUP. Its WMP must provide a risk-informed method or decision-making process for selecting location-specific, overhead versus undergrouding line rebuilds.

PacifiCorp also fails to provide specific targets for overhead versus underground line rebuilds. It only states that "Most of the projects in the Line Rebuild Program will involve the installation of insulated covered conductor."[16] This is unnecessarily vague and incorrectly implies a reactive selection process. Overhead line rebuilds and especially undergrouding are relatively long projects with 12+ month timelines that require advanced planning for the purpose of design and permitting phases. PacifiCorp should have a detailed plan for where and how many miles of overhead versus undergrounded line rebuild it will implement over the 2026-2028 WMP cycle.

[15] PacifiCorp 2026-2028 WMP, p. 116.
[16] Ibid p. 166.

PacifiCorp's WMP should be rejected based on its failure to provide the method for how it selects each mitigation based on location specific risk and mitigation cost report as well as its failure to provide separate, quantitative overhead versus underground system hardening targets. These are basic elements of the modern WMP that can substantially impact ratepayer cost and mitigation cost-benefit. PacifiCorp should be ordered to resubmit its WMP with separate overhead and undergrouding line rebuild targets. It should also be required to provide the risk-informed methodology it will use to determine location-specific undergrouding versus overhead line rebuild projects.

**Wildfire Mitigation Strategy: Prioritization based on Fuel/Terrain risk.**

PacifiCorp states that "The maximum circuit Fuel/Terrain risk scores are used to determine prioritization because there are operational mitigations available to address wind driven risk."[17] While this may be at least partially true, PacifiCorp should take care in assuming that PEDS and PSPS will mitigate all wind driven fire risk in the years proceeding a line rebuild. It should also take care in over relying on its fuel/terrain driven risk score, which does not appear to include any risk contribution from population impacted or buildings destroyed, metrics relevant to WUI proximity. PacifiCorp should accelerate plans for the third-party review of its risk model and generally work to improve its understanding of system risk for the purposes of mitigation selection and system rebuild prioritization.

**Wildfire Mitigation Strategy: Ingress/Egress**

PacifiCorp's 2026-2028 WMP references egress risk in 4 locations. These references are to RAVE model outputs "WC3" which include terrain difficulty as well as disability and senior population metrics. Appendix B refers to combining these RAVE risk components into composite risk scores that can inform increased risk, with examples that include egress.[18] PacifiCorp's Wind versus Fuel/Terrain "risk" quantification method inconsistently include terrain difficulty index (different weights), disabled population, and poverty population metrics. Disabled population and poverty population metrics are not included in the Fuel/ Terrain "risk"

[17] Ibid p. 121.
[18] Ibid p. 501.

calculation, which is used for mitigation prioritization, implying that these egress risk factors are not informing mitigation prioritization. It also appears to have access to granular "road availability" data with and without social vulnerability considerations, though it is not clear if these outputs are utilized in a risk-informed mitigation strategy.

PacifiCorp does not appear to have a working or applied knowledge of location specific egress/ingress risk. Its planning risk model methodology does not appear to offer an awareness of locations with heightened egress risk, since related terms are embedded in its "Risk" metric. There is no indication that it has developed a complimentary method to identify location specific egress/ingress risk within its California territory. This means that relevant mitigation selections and prioritization (e.g. pole wraps and non-wood pole installations) are not specifically informed by egress/ingress risk.

PacifiCorp should be required to substantiate that it includes egress/ingress risk in its risk modeling for both wind and fuel/terrain driven fires and validate the method; and/or provide an alternative method for egress/ingress risk assessment that includes at risk populations and infrastructure limitations (e.g. road access) or known egress/ingress routes in the WUI. It should be ordered to describe and provide examples of how its knowledge of egress/ingress risk informs mitigation selection and prioritization.

**PSPS/ Grid design, Operations, and Maintenance: PacifiCorp should substantiate how its mitigation initiative will reduce the impacts of PSPS.**

PacifiCorp's WMP does not demonstrate a clear understanding of the connection between PSPS risk, or outage risk in general, and whether/how specific mitigations will reduce that risk within its California territory. In its section on PSPS events, PacifiCorp states:

> The application of all mitigation initiatives will help reduce the impact of PSPS, however, certain initiatives are directly tied to the PSPS program… Many of PacifiCorp's initiatives are structured to reduce wildfire ignition risk which, by association, can reduce the impact of PSPS including the line rebuild program described in Section 8.2. The installation of covered conductor will increase grid resiliency against wind-driven vegetation contacts, which can lead to wildfire ignitions. The

> mitigation benefits of covered conductor when combined with other grid hardening efforts implemented as part of a rebuild effort can decrease PSPS event impacts.[19]

This comes off as an empty platitude and an absence of a clear understanding of PSPS risk, mitigation effectiveness, and PSPS thresholds. For example, it suggests its line rebuild program will decrease PSPS impacts. Ignition risk reduction achieved through covered conductor installation does not reduce PSPS risk "by association." PSPS risk reduction would require the utility to implement alternative PSPS thresholds based on the presence of covered conductor. However, PacifiCorp does not report whether PSPS criteria will be altered for lines rebuilt with covered conductor.

PacifiCorp's plan also reports contradictory information on its PSPS history in California, citing 2 PSPS events in 2020 and 2021.[20] It subsequently states that "…PacifiCorp has not initiated any PSPS events in California at the time of this writing…"[21] This contradiction should be corrected.

GPI strongly supports PacifiCorp's plan to conduct a "backcast of PSPS events based on the current PSPS criteria to develop a PSPS likelihood score for its assets."[22] However, its PSPS risk assessment and mitigation approach is scattered and does not demonstrate a clear understanding as to how each mitigation will function independently and collectively to address PSPS (as well as PEDS) frequency, scale, duration, and consequence. For example, increased PSPS wind thresholds for rebuilt, covered conductor lines enabled with PEDS can reduce the frequency of PSPS events. Combining this with strategic sectionalizing can reduce event scale (as well as frequency). Smaller scale PSPS events support shorter restoration times. DER programs (e.g. backup batteries) for areas frequently impacted by PSPS (and/or PEDS) events can mitigate consequences associated with power loss.

PacifiCorp should be ordered to provide a comprehensive strategy to build out its PSPS (and PEDS) risk mitigation methodology. This should include a timeline and milestones for

[19] Ibid p. 160.
[20] Ibid p. 45.
[21] Ibid p. 68.
[22] Ibid p. 112.

completing the first iteration of its outage risk model, model validation, and model application development. It should also include an actionable mitigation strategy with specific mitigation targets and a detailed understanding of how each mitigation is expected to reduce outage risk frequency, scale, duration, and consequence.

**Grid design, Operations, and Maintenance: Develop a plan for reducing PEDS outage frequency, scale, scope, duration, and/or consequence.**

PacifiCorp reports a total of 354 PEDS related outages, and up to 38 outages on a single circuit in the last 3 years with an average outage duration of 3.7 hours.[23] It intends to mitigate this risk through its GO-01 program "ESS Circuit Hardening" with a target of 3 circuits per year.[24] PEDS outage mitigation efforts already include enabling ESS based on daily fire risk reports. Other outage risk mitigation efforts now include an annual evaluation, which informed "short term" mitigation projects implemented prior to the 2025 wildfire season, such as upgrading fuses and crossarms. GO-01 also includes line sensor installations and a Distribution Protective Setting Review that is expected to reduce the outage rate.[25,26] Its WMP also states that it "may" install additional fault indicators to reduce the time to identify a fault.[27] PacifiCorp does not state on which circuits it will deploy its GO-01 outage mitigation activities or whether they will be located in the HFTD or HFRA.[28]

Of the top 10 impacted PEDS circuits, only half are reported in the top risk circuits slated for line rebuild (GH-01).[29] PacifiCorp appears to use the same IDs for Circuits and Circuit segments, providing different lengths in WMP Tables 5-5 and 6-1 (Top risk) versus WMP Table 8-7 (Top PEDS risk), and no length data is provided in its top risk circuit activity plan (WMP Table 6-4). The number of circuit miles within its top PEDS outage circuits that will be treated by Line Rebuilds is therefore unclear.

[23] Ibid pp 247-8.
[24] Ibid p. 163.
[25] Ibid p. 339.
[26] Ibid pp 325, 335.
[27] Ibid p. 253.
[28] Ibid p. 164.
[29] Ibid Table 6-4 and 8-7, IDs 4G1, 5L87, 5G23, 5G21, 5G83.

Sectionalizing, a common tool used by other utilities to mitigate PEDS and PSPS outage scale, is absent from PacifiCorp's plan other than to acknowledge that their system lacks sufficient SCADA sectionalizing. In its risk model assumptions and limitations, it states:

> Circuit Segments are not predefined in PacifiCorp's Distribution network topology.
>
> PacifiCorp does not have the amount of SCADA sectionalizing needed to define grid hardening, PSPS, and PEDS risk units.[30]

GPI is unable to discern the extent that PacifiCorp's 3-year WMP plan will successfully reduce its PEDS outage frequency, scale, duration, and consequences. Its plan is scattered and vague. While it scopes ESS circuit hardening (GO-01), the location of this work is undefined. Overlap between its GH-01 line rebuild work plan and PEDS risk is also opaque. Its vague proposal that it may install fault indicators suggests that PacifiCorp is perhaps not clear on what mitigations are needed to reduce the risk drivers causing its PEDS outages. For example, whether its PEDS reliability risk is driven by vegetation contact (e.g. mitigate hazard trees and clearances, install Covered Conductor), an overloaded and/or ageing system (e.g. Line rebuild), slow fault location identification (e.g. additional fault indicators, sectionalizing), or long circuit segments (e.g. more sectionalizing), can inform which mitigations will be most effective. PacifiCorp should have sufficient data on PEDS outage locations and drivers to develop a well formulated, multi-facted PEDS outage risk reduction plan regardless of the status of its PEDS risk model.

PacifiCorp should be ordered to provide more detail on, and justify, its PEDS outage mitigation plan, including how it will address specific, known PEDS outage divers. It should clarify the overlap between its Line Rebuild plan and circuits characterized by high PEDS outage frequency and duration. It should also report where it plans to deploy its GO-01 ESS hardening activity and how it expects this work to reduce observed PEDS risk drivers. PacifiCorp should also explain why it has not included sectionalizing as an activity in its WMP, whether for existing circuits or line-rebuild projects.

[30] Ibid p. 89

**Grid design, Operations, and Maintenance: PEDS and PSPS outage risk reduction mitigations should include Distributed Energy Resource programs.**

PEDS and PSPS consequences can be mitigated with distributed energy resources (DER). However, DER deployment programs that offer portable and permanent back up power supplies are largely under reported and/or underdeveloped despite their potential for mitigating a wide range of customer impacts during both PSPS and PEDS outages. In contrast, utility CRC programs intended to mitigate the impacts of PSPS events are generally more well developed. This same trend is reflected in PacifiCorp's WMP.

Within its WMP, PacifiCorp's portable battery program and generator rebate program are mentioned in passing and regarding customer communications.[31] It identifies low customer awareness of the generator rebate program (8%) and scopes a high-level plan to emphasize the program in preparedness communications.[32] It also notes the existence of a database with information on critical customer backup generation capabilities.[33] Its WMP does not include any specifics on either backup power supply program, such as quantitative targets, percent of vulnerable and/or total customers already equipped with backup power solutions or served by the program, total rebates or batteries distributed, or a more comprehensive plan to identify the cause of and remedy low customer awareness.

PacifiCorp should be ordered to report on its existing backup portable and permanent power supply programs, including the Distributed Energy Resource types its program offers. Its description should include quantitative targets and qualitative objectives for the 3-year WMP cycle as well as how its program is designed to mitigate territory specific PEDS and/or PSPS risk (e.g. outage location, frequency, duration, customer type). It should also establish a method to assess the cost-benefit of these programs, informed by PEDS and PSPS consequence reduction.

[31] Ibid p. 161, 426.
[32] Ibid p. 428.
[33] Ibid p. 402.

**Grid design, Operations, and Maintenance: Report on pilot program targets, location, and timeline.**

PacifiCorp's plan states:

> 2026-2028 Target Status, % Planned in HFTD, and % Planned for HFRA are "TBD" for initiatives AI-08: Distribution Infrared Inspections, AI-09: Transmission Drone Inspections, and AI-10 Distribution Drone Inspections as these are currently pilots, and the targets will be set when the pilots are completed.[34]

It is ridiculous to propose "set[ing] targets when the pilots are completed." This is simply poor planning and a failure to provide transparency in advance of implementation, which defeats the objective of the forward looking 3-year WMP. PacifiCorp should be ordered to set targets for all pilot programs. Pilot targets should include line miles or other work units (e.g. assets). It should be ordered to report on the percent of work planned within the HFTD and HFRA. If the work is planned to take place outside of its California territory, PacifiCorp should detail where, why, and how the work will be relatable to managing its California assets. Pilots should also include a timeline for data collection, analysis, and next steps assessment. These specifics demonstrate whether pilot programs are right sized and properly designed to produce meaningful results in a timely fashion for subsequent program adoption or discontinuation decision making.

**Grid design, Operations, and Maintenance: Provide a timeline with milestones for proposed programs and pilots.**

PacifiCorp's Grid Design, Operation, and Maintenance as well as Vegetation Management plans are generally lacking traceable plan elements, including targets, percent of work in HFTD/HFRA, timelines, and milestones. GPI recommends ordering PacifiCorp to remedy these deficits in a revised 2026-2028 WMP for its proposed studies, pilot programs, and regular programming. Given the extent of plan deficits, including failure to report undergrounding selection criteria and targets, we recommend that updates be triggered through a plan rejection.

In addition to its undergrounding plan deficits, specific programs in need of plan development, targets, and/or result reporting include, but are not limited to:

[34] Ibid p. 163.

- Pole replacements and wraps (GH-02, GH-15).[35] PacifiCorp should provide an estimate of planned pole wrap targets and locations. It should improve its discussion regarding how it selects different pole materials for pole replacements and decision making for pole wrapping versus pole replacement. For example, whether egress/ingress risk or evacuation routes are considered or HFTD versus HFRA location, etc. Post completion "target" reporting is unacceptable in all circumstances. It suggests that PacifiCorp does not have a forward-looking work plan or understand the risk reduction value of mitigations as a function of locational risk at a high level. Sophisticated risk models advance a granular understanding of risk but are not the only pathway to developing a risk informed mitigation selection. For example, BVES installed pole wraps along HFTD evacuation routes to reduce egress/ingress risk along these critical corridors.
- Microgrids.[36] PacifiCorp should provide a timeline for its microgrid assessment at 4 sites. It should clarify whether line removal is a compatible mitigation, or if the microgrids will remain connected to the grid.
- System Automation.[37] GPI generally supports system automation efforts that modernize the grid and improve operations for wildfire and outage risk management purposes, as well as other applications (e.g. DER integration etc.). The scope and location of planned work is unclear. It should improve its explanation of scope of work and location, as well as how the work is expected to support wildfire and outage risk mitigation.
- Proactive transmission and distribution drone inspection pilot(s).[38,39] PacifiCorp should provide details for its pilot including a timeline with milestones and scope of work/targets.
- Infrared inspections of distribution electric lines and equipment.[40] PacifiCorp should provide the results of its 2023-2024 pilot and should explain its decision to expand the program.

[35] Ibid p. 164, 171-7.
[36] Ibid p. 179.
[37] Ibid p. 179.
[38] Ibid p. 205.
[39] Ibid p. 208.
[40] Ibid p. 200.

- Detailed Inspections in the HFTD and HFRA. PacifiCorp does not clearly report on a frequency or inspection trigger, only stating:

> PacifiCorp's detailed inspections program is conducted on a planned cycle where the company inspects overhead assets located within the HFRA and HFTD more frequently than those assets located outside of the HFRA and HFTD, to mitigate higher risk areas. While all required inspections are completed within the prescribed cycle, the intent of this prioritization is to inspect facilities located in the highest fire threat areas prior to fire season where the risk is the greatest.[41]

Elsewhere it reports a 5-year cycle.[42] It is not clear if the detailed inspection frequency is every 5 years, or is more frequent in the HFTD and HFRA. PacifiCorp also proposes a pilot in Tier 3 to assess Detailed inspection frequency. It should provide a more comprehensive, traceable plan, including what inspection frequencies it will assess, scope of work/targets, and a timeline with milestones for completing the pilot. It should report on the results in a WMP filing.

- Non-reportable ignitions. PacifiCorp reports:

> Non-reportable fire incidents are also captured in the company's fire incident database through the same process as reportable incidents. Currently, the company is working with internal subject matter experts to determine scope and develop processes to capture the necessary data for these incidents to inform future potential trends and root cause analysis.[43]

GPI supports this effort, as it will compliment and expand on small CPUC-reportable ignition datasets that are critical to informing wildfire risk. PacifiCorp should expand its plan to include traceable timelines and milestones that include a reporting schedule.

- GO-01 Equipment Settings to Reduce Wildfire Risk: ESS and Fault Indicators. PacifiCorp states: "% of circuits in the HFTD for GO-01 ESS Circuit Hardening is TBD due to the reactive nature of this work."[44] PacifiCorp scopes 3 circuits per year for

[41] Ibid p. 194.
[42] Ibid p 188.
[43] Ibid p. 216.
[44] Ibid p. 163.

installation and QA/QC. It should be ordered to set a percent planned in the HFTD and justify how GO-01 will reduce observed outage risk.

**Grid design, Operations, and Maintenance: Require PacifiCorp to mitigate expulsion arrestor risk.**

PacifiCorp reports in both its equipment maintenance and repair section and lessons learned from wildfire section:

> For example, an incident that occurred last year involved an arrester failure that was an expulsion type arrester that emitted sparks when it operated. Replacing the expulsion type arrester with non-expulsion arrester could have prevented failure and would not have emitted sparks due to being non-expulsion.[45]

Despite identifying an acute source of wildfire risk, PacifiCorp's WMP has no plan to assess risk exposure due to expulsion arresters on its system, including within the HFTD and HFRA. It also offers no plan to replace expulsion arresters during the 3-year WMP.

PG&E has set targets that replace non-exempt surge arrestors and has a proactive replacement approach versus run to failure.[46] SDG&E's combined covered conductor program includes arrestor replacement.[47] SCE's replacement of non-exempt arrestors and risk exposure is not well documented.[48] Liberty reports that it "currently does not include CalFire compliant lightning arrestors as part of their construction standards."[49] Though Liberty reports replacing arrestors with updated equipment as part of their traditional hardening program.[50] BVES has targeted the replacement of non-exempt arrestors per ACI BVES-23-14 and replaces arrestors during pole replacements.[51]

In general, replacing non-exempt arrestors is a current best practice for wildfire risk mitigation. Perhaps most disconcerting is PacifiCorp's direct acknowledgement of identified risk associated

[45] Ibid p. 216, 523.
[46] PGE 2026-2028 WMP, p. 219, 275.
[47] SG&E 2026-2028 WMP, p. 123.
[48] SCE 2026-2028 WMP, p. 297 footnote, 298 footnote.
[49] Liberty 2026-2028 WMP, p. 145.
[50] Liberty 2026-2028 WMP, p. 123.
[51] BVES 2026-2028 WMP, p. 151.

with expulsion arrestors, yet abject failure to include a risk exposure assessment or risk mitigation plan in its WMP. PacifiCorp should be ordered to report on current expulsion arrestor exposure (i.e. number of existing units in the HFTD and HFRA). It should also be required to report on how it is mitigating this known risk through existing programs. If there are no existing mitigation programs that resolve expulsion arrestor risk, it should be ordered to include a risk mitigation approach with quantitative annual targets that include percent of work planned in the HFTD and HFRA.

**Vegetation Management and Inspections: Report on the outcomes of the "Enhanced Overhang Reduction Pilot"**

PacifiCorp states:

> In 2022, PacifiCorp implemented a pilot project, "Enhanced Overhang Reduction Pilot", starting in which culminated in 2025. This pilot project targeted high-risk distribution circuits and involved increasing post-pruning conductor-to-vegetation clearances to reduce fall-in risks and ignition potential (increased overhang removal). Post-audit reviews were conducted to ensure work was conducted in accordance with specifications and evaluate tree health. At the end of this year, PacifiCorp will determine to continue or discontinue the pilot.[52]

PacifiCorp fails to report on any outcomes of the "Enhanced Overhang Reduction Pilot." GPI recommends issuing PacifiCorp an ACI that requires it to report on its pilot results in the 2027 WMP Update (2026 filing) and justify its decision to continue or discontinue the pilot. If it continues the pilot, PacifiCorp should justify why and it should provide a comprehensive pilot plan that includes quantitative targets, percent of work in HFTD and HFRA, and a timeline with milestones that includes a pilot completion date and reporting schedule.

**Vegetation Management and Inspections: Develop standards for wood and slash removal.**

PacifiCorp states:

> In developed areas, debris is typically chipped and hauled offsite; in undeveloped areas, debris may be chipped and broadcast onsite; and in inaccessible areas, debris may be disposed of onsite through, typically, lop and scatter techniques. P. 293.

[52] PacifiCorp 2026-2028 WMP, p. 289

PacifiCorp does not provide a working definition of developed versus "inaccessible" areas as it pertains to debris removal practices (less than 6").[53] This vague description and its failure to establish well-defined standards for wood and slash removal may result in substantial wood and slash material left in place after vegetation management work is completed. GPI remains concerned that vegetation management work, including clearance maintenance and vegetation removals, may result in fuel accumulation and could potentially increase burn probability along utility right of ways if wood and slash residues are not removed. PacifiCorp should be ordered to benchmark with other utilities and establish more well-defined wood and slash removal standards. For example, areas within 100 feet of equipment accessible roads.

PacifiCorp also does not provide any insights on whether it or its contractors divert removed fuel and slash residues from landfills in accordance with California Short Lived Climate Pollution Reduction objectives. It should report on how VM residues removed from worksites are managed by in-house or contractor teams and whether they are diverted from landfills. Its description should include how it conforms with California state regulations regarding landfill diversion, including any issued waivers that apply to organic residue management per the Short-Lived Climate Pollutant Reduction Strategy.[54]

All utilities should be ordered to assess wildfire risk as a function of vegetation management residues left in place within or near infrastructure rights-of-way (e.g through a joint assessment and report). All utilities should also be ordered to track and report on slash and fuel removal volumes and landfill diversion practices in alignment with California's short-lived climate pollutant reduction goals.

**Vegetation Management and Inspections: Develop a plan to establish vegetation management partnerships in its California Territory.**

PacifiCorp reports that it has no vegetation management partnerships.[55] At this stage of WMP development it is commonplace and current best practices for utilities to develop vegetation management partnerships with entities such as local tribes and agencies that manage tribal, state,

[53] Ibid p. 293.
[54] CalRecycle Department issues waivers. https://calrecycle.ca.gov/organics/slcp/waivers/ Accessed on 8/21/2025.
[55] PacifiCorp 2026-2028 WMP, p 298.

and federal lands. These partnerships take the form of fuel management projects on or in proximity to utility rights-of-way and/or support related research. The outputs include above minimum required vegetation management and advancements in best practices. Outcomes include but are not limited to wildfire consequence mitigation (risk to and from utility assets), improved understanding of vegetation management risk reduction value and best practices, and relationship building with community and regulatory bodies as it pertains to utility vegetation management. GPI recommends issuing PacifiCorp an ACI that requires it to benchmark with other utility vegetation management partnership, especially those of the SMJUs, and to develop partnerships in the California territory that will yield positive outcomes similar to those reported by other utilities.

**Vegetation Management and Inspections: Order PacifiCorp to establish a method that allows for work order age tracking and trend assessments as well as work order prioritization.**

PacifiCorp reports "TBD" for all Past Due Vegetation Management Work Orders by age, HFTD Tier, and priority.[56] It states (emphasis added):

> At present, work locations are not formally assigned priorities. This *may* change with the implementation of PacifiCorp's updated MDMS. Please see the initiative "Develop work prioritization to incorporate within MDMS" in Table 12-1, which addresses PC-23B-16.
>
> *In general*, vegetation work identified within a calendar year associated with initiatives described in this WMP, are completed within the same calendar year. If any work was not completed, it would be rolled over into the following calendar year and scheduled for completion. Future plans may include the implementation of advanced work management tools to monitor and manage backlogs more effectively, enabling the development of targeted strategies to eliminate delays and ensure timely completion of work…
>
> Future enhancements to the company's work management processes and systems *may* include improved tracking and reporting capabilities to facilitate the development of an aging report and identify trends in open work orders across priority levels and risk areas. [57]

PacifiCorp's lack of knowledge regarding VM work order age as a function of location and risk (i.e. priority) as well as whether the work is past due is unacceptable. The vague statement that it "may" remedy the issue is inadequate. PacifiCorp must have the capability to track and report

[56] Ibid p. 316.
[57] Ibid p. 315-16.

on the number of past due VM work orders as a function of risk based on location and priority. Failure to establish this capability indicates that PacifiCorp does not have an understanding of persistent wildfire and outage risk associated with known, unresolved vegetation management work orders. Lack of past due work order tracking also obscures whether PacifiCorp has right sized is Vegetation management workforce to timely address vegetation risk.

PacifiCorp has also failed to address ACI PC-23B-16 required progress:

> In its 2026-2028 Base WMP, PacifiCorp must provide: • Risk-based criteria for determining and assigning priority to work locations, including remediation timelines for each priority level. GO 95, Rule 18(A)(2), and Liberty's "Work Priority Levels" should serve as examples. • A plan to operationalize risk-based criteria that includes specific, measurable, relevant, and timebound milestones.

It claims to address this in Sections 9.2.1.6 and 12.2. Neither section describes any risk-based criteria for assigning work order priory, nor a well-formed trackable plan to implement a vegetation work order prioritization method. PacifiCorp has not satisfied PC-23B-16.

PacifiCorp's WMP should be rejected and it should be ordered to resubmit its 2026-2028 WMP with a comprehensive plan to establish a work order prioritization method and past due work order tracking capability no later than the end of 2026. A new ACI should be issued to track both deficits and should require a comprehensive report on the implemented solutions, along with completed Past Due VM work order tables, no later than Q4 2026.

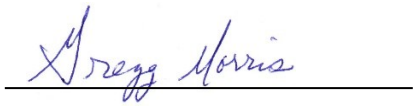
**Conclusions**

PacifiCorp's 2026-2028 Base WMP is deficient in many areas, particularly in the areas of risk assessment and methodology and modeling. Moreover, the WMP lacks detail in many areas, particularly in the area of planned mitigation activities. GPI has provided a number of critical comments and suggestions for improvements that should be ordered before OEIS approves of the plan.

For the reasons stated above, we urge the OEIS to adopt our recommendations herein.

Dated August 8, 2025.

Respectfully Submitted,



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