

[October 08, 2026]

Office of Energy Infrastructure Safety
715 P Street, 15th Floor
Sacramento, CA 95814

RE: Docket #WMP-Guidelines, Comments on Draft Wildfire Mitigation Plan Guidelines

Dear Office of Energy Infrastructure Safety Staff:

Technosylva respectfully submits the following comments in response to the Office of Energy Infrastructure Safety's ("Energy Safety") September 1, 2026 Draft Wildfire Mitigation Plan ("WMP") Guidelines.

These comments are informed by Technosylva's more than 25 years of experience providing wildfire modeling, risk analytics, and operational decision-support software to electric utilities and fire agencies across the United States, including extensive experience supporting California utilities in WMP development, operational wildfire decision-making, and post-event analysis.

Technosylva supports Energy Infrastructure Safety's continued efforts to strengthen the quantitative rigor, transparency, and validation of wildfire risk modeling used in WMPs. Technosylva offers the following technical recommendations to help preserve and enhance those objectives while also maintaining flexibility for utilities to adopt the most accurate and appropriately validated modeling approaches as wildfire science and technology continue to evolve.

1. Energy Safety should clarify what constitutes an "open-source" model for purposes of the model cross-comparison requirement.

Technosylva supports Energy Safety's proposal to strengthen model validation and require utilities to test wildfire spread models against observed historical fire behavior. Validation against real-world events is critical to demonstrating that wildfire models are appropriate for their intended use and can reliably support utility planning and operational decisions.

Section 14.2.3 requires an electrical corporation to "test and compare at least three models, at least one of which shall be open-source and peer-reviewed." Table 14-2 similarly identifies one of the comparison models as "Alt C (open source)." However, the draft does not appear to define what qualifies as an "open-source" model for purposes of satisfying this requirement.

Technosylva recommends that Energy Safety clarify the scope of this requirement. It is unclear whether Energy Safety intends “open-source” to refer strictly to the software licensing model or more broadly to levels of transparency of the model’s methodologies.

Providing this further definition would help ensure consistent implementation across electrical corporations and allow utilities and model providers to understand the intended purpose of the requirement while preserving Energy Safety’s broader objective of rigorous, transparent, and independently verifiable model comparison.

2. Historical reference-fire validation should avoid creating incentives to optimize models to a fixed benchmark set.

Technosylva supports the draft’s requirement that model comparisons use historical utility-caused wildfires and include at least one event in which winds exceeded 30 mph. The 30-mph criterion is a useful step toward testing model performance under severe fire-weather conditions.

Technosylva also recommends that Energy Safety clarify how the specified historical reference fires should be used in the model cross-comparison. The draft identifies several California fires that may be used as reference events and requires utilities to benchmark modeled fire behavior against observed fire perimeters. Historical-event validation is an important component of demonstrating model performance. However, over-reliance on a small or recurring set of reference fires can create a risk that models are calibrated, tuned, or otherwise optimized to perform well against those specific events rather than demonstrating robust performance across the broader range of conditions utilities are likely to encounter.

This concern is analogous to overfitting in statistical and machine-learning models. If the same historical events repeatedly become the benchmark against which model performance is evaluated, model developers and users may increasingly optimize inputs, assumptions, or calibration processes around those events. Strong performance against the benchmark set may then provide less information about how well the model will perform when confronted with a new fire under different fuel, weather, or terrain conditions.

Energy Safety could address this concern by requiring utilities to clearly distinguish between fires used to develop, tune, or calibrate a model and fires used for independent validation. Where feasible, at least some validation events should not have been used in model development or calibration so that the comparison better tests the model’s ability to generalize to previously unseen conditions.

This approach would preserve the value of historical-fire benchmarking while reducing the risk that a fixed set of reference events becomes a target that models are effectively optimized to reproduce.

3. Historical fire validation should include both reference fires and a broader range of fire conditions.

Technosylva supports the draft's use of historical reference fires as part of the model cross-comparison. Testing models against well-documented historical events can provide a useful and consistent benchmark for evaluating how accurately different models reproduce observed fire behavior.

At the same time, Technosylva recommends that Energy Safety clarify that performance against these reference fires should be only one component of model validation. Wildfire behavior is highly dependent on the interaction of weather, fuels, topography, and other local conditions, and no limited set of historical fires can represent the full range of conditions that may drive catastrophic wildfire behavior.

This limitation is particularly important in light of a changing climate. Future wildfire conditions may differ materially from those represented in the historical record as temperatures, fuel conditions, drought severity, wind patterns, and other drivers of wildfire risk evolve. Validation frameworks that rely too heavily on historical events risk implicitly assuming that the most severe conditions observed to date represent the outer bound of future wildfire behavior.

This concern is sometimes described as the “Lucretius Problem”: the tendency to treat the worst event experienced in the past as the worst event that can occur in the future, even though past record-setting events themselves exceeded what had previously been observed. For wildfire risk modeling, this reinforces the importance of evaluating whether models can credibly represent conditions and consequences beyond those contained in the historical record.

Accordingly, utilities should also demonstrate model performance across a broader range of fire-weather and fuel conditions relevant to their service territories. This could include high-wind events, low-relative-humidity and critically dry fuel conditions, grass-dominated landscapes and high grass loading, as well as other combinations of weather, fuels, and terrain associated with high-consequence wildfire behavior. Utilities should also have flexibility to evaluate plausible future or extreme conditions that may not yet be well represented in historical observations but could become increasingly relevant as wildfire risk evolves.

Utilities could also consider historical fires outside of the California reference set where those events help test model performance under different conditions. Events

such as the Lahaina Fire in Hawaii, the Marshall Fire in Colorado, and the Smokehouse Creek Fire in Texas illustrate materially different combinations of fuels, weather, development patterns, and geography that may provide useful additional validation cases.

We are not suggesting to replace the California reference fires or prescribe a new national list of events. Rather, the reference fires should serve as a common benchmark alongside additional validation that demonstrates the model can generalize across diverse fire environments and conditions. Energy Safety should also ensure that the validation framework does not inadvertently favor models that are optimized around the same well-studied historical events. Models should receive appropriate credit for demonstrating credible performance in conditions, fire environments, or risk scenarios that have not historically been well represented in commonly used validation datasets. This is particularly important as wildfire risk evolves and utilities increasingly need to assess emerging, under-observed, and potentially more severe future conditions rather than simply reproduce past events. Historical validation remains essential, but it should not become an artificial ceiling on the range of wildfire behavior a model is expected to represent.

Technosylva also recommends distinguishing between fires used to develop or calibrate a model and fires used for independent validation. Where feasible, at least some validation events should not have been used in model development or tuning, or demonstrate the use of appropriate validation techniques where less historical data is available. This would help ensure that strong performance reflects the model's ability to generalize to new conditions, rather than its ability to reproduce a limited set of well-studied events.

This approach would preserve the value of Energy Safety's reference-fire framework while providing greater confidence that the models utilities rely on for mitigation decisions will perform reliably across both the broader range of conditions that drive wildfire risk today and the potentially more severe conditions utilities may face in the future.

4. Cost per avoided ignition should complement, rather than replace, consequence-based measures of risk reduction.

Technosylva supports the draft Guidelines' increased emphasis on quantitative cost-effectiveness analysis, including Cost Per Avoided Ignition ("CPAI"), Expected Risk Reduction ("ERR"), and Benefit-Cost Ratio ("BCR"). These metrics can provide regulators and utilities with greater transparency into how wildfire mitigation investments reduce risk and whether limited resources are being directed toward higher-value mitigation opportunities.

Technosylva particularly supports the draft's use of baseline and post-mitigation counterfactual modeling for Expected Risk Reduction. The draft defines Expected Risk Reduction as the difference between present-value baseline risk and present-value post-mitigation risk, with baseline risk representing business-as-usual conditions without the mitigation applied. This is consistent with Technosylva's prior comments that risk reduction is most credibly evaluated by comparing modeled baseline conditions against identical conditions with a mitigation applied.

Technosylva recommends that Energy Safety clarify that CPAI should be considered alongside ERR, BCR, and other consequence-based risk measures rather than used in isolation to assess or prioritize mitigation activities.

The number of ignitions avoided does not by itself capture the full risk-reduction benefit of a mitigation. The potential consequences of individual ignitions can vary significantly based on location, weather, fuels, topography, population exposure, and other conditions. As a result, two mitigation activities could avoid the same expected number of ignitions while producing substantially different reductions in expected wildfire consequence.

This distinction is particularly important for mitigation activities targeted toward relatively infrequent but potentially catastrophic ignition scenarios. An activity could have a comparatively high cost per avoided ignition while still providing substantial risk-reduction value because the ignitions it addresses have unusually high potential consequences.

Technosylva therefore recommends that the Guidelines clarify that CPAI is a supplementary cost-effectiveness metric and that mitigation evaluation should continue to account for both changes in ignition likelihood and changes in expected wildfire consequence through the broader ERR and BCR framework.

5. Energy Safety should clarify the confidential treatment of proprietary third-party model and machine-learning documentation.

Technosylva supports Energy Safety's objective of increasing transparency regarding the models used to quantify wildfire risk. The expanded documentation requirements for machine-learning models, including validation methodology, test-set performance metrics, data partitioning, feature extraction, and feature importance, can provide useful information for evaluating whether a model is appropriately validated and suitable for its intended application.

At the same time, some of the information requested under the draft may involve proprietary intellectual property of third-party modeling providers. For example, detailed information regarding training-data composition, preprocessing methods,

feature engineering, feature-importance methodology, model parameters, or other elements of model implementation may contain commercially sensitive information developed through substantial research and investment.

The draft recognizes the potential need for confidential treatment of model documentation. Appendix B provides that, when compiling the required model materials, electrical corporations may prepare redacted versions for confidential filing.

Technosylva recommends that Energy Safety expressly clarify that proprietary third-party model information required under Appendix B may be submitted through the existing confidential-filing process where appropriate.

Such clarification would not reduce the substantive validation requirements and would encourage more information sharing from third-party model providers. Utilities should continue to provide Energy Safety with the information necessary to evaluate model performance, assumptions, uncertainty, and fitness for purpose. Rather, explicit treatment of proprietary model information would help ensure that expanded documentation requirements do not inadvertently require public disclosure of vendor intellectual property while preserving the transparency necessary for meaningful regulatory review.

6. Energy Safety should clarify disclosure requirements and establish appropriate confidentiality protections for proprietary third-party model documentation.

Technosylva supports Energy Safety's objective of increasing transparency regarding the models used to quantify wildfire risk. The expanded documentation requirements under Appendix B, including model methodologies, assumptions, validation procedures, and performance metrics, can help establish whether a model is appropriately validated and suitable for its intended application.

However, some of the requested information may involve proprietary intellectual property of third-party modeling providers. Detailed information regarding model algorithms, calibration parameters, feature engineering, training data, and other implementation details may contain commercially sensitive information. Requiring disclosure without appropriate safeguards could expose proprietary methodologies and trade secrets without materially improving regulatory oversight.

Technosylva recommends that Energy Safety clarify both the scope of documentation required under Appendix B and the confidentiality protections governing access to proprietary third-party model information.

First, the Guidelines should distinguish between information necessary to evaluate model performance and proprietary implementation details. Meaningful transparency can be achieved through descriptions of a model's scientific foundations, methodologies, and assumptions; references to peer-reviewed research; and validation results, performance metrics, and uncertainty assessments. These materials can provide a defensible basis for evaluating model reliability and fitness for purpose without requiring routine disclosure of underlying algorithms, model coefficients, calibration settings, or other proprietary information.

Technosylva recommends that the Guidelines expressly permit utilities and third-party providers to satisfy documentation requirements through methodology narratives, scientific references, and validation results where sufficient for evaluating model performance. Where more detailed technical information is necessary for regulatory review, the Guidelines should allow confidential submission by third-party providers rather than requiring inclusion in publicly accessible documentation.

Second, Energy Safety should establish clear limitations and confidentiality protections for access to proprietary model documentation by designated stakeholders. As drafted, Appendix B contemplates providing detailed documentation to Energy Safety or designated stakeholders upon request, without clearly establishing protections for third-party access. This could expose commercially sensitive information to outside organizations, consultants, or competing model providers.

Technosylva recommends that access to proprietary documentation generally be limited to the electrical corporation and Energy Safety. Where access by additional designated stakeholders is necessary, it should be subject to appropriate safeguards, including nondisclosure agreements or protective orders, conflict-of-interest screening, and advance notice to the model provider with an opportunity to object to disclosure.

These recommendations would preserve Energy Safety's ability to evaluate model validity, reliability, and performance while protecting commercially sensitive intellectual property. Clarifying these requirements would support meaningful regulatory transparency and cooperation among utilities, regulators, and third-party providers without unnecessarily exposing proprietary model information.

Closing Observations

Technosylva thanks the Office and staff for its continued efforts and supports Energy Safety's effort to strengthen quantitative wildfire risk assessment, model validation,

and mitigation cost-effectiveness analysis through the Draft WMP Guidelines. The recommendations above are intended to preserve those objectives while also ensuring that the final Guidelines remain technology-neutral, account explicitly for catastrophic tail risk, distinguish ignition counts from consequence-based risk reduction, and appropriately protect proprietary modeling information.

Technosylva appreciates Energy Safety's consideration of these comments and is available to share its experience supporting California utilities and other utilities across the country with wildfire risk modeling, validation, mitigation planning, and operational decision-making.

If you have any questions or I can provide more information, please contact me at iratnathicam@technosylva.com.

Respectfully,

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