

August 22, 2025

**BY ENERGY SAFETY E-FILING**

Caroline Thomas Jacobs, Director  
Office of Energy Infrastructure Safety  
California Natural Resources Agency  
715 P Street, 15<sup>th</sup> Floor  
Sacramento, CA 95814

Re: Reply Comments of Pacific Gas and Electric Company on its 2026-2028 Wildfire Mitigation Plan Revision Notice Response  
Docket: 2026-2028-WMPs

Dear Director Thomas Jacobs:

On August 12, 2025, two stakeholders submitted comments on Pacific Gas and Electric Company's (PG&E) 2026-2028 Wildfire Mitigation Plan (WMP) Revision Notice Response.<sup>1</sup> We submit these reply comments addressing specific issues raised by these two stakeholders. Please note that, given the amount of time for reply comments, we are not able to address every single issue raised in the opening comments. However, should the Office of Energy Infrastructure Safety (Energy Safety), or the commenting parties wish to meet to discuss any issues raised in the opening or reply comments, we would be happy to do so.

**I. RESPONSES TO SPECIFIC ISSUES CONCERNING PG&E'S SYSTEM HARDENING THAT WERE RAISED IN OPENING COMMENTS**

As a preliminary matter, we want to respond and clarify what appears to be a misconception about PG&E's objectives in terms of system hardening mitigations. The system hardening portfolio we propose in our 2026-2028 WMP reflects a continuation of the hybrid undergrounding and covered conductor portfolio ordered by the California Public Utilities Commission (CPUC) in PG&E's 2023 General Rate Case (GRC) Decision to strike "a balance between risk reduction, feasibility, timeliness, and cost containment."<sup>2</sup> Our system hardening decision tree and our decision-making process are oriented toward achieving a hybrid portfolio that combines the almost total risk reduction achieved by undergrounding in the highest risk areas with the high-risk reduction achieved by covered conductor in areas where risk drivers can be adequately addressed by overhead hardening.

TURN states that it "believes that the [mitigation] selection process should lead to well-targeted mitigation efforts, including undergrounding where it makes the most sense." We agree, and that is why we have designed our decision-making process—including the tools identified in

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<sup>1</sup> The Utility Reform Network (TURN) and the Mussey Grade Road Alliance (MGRA).

<sup>2</sup> CPUC Decision (D.) 23-11-069 at 273.

the Revision Notice (i.e., our use of a 50% cost-benefit ratio (CBR) threshold and consideration during scoping of specific, localized tree strike and egress risks)—so that we can consider localized risks. Only by understanding local risk drivers can we make an informed determination of where undergrounding “makes the most sense” and thereby achieve a hybrid portfolio of well-targeted mitigations.

The critical issue in making our service territory safer is that, if the local risk drivers are best mitigated through undergrounding, we need to be able to consider undergrounding in our mitigation selection process and not have it ruled out because of an initial high-level or preliminary analysis.

Considering recent actions by the CPUC—specifically the issuance of Draft Resolution SPD-37—PG&E is concerned that the new cost recovery requirements will introduce uncertainty into the 10-Year Electrical Undergrounding Plan (EUP) process that could impact our 2028 undergrounding target. PG&E recommends that Energy Safety specify that the Petition to Amend process for the WMP would apply to an EUP decision as well as to a utility’s GRC. PG&E further recommends that a similar Petition to Amend process be incorporated into the annual updates so that if authorized funding is not sufficient to complete the work included in a future year WMP undergrounding target, PG&E would have the opportunity to revise the WMP target to match the authorized funding.

#### **A. PG&E’s Use of a 50 Percent Cost/Benefit Threshold is Both Reasonable and Beneficial**

##### **1. PG&E’s Approach to Decision-Making Combining Quantitative Risk Modeling Supplemented by Expert Analysis is Reasonable**

In our Revision Notice Response, we discuss the limitations in our risk modeling and why it is reasonable to include a 50% threshold applied to the results of our initial cost/benefit analysis.<sup>3</sup> Our risk models generate a quantitative analysis of system risk but, given the lack of detailed, location-specific information related to ingress-egress risk, tree strike risk and climate change, this must be supplemented by reviews conducted outside of the risk model by subject matter experts.<sup>4</sup>

In its opening comments, TURN concedes that establishing a threshold to account for limitations in modeling may be a necessary element in decision-making but argues that PG&E fails to support making that threshold fifty percent.<sup>5</sup> TURN states that PG&E cannot arbitrarily assign a numerical threshold and justify it based on deficiencies in its own risk model.<sup>6</sup>

PG&E’s risk models are not deficient. Rather, our risk models provide an important starting point for mitigation selection that in certain cases must be further informed by additional

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<sup>3</sup> PG&E Revision Notice Response (Jul. 28, 2025) at 8-10.

<sup>4</sup> PG&E Revision Notice Response at 9.

<sup>5</sup> TURN Opening Comments on PG&E Revision Notice (Aug. 12, 2025) at 5.

<sup>6</sup> TURN Opening Comments on PG&E Revision Notice at 5.

evaluations. Risk models are developed using historical data to predict future events and may not accurately reflect all current conditions that directly impact the choice of a mitigation solution. It goes without saying that it would be irresponsible for us to rely solely on the outputs from risk models when we know that information about certain risk elements may be limited.

Our Wildfire Distribution Risk Model (WDRM), version 4 (v4) is the first of our ignition risk models to incorporate ingress/egress information. The ingress/egress model within the Wildfire Consequence (WFC) model v4 required input data to exist across the service territory to compare relative risk for the entire service territory. As described in the WFC model v4 documentation, Access and Functional Needs (AFN) customers were the best identified proxy to model egress risk with data covering PG&E's service territory. Additional engineering assessments and desktop reviews of local conditions on specific line segments should inform risk assessments for egress beyond what a territory-wide model can provide.

We acknowledged that the information captured in our risk models for tree strike risk represents a snapshot in time based on information available when WDRM v4 was developed.<sup>7</sup> Tree strike risk is variable—a healthy tree today could become a hazard tomorrow due to disease, pest infestation, or severe weather conditions, and certain tree species are more prone to falling or dropping branches.<sup>8</sup>

Conducting a secondary review of critical factors—ingress/egress and tree strike risk—is the prudent course of action knowing that the information in our models about these critical risk factors may not represent the most current and local conditions. Far from attempting to justify a decision due to a perceived deficiency in our risk model, as suggested by TURN, PG&E is acting responsibly by accounting for known limitations in the model predictions.<sup>9</sup> We conduct additional tree strike analysis that considers if a tree has the potential to strike and damage hardened conductors.<sup>10</sup> We also perform detailed analyses of local conditions at the street level to assess road conditions, potential obstacles and the overall accessibility into, and out of, an area.<sup>11</sup>

## 2. PG&E's Use of a 50 Percent Threshold Prudently Addresses the Limitations Inherent in Risk Modeling by Considering the Local Risk Environment

Both TURN and MGRA take issue with the use of a 50% threshold, specifically focusing on our statement that the cost estimates used in our CBR calculations are akin to an Association for the Advance of Cost Engineering (AACE) Class 5 estimate.<sup>12</sup> MGRA states that for PG&E to consider these estimates as either ballpark or order of magnitude strains credulity.<sup>13</sup> TURN claims that PG&E's method ignores the fact that undergrounding costs could also be understated,

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<sup>7</sup> PG&E Revision Notice Response at 11.

<sup>8</sup> PG&E Revision Notice Response at 11.

<sup>9</sup> TURN Opening Comments on PG&E Revision Notice at 7.

<sup>10</sup> PG&E Revision Notice Response at 10.

<sup>11</sup> PG&E Revision Notice Response at 11.

<sup>12</sup> TURN Opening Comments on PG&E Revision Notice at 4-6; MGRA Opening Comments on PG&E Revision Notice (Aug. 12, 2025) at 7-10.

<sup>13</sup> MGRA Opening Comments on PG&E Revision Notice at 8.

inflating the initial CBR value, and a better solution would be to objectively refine cost estimates on a project-specific basis through a more detailed analysis.<sup>14</sup> TURN also notes that while PG&E references that Class 5 estimates can vary between +100% to -50%, the midpoint would be 25%, not 50%.<sup>15</sup>

While TURN is correct that the midpoint between +100% and -50% is 25%, we are not anchoring on the midpoint to define the threshold.<sup>16</sup> Rather, we are pointing out that there is uncertainty in our CBR calculations and that the uncertainty generally aligns to an industry standard for cost estimate classification and project scope maturity.<sup>17</sup> It is important to recognize that the CBR threshold is a ratio based on both costs and benefits, while the AACE value only relates to cost estimates. Thus, TURN's reliance on the perspective that this AACE variance could be understating the underground costs and inflating the UG CBR isn't actionable because it anchors on a mathematical average that is only representative of part of the uncertainty (cost).<sup>18</sup> TURN's argument in this regard is unreasonable because there is also uncertainty in the risk model outputs and how we value risk reduction.

What both TURN and MGRA appear to fail to recognize is that, when we calculate a CBR to inform project selection, the cost information we are using in the CBR calculations are preliminary costs primarily based on historical cost information. These are costs that the AACE Class 5 Estimate refers to as costs typically used for strategic planning and concept screening.<sup>19</sup> Considering these costs as order of magnitude is reasonable given our understanding of the potential project scope at the time we calculate CBRs. Therefore, PG&E believes we have adequately explained how 50% is the correct threshold and is in alignment with industry standards. Despite the latest comments from parties, which are largely similar to previously filed comments, no change to this factor within PG&E's decision tree is needed given the uncertainty inherent in risk modeling.

3. PG&E's Use of Both CBR and Net Benefit Values for Selecting Mitigations is Appropriate Because it Considers both Cost Efficiency and Long-Term Project Benefits

TURN continues to inappropriately criticize PG&E's risk modeling processes saying, "[h]ere, as before, PG&E attempts to circumvent the previously adopted processes by introducing variables it argues must be considered to properly ascertain the 'Net Benefit' of any mitigation, undermining the foundational principles of the modelling framework."<sup>20</sup> TURN's criticism is unfounded. We are not circumventing previously adopted processes by introducing

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<sup>14</sup> TURN Opening Comments on PG&E Revision Notice at 6.

<sup>15</sup> TURN Opening Comments on PG&E Revision Notice at 5-6.

<sup>16</sup> TURN Opening Comments on PG&E Revision Notice at 6.

<sup>17</sup> PG&E Revision Notice Response at 10.

<sup>18</sup> TURN Opening Comments on PG&E Revision Notice at 6.

<sup>19</sup> PG&E Revision Notice Response at 9-10.

<sup>20</sup> TURN Opening Comments on PG&E Revision Notice at 6.

new variables to ascertain the Net Benefit. Our method for calculating a CBR adheres to the requirements in the Risk-Based Decision-Making Framework.<sup>21</sup> Additionally, the inputs and variables used in both the CBR and Net Benefit calculation are *exactly the same*—the only difference is that the CBR is calculated by *dividing* project benefits by project costs while Net Benefit is calculated by *subtracting* project costs from project benefits.<sup>22</sup> Furthermore, PG&E is not prohibited from considering Net Benefit when evaluating mitigations. The Risk-Based Decision-Making Framework states that a utility is not bound to select mitigations solely based on CBRs but can consider other factors.<sup>23</sup> In this case, PG&E is considering Net Benefit as well as CBR in selecting mitigations.

MGRA claims that PG&E's use of Net Benefit is concerning because it depends on PG&E's scaling function and asks Energy Safety to consider the impact of PG&E's risk averse function on its decision tree and cost-benefit analysis.<sup>24</sup> In previous comments, we explained that adopting a risk-averse attitude is more reasonable and consistent with risk management approaches across the utility industry and other high-hazard industries.<sup>25</sup> We have commented extensively on this issue in multiple proceedings and have already refuted many of the same arguments MGRA raises again in these comments on PG&E's Revision Notice Response. The CPUC's Risk-Based Decision-Making Framework allows utilities to use a risk-averse scaling function, and it properly represents PG&E's risk management approach.<sup>26</sup> It is unnecessary for Energy Safety to further consider its use.

#### 4. Responding to MGRA's Recommendations

MGRA makes four recommendations, and PG&E responds to each below.

*Recommendation No. 1:* Ensure that PG&E risk analyses, including its scaling function, are clearly labelled as such.<sup>27</sup>

*Response to Recommendation No. 1:* We do not object to noting if our risk analysis includes a scaling function.

*Recommendation No. 2:* Require PG&E to use a risk-neutral scaling function in addition to its risk averse scaling function when performing critical risk analyses.<sup>28</sup>

*Response to Recommendation No. 2:* We will continue to base our decision-making on risk values that use a risk-averse scaling function because it aligns with our risk management

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<sup>21</sup> See CPUC D.22-12-027, Appendix A.

<sup>22</sup> PG&E Revision Notice Response at 9.

<sup>23</sup> See CPUC D.22-12-027, Appendix A, Row 26.

<sup>24</sup> MGRA Opening Comments on PG&E Revision Notice at 9.

<sup>25</sup> Reply Comments of Pacific Gas and Electric Company on its 2026-2028 Wildfire Mitigation Plan (PG&E Reply Comments) (Jun. 2, 2025) at 5.

<sup>26</sup> PG&E Reply Comments at 5-8.

<sup>27</sup> MGRA Opening Comments on PG&E Revision Notice at 10.

<sup>28</sup> MGRA Opening Comments on PG&E Revision Notice at 10.

approach. We do not object to reporting risk values using both a risk-neutral and risk-averse scaling function.

*Recommendation No. 3:* Request E3 to independently verify PG&E's approach to convex risk attitude functions.<sup>29</sup>

*Response to Recommendation No. 3:* As already stated in previous comments, we welcome independent verification by experts on this topic.<sup>30</sup>

*Recommendation No. 4:* Use risk neutral scaling for any evaluation of PG&E's WMP.<sup>31</sup>

*Response to Recommendation No. 4:* For the reasons described above and in our reply comments to our WMP, we strongly support using a risk averse scaling for evaluation of our WMP. Adopting a risk-averse attitude is consistent with PG&E's and the industry's risk management approach.

## **B. The Local Risk Assessment Steps in PG&E's System Hardening Decision Tree are Properly Justified**

Our Revision Notice Response explains that the category label changes in our decision tree have no impact on the logic of the decision tree.<sup>32</sup> In both decision trees, the presence of six or more strike trees leads to consideration of undergrounding, while fewer than six trees lead to a preference for an overhead hardening mitigation.

We also explain in our Revision Notice Response that the risk assessment steps in our decision tree do not duplicate the WDRM analysis and do not double count those risks.<sup>33</sup> While our system hardening decision tree contains separate steps for tree strike risk assessment and ingress/egress risk assessment, the data assessed in those steps are different from the tree strike risk and egress risk data inputs captured in the WDRM risk calculations. The decision tree steps allow for an assessment of the current, localized risk drivers that are not fully captured in WDRM so that PG&E can consider the presence or absence of those risk drivers when it selects the mitigation for that location. The WDRM was never intended to be the sole decision-making factor in selecting system-hardening mitigations - while the WDRM prioritizes where and why to consider mitigation projects, we supplement this with localized, current assessments to confirm the risk and inform selection of the appropriate hardening mitigation.

In response to TURN's comments, we highlight several key points from our Revision Notice Response which demonstrate the distinction between tree strike risk assessed in the WDRM and in the decision tree step:

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<sup>29</sup> MGRA Opening Comments on PG&E Revision Notice at 10.

<sup>30</sup> PG&E Reply Comments at 8.

<sup>31</sup> MGRA Opening Comments on PG&E Revision Notice at 10.

<sup>32</sup> PG&E Revision Notice Response at 13-14.

<sup>33</sup> PG&E Revision Notice Response at 10-16.

- The WDRM is a relative model to apportion risk based on available inputs—in this case, tree strike data is from prior to January 2023.<sup>34</sup>
- Since WDRM risk is a snapshot in time, it may not reflect current conditions if they have changed from when WDRM data was collected.<sup>35</sup> For example, areas that have been recently impacted by a wildfire will initially show low tree density and tree strike risk, but the environment can regrow relatively quickly such that one year or 18 months later the local risk factors may be different than what was captured in the risk model.
- The WDRM does not calculate future location-specific tree strike risk for a to-be-mitigated line.<sup>36</sup>
- Our decision tree step assesses current conditions and possible future conditions to understand the risks facing a future hardened line. This step involves members of our system hardening and vegetation teams analyzing the existing strike tree count and strike tree height in a specific location to assess the future likelihood of a tree striking a new hardened line. They also assess the risk of whether that tree strike would actually break a line hardened with covered conductor. A field visit is then conducted to verify the modeled conditions, considering tree species, slope and other mitigation actions taken in those areas. All of this information is considered during mitigation selection.<sup>37</sup>

Likewise, as explained in our Revision Notice Response and summarized below, the ingress/egress risks assessed by Wildfire Consequence (WFC) model v4 used in WDRM are different from those assessed in our decision tree. Specifically:

- PG&E’s data science team found that egress considerations were best modeled by mobility issues within a threatened population. The WDRM utilizes Access and Functional Needs (AFN) customer locations as a proxy to model egress risk.<sup>38</sup>
- Ingress factors are included in the WDRM suppression consequence adjustment, which is modeled using Technosylva’s high-level Terrain Difficulty Index (TDI). This adjustment reflects the difficulty for resources to respond to an ignition event for any given location.<sup>39</sup>
- Since both the egress and suppression consequence adjustments are modeled using data available across PG&E’s service territory, the model predictions can be

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<sup>34</sup> PG&E Revision Notice Response at 13.

<sup>35</sup> PG&E Revision Notice Response at 11.

<sup>36</sup> PG&E Revision Notice Response at 13.

<sup>37</sup> PG&E Revision Notice Response at 13-14.

<sup>38</sup> PG&E Revision Notice Response at 14.

<sup>39</sup> PG&E Revision Notice Response at 14.

improved with location-specific information.<sup>40</sup> WFC Model v4 does not include road infrastructure as an input to the ingress/egress model.<sup>41</sup> It is logical that certain roads are more critical for community ingress and egress in case of an emergency, but this factor (specific local road infrastructure) and other local emergency factors must be assessed in the decision-tree to understand the risk of ingress and egress routes becoming blocked during an emergency. That risk of ingress and egress routes becoming blocked is then considered in the mitigation selection.<sup>42</sup>

We disagree with the suggestions from TURN and MGRA that consideration of these location-specific, real-time risk conditions creates a bias towards undergrounding—it does not.<sup>43</sup> Assessing the presence or absence of current local tree strike and egress risks enables us to be appropriately selective in where we implement an undergrounding solution so that we can deliver well-targeted mitigation efforts, including undergrounding where it makes the most sense.

## II. REPRESENTATION OF PROJECT PRIORITIZATION

PG&E followed the guidelines for tables 5-5 and 6-4. MGRA suggests requiring a minimum circuit length or only using wildfire risk rather than including PSPS risk and EPSS risk to rank circuit segments in tables 5-5 and 6-4.<sup>44</sup> While it is feasible to make these changes, the tables would align directly with a specific mitigation program (system hardening) rather than providing a more holistic view of risk.

Each mitigation program develops its own risk-prioritized work plan custom to that program's risk drivers and work execution in order to improve program efficacy.<sup>45</sup> For example, vegetation management programs would prioritize top circuit segments based on wildfire risk associated with the vegetation drivers. Alternatively, the open tag backlog program would prioritize tags based on the wildfire risk associated with the assets being worked and the risk spend efficiency of the work, accounting for the potential for tag work to be bundled with other activities in the same area. While there would likely be some overlap, neither of these programs would share top circuit segments with the system hardening program or the overall utility risk reported in tables 5-5 and 6-4. Examples of other factors influencing the mitigation work plans may include permitting requirements and timelines, funding, labor resources, technology, planning and construction lead time, compliance requirements, risk tolerance thresholds,

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<sup>40</sup> PG&E Revision Notice Response at 14.

<sup>41</sup> All of which MGRA recognized as correct factors to consider regarding egress risk. *See* MGRA Opening Comments on PG&E Revision Notice at 10. *See also* PG&E Revision Notice Response at 15.

<sup>42</sup> PG&E Revision Notice Response at 15.

<sup>43</sup> TURN Opening Comments on PG&E Revision Notice at 7-8; MGRA Opening Comments on PG&E Revision Notice at 10-11.

<sup>44</sup> MGRA Opening Comments on PG&E Revision Notice at 5.

<sup>45</sup> MGRA Opening Comments on PG&E Revision Notice at 5.



operational and execution considerations, and modeling limitations and/or uncertainties affecting the analysis, as discussed in PG&E's 2026-2028 WMP.<sup>46</sup>

### **III. CONCLUSION**

We appreciate this opportunity to provide reply comments on our response to Energy Safety's 2026-2028 WMP Revision Notice and look forward to continuing to work with Energy Safety and interested parties to reduce wildfire risk throughout California. Should you have any questions, or need any additional information, please do not hesitate to contact the undersigned.

Very truly yours,

*/s/ Jay Leyno*

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<sup>46</sup> PG&E 2026-2028 WMP R1, Vol. 1, at 125.