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Wildfire Safety Division
California Public Utility Commission

COMMENTS OF THE GREEN POWER INSTITUTE ON THE AUGUST WORKSHOPS

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Pursuant to the August 12, 2020, email from the Wildfire Safety Division inviting comments on the workshops presentations and associated staff proposals, the Green Power Institute, the renewable energy program of the Pacific Institute for Studies in Development, Environment, and Security (GPI), provides these *Comments of the Green Power Institute on the August Workshops*.

Introduction

The GPI appreciates the content provided in the August 11-12, 2020, WMP Workshop series on the Wildfire Mitigation Plan WSD Staff Proposal, WSD GIS Data Reporting Standards Draft, System Hardening for Electric Utility Resiliency (SHEUR) threshold, and Safety Culture WSD Staff Proposal.

Overall GPI generally supports the WSAB and WSD Proposals. However, we are concerned that the proposed WMP GIS data and accompanying database, and the SHEUR threshold are moving forward without the benefit of and direction from a defined wildfire mitigation optimization method, model, and tool. This poses numerous potential issues. Namely the data types and granularity needed to minimize wildfire risk, PSPS, and cost, should be informed by an optimization method which takes each of these objectives into account when considering where, and at what granularity to perform each wildfire mitigation approach. Similarly, the proposed SHEUR threshold must be defined by some quantitative model output in order to establish its meaning and value, as well as measure whether utilities have achieved said threshold. An appropriate threshold is also likely a combination of parameters that include minimizing wildfire risk, minimizing the calling of PSPS events, and minimizing costs. It follows that the proposed GIS data, database, and SHEUR threshold should both inform and be informed by a quantitative wildfire mitigation optimization method and model.

GPI recommends directing utilities to develop a joint quantitative wildfire mitigation optimization method and model. The WSD, WSBA, and utilities should also explore the option to use the Distributed Resources Plan (DRP) proceeding Integration Capacity Analysis (ICA) data and map tool as a platform for modeling wildfire mitigation on the distribution grid at a line segment or node-level granularity. We also suggest using the DRP ICA and Locational Net Benefit Analysis models and ICA map tool as an example to guide wildfire mitigation optimization model development. An optimization model will: (1) Provide clarity regarding the data and outputs necessary to efficiently and effectively direct wildfire mitigation activities; (2) Provide a basis for establishing when wildfire risk, PSPS, and cost impacts are sufficiently reduced; (3) Increase transparency into utility wildfire mitigation approaches and unify approaches between utilities; and (4) Put California at the leading edge of utility wildfire risk mitigation.

GPI provides additional comments on the WSD Staff proposal, GIS Data Reporting Standards documents, and SHEUR threshold slide deck, including:

- Utilities should be directed to jointly develop a quantitative wildfire mitigation optimization model that unifies and informs the development of the proposed GIS dataset, accompanying database, and SHEUR threshold.

Comments on the Wildfire Mitigation Plan WSD Staff Proposal

- Clarify the difference between the 2021 WMP Update mandated in the WSD resolutions versus the 2021 WMP described in the Wildfire Mitigation Plan WSD Staff Proposal.
- Section 6: Metrics and Underlying Data provide some general recommendations that must be clarified. This is perhaps best achieved by directing the development of new risk assessment and mitigation methods, models, and tools.
- Comprehensive WMP data tables support data accessibility and transparency and do not significantly increase utility reporting efforts. In contrast, quarterly data reports substantially increase reporting and review efforts but provide no clear value.

Progress and Outcome Metric Recommendations

- The Proposal should address the challenge of working with small datasets from utilities with relatively small territories.
- Utilities should include and explain how the duration of each mitigation activities' efficacy is considered in determining RSE values and the cost effectiveness of planned initiatives.

Comments on the WSD GIS Data Reporting Standards Draft

- The WSD proposal should clarify and establish how and when the proposed GIS data and database will be made publicly available.

General data suggestions

- Comments on the WSAB System Hardening for Electric utility Resiliency (SHEUR) Threshold

Utilities should be directed to develop a joint quantitative wildfire mitigation optimization model that unifies and informs the development of the proposed GIS dataset, accompanying database, and SHEUR threshold.

The GPI strongly recommends that utilities be required to develop a wildfire mitigation and PSPS reduction optimization method, quantitative model, and map-based (i.e. GIS) tool capable of optimizing each mitigation activity type individually and together at relevant granularities. The Distributed Resources Plan (DRP) Integration Capacity Analysis (ICA), Locational Net Benefit Analysis (LNBA), Grid Modernization approach, and associated ICA map-based tool should serve as an example of an optimization approach. The ICA in particular was designed to provide distribution grid topology and support power flow modeling at a node-level granularity in order to inform distributed energy resource (DER) integration. These models provide an initial assessment of locations on the distribution grid capable of supporting DER load and generation and inform grid modernization efforts where DER integration potential is limited. We recommend that the utilities explore the ability to utilize and leverage the existing ICA

node-level grid topology maps as the foundation for a wildfire mitigation optimization model and tool.

Using the ICA map-based distribution grid topology data and tool will save time and effort that would otherwise be spent recreating circuit, line segment, or node-level databases for wildfire mitigation optimization. Using the existing ICA map tool will also strengthen the connection between wildfire mitigation and the use of distributed energy resources capable of providing local energy and microgrid services during PSPS. The DRP proceeding has already recognized the potential role for DER to mitigate the impacts of PSPS and has required the IOUs to include PSPS data in the ICA map tool.

In the DRP proceeding, each IOU was instructed to develop a distributed resources integration assessment that provides a measure of the amount of distributed capacity or load that can be integrated at any given node in its territories' circuit. This directive led to three different models that raised questions as to their comparability and accuracy. This approach can provide a diversity of models and tools, each with potential strengths and weaknesses. However, the time required to vet the efficacy and accuracy of each of the three models, as well as test their ability to provide comparable results to identical circuit conditions slowed their implementation. GPI therefore recommends directing the utilities to collaboratively develop a single wildfire mitigation optimization model and tool that all utilities will employ. This approach includes the benefits of numerous sources of utility input to develop what we hope will constitute a sophisticated multi-attribute model. This approach will also leverage the understanding of the IOUs, which have already developed the ICA model and mapping tool, as well as the DRP LNBA and Grid Modernization approach, and extend their knowledge and resources to simultaneously include and elevate the SMJU's wildfire mitigation approaches. This new quantitative model and map-based tool will unify WMP data collection and application, define and clarify the SHEUR threshold, and ultimately place California in a leading role for wildfire mitigation.

Comments on the Wildfire Mitigation Plan WSD Staff Proposal

The WMP WSD Staff proposal included two types of recommendations: Structural changes and substantive changes. The GPI generally supports the proposed WMP structural and substantive changes with some modifications and additional recommendations. In general, the addition of a dedicated PSPS section and associated data tables will help differentiate PSPS from other wildfire mitigation approaches, and steer discussion towards minimizing the use and impacts of PSPS. We also appreciate the addition of a new section summarizing WMP expenditures disaggregated into mitigation categories. These data will provide valuable insight into RSE values and may constitute a valuable output metric for modeling wildfire mitigation initiative optimization.

1. *Clarify the difference between the 2021 WMP Update mandated in the WSD resolutions versus a 2021 WMP described in the Wildfire Mitigation Plan WSD Staff Proposal.*

Wildfire Mitigation Plans encompass a 3-year initiative plan and cycle, such that the next round of new, overhauled, and updated Wildfire Mitigation Plans should be filed in 2022. The WSD Resolutions mandated each utility to file a "2021 WMP Update" that would contain updated or remedial plan components, data, metrics, and descriptions as well as program progress reports. The GPI supports an annual WMP Update requirement in order to bridge the interim 3-years and enable continuous refinement and improvement, particularly during the early stages of WMP development. However, based on the Resolution requirements the 2021 WMP Update did not constitute an entirely new or overhauled 3-year plan. In contrast, the Wildfire Mitigation Plan WSD Staff Proposal repeatedly refers to making recommendations for a "2021 Wildfire Mitigation Plan" including structural and substantive changes that are relevant to a 3-year WMP filing cycle. The WSD should clarify the difference between the "2021 WMP Update" manded in Resolutions-002 though -010, and the "2021 WMP" referred to in the present WMP WSD Staff Proposal.

GPI believes it is unreasonable for utilities to file a completely overhauled WMP prior to the next 3-year filing deadline in 2022. The current 2020 plans, while flawed, do include

initiatives that extend through 2022 and will presumably provide some wildfire mitigation, though the efficacy and cost-effectiveness of the proposed plans remain in question. While future WMPs will benefit from the proposed structural and substantive changes, mandating that these changes be implemented in the upcoming year and via a completely overhauled 2021 WMP will not remedy the lack of foundational tools and methods needed to optimize wildfire mitigation initiatives and efforts. GPI therefore strongly recommends limiting the 2021 WMP filing to an update-type filing, and instead directing utility efforts towards developing quantitative methods and models capable of optimizing wildfire mitigation initiatives and supporting the SHEUR threshold concept developed by the WSAB.

The Integration Capacity Analysis (ICA) developed within the Distributed Resources Plan (DRP) proceeding is a prime example of how modeling and associated mapping tools can support utility and third-party project optimization. The multiple years and comment cycles it took to develop and vet the ICA is also a testament to the time, effort and resources required to develop functional circuit and node-level grid optimization models and tools. Wildfire mitigation optimization models will likely include a similar level of complexity, and should take into account numerous inputs and datasets including but not limited to risk bow-tie analyses, granular datasets (e.g. circuit, segment, and/or node/asset-level), RSEs, and duration of mitigation, all of which are necessary to ensure utility plans achieve least-cost / best-fit principles that reduce ratepayer costs and PSPS impacts while maximizing wildfire mitigation in a timely manner. The insight and outputs that new wildfire mitigation optimization tools and methods will provide may also lead to additional structural and substantive changes to the 3-year WMP filing. Time spent overhauling the utility WMPs in 2021 instead of developing the tools and methods needed to generate more cost-effective mitigation approaches will only delay progress towards achieving data-driven wildfire mitigation optimization sorely needed in the WMP, and envisioned by both the WSD and WSAB. GPI strongly recommends that utility efforts be directed towards developing, testing, and vetting methods and models that will re-define wildfire mitigation best-practices and place California at the forefront of utility wildfire mitigation.

2. *Section 6: Metrics and Underlying Data provide generalized recommendations that should be clarified. This is perhaps best achieved by directing the development of new quantitative wildfire risk mitigation methods, models, and tools.*

The WSD Staff Proposal recommends that "Geospatial data is required at a higher granularity to provide metrics at a local level – per WSAB recommendation (WSD Staff Proposal, p. 11)." This statement alludes to the need for data-driven circuit or even asset-level wildfire mitigation optimization modeling. However, the WSAB and WSD recommendations continue to provide vague guidance with respect to needing "higher granularity" geospatial data to provide metrics at a "local level." The proposed GIS data and accompanying database make significant strides towards mandating and acquiring higher-granularity datasets capable of informing wildfire mitigation, including point, line, and polygon GIS data. Whether these data provide sufficient granularity to support the WSAB's conceptualized initiative optimization approach and how it will be applied is yet to be determined. We support maximizing data availability, transparency, and accessibility via the proposed database and GIS dataset. However, these datasets should be developed in conjunction with quantitative optimization models in order to move the WMP process towards a concrete data application approach that advances utility mitigation efficacy and efficiency.

The ICA, developed in the DRP, is a prime example of how node and line segment distribution grid topology data can be integrated into a GIS-based tool that provides the foundation necessary for grid optimization methods and models. ICA grid topology data may even serve as a foundation for a wildfire mitigation optimization model and tool given that it already includes detailed node and line-segment distribution grid topology across the IOU territories. GPI recommends that utilities should begin developing quantitative methods, models, and tools that will inform mitigation activity optimization and establish what granularity of data and analysis is needed in a WMP database.

Comprehensive WMP data tables support data accessibility and transparency and do not significantly increase utility reporting efforts. In contrast, quarterly data reports substantially increase reporting and review efforts but provide no clear value.

The WSD Staff proposal recommends that "Tables that required a five-year history of certain data may need only the Year 2020 updates, if WSD creates an accessible database of the historic information (Table 2)." GPI does not support this recommendation. Relegating historical and comparative data to the database will make rapid WMP historical data comparison more cumbersome and may even create an access barrier for customers, the general public, and stakeholders alike. Furthermore, reporting 5-year historical data in the WMP does not require a substantial amount of effort for the utilities. Once the 5-year data are in place, each annual update only requires utilities to delete the 5th year of data and add the most recent data, which is required regardless of whether the prior 4 years of data are retained or not. GPI recommends retaining all 5-years of WMP data in the annual updates and 3-year WMP filings, as well as in the proposed database, in order to support data transparency and public access. GPI also recommends that the WMP annual updates and 3-year filings should include all performance and outcome data at the utility territory and HFTD/WUI granularities, including any relevant normalization parameters. Retaining thorough summary data tables will support public and customer access and transparency, as well as rapid initial analysis by stakeholders. These data should be complimented by the higher granularity data proposed for the WMP database, not replaced by it.

The WMP should be streamlined by eliminating quarterly data reports, not by cutting easily accessible data summaries. The WSD Staff Proposal suggests:

> Going forward, most data requirements will likely be submitted to the WSD on a quarterly basis, and the annual WMP updates will provide the narrative to explain changes in the data. Much of the data currently reported in the WMPs will therefore come outside of the WMP submission itself.

GPI does not support quarterly data reporting requirements. In our opinion the need for and value of a quarterly reporting schedule is not justified. Quarterly reports containing

just 3 months of outcome and progress metrics will likely provide insufficient data to support statistically relevant assessments of utility wildfire mitigation success. SMJU territories are already too small to accumulate sufficient ignition incidences over the course of a year to provide valuable insight into utility wildfire ignition trends, correlations with RFWs, and whether their mitigation plan is effective. It follows that SMJU quarterly data updates will not provide helpful insight into understanding utility wildfire risk and risk mitigation. Quarterly data reports from the IOUs will also include fewer incidents compared to aggregated annual data summaries. The decrease in data points, especially during quarters characterized by fewer wind events and typically low wildfire risk, will render quarterly data reports unusable. The WSD, WSAB, stakeholders and commenting parties may still have to delay data exploration and analysis until all data for a given year has been submitted.

Quarterly data reports will also create significant additional work for the utilities, WSD, WSAB, and reviewing parties, and will ultimately stymie the development of more sophisticated data-driven wildfire mitigation optimization methods, models, and tools capable of using higher-granularity data to improve wildfire mitigation efforts. Reporting methods should also avoid decoupling the data and explanatory narratives. This is not customary in peer-review research and reporting. In this case, decoupling data reports from annual WMP Update narratives and explanations may lead to misunderstandings, unnecessary questions, redundant communications, and additional narrative requests by the WSD, WSAB, stakeholders, and commenting parties, regarding quarterly data that would otherwise be clarified in the annual WMP Update narrative. The GPI strongly recommends that all WMP data should be filed on an annual basis and alongside explanatory narratives as a WMP Update or comprehensive 3-year WMP. Additional and more frequent data update schedules must be justified. For example, if more frequent data updates are required to enable quantitative utility wildfire mitigation optimization methods, models and tools at a higher granularity (e.g. node-level), or isolated data updates to justify off-ramping an initiative or on-boarding a new initiative.

3. Progress and Outcome Metric Recommendations

WSD Staff proposal recommendation 1b. states: "Delete line 3 - Grid Modernization (should be reported in the Mitigation section, although it was meant to illustrate "sectionalization" in PG&E territory, so not relevant for others) (WSD Staff Proposal, p. 17)." Table 1, row 3 is titled "Extent of Grid Modularization," which is different from "grid modernization" stated in the WSD Staff proposal. The proposal also alludes to sectionalizing being specific to PG&E, although to our knowledge it is applicable to all utilities filing WMPs and is relevant to mitigating wildfire risk and the impacts of PSPS. At this time there is insufficient justification to eliminate the summary of utility grid "modularization" in the WMP data tables. Until and unless a WMP database is developed, third party access is established, and accessibility is ensured, these data should be included in the WMP data tables. We do however, agree that a more granular assessment of grid topology and modularization nodes would likely improve wildfire mitigation planning and optimization, including the ability to reduce the impacts of PSPS.

The justification for narrowing the definition of near misses to near ignitions is unclear and insufficient. The WSD Staff proposal states:

> In the 2020 Guidance, Near Misses were defined: "An event with significant probability of ignition, including wires down, contacts with objects, line slap, events with evidence of significant heat generation, and other events that could cause sparking or have the potential to cause ignition."
>
> **…Recommendation 2a:** Instead, WSD suggests changing Near Misses to "Near Ignitions" defined as "Events that manifest in charring, melting, heavy smoke deposits, and/or visible evidence of arching that could indicate enough heat was present, which could have led to an ignition." [WSD Staff Proposal, p. 13.]

Eliminating "Near Miss" data and adding "Near Ignition" data will eliminate insight into the baseline frequency of events linked to utility ignitions. All three data types, Near Miss, Near Ignition, and Ignitions, provide valuable and distinct information. "Near Miss" data provide an event rate baseline. "Near Ignitions" are a subset of "Near Miss" incidences and allude to how often an event type produces sufficient thermal energy for ignition to occur. The extent to which a "Near Ignition" event causes an "Ignition" can be

dependent on many factors, such as weather and vegetation type. Knowing what proportion of a given "Near Miss" event type (e.g. contact with object) result in a "Near Ignition" event and when and how many "Near Ignition" events lead to "Ignitions" is all valuable information for wildfire mitigation planning. For example, Near Miss event types with a high incidence of Near Ignition may be preferred targets for wildfire mitigation efforts. Disaggregating and including a summary of both Near Miss and Near Ignition data in the WMP should be relatively easy, particularly as the WMP database matures and additional details regarding incidences are reported. The GPI recommends retaining the present "Near Miss" data and adding the subset "Near Ignition" data to the WMP data tables and database. If the WSD elects to eliminate Near Miss data, they should provide a clear justification for the decision.

The WSD Staff proposal recommends that "Refinement of the data schema will allow WSD staff to do normalization of data without relying on the utilities to do so in tables (Portions of Table 2)." For example:

> Recommended Change 2b: Remove "findings / total circuit miles" metric, and instead request two metrics for each finding level – # of findings by level (e.g., Level 1 findings) [and] # of circuit miles inspected (e.g., X miles) (WSD Staff Proposal, p. 13).
>
> 2.11 Critical Infrastructure Impacted by PSPS
> Issue: Normalization numbers raised unnecessary confusion and calculation errors…
> Recommended Change 2j: Delete line item for normalization (WSD Staff Proposal, p. 14).

GPI generally supports eliminating normalized progress and outcome data from the WMP data tables so long as the WMP data tables also include the numerous normalization parameters, including but not limited to distribution and transmission line miles and circuit miles, miles inspected, RFW days and PSPS normalization parameters in aggregate for each utility territory, as well as disaggregated by HFTD and WUI for each utility.

Section 2.10 of the WSD Staff proposal states: "**Number of utility wildfire ignitions Issue:** No need to disaggregate by HTFD if spatial data already provides information… **Recommended Change 2i**: Remove HFTD disaggregation in ignition field (WSD Staff Proposal, p. 14)." The WSD provides insufficient justification for eliminating utility

wildfire ignition data disaggregated by HFTD from the WMP data tables. Including HFTD disaggregated wildfire ignition data in the annual and 3-year WMP filing data tables is important for enabling public access as well as rapid initial assessment alongside utility activities and initiatives proposed in the WMPs. GPI strongly recommends retaining these data in the WMP filings in addition to including them in the proposed database.

The WSD Staff Proposal suggests that Table 7 "might be better in narrative than in table (WSD Staff Proposal, p. 17)." The format of Table 7 can facilitate comparison between data inputs each utility considers regarding their "Methodology for potential impact of ignitions" in the near-term and next WMP filing. The Proposal also recommends eliminating Tables 8 and 9. The WSD may consider using these or similar tables as part of the proposed WMP data checklists where each utility must provide a summary of whether the data is available and was provided. The proposal also recommends eliminating table 15 regarding Fault Locators, suggesting that "This is a lagging technology that is being replaced by better sensors." Some utilities may replace older technologies with new and better sensors over time, but continue to rely on older technologies in the near-term. The rate of replacement probably depends on the utility. Until and unless all Fault indictors are replaced, we see no reason to eliminate this data from the WMP at this time.

4. *The Proposal should address the challenge of working with small datasets from utilities with relatively small territories.*

The WSD Proposal does not address the analytical challenges of small datasets typical of utilities with small territories (i.e. SMJUs). SMJU annual ignition data presented in the 2020 WMPs exhibited low event numbers or a small sample size. For example, Liberty reports a maximum of 2 and as low as zero ignitions per year. These numbers are anticipated given the smaller SMJU territories, which inherently incur fewer events per year. However, the small sample size does not imply that ignition events are any less probable in small territories, or that they are not correlated with RFW days or any other external or internal risk factors. Small sample sizes run the risk of an event occurring just

by chance versus exhibiting a correlation with conditions such as RFWs that still increase the potential for ignition events. Normalizing such low incident numbers to territory size, RFW days, or any other normalization parameter only carries the issue of a small sample size forward to the normalized data. The result of a small sample size are values with large error and little to no statistical significance, and therefore no predictive power. These data will not provide a reliable outcome metric capable of measuring the efficacy of wildfire mitigation initiatives and activities performed by small utilities.

Liberty's Near Miss numbers are more statically robust, totaling between 99 to 278 incidences annually with an average of 148 ± 74 incidences per year. The total annual Near Miss events provide a more statistically robust metric for determining potential ignition events across small utility territories. "Near Miss" counts, and potentially the "Near Ignition" data proposed in the WSD Staff Proposal, may provide a better assessment of ignition probability and wildfire risk mitigation in small territories, including during high risk conditions such as RFW days. The WSD and WSAB must consider the existing data limitation for utilities with relatively small territories and determine an alternative method or methods to assess wildfire risk and the success of wildfire mitigation efforts by smaller utilities.

5. *Utilities should include and explain how the duration of each mitigation activities' efficacy is considered in determining RSE values and the cost effectiveness of planned initiatives.*

The duration of the effectiveness of a mitigation activity varies depending on the activity and will likely play a role in the cost effectiveness of each activity and where the approach is used. Vegetation management activities, for example, may reduce the incidence of "contact from object" near misses and ignition events over years depending on the growth rate of trees, depending on factors such as the tree species and climatic conditions where it is employed. Alternatively, activities such as conductor undergrounding or covered conductors may reduce "contact from object" wildfire risk for decades. While more expensive, the normalized cost per year of equivalent wildfire mitigation may indicate that in some instances, otherwise more costly wildfire mitigation approaches are preferable to

those less expensive approaches that must be repeatedly inspected, touched up, and/or redone on a more frequent basis. A more granular assessment of wildfire migration activity application may also reveal that some approaches such as vegetation management, for example, are more expensive in hard-to-reach, remote areas characterized by rapid growth rates. In this example the combined effects of a shorter duration of mitigation potential and increased costs associated with accessibility challenges may warrant other higher capital approaches that could provide a lower cost per year of mitigation provided.

In the near-term, utilities should be instructed to include the duration of the mitigation effect when determining RSEs, normalize wildfire mitigation costs to the duration of the mitigation's efficacy, and include a narrative explaining how the duration of each mitigation approach was considered when selecting how often and where to apply a particular mitigation approach. In the next phase of WMP development, utilities should be required to include the duration of each wildfire mitigation activity at the circuit or more granular data level, depending on activity type, in quantitative mitigation optimization methods, models and tools.

Comments on the WSD GIS Data Reporting Standards Draft

The GPI generally supports the GIS Data Reporting Standards Draft including its intention to develop a more robust and consistent GIS dataset linked to a comprehensive database that supports a wide array of incident tracking options and analyses. However, the GPI is concerned that decoupling the development of a WMP GIS database from efforts to develop a mitigation optimization method, model, and tool may lead to workflow inefficiencies and delay wildfire mitigation. That is, the available data and data reporting requirements should both inform, and be informed by the intended application, in this case wildfire mitigation optimization. For example, the usefulness of specific data types and granularity will depend on the desired level of data analysis, mitigation approach, and optimization. Circuit-level mitigation optimization may be suitable for vegetation management activities, whereas assessing the optimal placement of conductor undergrounding and ways to reduce PSPS may require a line section or node-level analysis. To ensure GIS data and database content support wildfire mitigation

optimization, utilities should be directed to develop a quantitative wildfire mitigation optimization model that takes into account existing and proposed WMP datasets, identifies which data are relevant, and advises what additional data and granularity is needed to achieve and ensure efficient and cost-effective wildfire risk reduction.

6. *The WSD proposal should clarify and establish how and when the proposed GIS data and database will be made publicly available.*

GPI strongly recommends that all database and GIS data be made publicly available to the maximum extent possible. This includes making the data downloadable in a range of formats (e.g. .csv) and enabling public access to a GIS-based mapping tool that allows users to visualize data without owning GIS software. For example, ICA map data is viewable on a utility hosted, GIS-based map tool. Ensuring database and GIS-data accessibility will support stakeholder engagement include external, expert review, and will create opportunities to advance our understanding of wildfire risk and mitigation approaches. The WSD GIS Data Reporting Standards Draft should clarify how and when the database will be made publicly accessible.

7. *General data suggestions*

    a. Database entries should be downloadable, including in .csv format
    b. We do not support a quarterly risk event and initiative data reporting schedule due to the amount of time it will require for utilities and stakeholders alike, despite limited value. We recommend requiring an annual data reporting cycle and refocusing efforts on developing a quantitative wildfire mitigation optimization model.
    c. Circuit and line segment data requests should leverage existing DRP ICA grid topology maps as a foundation for wildfire mitigation assessment and planning, including the use of DER to mitigate the impacts of PSPS and support system resiliency. It may be feasible to map and color-code RSE values on a wildfire mitigation GIS-based tool similar the DRP ICA map tool, which includes color coded circuits that correspond to DER hosting capacity.

d. GIS data and database entries should include DAC polygon feature class data to inform solutions that support disadvantaged communities.
e. Risk Event Feature Set comments
    i. The GIS and database data, terms and definitions in Section 3.4.3 Ignition should directly align with WMP data summary tables and risk bowtie analysis risk drivers in order to support data-driven wildfire risk mitigation planning and optimization. For example, the updated ObjectContact field options proposed for the WSD database (WSD GIS Data Reporting Standards Draft, p. 38) should be replicated in the WMP data summary tables. WMP data summary tables should also include the proposed ContributingFactor database field.
    ii. The FireSize field entry options should be updated to include a 10-99 acre option and eliminate the size gap (WSD GIS Data Reporting Standards Draft, p. 40)
    iii. 3.4.4. Transmission (WSD GIS Data Reporting Standards Draft, p. 41) and Distribution (WSD GIS Data Reporting Standards Draft, p. 45) Outage (Point Feature Classes) should include the ContributingFactor field that is included in the Ignition Point Class Feature. The SupplementalCause field is not defined and should be clarified. It is also unclear why the Ignition point feature class uses "SuspectedInitiatingCause," whereas Outage point feature classes use "BasicCause" for a field entry with the same definition and nearly identical field options. GPI recommends aligning field terms and definitions to the maximum extent possible in order to streamline the database.
f. Initiative Feature Set comments
    i. Line and Polygon feature classes do not provide sufficient data to locate them on a map/GIS platform in the event the database information is downloaded. Including start and end latitude and longitude data will allow users to co-locate line feature classes with GIS map data. Polygon feature classes should also include latitude and

longitude data. Alternatively, clarify how these database entries are co-locatable with GIS data. Line feature classes should also include line length akin to the Initiative Asset Log, AssociatedCircuitLength field.

ii. VM Project field classes (WSD GIS Data Reporting Standards Draft, p. 51- 55) would benefit from a verification/validation field that aligns with utility plans to verify 100 percent of VM work.

iii. Image logs should include the latitude and longitude where taken. This should be easily implementable with readily available GPS-enabled cameras and will allow images to be co-located along and within, line and polygon datasets, respectively.

iv. It is unclear how RFW day database entries will be associated with NWS RFW GIS Polygon data. RFW database entries should include a unique ID or other field type that cross-references with the NWS database. We are also unclear as to how an RFW Day Polygon Feature Class, derived from NWS polygon data, will include the total NumberRedFlagWarningDays over the last year. Clarify whether each polygon entry represents one NWS RFW event, or a region where many RFW events occurred and are aggregated over 1 year. We also recommend exploring how historical RFW data can be included in the database in order to analyze risk and mitigation trends over time, as well as inform future HFTD and WUI zoning. Providing examples of RFW Polygon feature class data entries and GIS data may clarify how the RFW Day Polygon Feature Class will be implemented to support risk and mitigation analysis.

Comments on the WSAB System Hardening for Electric Utility Resiliency (SHEUR) Threshold

The WSAB proposed developing a SHEUR threshold that would work in conjunction with a conceptual approach to inform wildfire mitigation optimization at a line segment or node-level granularity. The objective of the SHEUR threshold and example optimization

approach includes providing transparency into wildfire risk mitigation optimization and concurrent PSPS reduction. GPI generally supports the concept of the SHURE threshold and conceptual optimization approach and appreciates movement towards developing more granular wildfire mitigation assessments. However, GPI recommends refocusing WMP efforts on developing a quantitative wildfire mitigation optimization model such that the model outputs define the proposed the SHUER threshold. Wildfire optimization model development should be a holistic process concurrent with efforts to update and expand GIS datasets, develop a WMP database, and establish the proposed SHEUR threshold.

Focusing on a mitigation threshold prior to developing the underlying quantitative model and numerical outputs is putting the cart before the horse. A quantitative model and its outputs should provide the basis for determining a suitable threshold. This quantitative mitigation optimization model should endeavor to minimize wildfire risk, mitigation cost, and the impacts of PSPS on customers. The results of a quantitative wildfire mitigation optimization model may reveal that a single optimization threshold is insufficient to guide mitigation activities. That is, a suitable threshold may need to include some combination of maximum acceptable wildfire risk, PSPS impact, and cost.

The utilities should be directed to develop a joint quantitative wildfire mitigation optimization model that improves and informs the application of individual and complementary mitigation activities that minimize wildfire risk, PSPS impacts, and cost. Based on the DRP ICA development process, a wildfire mitigation optimization model will require time to design, test, and vet. Work on this model should therefore begin as soon as possible and occur concurrently and in conjunction with the proposed GIS dataset and database development. That is, the quantitative optimization model should inform and be informed by the proposed GIS and database tools through an iterative development process. GPI also recommends the iterative model and database development take precedence in the WMP development process over the recommendation to file quarterly data updates.

The proposed SHUER threshold also suggests aiming for a static mitigation optimization target when implementing wildfire mitigation activities. Developing a least-cost best-fit quantitative wildfire mitigation optimization model that minimizes wildfire risk, PSPS impacts, and cost may reveal novel and effective combinations of wildfire mitigation activities versus simply meeting a threshold standard. It will also provide a platform that supports ongoing methodological and modeling improvements that can lead to innovative wildfire risk mitigation solutions, inform wildfire risk and PSPS reduction thresholds, and ultimately and efficiently reduce wildfire risk over time.

Utilities should be tasked with considering numerous factors when developing a quantitative optimization model and the accompanying SHEUR threshold. These factors should include, but are not limited to, determining an appropriate granularity (e.g. circuit, line segment, or node-level) for assessing the efficacy of each mitigation activity (e.g. grid hardening versus vegetation management), efficacy of each mitigation activity to reduce each ignition driver risk, activity cost (including maintenance costs), and duration of mitigation activity efficacy. Utility RSE assessment methods may already include many of these factors or may need to be reevaluated and updated in order to capture necessary considerations such as these.

Conclusion

The August 11-12, 2020, WMP Workshop series, and the Wildfire Mitigation Plan WSD Staff Proposal, WSD GIS Data Reporting Standards Draft, and System Hardening for Electric utility and Resiliency (SHEUR) threshold proposals generally make progress towards optimizing wildfire mitigation activities and supporting datasets. However, these proposals are lacking the need for a quantitative wildfire mitigation optimization method, model, and tool, which will serve as a key unifying component of the WMP. Developing a quantitative mitigation optimization approach will inform WMP narrative and data reporting requirements, as well as provide a basis for defining the proposed SHEUR threshold. Utilities should be directed to collaboratively develop a quantitative wildfire mitigation optimization model, and explore the potential to leverage experience and lessons learned from the DRP ICA, LNBA, and Grid Modernization models and

approaches. Utilities and the WSD and WSAB should also explore the potential to leverage and directly employ the existing ICA GIS map tool and node-level granular data therein to advance wildfire mitigation optimization.

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Respectfully Submitted,

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