

Rulemaking (R.) 20-07-013: Phase 3 Workshop #6: December 6, 2023

Tail Risk: Non-wildfire Risks
Granularity of Tranches



Electric Scooters and Helmets



- 115 injuries per million e-scooter trips
 - [2022 UCLA Study](#)
- Make sure to wear a helmet!
 - E-scooter companies offered free helmets
 - Few people wear them

Workshop #6 Agenda

Introductions	10:00 – 10:10 am
Opening Remarks: Commissioner Reynolds' Office	10:10 – 10:15 am
Tail Risk: Non-Wildfire Risks: Sempra Presentation	10:15 – 10:45 am
Tail Risk: Non-Wildfire Risks: SCE Presentation	10:45 – 11:15 am
Break	11:15 – 11:25 am
Tail Risk Discussion	11:25 am – 12:00 pm
Lunch	12:00 – 1:00 pm

Workshop #6 Agenda (Cont.)

Granularity of Tranches: TURN Presentation	1:00 – 1:30 pm
Granularity of Tranches: Joint IOUs Presentation	1:30 – 2:00 pm
Break	2:00 – 2:10 pm
Granularity of Tranches: Discussion	2:10 – 3:50 pm
Phase 3 Workshop Close and Next Steps	3:50 – 4:00 pm

Review of Phase 3 Timeline

Phase 3 Timeline



PURPOSE & EXPECTED OUTCOMES OF THE WORKSHOP

Purpose & Outcomes for Workshop #6

- Tail Risk: Non-Wildfire Risks
 - Discuss the issue of tail risk events, which are known to be low probability, high consequence risk events.
 - Consider whether and how tail risk should be addressed in the context of non-wildfire risks.
- Granularity of Tranches
 - Discuss the use of tranches within RAMP and GRC filings for both test years and post-test years.
 - Consider the best approaches to granularity when designing tranches for risk assessment.
- Provide feedback on whether the Commission should provide guidance regarding tail risk for non-wildfire risks and whether the Commission needs to provide additional guidance with respect to the granularity of tranches.

Party Proposal for Tail Risk: Non-wildfire Risks

Presenter: Joint IOUs

Risk-Based Decision-Making Framework - Phase III

Joint IOU Risk Presentation

Pacific Gas & Electric
San Diego Gas & Electric
Southern California Gas Company
Southern California Edison

December 6, 2023



SDG&E and SoCalGas Tail Risk Discussion

Risk Mitigation in Similar Tail Risk Industries

Other industries with comparable tail risk exposures orient their risk management around catastrophic events, and have well-defined, tail-risk mitigation frameworks:

- Oil & Gas Exploration (E&P)
- Nuclear Power
- Commercial Aviation
- Chemicals

Similar to the IOUs, the above industries are characterized by:

- Massive, physical infrastructure
- Handling of highly dangerous substances
- Failures of components or personnel can result in catastrophic consequences

IOUs Operate in a Tail Risk Industry

Key Points

- SDG&E, SoCalGas, and the other IOUs operate in a **tail risk** industry, marked by actual catastrophic losses of life and property
- The RDF was established following the realization of a catastrophic tail risk event
- The RDF should continue to recognize that tail risk mitigation is the key driver of many well-informed investment decisions
- Whether based on expected values or tail risk events, benefit cost ratios must remain non-deterministic data points for assessing risks and mitigation effectiveness

Expected Values Provide a Limited View of Risk

Expected values may provide incomplete and misleading measures of risk assessment and mitigation effectiveness

- Relative to observable catastrophic tail risk events, the usefulness of expected values is heavily dependent on sufficient quantity and quality of data
- Expected values often do not account for operational context and compliance-driven scenarios, e.g., electric and gas system integrity management
- If the Companies manage to expected value losses where tail risk exists, the worst-case outcomes could remain unmitigated or under-mitigated
- This could potentially conflict with mandatory federal integrity management compliance requirements

Operational Tail Risk Approaches

SoCalGas's Integrity Management Program

- Focuses on reducing tail events by targeting the components associated with catastrophic outcomes
- Target asset risks in conjunction with regulatory and operational considerations
- Remediate lines that may rupture between inspection cycles

SDG&E's Electric Reliability Programs

- Assess high-consequence electric reliability events stemming from single points of failure
- Asset and operations-based approach for determining outage tolerances

Recommended Approach

To recognize the Companies' holistically risk-informed practices and account for tail risk in the RDF, it is recommended to the Commission that:

1. The prevention of tail risks be a foundational lens of the RDF and through which benefit-cost ratios are developed.
2. It remain incumbent upon the IOUs to identify where tail risk exists and provide transparent reasoning for benefit-cost ratio calculations.
 - *Where data is available, the calculation of tail risk consequences should be monetized and considered for the determination of the level of mitigation or control activities*
3. Risk tolerance must be taken into consideration when adopting a Cost-Benefit Approach, e.g., As Low as Reasonably Practical (ALARP), to ensure ongoing prevention of tail risk events that otherwise might not be considered "effective" under a Cost-Benefit Approach that does not take into account risk tolerance.

Joint IOU (SCE/SDG&E/SoCalGas) Whitepaper on Methods to Incorporate Tail Risk into Utility Risk Modeling

Joint IOU – Tail Risk

Joint Utility Proposal

- In response to the amended Scoping Memo, SCE, SDG&E, and SoCalGas (the Joint Utilities) have drafted a whitepaper including specific examples of how an appropriate tail risk metric for low-probability, high-consequence events can be derived in a practical manner, and why those metrics are more appropriate for establishing cost-benefit ratios than expected values.
- Using two examples, the joint utilities describe methods to derive tail risk values using generally-accepted risk management practices which recommend using tail risk value rather than expected value.

Joint IOU – Tail Risk (Cont.)

SDG&E and SoCalGas – Natural Gas Risk Assessment

- SDG&E and SoCalGas are firmly committed to furthering the Commission’s efforts, initiated twelve years ago, to guard against the occurrence of a catastrophic incident involving gas system infrastructure.
- Given the size and diversity of the natural gas system that serves Southern California, and State and Federal safety regulations requiring management of gas infrastructure safety risks, the consideration of tail risk is a key element in the utilities’ risk-based decision-making process to account for low probability/high consequence events and ensure the continued safety and reliability of our customers and public in delivering natural gas.
- To enable those ongoing efforts, it is critical that the Commission refrain from adopting an RDF model in this proceeding that will inhibit the State’s utilities from considering the potential consequences of tail risk events in their risk-based decision-making.

Joint IOU – Tail Risk (Cont.)

SDG&E and SoCalGas – Natural Gas Risk Assessment (Cont.)

- As part of the ***Transmission Integrity Management Program (TIMP)***, assessment results from in-line inspections (ILI) have been used to perform corrosion reliability assessments that necessarily account for the tail behavior present in ILI data.
- Within the ***Distribution Integrity Management Program (DIMP)***, a transition from relative risk ranking to quantified risk ranking is underway, which recognizes distributions of risk that account for improbable events.
- In the ***Storage Integrity Management Program (SIMP)***, efforts to develop industry leading quantified models for downhole well integrity are underway, and tail risk is a fundamental component of accurately measuring the risk associated with various well mitigation activities.
- In this way, gas infrastructure integrity management programs take into account the full risk profile for each asset type as a fundamental element of risk-informed decision-making

Joint IOU – Tail Risk (Cont.)

SDG&E and SoCalGas – Natural Gas Risk Assessment (Cont.)

- In 2017, the Western Electricity Coordinating Council (WECC) commissioned a study of the gas/electric interface in the Western Interconnection to identify potential threats to grid reliability at present and in the future (1).
- Specifically, the June 2018 Western Interconnection Gas - Electric Interface Study found that limitations on Aliso Canyon had heightened region-wide reliability risks to the Western Interconnection (2).
- The authors of this WECC Study (Wood Mackenzie) also presented in Rulemaking (R.) 20-01-007 and highlighted that *“the impact of an Aliso Canyon outage/retirement and its ripple effects into neighboring regions,”* including, for example, *“significant unserved energy and unmet spinning reserves resulting in [approximately \$1 billion] risked impact across Southwest / CA.”*(3) . The authors of the study indicated that *“[t]he actual event would effectively be around a 30-billion-dollar economic-impact event, so quite significant.”*
- Consideration of the tail risk potential of such catastrophic reliability events is essential to address system reliability

(1) see <https://www.wecc.org/Reliability/Western%20Interconnection%20Gas-Electric%20Interface%20Study%20Public%20Report.pdf>

(2) Western Interconnection (a wide area synchronous grid stretching from Western Canada south to Baja California in Mexico, reaching eastward over the Rockies to the Great Plains).

(3) R.20-01-007 Track 1B Workshop Presentation at Slide 13.

Joint IOU – Tail Risk (Cont.)

SDG&E and SoCalGas – Natural Gas Risk Assessment (Cont.)

- If the Commission were to adopt an RDF that considers “expected value” as a baseline position, then the results could potentially be catastrophic.
- An analysis that fails to allow utilities to properly account for and address the potential consequences of infrequent, yet catastrophic, events would fail to account for the true potential consequences and impacts to the system and society at large of such events and could potentially lead to the dangerous supposition that investments to prevent and mitigate the potential consequences of catastrophic natural gas risk events should be defunded.
- Instituting a “minimum” requirement of expected value and ignoring or undervaluing the potential consequences of tail events could arguably support the conclusion that all mitigations (outside of compliance) should be suspended whenever a system operates free of incident and should only be funded after an incident has occurred.

Joint IOU – Tail Risk (Cont.)

SCE – Hydro Risk Assessment

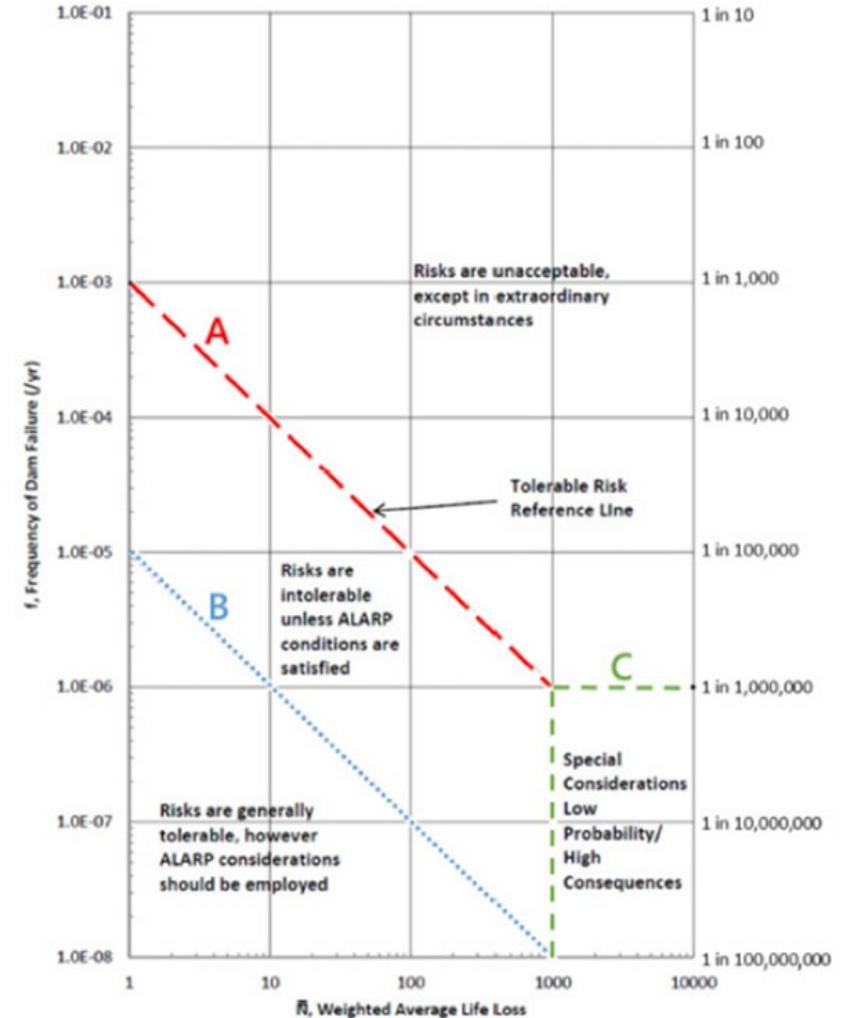
- SCE’s Dam Safety Risk Assessment Program is modeled after the United States Bureau of Reclamation (USBR) “Risk Management – Best Practices and Risk Methodology,”
- The USBR guidelines are based on two interconnected concepts.
 - First, that there is a level or risk deemed acceptable by society in order that some particular benefit can be obtained. This is known as “Tolerable Risk.”
 - Secondly, that the risk above this acceptable threshold should be mitigated until it is tolerable, or “As Low as Reasonably Practicable” (ALARP).
- This methodology can be used to develop appropriate thresholds to establish a tail risk metric for low probability, high consequence events for individual attributes (such as fatalities) or overall monetized risk.

The USBR framework has been updated, adopted, and modified by the USBR and other federal dam owners, such as the U.S. Army Corps of Engineers (USACE). It also forms the basis of the recently released Federal Emergency Management Agency (FEMA) Guidelines for Dam Safety Risk Management and the FERC guidelines for Risk Informed Decision Making (RIDM).

Joint IOU – Tail Risk (Cont.)

SCE – Hydro Risk Assessment (Cont.)

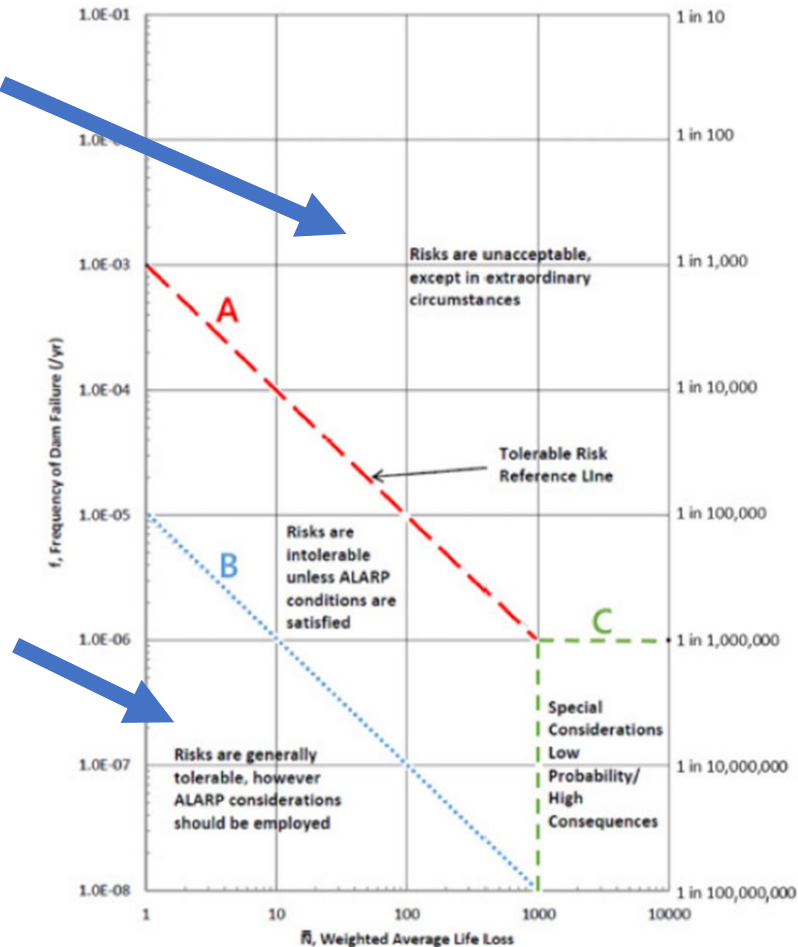
- This risk management approach is predicated on identifying the potential ways a specific dam could fail, known as Potential Failure Modes (PFMs), and then evaluating the likelihood of occurrence and the consequence of each PFM.
- These PFMs are plotted on an f-N chart. The four “zones” on the f-N chart are used to demarcate different risk tolerance thresholds.
- The first zone is used to identify likelihood and/or consequences which are deemed broadly unacceptable except in extraordinary circumstances (see chart, right)



Joint IOU – Tail Risk (Cont.)

SCE – Hydro Risk Assessment (Cont.)

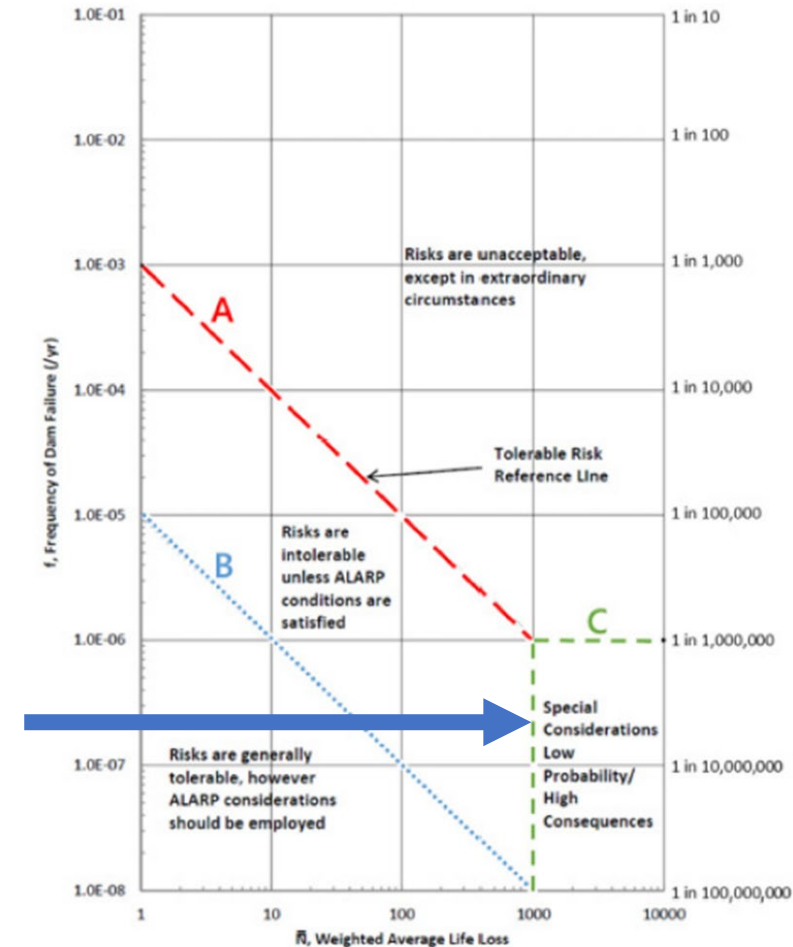
- For hydro asset failure, this zone is defined by a region where the average annual life loss is **greater than one fatality per 1,000 years**, as indicated by the region above the reference line “A”
- The second region – between reference lines “A” and “B” – is where risks are intolerable – and that cost-effective mitigations should be employed to reduce the risk to as low as reasonably practicable. This zone is defined by the region where average annual life loss is **less than one fatality per 100,000 years**, indicated by region below the reference line “B”



Joint IOU – Tail Risk (Cont.)

SCE – Hydro Risk Assessment (Cont.)

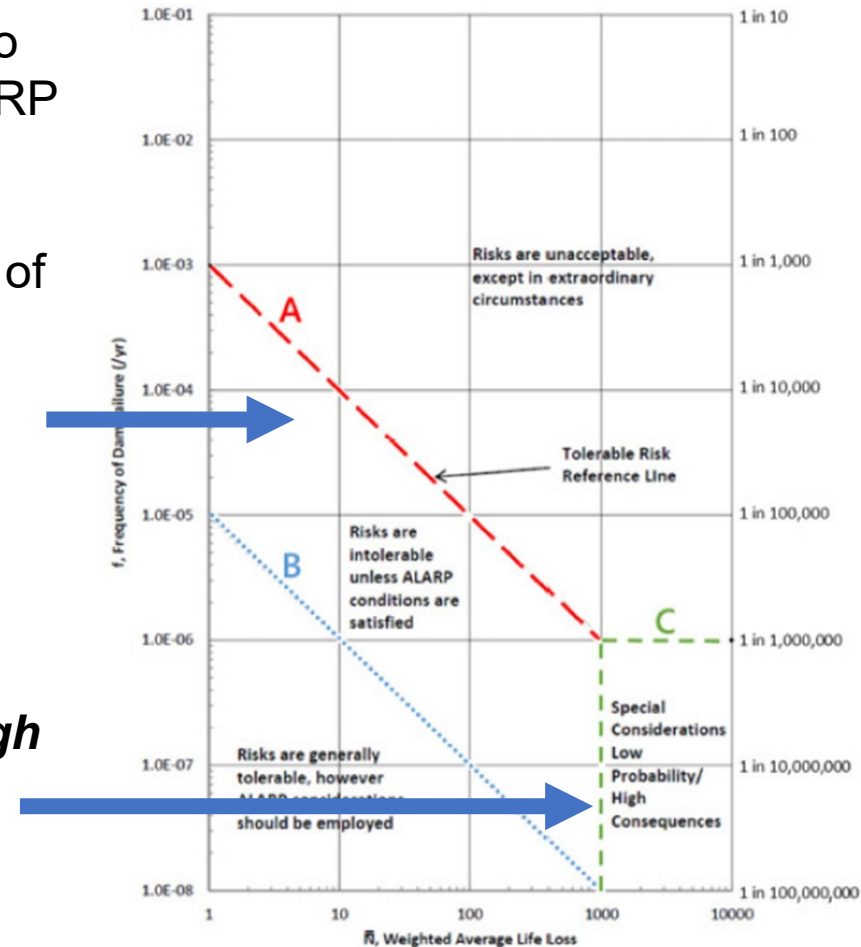
- Likelihoods and/or consequences below the ALARP line (“B”) are generally tolerable, but practical mitigations should still be employed.
- Finally, in the special consideration zone, PFMs are extremely low-probability, but may result in extremely high consequences.
- This zone is defined as the region bounded by **expected fatalities greater than 1,000, but annual probability less than 1 in 1,000,000**, as indicated by reference line “C”.



Joint IOU – Tail Risk (Cont.)

SCE – Hydro Risk Assessment (Cont.)

- The ALARP framework outlines the following criteria to evaluate to what extent ALARP is satisfied in the ALARP region (e.g., between A and B), and below B).
- Cost-effectiveness tests to assess the relative benefit of incremental risk reduction measures can be used to assess the reasonableness of mitigation portfolios in relation to these risk tolerance reference lines (e.g., A and B).
- Note that low-probability, high-consequence PFMs (below C) are generally deemed unacceptable, and **measures are taken to mitigate these PFMs through practical engineering.**



Joint IOU – Tail Risk (Cont.)

SCE – Hydro Risk Assessment (Cont.)

- As a matter of best practice, there should not be a gross disproportionality of the proposed costs relative to the benefits of any mitigation activity in relation to these risk tolerance reference lines.
- In addition to cost effectiveness, mitigations should be assessed in relation to “Good Practice” such as compliance with FERC Engineering Guidelines or other industry-recognized standards, as well as other qualitative societal concerns.
- Other factors, including duration of the risk, availability of risk reduction options, potential for creation of new risks, adequacy of the mitigation to future conditions, as well as industry benchmarking, and operational feasibility of proposed mitigations should also be considered.

Joint IOU – Tail Risk (Cont.)

SCE – Hydro Risk Assessment (Cont.)

- In this example, the use of expected (or average value of A and B) serves little or no practical purpose. If one were to use the “expected value” (e.g., an average of the likelihoods and/or probabilities of all PFMs) rather than the tail risk metrics that demark the ALARP region the resulting cost benefit assessment would ***result in the overvaluation of high-probability, low-consequence PFMs and an undervaluation of low probability, high consequence PFMs.***
- The ALARP framework represents a general approach to balance mitigation costs, achievable benefits, and risk reduction.
- We also note that this framework is predicated on establishing threshold values of tolerability in terms of both consequence and probability, an issue we continue for the Commission to address in this proceeding.

Conclusion

- We also outlined generally-accepted approaches to establishing tail risk event metrics. In addition, we described, through examples, why existing requirements to use expected values may not be aligned with underlying data that supports a given risk analysis, or with regulatory, judicial, or other applicable guidance.
- We continue to stress the need to address critical topics, such as tail risk, within the broader context of risk scaling (attitude) and risk tolerance.
- Unless and until the Commission decides the issue of risk tolerance and clarifies *whose* risk attitude is actually reflected in these analyses, we continue to stress that continued flexibility is the most reasonable and appropriate approach.
- The utility with the burden of proof must be able to present its risk analysis and mitigation selection in the most effective, efficient, and accurate manner, consistent with how the utility assesses risks and runs its operations and business processes.
- The Joint Utilities will provide modified language to D.22-12-027 Appendix A, A-14, row 24 to allow utilities to present an analysis of monetized pre-and post-mitigation [consequences of a risk event] CORE using a computation relevant to a tail risk value, rather than the expected value language in our post workshop proposal.

Break

11:15 – 11:25 am

Discussion

11:25 am – 12:00 pm

Tail Risk: Discussion

- SoCalGas/SDG&E's white paper mentions several “aspects that are definitely characterized by tail risk, among them wildfire prevention, medium- and high-pressure gas integrity management, and electric and gas system safety/integrity management.” (2)
 - Are there objective criteria that can be used to identify utility risk areas “characterized by tail risk?” If so, what are they?
- SoCalGas/SDG&E's white paper mentions the linkages between deriving tail risk values and the As Low As Reasonably Tolerable (ALARP) or risk tolerance framework several times.
 - What (specifically) is SoCalGas/SDG&E proposing in terms of sequencing or combining consideration of the tail risk and risk tolerance framework topics?

Tail Risk: Discussion

- Currently, Row 24 of the RDF states the following:
 - If a utility chooses to present Alternative Analysis of monetized pre- and post-mitigation CoRE using a computation in addition to the expected value of the Cost-Benefit Approach, such as tail value, it does so without prejudice to the right of parties to the RAMP or GRC to challenge such Alternative Analysis.
 - What specific language do the IOUs want to change in Row 24?
 - What are the implications of changing the language in Row 24?
- What are parties' thoughts, questions and concerns in response to the utility tail risk proposal and discussion?

Tail Risk: Discussion

- The f-N Chart used by Federal Energy Regulatory Commission in SCE's hydropower example has specified thresholds. Have these thresholds been used by other utilities other than SCE in California?
- In the gas pipeline example presented by SoCalGas, what exactly is the tail behavior present in in-line inspections? For the Distribution Integrity Management Program, what is an example of an improbable event? For the Storage Integrity Management Program, what exactly are the tail risks associated with downhole well integrity?
- What are the safety concerns related to the WECC Study of Aliso Canyon and how would such considerations be presented in the RAMP?

Lunch

12:00 – 1:00 pm

Granularity of Tranches

Presenters: TURN

TURN Granularity Proposal

R.20-07-013, Workshop 6
December 6, 2023



TURN believes we can and should live in a society where power, broadband, and phone service are treated as basic human rights for all families.

RDF Granularity Requirements

- Definitions
 - Tranche: a logical disaggregation of a group of assets (physical or human) or systems into subgroups with like characteristics for purposes of risk assessment.
- Mitigation Analysis for Risks in RAMP, Line 14: Definition of Risk Events and Tranches
 - ...For each Risk Event, the utility will subdivide the group of assets or the system associated with the risk into Tranches. Risk reductions from Mitigations and Risk Spend Efficiencies will be determined at the Tranche level, which gives a more granular view of how Mitigations will reduce Risk.
 - The determination of Tranches will be based on how the risks and assets are managed by each utility, data availability and model maturity, and strive to achieve as deep a level of granularity as reasonably possible. The rationale for the determination of Tranches, or for a utility's judgment that no Tranches are appropriate for a given Risk Event, will be presented in the utility's RAMP submission.
 - For the purposes of the risk analysis, each element (i.e., asset or system) contained in the identified Tranche would be considered to have homogeneous risk profiles (i.e., considered to have the same LoRE and CoRE).

TURN's Concern

- Insufficient granularity can mask the risk profile of individual assets and the effectiveness of a mitigation to address that risk.
- Greater granularity ensures that we can identify the proper assets for a mitigation, the scope of the mitigation and the pace of the mitigation work.
- This empowers intervenors to assess the utility proposal and offer alternatives.
- This empowers the Commission to have the best information to inform their decision.
- Concerns regarding the amount of information resulting from providing additional granularity are overridden by the increased accuracy and utility of the results.

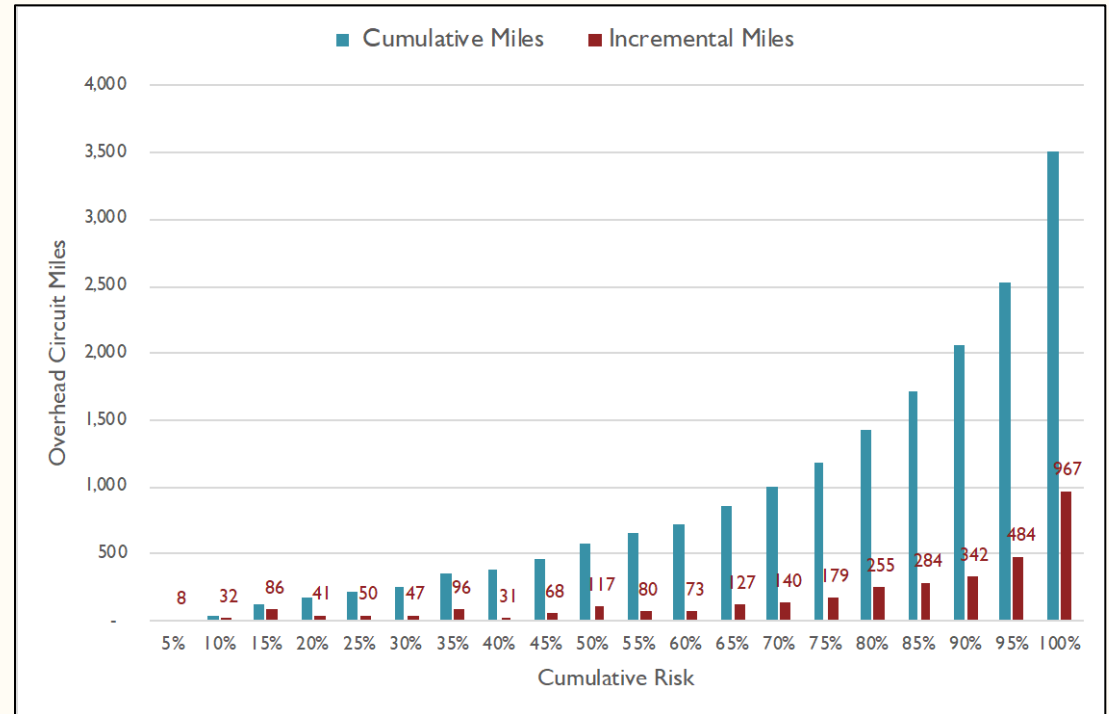
TURN Proposal

- **Limited to physical assets (ie. not required for workforce, cyber security other non-physical asset-based risks)**
- Sets minimum requirements for granularity; additional granularity is welcome.
- Two Prong Standard:
 - The risk between tranches may not be more than 5 percent;
 - The number of miles or assets in a given tranche should not represent more than 5 percent of the total asset count or milage count
- Risk must be normalized by number of assets or number of miles to ensure proper aggregation. For example, a circuit segment that is 1,000 miles long and has a risk of 100 units has a much different risk profile than a circuit that is 1 mile long and has a risk of 100 units.

Example

- Uses SDG&E's WiNGS model results, which provides wildfire risk for 575 circuit segments in SDG&E's HFTD, comprising 3,500 overhead miles of SDG&E's system.

Figure 1. Five Percent Risk Tranches: SDG&E Wildfire Risk



Source: Provided in TURN-31, Question 1a (provided in a Data Request to TURN in A.22-05-015 and attached to TURN's testimony volume TURN-08).

Proposed Modifications to RDF

No.	Name	Element Description and Requirements
14.	Definition of Risk Events and Tranches	<p>Detailed pre- and post-mitigation analysis of Mitigations will be performed for each risk selected for inclusion in the RAMP. The utility will endeavor to identify all asset groups or systems subject to the risk and each Risk Event associated with the risk. For example, if Steps 2A and 2B identify wildfires associated with utility facilities as a RAMP Risk Event, the utility will identify all Drivers that could cause a wildfire and each group of assets or systems that could be associated with the wildfire risk, such as overhead wires and transformers.</p> <p>For each Risk Event, the utility will subdivide the group of assets or the system associated with the risk into Tranches. Risk reductions from Mitigations and Risk Spend Efficiencies will be determined at the Tranche level, which gives a more granular view of how Mitigations will reduce Risk.</p> <p>The determination of Tranches will be based on how the risks and assets are managed by each utility, data availability and model maturity, and strive to achieve as deep a level of granularity as reasonably possible.</p> <p><u>For risks related to physical assets, Tranches must meet the following minimum requirements:</u></p> <ol style="list-style-type: none"> <u>1. The risk between tranches may not be more than 5 percent;</u> <u>2. The number of miles or assets in a given tranche should not represent more than 5 percent of the total asset count or mileage count.</u> <p><u>For risks not related to physical assets, the rationale for the determination of Tranches, or for a utility's judgment that no Tranches are appropriate for a given Risk Event, will be presented in the utility's RAMP submission.</u></p> <p>For the purposes of the risk analysis, each element (i.e., asset or system) contained in the identified Tranche would be considered to have homogeneous risk profiles (i.e., considered to have the same LoRE and CoRE).</p>

Granularity of Tranches

Presenter: Joint IOUs

Summary of Procedural Background

- In 2019, the S-MAP Settlement Agreement (SA) was reached by parties after many months of negotiation and after extensive building of the record. The tranching requirement from the SA and the most recent Risk Based Decision (RDF) gave the utilities needed flexibility and specifically noted that tranching “will be based on how the risks and assets are managed by each utility, data availability and model maturity, and strive to achieve as deep a level of granularity as reasonably possible.”¹
- In the July 12, 2023 Workshop #1, Staff proposed the potential use of “quintiles of Likelihood of Risk Event (LoRE) and Consequence of Risk Event (CoRE)” to define tranches.
- On August 10, 2023, TURN proposed a two-pronged tranching minimum standard approach in their Opening Comments to Workshop #1.
- On Oct. 13, 2023, the Assigned Commissioner authorized an additional workshop on December 6th to discuss whether the Commission should give additional guidance regarding tranche granularity in the RDF.
- TURN submitted a modified tranching proposal on November 22nd

TURNs Proposal As Written is Still Unclear on How to Apply the Constraints

- Setting aside other concerns, it is not clear if TURN is proposing that *both* constraints must be met or just *one of the two*. It may not be mathematically, or even realistically feasible to meet both of these constraints for all risk types.
- TURN appears to implicitly acknowledge this in their proposal: “there may be some asset families where the granularity proposal would require each asset being treated separately and TURN believes that is the proper result in these circumstances.”
- It is unclear how this circumstance would be treated under TURN’s proposal. For -certain risks like Hydro Asset Failure if every asset/dam is treated separately, how -could both of TURNs minimum requirements be met?
- Unclear-exactly what is meant by ‘physical assets’ in TURN’s updated proposal. This would have to be agreed upon before any proposal can be considered for adoption.

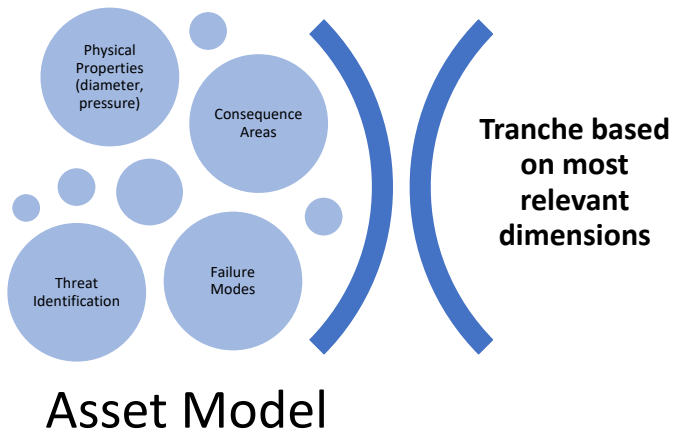
Importance of Having Risk Tranching Align with Current RDF Language and Reflect How IOUs Operate

- Arbitrarily mandating a division in a group of assets or a totality of risk, ignores: (a) how the IOUs manage assets and operate; (b) what the data availability is; and (c) the flexibility previously established by the SA and updated RDF regarding how tranches should be determined.
- The way in which projects or work is executed does not follow a tranche as established by TURN's proposal and, in fact, would create more confusion and less transparency since this is not how risk reduction efforts are managed or executed.
- Mandating the approach preferred by TURN is much more than simply provision of "more" information; it would instead essentially default the utilities to what TURN wants. Any utilization of any other approach presented in the alternative would in essence be subject to a rebuttable presumption on the part of the Commission that the "alternative" approach is not valid or useful in comparison to the "minimum" approach.

TURN's Proposal Imposes a Statistical Approach to Asset Risk Management

Statistical, expected value-based approaches should not supplant or consign away the use of physical/engineering-based approaches. They should be used to provide an overall picture, and/or to explain risk when underlying factors are not well understood or available.

Asset Risk is a Multi-Dimensional Problem ...



... but TURN Proposal Imposes a One-Dimensional View

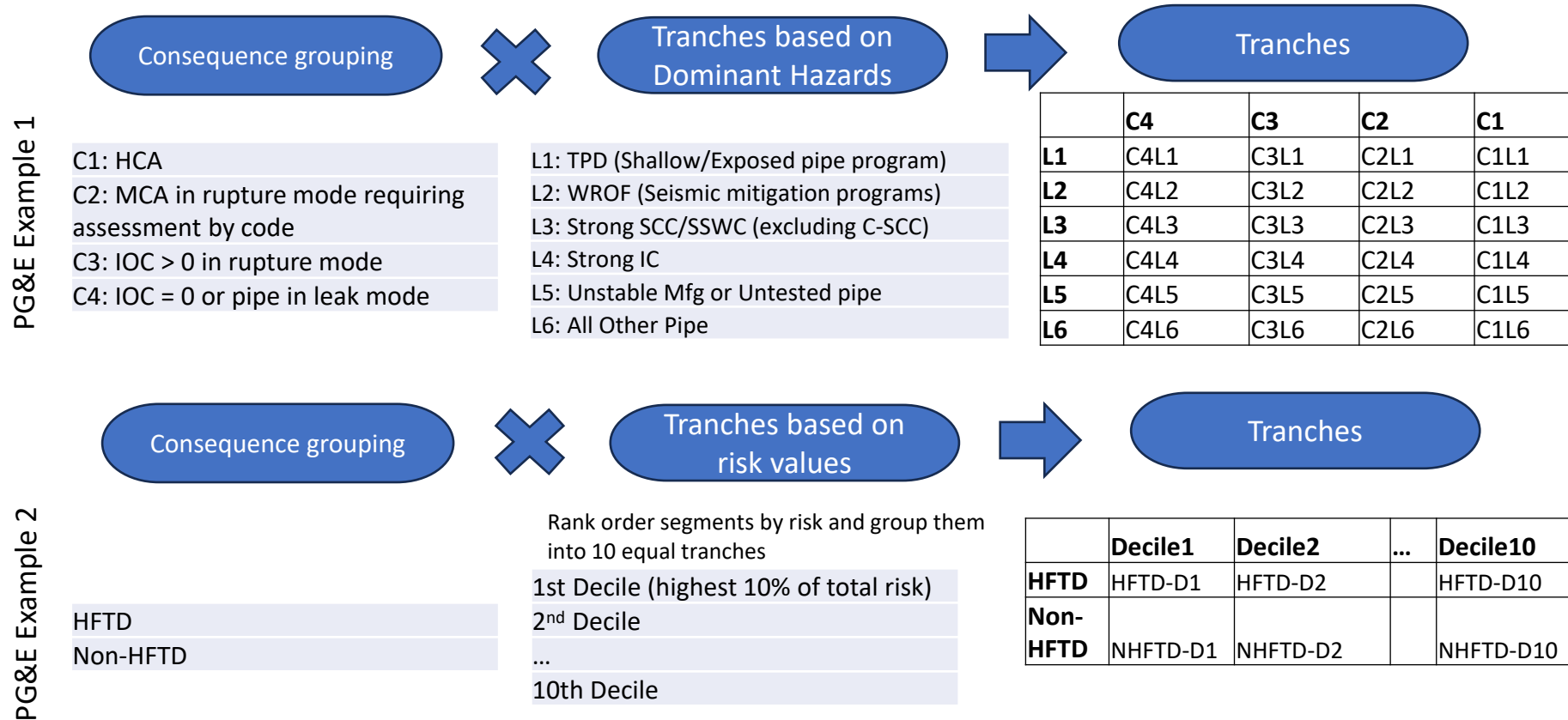


Asset #	LoRE	CoRE	\$ Risk
1001	L1001	C1001	R1001
3015	L3015	C3015	R3015
...
78	L78	C78	R78
2556	L2556	C2556	R2556
...

Tranche 1 (rows 1-3)
Tranche 2 (rows 4-6)

- Assumes LoRE and CoRE (expected consequence in \$) can be determined at the asset level.
- Does not consider physical constraints, properties and/or factors that may impact how individual assets are managed.
- Not Explanatory - even if the tranches contain assets with similar risk scores, risk profiles (e.g., dominating drivers & asset characteristics, factors that affect the consequences) could be significantly different between the assets in the same tranche.

Even if granular planning risk models are available with LoRE and CoRE at the segment /asset level, there are many ways that tranching could be done.



It is premature to prescribe a particular approach given the limited experience in assessing the usefulness of different approach across different types of assets and risks for the purpose of risk-informed decisions for the GRC period, which is 4-8 years out when preparing for RAMP.

Joint IOU Counter Proposal Summaries

While the Joint IOUs Believe the Current Guidance and Process is Sufficient, We Offer Two Other Potential Options for Consideration

Option 1: The IOUs Provide Tranching Approaches in the Pre-RAMP Workshops

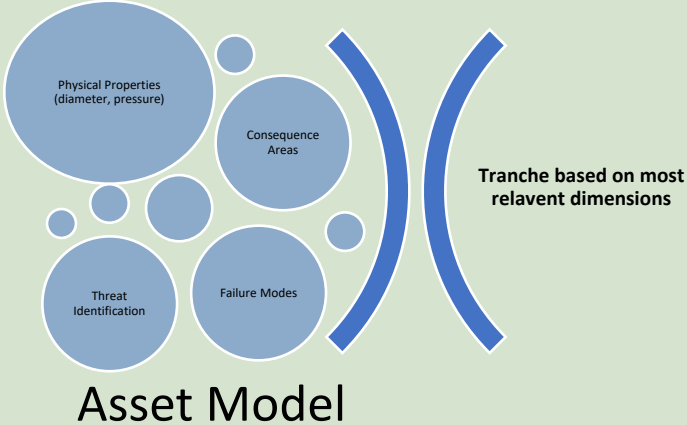
- Affords parties an early opportunity to review and provide recommendations tailored to individual RAMP risks.

Option 2: IOUs Describe how Asset-based Risk Model results map to Tranches

- IOUs will be required to explain how they manage risk in terms of the assets' physical properties, and how it is consistent with the RDF.

Joint IOU Counter Proposals

Option 2: Describe how Asset Models inform Tranches

Granular Asset Model Available	Granular Asset Model Not Available
<p>Describe the mapping between the detailed asset-level information (e.g., circuit segments) and model to tranches:</p> <ul style="list-style-type: none"> • Dimensions used • How the mapping supports, or could support, actionable controls and mitigation programs  <p>The diagram illustrates an 'Asset Model' composed of several interconnected components: 'Physical Properties (diameter, pressure)', 'Consequence Areas', 'Threat Identification', and 'Failure Modes'. These components are represented by circles of varying sizes. A large blue bracket on the right side of the model indicates that a 'Tranche based on most relevant dimensions' is derived from this information.</p>	<p>Describe:</p> <ul style="list-style-type: none"> • Dimensions used and why • How the mapping supports, or could support, actionable controls and mitigation programs

Joint IOU Counter Proposals

Option 2: Updated RDF Language

The Joint IOUs propose adding the underlined language below to maintain flexibility while requiring the IOUs to describe how granular models were translated to tranches.

No.	Element Name	Element Description and Requirements
14.	Definition of Risk Events and Tranches	<p>Detailed pre- and post-mitigation analysis of Mitigations will be performed for each risk selected for inclusion in the RAMP. The utility will endeavor to identify all asset groups or systems subject to the risk and each Risk Event associated with the risk. For example, if Steps 2A and 2B identify wildfires associated with utility facilities as a RAMP Risk Event, the utility will identify all Drivers that could cause a wildfire and each group of assets or systems that could be associated with the wildfire risk, such as overhead wires and transformers.</p> <p>For each Risk Event, the utility will subdivide the group of assets, or the system associated with the risk into Tranches. Risk reductions from Mitigations and Risk Spend Efficiencies will be determined at the Tranche level, which gives a more granular view of how Mitigations will reduce Risk.</p> <p>The determination of Tranches will be based on how the risks and assets are managed by each utility, data availability and model maturity, and strive to achieve as deep a level of granularity as reasonably possible. The rationale for the determination of Tranches, or for a utility’s judgment that no Tranches are appropriate for a given Risk Event, will be presented in the utility’s RAMP submission. <u>Notwithstanding the guidance above, each utility should demonstrate:</u></p> <ul style="list-style-type: none"> <u>If a risk is managed through granular, planning models (e.g., PG&E’s Wildfire Distribution Risk Model, Transmission Integrity Management Program - TIMP): how it maps the detailed asset-level information (e.g., circuit segments) to tranches, the dimensions involved (failure modes, asset type, consequence profile, etc.), and how the mapping supports, or could support, actionable controls and mitigation programs.</u> <u>If detailed planning models are not available, utilities will describe the dimensions involved (failure modes, consequence profiles), and how the chosen tranches support, or could be used to support, actionable controls and mitigation programs.</u> <p>For the purposes of the risk analysis, each element (i.e., asset or system) contained in the identified Tranche would be considered to have homogeneous risk profiles (i.e., considered to have the same LoRE and CoRE).</p>

Break

2:00 – 2:10 pm

Discussion

2:10 pm – 3:50 pm

Granularity of Tranches: TURN Proposal

- Greater granularity may provide for increased accuracy in risk assessment. What are the implications of greater granularity for the precision of risk models? Does greater granularity help decision-makers better understand the uncertainty in the models? If so, how? If not, why not?

Granularity of Tranches: TURN Proposal

- Why should the risk between tranches not be more than 5 percent? Why should the number of miles or assets in a given tranche not be more than 5 percent of the total number of assets or miles? What would be the implication if this number was 2 percent? What would be the implication if this number was 10 percent?
- What are the implications of applying a five percent approach to a large amount of low-risk overhead lines miles (as indicated in TURN's example regarding SDG&E, where the last 967 miles would yield 13-14 tranches)? Would this produce useful information? Should some other approach be considered?

Granularity of Tranches: Joint IOU Proposal 1

- A fundamental principle to risk assessment in Step 5 of the RDF requires the IOUs to “assess the uncertainty in the Attribute Levels by using expected value or percentiles, or by specifying well-defined probability distributions, from which expected values and tail values can be determined.” In other words, the IOUs are expected to take a statistics-based approach to modeling risks. What exactly are the physical/engineering-based approaches that TURN’s proposal would supposedly replace? Why would a statistics-based approach distort risk analysis?
- The mitigation work in SoCalGas’s Transmission Integrity Management (TIMP) program is not managed according to a percentage of assets in the system or percentage of risk of the system. How then are mitigation projects in the TIMP program executed and how is that work translated into a tranche?

Granularity of Tranches: Joint IOU Proposal 2

- Should the IOUs structure tranches that demonstrate the variations in risk across assets consistent with project level detail? If so, why? If not, why not?
- According to the “Ten Major Components of RAMP Filings Adopted by the Interim Decision” from D.18-12-014, Step 8 states that “For those business areas with less data, improve the collection of data and provide a timeframe for improvement.” If a risk is managed using a means other than detailed planning models, should the IOUs provide a timeline for improvement?
- With regard to the pre-filing workshop, the RDF in Step 2B Row 12 requires the IOUs to provide information about the RAMP at least 14 days in advance of the workshop. In order to properly evaluate the granularity of tranches, should this be extended to 30 days in advance?

CPUC Close and Next Steps

3:50 pm – 4:00 pm

Next Steps

1. Workshop Recording on Youtube (3-4 days)

<https://www.youtube.com/user/CaliforniaPUC>

2. Joint IOUs & TURN File Proposals (December 12)
3. Ruling with Questions for Party Comment (approx. December 15)
4. Workshop #6 Opening Comments (January 10)
5. Workshop #6 Reply Comments (January 17)

Thank you!

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