CPUC Workshop on R. 20-07-013: SMAP II Establishing A Utility Safety Framework

December 15th, 2020

Webex Online Meeting

California Public Utilities Commission

Workshop Logistics and Safety

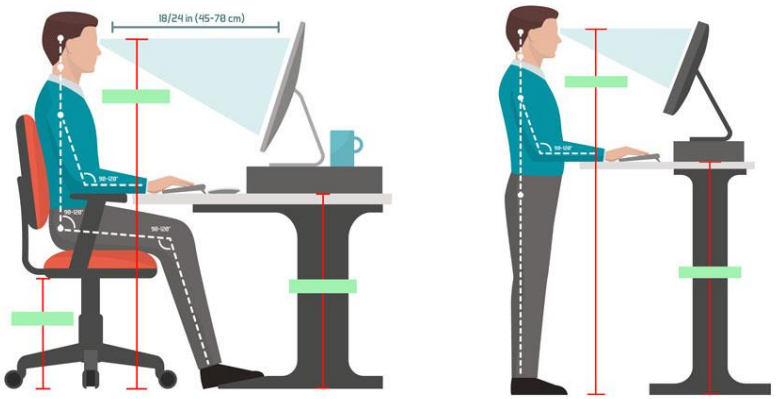
Online only

- Audio through computer or phone
  - Telephone: 800-857-1917
  - Participant Passcode: 7218384

- **This workshop is being recorded**

Safety

- Note surroundings and emergency exits
- Ergonomic Check
- COVID-19



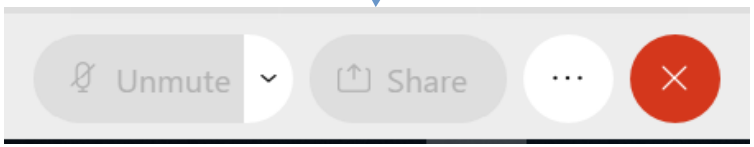
Question and Answer Sessions

- Question and Answer Sessions follow each panel
    - We will take Q&A from the chat or comments by the phone

- To listen or make comments by phone, dial 1-800-857-1917 and enter passcode 7218384. Once you have joined please press star one (“*1”) and an operator will place you in the queue in the order that you pressed star one

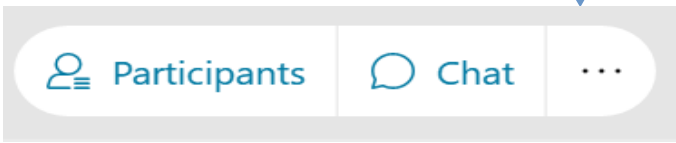
Webex Participant Guide

All attendees will be automatically muted and have video disabled



Click to see the participants

Click to see the Q&A and enter questions



Need tech help?

Call: 415-703-2598

Commissioner Opening Remarks

Introduction

Martin Kurtovich

Track 1: Clarifying RDF Technical Requirements

Mitigation and Controls

- Do the terms "mitigations" and "controls" need to be defined? Should "mitigations" and "controls" be treated in the RDF using the same methodology

PSPS and the Utility Risk Framework

- How should public safety power shutoff events and other utility activities with high customer impacts be treated in the RDF

Risk Modeling and Mitigation Priorities

- Can the Commission identify any guiding principles, best practices, aspirational characteristics and/or minimum requirements for developing an RDF MVAF?

Incorporating Mitigation into Framework

- How should the mitigation impact of data gathering (inspections and patrols) or foundational elements (technology tools) be estimated or measured in the RDF?

T&D Risk Modeling and Mitigation

- Should the Commission specify how transmission assets should be addressed in the RDF in a manner consistent with distribution assets?

Other related clarifications as needed

Workshop Agenda

1. Introduction – Marty Kurtovich, Safety Policy Division(10:00am-10:10am)

2. Opening Remarks – Commissioner Rechtschaffen(10:10am-10:20am)

3. The Development of Safety Mitigation Assessment Phase – Steve Haine, Safety Policy Division (10:20am-10:40am)

4. Intervenors' Perspectives on SMAP – TURN, MGRA, CalAdvocates (10:40am-11:40am)

5. Break (11:40am-11:45am)

6. Question and Answer Session – Marty Kurtovich, Safety Policy Division (11:45am-12:45pm)

7. Lunch Break (12:45pm-1: 30pm)

8. Utilities' Perspective on SMAP – Sempra PG&E, SCE (1:30pm-2:30pm)

9. Question and Answer Session – Marty Kurtovich, Safety Policy Division (2:30pm-3:30pm)

10. Break (3:30pm-3:35pm)

11. Summary and Next Steps for SMAP II OIR Schedule – Marty Kurtovich, Safety Policy Division (3:35pm-3:40pm)

California Public Utilities Commission

Safety Policy Division Presentation
R.20-07-013

Steven Haine, P.E.

Senior Utilities Engineer

Risk Assessment and Safety Analytics Section

December 15, 2020

History of Evolution of Risk-based Decision-making in Rate Case Proceedings

- 9/9/2010 - San Bruno gas explosion.

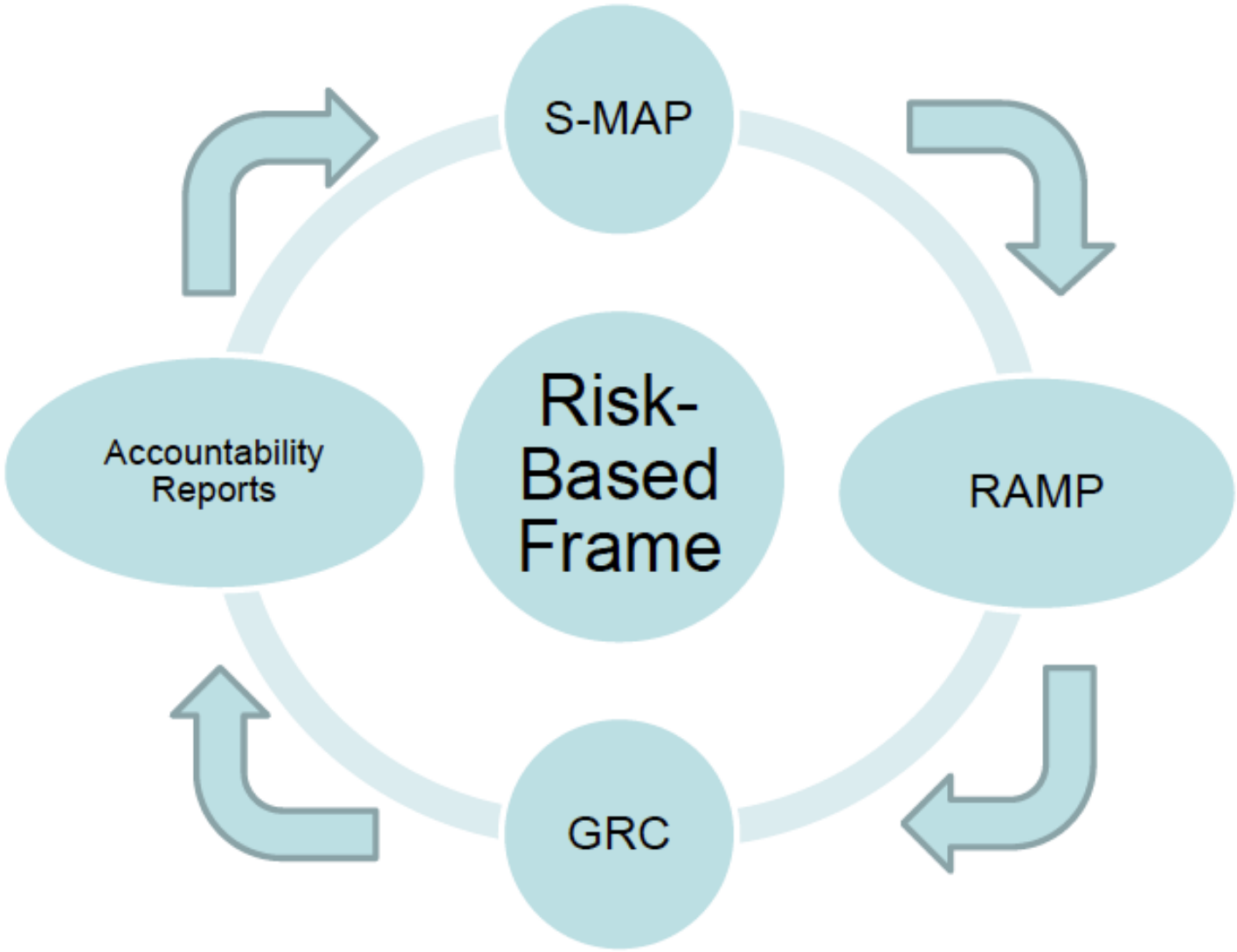
- 2/24/2011 – In response to San Bruno, Gas Safety OIR was opened (R.11-02-019).
  - One item in the OIR was to “Consider ways that this Commission can undertake a comprehensive **risk assessment** for all natural gas pipelines regulated by this Commission, and possibly for other industries that the Commission regulates.”

- 9/27/2011 – Risk Assessment Unit was formed.

- 3/5/2012 - Paul Clanon (then Executive Director) sent letter to PG&E requesting PG&E to "*perform and provide a risk assessment of its entire system … and a comparison to industry best practices.*" The letter further directed that PG&E should provide (in the GRC filing) a risk assessment of its physical system as well as a description of and a justification for the company's risk mitigation programs and policies.

- 11/2012 – PG&E filed GRC, incorporating quite rudimentary risk-based considerations to safety.

- 2013 - **Policy Planning Division (PPD) released a straw proposal** laying out the basic elements (or a mechanism) on how to incorporate risk-based decision-making into GRCs. It recommended a proceeding be opened to consider:
  1. **Safety Model Assessment Phase (S-MAP**) would consider the risk modeling approaches. The Commission would adopt a particular approach as the official approach.
  2. **Risk Assessment Mitigation Phase (RAMP)** would use that selected risk modeling approach to perform risk assessment of its top risks.
  3. **RAMP is to be filed a year before GRC will be filed.**


S-MAP
RAMP
GRC
Accountability Reports
Risk-Based Frame

- 11/14/2013 – R.13-11-006, Develop a Risk-Based Decision-Making Framework to Evaluate Safety and Reliability Improvements and Revise the General Rate Case Plan for Energy. This was the "**first Risk OIR**." It considered the recommended S-MAP/RAMP framework in the PPD straw proposal.
- **D.14-12-025 adopted the risk-based decision-making framework, consisting of S-MAP, RAMP** proceedings, and the filing of annual verification reports consisting of the Risk Mitigation Accountability Report and the Risk Spending Accountability Report for use by the large energy utilities, consisting of PG&E, SDG&E, SoCalGas, and SCE.
- According to D.14-12-025, **beginning on February 1, 2015, the risk-based decision-making framework shall apply to all future GRC application filings of PG&E, SDG&E, SoCalGas, and SCE**.

Details of 1st S-MAP

- May/2015 – All 4 large energy IOUs filed S-MAP applications. S-MAP proceeding **A.15-05-002 et al. was opened**.
- The **purpose of the S-MAP** was to allow the Commission and parties **to examine, understand, and comment on the models** that the energy utilities plan to use to prioritize and mitigate risks, and for the Commission to establish guidelines and standards for these models.
- The **end-product of each S-MAP** proceeding will be a Commission decision deciding whether a particular risk assessment approach or model that a utility is using, or a variant or alternative model, can be used as the basis for each energy utilities‘ RAMP filing in its respective GRC, i.e. **a uniform approach**.
- S-MAP is a triennial process.

Primary Problems with Pre-SMAP Utility Models

- Scores were not comparable across utilities.
- Indexing models producing relative risk scores using whole integer frequency and consequence scores based on SME selection.
- Very difficult to evaluate cost effectiveness based on risk reduction per dollar spent because of non-linear scales.
- Multi-attribute weights not selected based on any methodical process.
- Models were marked by weak transparency and questionable repeatability.

- Joint Intervenors introduced Joint Intervenors Approach (JIA) in the last workshop in Phase I of 1st S-MAP
- Joint Intervenors introduced Joint Intervenors Approach (JIA) in the last workshop in Phase I of S-MAP. JIA was based on Multi-Attribute Value Function concept:

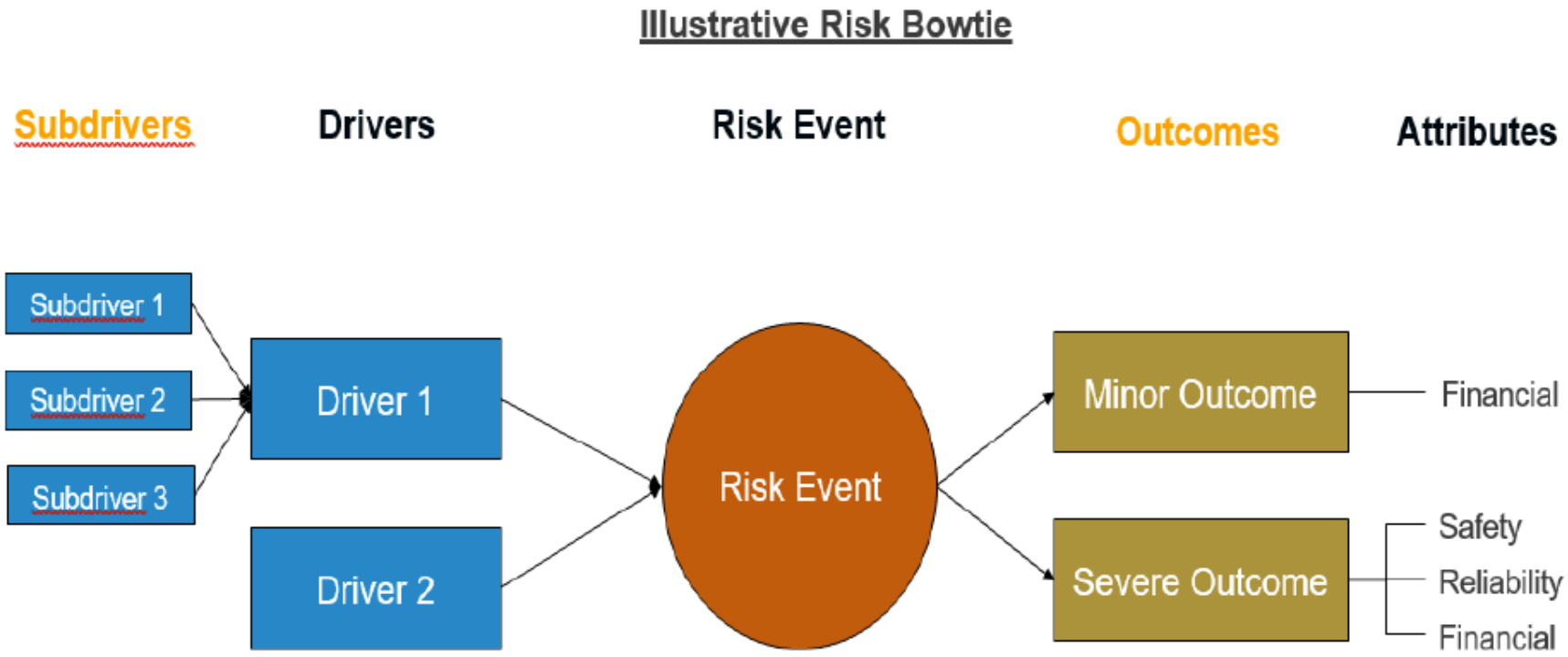
$$MAVF = L \times (W_1C_1 + W_2C_2 + W_3C_3 + \ldots)$$

- S-MAP Phase I decision D.16-08-018 rejected the utilities' individual approaches and instead selected the JIA on interim basis subject to a successful test drive of the JIA. Test drive began in Phase II.

- Following introduction of JIA, the Joint Utilities also introduced the Joint Utilities Approach (JUA) as a competing alternative to the JIA.
- During a workshop, Joint Intervenors and Joint Utilities representatives began to consider the possibility of a hybrid approach combining features of JIA and JUA.
- Parties reached settlement agreement on May 2, 2018. The proposed SA represents a compromise between the Joint Intervenors Approach (JIA) and Joint Utilities Approach (JUA) to risk assessment and mitigation resulting from extensive negotiations among the parties.
- D.18-12-014adopted S-MAP Settlement Agreement.

Risk = LoRE x CoRE

$$CoRE = W_1C_1 + W_2C_2 + W_3C_3 + \ldots$$

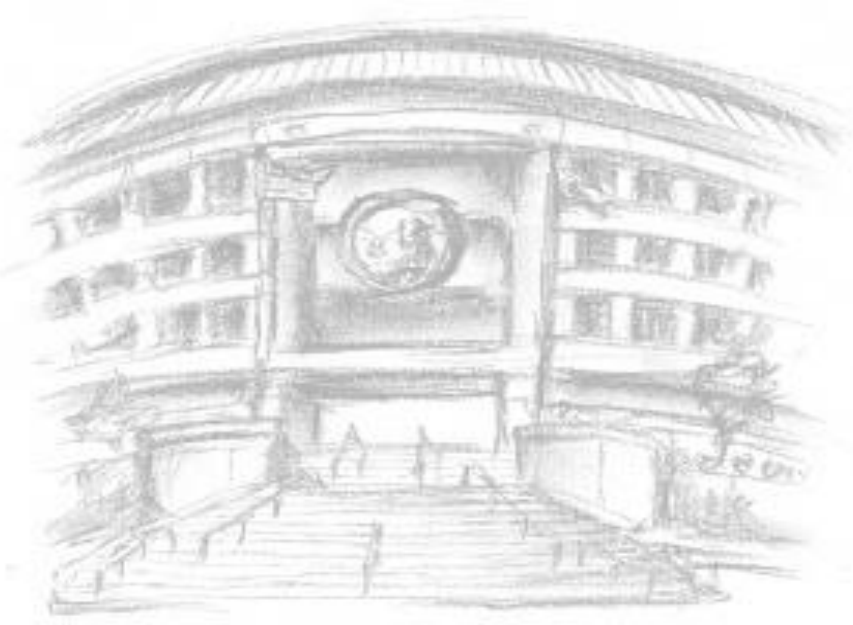


"2nd Risk OIR" or "SMAP 2.0"

- First S-MAP concluded in April/2019.
- There were longer term issues that needed to be addressed. For example, one longer term issue is the consideration of risk tolerance.
- 2nd Risk OIR (or "S-MAP 2.0") opened in July R.20-07-013.

Event	Date
Workshop on Track 1 issues and launch of Track 1 working groups	December 15, 2020
Workshop on Track 2 issues and launch of Track 2 working groups	December 2020 / January 2021
Workshop on Track 3 issues and launch of Track 3 working group	January /February 2021
Launch of Track 4 working group	2021
Additional workshops as needed	2021
Staff recommendations on Track 1 and Track 2 issues	Mid-2021
Decision on Track 1 and Track 2 issues	Q3-Q4 2021
Staff recommendations on Track 3 and Track 4 issues	Q3 - Q4 2021
Decision on Track 3 and Track 4 issues	Q4 2021/ Q1 2022
All Party Meeting or PHC on Phase II Issues	Q1 2022
Workshops and Working Groups on Phase II Issues, as needed	2022
Decision(s) on Phase II issues	By Q4 2022

Thank You!



Intervenor Panel

R.20-07-013
Track 1 Workshop

TURN Presentation

- Safe, reliable and affordable utility service requires that the correct work is done correctly.
  - The utility must appropriately pick, prioritize and scope projects.
  - Work must be completed correctly, the first time, with adequate quality assurance in place.

- PG&E Federal Monitor Report, October 16, 2020:
  - “In sum, based on inspections completed to date …, the Monitor team has not seen a meaningful improvement in the quality of work from late 2019 to 2020.”
  - “In sum, the Monitor team’s findings from our field observations and subsequent data analyses suggested that PG&E completed the majority of its 2019 EVM work in relatively low-risk portions of its high fire-threat districts (“HFTDs”). Put another way, as the Company pushed to meet its 2,455-mile EVM target for 2019, it did not prioritize wildfire risk reduction according to its risk model.”

Recommendations

- Control=Mitigation; already settled that “controls” must be scored
- Specify assets and mitigations with as much granularity as possible so that the LoRE and CoRE are the same for all assets in a tranche
- Working Group to address and/or further opportunity to comment on:
  - Best practices for development of the MAVF;
  - Common definitions of assets and mitigation;
  - The value of data gathering and inspection; and
  - Guidance on use of assumptions and estimates.

Q: Do the terms “mitigations” and “controls” need to be defined? Should “mitigations” and “controls” be evaluated in the RDF using the same methodology?

- Control=Mitigation
- Lexicon adopted in D.18-12-014 defines:
  - Control: Currently established measure that is modifying risk.
  - Mitigation: Measure or activity proposed or in process designed to reduce the impact/consequences and/or likelihood/probability of an event.
- Control is a subset of mitigation.
- All mitigations should be scored using the same methodology.

Q: In light of these authorities and ongoing Commission proceedings on PSPS events, how should PSPS events and other utility activities with high customer impacts be treated in the RDF?

- WSD-02 at 20: “RSE is not an appropriate tool for justifying the use of PSPS.”
- While PSPS may avoid a wildfire, any mitigation benefits come at an extraordinary cost to utility customers.
  - If the utility is unable to estimate the safety, reliability and economic impact to the customer it cannot be accurately scored.

Q: Should the Commission identify any guiding principles, best practices, aspirational characteristics and/or minimum requirements for developing an MAVF? What recommendations do you have in these areas?

- SMAP Settlement at A-2: "Attribute: an observable aspect of a risky situation that has value or reflects a utility objective….The attributes in an MAVF should cover the reasons that a utility would undertake risk mitigation activities."
- SMAP Settlement provides flexibility in how a utility defines its MAVF.
- Commission can and should identify certain attributes that should be included in a reasonable MAVF: safety, reliability, financial
  - Also: Environmental? Catastrophic?

Q: Should the Commission identify any guiding principles, best practices, aspirational characteristics and/or minimum requirements for developing an MAVF? What recommendations do you have in these areas?

- Natural Unit of the Attribute: ”the way the level of an attribute is measured or expressed.”
  - For example: Financial measured in dollars, safety in injuries and fatalities
- Range of the Natural Unit: “the smallest observable value of the Attribute is the low end of the range and the largest observable value is the high end of the range.”
  - High end of the range not necessarily defined by what has been observed but what could be observed
- Scaled Unit of the Attribute: “…the benefit achieved by changing the level of an Attribute in natural units is measured by the corresponding difference in scaled units.”
  - Certain scaling functions lead to more reasonable results.
- The Commission can and should consider potential units, ranges and scaling function and adopt best practices for each concept.

Q: Should and, if so, how can MAVF requirements be supplemented to enable more granular risk analysis and mitigation programs?

- More granularity enables better and more precise mitigation portfolios- not only the appropriate work but also the appropriate scope of work
- Settlement, Line 14: ”For each Risk Event, the utility will subdivide he group of assets or the system associated with the risk into tranches.... The determination of Tranches will…strive to achieve as deep a level of granularity as reasonably possible.”
- MAVF defines the Consequence of the Risk Event
  - The more attributes that are identified ➡ the more targeted the mitigations
- Granularity should also be a goal when determining the Likelihood of Risk Event

Q: Are utility modeling results comparable and consistent across Commission proceedings including the RAMP, GRC, and Wildfire Mitigation Plan proceedings (Rulemaking 18-10-007), rate case plan guidance and RSAR requirements? If not, should the Commission address this and, if so, how?

- Comparability aided by commonly defined assets and mitigations
- The utilities are not relying on similarly granular tranches
- The Commission can and should work with intervenors and utilities to develop common definitions of assets and mitigations

Q: How should the mitigation impact of data gathering (inspections and patrols) or foundational elements (technology tools) be estimated or measured in the RDF?

- The Commission can and should address the role of data gathering. In the interim, the Commission can and should establish guidelines for the development of and reliance on assumptions and estimates.
  - For each develop the information that must be provided as a foundation and to test the assumption/estimate.
- Asset condition is an important data point. Asset condition can provide information on the asset's behavior and help determine the failure rate for the condition. Asset condition and failure rate inform the best mitigation strategy.

Q: Should the Commission specify how transmission assets should be addressed in the RDF in a manner consistent with distribution assets?

- All utility assets should be considered in order to develop the asset management strategy that reflects the utility system.

Mussey Grade Road Alliance
S-MAP II Phase 1 Track 1 Workshop

December 15, 2020

Joseph W. Mitchell, Ph. D
M-bar Technologies and Consulting, LLC
jwmitchell@mbartek.com

Prepared by M-bar Technologies and Consulting

Mussey Grade Road Alliance

- Formed in 1999 to preserve environment & quality of life for area residents in Ramona, CA
- Intervening at CPUC since 2006
- Numerous contributions to the utility wildfire issue:
  - Raised utility wildfire as issue requiring EIR prior to 2007 fires
  - Proposed & successfully supported collection of utility ignition data
  - Ditto for statewide utility-specific fire hazard maps
  - And for utility wildfire plans, precursor to WMPs.
  - Cost/benefit for power shutoff
- Participants in the original S-MAP Proceeding (“test-drives”)
- Currently involved in PG&E & SDG&E RAMP proceedings

December 15, 2020 Topics

a) Definition of “Mitigation” and “Controls”

b) **How to treat Power Shutoff**

c) **Risk Analytics and Modeling**

- **MAVF best practices**
- **Granularity**
- **Consistency**

d) Miscellaneous

MAVF – Lessons

Multi-Attribute Value Function (MAVF)

A tool for combining all potential consequences of the occurrence of a risk event, and creates a single measurement of value.

- Experience
  - PG&E RAMP (underway)
  - SDG&E RAMP (Started & re-started)
  - Wildfire Mitigation Plans
- Findings
  - Finer tranches needed
  - Weightings have consequences
  - Use proper statistics
  - Risk score standards to allow utility comparisons

MAVF – Lesson 1: Use Finer Tranches

Tranches = Equivalent Risk BUT

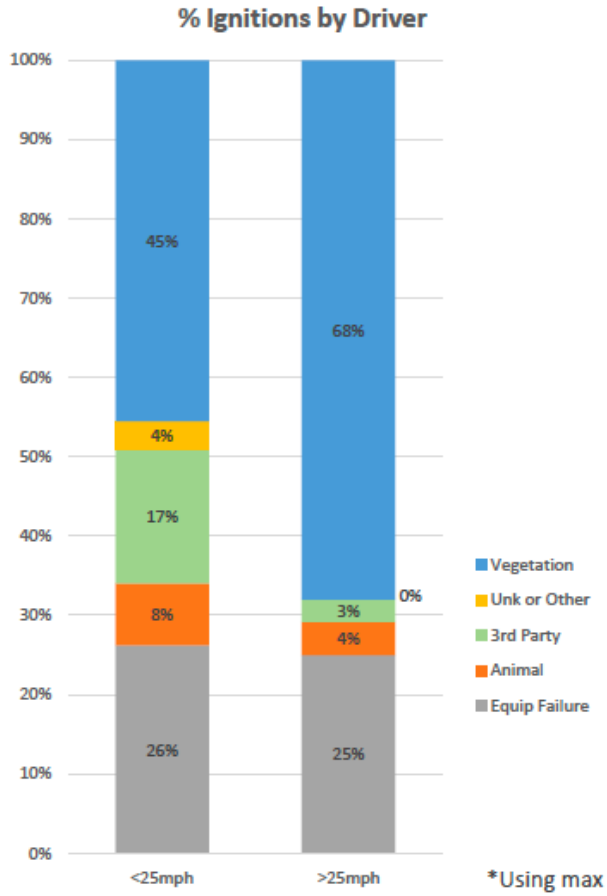
Tranches should be **ACTIONABLE**

- Allows prioritization, or better
- Differentiates between mitigations, i.e – High wind geographic areas

PG&E Wind Scenario

Example:
Importance of external agent contributions (3rd party, animals, balloons,vehicles) is reduced in high-wind tranches.

Wind Dependency for Ignition drivers.



- Vegetation drivers show higher wind dependency as expected.

  higher proportion of vegetation-driven ignitions when max wind gust speed is > 25mph.

- 3rd Party and animal drivers show low wind dependency as expected.

- The wind dependency of equipment failure driver is higher is lower than vegetation-driver.

  Disputed!

  Prob(>25 mph| HFTD-Dist ignitions of Vegetation Driver) = 16%
  Prob(>25 mph| HFTD-Dist ignitions of Equipment Failure Driver) = 11%

*Using max wind gust speed within +/- 12 hours of ignition

MAVF – Lesson 2: Weights and Scales are Arbitrary

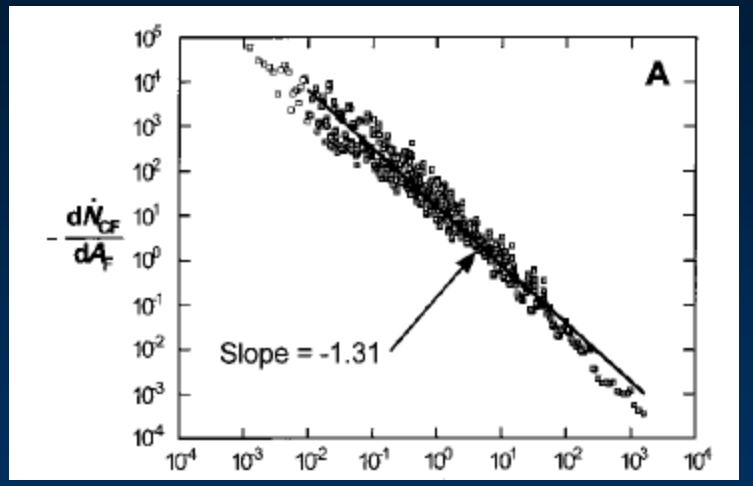
- Easy to “tune” desired result by setting maximum scales (ex. Financial vs. Safety). Needs to be closely monitored to ensure public good. (PG&E MAVF alternatives)
- Setting financial vs. safety weighting and scale determines Statistical Value of Life. Make sure it is reasonable. ($100 M vs $10 M)
- Increasing safety weight decreases relative importance of catastrophic wildfires. Why? Wildfires are ***expensive*** (high financial to fatality ratio).
- ***SMAP2 should determine standards.***

MAVF – Lesson 3: Use Correct Statistics

- Limitations of Historical Data:
  - Data size limits tranches (statistics of small numbers)
  - Short time window misses important historical events (2015-2019 history misses 2007 fires, for instance)
  - ***Supplement with theory, modeling, SME.***
- Use Correct Statistical Distribution for the Job
  - **Frequency:** Not all risk events are random in time (Poisson). Example: Wildfire ignitions highly correlated to external driver events. Using random distribution can to significant underestimation of risk.
  - **Consequence:** estimates should be based on fit of data using appropriate statistical function (power law for wildfires) and any additional physical constraints.

Lesson 3A: More on Extreme Events

- Wildfires show power law statistics.



- Cumulative consequences driven by extreme events.
- Do not cap the maximum losses (consequence) or risk scores LoRE X CoRE. Allow extreme events into the sample, even if they overwhelm it.
- Prefer mitigations that address catastrophic events. "*do not push outliers under the rug, rather build everything around them*" – Taleb 2020

Lesson 3B – Use Valid Risk Data

Not ignition (after 2018)!

PSPS bias:

No ignition & outage data taken during high danger periods, so we don't know their characteristics

Peril-Sensitive Sunglasses

Alternatives:

- PSPS Damage Reports
- Outages (high-wind, no RFW)
- Ignition used for outage -> ignition probability (carefully!!!)

Lesson 4 : Consistency of Risk Models

Table 4 – Comparisons of Risk and RSE Across Utilities[76]

Initiative Area	SDG&E		SCE		PG&E	
	Risk	RSE	Risk	RSE	Risk	RSE
Hardening	0.0158	22.5	0.2	9.1	5791	4.12
Covered Conductor	0.0042	20.7	41.6	23.4		
Undergrounding	0.0518	21.6	0.3	4.8		
Tree Trimming / EVM	0.5	122.5	3.4	30.4	202	0.15
PSPS	0.5	118	8.3	56.3	12100	26

Vary by orders of magnitude

Normalized

Normalize to hardening

Different relative RSEs

Hardening	1.00	1.00	1.00	1.00	1.00	1.00
Covered Conductor	0.27	0.92	208.00	2.57		
Undergrounding	3.28	0.96	1.50	0.53		
Tree Trimming / EVM	31.65	5.44	17.00	3.34	0.03	0.04
PSPS	31.65	5.24	41.50	6.19	2.09	6.31

Why IOUs ♥ PSPS

Commission needs standards for risk metrics

PSPS and the RDF

- MGRA
  - Original proponent of cost/benefit in A.08-12-021
- WSD:
  - Do not use RSEs for PSPS
  - Must contain customer harm
- Intervenors
  - Laundry list of possible negative impacts
  - Utilities call these “secondary”
- MAVF
  - Surprise – Reliability + Financial can yield cost / benefit analysis

PG&E Example: Fall 2019

- PG&E estimates PSPS risk reduction of 43k units (avoided wildfires)
- PG&E financial impact of shutoff set to 25k units
- Comparison of financial to shutoff in dollars implies $6B in impacts from PSPS
- This implies estimated wildfire losses of
  (43k/25k) X $6B = $10 B if no PSPS

Note: There is no evidence this is actually correct!

PSPS – Dangers on Both Ends

PSPS Hazards
(w. alleged examples)

- Economic Losses
- At-risk Individuals
- Loss of Communications (San Anselmo house fire fatality)
- Generator fires (Thief fire)
- Cooking fires (Tick fire)
- Auto accidents (PG&E claims)

Wildfires Before/During/After PSPS
(w. alleged electrical involvement)

Fire	Date	Utility
Camp	November 8, 2018	PG&E
Kincade	October 23, 2019	PG&E
Zogg	September 27, 2020	PG&E
Silverado	October 26, 2020	SCE
Cornell	December 7, 2020	SCE

The Commission Should Lead PSPS Discussion

- IOU estimates take into account no “secondary impacts”: generator fires, medical impacts, safety & evacuation.
- Reliability vs. Safety vs. Financial are arbitrary.
- Utilities have counterincentive to do this properly. PG&E claims no liability from shutoff (Rule 14).
- Commission must take lead in setting cost/benefit and risk methodology for PSPS

PSPS Proposal

- Commission determines whether shut-off or SMAP proceeding is correct venue.
- PSPS risk triage: economic, potential catastrophic, or negligible.
- Obtain a consultant, ***but***
  - Must have capabilities on both wildfire and risk side.
  - Must work closely with Commission, stakeholders, WSD, utilities.
  - *This is hard. Many ill-informed opinions out there.*
- Quantify PSPS risks in same units used for wildfire.
- Incorporate into RDF. Include risks from PSPS and mitigation for PSPS.

Thank you

Joseph W. Mitchell, Ph. D
M-bar Technologies and Consulting, LLC
jwmitchell@mbartek.com

Prepared by M-bar Technologies and Consulting

R.20-07-013
Risk-based Decision-making Framework (RDF)
Rulemaking

Phase I Track 1 Workshop: "Clarifying RDF Technical Requirements"

Public Advocates Office
December 15, 2020

Workshop Agenda Categories

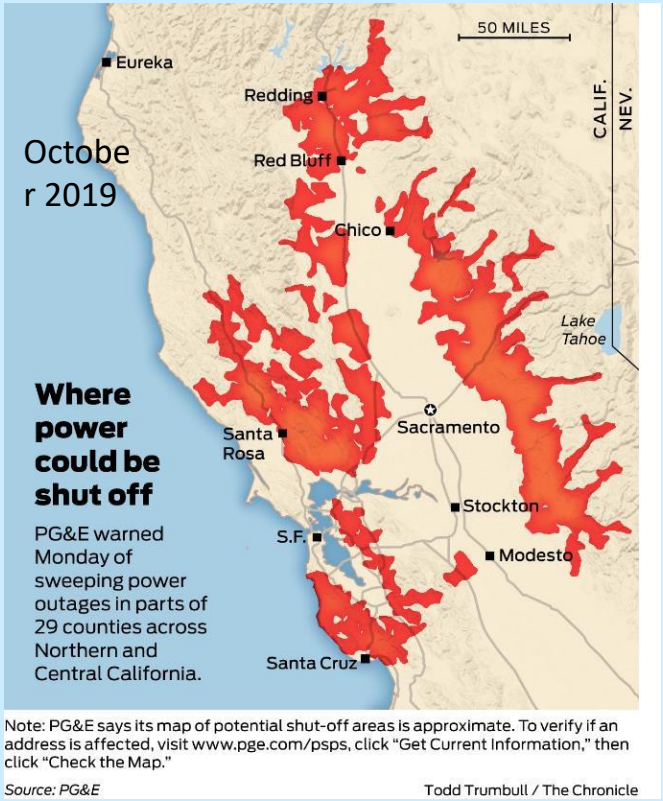
1. "Mitigations" vs. "Controls"
2. Public Safety Power Shutoff (PSPS) Events
3. Utility Safety Risk Analytics and Modeling:
    - A. Guiding principles and best practices
    - B. Granularity of risk analysis and mitigation programs
    - C. Utility modeling/analysis across different Commission proceedings
4. Miscellaneous
    - A. Additional technical clarifications: 'direct' vs 'indirect' impacts
    - B. Mitigation impacts of inspections, monitoring, technology…
    - C. Transmission vs. distribution

1. "Mitigations" vs. "Controls"

Cal Advocates suggests that parties consider if:

- The term "control(s)" should be replaced with the term "Existing Mitigation(s)"
- The term "mitigation(s)" should be replaced with "Proposed Mitigation(s)"

2. Public Safety Power Shutoff (PSPS) Events



Note: PG&E says its map of potential shut-off areas is approximate. To verify if an address is affected, visit www.pge.com/psps, click "Get Current Information," then click "Check the Map."

Source: PG&E Todd Trumbull / The Chronicle

Financial and Safety Impacts of PSPS Events on Customers

Dr. Wara examined financial impacts of PG&E 2019 PSPS events:
"My best estimate, using the Interruption Cost Estimator (ICE) tool developed by Lawrence Berkeley Laboratory (LBL) indicates that Pacific Gas & Electric (PG&E) PSPS events in 2019 **cost customers more than $10 billion . . ."**

Hearings before U.S. Senate Committee on Energy & Natural Resources, Full Committee Hearing to Examine the Impacts of Wildfire on Electric Grid Reliability (Dec. 19, 2019), testimony of Dr. Michael Wara, Director, Climate and Energy Policy Program, Senior Research Scholar, Woods Institute for the Environment, Stanford University, available at https://www.energy.senate.gov/hearings/2019/12/full-committee-hearing-to-examine-the-impacts-of-wildfire-on-electric-grid-reliability

<< Image taken from: Cabanatuan, Morris, and Trumbull, *San Francisco Chronicle, PG&E releases list of California cities, counties on power shut-off watch: Here's what you need to know* (Oct. 8, 2019), https://www.sfchronicle.com/california-wildfires/article/PG-E-issues-unprecedented-power-shutoff-watch-for-14498454.php

2. Public Safety Power Shutoff (PSPS) Events

PG&E RAMP Risk Scores

			2023 Baseline Score	
Rank	LOB	Safety Risks	Safety Risk Score	Multi-Attribute Risk Score
1	EO	Wildfire	9,856	25,127
2	SHED	Third Party Safety Incident	887	944
3	GO	Loss of Containment on Gas Transmission Pipeline	128	281
4	SHED	Contractor Safety Incident	94	94
5	SHED	Employee Safety Incident	86	90
6	GO	Loss of Containment on Gas Distribution Main or Service	72	99
7	SS	Real Estate and Facilities Failure	69	97
8	PGEN	Large Uncontrolled Water Release (Dam Failure)	41	70
9	EO	Failure of Electric Distribution Overhead Assets	18	525
10	SHED	Motor Vehicle Safety Incident	16	17
11	EO	Failure of Electric Distribution Network Assets	6	7
12	GO	Large Overpressure Event Downstream of Gas M&C Facility	5	13

PSPS as a RAMP Risk is at least 8515?

Utilities should evaluate PSPS events as a RAMP risk

In PG&E's 2020 RAMP, PG&E assessed that PSPS reduced its wildfire risk score by 14,560.
However, the *net* risk reduction was only 6,046 as PG&E assessed that PSPS ***increased*** the reliability risk score by 8515.*

This indicates that had PSPS been evaluated separately as a RAMP risk to the public, it would likely have ranked **2nd only to wildfires**.

Wildfire and PSPS risks dwarf all of PG&E's other top risks.

*PG&E, *Data Request response* (Nov. 17, 2020), RAMP-2020_DR_CalAdvocates_003-Q01-02.

2. Public Safety Power Shutoff (PSPS) Events

PSPS Impacts on Customers

- In evaluating PSPS as a RAMP risk, utilities must be required to consider all safety, reliability, and financial impacts of PSPS events.
- This will drive utilities to prioritize and implement mitigation programs to reduce utility PSPS use and the resulting impacts on customers.

Assessing the True Impacts of PSPS

- Customer outage minutes should not be used as a surrogate for measuring true PSPS event impacts.
- Outage duration data should be assessed granularly, rather than in aggregate. Aggregation conceals the full impacts of long-term outages on pockets of customers.

Targeting Mitigations

- Mitigations should be granularly prioritized and targeted (9/23/2020 WSAB Meeting on 2019 PSPS Lessons):
  - Auburn City Hall remained powered, while the adjacent Police Department lost power.
  - By hardening just 0.6 miles of overhead line, about 20,000 customers in northeast Santa Rosa who experience repeat PSPS events, could remain energized through all the PSPS events.

3. Utility Safety Risk Analytics and Modeling

A. Guiding principles and best practices

1. Utilities should incorporate Failure Mode Effects Analysis (FMEA) to identify risks.
2. Utilities should incorporate Safety Management System (SMS) programs as mitigation programs. (QC, QA, Management of Change, Corrective Action Programs,…)
3. Utilities should report mitigation program progress, context, cost, and effectiveness.

B. Granularity of risk analysis and mitigation programs

Both risk analysis and mitigation programs require detailed granularity. This was discussed in depth recently in the CPUC's Safety Policy Division (SPD) November 2020 report and workshop on PG&Es' 2020 RAMP.

C. Utility Modeling/Analysis across different Commission proceedings

Modeling results and data used in different proceedings should be expanded, but not reduced. For example, Wildfire Mitigation Plans (WMPs) require far greater detailed data than that used in Risk Spend Accountability Reports (RSARs). This data is critical. Other proceedings may incorporate this data. WMP data should NOT be reduced. Both risk analysis and mitigation programs require greater detailed granular data.

4. Miscellaneous

A. Additional Technical Clarifications: 'Direct' vs 'Indirect' Impacts

- All impacts, whether arbitrarily characterized or labeled as 'direct' or 'indirect', are impacts to the public.
- A current lack of data, limited data, or utility failure to collect data, must not be excused when utilities fail to analyze the true and real impacts of risks to the public.
- ALL impacts on customers should be evaluated to then prioritize mitigations to reduce and mitigate those impacts. Any shortfall in data should temporarily be filled with subject matter expert (SME) estimates.

B. Mitigation Impacts of inspections, monitoring, technology…

- Core mitigation programs include: Inspection programs, monitoring programs, and new technology.
- Safety and operational metrics can capture the effectiveness and performance of these programs.
  - Example metrics include:
    - Number of Repeat Findings.
    - Inspection and Maintenance Backlogs.
    - Effectiveness of Corrective Actions.

4. Miscellaneous

C. Transmission vs. Distribution

- The Commission and utilities should:
  - Leverage what is learned from risk management of distribution assets.
  - Identify unique attributes and risks of transmission assets.
  - Identify risks and mitigation programs specific to transmission assets, such as:
    - cascading outages;
    - remedial action schemes;
    - greater clearance requirements; and
    - generation tie-ins.

Thank you

Contact: Chris Parkes
California Public Utilities Commission
Public Advocates Office | Program & Project Supervisor |Safety Branch, Financial Impacts Section
christopher.parkes@cpuc.ca.gov
415-703-1975

5 Minute Break

Question and Answer Session

Lunch Break

Workshop will resume at 1:30pm

Utility Panel

CPUC Order Instituting Rulemaking
To
Further Develop a Risk-Based Decision-Making Framework
for
Electric and Gas Utilities
(Risk OIR, R.20-07-013)

Clarifying Risk-Based Decision-Making Framework Technical Requirements

Workshop #1: December 15, 2020

Agenda

Objective: Address any of the key topics in Phase 1, Track 1 of the Risk OIR that were specified in the Scoping Memo.

Risk OIR: (R.20-07-013)
Workshop #1: Phase 1, Track 1 Issues

Slide	Discussion
3	Clarifications on Settlement Agreement
5	Category 1: Mitigations and Controls
8	Category 2: Public Safety Power Shutoff (PSPS)
10	Category 3: Risk Analytics & Modeling
13	Other Related Clarifications

12/15 S-MAP OIR Workshop Topics

S-MAP I

2020 – 2022 RAMP cycle

PG&E 2020
SCG / SDG&E 2021
SCE 2022

S-MAP II

2024 – 2026 RAMP cycle

PG&E 2024
SCG / SDG&E 2025
SCE 2026

12/15 S-MAP OIR Workshop Topics

- Clarify Current Settlement Agreement
  - Review language and terminology in Settlement Agreement to ensure consistent and appropriate RAMP reports.
- Commission recommendations from previous RAMP reports
  - Topics that apply to 2020-2022 RAMP cycle, but are in addition to Settlement Agreement requirements.
- Modifications to the Risk-Based Decision-Making Framework (RDF) for future RAMP reports
  - Topics related to the 2024-2026 RAMP cycle. Application of lessons learned and further workshop-style discussions on how to continually improve risk proceedings.

Category 1: Mitigations and Controls

Clarify Settlement Agreement

- Key Issues:
- Do the terms “mitigations” and “controls” need to be defined?
- Should “mitigations” and “controls” be treated in the OIR using the same methodology?

Clarify Settlement Agreement

Mitigations and Controls: As currently understood

In the Decision adopting the S-MAP Settlement Agreement, the terms “Mitigation” and “Control” were defined as follows:

- Mitigation: Measure or activity proposed or in process designed to reduce the impact/consequences or likelihood/probability of an event.
- Control: Currently established measure that is modifying risk.

In PG&E’s 2020 RAMP filing, the term “Foundational” was introduced as follows:

- Foundational: Programs that support multiple mitigations that reduce risk, but do not reduce risk themselves.

Clarify Settlement Agreement

Do the terms “mitigations” and “controls” need to be defined?

SoCalGas and SDG&E propose revisions to two existing terms in the S-MAP Lexicon:

- Mitigation, Control[1]: Measure or activity designed to reduce the impact/consequences or likelihood/probability of an event (for current and future activities).

[1]The terms “mitigation” and “control” can be utilized interchangeably

SoCalGas and SDG&E also propose the inclusion of a new category/term:

- Foundational: Programs that support multiple mitigations, but do not reduce risk themselves.

Category 2: Public Safety Power Shutoff (PSPS)

- Key Issue:
- How should PSPS events and other utility activities with high customer impacts be treated in the RDF?

How should PSPS events and other utility activities with high customer impacts be treated in the RDF?

- At their discretion, SDG&E will utilize risk-based information to determine whether a PSPS is appropriate to mitigate wildfire risk.
  - Risk-based information that is considered in real-time include: wildfire risk (e.g. environmental conditions present, fire behavior modeling) and customer impacts.

- SDG&E supports the process of considering customer impacts in the MAVF for PSPS.
  - Avoided customer impacts should also be considered in calculating the efficacy of mitigations for PSPS impacts.

Category 3: Risk Analytics and Modeling

- Key Issues:
- Should the Commission identify any guiding principles, best practices, aspirational characteristics and/or minimum requirements for developing an MAVF?
- Should, and if so, how can MAVF requirements be supplemented to enable more granular risk analysis and mitigation programs?
- Are utility modeling results comparable and consistent across Commission proceedings including the RAMP, GRC, Wildfire Mitigation Plan proceedings (Rulemaking 18-10-007), rate case plan guidance, and RSAR requirements? If not, should the Commission address this, and if so, how?

Utility Safety Risk Analytics and Modeling (1 of 2)

- Should the Commission identify any guiding principles, best practices, aspirational characteristics, and/or minimum requirements for developing a MAVF?
  - SoCalGas and SDG&E recommend that this question be explored in detail in Phase 2 of this proceeding. Policies involving changes to risk analytics and modeling should be considered in the context of the entire risk-informed framework, which is subject to change due to stakeholder input into Phase 2.

- Should, and if so, how can MAVF requirements be supplemented to enable more granular risk analysis and mitigation programs?
  - See above response.

Utility Safety Risk Analytics and Modeling (2 of 2)

- Are utility modeling results comparable and consistent across Commission proceedings?
  - As appropriate, SoCalGas and SDG&E will seek to consistently apply its risk modeling across filings, explaining where changes have occurred and the reasons for such changes.
  - SoCalGas's and SDG&E's risk modeling efforts are continually evolving. It is likely that certain changes will cause newer versions of risk modeling to appear "inconsistent" with older versions.
  - With the RAMP, GRC, and WMP (as well as associated after-filing reports), each with separate filing dates, it will be difficult to keep risk modeling consistent across all proceedings while applying updated risk modeling approaches as they are developed.

Other Related Clarifications

- How should the mitigation impact of data gathering (inspections and patrols) or foundational elements (technology tools) be estimated or measured in the RDF?
  - SoCalGas and SDG&E believe there are situations where foundational elements are treated in a different manner than risk reducing activities.
  - SoCalGas and SDG&E recommend that this question be explored in detail in Phase 2 of this proceeding.

- Should the Commission specify how transmission assets should be addressed in the RDF in a manner consistent with distribution assets?
  - SoCalGas and SDG&E recommend that this question be explored in detail in Phase 2 of this proceeding.

CPUC Order Instituting Rulemaking to Further Develop a Risk-Based Decision-Making Framework for Electric and Gas Utilities (OIR, R.20-07-013)

Clarifying Risk-Based Decision-Making Framework Technical Requirements

Workshop #1: December 15, 2020

Together, Building a Better California

Agenda

Objective

An opportunity to address any of the questions as presented in the CPUC's guidance for this workshop. This includes: Mitigations and Controls; PSPS; Utility Safety Risk Analytics and Modeling; Miscellaneous;

Risk OIR: (R.20-07-013) Workshop #1 for Phase 1, Track 1

Category	Discussion
1	Mitigations and Controls
2	Public Safety Power Shutoff (PSPS)
3	Risk Analytics & Modeling

Category 1: Mitigations and Controls As Currently Understood

In the S-MAP, the terms "Mitigation" and "Control" were defined as follows:

- **Mitigation:** Measure or activity proposed or in process designed to reduce the impact/consequences or likelihood/probability of an event.
- **Control:** Currently established measure that is modifying risk

In PG&E's 2020 RAMP filing, the term "Foundational" was introduced as follows:

- **Foundational:** Programs that support multiple mitigations that reduce risk, but do not reduce risk themselves.

Category 1: Mitigations and Controls
Do the terms "mitigations" and "controls" need to be defined?

PG&E sees little difference regarding the treatment of Mitigations versus Controls.

Based on this observation, PG&E proposes revisions to two existing terms in the S-MAP Lexicon:

- **Mitigation:** Measure or activity designed to reduce the impact/consequences or likelihood/probability of an event. Includes both current and future activities.

- **Control:** See Mitigation.

… and the inclusion of a new category/term:

- **Foundational:** Programs that support multiple mitigations but do not reduce risk themselves.

Category 1: Mitigations and Controls
Should "mitigations" and "controls" be evaluated in the RDF using the same methodology?

- PG&E believes mitigations and controls should be evaluated in the RDF using the same methodology.
- Calculating RSEs for mitigations and controls may be difficult due to a lack of data or basis from which to determine the efficacy of the mitigation/control.
  - The SA allows use of SME judgment, which is a form of qualitative assessment in those instances where data availability is an issue.
- PG&E requests that the Commission consider in Phase 1, Track 1 a framework/guidelines for qualitative assessments and assumptions, together with ways to represent uncertainty in estimates (e.g., confidence intervals).

Category 1: Mitigations and Controls
Should “mitigations” and “controls” be evaluated in the RDF using the same methodology?

- PG&E believes Foundational items should NOT be evaluated based on an RSE or similar measure.
- Foundational items should be evaluated based on a prudency standard.

Category 1: Mitigations and Controls Foundational Examples from PG&E RAMP

Activity	Description
Enhance Technical Information Library and Guidance Document Library	Improves ease of use and ability to search for documents from a mobile device. Includes the following updates to the TIL and GDL: Improve ease of use through developing a standard, mobile friendly, format for new documents and reformatting of existing documents. Enhance search engine/function with key words and task names. Create the data and capability to link a specific task from the work scheduling system to the appropriate procedure or job aid.
Electric and Power Generation Review and Update Expected Job Functions	Increases detail of the specific qualifications and skills required for Electric and Power Gen tasks to the level that Gas and Nuclear currently have. Will enhance the completeness of qualification documentation for jobs classifications, specific positions and tasks performed.

Category 2: PSPS
How should PSPS events and other utility activities with high customer impacts be treated in the RDF?

The Commission has ruled on several aspects on the use and treatment of PSPS as a mitigation:

- PSPS events "must be deployed by the utilities as a measure of last resort."
- "Electrical corporations shall not rely on [Risk-Spend Efficiency] RSE calculations as a tool to justify the use of PSPS."

PG&E proposes the following for the PSPS Modeling Framework:

- PG&E supports a stakeholder process to determine how to represent indirect customer impacts in the MAVF for PSPS.
- Avoided customer impacts (direct and indirect) should also be considered in calculating the efficacy of mitigations for PSPS impacts.

Category 3: Utility Safety Risk Analytics and Modeling

PG&E recommends the following questions be explored in detail in Phase 2 of this proceeding:

- Should the Commission identify any guiding principles, best practices, aspirational characteristics and/or minimum requirements for developing an MAVF?
- Should and, if so, how can MAVF requirements be supplemented to enable more granular risk analysis and mitigation programs?

Regarding the consistency of utility modeling across Commission proceedings:

- PG&E takes measures to ensure consistency of its modeling results in its filings, explaining where changes have occurred, and the reasons for such changes.
- PG&E's risk modeling efforts are evolving to include more data-driven results, resulting in higher confidence in the representation of our risks.
- PG&E recognizes the need for additional work to create and gather the data necessary to fully characterize our risks based on objective, data-based information.

SCE Risk OIR Workshop – Phase 1 Track 1 Presentation

Clarifying Technical Requirements for Risk-Based Decision-Making Framework

December 15, 2020

Introduction

- Utilities are generally aligned, but there are a few points SCE wishes to illuminate to foster a productive discussion.
- We welcome an open conversation. Absence of written comment on an item should not be interpreted as SCE conceding to it, or that SCE is not open to discussing it.
- We appreciate the participation and perspectives of the parties.

Further Clarification On Terminology Is Needed

For consideration, below are updated definitions that distinguish between compliance and non-compliance-based work

	SMAP Lexicon[1]	Updated Definition for Discussion	Risk Spend Efficiency Calculation
Mitigation	Measure or activity proposed or in process designed to reduce the impact/consequences or likelihood/probability of an event.	Measure or activity designed to directly reduce the impact/consequences or likelihood/probability of an event. Includes both current and future activities.	Yes
Control	Currently established measure that is modifying risk.	N/A[2]	N/A[2]
Compliance	A program that meets a compliance obligation under applicable law, or regulation, (including but not limited to any general orders), provided that this exclusion shall not apply if the utility chooses to exceed the min requirements of the compliance obligation or if the terms of the compliance obligation allows the utility to exercise discretion regarding the pace or scope of the program to meet the obligation	A program or project that is undertaken or for which authorization is sought in order to meet a compliance obligation pursuant to any applicable statute, regulation, or judicial or administrative decision or order. However, this definition shall not apply to the extent that the utility chooses to exceed the required levels of the compliance obligation. Further, this definition does not apply if the terms of a compliance obligation allow the utility to exercise full discretion regarding the pace or scope of the program or project for purposes of meeting the obligation.	No

1) *Control and Mitigation taken from D.18-12-014 pp. 16 and 17 and Compliance from Row 28 (2)c from the Settlement Agreement (SA)*
2) *Mitigation definition incorporates current and future activities eliminating the need to distinguish between controls and mitigations as defined in the SMAP Lexicon.*

Inherent Difficulty in Scoring Compliance-Based Programs

- Utility performs compliance because it is mandated – no realistic basis to test for what happens if utility does not comply.
- In many cases, compliance has occurred for an extended period of time. Accordingly, no useful or realistic base of information concerning lack of compliance.
- When legislative body enacts law or regulation, they have balanced interests, including burdens and costs of compliance compared to benefits and gains obtained.
  - Legislative body has taken into account the interests of various affected parties – i.e., looked at issue through "wider lens."
  - Process of enacting law or regulation – draft bill, testimony or evidence may be taken or entered into record, negotiation of language of provisions, comments, debate, etc.
- Utility should not be placed in position of having to choose which laws are "better" to comply with than others, particularly for safety. Analysis will necessarily involve assumptions, which may create distorted picture and lead to unproductive or unsound results.
- Targeted OIRs could be opened as needed to address risk scoring for specific compliance programs. This would ensure that appropriate stakeholders are involved and there is notice and opportunity to be heard.

SCE Will Analyze PSPS as an Individual Risk in the 2021 WMP

How should Public Safety Power Shutoff events and other utility activities with high customer impacts be treated in the RDF?

- In the 2021 WMP, SCE will treat PSPS as its own risk with associated consequences, consistent with the 2021 WMP Guidelines.
- Consequences will include factors incorporating vulnerable communities and critical infrastructure.
- PSPS risk will utilize a common MAVF Framework developed for Wildfire so that these risks can be added together to form a Wildfire+PSPS risk stack.
- Risk stack can be applied to different mitigations (e.g., those that mitigate Wildfire only, those that mitigate PSPS only, or those that mitigate both Wildfire and PSPS consequences).

Significant Updates to the MAVF Should be Considered in Phase 2 of the OIR

Can the Commission identify any guiding principles, best practices, aspirational characteristics and/or minimum requirements for developing an RDF Multi-attribute Value Function?

- SCE is open to a discussion on lessons learned and best practices. However, we feel that any substantive changes to the Settlement Agreement (SA) should be discussed in Phase 2 since SCE has not filed a RAMP under the SA.
- SMAP settlement terms – timing to implement methodology and agreed-upon items.
- SCE's efforts on its next RAMP showing will be well underway by Q3/Q4 of 2021 when a decision is scheduled for Phase 1 Track 1.[1]
- Once SCE has commenced its RAMP preparation, this Rulemaking must not change in any *significant or substantive* manner the SMAP SA RAMP requirements for SCE's next RAMP in May 2022.

1) *R.20-07-013 Scoping Memo, November 2nd 2020, p. 10; Decision on Track 1 and Track 2 issues in Q3/Q4 2021.*

Question and Answer Session

5 Minute Break

California Public Utilities Commission

- Next Steps
- Written Feedback by January 5
- Commission Proceeding Workplan by late January/early February

Martin Kurtovich