

# **Rulemaking (R.) 20-07-013: Phase 3**

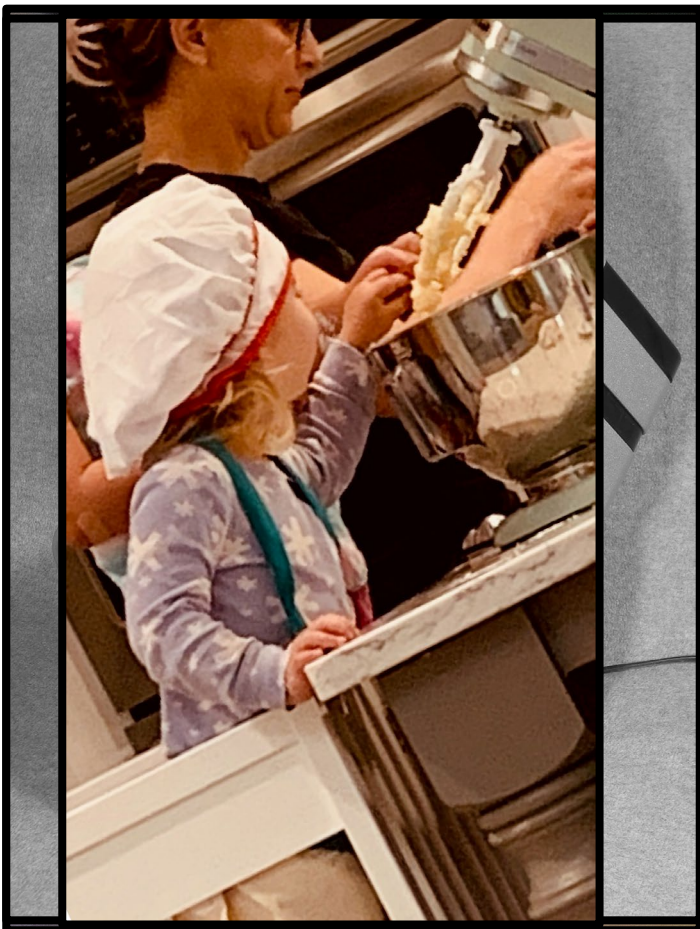
## **Workshop #5: October 25, 2023**

Risk Mitigation Reporting Templates  
Discount Rates



California Public  
Utilities Commission

# Electronic Appliances and Children



- Constant Observation
  - Mixers ≠ Long Hair
  - Ovens and Burners
- Protective Equipment
  - Mixer guards
  - Outlet plug covers

# Workshop #5 Agenda

<b>Introductions</b>	<b>10:00 – 10:05 am</b>
<b>Opening Remarks: Commissioner Reynolds' Office</b>	<b>10:05 – 10:10 am</b>
<b>Review Phase 3 Timeline and Purpose and Expected Outcomes of Workshop 5</b>	<b>10:10 – 10:15 am</b>
<b>Reporting Templates Presentation: CalAdvocates</b>	<b>10:15 – 10:45 am</b>
<b>Reporting Templates Clarifying Q&amp;A</b>	<b>10:45 – 11:00 am</b>
<b>Break</b>	<b>11:00 – 11:10 am</b>
<b>Reporting Templates Discussion</b>	<b>11:10 am – 12:00 pm</b>
<b>Lunch</b>	<b>12:00 – 1:00 pm</b>

# Workshop #5 Agenda (Cont.)

<b>Discount Rates: TURN Presentation</b>	<b>1:00 – 1:30 pm</b>
<b>Discount Rates: TURN Clarifying Q&amp;A</b>	<b>1:30 – 1:45 pm</b>
<b>Discount Rates: SPD Presentation</b>	<b>1:45 – 2:15 pm</b>
<b>Discount Rates: SPD Clarifying Q&amp;A</b>	<b>2:15 – 2:30 pm</b>
<b>Break</b>	<b>2:30 – 2:40 pm</b>
<b>Discount Rates: Discussion</b>	<b>2:40 – 3:50 pm</b>
<b>CPUC Close and Next Steps</b>	<b>3:50 – 4:00 pm</b>

# Review of Phase 3 Timeline

# Phase 3 Timeline



# PURPOSE & EXPECTED OUTCOMES OF THE WORKSHOP

# Purpose & Outcomes for Workshop #5

- Risk Mitigation Reporting Templates
  - Discuss merits of the Mitigation Project Selection Template
  - Discuss merits of the Mitigation Project Progress Template
- Discount Rate
  - Discuss the use of varying discount rates,
  - Discuss an appropriate discount rate,
  - Discuss the varying of discount rates by mitigation
- Provide feedback on the two templates proposed by CalAdvocates and varying of discount rates within the calculation of Cost-Benefit Ratios.



# Party Proposal for Risk Mitigation Reporting Templates

Presenter: California Public Advocacy Office



*The Public*  
ADVOCATES  
OFFICE

# Risk Mitigation Project Templates

R.20-07-013 Workshop #5

Cal Advocates | October 25, 2023

# Agenda

1. Background on Cal Advocates Templates
2. Utilities' Concerns Regarding Templates
3. Summary of Issues
4. Objectives
5. Risk Mitigation Project Templates
6. Mapping of Risks and Progress
7. Cal Advocates Recommendations

# 1. Background on Cal Advocates Templates

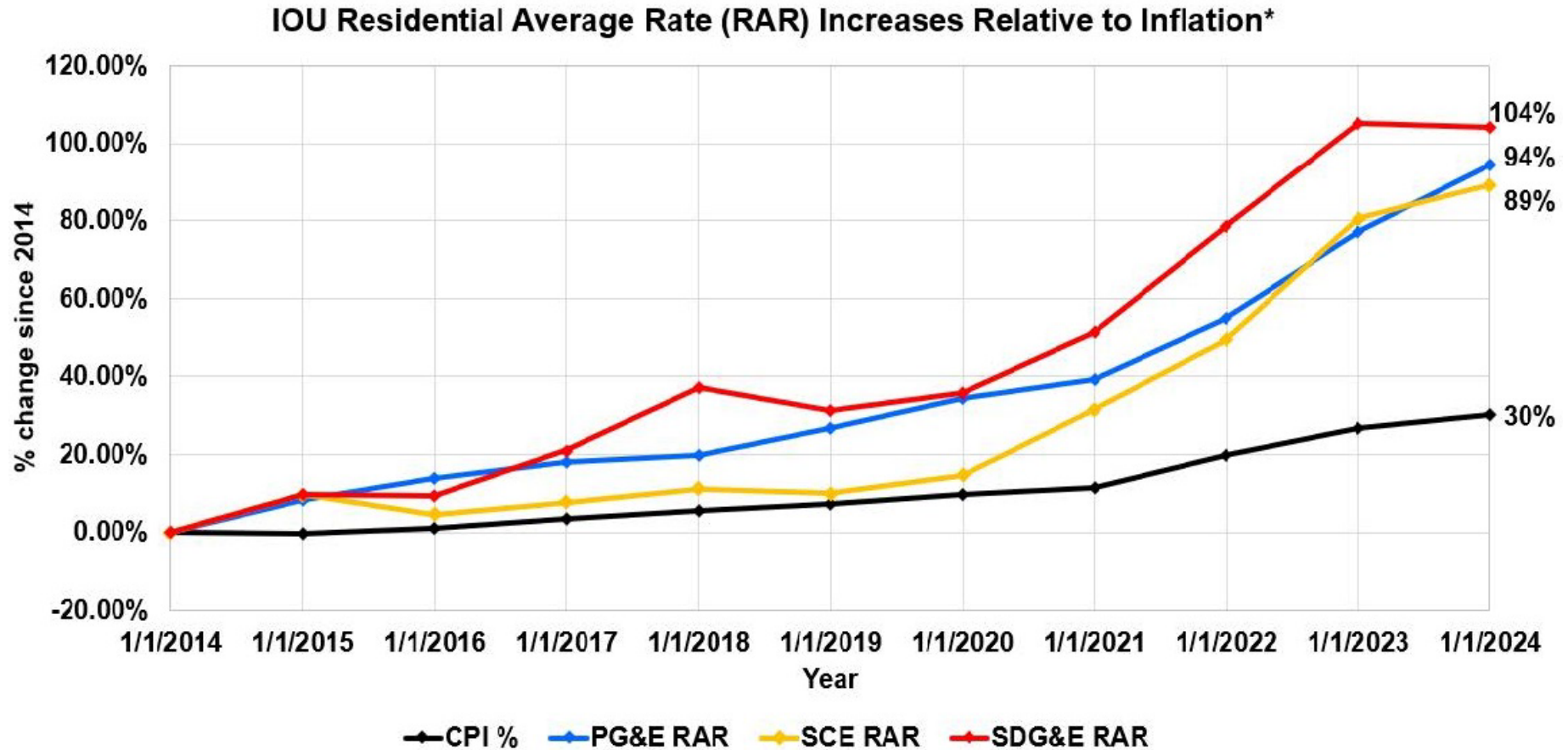
- Cal Advocates recommended that Phase III should prioritize adoption of risk mitigation templates for the RAMP and GRC.
- In these templates, utilities should report granular data and information to support utilities' risk mitigation projects in RAMP and GRC filings:
  - How utilities determined specific targets and forecasts.
  - Cost-effectiveness for each mitigation project presented.
  - Mitigation effectiveness of each mitigation project.
  - Past, current, and projected progress/forecasts of mitigation projects.
- Cal Advocates submitted preliminary templates on April 21, 2023, in its Post-Prehearing Conference Statement, which have been modified in this proposal.

## 2. Utilities' Concerns Regarding Templates

- The templates may include some non-applicable fields.
- Duplicative reporting of data across different filings may cause undue burden.
  - PG&E's Transparency Guidelines Proposal
  - Wildfire Mitigation Plans (WMP)
  - Risk Spending Accountability Reports (RSAR)
  - Risk Mitigation Accountability Reports (RMAR)
- Reporting at the project level will yield an excessively large data set.
- Project level mitigation plans can change substantially over the course of time from scoping through implementation in the last GRC attrition year.
- Utilities already report data at the mitigation level as required by the CPUC's framework.

# 3. Summary of Issues

- 1. Rising rates highlight the need for critical review of risk mitigation program cost effectiveness. Rates have increased substantially since 2014, surpassing inflation.



\*Cal Advocates Analysis of Investor-Owned Utilities (IOU) Electric Rate Quarterly Reports for Q3 2023. Forecasted authorized rates for January 1, 2024, as of Q3 2023, and using latest CPI index from August 2023 as an estimate for January 2024. Does not include rate increases from pending applications, including GRC applications

# Summary of Issues

2. RAMP and GRC applications currently lack a standard consolidated detailed template necessary for the Commission and parties to:
  - a) Critically assess the cost effectiveness and performance effectiveness of proposed risk mitigation projects and their alternatives.
  - b) Compare, contrast, and evaluate the ratepayer impacts of risk mitigation proposals.
  - c) Clearly demonstrate that utilities are prioritizing the riskiest areas first.
3. RAMP and GRC applications currently lack a standard and consolidated template that requires details necessary for the Commission and parties to effectively assess progress on risk mitigation project implementation.

## 4. Objectives

- Expedite collection and reporting of mitigation project-level information necessary for the Commission and parties to critically evaluate proposed utility mitigation program projects.
- Consolidate information necessary for the Commission and parties to critically evaluate prioritization and progress of utility risk mitigation projects.
- Provide information necessary for the Commission to ensure utilities prioritize and complete work on projects that mitigate the utility's highest risk areas.
- Provide a reporting tool to help expedite Commission assessment and oversight of mitigation programs and to support potential consensus among utilities and parties in authorization of risk mitigation programs.



# 5. Risk Mitigation Project Selection Template

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Mitigation Program	Mitigation Project Name	Mitigation ID	Primary Risks Mitigated	HFTD and HFRA Designations (as applicable)	Location	County	Primary Mitigation Unit	Forecast Total Project Units to Complete Over Project Timeline	Forecast Project Cost per Unit	Forecast Total Cost of Mitigation Project	Mitigation Effectiveness	Mitigation Effectiveness Formula	Risk Ranking
2														
3														
4	<b>Electrical Undergrounding Program: All Electrical Undergrounding Projects</b>	Total of all Electrical Undergrounding Projects												
5	Electrical Undergrounding	Mountain Vista Circuit Undergrounding												
6	Electrical Undergrounding	Winding Way Circuit Undergrounding												
7														
8	<b>Electrical Covered Conductor Program: All Covered Conductor Projects</b>	Total of all covered conductor projects												
9	Covered Conductor	Pine Tree Way Circuit Covered Conductor												
10														
11	<b>Electrical REFCL Program: All REFCL Projects</b>	Total of all REFCL projects												
12	REFCL	Clear Lake REFCL Project												
13														
14	<b>Pipeline Replacement Program: All Pipeline Replacement Projects</b>	Total of all Pipeline projects												
15	Pipeline Replacement	Desert Ravine Pipeline Segment												

	A	B
1	Mitigation Program	Mitigation Project Name
2		
3		
4	<b>Electrical Undergrounding Program: All Electrical Undergrounding Projects</b>	Total of all Electrical Undergrounding Projects
5	Electrical Undergrounding	Mountain Vista Circuit Undergrounding
6	Electrical Undergrounding	Winding Way Circuit Undergrounding
7		
8	<b>Electrical Covered Conductor Program: All Covered Conductor Projects</b>	Total of all covered conductor projects
9	Covered Conductor	Pine Tree Way Circuit Covered Conductor
10		
11	<b>Electrical REFCL Program: All REFCL Projects</b>	Total of all REFCL projects
12	REFCL	Clear Lake REFCL Project
13		
14	<b>Pipeline Replacement Program: All Pipeline Replacement Projects</b>	Total of all Pipeline projects
15	Pipeline Replacement	Desert Ravine Pipeline Segment

	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1	Risk Reduction	Risk Reduction Formula	CBR	CBR Formula	Timeline for Installation	Units per Year	Justification for Project Duration and Scope	Factors or Considerations Impacting Project Choice	Long-Term Program Target Units	Long-Term Goal Program Timeline	Discussion of Key Constraints	Alternatives	Notes or Comments
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													

# Risk Mitigation Project Progress Template

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1	Overall Project Timeline															2022		2023		2024		2025	
2	Selected mitigation program to implement	Selected mitigation project to implement at the project level	Forecast Total Project Units to Complete Over Project Timeline	Actual Total Project Units Completed Over Project Timeline	Estimated Risk Reduction	Imputed Risk Reduction	Primary Mitigation Unit	Forecast Project Cost per Unit	Actual Project Cost per Unit	Estimated CBR	Actual CBR	Forecast Completion Date	Actual Completion Date	Timeline for Project	Forecast Project Units to Complete in 2022	Actual Project Units Completed in 2022	Forecast Project Units to Complete in 2023	Actual Project Units Completed in 2023	Forecast Project Units to Complete in 2024	Actual Project Units Completed in 2024	Forecast Project Units to Complete in 2025	Actual Project Units Completed in 2025	
3																							
4	<b>Electrical Undergrounding Program: All Electrical Undergrounding Projects</b>	Total of all Electrical Undergrounding Projects																					
5	Electrical Undergrounding	Mountain Vista Circuit Undergrounding																					
6	Electrical Undergrounding	Winding Way Circuit Undergrounding																					
7																							
8	<b>Electrical Covered Conductor Program: All Covered Conductor Projects</b>	Total of all covered conductor projects																					
9	Covered Conductor	Pine Tree Way Circuit Covered Conductor																					
10																							
11	<b>Electrical REFCL Program: All REFCL Projects</b>	Total of all REFCL projects																					
12	REFCL	Clear Lake REFCL Project																					
13																							
14	<b>Pipeline Replacement Program: All Pipeline Replacement Projects</b>	Total of all Pipeline projects																					
15	Pipeline Replacement	Desert Ravine Pipeline Segment																					

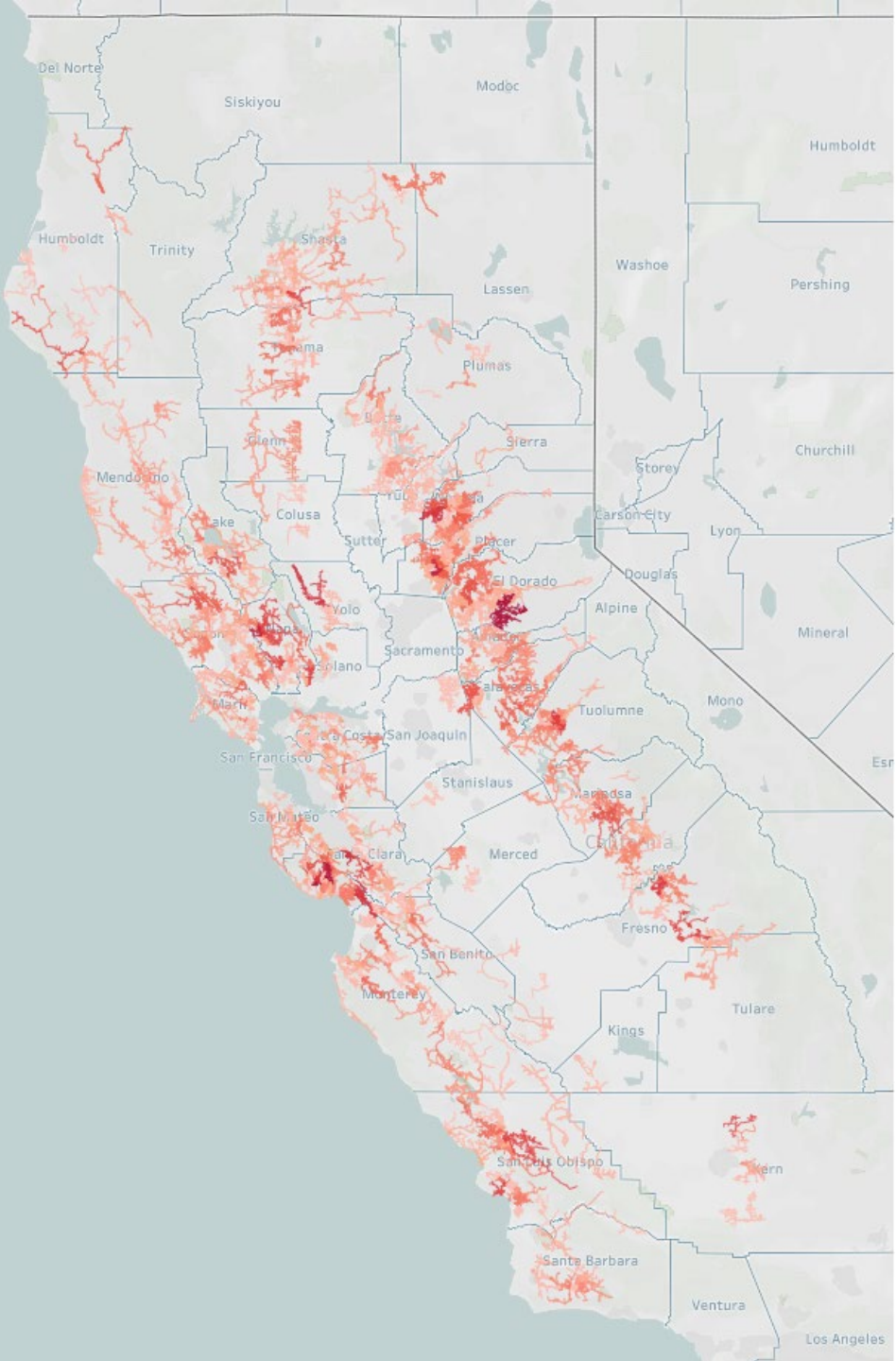
## 6. Mapping of Risks and Progress

Utilities should provide spatial location data as specified in the templates, in a format similar to that used in WMP quarterly reports.

This will allow the Commission, utilities and parties to map various template elements, using color intensity to distinguish template values.

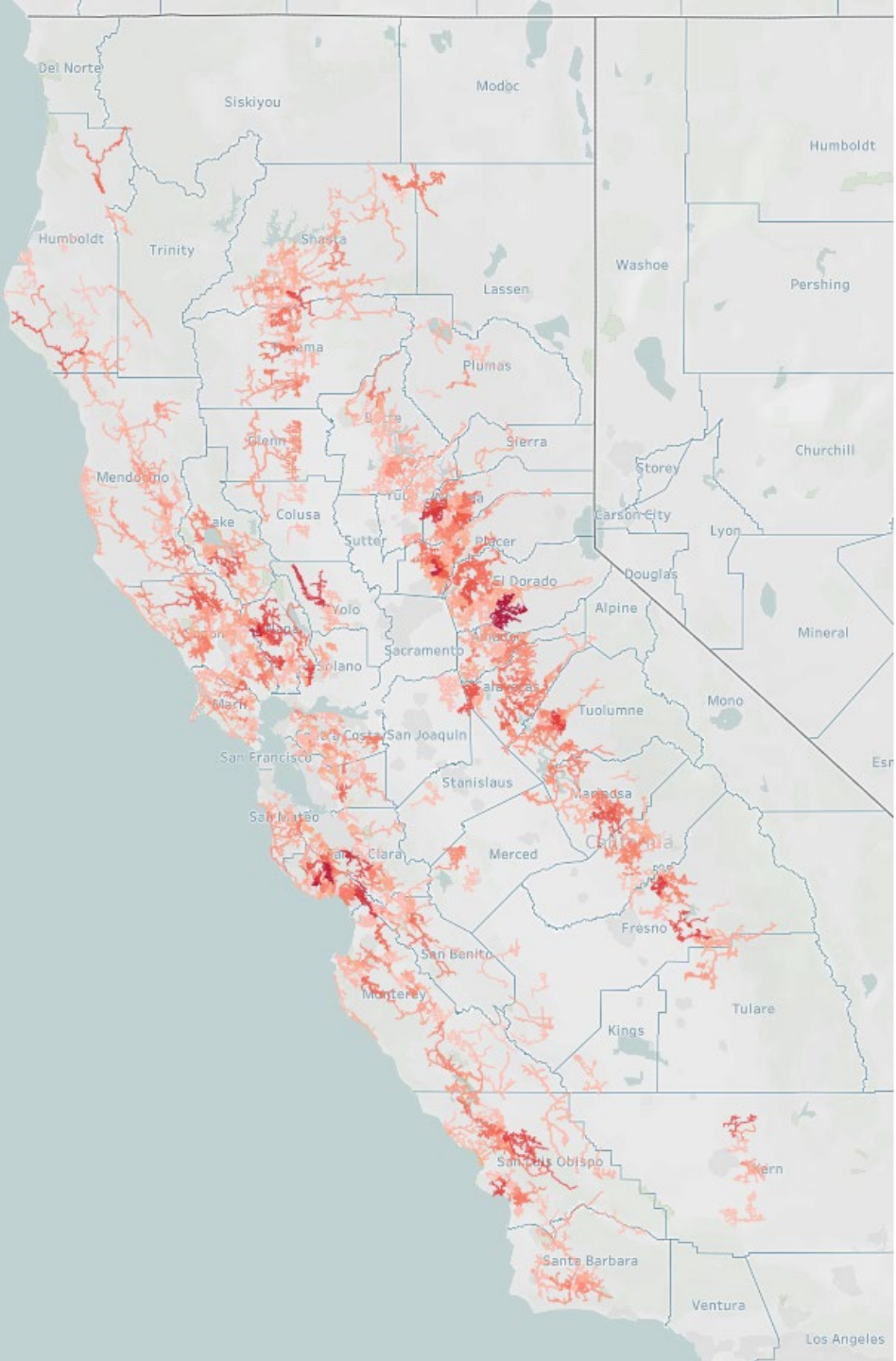
For example, map color coding could readily identify:

- Locations of highest priority mitigation projects that address the highest ranked risks.
- Locations of projects based upon the type of risk (e.g., wildfire, PSPS, EPSS, GHG emissions, etc.)
- Locations of projects that exhibit the highest CBR.
- Locations of projects based upon project completion or progress status.



# Example Mapping of EPSS Events

Source: Data from CPUC Web Page: Protective Equipment and Device Settings, Monthly EPSS Reports To SED and PG&E's Quarterly Data Reports  
Accessed at: <https://www.cpuc.ca.gov/industries-and-topics/wildfires/protective-equipment-device-settings> and [https://www.pge.com/en\\_US/safety/emergency-preparedness/natural-disaster/wildfires/wildfire-mitigation-plan.page?WT.mc\\_id=Vanity\\_wildfiremitigationplan](https://www.pge.com/en_US/safety/emergency-preparedness/natural-disaster/wildfires/wildfire-mitigation-plan.page?WT.mc_id=Vanity_wildfiremitigationplan)



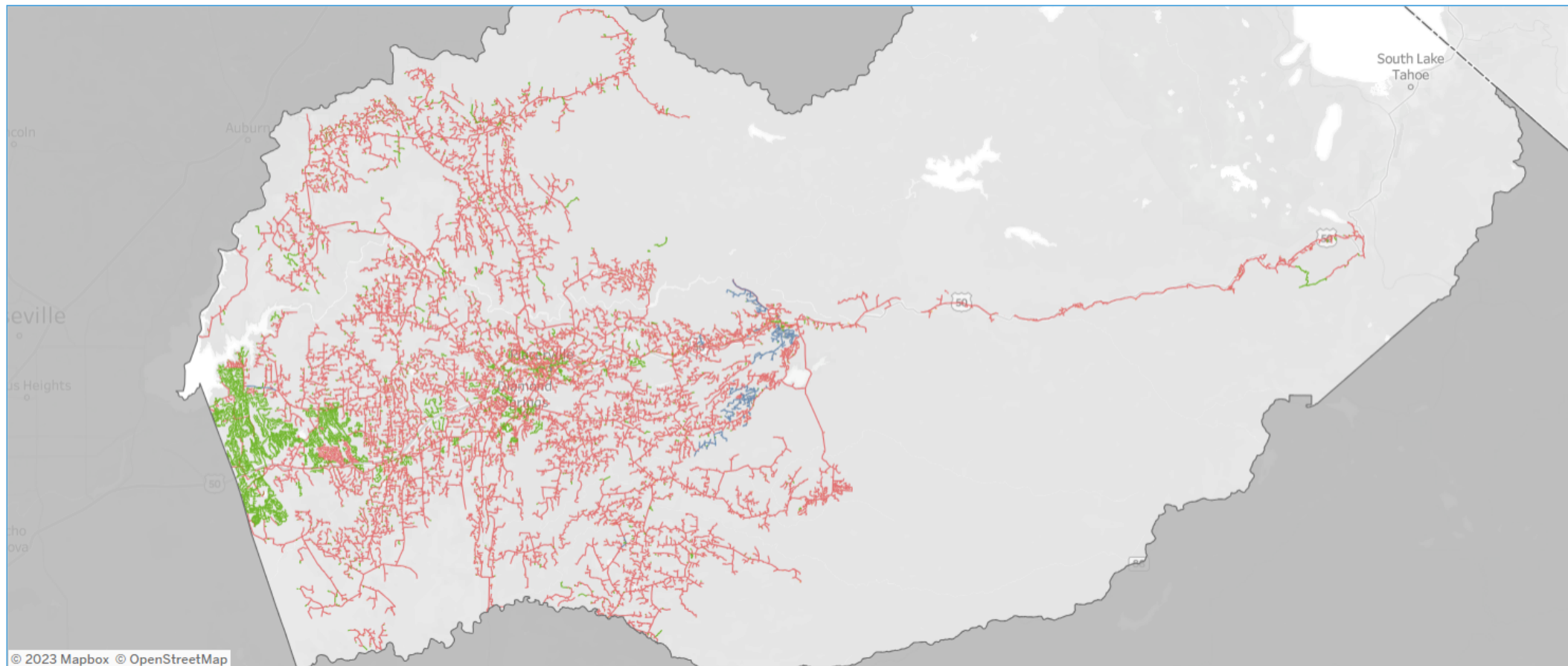
# Example Mapping of EPSS Events

The proposed templates collect risk ranking and location spatial data which may then be used to map areas to be prioritized for risk mitigation.

*Source: Data from CPUC Web Page: Protective Equipment and Device Settings, Monthly EPSS Reports To SED and PG&E's Quarterly Data Reports  
Accessed at: <https://www.cpuc.ca.gov/industries-and-topics/wildfires/protective-equipment-device-settings> and [https://www.pge.com/en\\_US/safety/emergency-preparedness/natural-disaster/wildfires/wildfire-mitigation-plan.page?WT.mc\\_id=Vanity\\_wildfiremitigationplan](https://www.pge.com/en_US/safety/emergency-preparedness/natural-disaster/wildfires/wildfire-mitigation-plan.page?WT.mc_id=Vanity_wildfiremitigationplan)*

# Mapping of Progress

## Status of Power Lines in El Dorado County (Primary and Secondary Distribution Lines Reported by Investor-Owned Utilities, as of June 2021)



The interactive map shows the status of power lines throughout the county. You can zoom in on a particular area of interest or use the search function at the top-left of the map to search for a city within the county. The status of each power line is color-coded as follows:

- Underground
- Covered
- Bare
- Other
- Unknown

Depending upon the number of power lines within the county, the map may take up to 30 seconds to load.

Source: Geographic data for primary and secondary distribution lines that Bear Valley Electric Service, PacifiCorp, Pacific Gas and Electric, Southern California Edison, and San Diego Gas and Electric reported to the Energy Safety Office, as of June 2021, and interviews with Energy Safety Office staff.

Note: The data provided in these graphics are for general informational purposes only. They are not intended to be relied upon for decision-making purposes, particularly any decisions about underground digging. The data are as of June 30, 2021. Contact the utilities directly for data for decision-making purposes or for more recent data.

Source: CA State Auditor's map of IOUs' Electricity Distribution Lines That Are Underground or Covered As Reported in June 2021.  
Accessed at: <https://auditor.ca.gov/reports/2021-117/supplemental-line-status.html>

## 7. Cal Advocates Recommendations

1. The Commission should immediately adopt the proposed templates to expedite collection and consolidation of necessary mitigation project data to achieve the objectives described above.
2. The templates should include mitigation project location spatial data as described above. This enables mapping of mitigation project progress and supports assessment of how mitigation projects target, prioritize, and address a utility's highest risks.
3. The Commission should provide that Safety Policy Division (SPD) may make revisions and improvements to these templates as SPD deems appropriate, based upon experience.
4. Utilization of the Risk Mitigation Project Templates should begin with 2025 filings (Sempra's 2025 RAMP and PG&E's TY 2027 GRC) and continue with annual updates.

# Questions?



# Break

11:00 – 11:10 am

# Discussion

11:10 am – 12:00 pm

# Q&A Discussion: Risk Mitigation Reporting Templates

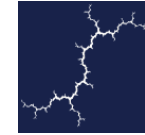
- Should templates for Mitigation Project Selection and the Mitigation Project Progress be required for RAMP and GRC filings? If so, why? If not, why not?
- What information and variables should be included within the Mitigation Program Selection and Mitigation Project Progress templates? Why should it be included?
- What information and variables should not be included within the Mitigation Program Selection and Mitigation Project Progress templates? Why should it not be included?

# Lunch

12:00 – 1:00 pm

# Discount Rates

Presenters: TURN and SPD



# Application of Discount Rates for Risk Modeling Cost-effectiveness

---

Safety Model Assessment Proceeding

10/25/23

Eric Borden

# Synapse Energy Economics

---

- Founded in 1996 by CEO Bruce Biewald
- Leader for public interest and government clients in providing rigorous analysis of the electric power and natural gas sectors
- Staff of 40+ includes experts in energy, economic, and environmental topics

# Agenda

---

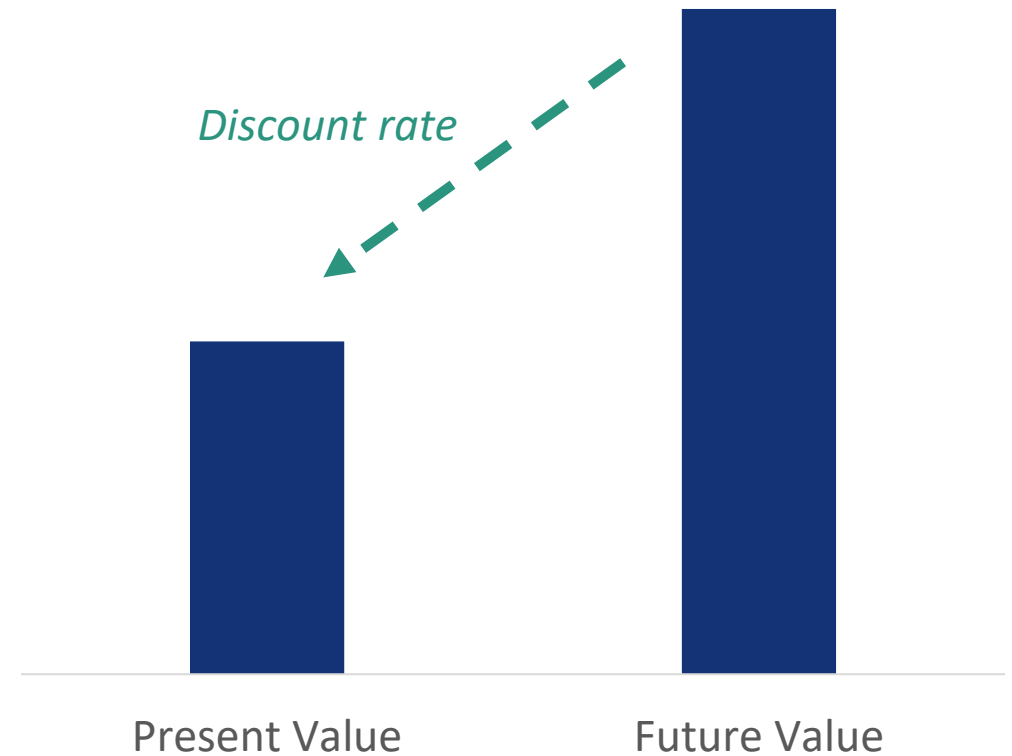
- Background on discount rates
- Nominal vs. real discount rates
- Considerations for determining the real discount rate
- Synapse/TURN recommendations



# Background on Discount Rates

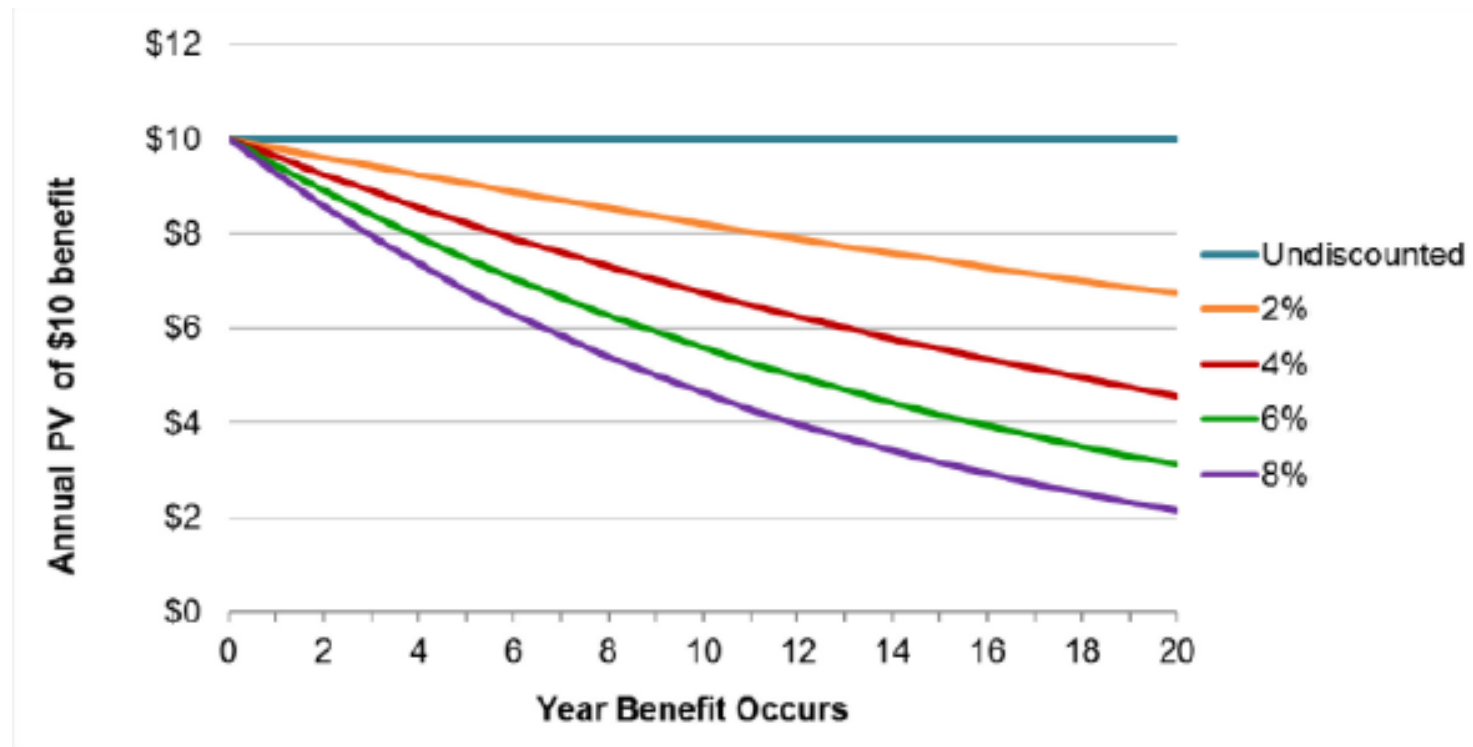
# Background on Discount Rates

- The discount rate is a factor that facilitates comparison of monetary values across time.
- *Future values* are adjusted to *present value* to reflect the time value of money to account for:
  - The *opportunity cost* of an investment – return to resources in their most productive application elsewhere.
  - Considerations of intergenerational equity – fairness to groups across time.



# Background on Discount Rates

- The choice of discount rate becomes more important when costs/benefits are distributed over time.



Source: National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources. 2020. National Energy Screening Project ("NSPM"), <https://www.synapse-energy.com/national-standard-practice-manual-benefit-cost-analysis-distributed-energy-resources>.

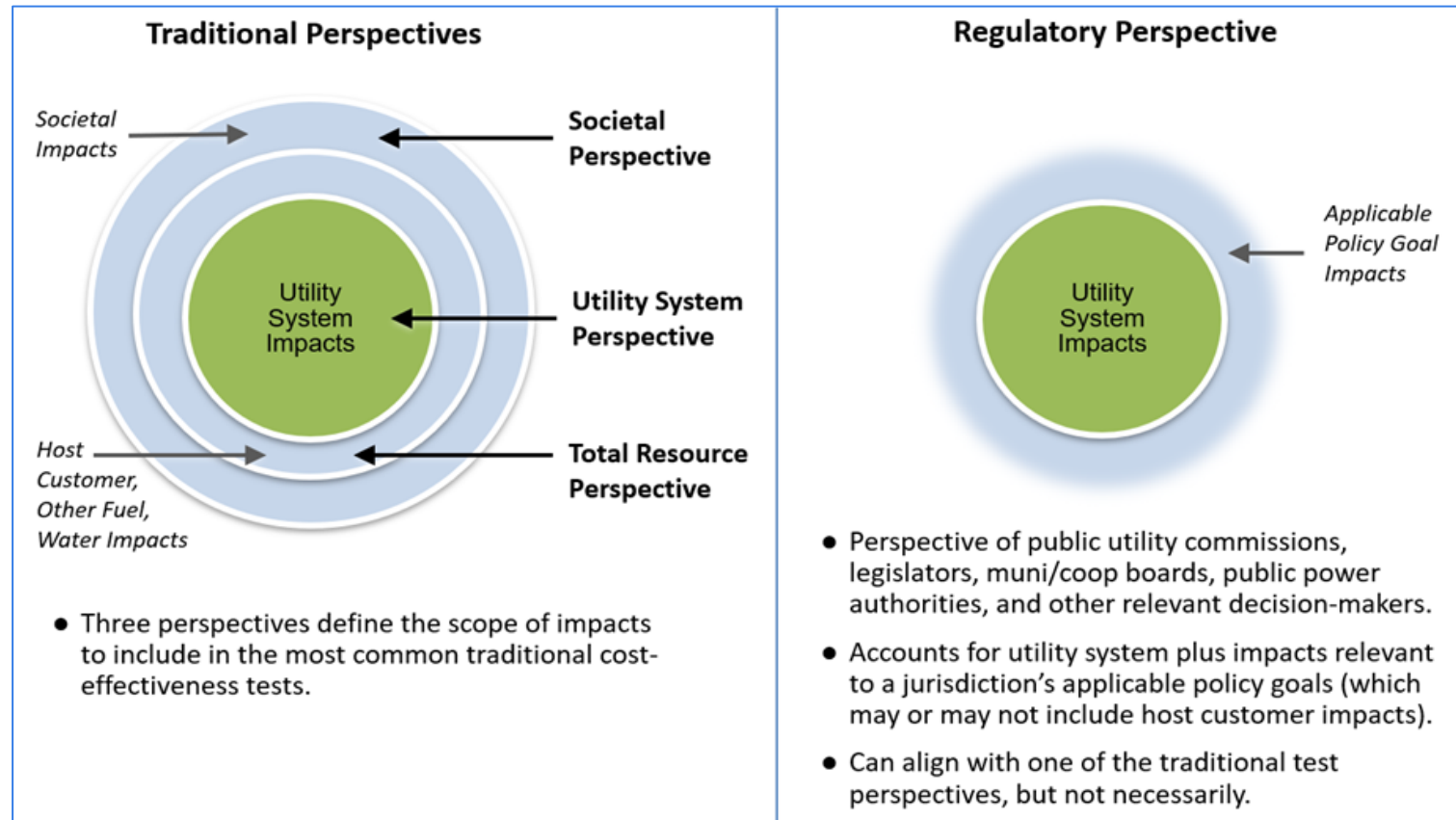
# Nominal and Real Discount Rates

# Nominal vs. Real Discount Rates

- Adjusting to account for *inflation* should be distinguished from discounting for other issues related the time value of money.
  - Inflation is an objective phenomenon - it is the rate of increase in prices across the economy or relevant sector.
- To avoid confusion, it is best not to refer to adjustments for inflation as “discounting.”
  - May be referred to simply as “adjusting for inflation.”
- A *real* discount rate is what is usually meant when “discounting.”
  - This refers to the discount rate over and above adjustments for inflation / price increases
- It is helpful to think of finding the present value of future value streams as a two-step process:
  1. Adjust future values for inflation by using a constant or real dollar year.
  2. Apply a real discount rate.

# Determining the Real Discount Rate - Regulatory Perspective

- The discount rate should reflect the time preference chosen by regulators on behalf of all customers, referred to in the *National Standard Practice Manual* as the “regulatory perspective.”
- The “regulatory perspective” may account for many factors:
  - low-cost, safe, reliable service; intergenerational equity; other regulatory policy goals



Source: *National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources*. 2020. National Energy Screening Project (“NSPM”), <https://www.synapse-energy.com/national-standard-practice-manual-benefit-cost-analysis-distributed-energy-resources>.

# Determining the Real Discount Rate

- The choice of discount rate is a policy decision.
- Analysts can use sensitivities to consider different discount rates.
  - Use the utility WACC as a high case
  - Use a low-risk or societal discount rate as a low case

Type of Discount Rate	Potential Indicator of Time Preference	Typical Values	Notes and Sources
Societal	Societal cost of capital, adjusted to consider intergenerational equity or other societal values	<0% to 3%	In addition to low-risk financing, government agencies have a responsibility to consider intergenerational equity, which suggests a lower discount rate (US OMB 2003). Society's values regarding environmental impacts might warrant the use of a negative discount rate (Dasgupta, Maler, and Barrett 2000).
Low-Risk	Interest rate on 10-year U.S. Treasury Bonds	-1.0% to 3%	Over the past 20 years the real interest rate on 10-year U.S. Treasury Bonds ranged between roughly -1.0% and 3.0% percent (multpl.com).
Utility Customers on Average	Customers' opportunity cost of money	varies	Customers' opportunity costs can be represented by either the cost of borrowing or the opportunity costs of alternative investments (Pindyck and Rubinfeld 2001, 550). The real rate on long-term government debt may provide a fair approximation of a discount rates for private consumption (US OMB 2003).
Publicly Owned Utility	Publicly owned utility's cost of borrowing	3% to 5%	Publicly owned utility costs of capital are available from the Federal Energy Regulatory Commission Form 1, Securities Exchange Commission 10k reports, and utility annual reports.
Investor-Owned Utility	Investor-owned utility's weighted average cost of capital	5% to 8%	Investor-owned utility costs of capital are available from the Federal Energy Regulatory Commission Form 1, Securities Exchange Commission 10k reports, and utility Annual Reports.

*Note: Typical values of discount rates are in real terms, as opposed to nominal. Real interest rates take into account the effects of inflation whereas nominal rates have not been adjusted for inflation. Real discount rates should always be applied to real cash flows, and nominal discount rates should always be applied to nominal cash flows. The utility cost of capital should be after-tax.*

Source: National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources. 2020. National Energy Screening Project ("NSPM"), <https://www.synapse-energy.com/national-standard-practice-manual-benefit-cost-analysis-distributed-energy-resources>.

# Considerations for Determining Real Discount Rates

Consideration	If the answer is “yes”
<b>Time Preference Considerations:</b>	
Does the regulatory perspective suggest the same time preference as utility investors?	Choose a discount rate equal to the utility WACC.
Does the regulatory perspective suggest placing a higher value on long-term impacts than utility investors?	Choose a discount rate less than the utility WACC.
Does the regulatory perspective suggest the same time preference as that of all utility customers?	Choose a discount rate that represents all utility customers on average.
Does the regulatory perspective suggest the same time preference as that of society?	Choose a societal discount rate.
Does the regulatory perspective suggest placing a lower value on long-term impacts than society does?	Choose a discount rate greater than a societal discount rate, or at the high end of the range of societal discount rates.



# Synapse/TURN Recommendations

# Synapse/TURN Recommendations

- Certain ground rules should be established in this phase of the SMAP proceeding to ensure consistency with best practices and accurate results of utility risk modeling analysis.
- At this time we have 4 primary recommendations regarding the use of discount rates in utility cost-benefit ratios for risk related investments.
  1. A "constant dollar year" set to the utility's test year in the GRC should be used to remove the effect of inflation on future costs and benefits.
  2. Utilities should estimate program costs (the denominator of the CBR) as the present value of revenue requirement.
  3. One real discount rate should be applied in both the numerator and denominator of the cost benefit ratio.
  4. A sensitivity analysis should be utilized to examine the effect of reasonable low and high real discount rates.

*Staff Planning Question 1*

*Staff Planning Question 4*

*Staff Planning Question 7*

# Recommendation 1: Constant Dollar Year

A "constant dollar year" set to the utility's test year in the GRC should be used to remove the effect of inflation on future costs and benefits.

- A constant dollar year set at the utility's GRC test year is the first step in a two-step process to 1) remove inflation and then 2) apply a real discount rate
- The GRC test year is when both costs and benefits begin to accrue for the proposed programs.

# Recommendation 2: Revenue Requirement to Estimate Costs

Utilities should estimate program costs (the denominator of the CBR) as the present value of revenue requirement.

- The choice of discount rate cannot be addressed without knowing how costs are estimated.
  - Utilities have utilized a variety of approaches to represent costs in the denominator of the CBR equation – some have been more accurate than others.
- The revenue requirement (RRQ) is the costs paid by ratepayers in rates each year.
  - There is usually little difference between direct costs and RRQ for O&M programs.
  - Capital program costs are depreciated over the expected life of the asset.
    - *Over this time period ratepayers pay for taxes and carrying costs each year.*
- PV of RRQ for capital programs can be accomplished using a proxy factor that varies depending on depreciation life.
  - This approach was taken in PG&E's TY 2023 GRC.

# Recommendation 3: Revenue Requirement to Estimate Costs

One real discount rate should be applied in both the numerator and denominator of the cost benefit ratio.

- It is not standard practice to use different discount rates in the numerator and denominator of a benefit-cost analysis.
- We do not support use of multiple discount rates, for the simple reason that it will bias the analysis in a manner contrary to the purpose of these calculations: to compare the costs and risk reduction (benefits) of a given program.
- *Hypothetical example: 10-year program where the costs and benefits in each year are exactly the same.*
  - *The benefit-cost ratio of such a program should be 1.0, because benefits are equal to costs.*
  - *Instead, the application of different discount rates unduly influences the result of the analysis.*

	<b>Numerator (Benefits)</b>	<b>Denominator (Costs)</b>	<b>Cost-Benefit Ratio</b>
<b>Discount Rate</b>	7%	3%	0.82
	3%	7%	1.21
	3%	3%	1.00
	7%	7%	1.00

## Recommendation 4: Sensitivity Analysis

A sensitivity analysis should be utilized to examine the effect of reasonable low and high real discount rates.

- The choice of real discount rate is ultimately subjective and should reflect the regulator's perspective time value of money.
- Sensitivity analysis can be used to examine the impact of a range of reasonable discount rates.
- This approach is recommended by the U.S. government's Office of Management and Budget for evaluation of government programs.

# Contact Information

---

Eric Borden  
Principal Associate, Synapse  
[eborden@synapse-energy.com](mailto:eborden@synapse-energy.com)

# Key Sources

---

*National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources. 2020. National Energy Screening Project (“NSPM”), <https://www.synapse-energy.com/national-standard-practice-manual-benefit-cost-analysis-distributed-energy-resources>.*

*Office of Management and Budget, Circular A-94 Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs (“OMB Circular”), <https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/a94/a094.pdf>.*

*Council of Economic Advisers Issue Brief, January 2017, Discounting for Public Policy: Theory and Recent Evidence on the Merits of Updating the Discount Rate (“Economic Advisors Issue Brief”), [https://obamawhitehouse.archives.gov/sites/default/files/page/files/201701\\_cea\\_discounting\\_issue\\_brief.pdf](https://obamawhitehouse.archives.gov/sites/default/files/page/files/201701_cea_discounting_issue_brief.pdf).*



# SPD Staff Proposal on Discount Rates in Cost-Benefit Analysis in RAMP/GRC

Staff Proposal addresses four questions:

1. How to discount the terms in the cost-benefit ratio used in the RAMP and GRC proceedings?
2. Whether the same discount rate must be used to discount both the numerator and the denominator of the cost-benefit ratio.
3. What interest rates should be used to discount the different terms in the cost-benefit ratio?
4. Should the Commission authorize IOUs to vary their use of discount rates by mitigation?

# What is time-discounting?

Time Discounting (or discounting): a method of expressing a subject's indifference between time-dependent outcomes at two different times by considering the subject's opportunity cost for delaying the realization of the outcomes.

Time Discounting has four essential elements:

1. **Subject** – There is a definite subject or entity that possesses some value to be discounted.
2. **Value** – The value belongs exclusively to the subject and is something on which the subject's opportunity cost applies.
3. The subject's **Opportunity Cost** (periodic interest rate or rate of return) – The opportunity cost is the subject's own opportunity cost, not someone else's opportunity cost or some generic opportunity cost.
4. **Indifference** – The subject is indifferent between receiving the value today and receiving the same value at any other time so long as the subject will receive the full original value, plus/minus the subject's opportunity cost.

# CBR continued ...

- If any of these four essential elements are missing or violated, the discounting process is no longer economically valid. For example, if the subject's opportunity cost is replaced by someone else's opportunity cost, then the subject can no longer be said to be indifferent between receiving the original value today and receiving the original value plus an opportunity cost in the future. If the subject is no longer indifferent between the two outcomes, the discounting process is invalid, and the discounted value is no longer a meaningful number. The resulting CBR using a meaningless discounted value is likewise meaningless.

# Cost-Benefit Ratio (CBR) in RAMP/GRC

$$\text{CBR} = \frac{\text{NPV of monetized value of risk mitigation benefits}}{\text{NPV of risk mitigation costs}}$$

- Risk mitigation benefits = safety improvement + reliability improvement + financial impact reduction
- S-MAP OIR (R.20-07-013), Phase 2 decision, D.22-12-027 converted the safety and reliability terms into dollar values.
- Unlike the financial impact term and the risk mitigation costs term, the monetized safety and reliability terms are equivalent monetary values but not actual dollars in an account that can be invested to obtain a rate of return on their values. Therefore, the rate of return or opportunity cost for the safety term and the reliability term is zero.

Risk Attributes and Sub-attributes	Injured Parties or Beneficiaries of Risk Mitigations (subject/entity of discounting)	Monetized Unit Value	Discount Rate
Safety - Reductions in fatalities	Utility, Utility ratepayers, members of the public who are not ratepayers of the utility, <b>society at large</b> , utility's workers and contractors	Value of Statistical Life (VSL)	Effective compounded rate of Inflation Rate, real growth rate of wages above inflation, social rate of time preference
Safety - Reductions in serious injuries	Utility, Utility ratepayers, members of the public who are not ratepayers of the utility, <b>society at large</b> , utility's workers and contractors	Fraction of VSL, typically each serious injury equals 1/4 of a VSL	Effective compounded rate of Inflation Rate, real growth rate of wages above inflation, social rate of time preference
Reliability - Reductions in electricity outages (customer-minutes)	Utility ratepayers, members of the public who are not ratepayers of the utility, <b>society at large</b> , utility's workers and contractors	Interruption cost calculated by LBNL's ICE calculator	Effective Compounded rate of Inflation Rate, real growth rate of wages above inflation, social rate of time preference
Financial - Reductions in financial impact	Utility	No monetization step needed on actual dollar value	Utility's WACC
Mitigation Costs	Utility	No monetization step needed on actual dollar value	Utility's WACC

# Main Points of Staff Proposal on Discount Rates

- Important to identify the subject or primary beneficiary of each term in the CBR and use an opportunity cost applicable to that subject when discounting each term.
- Okay to have different discount rates for different components of the RSE/CBR because each term in the numerator and the denominator can have a different subject and its own opportunity cost.
- Financial attribute and mitigation costs should be discounted at the IOU's adopted WACC.
- Using an opportunity cost (i.e. discount rate) not applicable to the subject/beneficiary produces a meaningless discounted value and violates the condition of indifference from the subject's perspective.

- Monetized values of the safety and reliability attributes are not actual dollars and cannot be invested to get a return on their values. Therefore, there is no opportunity cost associated with these two terms.
- Safety and Reliability attributes should be discounted at the compounded rate of the projected long-term average inflation rate, the projected per-capita real growth rate of wages during the GRC period, and a social rate of time preference (3%). The Commission should adopt common inflation rates and per-capita real wage growth rates for all IOUs to use in RSE/CBR.
- Answer to question of having different discount rates for different mitigation types should be deferred to coordinate with the Climate Adaptation proceeding.

# Summary of Discount Rates for Components in Different Proposals

Component in RSE/CBR	SCE/Sempra RAMP proposals	TURN	SPD Staff Proposal
Safety	3%	WACC	Compounded discount rate of inflation rate, per-capita real growth rate of wages, and 3% social rate of time preference <sup>1</sup>
Reliability	3%	WACC	Compounded discount rate of inflation rate, per-capita real growth rate of wages, and 3% social rate of time preference
Financial	3%	WACC	WACC
Mitigation costs	10%	WACC	WACC

<sup>1</sup>Compounded annual discount rate = (1+ inflation rate) x (1+ per-capita real growth rate of wages) x (1+ social rate of time preference) - 1



# Break

2:30 – 2:40 pm

# Discussion

2:40 pm – 3:50 pm

# Q&A Discussion: Discount Rates

- When calculating a cost-benefit ratio, must the same discount rate be used in both the numerator and the denominator? If so, why? If not, why not?
- What are the implications for an IOU's cost-benefit analyses that use the same discount rate in both the numerator and denominator?
- Alternatively, what are the implications for an IOU's cost-benefit analyses that use a different discount rate in the numerator and denominator?
- How should the fact that there are different types of benefits (e.g., safety, reliability, and financial) affect the choice of discount rate?

# Q&A Discussion: Discount Rates and Mitigations

- How should the purpose of the Cost Benefit Ratio (CBR) – to assist in assessing and comparing the cost effectiveness of proposed utility mitigations – affect the choice of discount rates?
- Should different discount rates be used to adjust the risk reduction benefit achieved by different types of mitigations? Specifically, can dual-rate discounting be used for mitigations that demonstrate a social benefit? If so, how is a social benefit distinguished from a non-social benefit?
- Should different discount rates be used to adjust the costs associated with different types of mitigations?

# Q&A Discussion: Ranges and Sensitivity Analysis

- If dual-rate discounting is appropriate for calculating the cost-benefit ratio, what then should be the appropriate range(s) for the discount rate(s)?
- Are sensitivity or scenario analyses appropriate to examine the impact of discount rates on CBRs?

# CPUC Close and Next Steps

3:30 pm – 4:00 pm

# Next Steps

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

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

2. CalAdvocates, TURN & SPD File Proposals (October 31) 🎃
3. Ruling with Questions for Party Comment (approx. November 3)
4. Workshop #5 Opening Comments (December 1)
5. Workshop #5 Reply Comments (December 8)