



**Safety and Enforcement Division
Risk Assessment Section
Staff Report
Pacific Gas and Electric Company (PG&E)
2017-2019 General Rate Case Application A.15-09-001**



SED – Risk Assessment and Enforcement
California Public Utilities Commission

March 25, 2016





Emergency Evacuation Procedure

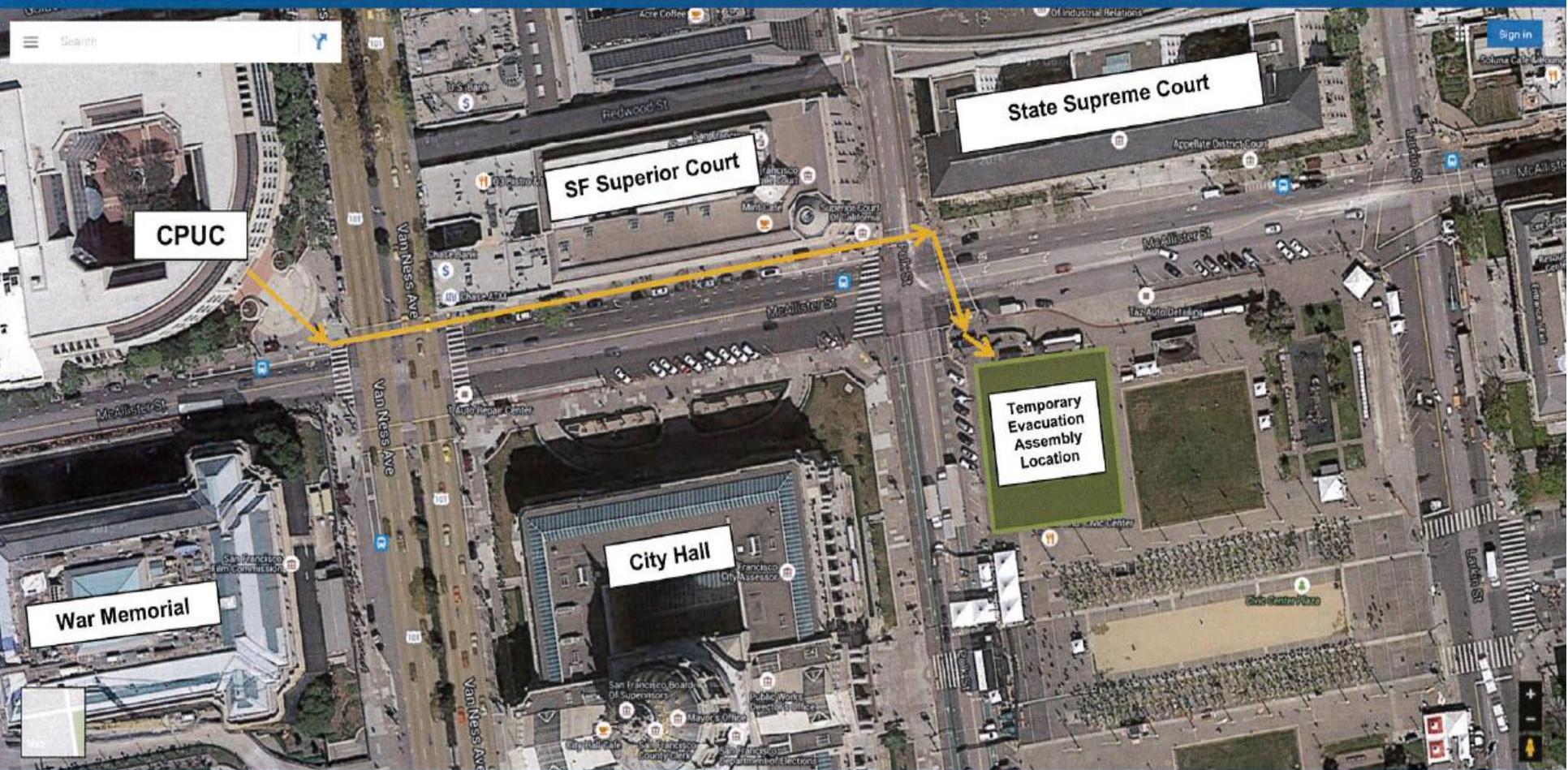
In the event of an emergency evacuation:

- **Calmly Proceed out of the nearest exit.**
- **Proceed down Van Ness to McAllister Street. Take a left on McAllister and go a block to the Civic Center Plaza across the street from City Hall.**
- **Re-group on the green across the street from City Hall until safe to return.**





Temporary Evacuation Assembly Location





Practical Information

WiFi Access

SSID: cpucguest

User: guest

Password: cpuc22916

Restrooms:

**Past security to the other
end of the entry way..**

Call in information:

- **Phone line: 1-866-859-2737**
Participant code: 1682922

WebEx:

**[https://van.webex.com/van/j.php?
mtid=me98bb67fa624c27af018e186
5a3b0481](https://van.webex.com/van/j.php?mtid=me98bb67fa624c27af018e1865a3b0481)**

Meeting Number: 745 246 569

Meeting Password: Pge2016!





Presentation Agenda

Table of Contents:

9:30 - 9:45 Staff Introduction & Emergency Procedures

9:45 - 10:00 Introductions – New Parties to the Proceeding:

- Office of Rate Payer Advocates (ORA) Safety Section. Supervisor, Nat Skinner
- Collaborative Approaches to Utility Safety Enforcement (CAUSE), Scott Rafferty
- Any other new parties to the proceeding who would like to introduce themselves.

10:00 - 10:15S-MAP Overview and Nexus with PG&E's 2017 GRC

10:15 - 10:35Introduction of PG&E's SED 2017 GRC Report (A.15-09-001)

10:35 - 10:45Break

10:45 - 11:00Cont. - Introduction of PG&E's SED 2017 GRC Report (A.15-09-001)

11:00 - 12:15PG&E Presentation:

- How PG&E uses RIBA to translate risk assessment into GRC spending proposals
Jamie Martin – Senior Director, Business Finance, PG&E's Risk Informed Budget Allocation (RIBA) Model.
Eric Back – Director, Compliance and Risk Management, Application of RIBA to our Electric Operations.

12:15 - 1:15 Lunch Break

1:15 - 2:30 Overview and Walk Through Examples from the Report

- Electric Distribution - Wildfire Risk
- Gas Distribution – Cross Bore Risk
- Energy Supply – Hydro Generation
-

2:15 - 2:25 Break

2:25 - 2:40 SB900 – Incidents and Audits

2:40 - 2:55 Question and Answer

2:55 - 3:05 Next Steps





Background of SED Utility Rate Case Risk & Safety Reports

Executive Director Directed PG&E to Incorporate Risk Assessment and Best Practices into its 2014 GRC – March 2012

PG&E 2014 GRC SED Consultant Reports – May 2013

- Liberty Consulting: Electric Generation & Distribution GRC Report
- Cycla: Gas Distribution GRC Report

Gas Safety Ruling Ordered a Gas Distribution Financial Audit Report (Overland) included in the 2014 GRC.

SCE 2015 GRC SED Staff Report – August 2014

PG&E 2015 GT&S SED Final Staff Report – September 2014

Sempra (SoCalGas & SDG&E) 2016 GRC SED Staff Report – March 2015





S-MAP (D.14-12-025)

- **OIR Decision for R.13-11-006 Creates Three New Processes**
 - Safety Model Assessment Proceeding (S-MAP)
 - Risk Assessment Mitigation Phase (RAMP)
 - Accountability Reports – Risk Reduction and Project Spending.





Assigned Commissioner's Ruling and Scoping Memo A.15-09-001 – December 01, 2015

SED Staff directed to:

Describe and analyze how PG&E's current risk assessment and management process is evolving and how it is being used for risk and safety aspects of its GRC application for 2017-2019:

- to identify major risks;
- to determine potential mitigation plans and programs; and
- to inform PG&E's GRC budget requests in order to reduce or avoid those major risks.





Scope of the Report

The report:

- Describes the process to assess and prioritize its major risks.
- Explains how risks are translated into mitigations making up portions of the revenue requirement.
- Provides examples of major risk and mitigation proposal(s).
- Summarizes CPUC data and statistics related to incidents of violations of rules and general orders, and audits of operations.





What This Report Does Not Cover

- Evaluation or conclusions on funding levels associated with any project or the risk score ranking prioritizing projects and programs.
- The safety culture (See OII – I.15-08-019).
- Evaluation of third-party reports on PG&E's efforts to integrate risk, asset and investment management in its decision making and operations.





Conclusions

The risk assessment framework and integrated planning processes employed by PG&E identifies major risks and determines mitigation plans and programs.

Risk assessment program is in a state of transition.

The Risk-Informed Budget Allocation process should be used in conjunction with testimony, evidentiary hearings and cross-examination of witnesses to provide a complete record.





Conclusions

PG&E provided more transparency in the risk assessment and mitigation process, and mapping outcomes to proposed expenditures for programs.

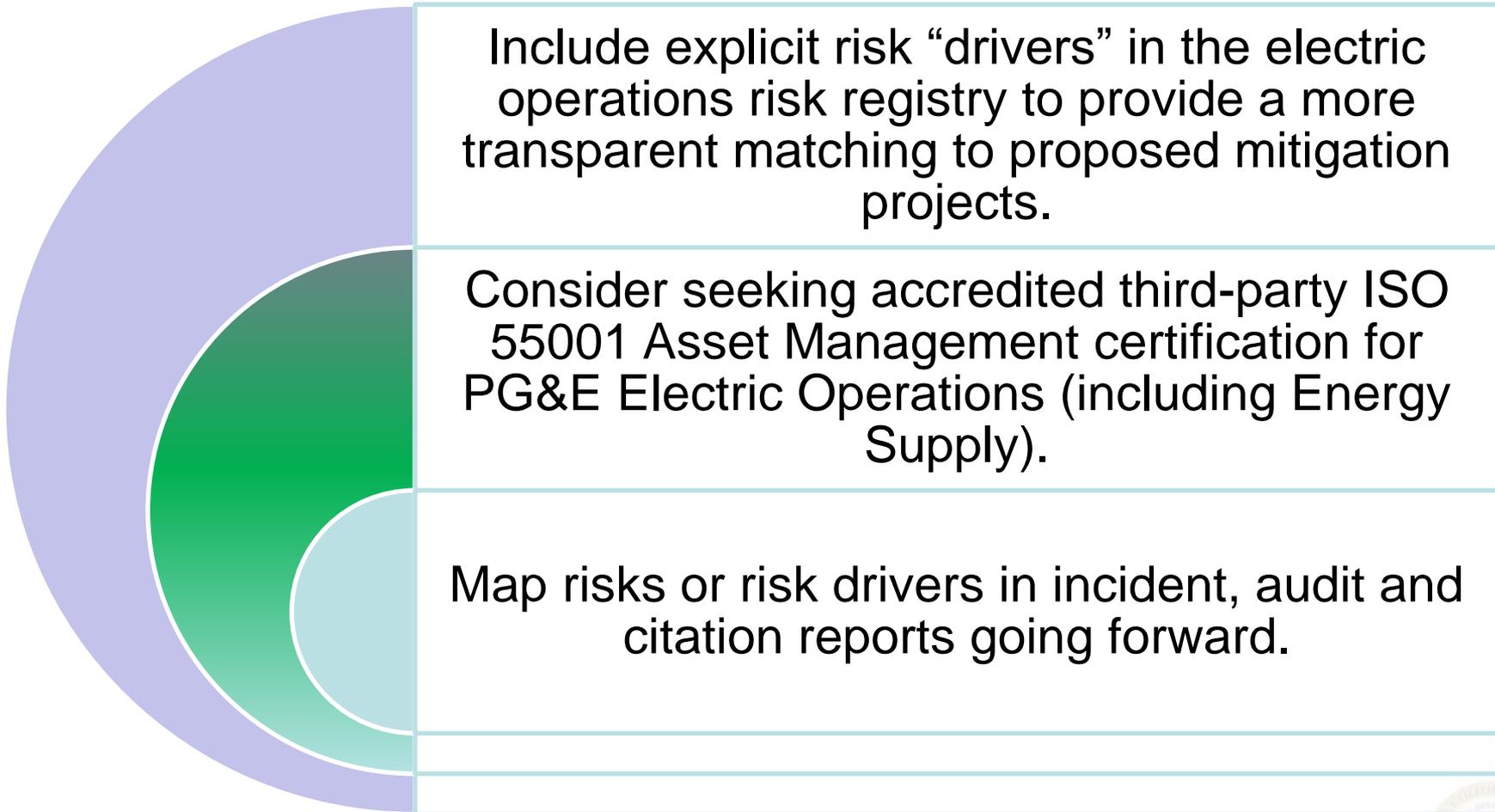
PG&E moved safety to a fundamental consideration in its GRC.

More can be done to assist decision makers and intervenors in following the trail from risk assessment to budget request.





Recommendations





Q & A





Overview

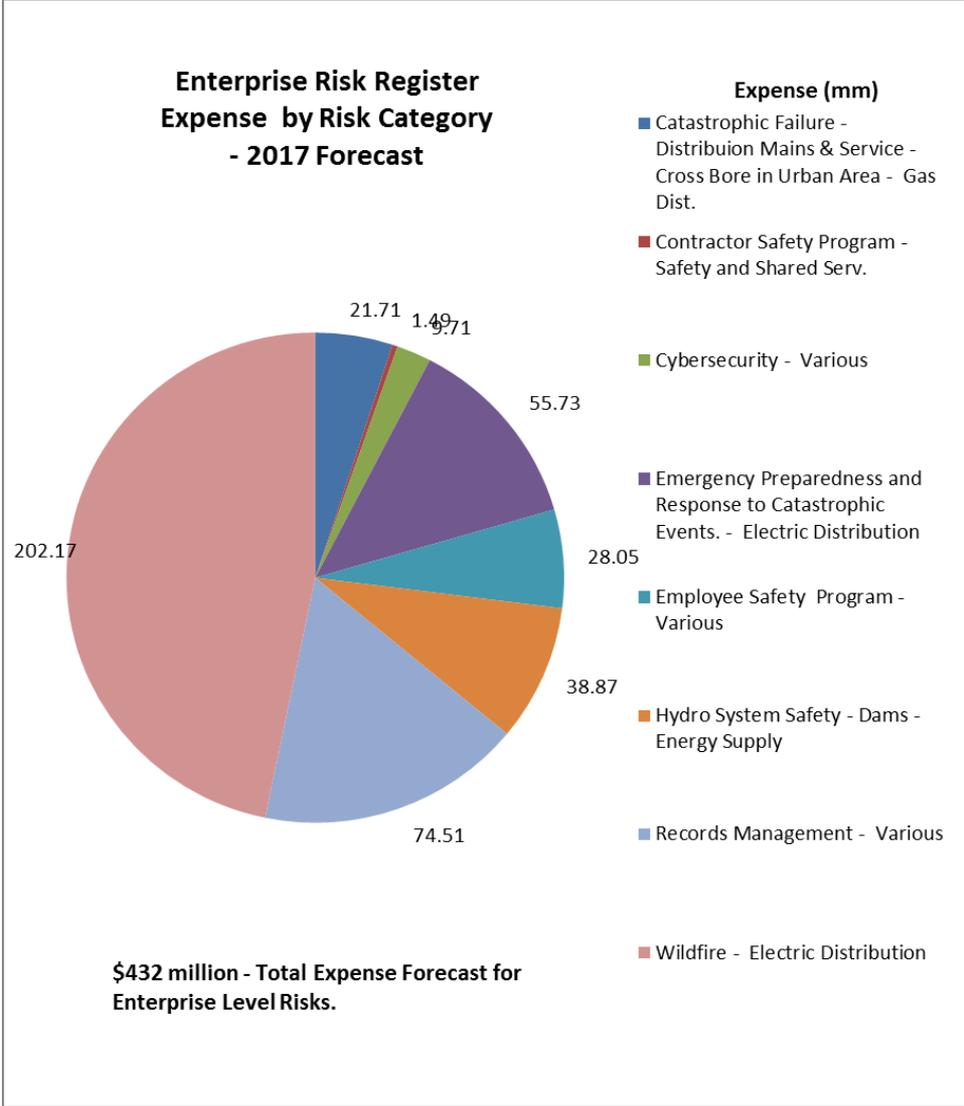
How does PG&E incorporate risk assessment and evaluation into its business and reflect that in its GRC?

What are the key features consistently used by PG&E to form its risk-based approach to assessing and evaluating risk?



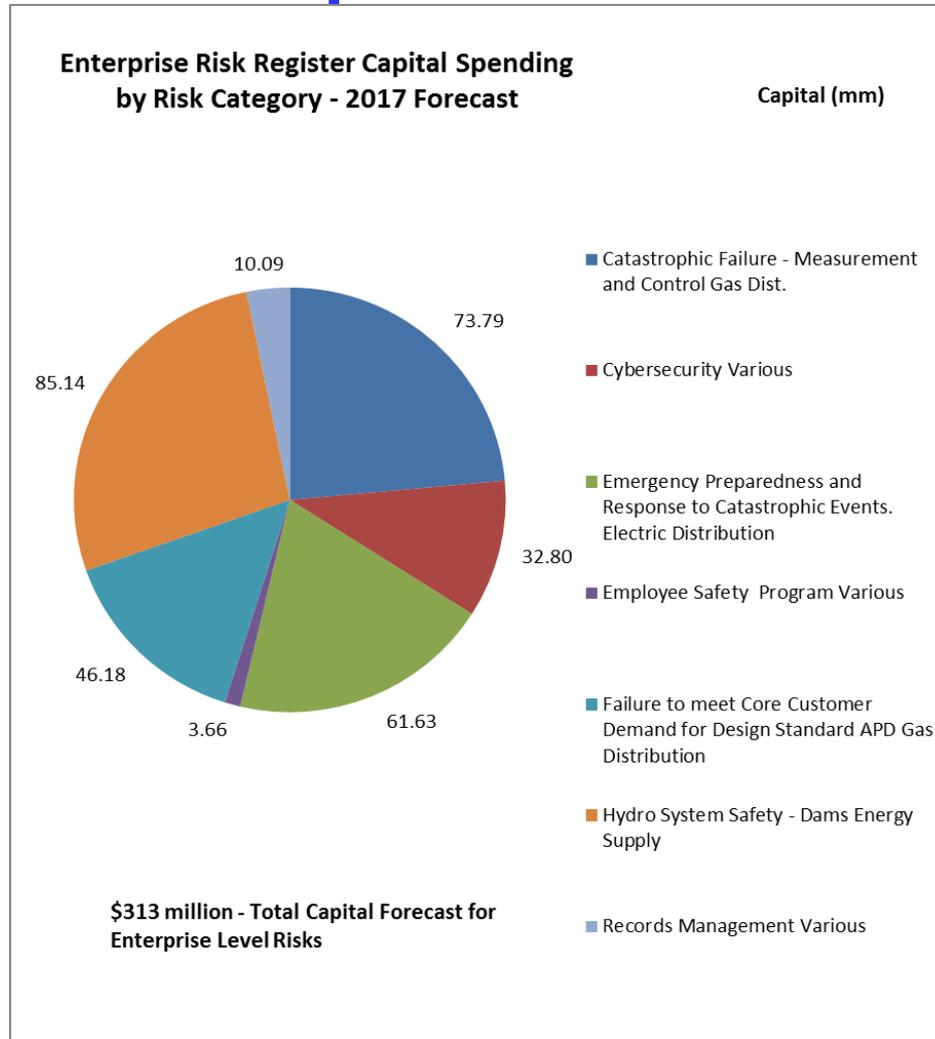


Enterprise Risks – 2017 GRC Expense





Enterprise Risks – 2017 GRC Capital Expenditures





How does PG&E incorporate risk assessment and evaluation into its business and reflect that in its GRC?

- **Planning – Strategic, Two Year, and Tactical**
- **Implementation – Risk Committees, LOB Coordination, and Tool Development**
- **Execution – Risk management, LOB Sessions, resource allocation, and Executive monitoring.**
- **Review – Session 2, Dashboard/Metrics, LOB and Executive follow up.**
- **Iteration – Revisit plans, update strategic goals, and annual process cycles.**
- **Change – Monitor process, strategic plan, and outside input.**





Managing Safety Through a Risk-Based Decision Model

Long Term Goal – Implement Risk-Based Model.

- **Progress Toward Meeting Risk Program Goals.**
- **Future Strategic Goals.**





Progress Toward Meeting Risk Program Goals.

- **2013 Goals**

- Create risk registers - Create data base for risks and mitigations - Engage Sr. Management - Identify strategies and resources - Metrics for monitoring risk status.

- **2014 Goals – In Process**

- Automate Tracking - Identify data and gathering information from available sources - Mitigations based on benchmarking and scoring - Quantification through metrics and benchmarking - Risk factors to prioritize funding - Risk as foundation for regulatory cases.

- **2015 Goals – In Process**

- Use risk informed resource allocation - Improve risk and benchmarking for regulatory cases - Measure efficacy of mitigation and impact on risks.





Summary of Future Strategic Risk Program Goals

- **2016 - Levelize risks across LOBs - Begin consideration of risk tolerance in models - Pilot risk quantification models.**
- **2017 – Quantitatively evaluate investments - Risk tolerance guidance for LOB's - Value of risk reduction part of investment planning - Risk mitigation assessment aligned with CPUC direction.**





Summary of Future Strategic Risk Program Goals – Cont.

- **2018 - Explicit uncertainty analysis - Process for documenting risk tolerance analysis in each LOB – Risk reductions integrated in planning.**
- **2019 - Incorporate risk tolerance into regulatory cases - Explicit risk reduction values determine investment decisions.**
- **2020 - Demonstrable risk reduction benefits - Institutionalized risk tolerance methods.**





Summary of Future Strategic Risk Program Goals – Observations.

Five-year strategic plan is an iterative document that gets updated annually.

Combine objectives to achieve synergies within the organization.

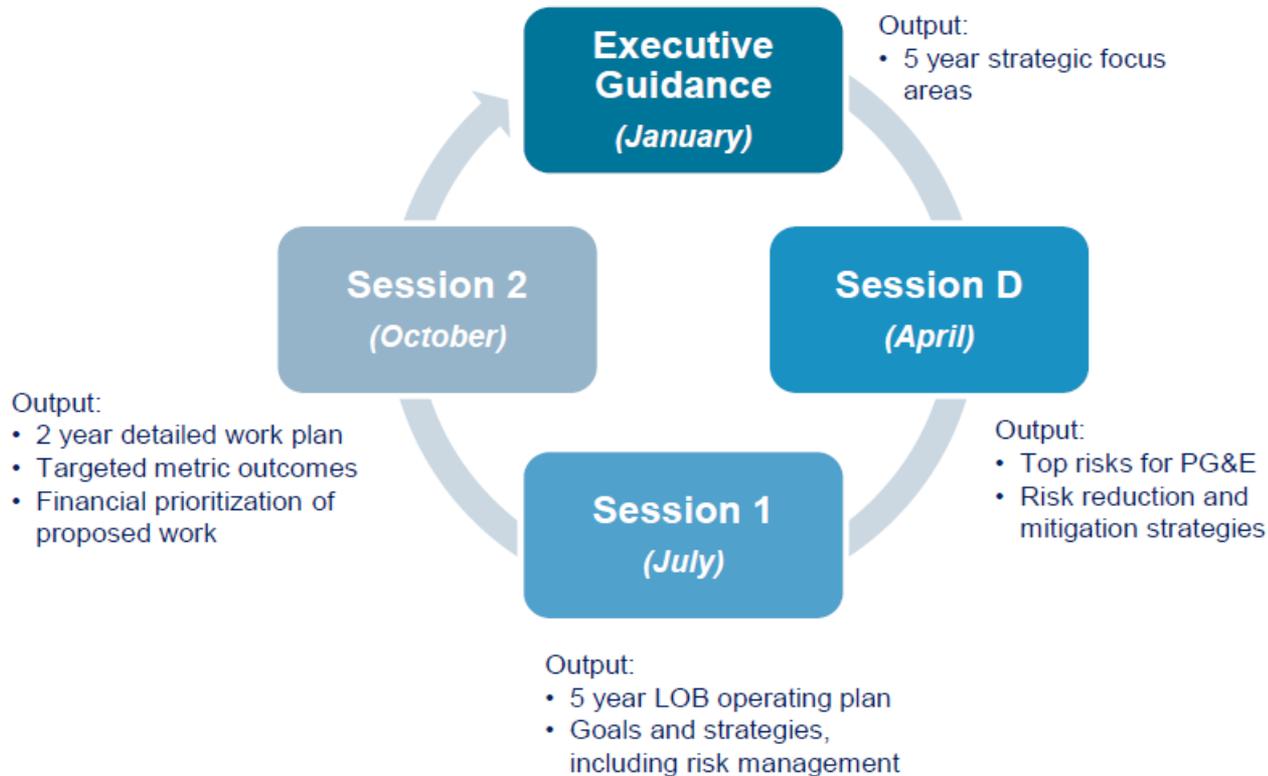
Some of the goals and processes appear well suited for parallel development and work.





Overview of the Integrated Planning Process - Enterprise and Operational Risk Management (EORM)

FIGURE 4-1
INTEGRATED PLANNING PROCESS





Background - Risks

Each line of business maintains its own risk register.

- Electric Operations Risk Register has 73 identified risks of which 5 are Enterprise Risks.
- Gas Operation's Draft Risk Register has 195 risks of which 46 are Enterprise Risks.





Risk Assessment Program

The components of a risk assessment include:

- Risk definition and scope.
- A scoring scenario (the “P95” scenario – worst case).
- Application of the Risk Evaluation Tool (RET) to determine a Risk Register score.
- Identification of risk drivers and consequences.
- Identification and assessment of existing controls.
- Identification of current gaps in controls and consideration of alternative mitigations.





Session D - Risk Evaluation Tool (RET)

RET:

Six Categories – Weighting used for in scoring.

- Safety, Environmental, Compliance, Reliability, Trust, and Financial.

Seven by Seven Scoring

- Impact - 7 Levels of Impact from Catastrophic to Negligible.
- Frequency – 7 Levels of Frequency from – Remote to Common.

Logarithmic Scale – Differentiation.





Seven by Seven Scoring Matrix

Frequency Level	Impact Levels						
	Negligible	Minor	Moderate	Major	Extensive	Severe	Catastrophic
	1	2	3	4	5	6	7
Common (7)	10	32	100	316	1,000	3,162	10,000
Regular (6)	6	18	56	178	562	1,778	5,623
Frequent (5)	2	7	23	74	234	740	2,340
Often (4.5)	2	7	21	67	211	668	2,113
Occasional (4)	2	6	18	56	178	562	1,778
Infrequent (3)	1	4	14	43	135	427	1,351
Rare (2)	1	3	10	32	100	316	1,000
Remote (1)	1	2	6	18	56	178	562





PG&E's Presentation on Risk Informed Budget Allocation

How PG&E uses RIBA to translate risk assessment into GRC spending proposals

- **Jamie Martin – Senior Director, Business Finance, Overview of PG&E's Risk Informed Budget Allocation (RIBA) Model.**
- **Eric Back – Director, Compliance and Risk Management, Application of RIBA to our Electric Operations.**





Examples of Identified Risks and Risk Evaluation Process

Electric Operations – Wildfires

Gas Operations – Cross Bore

Energy Supply – Hydro Generation





Risk Assessment in Practice Electric Operations





Electric Operations 2017 GRC Spending Forecast

Electric Distribution 2017 Forecast Expenditures Mapped to			
	(000)	Expense	Capital
Enterprise Risks	Wildfire	\$ 202,172	\$ -
	Failure of Substation - Catastrophic	-	-
	Emergency Preparedness and Response - Catastrophic Events	55,734	61,626
	Records Management	10,596	-
	Cybersecurity	500	-
	Employee Safety	1,550	-
	Contractor Safety	-	-
Substation Risks	General	28,783	115,490
	Transformers & Voltage Regulators	4,278	39,955
	Protective Relays, Instrument Transformers, & Station Batteries	4,855	2,876
	Voltage & Flow Control Equipment	455	6,209
	Circuit Breakers & Switch Gear	4,983	73,506
	Grounding Systems	-	577
	Switches	382	665
	Unit Substations	-	142
	Bus Structures	-	6,028
	Critical Equipment Procurement	-	-
Distribution Overhead Risk	Seismic Resiliency	-	530
	General	136,171	278,866
	Conductor Primary	8,988	74,030
	Support Structures	26,498	147,153
	Line Equipment - voltage Regulators, Boosters & Capacitors	10,076	27,872
	Streetlight Structures	5,028	34,378
	Conductor Secondary	-	1,234
	Transformers	617	13,498
	Line Equipment - Protective	5,191	5,841
	Encroachment on EO Assets	-	-
Distribution Underground Risks	Distributed Generation	-	22,509
	Contact Voltage	-	-
	General	80,131	103,889
	Network Components	7,056	13,209
	Line Equipment	1,045	48,866
Other Work (Work Requested by Others, New	Cables	5,979	60,174
	Subsurface & Pad-Mount Transformers	3,032	16,867
	New Business, Work at the Request of Others, Rule 20A	32,488	612,157
	Distribution Operations	74,820	14,818
	Electric Operations Technology	3,580	32,099
Distribution Support Activities	7,655	3,913	
Total		722,643	1,818,977





Electric Operations Risks

Out of a total of 17 enterprise risks, five belong to Electric Operations and the following three relate to Electric Distribution:

- Wildfire (RET score 626)
- Failure of Substation (Catastrophic) (RET score 401)
- Emergency Preparedness and Response to Catastrophic Events (RET score 280)





Electric Operations – Example Wildfires

Purpose:

- To select an Electric Operations risk for review of the risk assessment program.

Risk Example:

- Wildfires – Highest RET Score (626)

Definition: “The Wildfire enterprise risk is that PG&E assets initiate a wildfire that is not easily contained and that endangers the public, private property, or sensitive lands. This risk has been a formally-tracked enterprise risk for the Company since 2006.”





Wildfire Program Purpose

Wildfire Caused by Company Assets

Top Enterprise Risk



Vegetation and Asset Caused Ignition

Primary Risk Driver



Vegetation Management and Priority Line Inspections

Risk Driver Mitigation





Risk Identification and Ranking

PG&E identified risks in Session D



PG&E scored risks using the Risk Evaluation Tool (RET) and ranked risks



Risk Register lists risks with scores



Wildfire – Electric Operations ranked as the top enterprise risk





Risk Identification and Mitigation

- Primary focus is on identification and reduction of ignition risks.
- Secondary focus on early detection and mitigating extent of the wildfire and collateral damages.
- Controllable factors - Vegetation management, line inspections, infrastructure replacement, training and education, detection and early warning systems.
- Uncontrollable factors - Drought, forestry practices, public, response to a fire, climate change and weather.





Risk Identification and Mitigation – Cont.

- Continuing wildfire prevention through additional wildfire patrols and use of new technology such as Laser Illuminated Detection and Ranging, (LiDAR).
- “It is important to note that there are distinctions between: Risk Register scores; program/project risk scores (which are discussed later in the Risk Informed Budget Allocation section of this chapter); and an individual asset risk score which is discussed in the System Tool for Asset Risk (STAR) section...”





Electric Distribution – Wildfires – Target Activities

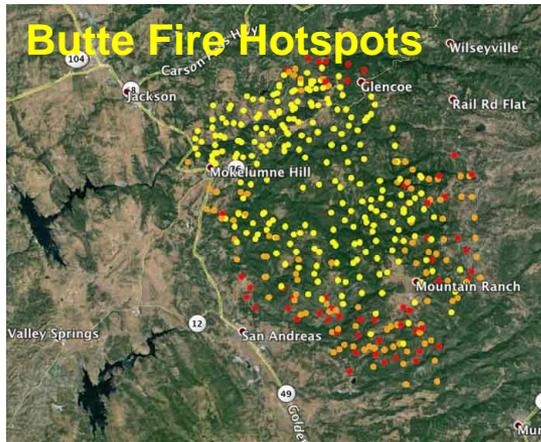
Programs to Reduce Ignition Risk

- Vegetation Management.
- Infrastructure replacement – excessively spliced lines, capacitors, insulators, and poles.
- Education and outreach – first responders and public.
- Line inspection in zones of high fire risk or consequence.





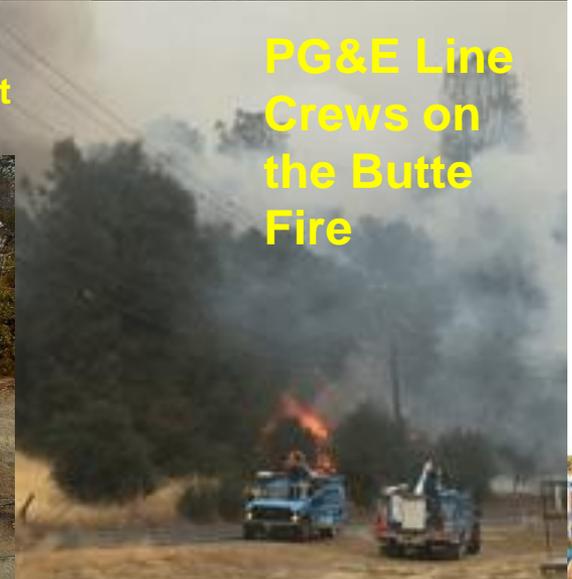
2015 Butte Fire – Recent Example



Devastating Consequences of Wildfires - 7th Worst In California History

Thousands evacuated from their homes. About 900 structures lost.

PG&E Line Crews on the Butte Fire





Risk Profile – High Consequence, Low Frequency

An executive with Pacific Gas and Electric Co. (PG&E) acknowledged that the Butte Fire may have been triggered by one of the company's power lines.

- PG&E's vice-president of Emergency Preparedness and Operations, stated, "While we don't have all the facts yet, a live tree may have contacted a PG&E line in the vicinity of the ignition point. ... We are cooperating fully with Cal Fire in an investigation of whether this could have been a source of ignition for the Butte Fire." He added, "We are reviewing our inspection and patrol data for 2014 and 2015 for the area near this tree," according to the [San Francisco Chronicle](#).





CalFire Incident Summary

Butte Fire Incident Information:

Last Updated:	October 15, 2015 7:45 pm	FINAL
Date/Time Started:	September 9, 2015 2:26 pm	
Administrative Unit:	CAL FIRE Amador - El Dorado Unit	
Acres Burned - Containment:	70,868 acres - 100% contained	
Estimated - Containment:	10/1/2015	
Structures Destroyed:	A total of 921 structures have been destroyed including; 549 homes, 368 outbuildings, and 4 commercial properties. 44 total structures damaged.	
Injuries:	2 civilian fatalities, 1 injury	
Cause:	Under Investigation	
Cooperating Agencies:	Amador County Sheriff, Calaveras County Sheriff, CAL OES, BLM, PG&E, CHP, Amador Fire Protection District, Calaveras PUD, CDCR, Sutter Creek Fire Department, CALTRANS, State Parks, California Conservation Corp.	
Total Fire Personnel:	298	
Total Fire Engines:	15	
Total Fire crews:	11	
Total Dozers:	6	
Total Water Tenders:	2	





Wildfire Potential Consequences*

Utility assets or personnel implicated in cause of the fire:

- a) Liability for damages – life, limb or property.
- b) Replace lost utility assets.
- c) Fines and penalties.
- d) Increased liability insurance premiums.
- e) Cost to restore service – Emergency response and post emergency work.
- f) Cost to repair reputation or image - public perception of real or purported poor service response and/or from negative publicity.

*** Some costs get passed to shareholders, most allocated to rate payers. Unproductive expenditures are considered wasteful and unfavorable no matter who pays in this context, therefore, minimizing wildfire risk is important.**





Conclusion

- **PG&E identified electric distribution and operations risks, ranked those risks, identified programs to mitigate risks, and ranked those programs.**
- **The Vegetation Management Program was highly ranked and addresses the highest ranked electric distribution risk.**





Challenges

- **Identifying the relationship between risk drivers and the categorization of the risk and risk mitigation programs.**
- **PG&E use of terminology and multiple locations within workpapers and testimony used for outlining the risks, drivers and mitigations.**





Recommendation

PG&E should Include explicit risk “drivers” in the electric operations risk registry to provide a more transparent matching to proposed mitigation projects.





Thank you!
For Additional Information:
www.cpuc.ca.gov
www.GoSolarCalifornia.ca.gov
www.CalPhoneInfo.com

