

DOCKETED

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Risk Assessment of Climate Change Impacts

August 29, 2017

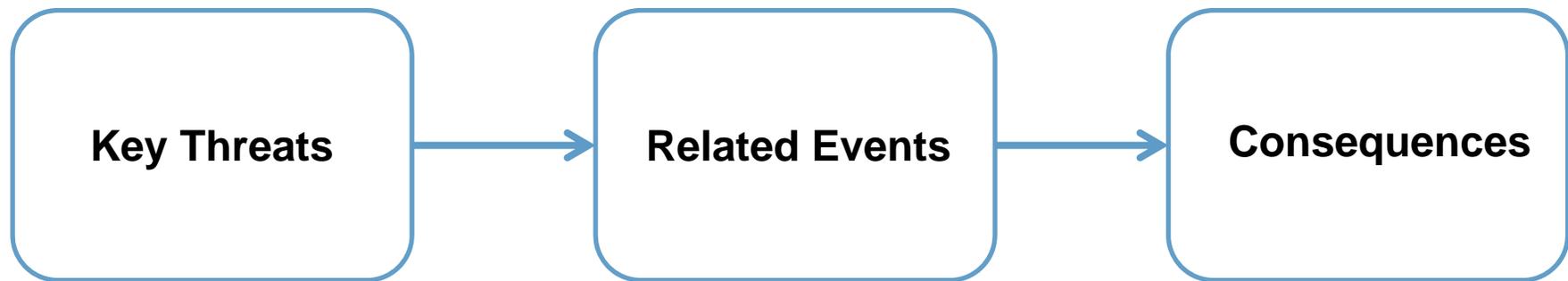


A  Sempra Energy utility

Risk Assessment and Mitigation Phase (RAMP) – Climate Change Adaptation

- » Purpose: mitigation plan for the risk of Climate Change Adaptation
 - Safety-related threats to gas infrastructure posed by climate change
 - Addressing the risks through formal planning and adaptive actions

Understanding Risk



Calculating Risk

- Risk Evaluation Framework
- Evaluative Criteria
 - Impact Input
 - Health, Safety, Environmental
 - Operational & Reliability
 - Regulatory, Legal, Compliance
 - Financial
 - Frequency Input
- Calculate Risk Score
 - Assigning criteria weighting
 - Scaling score for criteria based on scenarios
 - Calculating total score with the formula

	Impact						
	7	6	5	4	3	2	1
	Catastrophic	Severe	Extensive	Major	Moderate	Minor	Negligible
Health, Safety, & Environmental: Endanger workplace or public safety; impact to surrounding environment; Long-term: 10+ years Medium-term: 3-10 years Short-term: 1-3 years	Fatalities: Many fatalities and life threatening injuries to the public or employees. Immediate, severe, and irreversible impacts to environment	Fatalities: Few fatalities and life threatening injuries to the public or employees. Severe and long-term impacts to environment	Permanent/Serious Injuries or Illnesses: Many serious injuries or illnesses to the public or employees. Significant and medium-term impacts to environment	Permanent/Serious Injuries or Illnesses: Few serious injuries or illnesses to the public or employees. Significant and short-term impacts to environment	Minor Injuries or Illnesses: Minor injuries or illnesses to many public members or employees. Moderate and short-term impacts to environment	Minor Injuries or Illnesses: Minor injuries or illnesses to few public members or employees. Environmental impact is immediately correctable or contained within small area	No injury or illness or up to an un-reported negligible injury. No environmental impact
Operational and Reliability: Disruption to company operations that could impact customers; may be measured in quantity of impacted customers, critical locations, loss of energy flows, and/or duration	> 1 MM customers affected; or impacts an entire metropolitan area, including critical customers; or disruption of service of more than a year due to permanent loss to a facility	>100 K customers affected; or impacts multiple critical locations and customers; substantial disruption of service greater than 1 months	> 50 K customers affected; or impacts multiple critical locations or customers; substantial disruption of service greater than 10 days	> 10 K customers affected; impacts single critical location or customer; disruption of service greater than 1 day	> 1 K customers affected; impacts single critical location or customer; disruption of service for 1 day	> 100 customers affected; impacts small area with no disruption to critical location or customer; disruption of service less than 1 day	< 100 customers affected; impacts small localized area with no disruption to critical location/customer; disruption of service less than 3 hours
Regulatory, Legal, & Compliance: Diminishing relationship and increased scrutiny by regulators or government agencies; ongoing media coverage forces outreach to policy makers/regulators; increasing stakeholder revolt or objections leading to increased oversight; loss of license, exclusivity, or monopoly	Actions resulting in closure, split, sale of the company, or criminal conviction	Cease and desist orders are delivered by regulators; Critical assets and facilities are forced by regulators to be shut down; revoking license, market-based rate authority, or monopoly	Governmental, regulatory investigation (including criminal), and enforcement actions lasting longer than one year; violations that result in fines/penalties and large non-financial sanctions	Violations that result in fines or penalties, or a regulator enforces non-financial sanctions, or significant new and updated regulations are enacted as a result of an event	Violations that result in fines or penalties	Self-reported or regulator identified violations with no fines or penalties	No impact to administrative impact only
Financial : Potential financial loss, including disallowance, legal actions or fines, replacement energy, remediation, damage to 3rd party properties, etc.	Loss > \$3 billion Ability to raise capital significantly impacted; or decrease in stock price greater than 25%; or potential insolvency	\$1 B - \$3 B Ability to raise capital is challenged; or decrease in stock price greater than 15%	\$100 MM - \$1 B Ability to raise capital becoming more difficult; or decrease in stock price greater than 5%	\$10 MM - \$100 MM	\$1 MM - \$10 MM	\$50 K - \$1 MM	< \$50 K
	Frequency/Likelihood						
	7	6	5	4	3	2	1
	Common	Regular	Frequent	Occasional	Infrequent	Rare	Remote
Frequency of an occurrence: How often does the risk event occur	> 10 times per year	1-10 times per year	Once every 1-3 years	Once every 3-10 years	Once every 10-30 years	Once every 30-100 years	Once every 100+ years

Moving Forward

- » Utilizing the matrix to prioritize investments
- » Plans for future work
 - Gas Infrastructure Resilience and Vulnerability Report
 - Developing a tool/process for local government coordination (SB 379)
- » Geological Hazard Data Analysis
- » Strain Gauge Installation Projects
- » Slope Stability & Erosion Control Projects

How YOU can help

- » Include utilities when identifying assets/vulnerabilities and when developing high level policies, plans and implementation strategies.
- » Incorporate consideration of natural gas technologies into future planning processes
- » Support “resiliency and hardening” of infrastructure
- » Learn from previous disasters, support diversity of energy sources and avoid putting all “eggs into one basket”

THANK YOU

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