

## DOCKETED

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# Risk Assessment of Climate Change Impacts

August 29, 2017

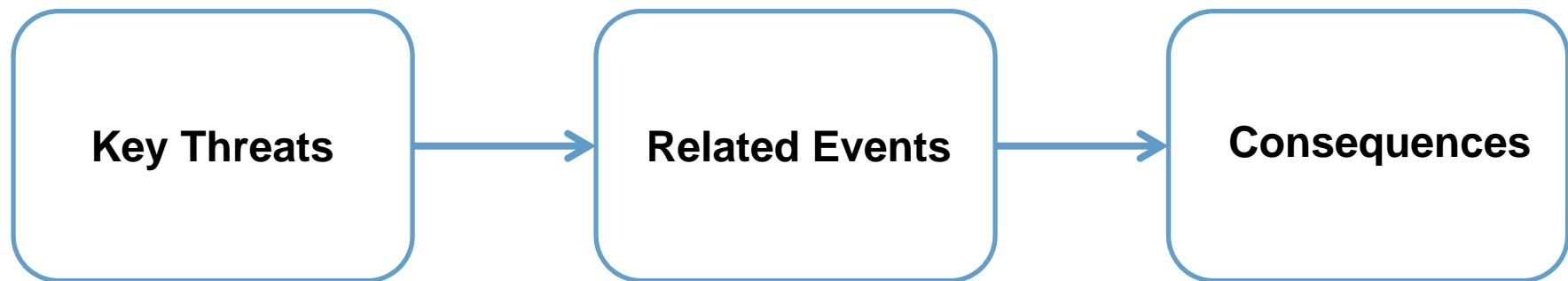


A  Semptra Energy utility

# 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   |
| <b>Health, Safety, &amp; Environmental:</b><br>Endanger workplace or public safety; impact to surrounding environment;<br>Long-term: 10+ years<br>Medium-term: 3-10 years<br>Short-term: 1-3 years  | Fatalities: Many fatalities and life threatening injuries to the public or employees.<br><br>Immediate, severe, and irreversible impacts to environment                           | Fatalities: Few fatalities and life threatening injuries to the public or employees.<br><br>Severe and long-term impacts to environment  | Permanent/Serious Injuries or Illnesses: Many serious injuries or illnesses to the public or employees.<br><br>Significant and medium-term impacts to environment                              | Permanent/Serious Injuries or Illnesses: Few serious injuries or illnesses to the public or employees.<br><br>Significant and short-term impacts to environment               | Minor Injuries or Illnesses: Minor injuries or illnesses to many public members or employees.<br><br>Moderate and short-term impacts to environment | Minor Injuries or Illnesses: Minor injuries or illnesses to few public members or employees.<br><br>Environmental impact is immediately correctable or contained within small area | No injury or illness or up to an un-reported negligible injury.<br><br>No environmental impact   |
| <b>Operational and Reliability:</b><br>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 |
| <b>Regulatory, Legal, &amp; Compliance:</b> 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  |
| <b>Financial :</b> Potential financial loss, including disallowance, legal actions or fines, replacement energy, remediation, damage to 3rd party properties, etc.  | Loss > \$3 billion<br>Ability to raise capital significantly impacted; or decrease in stock price greater than 25%; or potential insolvency                                       | \$1 B - \$3 B<br>Ability to raise capital is challenged; or decrease in stock price greater than 15%   | \$100 MM - \$1 B<br>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   |
| <b>Frequency of an occurrence:</b> 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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