Risk Assessment in Practice
Gas Operations

Purpose

Take one funding proposal for Gas Operations and walk through PG&E's risk assessment process.

Example program: Cross Bore Program

GRC Expenditure Forecast for Gas Operations to Enterprise Mapping (2017)

The programs and associated funds listed in the Risk Mitigation Summary address the enterprise risks (Referenced in Exhibit (PG&E-2), Chapter 3) and other non-catastrophic risks and drivers.

	EXP	CAP
Catastrophic Failure: Distribution Mains and Services/ Cross Bore in Urban Area CHAPTER 4	$22	–
Catastrophic Failure: Measurement and Control CHAPTER 5	–	$74
Failure to Meet Core Customer Demand: Abnormal Peak Day (APD) CHAPTER 7	–	$46
Records Management (Gas Distribution) CHAPTERS 9/10	$21	–
Cybersecurity (Gas Distribution) CHAPTER 7	$4	$3

Indicates risks with GT&S and GRC expenditures

NOTE: The dollars shown are only GRC related

Forecast expenditures are in millions of dollars.

What is a Cross Bore?

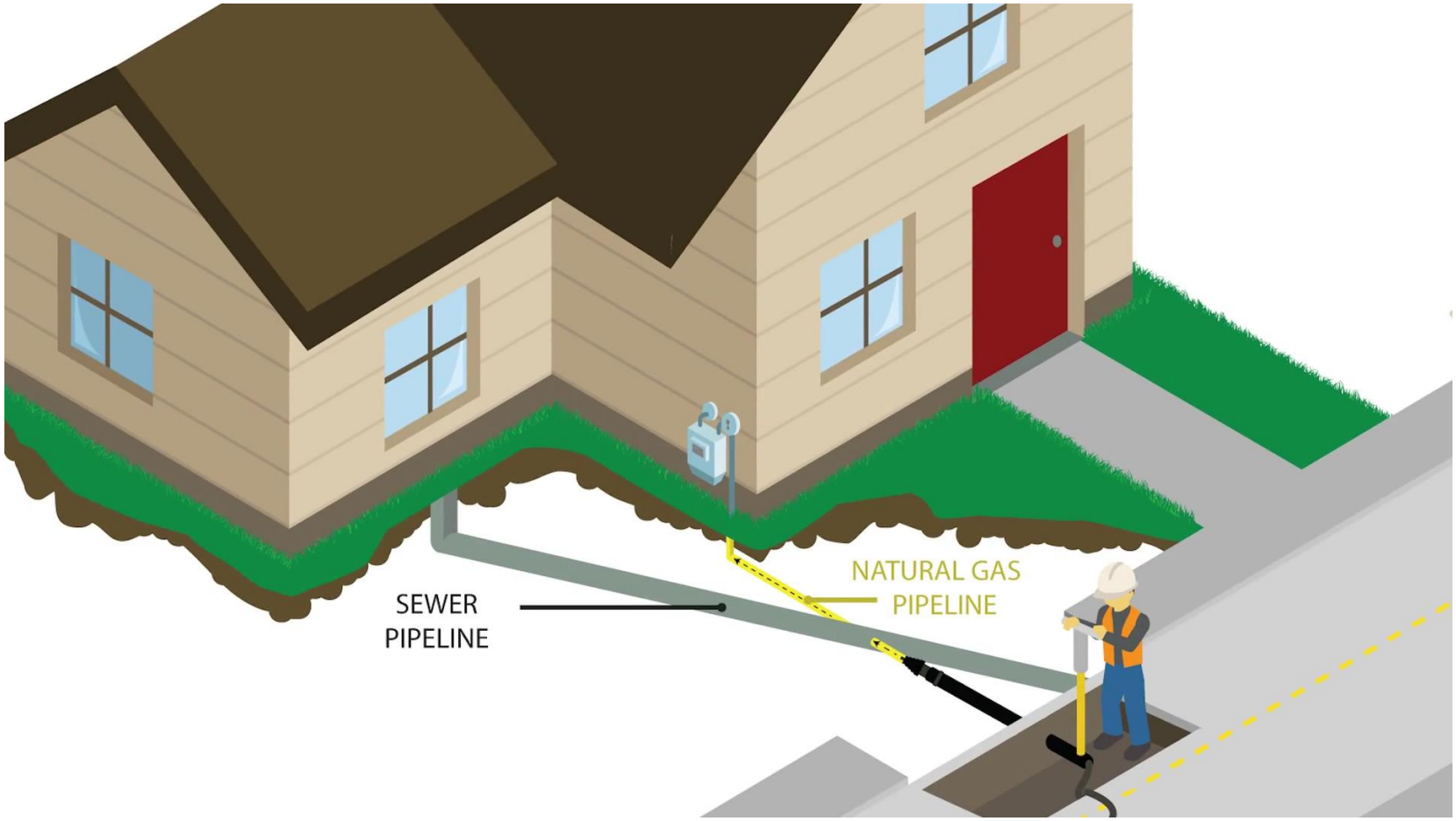

Image credit: Puget Sound Energy

Sewer Cleaning Can Rupture the Gas Line

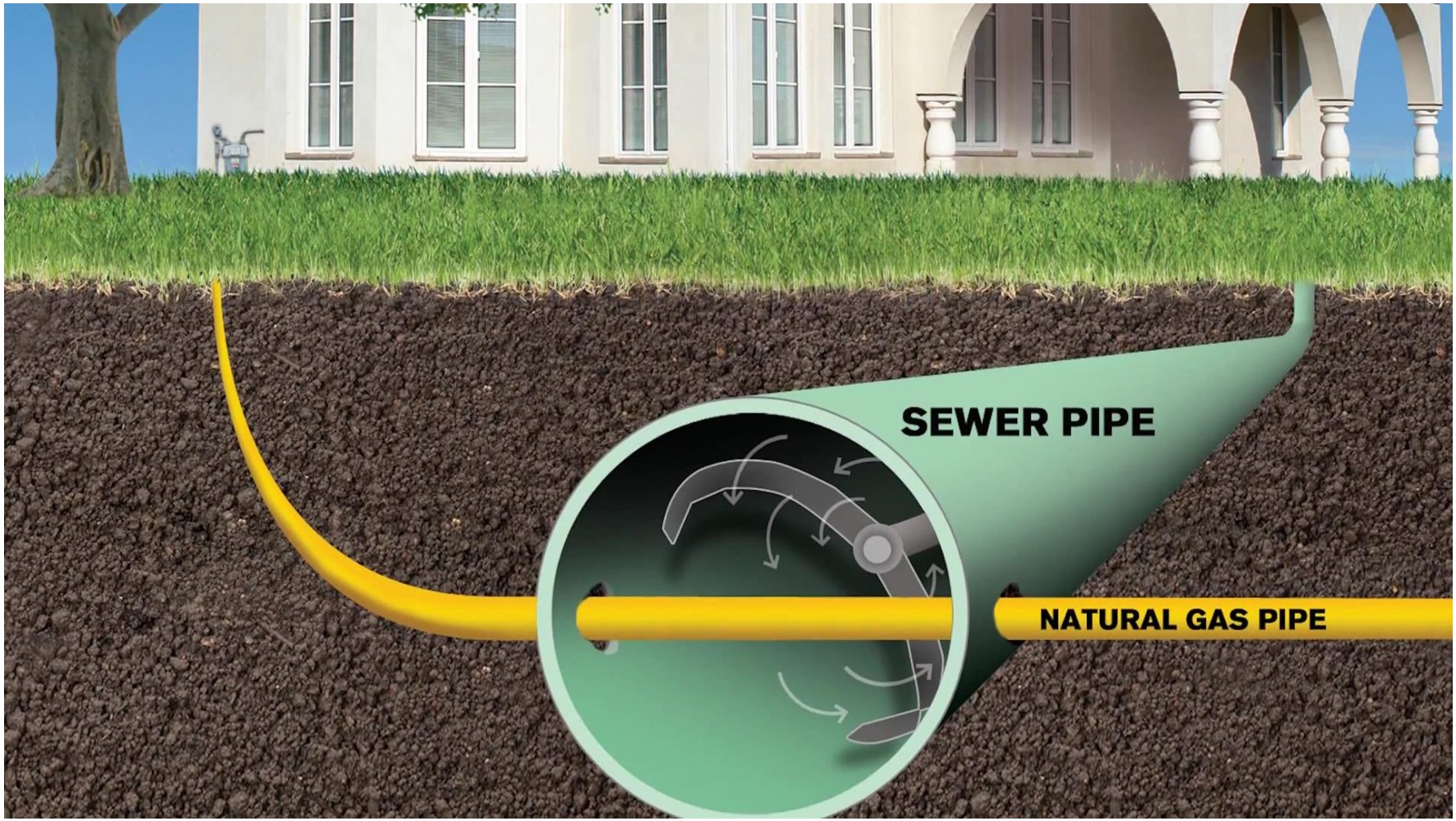

Image credit: Puget Sound Energy

Cross Bore Program Description

- Established in 2011.
- PG&E inspects, identifies, and remediates cross bores on the gas distribution system.

Cross Bore Program Purpose

Catastrophic Failure – Distribution

Top Enterprise Risk

Cross Bore in an Urban Area

Risk Driver

Cross Bore Program

Risk Driver Mitigation

Risk Identification and Ranking

PG&E identified risks in Session D

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

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Risk Register lists risks with scores

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Catastrophic Failure – Distribution ranked as a top enterprise risk

FIGURE 3-5
HEAT MAP

GRC Rank & Heat Map ID	Risk Driver Name	Enterprise Risk Name	Risk Register Risk Score*
1	Cybersecurity	GO - Cybersecurity	811
2	DMS45 - Incorrect Operations - Cross Bore in Urban Area	Catastrophic Failure – Distribution Mains and Services	617
3	Records Management	Records Management	591
4	MC16 - Equipment Related - Loss of Containment LP Distribution	Catastrophic Failure - Measurement & Control	551
5	Failure to Meet Core Customer Demand for Design Standard Abnormal Peak Day (APD)	Failure to Meet Core Customer Demand – Abnormal Peak Day (APD)	548

*Current Residual Risk

Program Identification and Scoring

Asset Family Owner Proposed Cross Bore Program as a Mitigation

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PG&E scored the program using RIBA

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Cross Bore Program received second highest score for Gas Distribution

	Impact Levels						
	Negligible	Minor	Moderate	Major	Extensive	Severe	Catastrophic
Frequency Level	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

Cross Bore
RIBA Score: 1389

A Quick Review…

- The Risk Evaluation Tool (RET) score and Risk Informed Budget Allocation (RIBA) score are distinct.
- The RET score is used to rank risks in the risk register.
- The RIBA score (AKA the Program and Project risk score) relatively captures the consequence and likelihood scores for Safety, Environmental, and Reliability to determine the worst credible event that could occur if PG&E does not invest in the program or project.

Aligning Risks and Programs

RET and RIBA scores are ranked relatively from largest to smallest.

Scores are grouped into five range groups with each range group representing twenty percent of the total population of programs and projects

PG&E compared the range group of the program and project to the range group of the top two risks each program or project is aligned to.

The Cross Bore RET and RIBA scores were each in Range 1, resulting in alignment.

Program Funding

RIBA results are used as an input for Session 1

Session 1 provides funding recommendations

PG&E recommended the Cross Bore Program for funding

Funding is based on 2014 program costs including assumptions about efficiency savings

Final Result

PG&E proposed to increase Cross Bore Program inspections from 33,570 in 2014 to 45,000 in 2017 at a cost of $22 million in 2017.

Conclusion

- PG&E identified gas operations risks, ranked those risks, identified programs to mitigate risks, and ranked those programs.
- The Cross Bore Program ranked highly and addresses a highly ranked risk.
- PG&E proposed to accelerate the Cross Bore Program inspections.

Challenges

- Summary of risk assessment process was not presented for each program or risk.
- PG&E used varying terminology and identifications for the Cross Bore Program.

Recommendations

- PG&E should provide an explicit conclusion and narrative demonstrating how its risk prioritization process affected funding for a particular program.
- Programs should be identified with consistent terminology.