



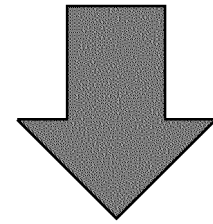
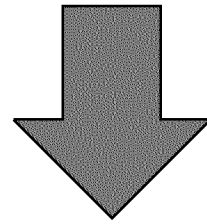
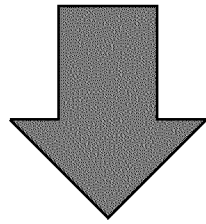
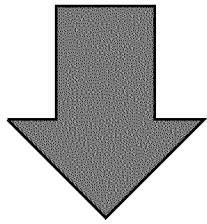
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# Gas Operations – Risk Management Process

AUGUST 2013

PG&E Confidential

*“**Systematic and coordinated** activities and practices through which an organization **optimally and sustainably** manages its assets, their risks, performance and expenditures over their **life cycle** for the purpose of achieving its organizational strategic plan”*



**Know your  
assets**

**Know their  
condition**

**Understand their  
risks**

**Mitigate those  
risks**



# Gas Operations Asset Families

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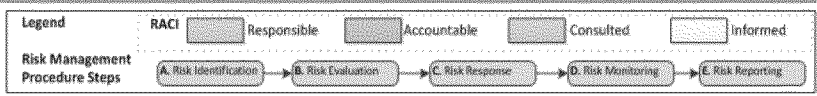
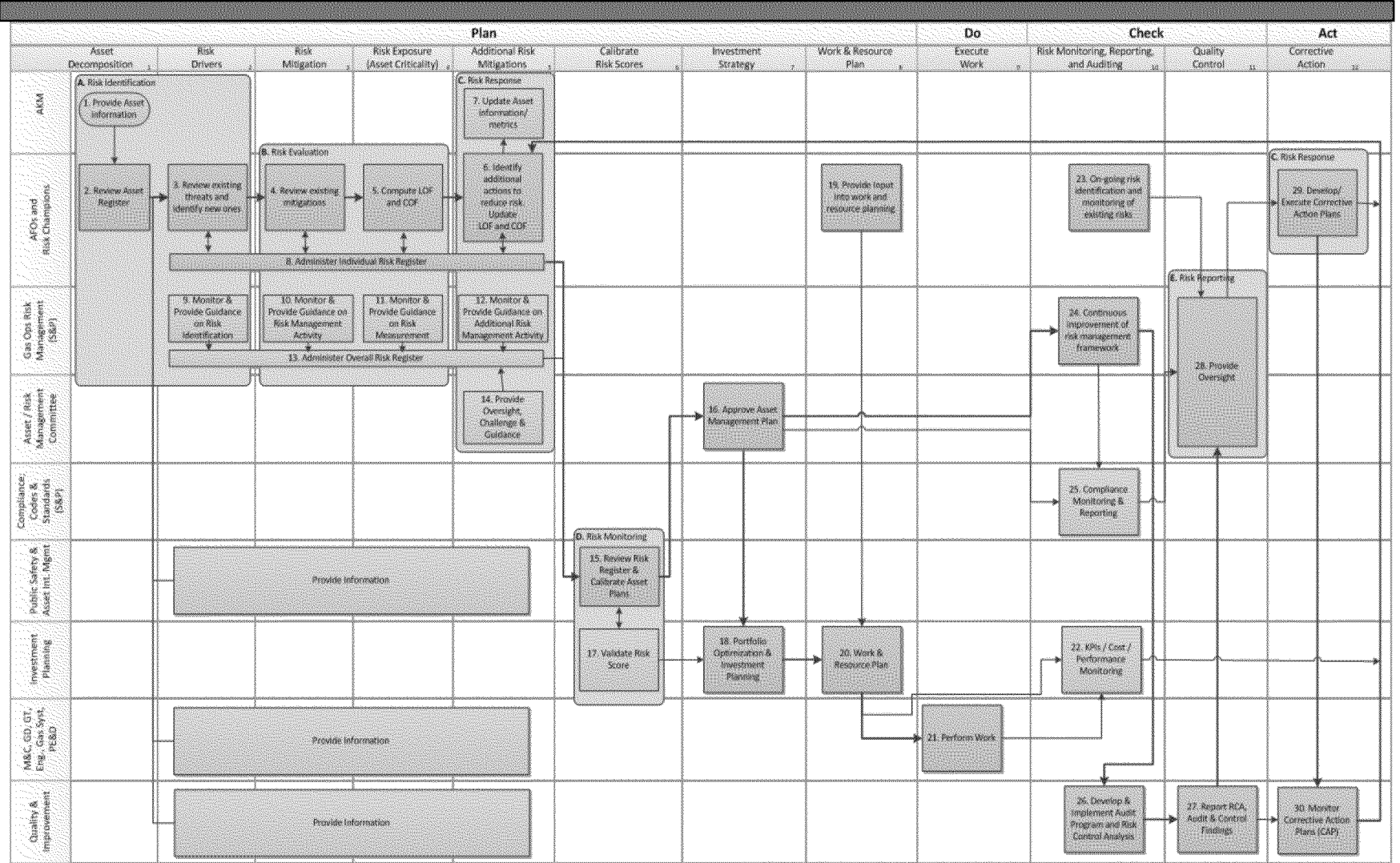


----- 8 Gas Asset Families -----

<b>NOT DRAWN TO SCALE</b>	Storage	Distribution Mains	Cathodic Protection	Odorizer
Not included in gas asset system	Compression & Processing	Distribution Services	Station Protection	Separator
	Measurement & Control	Customer Connected Equipment		
	Transmission Pipe	CNG/LNG		



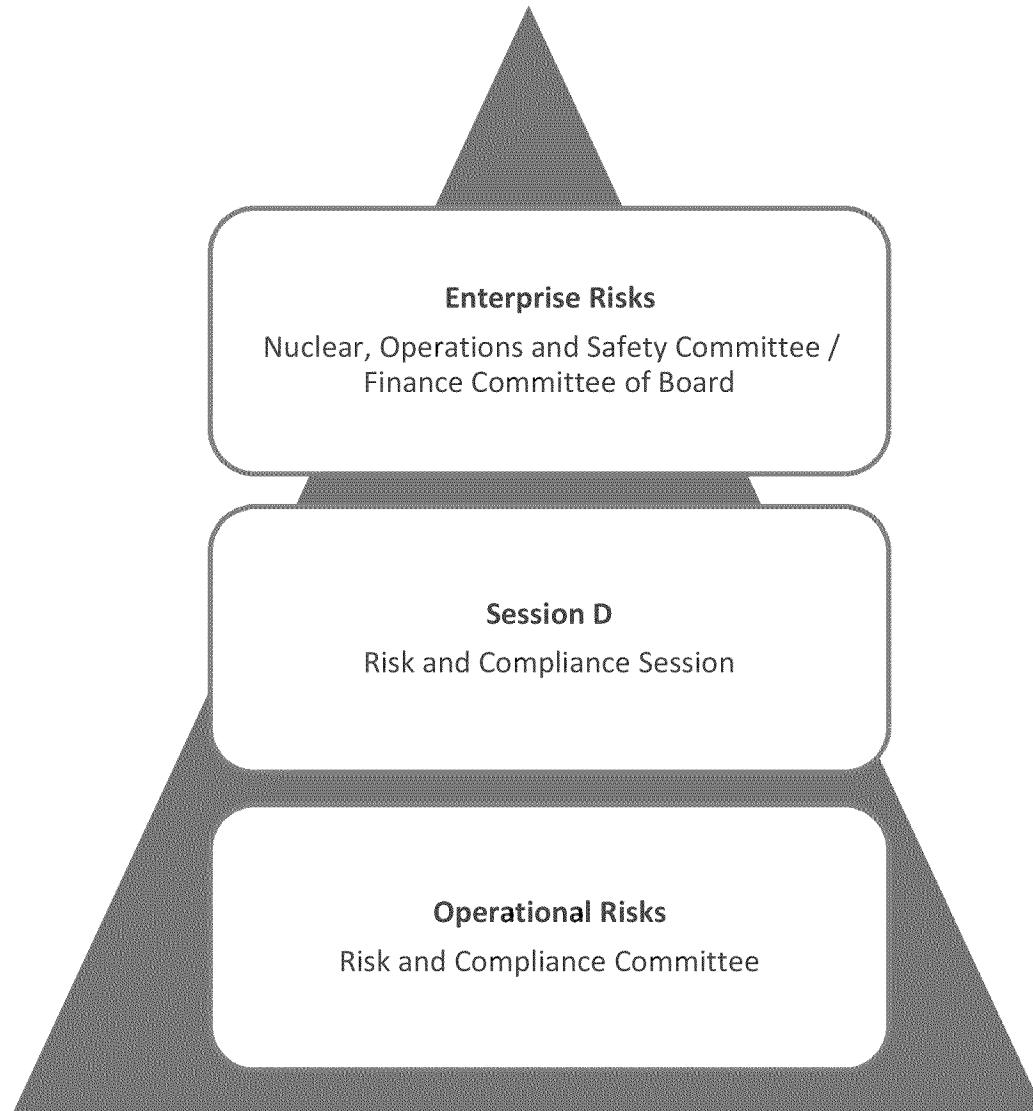
# Asset Risk Management Process



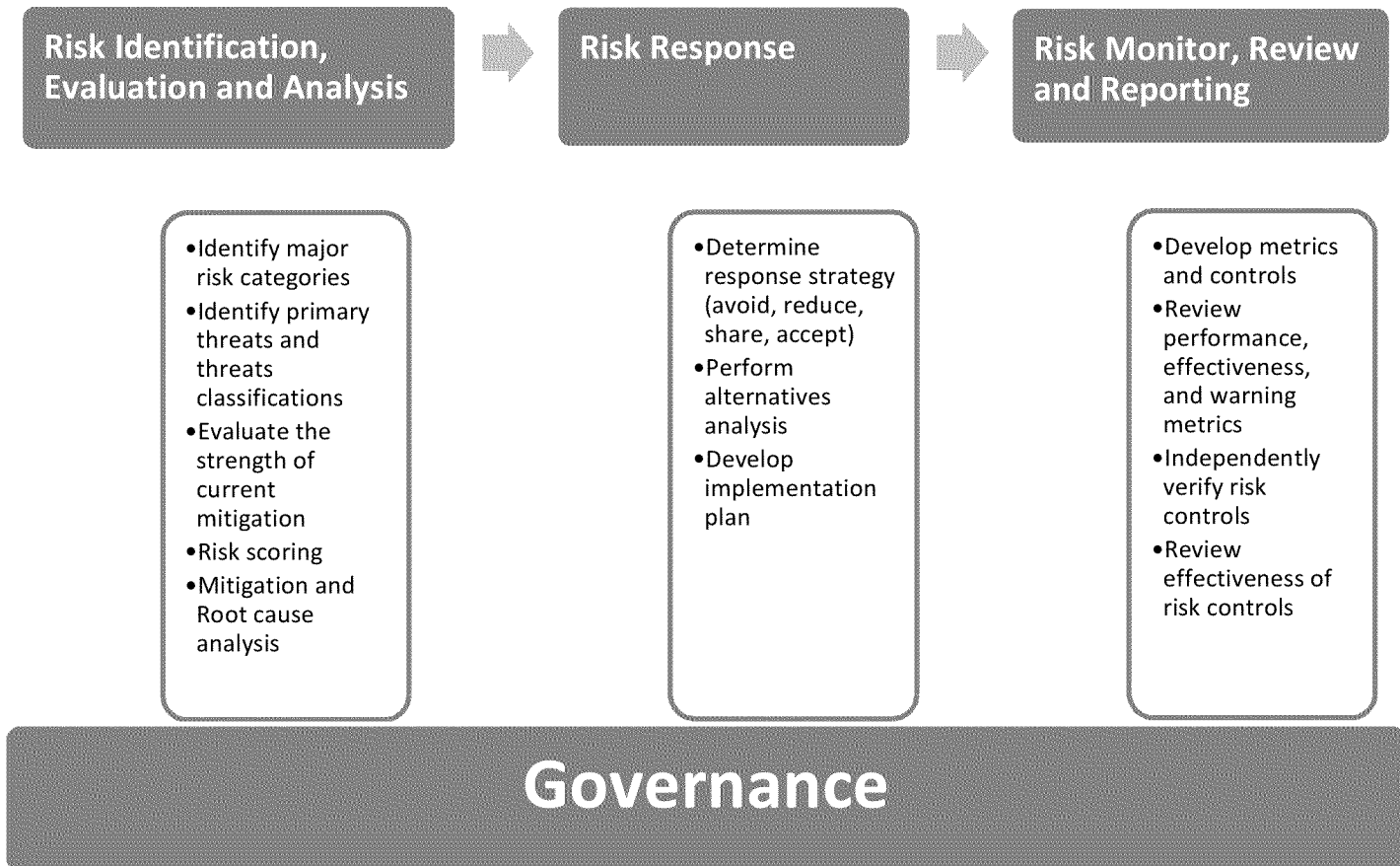


# Gas Operations Risk Management Governance

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# Gas Operations Risk Management Process



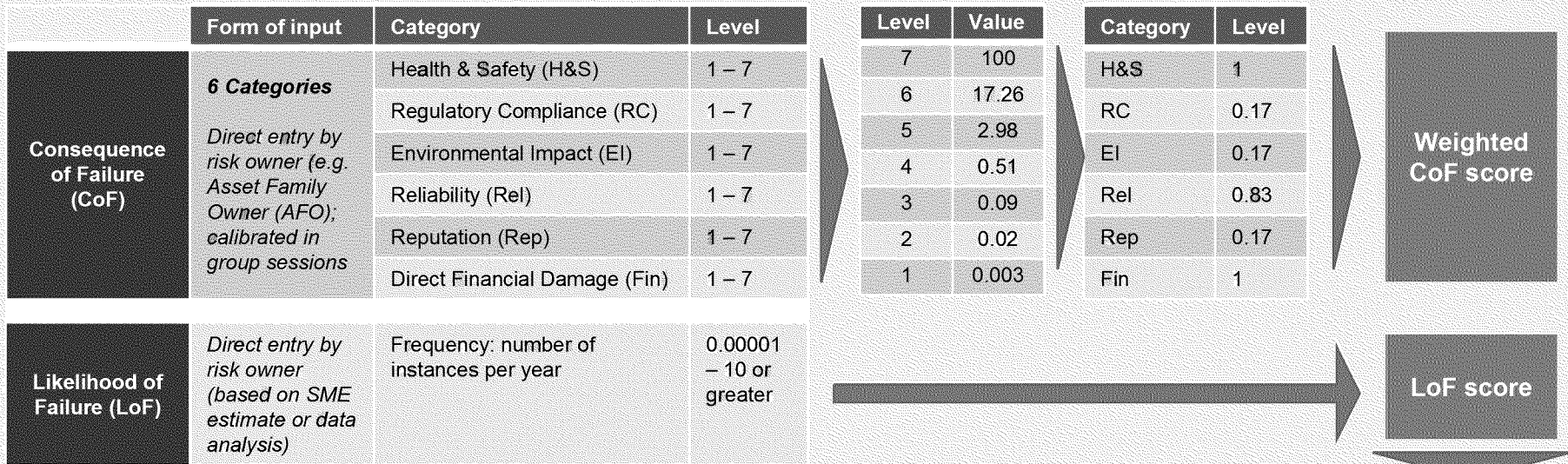
## Method for calculating weighted risks

1. Risk owners enter levels for CoF and LoF for each risk

2. Category levels equivalent to values (COF only)

3. Weightings applied to each category (COF only)\*

4. Weighted risk score generated



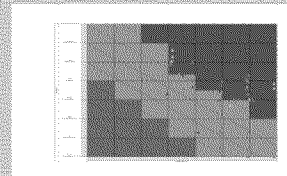
\* Applies ERM-defined weighting factors, adjusted by dividing by 0.3 to avoid diluting final score

## Outputs

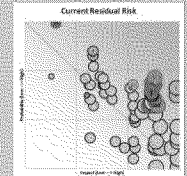
i) Calculation results for each risk (**Risk Register**)

	Weighting factor	Input						Value weights	Prob <sub>year</sub>	Consequence <sub>year</sub>
		0.3	0.05	0.05	0.25	0.05	0.3			
	LoF <sup>2</sup>	N <sub>H&amp;S</sub>	N <sub>RC</sub>	N <sub>EI</sub>	N <sub>Rel</sub>	N <sub>Rep</sub>	N <sub>Fin</sub>	Table 3	Formula (1)	Formula (2)
Risk1	0.062	5	1	1	2	5	2	3.50	54.177	3.28
Risk2	0.04	6	1	1	2	4	2	17.38	51.458	3.93
Risk3	0.000008	7	1	1	5	6	3	105.47	0.000	4.66
Risk4	0.0000016	6	2	1	5	5	2	20.26	0.000	3.99
Risk5	0.01	3	2	1	5	4	4	3.17	42.857	3.24

ii) Results in risk matrix



iii) Heat Map as part of the Risk Evaluation Tool





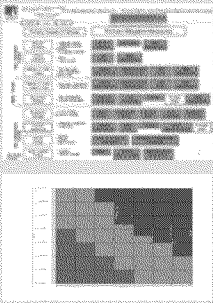
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A systematic approach to identify existing barriers and controls; assess their strength and weakness; and establish metrics.

## Our steps to improve risk management in Gas Operations

### Working with a range of stakeholders:

AFOs; Integrity Management (IM); Investment Planning (IP); Asset Knowledge Management (AKM); Gas Ops Risk Management (RM)



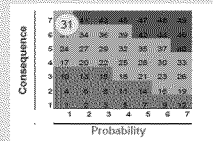
#### • Developing a bottom-up asset risk assessment methodology in line with PAS 55

- Braking down assets into sub-segments resulting in specific risks and specific risk reductions
- Introducing the ability to quantify very low likelihood, but high consequence events
- Including sufficient granularity for investment planning

AFOs

IM

RM



#### • Developing a risk based investment prioritization

- Executed successful pilot in Q4 2012
- In process of re-prioritizing 2013 projects

IP

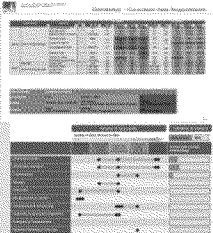
RM



#### • Developing a consistent risk management process

- Drafting policies and procedures

RM



#### • Improving the quality and application of data

- Performed diagnostic of risk data quality in Q4 2012
- Working with Asset Knowledge Management to make improvements

AFOs

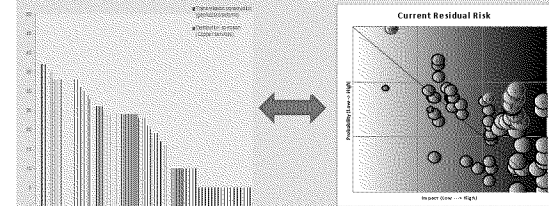
AKM

## Ensuring alignment with ERM and Investment Planning

In reviewing more than 580 project risk scores vs. risk scores in the risk register we encountered only a couple of discrepancies, which have already been resolved.

Projects addressing top risk-register risks scored very high in the IP process, for example:

- 6 of the top 25 highest-scoring projects correspond to the #1 risk register risk (Transmission construction)
- The highest scoring non-blanket distribution project corresponds to the top risk register distribution risk (Distribution corrosion – copper)





# 12-month roadmap for risk management program

Quarter	Activities
<b>August 2013 – December 2013</b>	<ul style="list-style-type: none"><li>• Continue developing the Gas Ops Risk Management team</li><li>• Develop software solution for the risk register</li><li>• Train stakeholders on how to use risk register software tool, ensuring alignment with their activities</li><li>• Establish specific process &amp; methodology linkage between risk register and risk-based planning processes in e.g. CAP, Audit and AKM</li><li>• Continue performing mitigation/barrier analysis for top risks</li><li>• Establish risk metrics</li><li>• Refresh risk register, based on updated, more comprehensive risk assessments and asset management plans</li><li>• Report progress to senior management since Session D in October</li><li>• GT&amp;S Rate Case submission in October – programs built around risk reduction</li></ul>
<b>January 2014 – July 2014</b>	<ul style="list-style-type: none"><li>• Roll out data analysis process to support risk evaluations, in collaboration with AKM and asset families</li><li>• Update risk register to capture data analysis</li><li>• Refine risk metric tracking to enable leadership to make informed decisions</li><li>• Prepare 2014 Session D material, demonstrating risk management progress</li><li>• PAS 55 Certification</li></ul>



# Gas Operations Risk Management Program Plan – FY13

Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Establish the risk register</b>												
Perform risk assessments – top risks in Gas Ops	█											
Prepare Session D material – top risks in Gas Ops		█		◆ 2013 Session D								
Communicate RM framework & top risks to ELT				█								
<b>Develop &amp; embed risk management governance</b>												
Design RM team governance & org structure; write job spec				█								
Develop the RM team & org structure						█						
Draft RM GDA, Standard and Procedure				█								
Coordinate stakeholder review of RM standard and procedure				█								
Provide input to Codes & Standards review & publishing, as required					█				◆ Publish documents			
<b>Develop risk management integration</b>												
Develop stakeholder integration plans (for AFOs, RCs, AMP, AKM, Q&I, IP, GSO, EP, etc.)				█								
Establish and Implement integration with stakeholders and perform assessment						█						
<b>Develop the risk register</b>												
Continue risk assessments to capture all operational risk							█					
Develop software solution for the risk register – ECTS Risk Module. Upload risk register into ECTS (ERM)							█					
Train stakeholders on the risk register software tool								█				
Perform root cause and complete response plans for top risks							█					
Refresh risk register									█			
<b>Track progress</b>												
Develop risk mitigation effectiveness and reporting						█						
<b>Prepare for GT&amp;S rate case</b>												
Prepare GT&S material for first draft submission				█								
Prepare GT&S material for second draft submission						█						
Prepare GT&S material for second draft submission							█					
Prepare final GT&S submission									█			◆ Final GT&S
<b>ERM-Related Calendar</b>												
S1 planning				█								
S2 planning						█						◆ 2013 Session 2
Progress report to senior management												◆ Final Draft Due
2014 Session D planning												◆ Commence 2014 Session D Activity

Completed
  In-Progress
  Milestone

