2025 RAMP RISK WORKSHOP

December 17, 2024

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Welcome

» Opening Remarks on behalf of SoCalGas and SDG&E
  - SoCalGas Chief Risk Officer, Deana Ng

Agenda

- Opening Remarks and Introductions – 5 minutes
- RAMP Preliminary Risk Selection – 10 minutes
  - SoCalGas RAMP Risk Results
  - SDG&E RAMP Risk Results
- Cost Benefit Approach Overview
- RAMP Risk Scoring Metrics – 20 minutes
  - Cost of Gas & Electric Reliability
  - Modified ICE 1.0 Model
- RAMP Risk Results Q&A – 20 minutes

- Break

- Tranching methodology / whitepaper overview – 30 minutes
  - Wildfire example (SDG&E)
  - Medium Pressure example (SoCalGas)
- Tranching Q&A – 25 minutes
- Wrap up and conclusion – 5 minutes

This Meeting's Objectives:

1. Achieve a shared understanding of SoCalGas and SDG&E's preliminary risk selections and scoring criteria
2. Review objectives and mechanics of the Homogeneous Tranching Method (HTM)
3. Respond to Stakeholder questions and gather input

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2025 RAMP Workshop Presenters

- Deana Ng
  - Vice President, Chief Risk & Compliance Officer - SoCalGas
- Chloe Bled
  - Project Manager, Enterprise Risk Management - SoCalGas
- Jade Thiemsuwan
  - Risk Governance Manager - SDG&E
- Allen Katouli, PhD
  - Quantitative Risk Manager - SoCalGas
- Joaquin Sebastian Peral
  - Risk Analytics Manager - SDG&E

SoCalGas Preliminary 2025 RAMP Risks - Unscaled

Risk Event	Top 40%	Preliminary RAMP Risk	Safety ($M)	Gas Reliability ($M)	Financial ($M)	*Total ($M)*
Employee Safety	✓	✓	19	0	5	23
High Pressure Gas System	✓	✓	15	2	20	37
Contractor Safety	✓	✓	11	0	2	13
Gas System Excavation Damage	✓	✓	6	20	6	32
Medium Pressure Gas System	✓	✓	6	5	87	98
Underground Gas Storage			<1			
Beyond the Meter			<1			
Seismic Activity[1]			<1			
Physical Security			<1			
Technology Recovery & Resiliency			<1			
Cybersecurity		✓	<1	2	3	5
Energy Resilience – Climate Change[2]			>0			
Energy Resilience – Energy Transition			0			
Energy Supply			0			
Asset Records Management			0			

[1] Denotes that Seismic Activity is shown separately but is included in High Pressure Gas System Risk

[2] Climate Change is shown as 0 because it is a relative risk score to the current year. Climate change risk for TY 2028 will be greater than 0 and included in High and Medium Pressure risks

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SDG&E Preliminary 2025 RAMP Risks – Unscaled

Risk Event	Top 40%	Preliminary RAMP Risk	Safety ($M)	Electric Reliability ($M)	Gas Reliability ($M)	Financial ($M)	Total ($M)
Wildfire & PSPS	✓	✓	21	95	0	156	272
Customer & Public Safety - Contact with Electric Equipment	✓	[a]	10	<1	0	<1	10
Contractor Safety	✓	✓	8		0	<1	9
Employee Safety	✓	✓	4		0	<1	5
Motor Vehicle Incident	✓	[b]	2		0	<1	2
Workplace Violence	✓	[b]	1		0	<1	2
Electric Grid Failure (Failure to Black Start)[c]	✓		1		0		1
High-Pressure Gas System		✓	1		<1	6	7
Medium-Pressure Gas System		✓	<1		<1	6	8
Cybersecurity		✓	<1	163	4	5	172
Aviation Incident			<1				<1
Gas System Excavation Damage		✓	<1		2	<1	3
Physical Security			<1				<1
Electric Infrastructure Integrity		✓	<1	351	0	26	377
Lack of IT Resiliency			<1				<1
Critical Technology and Applications Recovery			<1				<1
Beyond the Meter			<1				<1

[a] Denotes risk is to be consolidated with Electric Infrastructure Integrity
[b] Denotes risk is to be consolidated with Employee Safety
[c] Mitigation under FERC jurisdiction, thus not applicable for inclusion in RAMP

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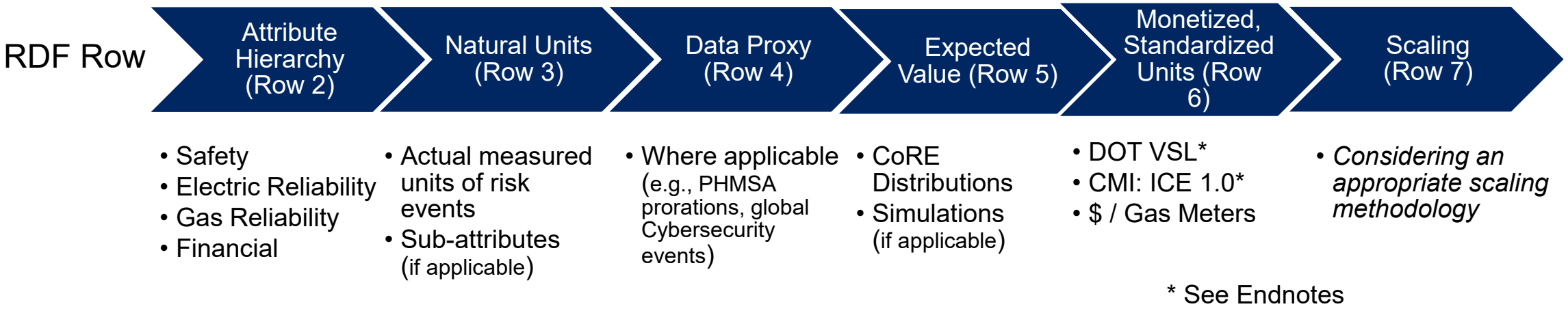
Discussion

Cost-Benefit Approach Overview

» SoCalGas and SDG&E are implementing the Cost-Benefit Approach, authorized in D.22-12-027 and modified in D.24-05-064, to perform the preliminary Risk Assessment



* See Endnotes

Safety and Reliability Preliminary Scoring Metrics

» SoCalGas and SDG&E adopted attribute values as stipulated by the CPUC in D.22-12-027 and D.24-05-064 (Appendix A, Row 6)

Safety — DOT Value of Statistical Life (VSL), *Adjusted*

- **$15,200,000** per equivalent fatality, $3.8M per serious injury
- 2023 CA-Adjusted DOT VSL

Electric Reliability — Lawrence Berkeley National Laboratory ICE 1.0, *Modified*

- **$3.67** per Customer Minute Interrupted (CMI), system-wide
- Preliminary regional breakdowns indicate alternative rates for HFTD Tier 2 and Tier 3 (**$3.34** to **$4.41**)

Gas Reliability — 2021 RAMP, implied MAVF risk score value, *Updated*

- **$3,382** per gas meter interrupted, and as stipulated in Decision 22-12-027, Ordering Paragraph (OP) 2,c.*

*see Endnotes

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SDG&E Modified ICE 1.0 Model

	Base ICE 1.0 Model	SDG&E Modified ICE 1.0 Model
Key Inputs	ICE 1.0 Version 2 2023 Customer Demographics 2023 Customer Load 2023 Gross Domestic Product 2023 Median Household Income 2023 SDG&E Reliability Data	
Method	As Defined	<u>In-ICE Modifications:</u> 1. Correct load class demotions using industry-specific load factor 2. Input top two SDG&E industries (Public Administration, Manufacturing)
Results	**$3.56** / CMI	**$3.67** / CMI

SDG&E Modified ICE 1.0 Model – Regional Segmentation

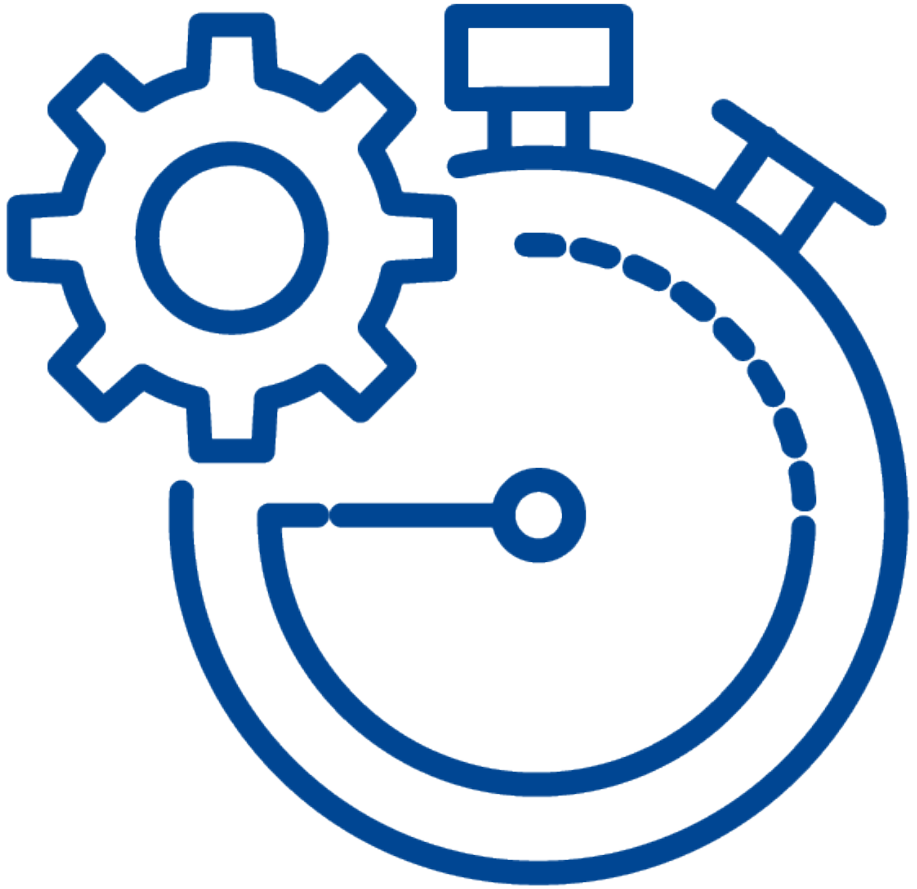
- The underlying ICE 1.0 logic does not accurately represent SDG&E's customer demographics and regional load shape
  - San Diego County has the highest concentration of PV penetration in the country (*source: CEC 6/29/23*)
  - ICE demotes over 5% of SDG&E's customers from *Medium* & *Large* to *Small* due to excess energy production

	Base ICE 1.0 Model	SDG&E Modified ICE 1.0 Model	% Service Territory Customers	% Non-Residential Customers
Non HFTD	$3.62	$3.78	85.50%	10.80%
Tier 2	$3.27	$3.34	12.25%	8.70%
Tier 3	$4.27	$4.41	2.25%	16.40%
Entire Service Territory	$3.56	$3.67	100%	10.70%

- SDG&E adjusted the $/CMI rates by service region
  - Corrected the load class demotions using industry-specific load factors
  - Included the top two SDG&E industries (Public Administration, Manufacturing)

Discussion

Break



ALTERNATIVE TRANCHING METHOD

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Tranching Background

- The CPUC approved D.24-05-064 which included a new tranching approach, the Phase Three Tranching Approach (PTTA), and a process should a utility prefer a different approach:

> *"The best practice for determining the homogeneity of risk profiles in reporting tranches is the use of quintiles of LoRE and quintiles of CoRE, resulting in 25 reporting tranches."*

> *"If an IOU prefers to determine tranches not based on homogeneous risk profiles using LoRE and CoRE quintiles, or they wish to use a percentile ranking approach that would result in more than 25 reporting tranches, the IOU must submit a White Paper describing its preferred method for determining tranches along with relevant workpapers to SPD no later than 45 days before their first pre-RAMP workshop and must serve the White Paper to the service list of R.20-07-013 on the same timeframe. Staff and Parties may provide input on the IOU's White Paper on an alternative approach to creating tranches within 21 days of the submittal."*

- On November 1, 2024, SoCalGas and SDG&E submitted a White Paper presenting an alternative approach, the Homogeneous Tranching Method (HTM)
- On November 22, 2024, SPD provided input on the HTM White Paper

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Goals of the Homogeneous Tranche Method (HTM)

- Apply to all risks
- Advances the PTTA's Homogeneous Risk Profiling
- Provides flexibility to define Asset Classes thereby allowing the utilities to transparently represent how risk is managed
- Fosters a dynamic process subject to further advancement and adaptation

Electric Risk: Example of HTM

Wildfire (without PSPS): Preliminary Unscaled Wildfire (without PSPS) Expected LoRE/Expected CoRE

1. PTTA Tranching Method
2. Alternative Tranche Method (HTM) (assume entire data is one class)

Note: *The 2025 RAMP Report will include Wildfire and PSPS activities and costs*

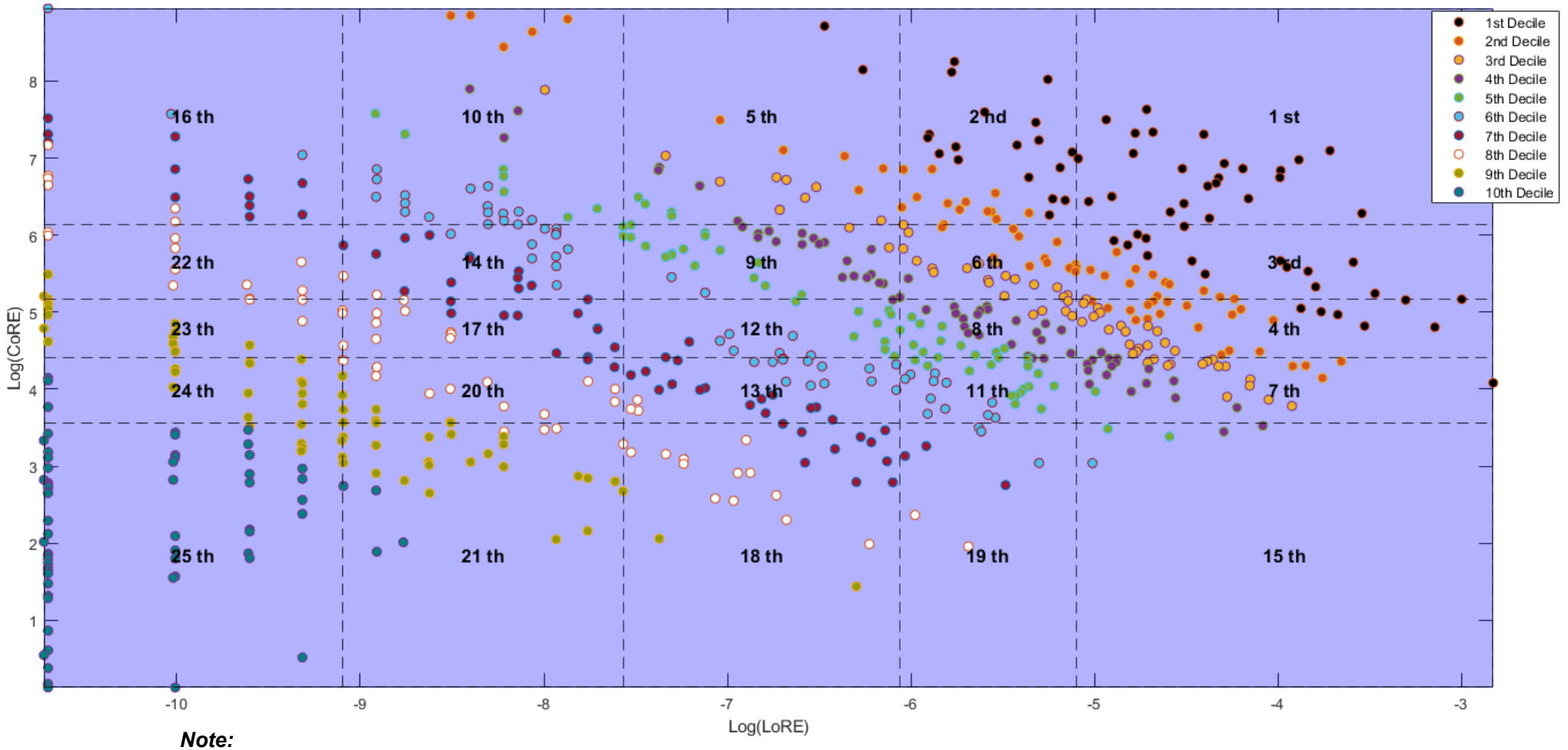
Wildfire (without PSPS) – Testing PTTA

- LoREs and CoREs separately divided into quintiles
  - 5 groups of near equal size determined using percentiles (i.e., 20, 40, 60, 80) for each forming 25 LoRE/CoRE quintiles
- Each LoRE and corresponding CoRE is plotted as an ordered pair on x-y axis
  - 5x5 grid is overlayed to demarcate boundaries of LoRE and CoRE quintiles
- Graphical representation used depict tranches
  - Log – Log scale used for readability

Wildfire (without PSPS) – Testing PTTA Cont.

- Near Equal number of pairs in each column (quintiles of LoRE)
- Near Equal number of pairs in each row (quintiles of CoRE)
- Varying number of pairs in each box (resulting tranche)
- LoRE, CoRE pairs are color coded to show risk level
  - Decile represents risk level
  - First decile is top 10% of risk
  - Varying levels of risk in each box shown by different colored points

Wildfire (without PSPS) – PTTA Example



Note:

- The 2025 RAMP Report will include Wildfire and PSPS activities and costs
- Each dot represents a feeder segment in SDG&E's HFTD.
- LoRE and CoRE values will be updated when PSPS and PEDS (Protective Equipment and Device Settings) risk are calculated.

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HTM Steps

1. Break down risk into similar risk profiles (Classes)

2. For each Class, create 1-10 risk quantiles (number depends on available data/modeling granularity)

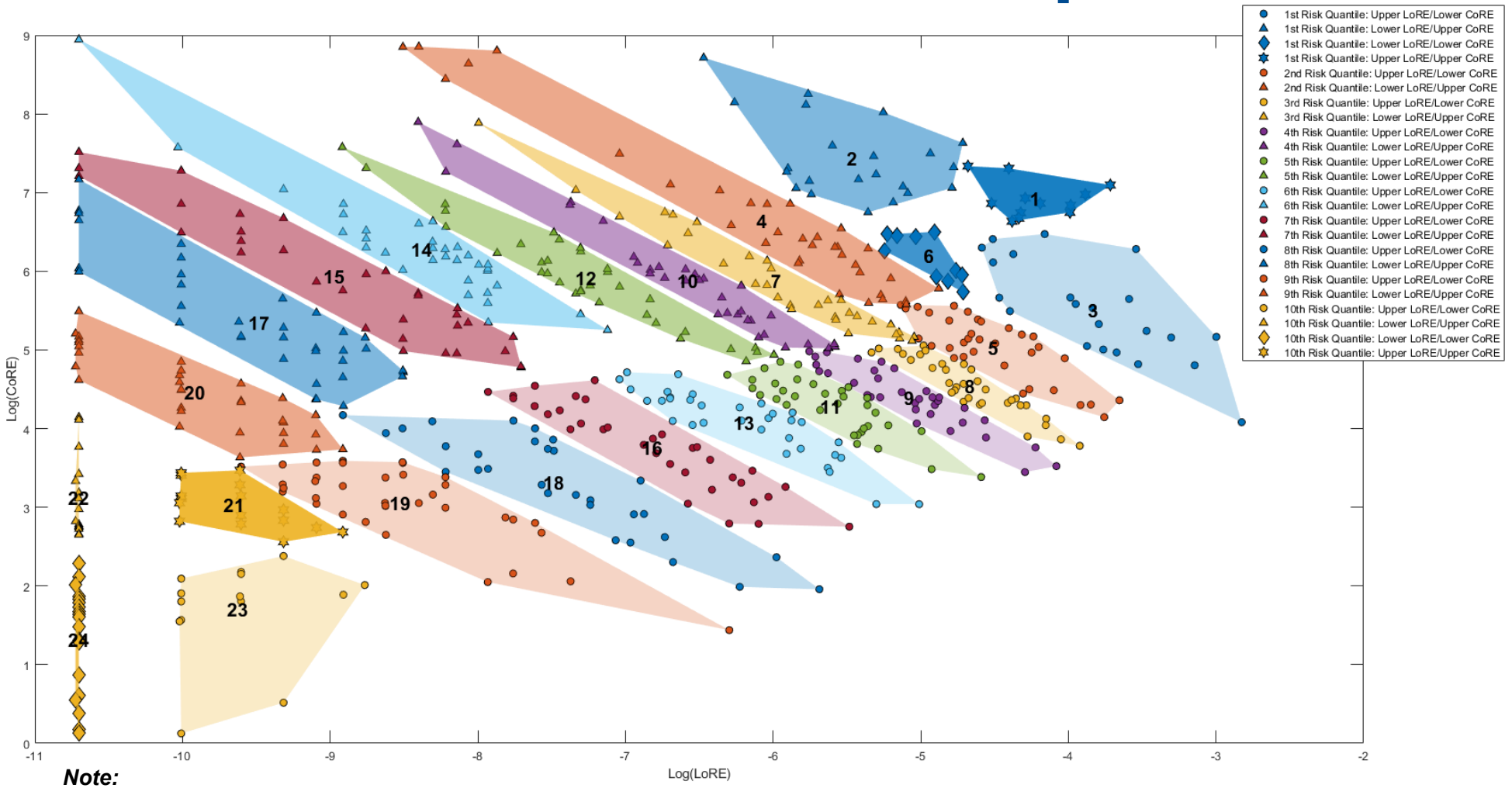
3. For each risk quantile of each Class, create 2-4 homogeneous LoRE/CoRE Tranches
   - The number of homogeneous LoRE/CoRE Tranches per risk quantile is dependent on the clustering properties of the pairs that make up the risk quantile
   - If there are less than four unique LoRE/CoRE pairs for this risk quantile, then the Risk Quantile is the final Tranche

4. Calculate the LoRE, CoRE and Risk of the resulting tranches

Wildfire (without PSPS) – HTM

- First identifies similar risk (LoRE x CoRE) levels by grouping into deciles
  - Avoids mixing different levels of risk in one tranche
- Then separates into similar LoRE/CoRE regions within each risk decile
- PTTA 5x5 grid can be plotted over HTM regions for comparison

Wildfire (without PSPS) – HTM Example (as one Class)



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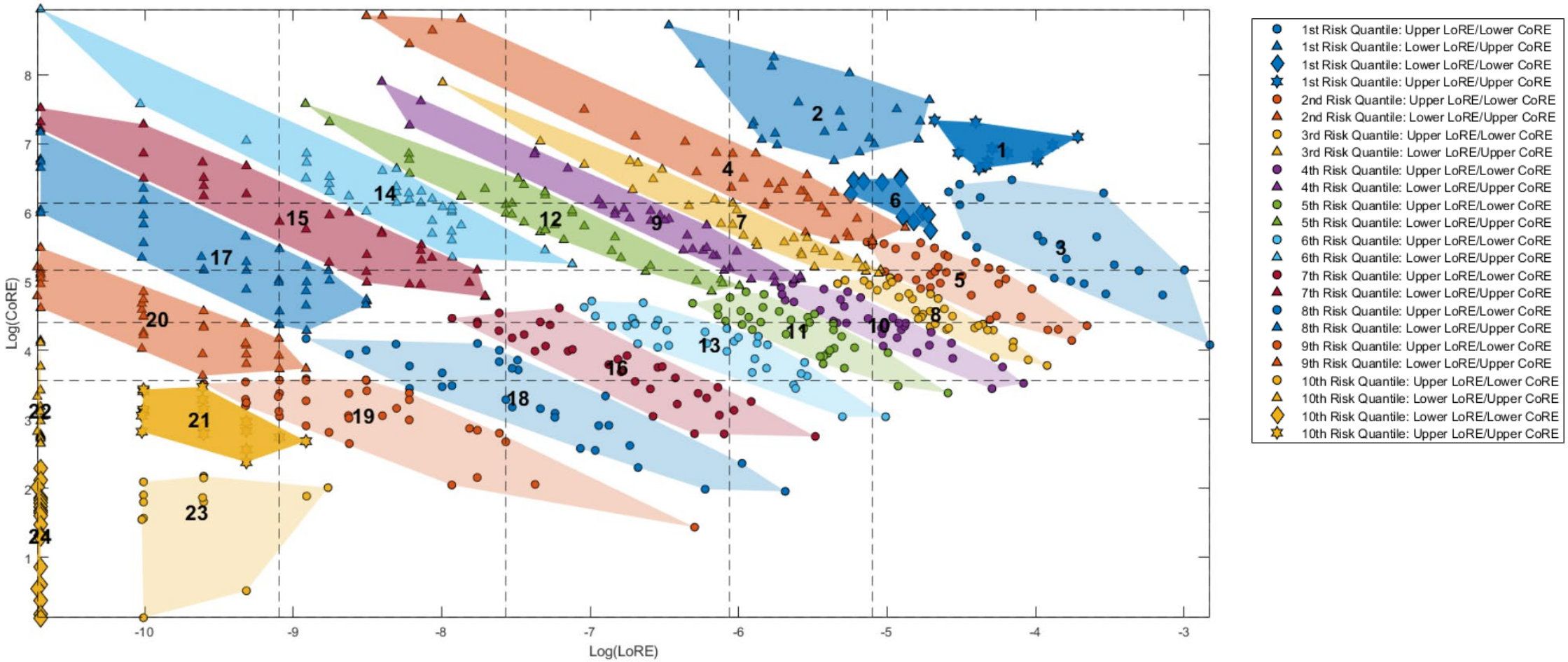
Wildfire (less PSPS) – HTM vs PTTA



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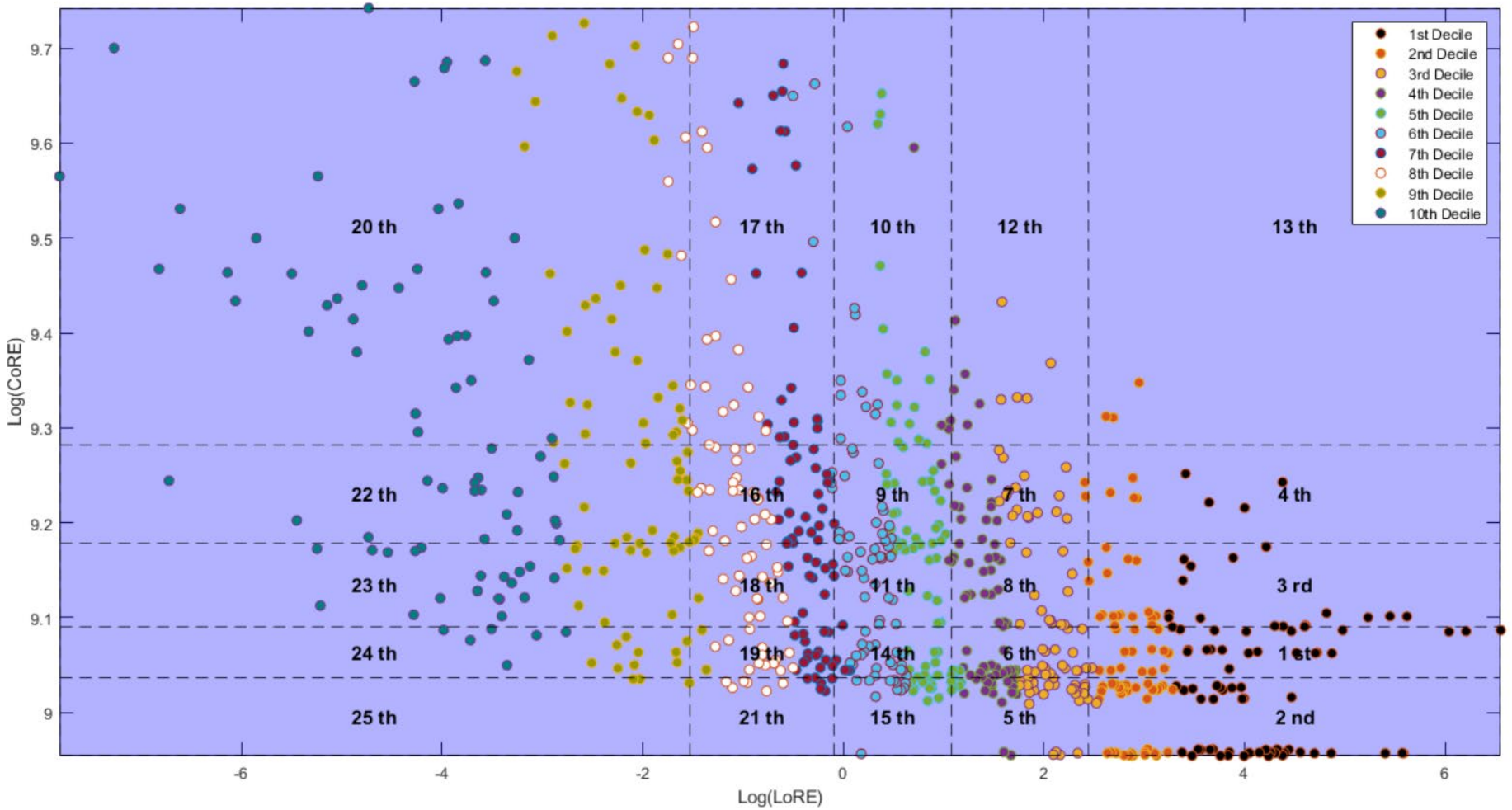
- Each dot represents a feeder segment in SDG&E's HFTD.
- LoRE and CoRE values will be updated when PSPS and PEDS (Protective Equipment and Device Settings) risk are calculated.

Gas Risk: HTM Example

Medium Pressure Pipe: Preliminary Unscaled SoCalGas Medium-Pressure excluding dig-in (without risers, regulators and MSAs) LoRE/Expected CoRE

1. PTTA
2. Alternative Homogeneous Tranche Method (assume entire data is one class)
3. Alternative Homogeneous Tranche Method (assume four classes splitting Mains and Services by material: Steel or Plastic)

Medium Pressure Pipe – PTTA Example



Note:

- Excludes aboveground medium pressure assets (i.e., Regulator Stations, Risers, MSAs)

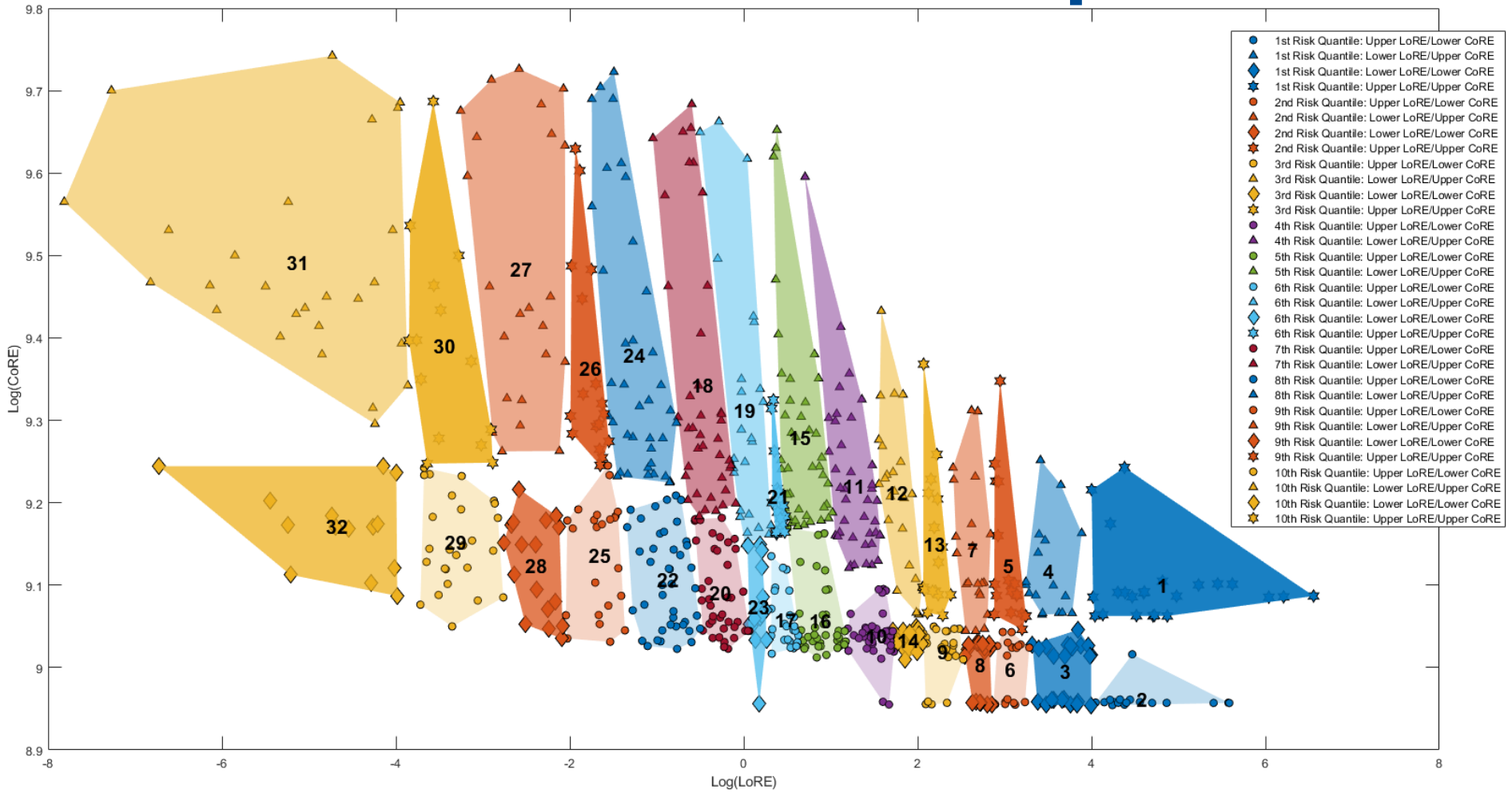
Medium Pressure Pipe – HTM Implementation

» HTM implemented on Medium Pressure Pipeline risk two ways

1. All pipeline considered one class

2. Material and asset type used to create four hypothetical classes
   - Steel mains, plastic mains, steel services, plastic services
   - Similar to tranches presented in GRC
   - Other classes could be considered

Medium Pressure Gas – HTM Example (as one Class)



Note:

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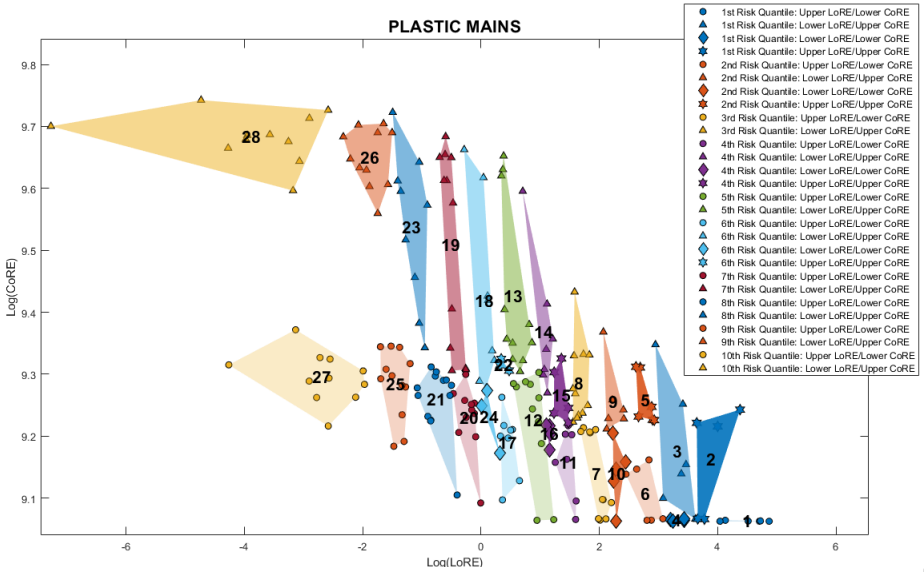
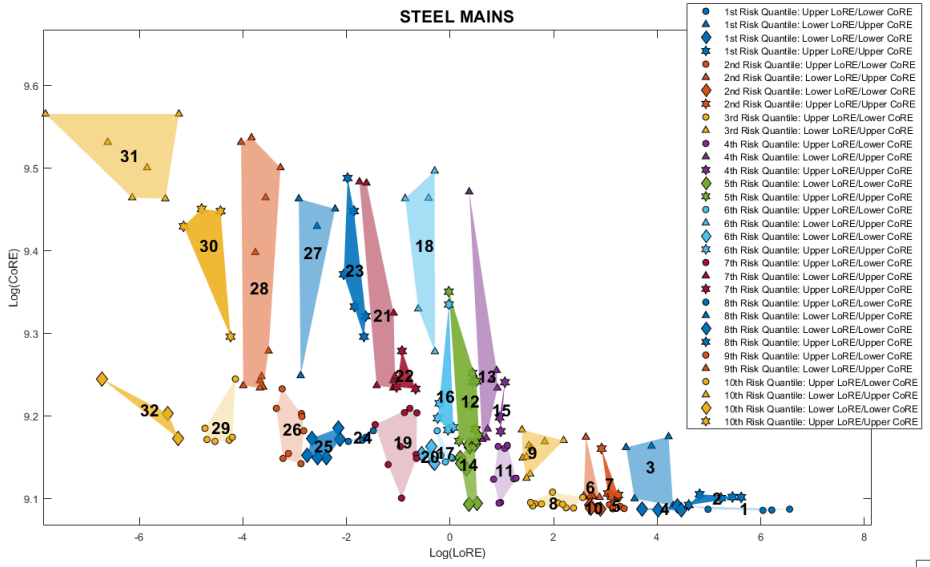
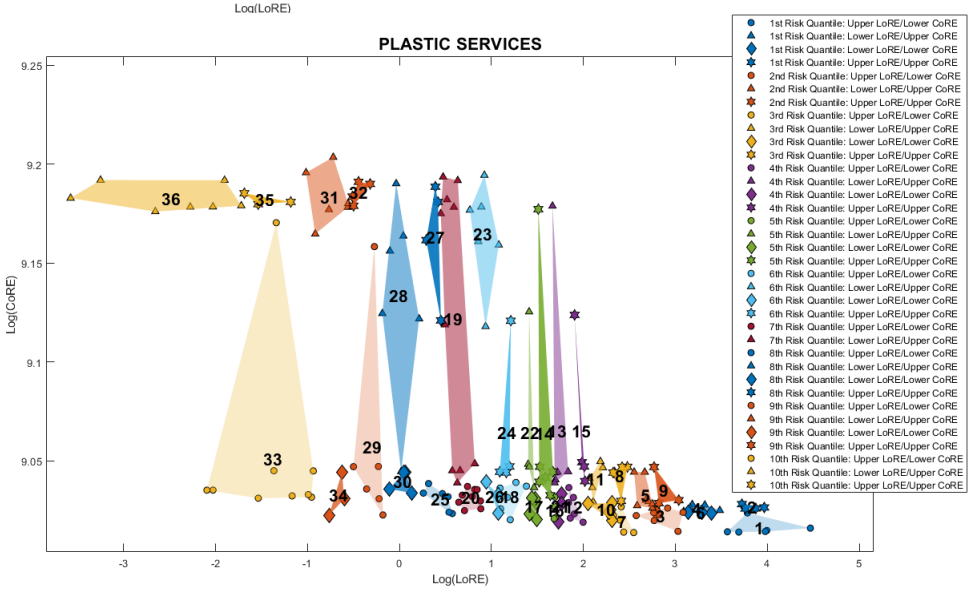
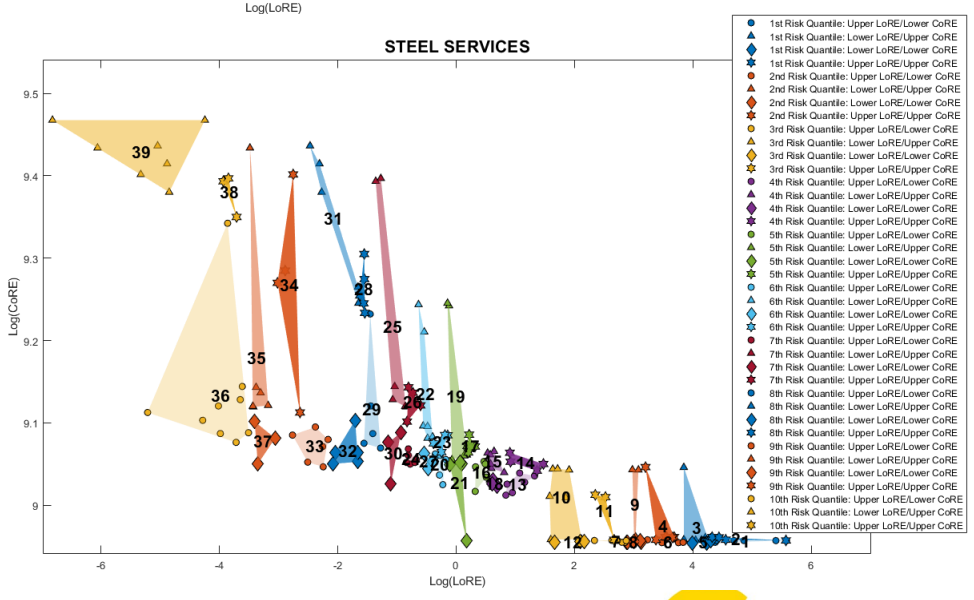
Medium Pressure Gas – HTM Example (with four hypothetical Classes)









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Discussion

THANK YOU

- Additional follow up, please reach out to

Jamie York, Director, RAMP and General Rate Case (GRC)

Kathe Cordova, Regulatory Case Manager, RAMP and GRC

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Glossary

- CMI – Customer Minutes of Interruption
- CoRE - Consequences of a Risk Event
- CPUC – California Public Utilities Commission
- DOT – Department of Transportation
- GRC – General Rate Case
- HTM – Homogeneous Tranche Method
- ICE - Interruption Cost Estimate
- LoRE - Likelihood of a Risk Event
- MAVF - Multi-Attribute Value Function
- PHSMA – Pipeline & Hazardous Material Administration
- PTTA – Phase Three Tranching Approach
- RAMP – Risk Assessment and Mitigation Phase
- SDG&E – San Diego Gas and Electric Company
- SoCalGas – Southern California Gas Company
- SPD – Safety Policy Division
- VSL – Value of a Statistical Life

Endnotes

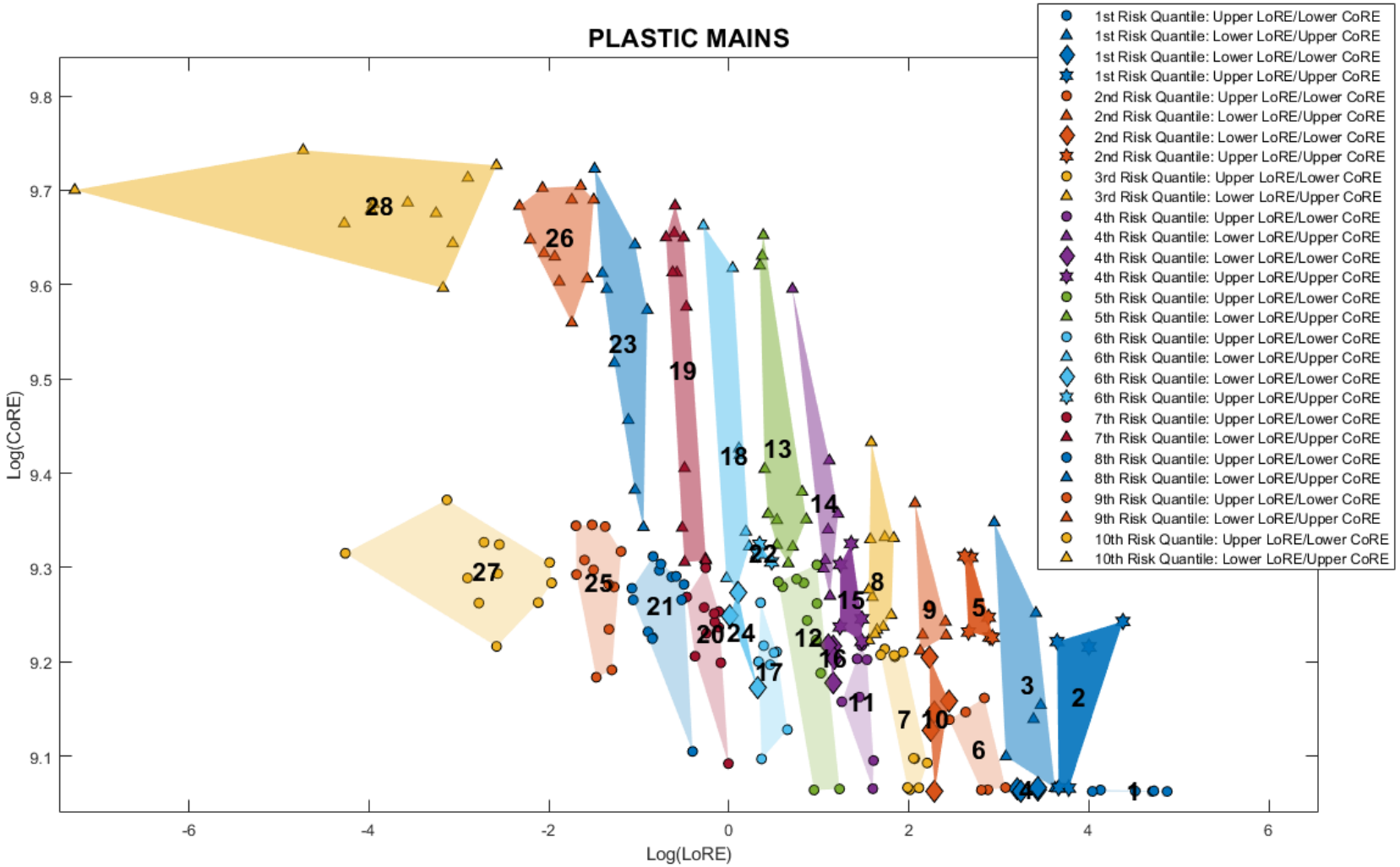
Slide 6: Cost Benefit Overview

- Monetized Standardized Units (Row 6)
  - DOT VSL - Adjusted 2023 DOT VSL Base Value with considerations for California Real Wages and Consumer Price Index
  - CMI: ICE 1.0 - Modified to reflect 1) Public Administration and Manufacturing loads and 2) Correct net-energy demotions using industry specific load factors

Slide 7: Safety and Reliability Preliminary Scoring Metrics

- Gas Reliability Attribute – D.22-12-027, OP 2c
  - "Each IOU shall apply a dollar value for gas reliability based on the implied value from their most recent Multi- Attribute Value Function Risk Score calculation presented in their most recent RAMP or shall justify its choice of an alternative model by providing an analysis comparing the results of its preferred alternative model to the results using the implied values. If using the implied value from its most recent RAMP: i. For PG&E, use the 2020 RAMP filing; ii. For SDG&E and SoCalGas, use the 2021 RAMP filings; and iii. For SCE, use the 2022 RAMP filing."

Medium Pressure Gas – HTM Example (with four hypothetical Classes)



Note:

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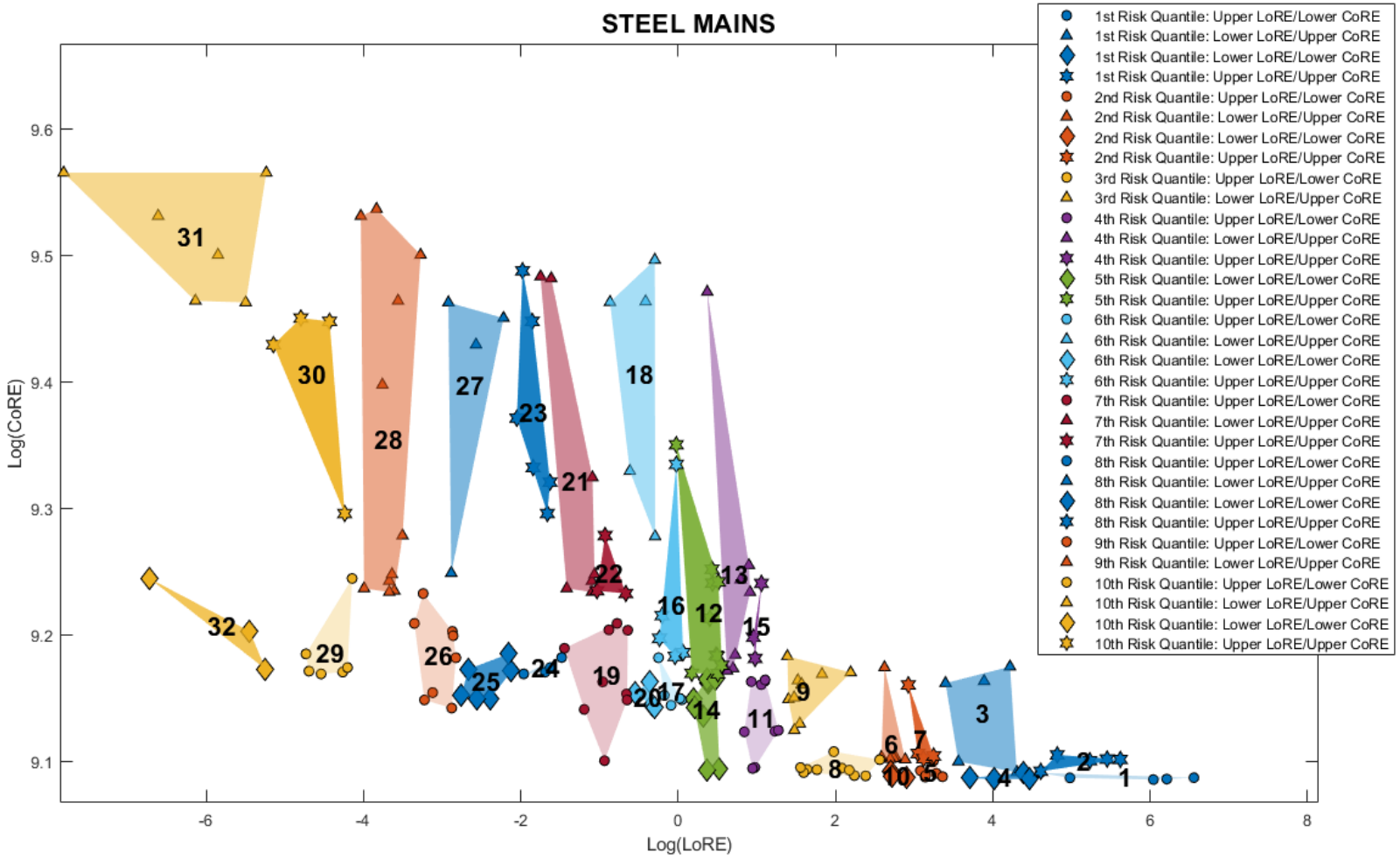
Medium Pressure Gas – HTM Example (with four hypothetical Classes)



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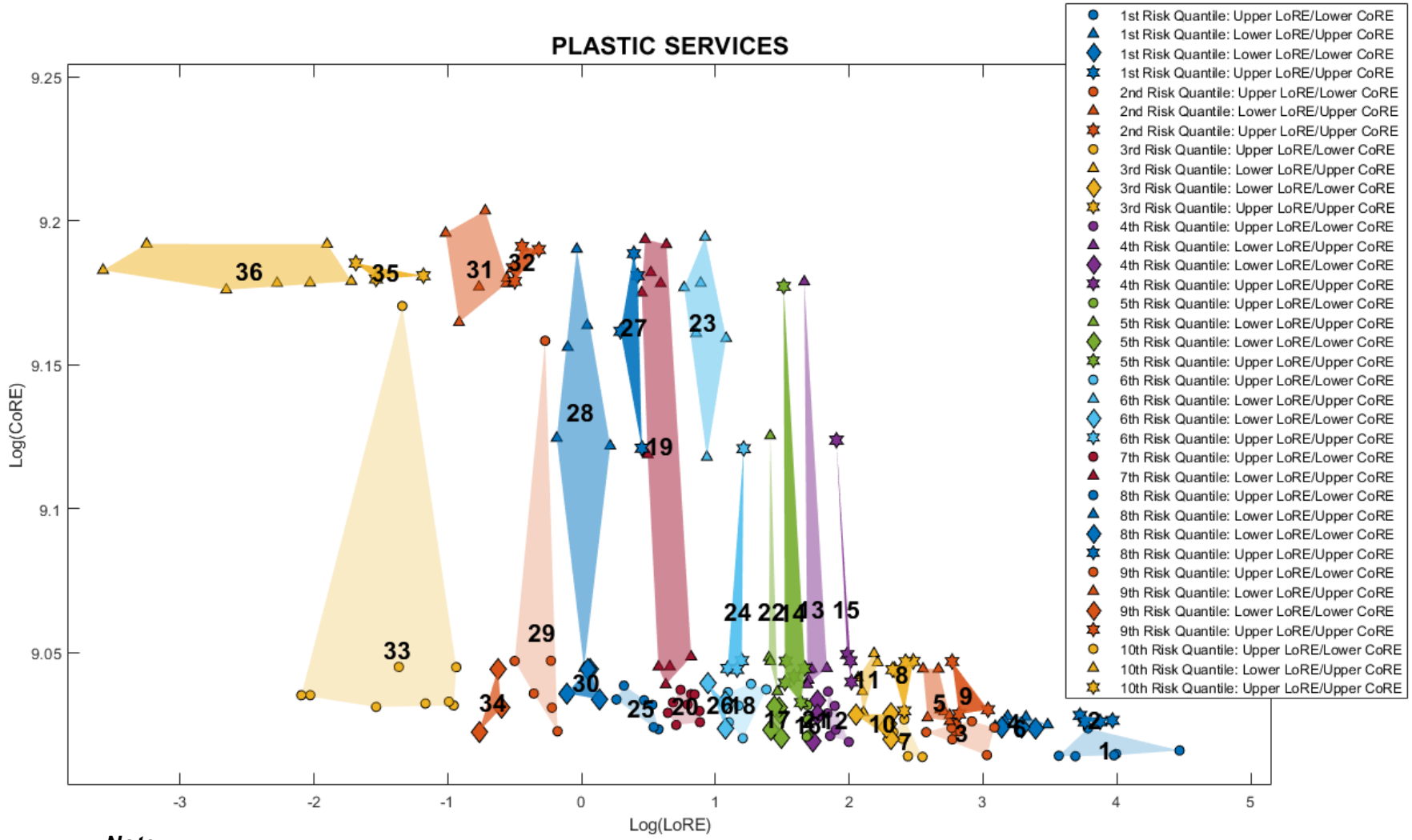
Medium Pressure Gas – HTM Example (with four hypothetical Classes) Cont.



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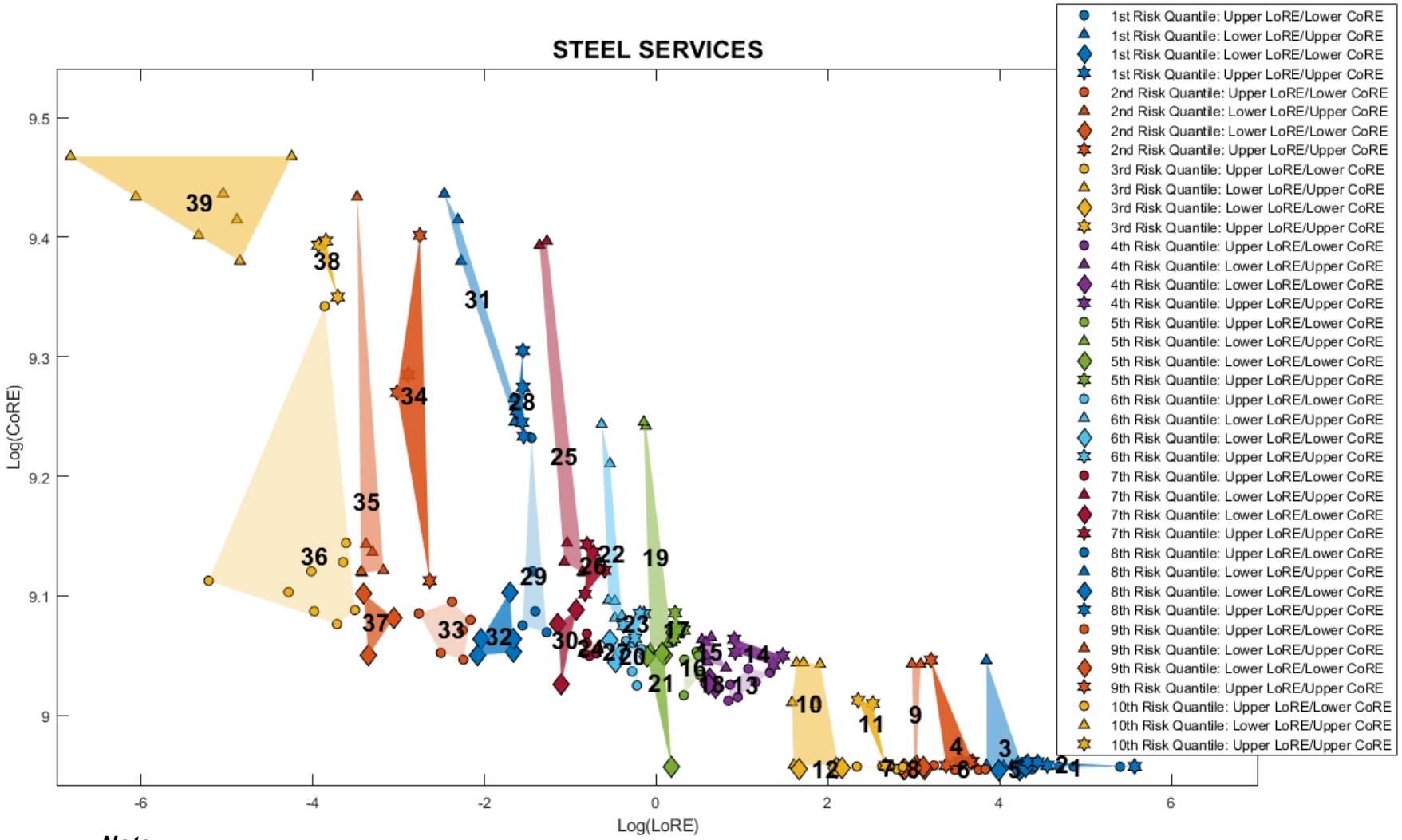
Medium Pressure Gas – HTM Example (with four hypothetical Classes) Cont.



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