North American Natural Gas Overview

November 19, 2025

The Leader in Energy Market Simulation Systems

Providing energy companies, consultants, and regulators advanced tools to support:

- Investment and M&A Strategy
- Environmental and Sustainability Goals
- Credible Risk Analysis
- Trading Strategy
- Policy Development and Assessment
- Energy Security

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Supply

November 21, 2025

Oscar Tobar
Data Analyst

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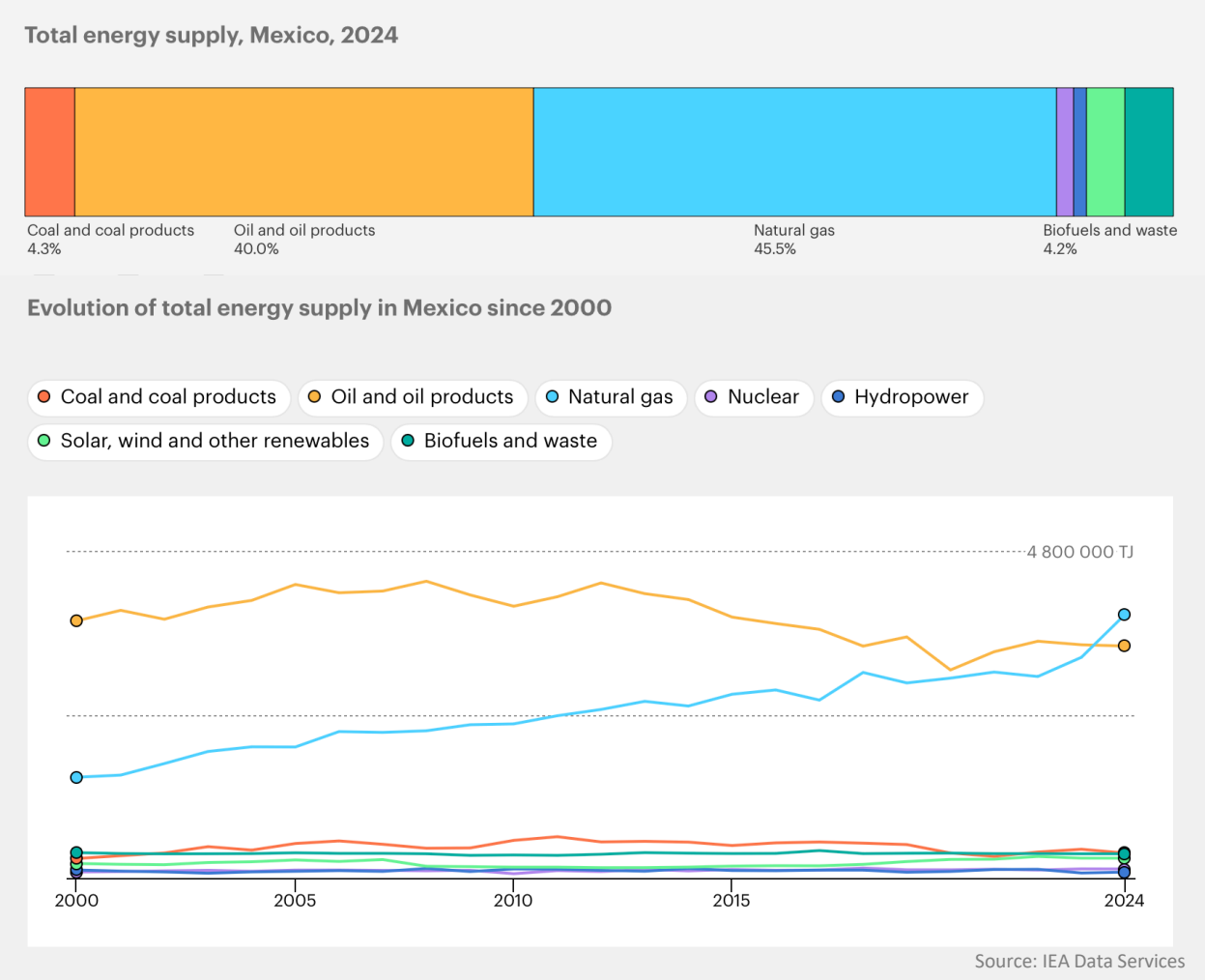
Modeling the Impact of Hurricanes on LNG Exports

1. Mexico Energy Landscape
2. Ixachi Fields
3. GPCM Supply Project Setup
4. Mexico Production
5. Cross Border Flows
6. Price and Basis
7. Mexico Import Cost

Mexico Total Energy Supply



- Share of gas in energy Supply 45.5%
- Natural gas supply 161% increase from 2000-2024
- Domestic natural gas production 3% increase from 2000-2024
- Net gas imports 62.9% of 2024 supply

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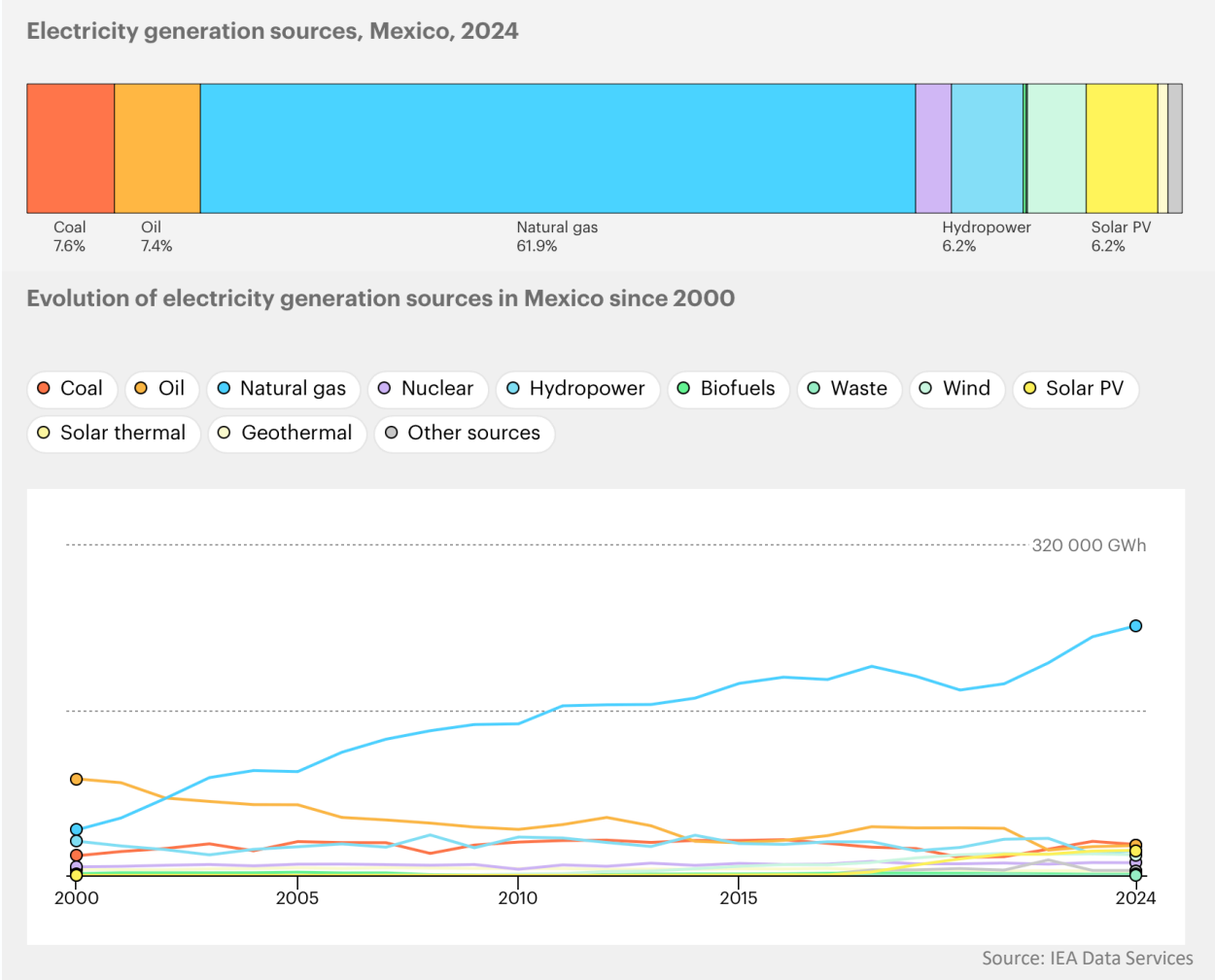
Mexico Electric Generation

- 62% of total electric generation is natural gas in 2024
- Share of electricity consumption by sector 2023
  - Industrial 57.8%
  - Residential 24.7%
  - Commercial 6.4%
  - Other 11.2%



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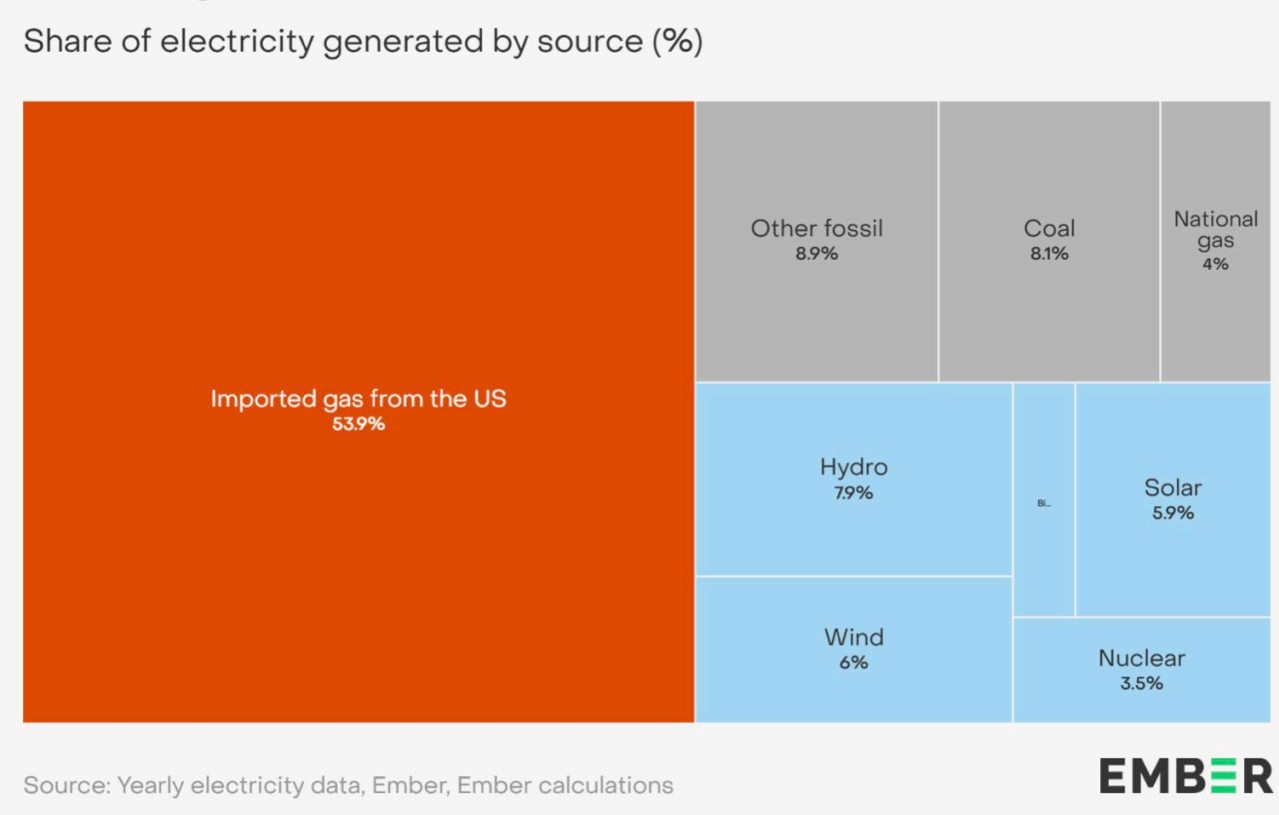
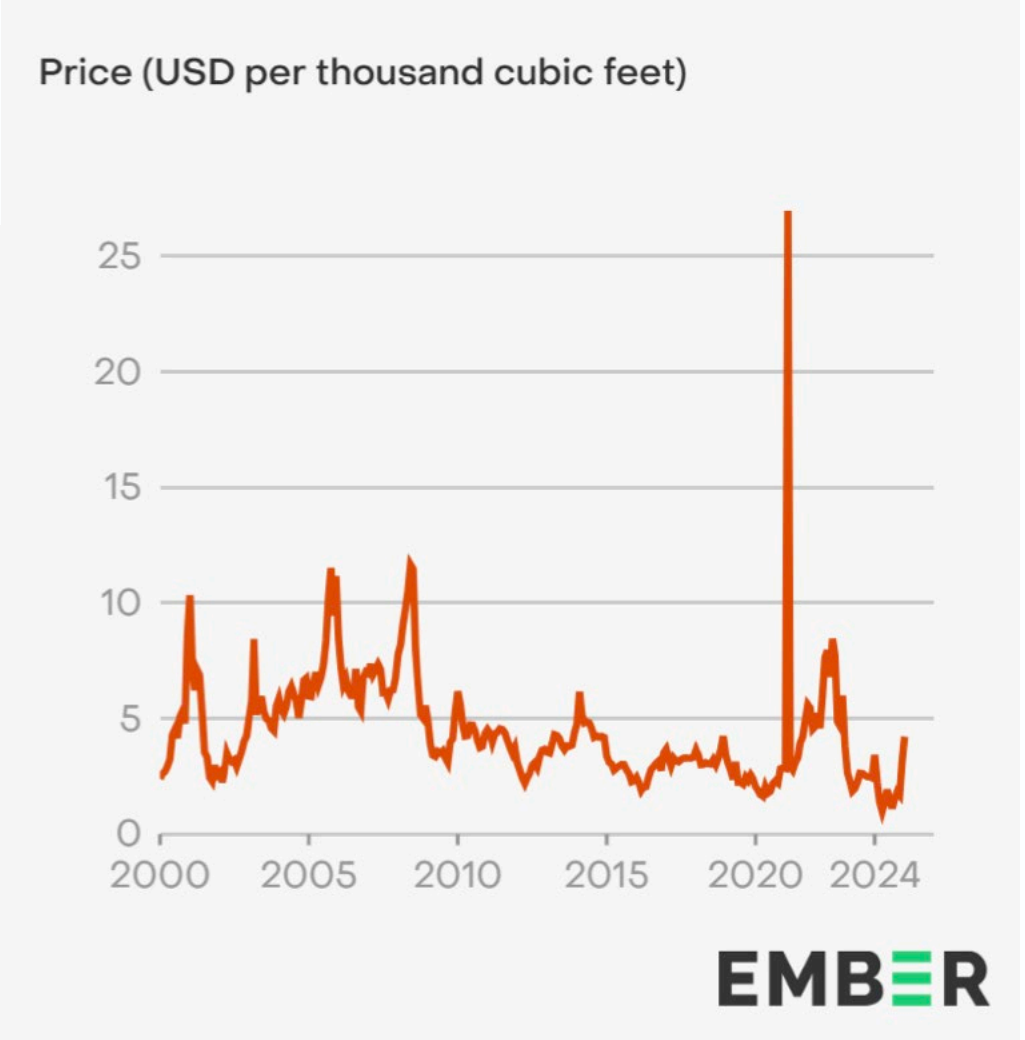
Mexico Dependency on the US

Gas imports in Mexico have surged, fueled by steady growth in power generation, while prices remain volatile





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Mexico Production Options

Offshore

- Large untapped resources
- Higher-quality reservoirs
- Very high capital and operating cost
- Long development timelines

Shale

- Huge recoverable reserves
- Can leverage U.S. shale expertise
- Regulatory, infrastructure, and water use issues
- Security challenges in northern Mexico

Conventional

- Low cost, predictable production
- Existing infrastructure
- Declining legacy fields
- Infrastructure bottlenecks

Efficiency

- Low-cost incremental supply
- Immediate gains
- Limited volume upside
- Gains often offset by declining older assets

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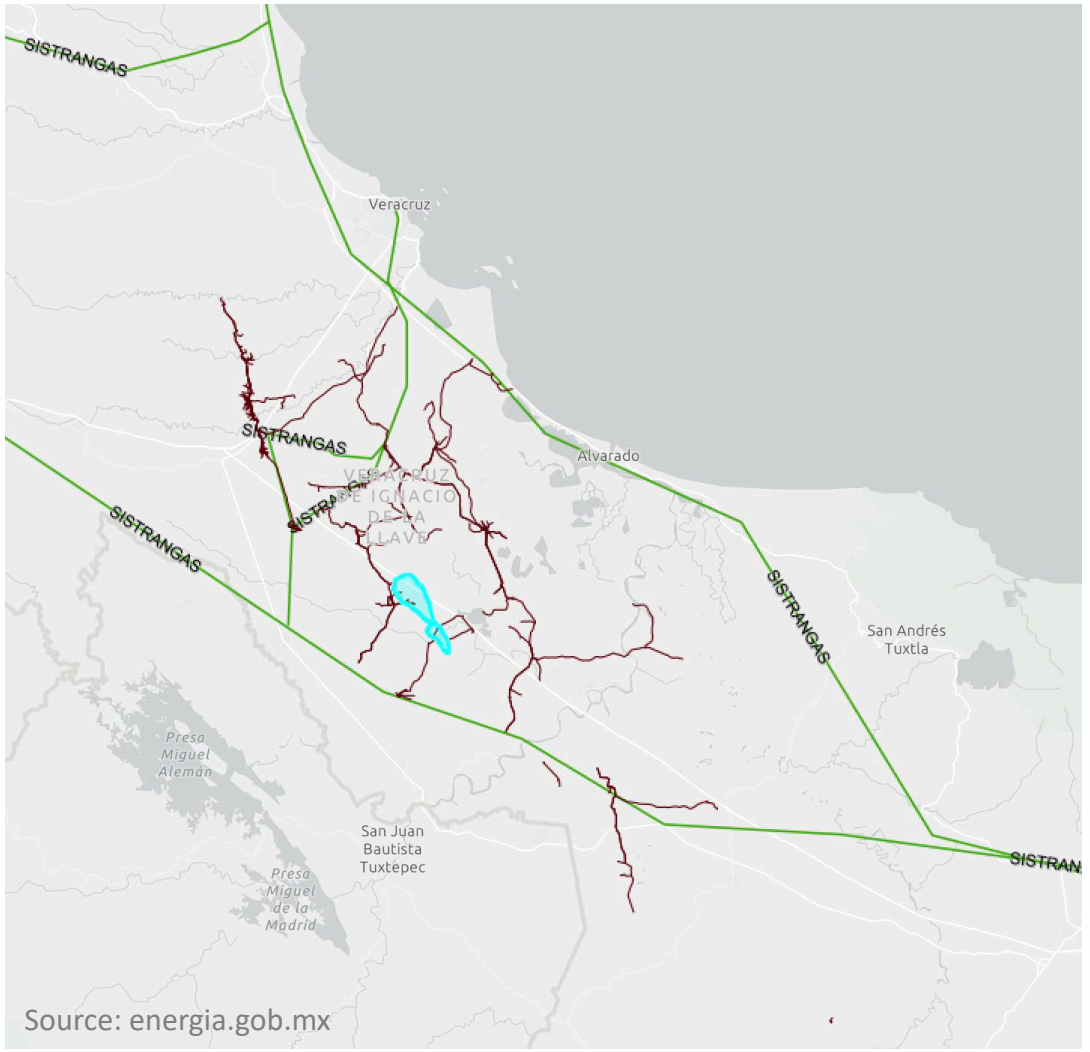
Ixachi Fields Mexico

- Conventional Gas
- Newer field
- 2 Connected processing plants
  - Ciudad Pemex
  - Nuevo Pemex
- 22 Producing wells
  - 19 gas wells
  - 3 oil wells



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Ixachi Fields Mexico

- Grupo Carso agrees with Pemex to drill up to 32 wells in Ixachi field, Mexico over a 3-year period
- Project worth $1.99 Billion
- Pemex will make monthly payments for each completed well, starting in January 2027.
- By the time payments begin in January 2027, Grupo Carso expects that 12 of the 32 wells will already be in production

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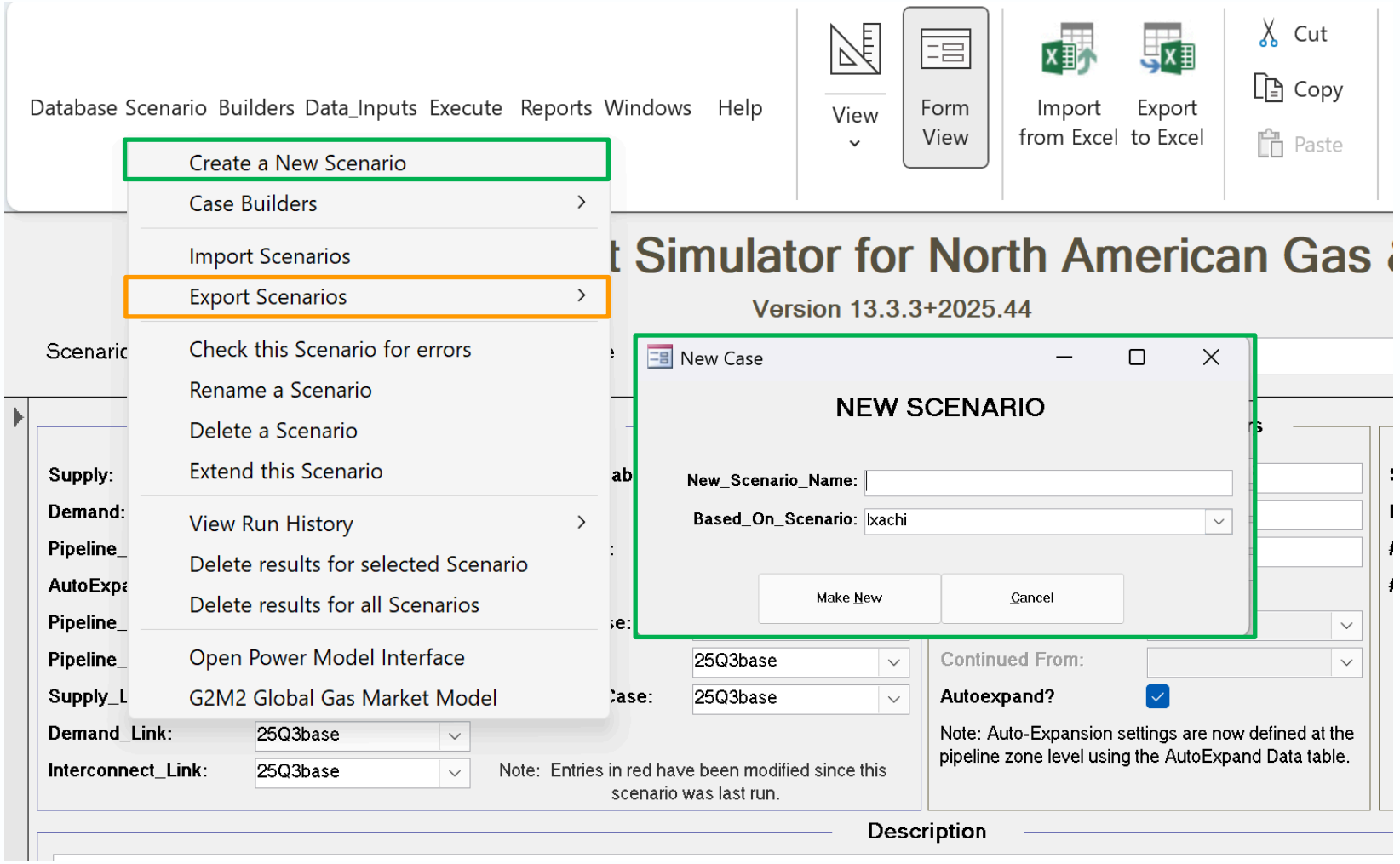
Ixachi Database Set Up

- Create a Log
- Create a new scenario
- Export scenario (new DB)
- Create 3 new scenarios for my low, med, and high case



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Ixachi DB Log

Cnt	tab	Analyst	date	from DB	new DB	Category	PPL or Stor	Description
1		OT	11/3/2025	25Q3base	Ixachi	New DB		Created new DB from 25Q3base DB new scenario Ixachi export
2		OT	11/3/2025	Ixachi		Scenario		Created new "Low" scenario
3		OT	11/3/2025	Ixachi		Scenario		Created new "Med" scenario
4		OT	11/3/2025	Ixachi		Scenario		Created new "High" scenario
5		OT	11/4/2025	Ixachi		Supply Case		Created new "Low" supply case refrence sheet 1
6		OT	11/4/2025	Ixachi		Supply Case		Created new "Med" supply case refrence sheet 2
7		OT	11/4/2025	Ixachi		Supply Case		Created new "High" supply case refrence sheet 3

LOG | MX CEN Supply | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10

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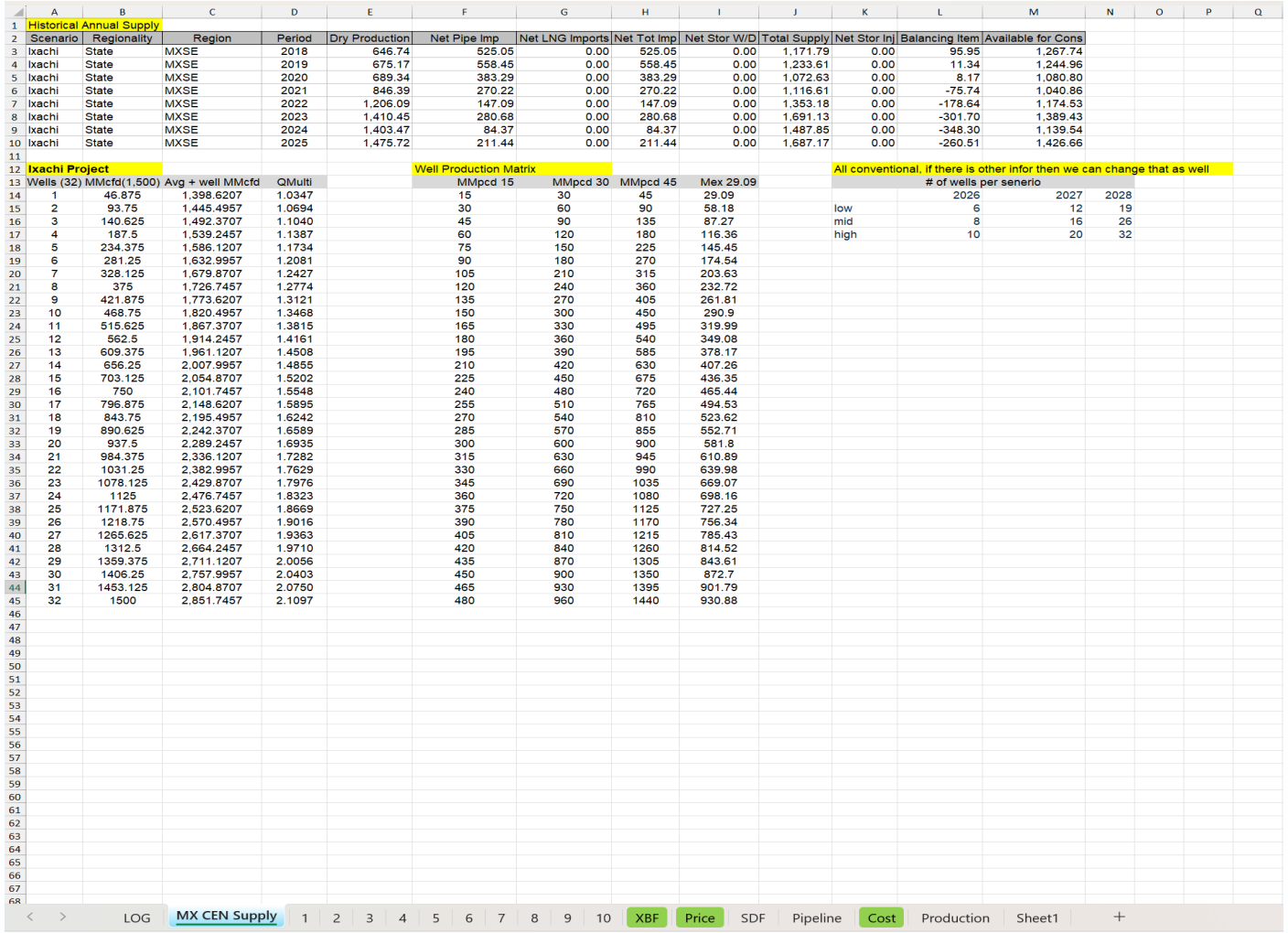
Ixachi DB Log



Historical Annual Supply

Scenario	Regionality	Region	Period	Dry Production	Net Pipe Imp	Net LNG Imports	Net Tot Imp	Net Stor W/D	Total Supply	Net Stor Inj	Balancing Item	Available for Cons
Ixachi	State	MXSE	2018	646.74	525.05	0.00	525.05	0.00	1,171.79	0.00	95.95	1,267.74
Ixachi	State	MXSE	2019	675.17	558.45	0.00	558.45	0.00	1,233.61	0.00	11.34	1,244.96
Ixachi	State	MXSE	2020	689.34	383.29	0.00	383.29	0.00	1,072.63	0.00	8.17	1,080.80
Ixachi	State	MXSE	2021	846.39	270.22	0.00	270.22	0.00	1,116.61	0.00	-75.74	1,040.86
Ixachi	State	MXSE	2022	1,206.09	147.09	0.00	147.09	0.00	1,353.18	0.00	-178.64	1,174.53
Ixachi	State	MXSE	2023	1,410.45	280.68	0.00	280.68	0.00	1,691.13	0.00	-301.70	1,389.43
Ixachi	State	MXSE	2024	1,403.47	84.37	0.00	84.37	0.00	1,487.85	0.00	-348.30	1,139.54
Ixachi	State	MXSE	2025	1,475.72	211.44	0.00	211.44	0.00	1,687.17	0.00	-260.51	1,426.66

Ixachi Project

Wells (32)	MMcfd(1,500)	Avg + well MMcfd	QMulti
1	46.875	1,398.6207	1.0347
2	93.75	1,445.4957	1.0694
3	140.625	1,492.3707	1.1040
4	187.5	1,539.2457	1.1387
5	234.375	1,586.1207	1.1734
6	281.25	1,632.9957	1.2081
7	328.125	1,679.8707	1.2427
8	375	1,726.7457	1.2774
9	421.875	1,773.6207	1.3121
10	468.75	1,820.4957	1.3468
11	515.625	1,867.3707	1.3815
12	562.5	1,914.2457	1.4161
13	609.375	1,961.1207	1.4508
14	656.25	2,007.9957	1.4855
15	703.125	2,054.8707	1.5202
16	750	2,101.7457	1.5548
17	796.875	2,148.6207	1.5895
18	843.75	2,195.4957	1.6242
19	890.625	2,242.3707	1.6589
20	937.5	2,289.2457	1.6935
21	984.375	2,336.1207	1.7282
22	1031.25	2,382.9957	1.7629
23	1078.125	2,429.8707	1.7976
24	1125	2,476.7457	1.8323
25	1171.875	2,523.6207	1.8669
26	1218.75	2,570.4957	1.9016
27	1265.625	2,617.3707	1.9363
28	1312.5	2,664.2457	1.9710
29	1359.375	2,711.1207	2.0056
30	1406.25	2,757.9957	2.0403
31	1453.125	2,804.8707	2.0750
32	1500	2,851.7457	2.1097

Well Production Matrix

MMpcd 15	MMpcd 30	MMpcd 45	Mex 29.09
15	30	45	29.09
30	60	90	58.18
45	90	135	87.27
60	120	180	116.36
75	150	225	145.45
90	180	270	174.54
105	210	315	203.63
120	240	360	232.72
135	270	405	261.81
150	300	450	290.9
165	330	495	319.99
180	360	540	349.08
195	390	585	378.17
210	420	630	407.26
225	450	675	436.35
240	480	720	465.44
255	510	765	494.53
270	540	810	523.62
285	570	855	552.71
300	600	900	581.8
315	630	945	610.89
330	660	990	639.98
345	690	1035	669.07
360	720	1080	698.16
375	750	1125	727.25
390	780	1170	756.34
405	810	1215	785.43
420	840	1260	814.52
435	870	1305	843.61
450	900	1350	872.7
465	930	1395	901.79
480	960	1440	930.88

All conventional, if there is other infor then we can change that as well

	# of wells per senerio		
	2026	2027	2028
low	6	12	19
mid	8	16	26
high	10	20	32

LOG | MX CEN Supply | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | XBF | Price | SDF | Pipeline | Cost | Production | Sheet1

- I want to use the QMulti that shifts the supply curves up.
- I will need to get the data from GPCM to calculate the Qmulti for my supply case “Make New”.

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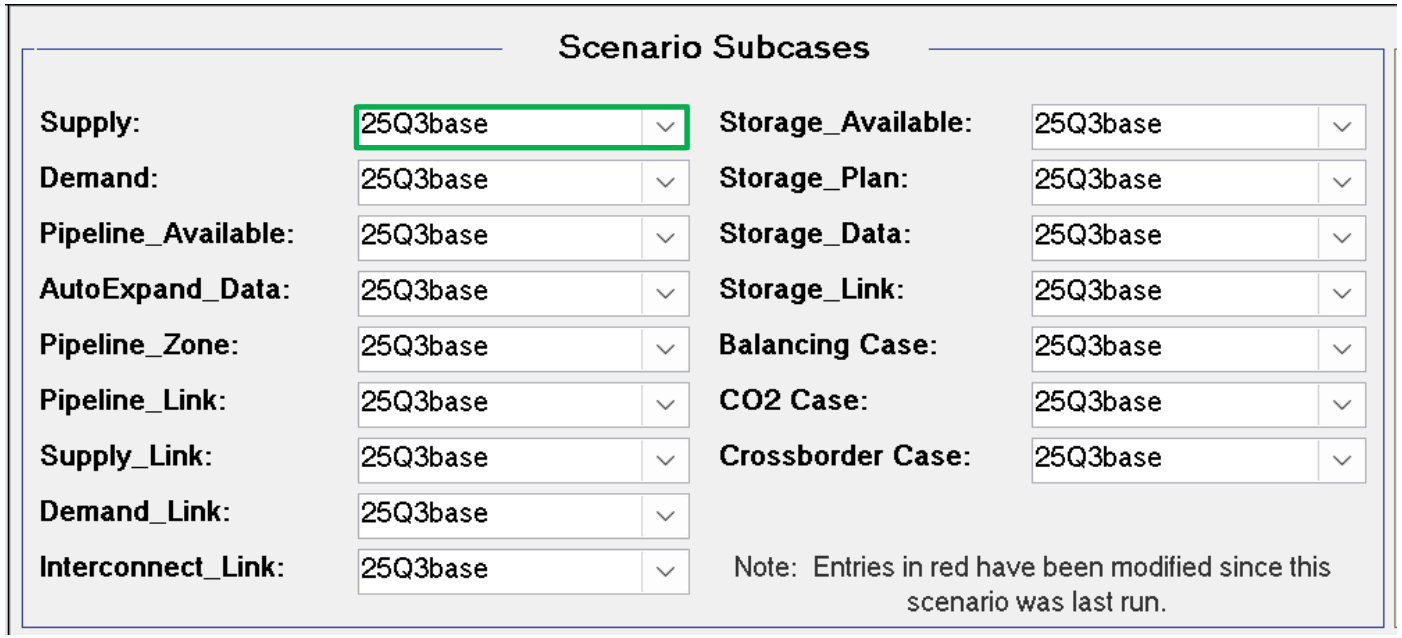
Supply Case Builder

- Click Supply case
- In the supple case click on make new
- We will make a total of 3 supply cases to match my scenarios



Supply

Summary | Isoprices | Isograms | Export Iso | Shift | Append | Recomp | Compare | Import | Export | Make New | Rename | Delete | Close

Supply Case	Location	Supply Play	Type	Period	Segment	Supply1 mmcf/d	Price1 $/mmbtu	Supply2 mmcf/d	Price2 $/mmbtu	Elasticity
25Q3base										
25Q3base	AB CE	CBM	CBM	Jan-2011	0	404	0.928	433	3.714	0.050
25Q3base	AB CE	CBM	CBM	Jan-2011	1	433	3.714	452	8.426	0.050
25Q3base	AB CE	CBM	CBM	Feb-2011	0	413	0.922	442	3.693	0.050
25Q3base	AB CE	CBM	CBM	Feb-2011	1	442	3.693	461	8.378	0.050

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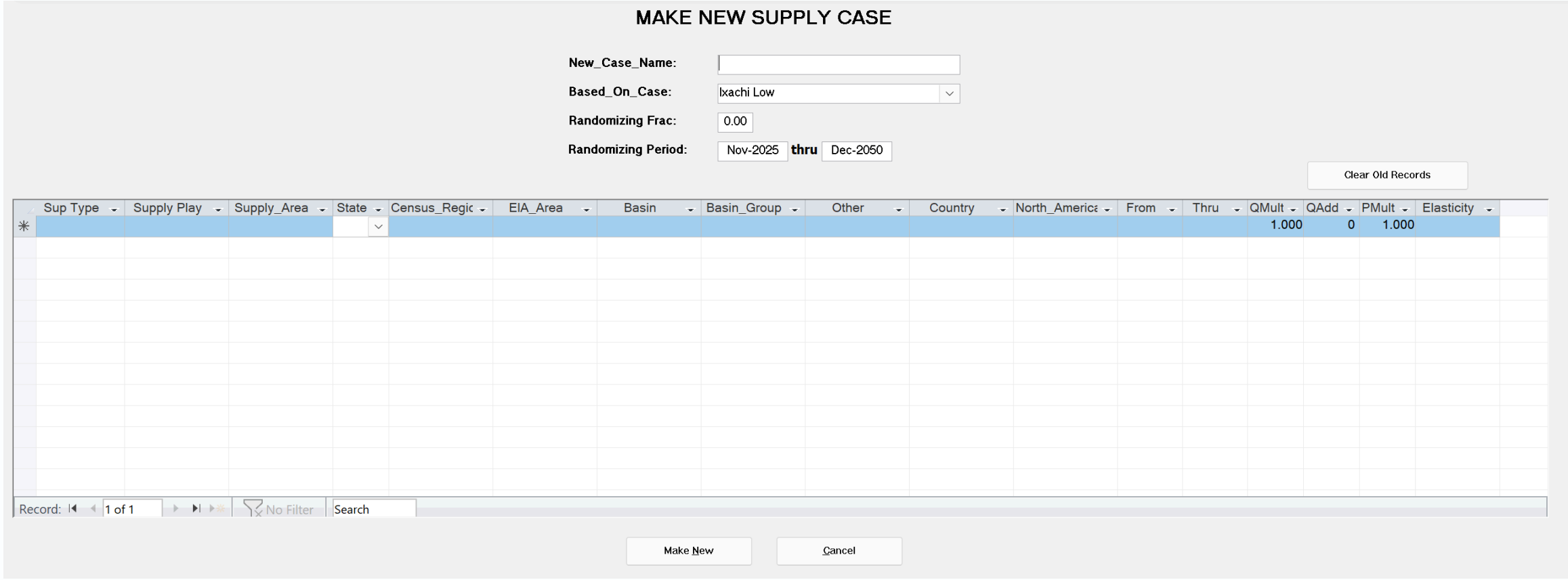
Supply Case Builder



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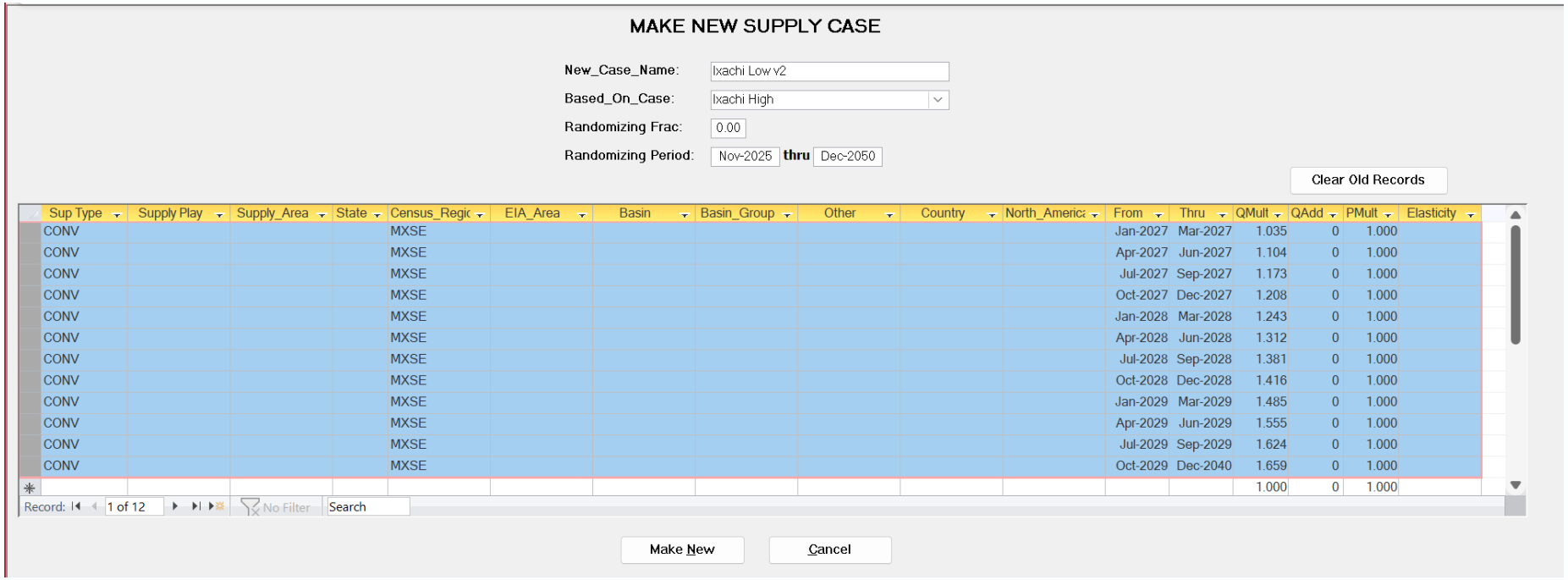
Supply Case Builder

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**Ixachi Low Supply Case**																
2	Sup Type	Supply Play	Supply_Area	State	Census_Region	EIA_Area	Basin	Basin_Group	Other	Country	lorth_Americ	From	Thru	QMult	QAdd	PMult	Elasticity
3	CONV				MXSE							Jan-2027	Mar-2027	1.034677	0.00	1.00	
4	CONV				MXSE							Apr-2027	Jun-2027	1.104032	0.00	1.00	
5	CONV				MXSE							Jul-2027	Sep-2027	1.173387	0.00	1.00	
6	CONV				MXSE							Oct-2027	Dec-2027	1.208064	0.00	1.00	
7	CONV				MXSE							Jan-2028	Mar-2028	1.242742	0.00	1.00	
8	CONV				MXSE							Apr-2028	Jun-2028	1.312096	0.00	1.00	
9	CONV				MXSE							Jul-2028	Sep-2028	1.381451	0.00	1.00	
10	CONV				MXSE							Oct-2028	Dec-2028	1.416129	0.00	1.00	
11	CONV				MXSE							Jan-2029	Mar-2029	1.485483	0.00	1.00	
12	CONV				MXSE							Apr-2029	Jun-2029	1.554838	0.00	1.00	
13	CONV				MXSE							Jul-2029	Sep-2029	1.624193	0.00	1.00	
14	CONV				MXSE							Oct-2029	Dec-2040	1.658870	0.00	1.00	
15																	



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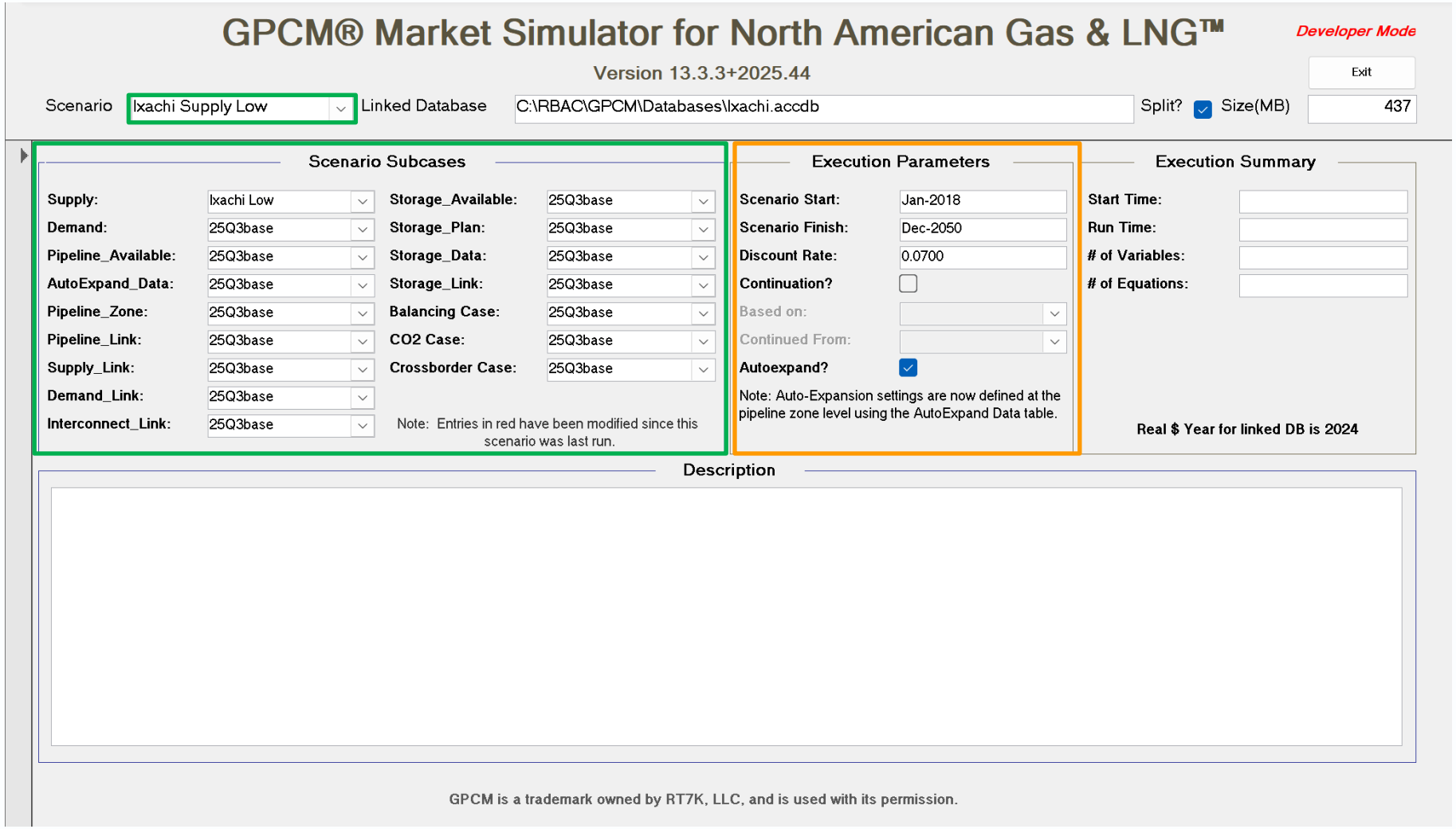
Supply Case Builder



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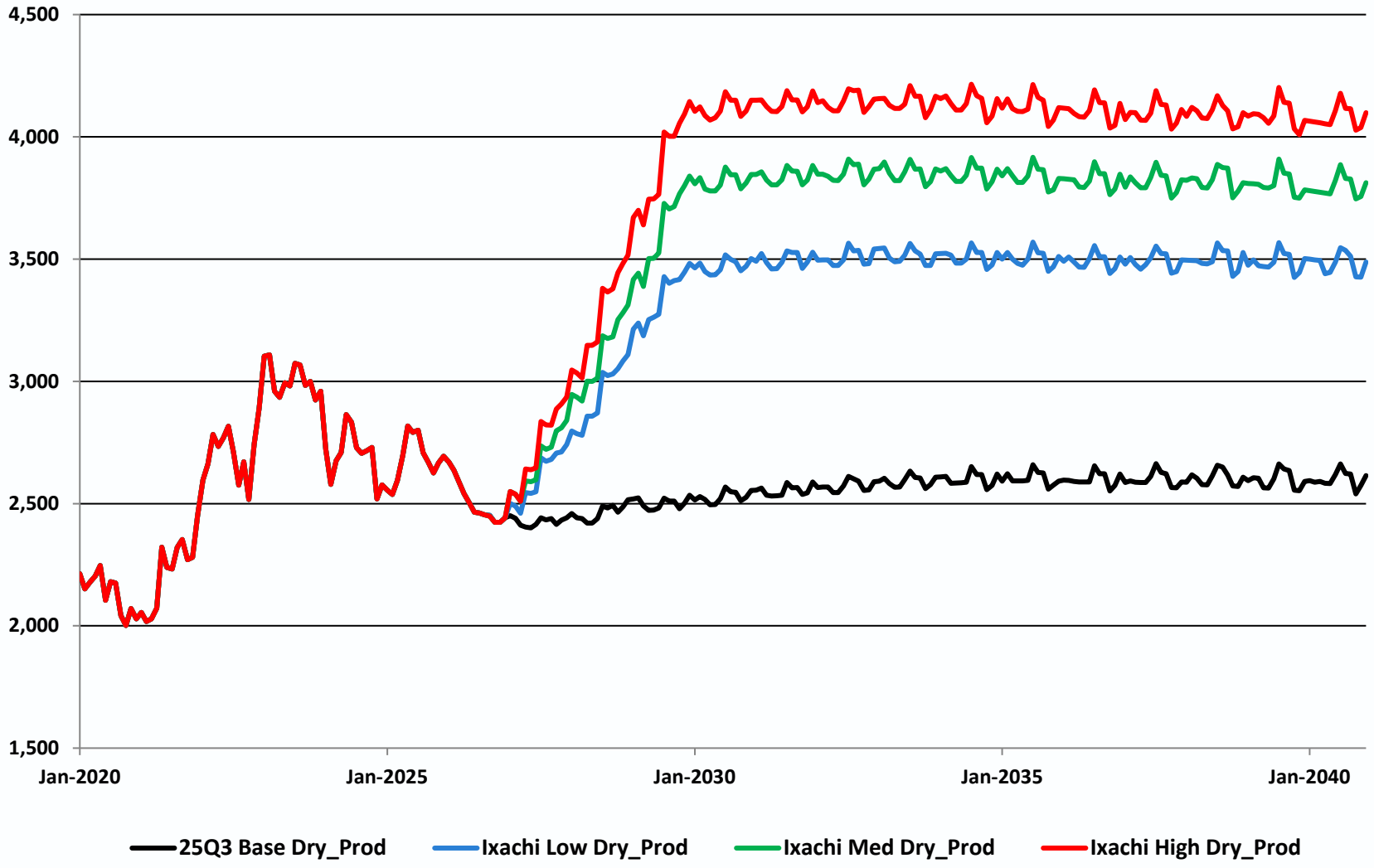
Mexico Production Mmcf/d



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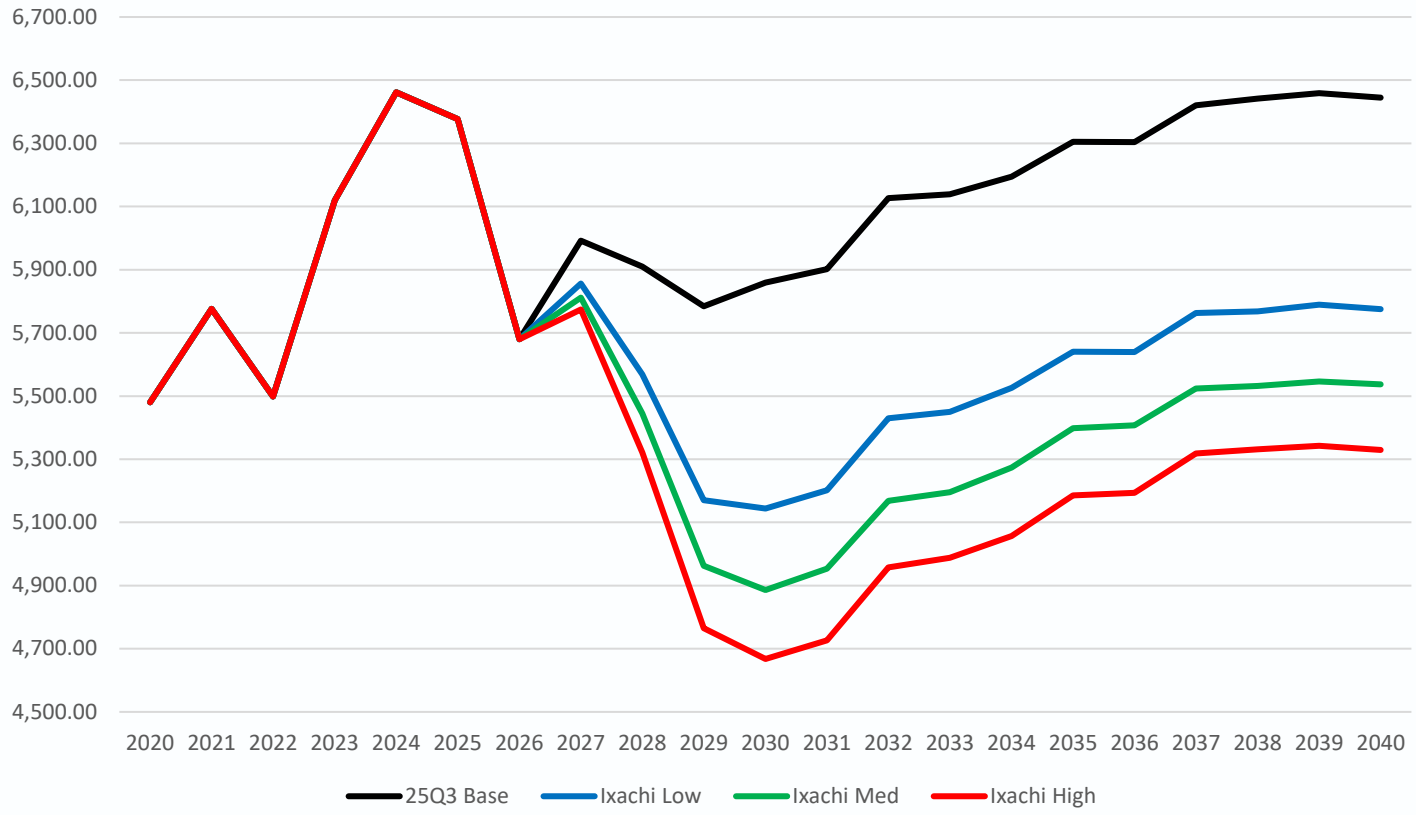
Cross Border Flows Mmcf/d

Cross Border Flow Delta			
	Ixachi Low	Ixachi Med	Ixachi High
2027	-134.96	-179.73	-217.54
2028	-341.18	-464.92	-587.91
2029	-614.05	-822.12	-1,019.19
2030	-715.60	-973.57	-1,191.86
2031	-700.69	-949.05	-1,175.17
2032	-696.32	-958.19	-1,169.02
2033	-688.66	-942.73	-1,150.47
2034	-668.58	-921.23	-1,138.35
2035	-664.38	-906.53	-1,119.36
2036	-664.33	-895.95	-1,110.30
2037	-657.28	-896.39	-1,101.80
2038	-673.01	-909.51	-1,110.46
2039	-669.41	-912.54	-1,116.32
2040	-669.71	-907.62	-1,115.63



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Average GPCM Price

Henry Hub				
Year	25Q3 Base	Ixachi Low	Ixachi Med	Ixachi High
2025	3.449	3.449	3.449	3.449
2026	4.465	4.465	4.464	4.464
2027	4.370	4.350	4.344	4.336
2028	4.643	4.581	4.562	4.542
2029	4.757	4.673	4.652	4.625
2030	4.669	4.580	4.545	4.515
2031	4.733	4.641	4.612	4.587
2032	4.611	4.528	4.501	4.481
2033	4.518	4.445	4.415	4.392
2034	4.564	4.498	4.466	4.442
2035	4.689	4.615	4.586	4.559
2036	4.813	4.731	4.702	4.682
2037	4.744	4.668	4.645	4.619
2038	4.805	4.744	4.720	4.694
2039	4.837	4.789	4.771	4.752
2040	4.943	4.873	4.854	4.839

Agua Dulce Hub				
Year	25Q3 Base	Ixachi Low	Ixachi Med	Ixachi High
2025	3.247	3.247	3.247	3.247
2026	4.233	4.233	4.233	4.233
2027	4.151	4.128	4.121	4.112
2028	4.457	4.389	4.366	4.344
2029	4.592	4.498	4.471	4.440
2030	4.515	4.418	4.378	4.343
2031	4.573	4.471	4.438	4.407
2032	4.445	4.352	4.320	4.294
2033	4.355	4.269	4.235	4.208
2034	4.408	4.330	4.296	4.269
2035	4.537	4.453	4.422	4.393
2036	4.669	4.577	4.545	4.523
2037	4.609	4.527	4.499	4.472
2038	4.675	4.605	4.578	4.550
2039	4.712	4.655	4.633	4.611
2040	4.823	4.747	4.724	4.706

Waha				
Year	25Q3 Base	Ixachi Low	Ixachi Med	Ixachi High
2025	1.447	1.447	1.447	1.447
2026	3.221	3.221	3.221	3.221
2027	3.753	3.729	3.721	3.712
2028	4.069	4.003	3.982	3.963
2029	4.176	4.088	4.061	4.029
2030	4.078	3.988	3.942	3.910
2031	4.102	4.016	3.987	3.956
2032	3.968	3.893	3.868	3.844
2033	3.882	3.812	3.782	3.757
2034	3.943	3.879	3.845	3.820
2035	4.082	4.009	3.976	3.950
2036	4.226	4.141	4.107	4.087
2037	4.184	4.104	4.077	4.051
2038	4.258	4.184	4.159	4.135
2039	4.310	4.249	4.226	4.206
2040	4.431	4.349	4.326	4.310

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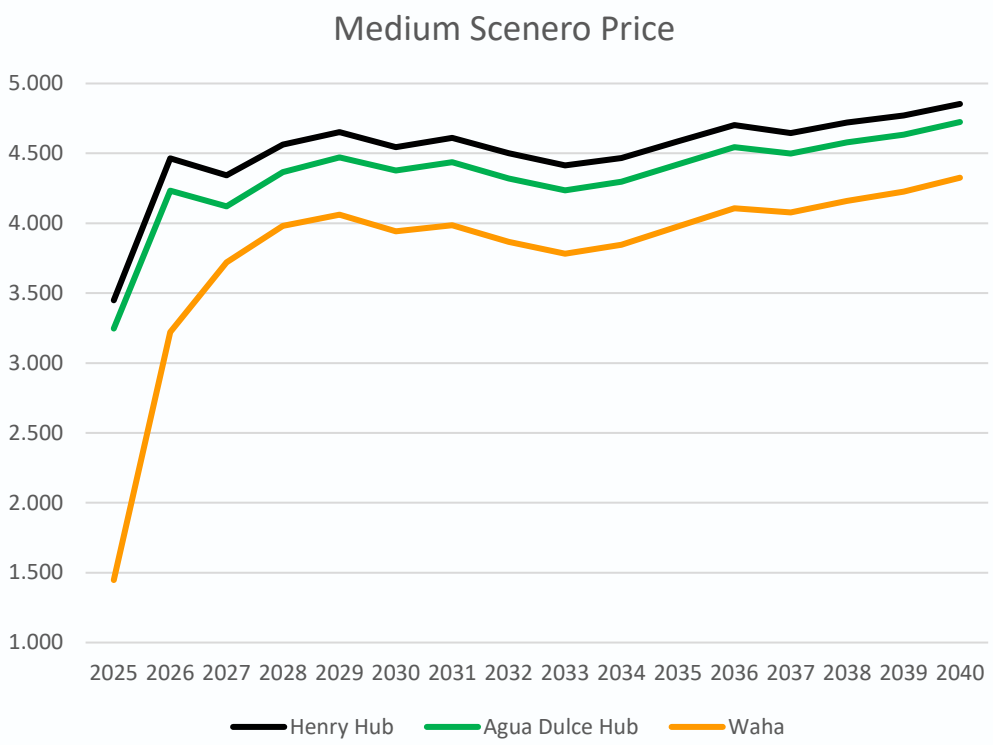
Price and Basis

Waha				
Year	25Q3 Base	Ixachi Low	Ixachi Med	Ixachi High
2025	-2.002	-2.002	-2.002	-2.002
2026	-1.244	-1.244	-1.244	-1.244
2027	-0.617	-0.621	-0.623	-0.625
2028	-0.574	-0.577	-0.580	-0.579
2029	-0.580	-0.585	-0.590	-0.596
2030	-0.591	-0.592	-0.603	-0.605
2031	-0.631	-0.625	-0.625	-0.631
2032	-0.643	-0.635	-0.633	-0.636
2033	-0.636	-0.634	-0.633	-0.636
2034	-0.620	-0.619	-0.621	-0.622
2035	-0.607	-0.605	-0.609	-0.610
2036	-0.587	-0.590	-0.594	-0.595
2037	-0.560	-0.565	-0.567	-0.568
2038	-0.548	-0.559	-0.560	-0.559
2039	-0.528	-0.540	-0.544	-0.546
2040	-0.640	-0.642	-0.528	-0.529



Agua Dulce				
Year	25Q3 Base	Ixachi Low	Ixachi Med	Ixachi High
2025	-0.202	-0.202	-0.202	-0.202
2026	-0.232	-0.232	-0.232	-0.232
2027	-0.219	-0.222	-0.223	-0.225
2028	-0.186	-0.192	-0.196	-0.199
2029	-0.164	-0.175	-0.181	-0.185
2030	-0.154	-0.163	-0.167	-0.172
2031	-0.160	-0.170	-0.174	-0.180
2032	-0.166	-0.176	-0.181	-0.187
2033	-0.163	-0.176	-0.180	-0.184
2034	-0.156	-0.168	-0.170	-0.173
2035	-0.151	-0.161	-0.164	-0.166
2036	-0.145	-0.154	-0.157	-0.159
2037	-0.135	-0.142	-0.145	-0.147
2038	-0.130	-0.139	-0.142	-0.144
2039	-0.125	-0.134	-0.137	-0.141
2040	-0.120	-0.126	-0.129	-0.132

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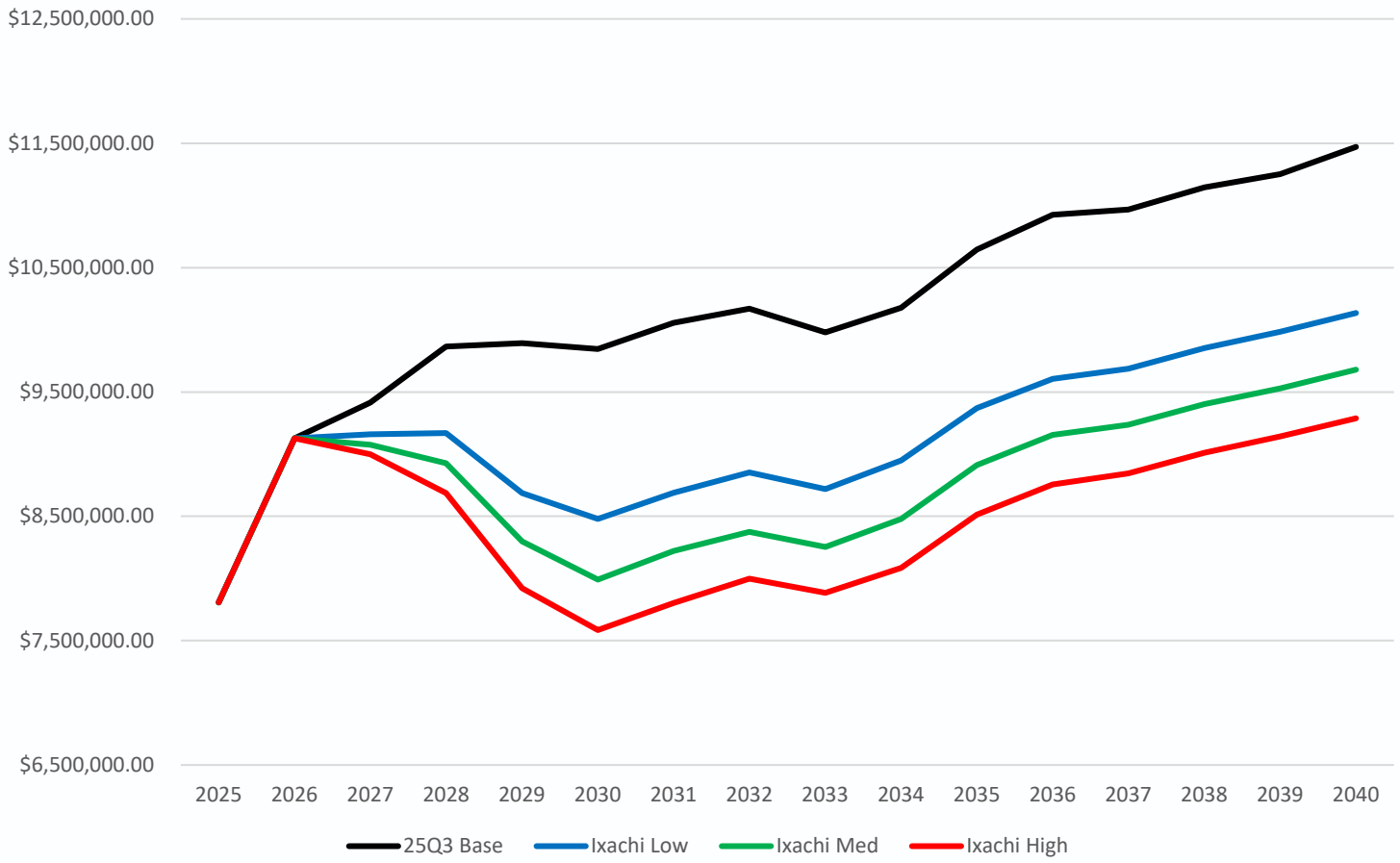
Modeling the Impact of Hurricanes on LNG Exports

1. Mexico Energy Landscape
2. Ixachi Fields
3. GPCM Supply Project Setup
4. Mexico Production
5. Cross Border Flows
6. Price and Basis
7. Mexico Import Cost

US to MEX Import Cost



Delta Savings by Case			
Year	Ixachi Low	Ixachi Med	Ixachi High
2027	$ (255,133.21)	$ (338,860.91)	$ (414,512.75)
2028	$ (697,025.73)	$ (939,200.50)	$ (1,180,092.01)
2029	$ (1,205,409.34)	$ (1,592,619.71)	$ (1,969,517.43)
2030	$ (1,366,998.03)	$ (1,854,642.97)	$ (2,261,214.38)
2031	$ (1,366,067.74)	$ (1,833,773.13)	$ (2,251,874.31)
2032	$ (1,316,467.24)	$ (1,793,452.83)	$ (2,172,108.45)
2033	$ (1,261,815.16)	$ (1,726,241.99)	$ (2,096,757.81)
2034	$ (1,229,351.41)	$ (1,699,015.28)	$ (2,093,014.98)
2035	$ (1,273,329.18)	$ (1,731,477.83)	$ (2,131,183.18)
2036	$ (1,318,639.57)	$ (1,769,681.83)	$ (2,170,138.16)
2037	$ (1,280,104.28)	$ (1,729,292.97)	$ (2,122,025.29)
2038	$ (1,291,872.36)	$ (1,744,183.66)	$ (2,134,669.48)
2039	$ (1,265,998.60)	$ (1,721,436.90)	$ (2,107,581.90)
2040	$ (1,335,763.45)	$ (1,791,348.20)	$ (2,182,722.19)
Grand Total	$ (16,464,196.46)	$ (22,265,700.70)	$ (27,287,884.30)

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GPCM Case Study - Supply

Summary

- Mexico has a target natural gas supply increase of 1.5 bcf/d by 2030.
- Mexico realistic supply increase 0.5 to 0.9 bcf/d by 2029.
- US natural gas export to Mexico would decrease 0.6 to 0.9 bcf/d. Primary resulting from a decrease of Permian Gas.
- New production increase would drive price down average of 7.5 – 11.5 cents across including Henry Hub, Agua Dulce and Waha.

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GPCM Case Study

Questions?

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RBAC leads the market in global and regional gas and LNG market simulation and predictive analytics in support of corporate investment and M&A strategy, ESG, risk analysis, planning, and commodity trading. Our products and expertise help companies go beyond the narratives and hype to identify the opportunities and define the risks inherent in the uncertainties of energy transition using reality and fact-based fundamentals and analysis.

We continuously enhance our market simulation systems with the latest software and computer technology while applying the best of mathematical economics to assist our clients achieve their goals. This is especially needed as we see fundamental shifts taking place in the energy industry to achieve energy transition goals and meet increasingly demanding requirements of ESG. We provide regularly scheduled updates of our simulation systems and databases to keep our clients up-to-date with the most current market information. We enhance the functionality of our systems to enable our customers to simulate the effect of new regulations or industry requirements.

Our aim is to continue to lead the market in best practices which raise the standard of market simulation, enabling rapid and flexible scenario generation, sensitivity analysis, risk-assessment and forecasting, giving clients the edge in the rapidly changing energy market.

Those using RBAC's products and services include energy industry firms and consultants, as well as government agencies involved with energy, transportation, and the environment.

RBAC's principal products include:

- **GPCM® Market Simulator for North American Gas and LNG™** focused on the North American gas & LNG markets. GPCM is the industry standard market simulator for North American gas.
- **G2M2® Market Simulator for Global Gas and LNG™** for simulating increasingly integrated gas and LNG markets worldwide.
- **Gas4Power®** for integrating gas and power market fundamentals to produce credible forecasts for both.
- **NGL-NA®** Market Simulator for North American Natural Gas Liquids

With RBAC's advanced simulation systems, licensees can create and run scenarios involving bio-methane (Renewable Natural Gas – RNG) mixed with natural gas and to assess the implications of carbon taxes and markets on supply, demand, and prices. Future enhancements will include the ability to simulate the advent of a future hydrogen market with both pure hydrogen pipelines as well as mixtures with methane. The Energy Analyst of today and the future needs these kinds of tools to conduct realistic assessments and help develop realistic strategies and plans to achieve the goals of the energy transition.

Dr. Robert Brooks founded RBAC in 1987 based on experience developing several well-respected predictive models for government and industry. He designed the first gas transportation model while getting his PhD at MIT and has led the industry ever since.

RBAC's staff includes industry-trained experts in natural gas supply and demand, transportation, storage, marketing, and trading. Our team applies its world-class expertise in mathematical modeling, statistical analysis, mathematical algorithm development, software engineering, and database design to current and future challenges, risks and opportunities in energy.

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