Canada Exports and the Possible Impact of Wildfires

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Canada Exports and the Possible Impacts of Wildfires

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Canada Exports and the Possible Impacts of Wildfires

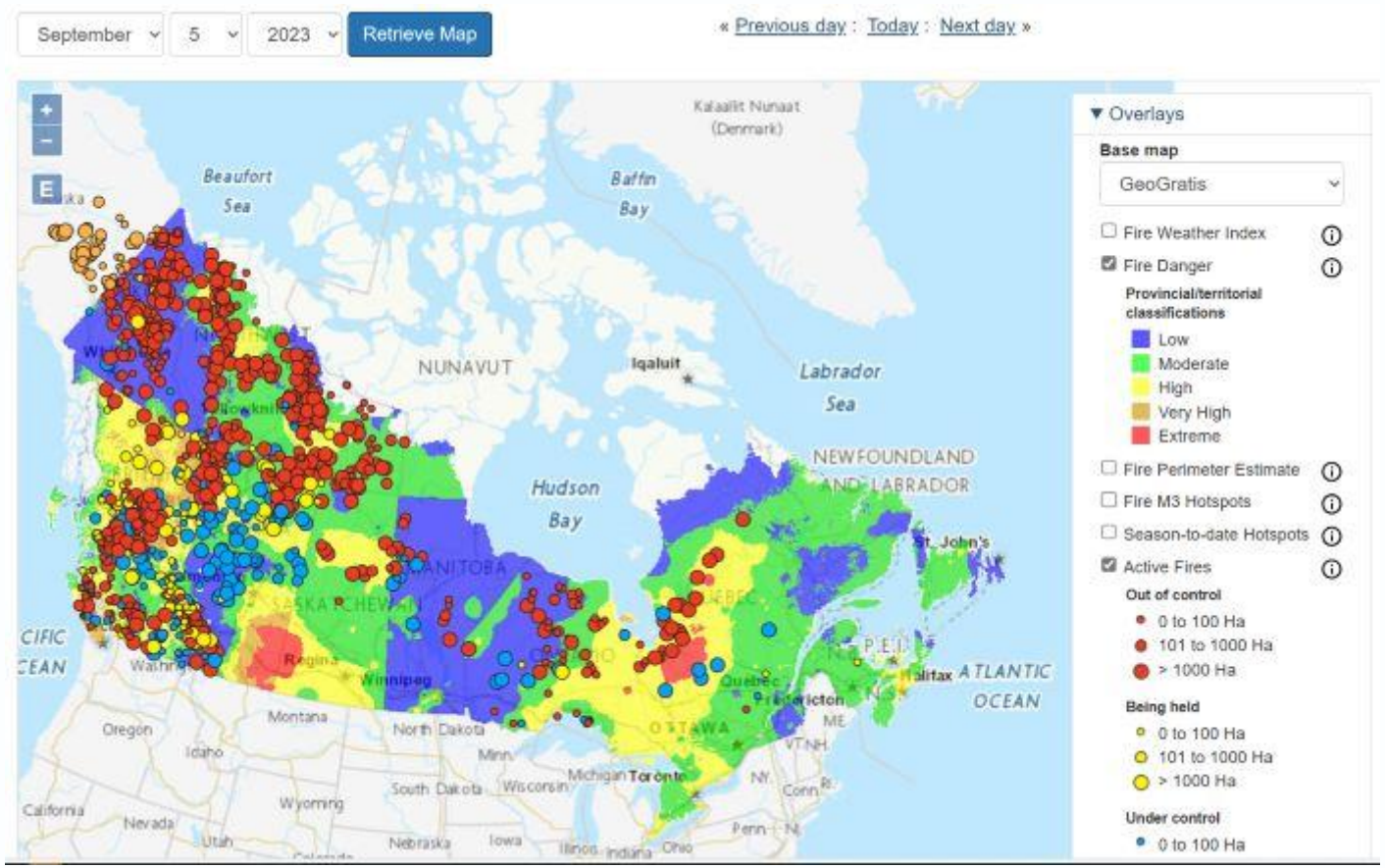
1. 2023 Wildfire Season
2. Scenario Set - Up
3. Pricing Impacts
4. LNG Exports
5. Why?
6. Summary

2023 Wildfire Season

Officially the most destructive wildfire season on record, the 2023 season consisted of more than 6,000 fires and impacted over 18 million hectares of land. More than double the previous record set back in 1989 and 6 times larger than a normal wildfire season. With many of the fires impacting areas with significant natural gas production assets like Alberta and British Columbia.

Canada experienced its warmest May to July weather in 80 years, which was then exacerbated by summer lightning storms through remote areas.

It was not until October 2023 that the fire season slowed down, with the colder weather suppressing much of the activity.

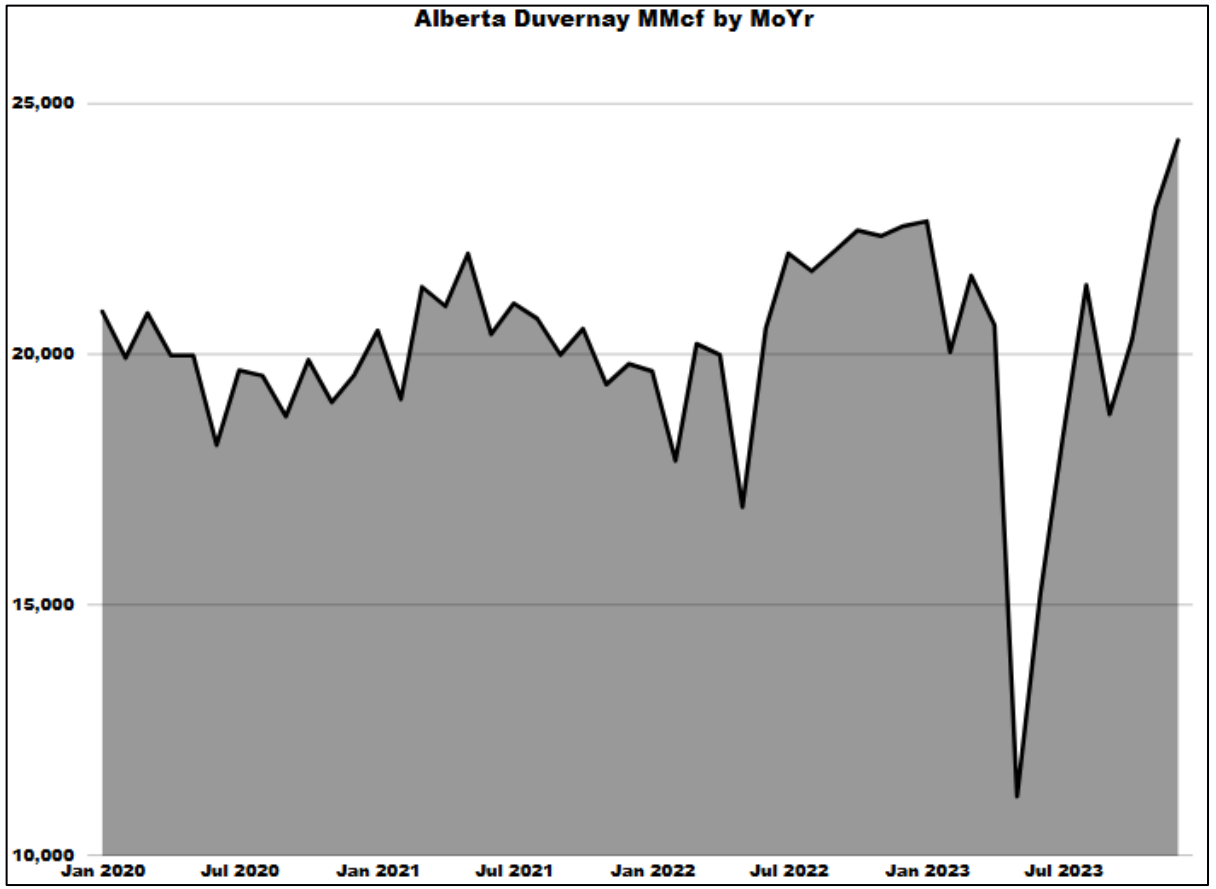


Canada's record-breaking wildfires in 2023: A fiery wake-up call - Natural Resources Canada

Production Impact

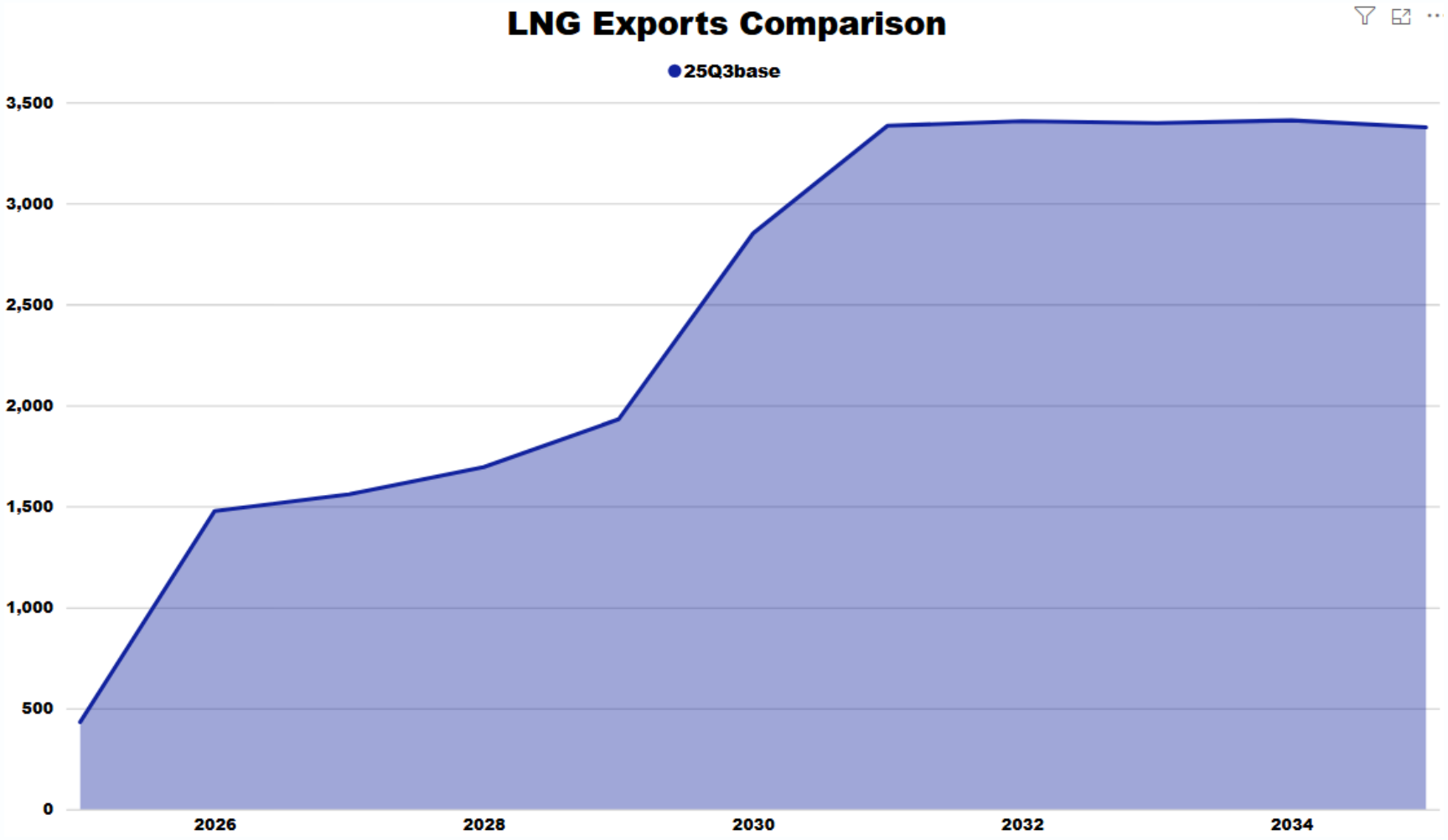
There was a significant impact to natural gas production from the Duvernay Shale. Which let us to hypothesis; what would happen if a similar event happens in the future? When Canada LNG Exports are a significant portion of the regional supply/demand picture?

What if the next event is worse? What if it affects the entire Western Canada Sedimentary Basin?



RBAC State Prod Data?

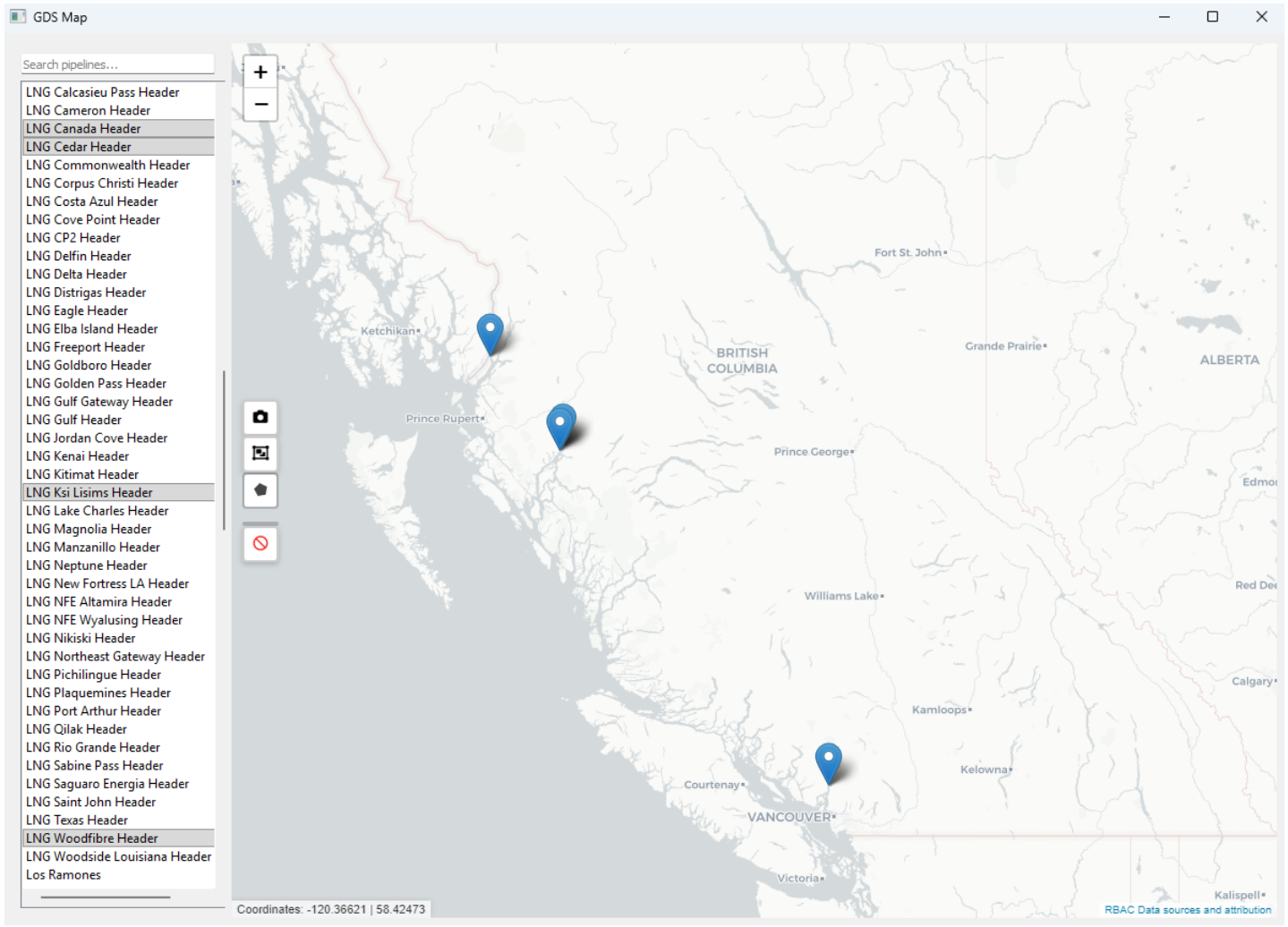
Recent Developments



RBAC, Inc. Visual Analytics

- LNG Exports from British Columbia began in 2025
- The proximity to Asian customers gives these facilities favorable economics when compared to those in the Gulf.
- LNG Canada is already exporting natural gas
- Future Facilities consist of:
  - Cedar LNG
  - Ksi Lisims LNG
  - Woodfibre LNG
- We expect exports from Canada to peak in the 2030s
- Large demand customers like LNG Export facilities add volatility in markets as we have seen in the Gulf, with the outages at Freeport LNG having been the main culprit.
- A significant change in supply or demand could drastically impact prices in the region.

LNG Export Facilities



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Scenario Set - Up

	Incremental Change From RBAC Base Case				
	Comparative Analysis	Production Area Impacted	Dates Impacted		
			May-33	Jun-33	Jul-33
RBAC Base Case	Status Quo	N/A	N/A	N/A	N/A
Wildfire 1	Applying the experienced production impact to a future period	Duvernay	54%	74%	89%
Wildfire 2	Applying the experienced Duvernay impact to tne entire WCSB during the same future period	Apply the Duvernay percentage reduction across all of WCSB	54%	74%	89%

Supply Make News

MAKE NEW SUPPLY CASE

New_Case_Name: Wildfire 1

Based_On_Case: 25Q3base

Randomizing Frac: 0.00

Randomizing Period: Nov-2025 **thru** Dec-2050

Clear Old Records

Sup Type	Supply Play	Supply_Area	State	Census_Regic	EIA_Area	Basin	Basin_Group	Other	Country	North_Americ	From	Thru	QMult	QAdd	PMult	Elasticity
	Duvernay Shale										May-2033	May-2033	0.540	0	1.000	
	Duvernay Shale										Jun-2033	Jun-2033	0.740	0	1.000	
	Duvernay Shale										Jul-2033	Jul-2033	0.890	0	1.000	
*													1.000	0	1.000	

MAKE NEW SUPPLY CASE

New_Case_Name: Wildfire 2

Based_On_Case: 25Q3base

Randomizing Frac: 0.00

Randomizing Period: Nov-2025 **thru** Dec-2050

Clear Old Records

Sup Type	Supply Play	Supply_Area	State	Census_Regic	EIA_Area	Basin	Basin_Group	Other	Country	North_Americ	From	Thru	QMult	QAdd	PMult	Elasticity
						WCSB					May-2033	May-2033	0.540	0	1.000	
						WCSB					Jun-2033	Jun-2033	0.740	0	1.000	
						WCSB					Jul-2033	Jul-2033	0.890	0	1.000	
*													1.000	0	1.000	

North American Natural Gas Overview

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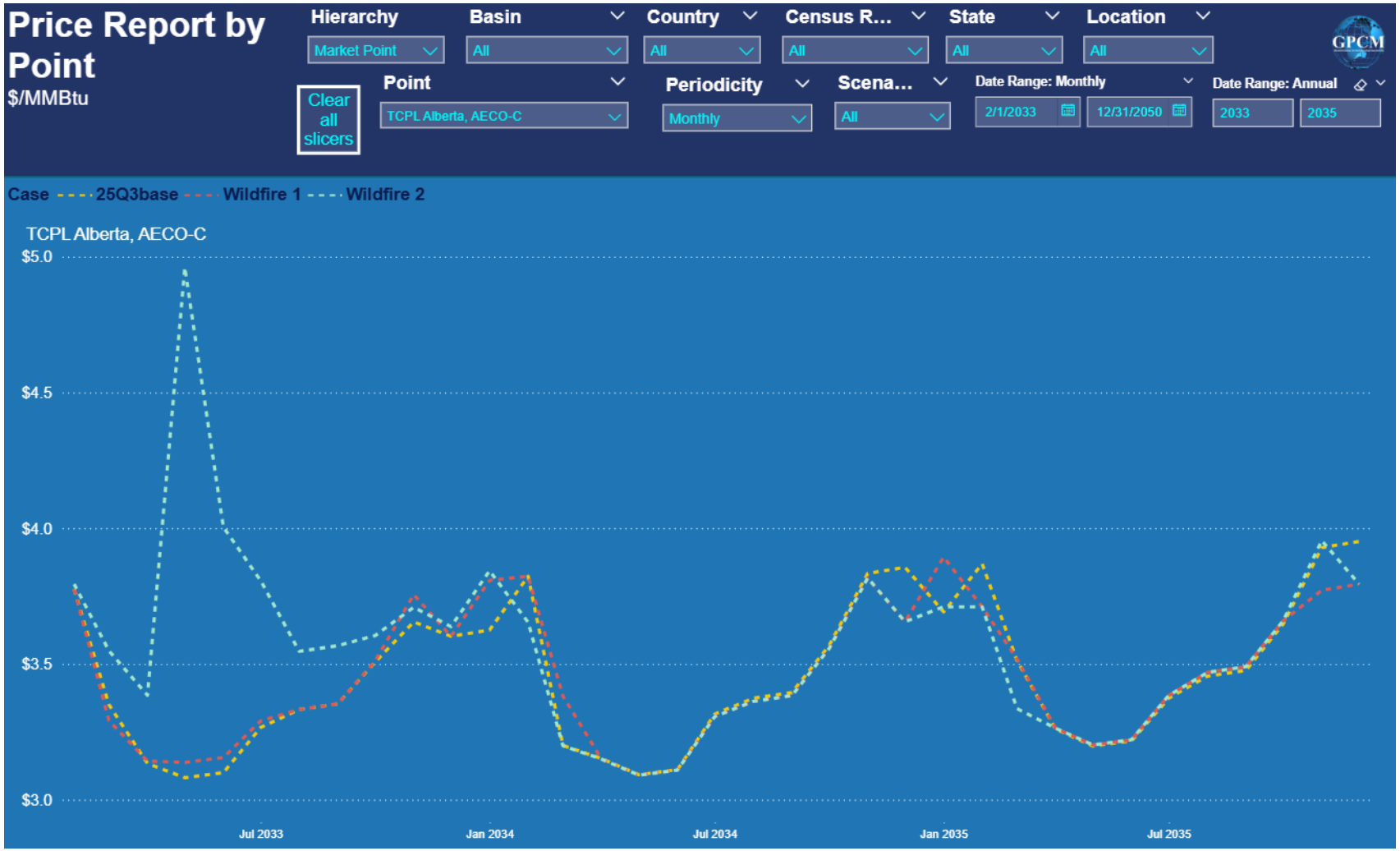
AECO Pricing



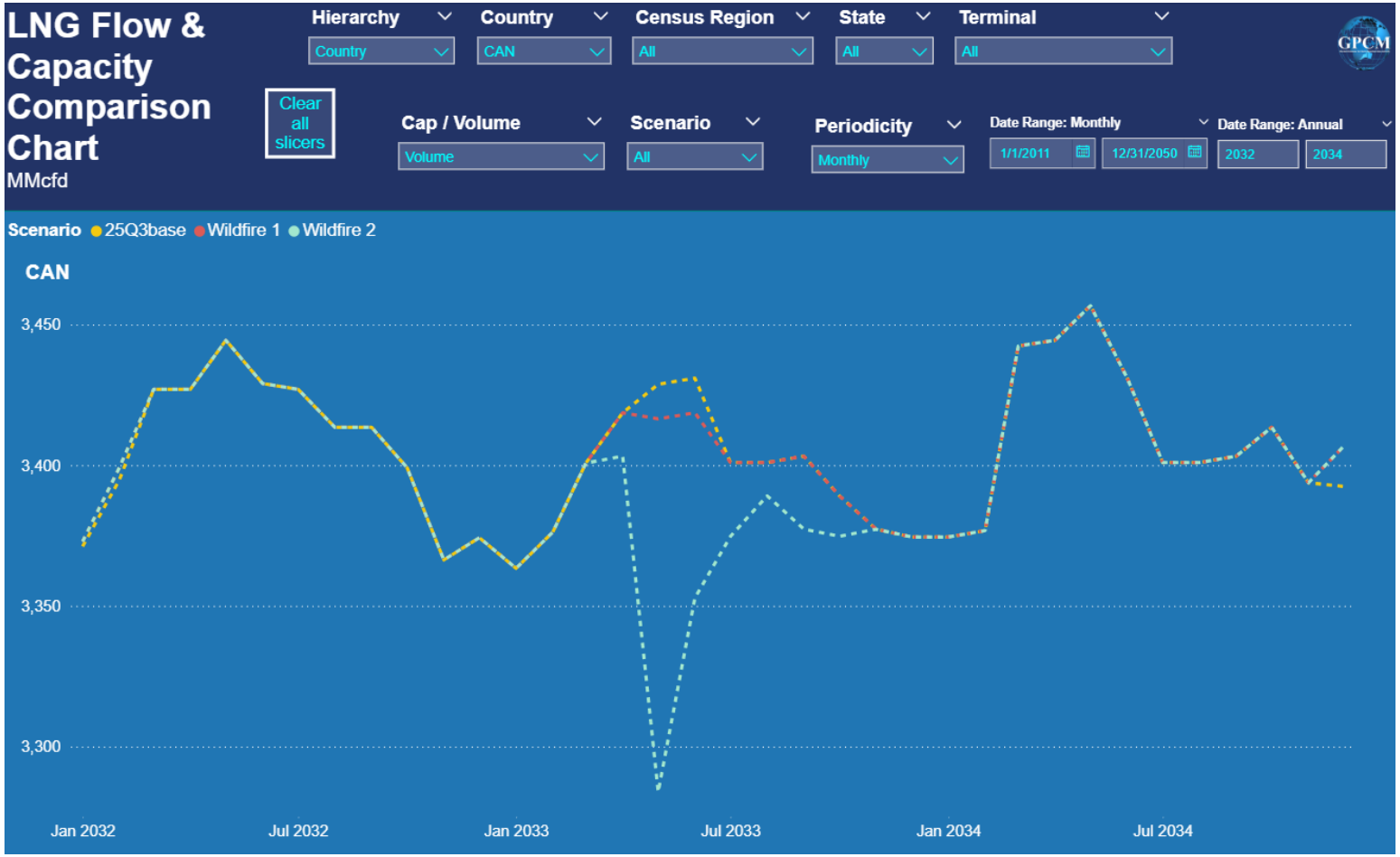
Henry Hub

Canada Exports and the Possible Impacts of Wildfires

1. Henry Hub Price & Basis
2. Supply
3. Demand
4. LNG Exports
5. Storage
6. Infrastructure

LNG Exports from British Columbia

- Minimal impacts to Canadian exports during Wildfire 1 scenario which duplicates the experienced Duvernay reduction
- The Wildfire 2 scenario, which applies the experienced Duvernay reduction across the entire WCSB does impact exports to a greater degree, but not a significant about.
- Exports from Canada could decline ~5%, a smaller reduction then expected most likely due to the Take-or-Pay contract structure that many LNG Export Facilities utilized to gain FID



LNG Exports from British Columbia

- The declines are spread across 3 LNG Export Facilities
- Ksi Lisims and LNG Canada bore the brunt of the declines, while Cedar LNG's small scale made its decline non-material
- Woodfibre LNG was largely insulated from the impact of wildfires, possibly due to its proximity to the US/Canada Border.

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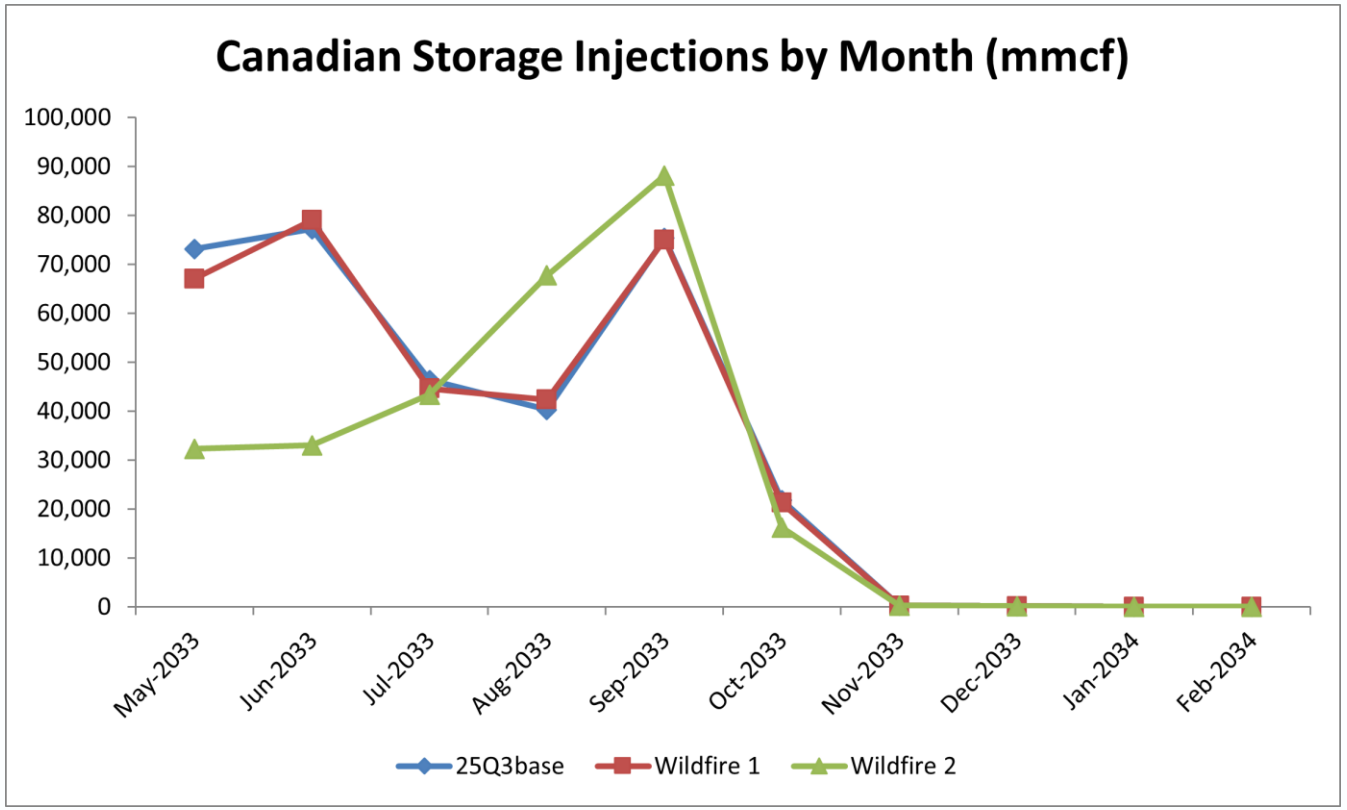
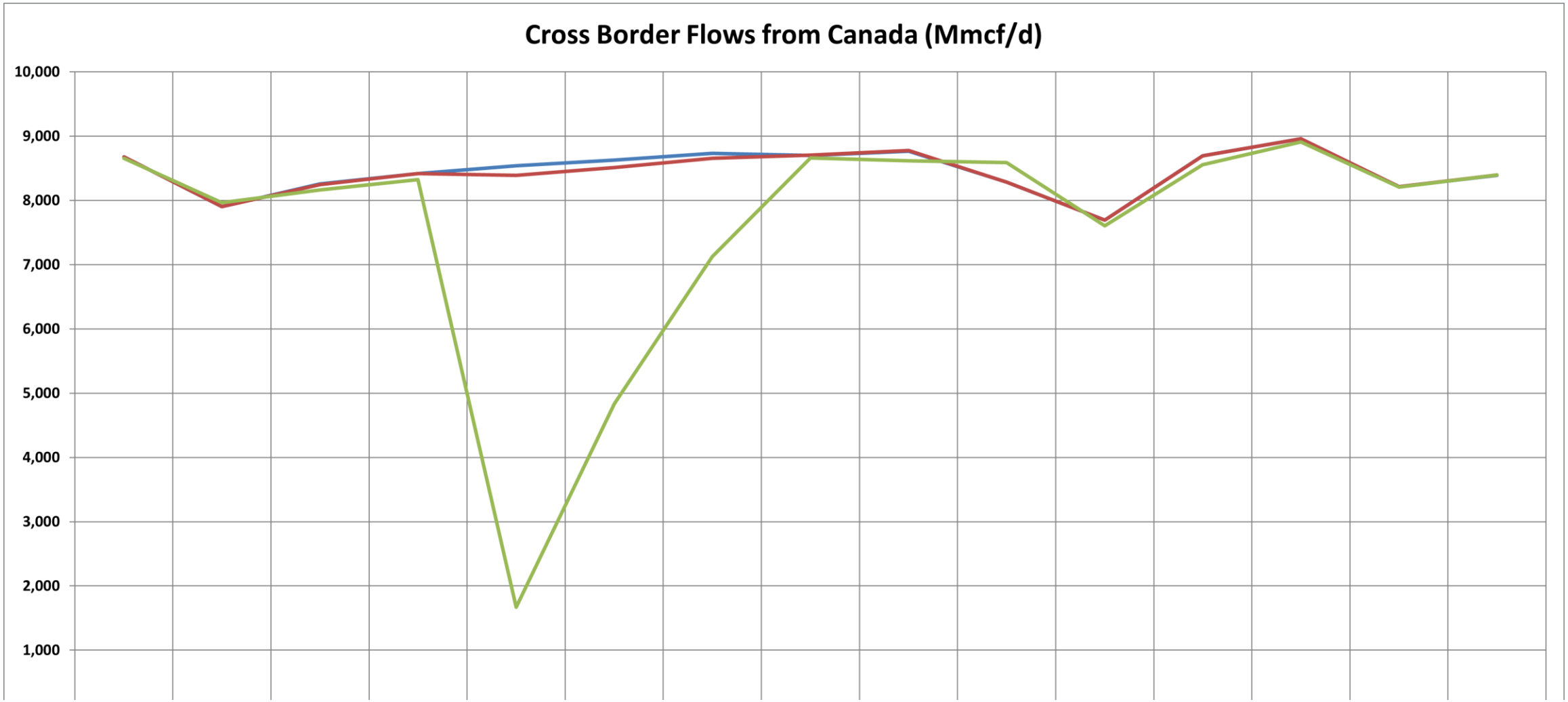
Why?



Fundamentally natural gas storage has always been the balancing mechanism when there is a mis-match between supply and demand.

With the loss of production in the Wildfire 2 scenario seeing a reduction in storage injections make total sense, as well as higher injections later in the season to make up for it.

Why?



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Summary

- The natural gas market in Canada has the built in flexibility to absorb significant losses in production for short periods of time.
- While an AECO price near $5.00 is nowhere near the volatility we have seen in New York in recent history or in Texas during Winter Storm Uri.
- Further research into which cross-border points into the US decline the most and the impacts to those market areas.
- Given the seemingly perfect storm of events leading up to these wildfires, it seems unlikely that our worst-case scenario of production drops is within the realm of possibility.

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.