

PLATA ENERGY

OIL & GAS CONSULTANTS



2nd Argentina

ENERGY SUMMIT 2022

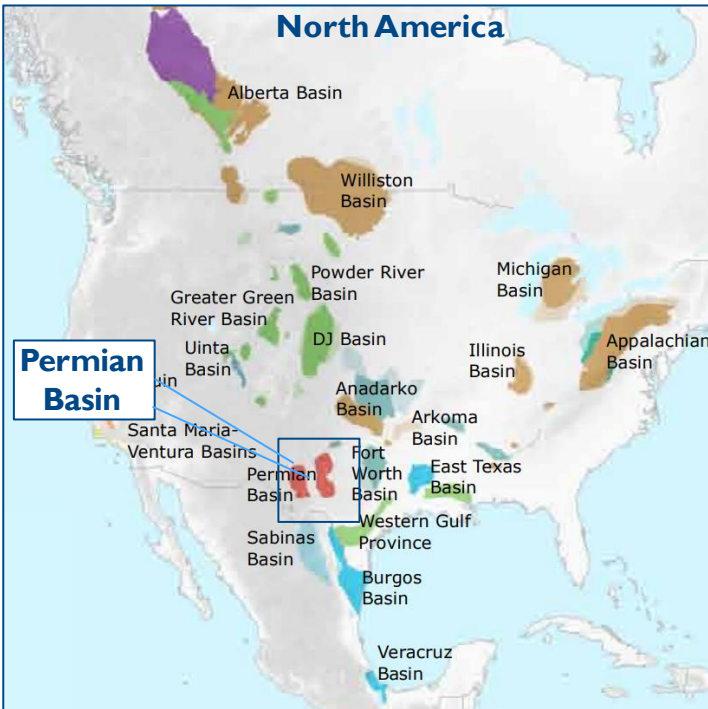
Neuquen Basin vs Permian Basin,
and the winner is ...

2nd Argentina Energy Summit 2022

Lucas Santimoteo

Plata Energy

Neuquen Basin vs Permian Basin, and the winner is ...

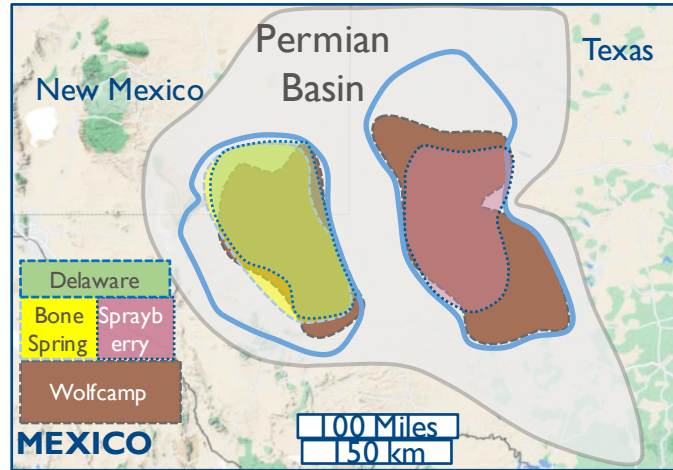


- Key technical similarities and differences at basin level and current unconventional producing units
- Historical pace of development and so far achievements
- Potential size of the remaining price
- Argentina's challenges
- Closing Remarks

Key technical similarities and differences at basin level

Areal distribution and location

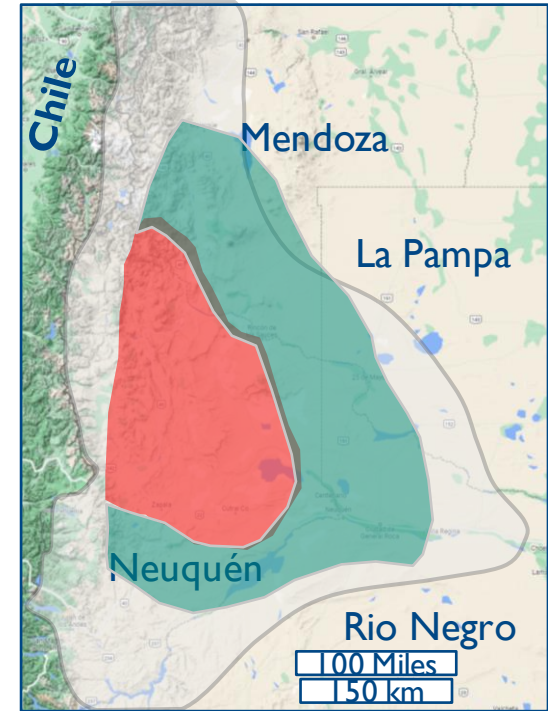
Permian Basin



Source: Boundaries of the Permian Basin extent and Permian sub-basins are from US Energy Information Administration (2017)

- ❖ Permian basin 27.000 square miles (65.000 sq km)
- ❖ Neuquen basin 11.600 square miles (30.000 sq km)
- ❖ **Neuquen <50% of Permian acreage**

Neuquen Basin



Permian Basin

Neuquen Basin

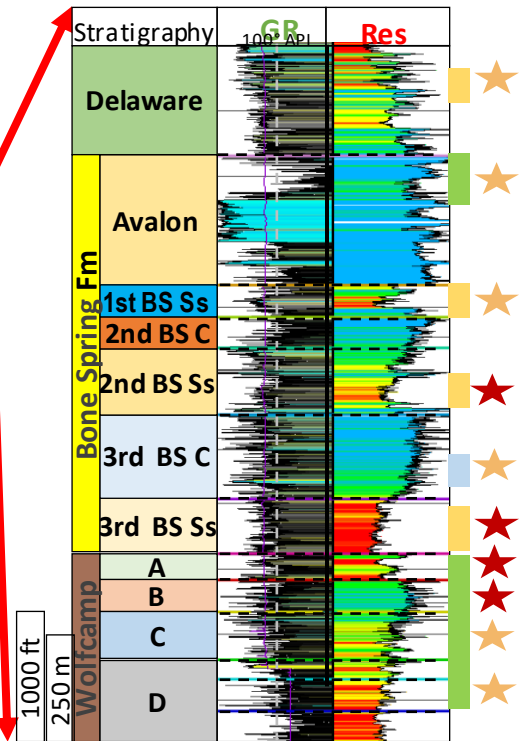
	Permian	Neuquen
Number Operators	~380	~20
Number Landing Zones	5-12	3-8
Reservoir Props per Zone	Similar for both basins	Similar for both basins
Well Performance	Similar for both basins	Similar for both basins. Shorter learning curve based Permian knowledge
Infrastructure	Decentralized 3rd party processing and transporting facilities	Each operator design, build, and operate their own processing facilities; just a few centralized transporting facilities
Total Current Cum (billion bbls oil)	~30	~0.2

Key technical similarities and differences at basin level

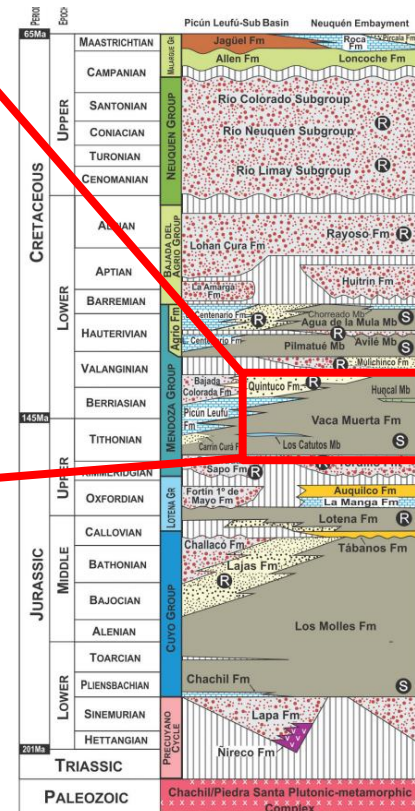
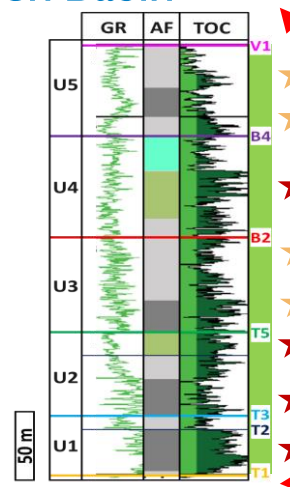
Stratigraphy and Producing Units

Permian Basin

Ma	System	Series	Delaware Basin Formations
252	Permian	Ochoan	Dewey Lake
			Rustler
			Salado
			Castile
			Lamar
		Guadalupian	Bell Canyon
			Cherry Canyon
			Brushy Canyon
			Bone Spring
			Wolfcamp
	Leonardian		
	Wolfcampian		
299	Pennsylvanian	Virgillian	Cisco
		Missourian	Canyon
		Desmoinesian	Strawn
		Atokan	Atoka
		Morrowan	Morrow
323	Mississippian	Chesterian	Barnett
		Meramecian - Osagean	L. Miss Lm
359	Devonian	Kinderhookian	Woodford
		Upper	
		Middle	
419	Silurian	Lower	Devonian (Thirtynone)
		U. Niagaran	Upper Silurian (Wristen)
		L. Niagaran	
444	Ordovician	Alexandrian	Fusselman
		Cincinnatian	
		Mohawkian	
		Chazyan	
		Ozarkian	
485	Cambrian	Canadian	Ellenburger
		Ozarkian	
541	Precambrian		Precambrian Basement

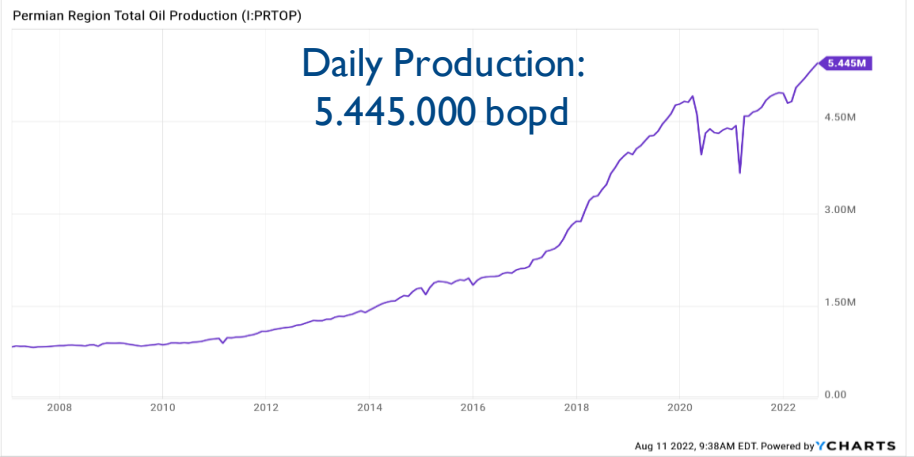


Neuquen Basin



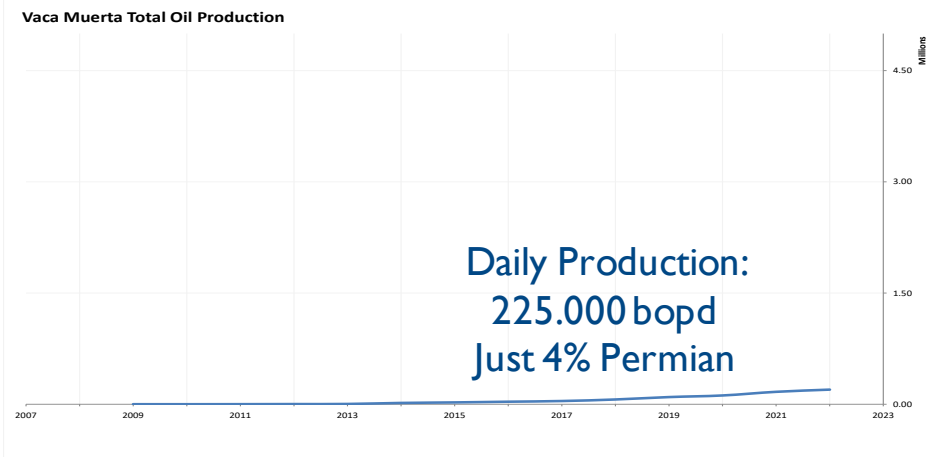
Similar rock quality; VM with less thickness

Permian Basin



Source: YCharts

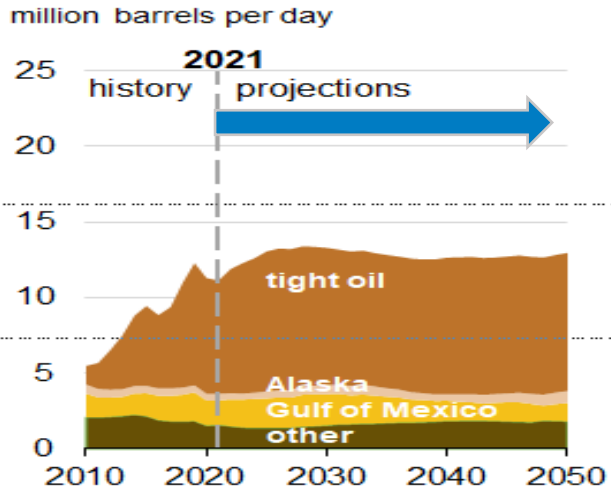
Neuquen Basin



Source: Secretaria de Energia

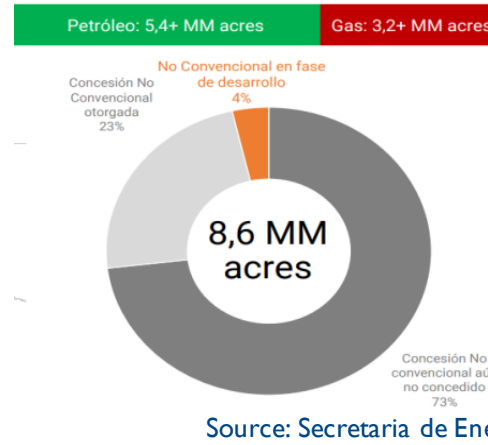
- ❖ The Permian basin has a total number of unconventional wells of about 45.000 wells (~80% of them are horizontal) and the current active drilling rigs are around 350
- ❖ Neuquen basin with only 1.250 unconventional wells (~60% horizontal) and around 40 active drilling rigs.
- ❖ Total current cum: ~30.0 billions bbls oil vs Neuquen ~0.2 billions bbls oil (0.6% over Permian)

Permian Basin



Source: EIA

Neuquen Basin



Solamente el 4% de la superficie no convencional de cuenca neuquina (principalmente en formación Vaca Muerta) pasó a fase de desarrollo.

8,6 MM de acres \approx +35.000 km²

Recoverable reserves:

- ❖ Permian basin are about 105 billion barrels (~30% of it already produced)
- ❖ Neuquen basin 16 billion barrels (only ~1% of it already produced)

Challenges in Argentina to replicate US

Critical Factor	Current	Trend	Comments
Resource base quality	●	■	Similar and comparable with Permian's
Resource base quantity	●	■	Important remaining resources
Average well performance	●	↑	Slightly better than Permian's
Cooperative government	●	■ ↑	Provincial / federal governments
Service sector capacity	●	■ ↑	Expected to increase with de-risking and de-bottlenecking
Innovation via completion	●	↑	Signs of industry cooperating locally and with Permian
Industry willingness to invest	●	↑	Currently increasing with de-risking and de-bottlenecking
Favorable hydrocarbon prices	●	↑	Better international prices / less government intervention
Easy to market	●	↑	Going on and already committed investments
Incentives for unconventional	●	■	Government becoming responsive

● Good shape

● Standard

● Room for Improvement

↑ Show Improvement

■ Stay same

↓ Worsening

Neuquen Basin vs Permian, and the winner is ...

- ✓ Both basins have excellent business cases and demonstrated important remaining resources
- ✓ Both basins benefit from sharing same operators / services companies with common lesson learned and best practices
- ✓ Sharing developing and implementing creative tools in drilling and completion create costs and time reductions in both basins
- ✓ Proved high performance and efficiency in companies organized as factory model approach
- ✓ Vaca Muerta has half of the acreage but only 4% has been drilled and 1% of cum production
- ✓ But as in every match, there are other factors Argentina need to improve:
 - Access to market, both from equipment, tools, and materials, as well as customers
 - Local infrastructure might act as a massive development bottleneck
 - Administration incentives to producers and develop proper stable regulations for shale

❖ **US Permian is the business model to be followed if Vaca Muerta is to be successful since both have similar developing dynamics and rock quality**