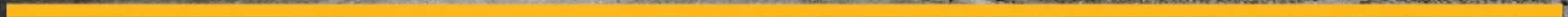




WESTERN STATES
AND TRIBAL NATIONS
NATURAL GAS INITIATIVE

Western States and Tribal Nations Natural Gas Initiative

Western Tribal Carbon Management
Strategies Forum
October 2023



What Is WSTN?

Western States and Tribal Nations is a unique, trans-national initiative led by sovereign tribal nations, states and counties focused on creating rural economic development, advancing tribal self-determination and a reducing global emissions through the export of clean natural gas from western North American basins to international markets.



**NEW MEXICO JOINS WESTERN
STATES AND TRIBAL NATIONS**

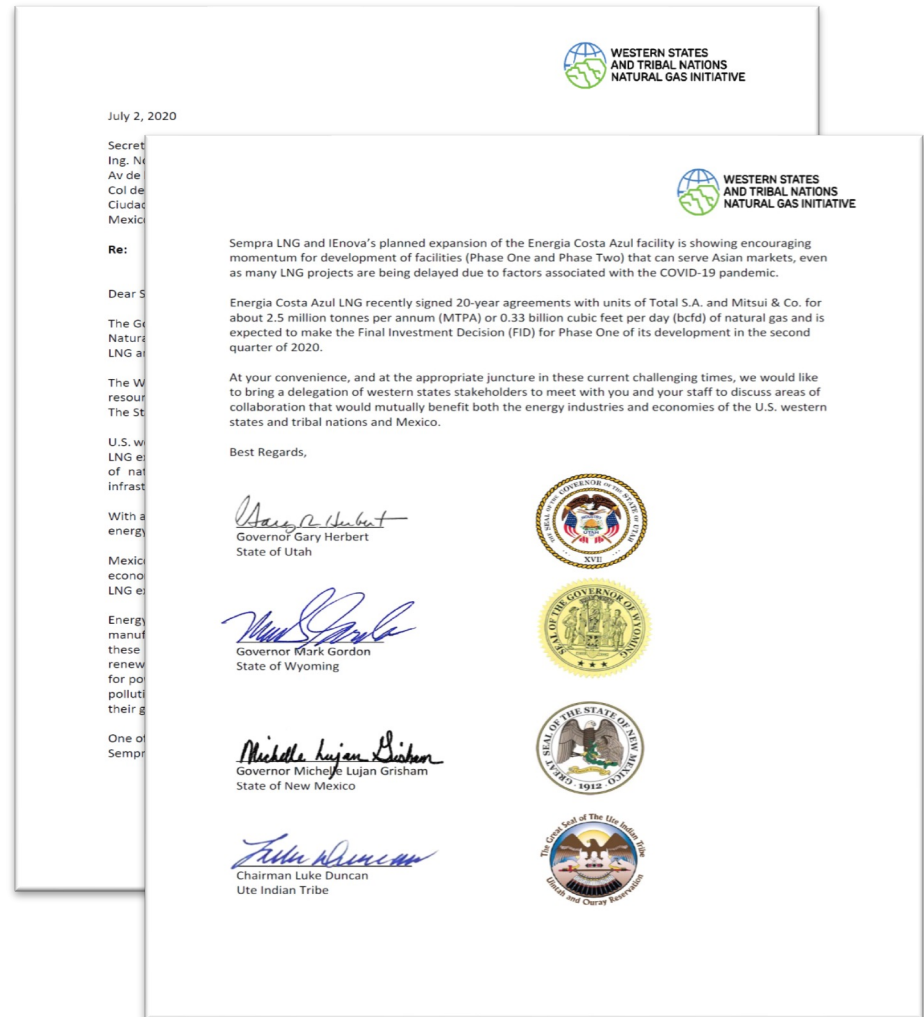


WSTN MOU Membership

- Ute Indian Tribe
- Jicarilla Apache Nation
- Southern Ute Indian Tribe
- State of Baja California, Mexico
- State of New Mexico
- State of Utah
- State of Wyoming
- Western Colorado Counties of Garfield, Mesa, Moffat and Rio Blanco
- Province of Alberta (pending)

Currently Courting

- State of Arizona
- Navajo Nation



WSTN Board of Directors-Officers

- The Ute Indian Tribe represented by Devin Pehrson (*Treasurer*)
- The State of Utah (Utah Governor's Office of Energy Development) represented by Jeff Hartley (*Vice Chair and Governmental Liaison*)
- The State of Wyoming (Wyoming Energy Authority) represented by Bobby Rolston (*Vice Chair and Industry Liaison*)
- The State of New Mexico (Energy, Minerals and Natural Resource Department) represented by Jason Sandel (*Chair*)
- The Western Colorado counties of Garfield, Mesa, Moffat and Rio Blanco represented by Duane Zavadil (*Treasurer*)
- The Southern Ute Indian Tribe represented by Travis Taylor
- The Jicarilla Apache Nation represented by Todd Osmera
- The Province of Alberta represented by James Rajotte



WSTN Membership

- State of Utah-Governor's Office of Energy Development – MOU Member
- Ute Indian Tribe-MOU Member
- State of Wyoming – Wyoming Energy Authority-MOU Member
- Garfield County, CO – MOU Member
- Moffat County, CO – MOU Member
- Mesa County, CO – MOU Member
- Rio Blanco County, CO – MOU Member
- State of New Mexico –Energy, Minerals & Natural Resources Dept. – MOU Member
- State of Baja California, Mexico, Dept. of Economic Development and Tourism – MOU Member
- Southern Ute Indian Tribe-MOU Member
- Jicarilla Apache Nation-MOU
- Province of Alberta (MOU Pending)
- Duchesne County, UT
- Uintah County, UT
- UT School and Institutional Trust Lands Administration (SITLA)
- Seven County Infrastructure Coalition, UT
- Caerus Energy
- Laramie Energy
- Terra Energy
- Converse County, WY
- Sempra LNG
- Sweetwater County, WY
- TYR Group
- BlackHawk Energy (a Jicarilla Apache company)
- Three Crowns Petroleum
- PureWest
- Missouri River Resources
- IKAV
- NueVida
- Southwest Gas Holdings
- Enduring Resources
- Jonah Energy
- Chevron
- Lincoln County, WY



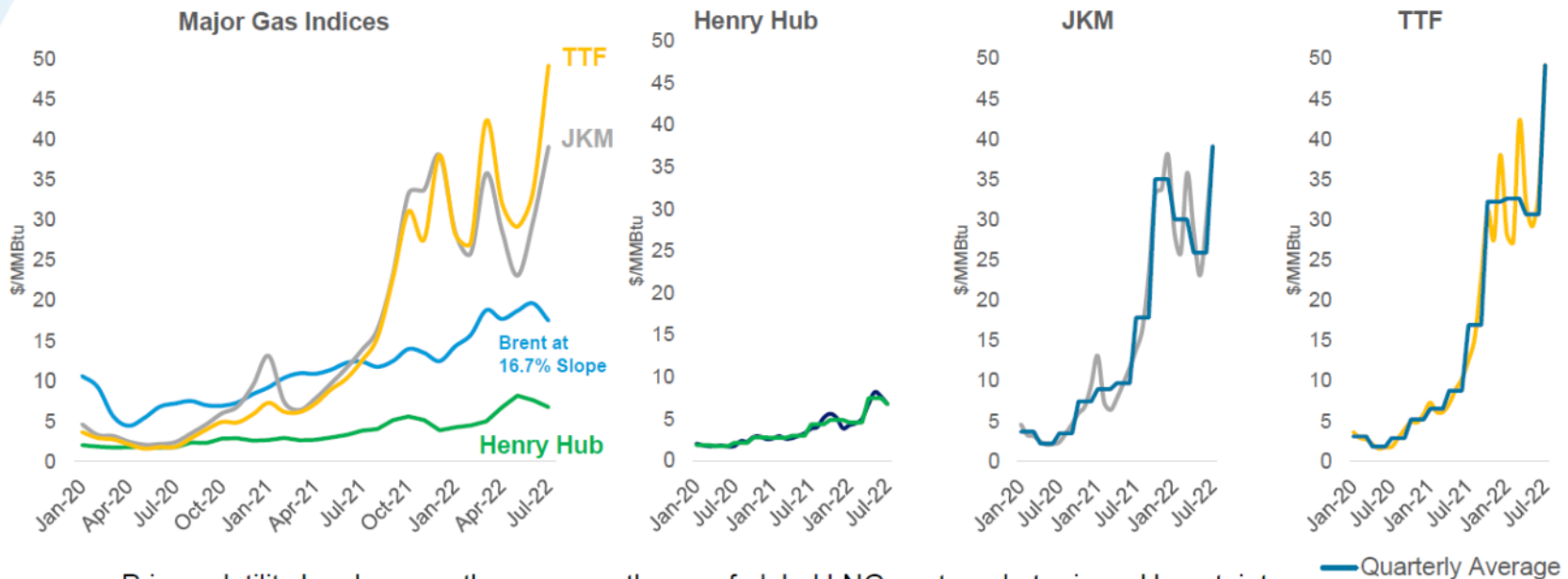
WSTN Customers and Stakeholders – Evolving Trends – Societal, Policy, Economic, Security

- Japan and Asian markets – Significant energy security focus; high energy prices and import dependent; want RSG and looking to be a market maker for blue/green ammonia
- Biden Administration – Inflation Reduction Act (IRA) focus on H2; White House CCUS Task Force includes significant Wyoming and Jicarilla Apache Nation and Southern Ute Indian Tribe representation
- Arizona – SHINe Coalition, Crossroads of Energy Infrastructure and Pipeline Keystone State; Governor – centrist on energy but needs to watch her political left
- California – High NatGas prices for the foreseeable future, significant anti-fossil lobby, major utilities (Socal, PG&E) are moving to H2



Asian Outlook

GLOBAL MARKETS: NATURAL GAS PRICES



- Price volatility has become the common theme of global LNG spot market prices: Uncertainty in Europe has impacted global prices everywhere; companies with long-term contracts (e.g., Japan) less impacted
- Henry Hub remains relatively low compared to the international indices – a testament to North America's abundant, low-cost resource and the differential between North American LNG and other global spot sources



Japanese Outlook

MINISTRY OF ECONOMY, TRADE, AND INDUSTRY JAPAN – JULY 2022

Primary energy dependency on Russia of each G7 countries

- Our country has the lowest self-sufficiency rate of primary energy among the G7 countries.
- Though the situation of energy dependence on Russia differs from country to country, Germany and Italy are especially dependent on Russia.

Country	Self-sufficiency rate of primary energy (2020)	Dependency on Russia (Percentage of import from Russia) (2020) <small>※The data of Japan is quoted from Trade Statistics of Japan 2021</small>		
		Oil	LNG	Coal
Japan	11% (Oil:0% LNG:3% Coal:0%)	4% (Share of Russia :5th)	9% (Share of Russia: 5th)	11% (Share of Russia:3rd)
USA	106% (Oil:103% LNG:110% Coal:115%)	1 %	0%	0%
Canada	179% (Oil:276% LNG:13% Coal:232%)	0%	0%	0%
UK	75% (Oil:101% LNG:53% Coal:20%)	11% (Share of Russia:3rd)	5% (Share of Russia:4th)	36% (Share of Russia:1st)
France	55% (Oil:1% LNG:0% Coal:5%)	0%	27% (Share of Russia:2nd)	29% (Share of Russia:2nd)
Germany	35% (Oil:3% LNG:5% Coal:54%)	34% (Share of Russia:1st)	43% (Share of Russia:1st)	48% (Share of Russia:1st)
Italy	25% (Oil:13% LNG:6% Coal:0%)	11% (Share of Russia: 4th)	31% (Share of Russia:1st)	56% (Share of Russia:1st)

(Sources) World Energy Balances 2020, BP Statistical Review of World Energy, EIA, Oil Information, Cedigaz, Coal Information

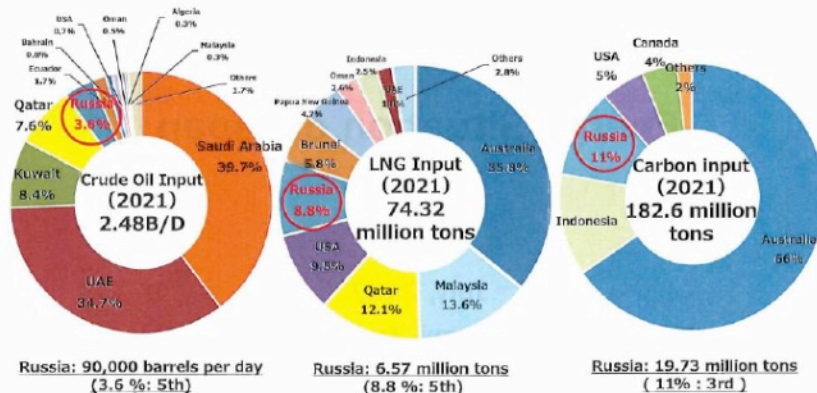


Japanese Outlook

MINISTRY OF ECONOMY, TRADE, AND INDUSTRY JAPAN – JULY 2022

Russia's share of Japan's crude oil, LNG, and coal imports (2021 preliminary figures)

- Japan's energy dependence on Russia is 3.6% for crude oil, 8.8% for LNG, and 11% for coal.



(Source) Trade Statistics of Japan (Ministry of Finance)

Electricity Supply and Demand Forecast for Winter 2022

- Eight areas in Japan, excluding Hokkaido and Okinawa, **have NOT secured the 3% electricity capacity margin** required for stable energy supply.
- This figure incorporates LNG procurement from **Freeport (2.2%)** and **Sakhalin 2 (3.0%)**.
- The disruption of Sakhalin 2 could lead to further negative impact on electricity supply and demand during the winter season.

Electricity Capacity Margin Forecast in this Winter

	Dec. 2022	Jan. 2023	Feb. 2023	Mar. 2023
Hokkaido	12.6%	6.0%	6.1%	12.3%
Tohoku		1.5% (103)	1.6% (95)	
Tokyo	7.8%			
Chubu				
Hokuriku				
Kansai				
Chugoku	5.5%	1.9% (99)	3.4%	10.1%
Shikoku				
Kyushu				
Okinawa	45.4%	39.1%	40.8%	65.3%

*The figure in brackets () shows the shortfall against 3%. Unit: ten thousand kW



Asian Energy Geopolitics

Russia and the Global South

- Since the Ukraine crisis, Russia has been strengthening its ties with the Global South.
- After Russian oil and gas prices going down, some of the biggest beneficiaries may have been the biggest Global South nations.



India

According to Kotak Securities, India's imports of Russian crude in dollar terms were up 12-fold year on year during the April-October period of 2022. (Jan, 2023 S&P global)



Pakistan

"Pakistan could start importing Russian oil after March" - "Russia could start exporting oil to. . . Pakistan after March if terms are agreed, and is discussing with Islamabad whether payment could be made in the currencies of "friendly" countries, Russia's energy minister said. . ." (Jan, 2023 Reuters)

Africa

Russia sent 214,000 barrels a day of refined petroleum products to Africa in December 2022, roughly three times more than in December 2021, . . . (Feb, 2023 Financial Times)



China

"How China's energy outlook has been reshaped by the Ukraine war" - ". . . the war has enhanced China's oil supply security because Chinese refiners have been able to buy Russian crude at a discount. . . might provide China with leverage in future negotiations over new supply contracts." (Feb, 2023 South China Morning Post)



Asian Energy Geopolitics

Voices from Asia



India

Modi said that India's gas demand would grow over 500% in the foreseeable future as the country had set a target to raise the share of gas in the country's energy mix to 15% by 2030, from about 6%. (S&P Global Platts, Feb 2023)



Singapore

Natural gas is the cleanest fossil fuel and will remain an important transition fuel for many countries, including Singapore, until low-carbon alternatives like hydrogen can be deployed on a large scale. (Nov, 2022)



Bangladesh

Bir Bikram Tawfiq-e-Elahi Chowdhury, the energy adviser to the Prime Minister of Bangladesh, "There were ships floating around Western Europe carrying gas, and other countries were not able to buy because of the price," (Reuters, Feb 2023)

Thailand(Oct, 2022)

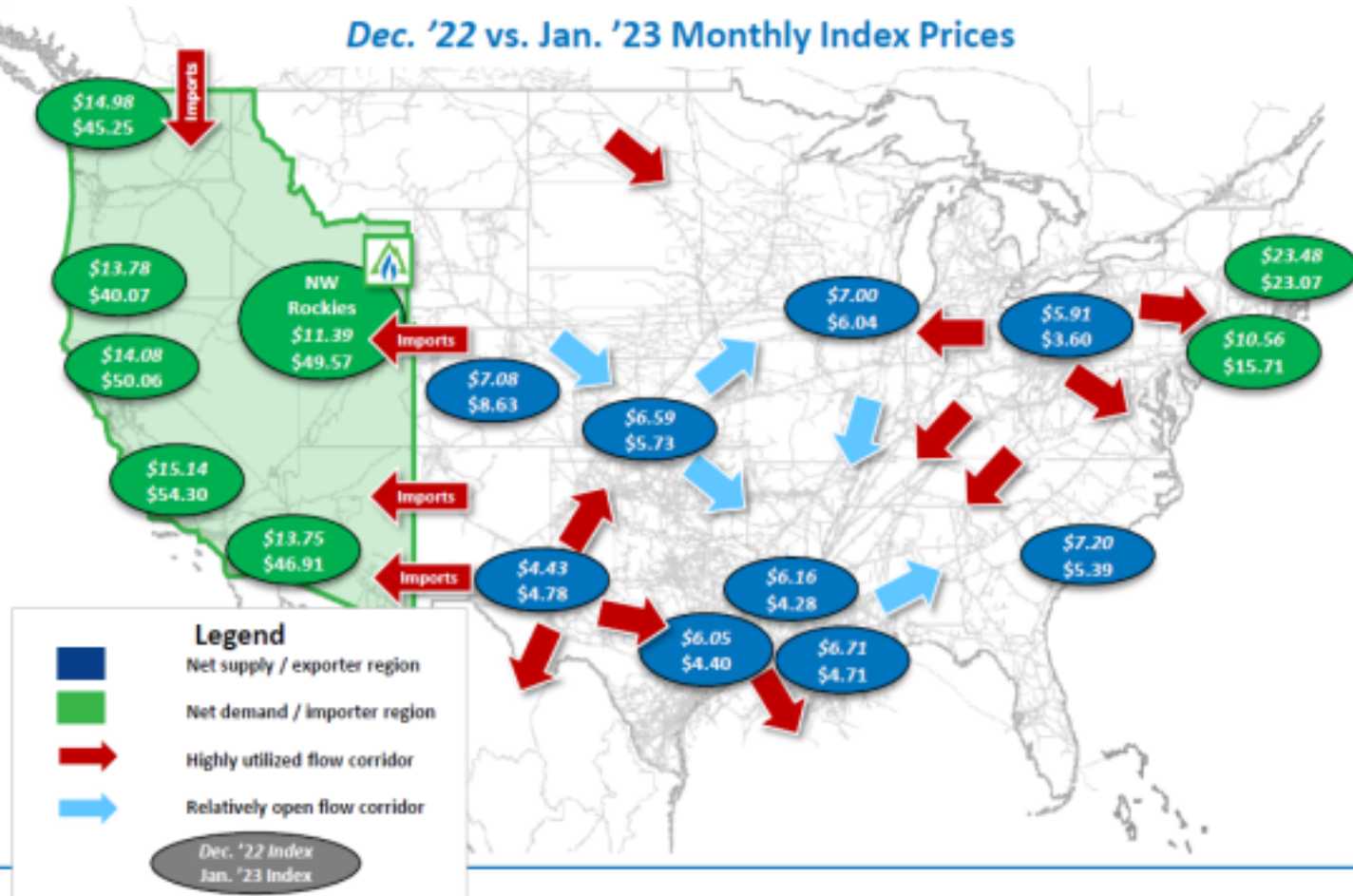
- In the midst of the crisis, it can strengthen the bargaining power of both Japan and Thailand on LNG, as both countries are important LNG importers. LNG is a clean energy source that we need to continue to use in the future.

Philippines(2022)

- Even though Philippines had planned to introduce LNG in the process of increasing renewable energy, the U.S. government abruptly stopped supporting it, because of the change of administration.



Dec. '22 vs. Jan. '23 Monthly Index Prices



Why Rockies Gas?

- The Potential Gas Committee updated its resources estimates at year-end 2019. Potential recoverable resources for the Rocky Mountain region were 502 trillion cubic feet.
- U.S. Tribal Nations hold almost 10 percent of the known oil and gas reserves in the U.S.
- Reduced Geopolitical Risk – West Coast LNG facilities would not require the use of the Panama Canal, a political risk as well as a shipping bottleneck
- Current production of over 11 bcf/d of Non-Associated Natural Gas production ready to supply Energía Costa Azul (ECA) Phase II and Mexico servicing need
- Available pipeline infrastructure capacity with state (New Mexico, Wyoming and Utah) bonding authority available for utilization for infrastructure development and de-bottlenecking need
- Regulatory transparency and key political support by WSTN members at the gubernatorial and national level for project development

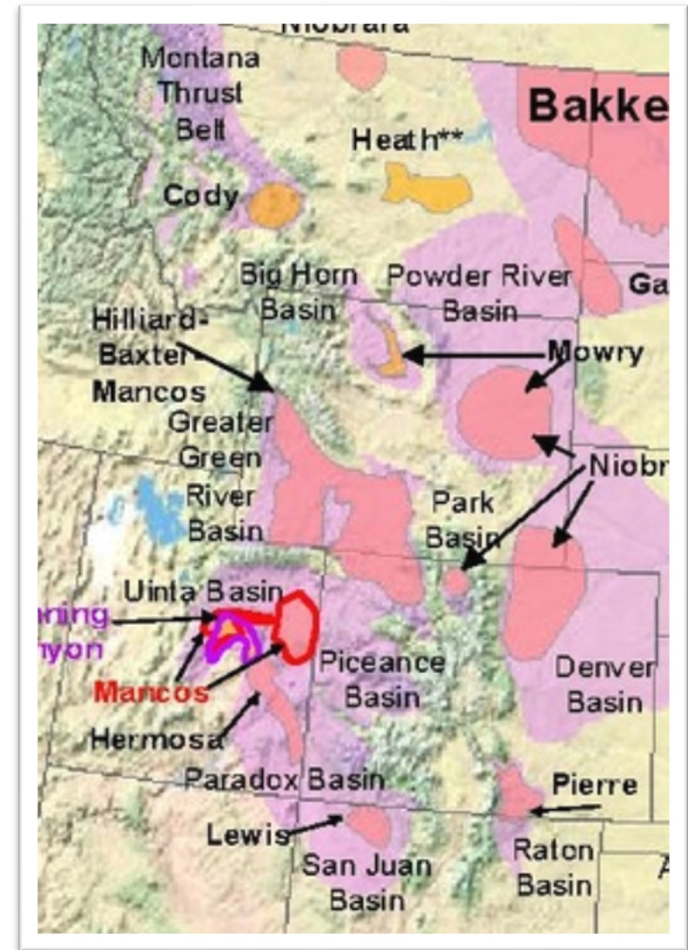


WSTN In Pursuit of LNG Exports



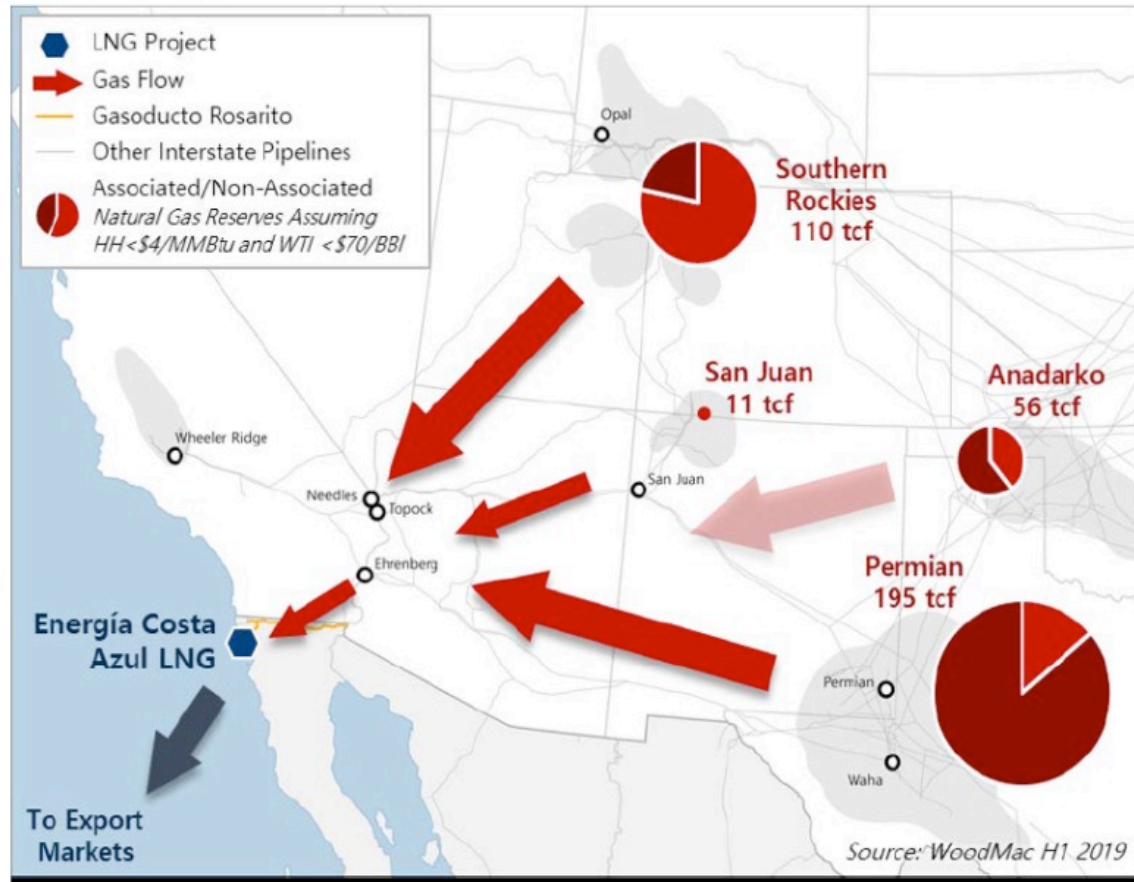
Western States' Advantages

- Ample Supply
- Pipeline bonding authority
- Existing pipelines / Right of Ways
- Reduced geopolitical risk



ECA Supply and Pipelines

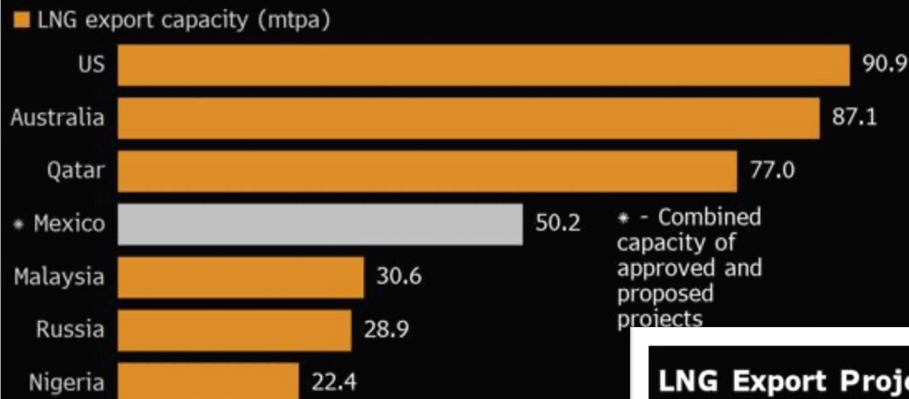
- ECA Phase 1: ~0.5 Bcfd load will be sourced from a portfolio of western supply basins utilizing existing and expanded transportation infrastructure
- ECA Phase 2: ~2+ Bcfd feedgas demand will likely necessitate a greenfield pipeline to ensure it can fulfil its load and operational requirements
- Evaluating cost / risks / benefits of different routes
- Magnitude of Permian resource & credit-worthiness of key stakeholders make it a candidate for the primary source of feed gas supply but is largely associated gas



Mexico & Costa Azul

Mexico's Major LNG Export Ambitions

The country could become the fourth largest gas shipper in the world



Source: BloombergNEF, Bloomberg News

Note: Export capacity for all countries besides Mexico is for 2020

Exporter

LNG Export Projects in Mexico

One project is under construction and more are on the drawing board

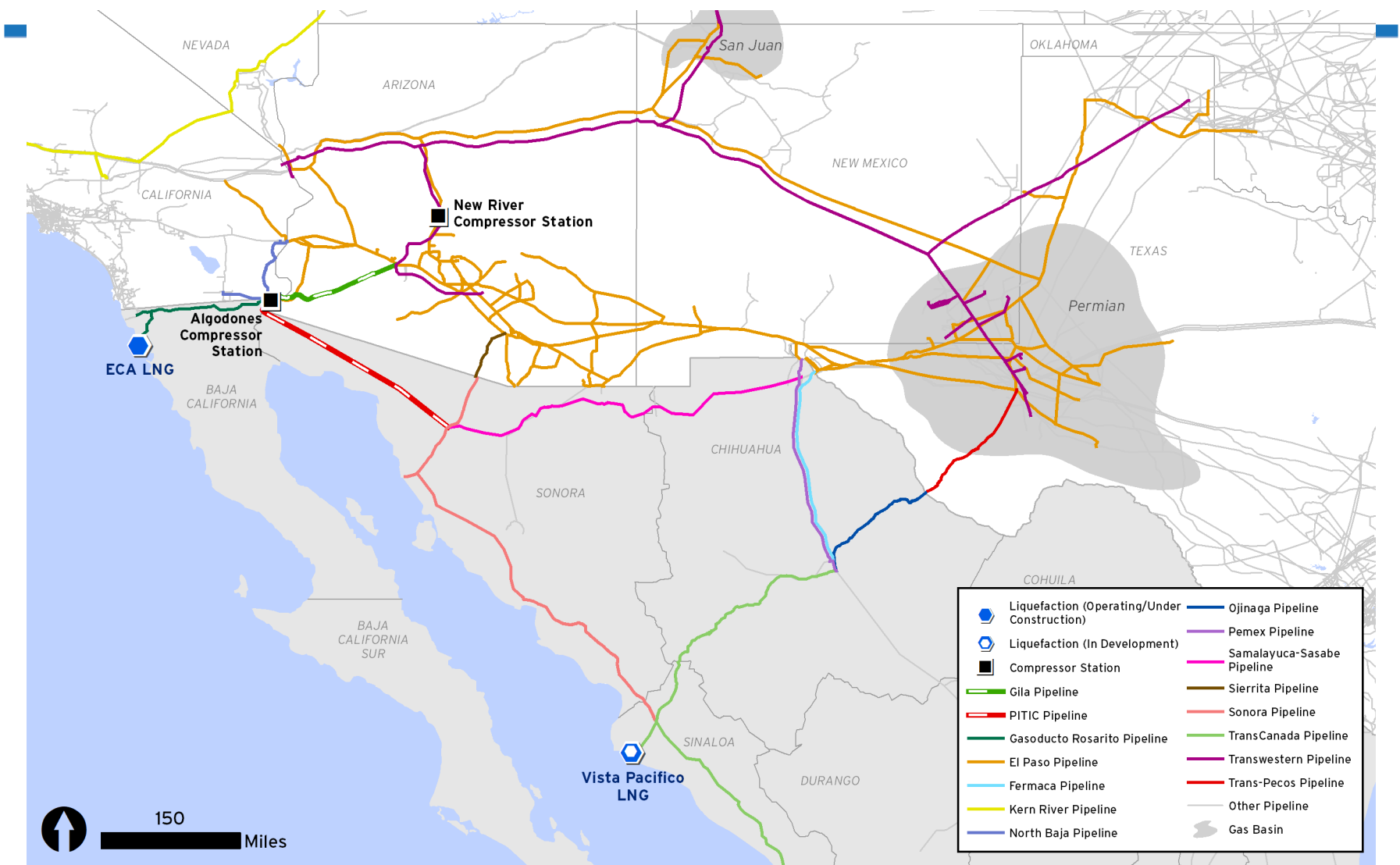
Project	Location	Status	Production Capacity (mtpa)	Daily Nat Gas Use (bcf/d)
Energia Costa Azul (Phase I)	Baja California	Under Construction	3.3	0.4
Energia Costa Azul (Phase II)	Baja California	Proposed	12.4	2.0
Mexico Pacific Limited	Sonora	Proposed	14.1	1.9
Vista Pacifico LNG	Sinaloa	Proposed	4.0	0.5
Salina Cruz LNG	Oaxaca	Proposed	3.0	0.4
Amigo LNG	Sonora	Proposed	7.8	1.0
Altamira FLNG	Tamaulipas	Proposed	4.2	0.6
Lakach FLNG	Veracruz	Proposed	1.4	0.2
Total			50.2	7.0

Source: Bloomberg

Bloomberg

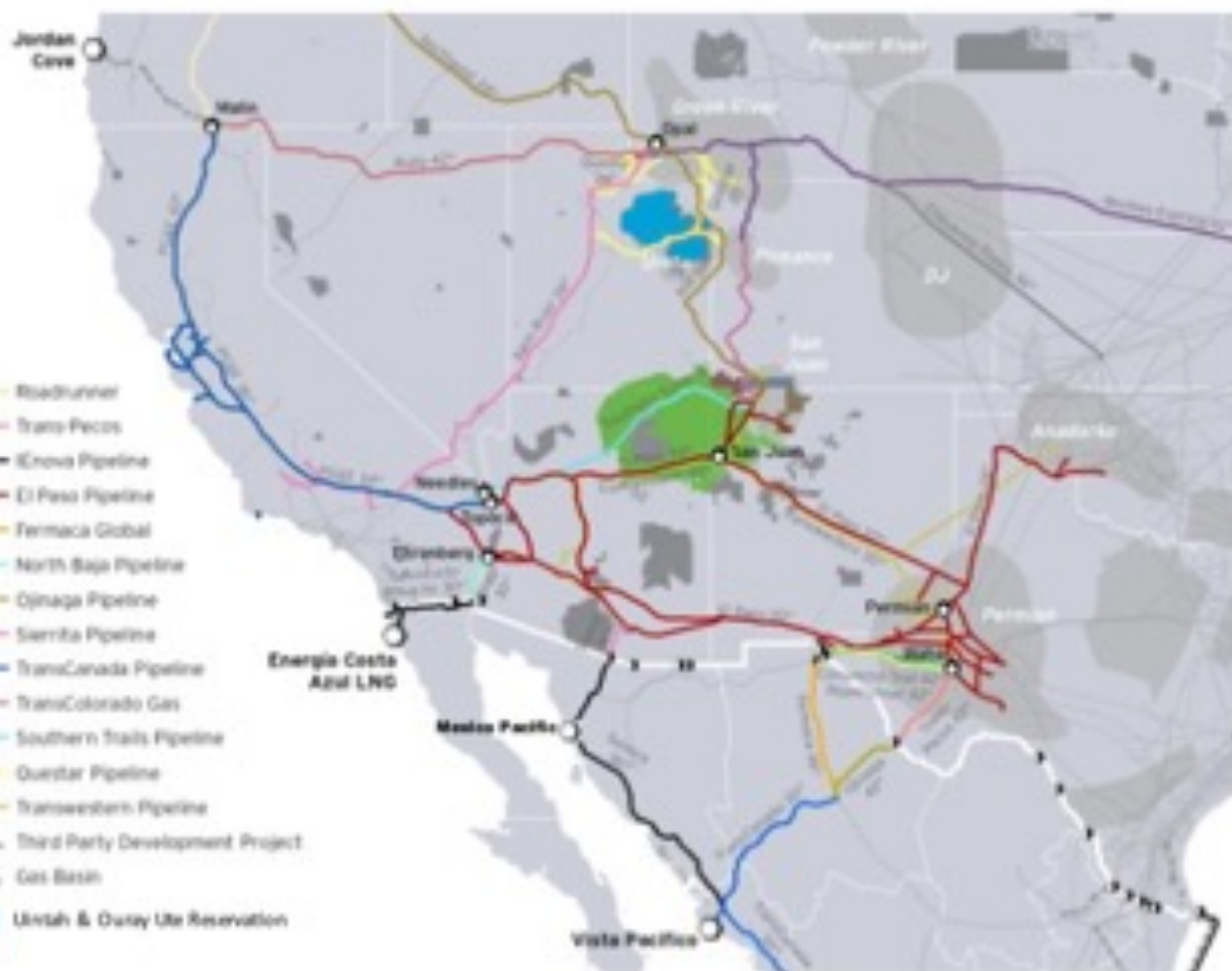


Rockies Natural Gas to Energía Costa Azul





- LNG Project Location
- Import/Export Point
- Gas Hub
- Jicarilla Apache Reservation
- Navajo Reservation
- Southern Ute Reservation
- Ute Mountain Ute Reservation
- Other Native American Reservation Land
- Cheyenne Plains Gas Pipeline
- Gas Transmission Northwest
- Kern River Gas Transmission
- Northwest Pipeline
- Pacific Gas and Electric
- Ruby Pipeline
- Comanche Trail
- Rockies Express
- Roadrunner
- Trans-Pecos
- Enova Pipeline
- El Paso Pipeline
- Fermaca Global
- North Baja Pipeline
- Ojinaga Pipeline
- San Juan Pipeline
- TransCanada Pipeline
- TransColorado Gas
- Southern Trails Pipeline
- Questar Pipeline
- Transwestern Pipeline
- Third Party Development Project
- Gas Basin
- Utah & Ouray Ute Reservation



WSTN Asian Engagement

- Decarbonization efforts resulting in Responsibly Sourced Gas (RSG) along the natural gas value chain in the western states including state-led regulations moving to net zero methane emissions
- Natural gas resource base (current production, proven and prospective reserves) of western natural gas with a focus on Green River, Uintah, Piceance and San Juan Basins (Mancos Gas)
- Further identify infrastructure needs and options for financing (e.g. state bonding authority support)
- Next Steps
 - Responsibly Produced Gas Certification
 - BIL / IRA (Hydrogen & Carbon Capture components) Impact to Western Energy Development
 - Asian/WSTN Trade Mission to Singapore – Fall to 2024



Greenhouse Gas Study

- Peer reviewed study, “Lifecycle GHG Emissions in Proposed LNG Facilities”.
- Average 40% Drop in Lifecycle GHG Emissions
 - China - 40.4%
 - India – 48.5%
 - Japan – 50.7%
 - South Korea – 53.5%
 - Taiwan – 35.7%
- Conclusions
 - There is a need for “bridge” source of energy to achieve GHG reduction goals.
 - Natural gas (LNG) exports from US to Asia can be both economically and environmentally beneficial in terms of global GHG emissions reduction.



WSTN Asian Engagement



WSTN at Energia Costa Azul



Japan H2 and Decarbonized Ammonia



WSTN Asian Trade Missions-Q4





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Questions?

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