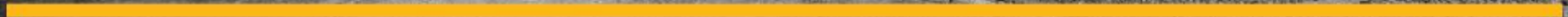




WESTERN STATES
AND TRIBAL NATIONS
NATURAL GAS INITIATIVE

Western States and Tribal Nations Natural Gas Initiative

National Association of State
Trust Lands – July 13, 2022



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.

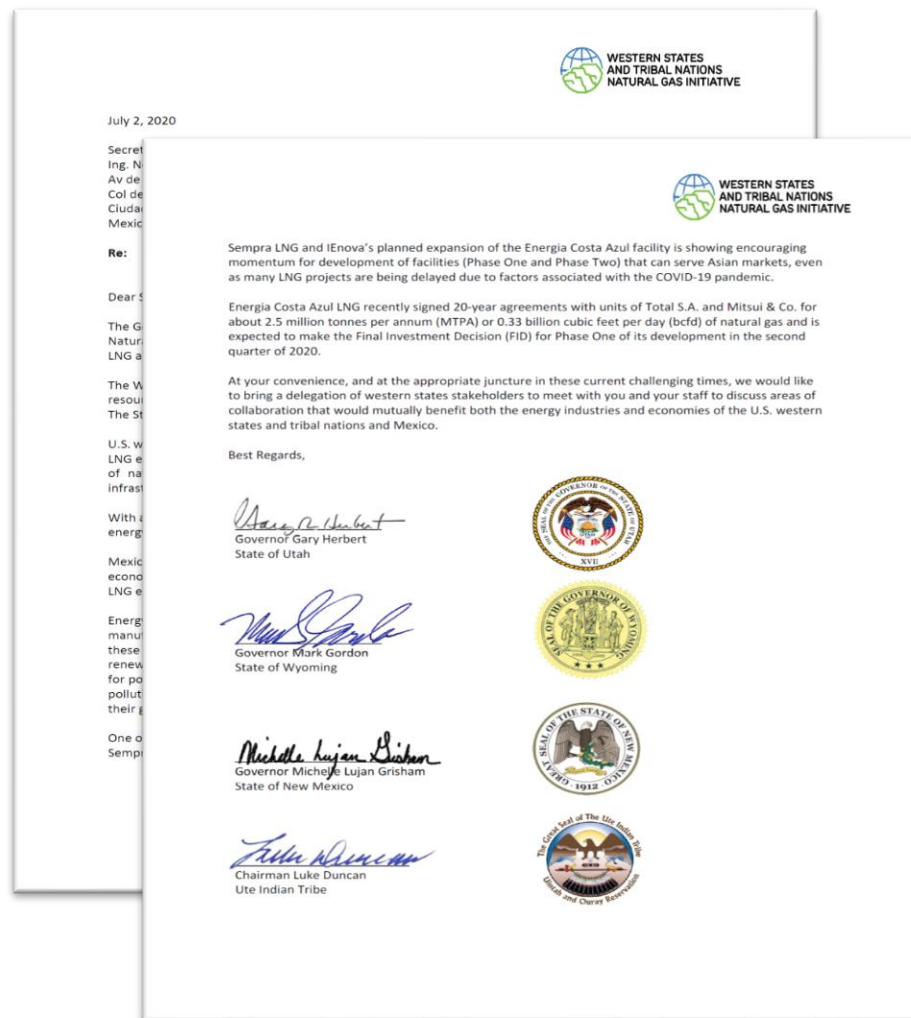


NEW MEXICO JOINS WESTERN STATES AND TRIBAL NATIONS



WSTN MOU Membership

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



WSTN Board of Directors

- 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 Baja California, Mexico (Ministry of Tourism and Economic Development) (*Vacant*)
- 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*)



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
- Province of Alberta (MOU Pending)
- Duchesne County, UT
- Uintah County, UT
- Seven County Infrastructure Coalition, UT
- Dominion Energy/Wexpro – UT, WY
- 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
- Bayotech
- Purewest
- Missouri River Resources

WSTN Priorities-2022

- Continued work with Sempra LNG and the Government of Mexico to position Rockies Natural Gas for export through Energía Costa Azul and Vista Pacifico LNG
- Continue work with Canadian Governments focused on Canadian/British Columbia LNG export projects
- Work to establish the GHG Technical Baseline – quantifying Natural Gas decarbonization efforts- for Rockies Natural Gas under Environment, Social, Governance principles
- Counter “academic hits” on Blue Hydrogen
- Develop forums to promote Rockies Natural Gas in terms of ESG, Geopolitics of Climate Change and Energy Security
- Continued member recruitment including additional Tribal Members
- Look at Western State “bundled” trade missions to Asian Nations (Q4)

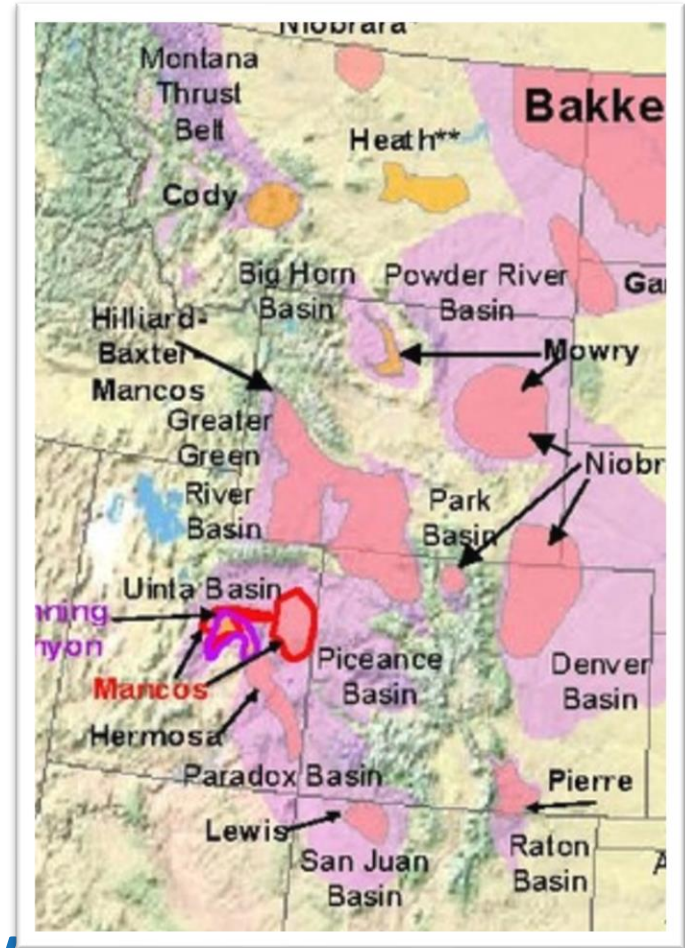


WSTN In Pursuit of LNG Exports



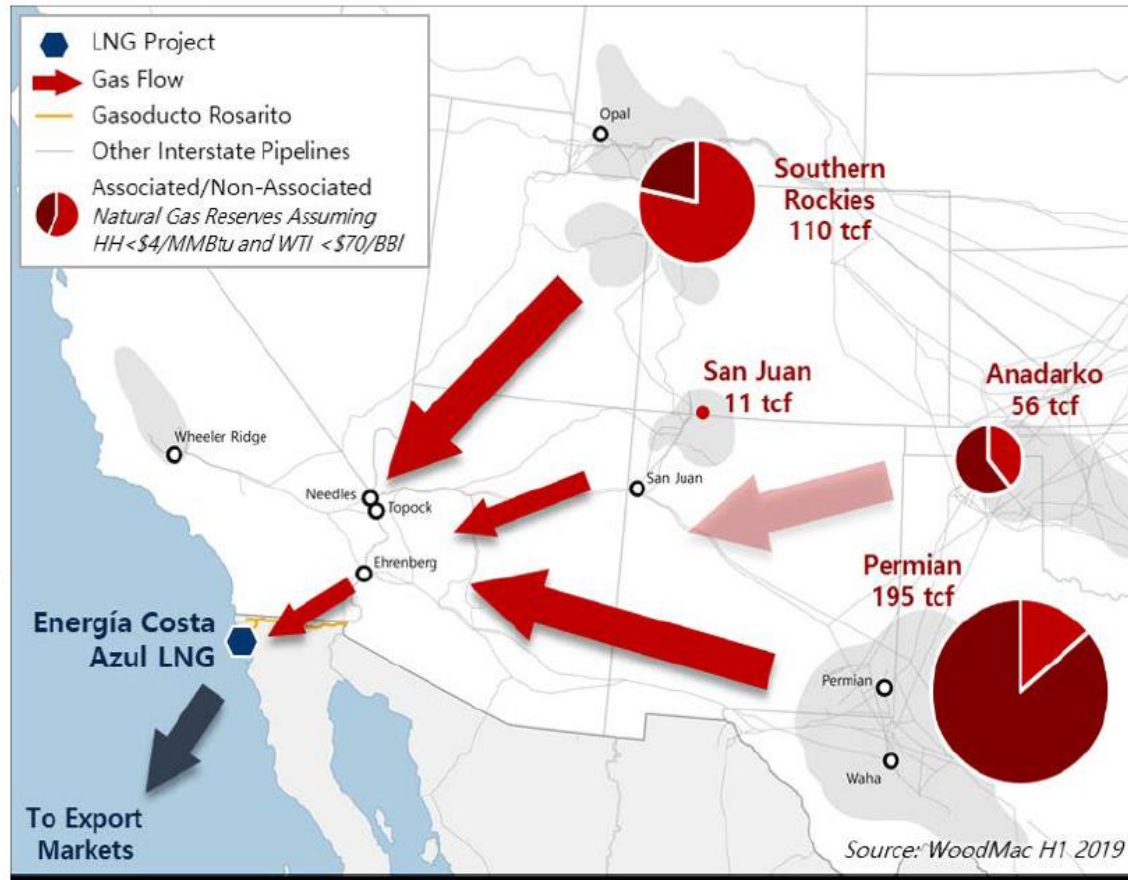
Western States' Advantages

- 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



WSTN & Greener Gas

Global LNG market requires further “greening” of natural gas.

1. NM / CO Methane rules provide a backdrop of success.

- Methane mitigation and capture will be the price of admission for any natural gas supplier.

2. WSTN ESG Certification Proposal

- Identify and establish standards for ESG Certified Natural Gas
- Incorporating the standards, develop a curriculum for the training of displaced and underemployed workers.
- Once trained and certified, graduates will then be able to certify producers in measurement, verification and certification of their environmental footprint.



WSTN Looking to Lead On the Issue of ESG Clean Fuel

Environmental Science & Technology

Country-level Life Cycle Assessment of Greenhouse Gas Emissions from Liquefied Natural Gas Trade for Electricity Generation

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[‡] Massachusetts Institute of Technology, Cambridge, Massachusetts, United States

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^{||} Johns Hopkins University, Washington, DC, United States

Abstract.

In the determination of the net impact of liquefied natural gas (LNG) on greenhouse gas emissions, Life Cycle Assessments (LCA) must consider the effects of transport distances between export and import countries, the infrastructure in importing countries, and the electricity used to liquefy and re-liquefy the gas. To address this, we conduct a LCA of electricity generated from LNG in Columbia, Canada with a three-step approach: (1) the development of resiliency metrics for LNG, (2) the development of resiliency metrics for LNG transport to importing nations as well as the

Statement of Need Idea Addresses:

The Proposal will address the following Needs:

1) Establish of San Juan College School of Energy as a "Center of Excellence" for development of Environmental, Social, Governance (ESG) Standards for the Rockies Oil & Natural Gas Upstream Industry;

2) Development of an ESG Fuel Certification Program that will:

- Position San Juan Natural Gas for LNG Exporters who are seeking to reduce or offset carbon in the LNG value chain;

- Train and certify workers impacted by coal plant closures with a focus on workers from the Navajo Nation and other tribal communities

Environmental, Social, Governance-Establishing San Juan College as a Center of Excellence for ESG

Shareholders, banks, institutional investors, politicians and voters have all voiced their desire for energy producers and companies to institute processes that drive more robust reporting on operational metrics. These metrics are grouped into categories that include Environment (E), Social (interactions with the communities in which the companies operate) and Governance (overall transparency and good governance principles) or ESG.

Energy demand is soaring in Asia, led by economic growth and fuel switching in China, Japan, South Korea, Taiwan and India. Natural gas from New Mexico can play a key role in meeting those energy needs, providing reliable, cleaner baseload power to displace dirtier fuels and support renewable energy deployment.

- Asian Carbon Reduction Study
- NM ETAC "Green Certification" Program
- Cooperation with Blue & Green Hydrogen Advocates and Producers
- Major Companies Total, Sempra, Mitsui transitioning to H2 and lower carbon players

Today's Global Hydrogen Value Chains

Source	Value	Notes
Natural Gas	196 Mtoe	
Coal	75 Mtoe	
Oil	2 Mtoe	
Electricity/Other	2 Mtoe	
By-product hydrogen	48 Mt H ₂	of which <0.3 Mt H ₂ produced with renewables
Losses	69 Mt H ₂	of which <0.4 Mt H ₂ produced with CCUS, of which <0.1 Mt H ₂ produced with renewables
Refining	38 Mt H ₂	Demand for pure hydrogen
Ammonia	31 Mt H ₂	Demand for pure hydrogen
Transport	<0.01 Mt H ₂	Demand for pure hydrogen
Other	4 Mt H ₂	Demand for pure hydrogen
Methanol	12 Mt H ₂	Demand for hydrogen mixed with other gases
DRI	4 Mt H ₂	Demand for hydrogen mixed with other gases
Other e.g. heat	26 Mt H ₂	Demand for hydrogen mixed with other gases

Image from "The Future of Hydrogen: Seizing today's opportunities" report prepared by IEA for the G20, Japan. Mtoe=million tons of oil equivalent. Mt=million tons

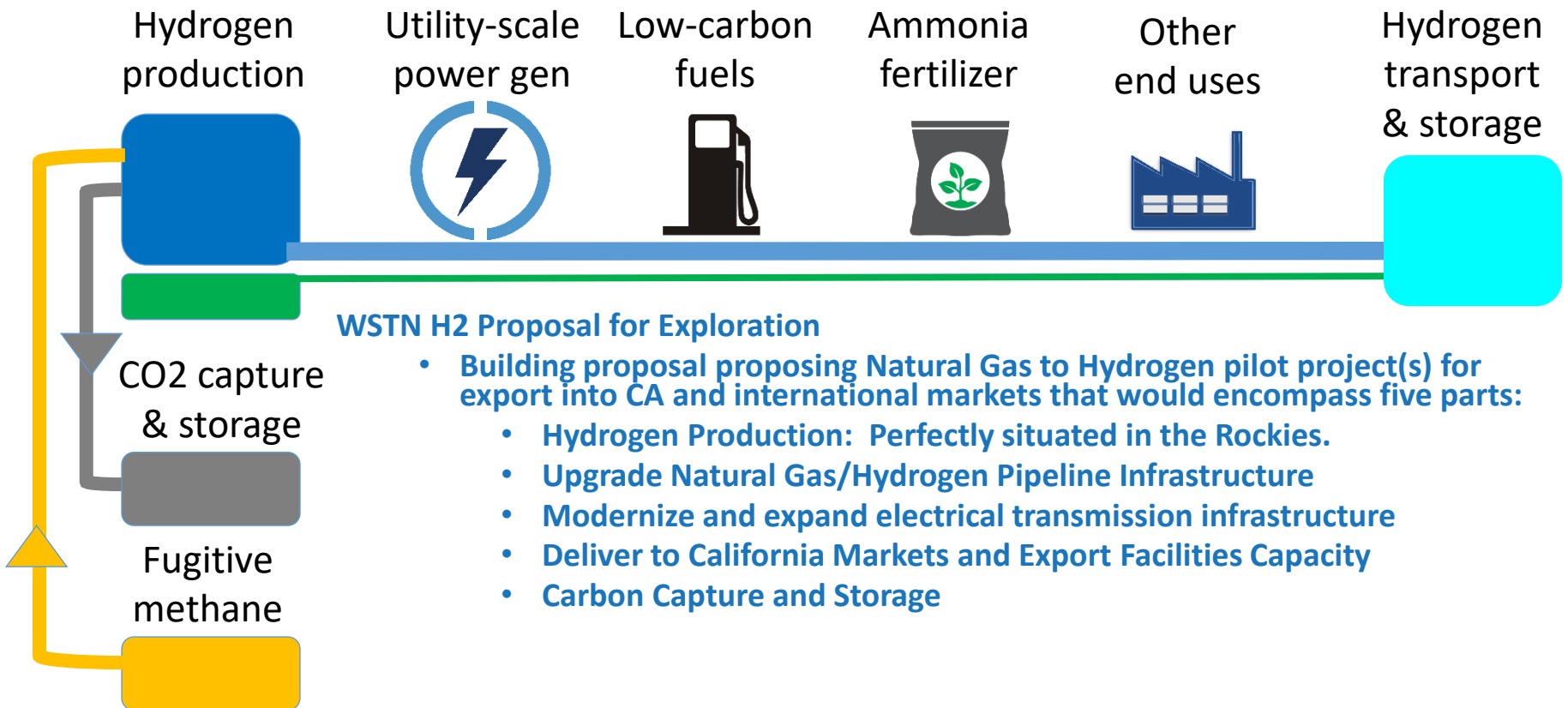
Greenhouse Gas Study

- 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 H2 Watchlist

Collaborative commercial pilot cluster
Real-world scale, constraints & market context



Western Inter-State H2 Hub



MEMORANDUM OF UNDERSTANDING

Western Inter-States Hydrogen Hub



Western Inter-State H2 Hub

- JERA-Chubu Hekinan Power Station (1,000MW)



WSTN Asian Trade Missions-Q4





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Questions?

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