



National Conference of State Legislators

Natural Gas 101

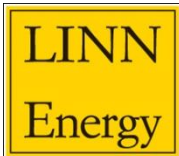
Tom Hassenboehler
Vice President of Policy Development
and Legislative Affairs



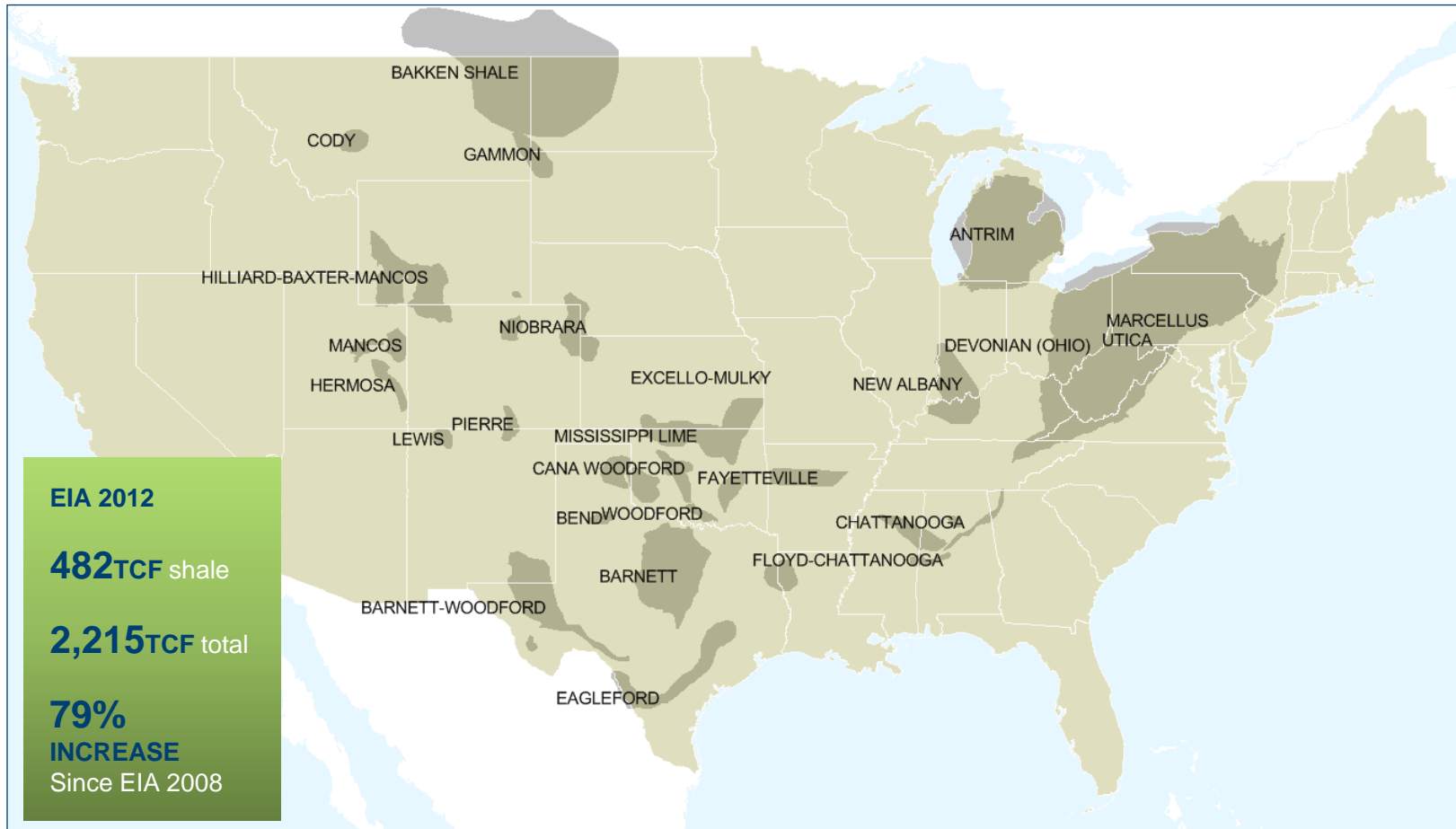
About ANGA

ANGA is dedicated to increasing the understanding of the environmental, economic and national security benefits of clean, abundant, dependable and efficient North American natural gas.

ANGA Members



The Shale Gas Revolution



Source: EIA Annual Energy Outlook, 2008 to 2011, Ventyx Velocity

Natural Gas Production is Extensively Regulated from Initial Permitting to Decommissioning

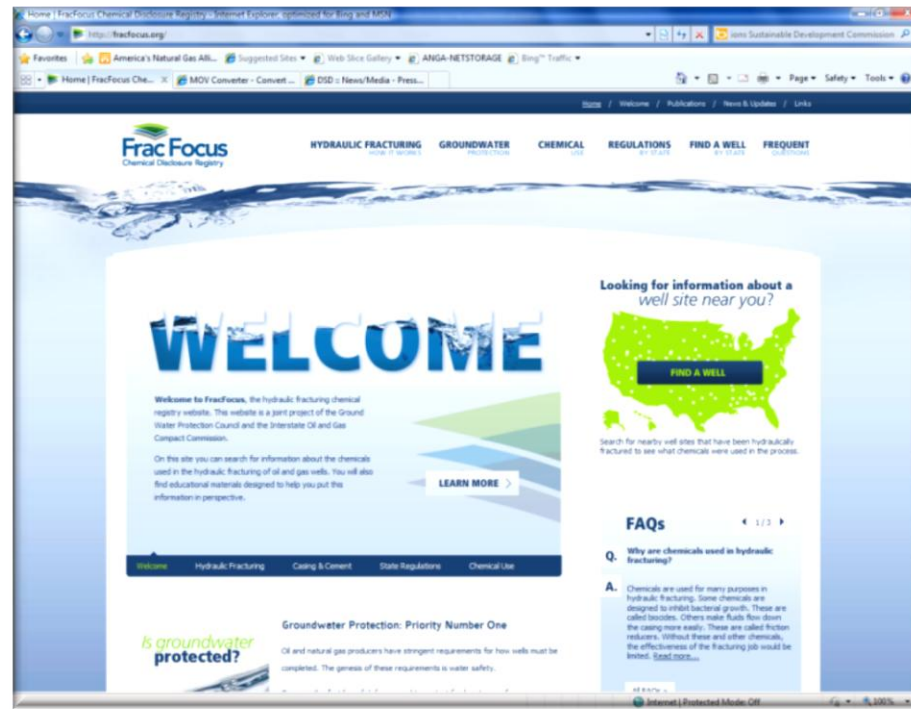
1 Site Selection and Permitting	2 Well Construction	3 Drilling and Completion	4 Startup and Production	5 Decommissioning
<ul style="list-style-type: none"> • Road use permits • Local zoning requirements • Disturbance limits • Seismic survey agreement • Historic preservation • Endangered species review • FAA air clearance 	<ul style="list-style-type: none"> • Seasonal activity restrictions • Road construction permits • Water access permits • Land development permits • Industry standards for well casing materials 	<ul style="list-style-type: none"> • Water well survey and tests • Local sewage permits • Drilling plan • Water management plan • EPA emissions standards 	<ul style="list-style-type: none"> • Permits for water withdrawals • Gas flaring permit • Waste management permit • State and federal air permits • Post drill reports • Spill prevention and control • Frack focus report 	<ul style="list-style-type: none"> • Plugging permit • Landowner/lease - restoration and release requirements

Sample of local, state, and federal regulations and industry programs and standards targeting natural gas production.

Disclosure System

Chemical Disclosure & Operation Updates

- <http://fracfocus.org/> created by GWPC and IOGCC
 - 149 companies reporting
 - Information is currently posted on 18,008 wells
 - 255,044 website visits



HF Federal Agency Activities

- 10 Agencies Currently Reviewing
 - EPA, DOE, DOI, USDA, DOD, DOT, SEC, HHS, Commerce, State
 - ESA – (listings plus reform)
 - BLM Well Completion Rule
 - EPA Diesel Guidance
 - EPA HF study *
 - O&G NSPS/NESHAP refinement/implementation
 - DRBC
 - CDC/ATSDR

Production: The Power of Progress

- **Smaller surface impact. Less waste.**
 - The average well site today is just 30% of the size of its 1970s counterpart—and today's wells can access over 60 times more below-ground area.
- **Onsite water Recycling.**
 - Closes loop water recycling system. This eliminates the need to dig and use an open reserve pit.
- **Greener Fluids.**
 - Many service companies are moving toward biodegradable solutions—such as food ingredients and ultra-violet light.
- **Fewer air emissions.**
 - More efficient operations also means less energy consumption, and thus less air emissions, per unit of natural gas produced.

The Economic Impacts of Shale Gas

- 1.6 Million Jobs in 2035
- \$930 Billion in Tax Revenues
 - Cumulative to 2035
- Nearly \$1.9 Trillion in Capital Expenditure
 - Between 2010 and 2035
- Lower Energy Prices for Consumers
 - Households save an average \$926 per year to 2015
 - This savings exceeds \$2000 by 2035
 - Electricity prices average 10% lower

Source: <http://anga.us/media/235626/shale-gas-economic-impact-dec-2011.pdf>

Job Impacts

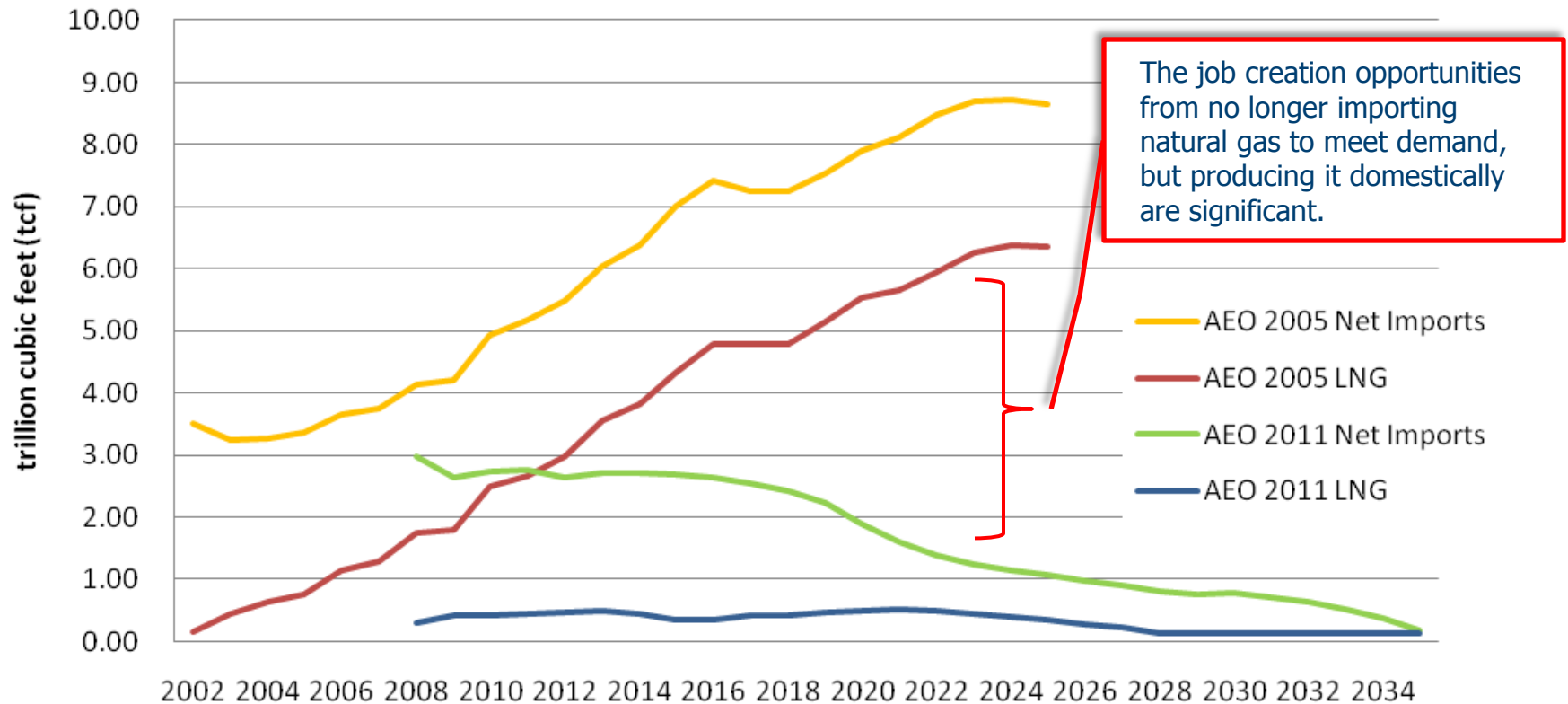
- Shale gas industry supported jobs: 600,000 in 2010, growing to more than 1.6 million by 2035.
 - Higher paid jobs: average wage for shale gas sector is \$23.16/hour. Average pay for non-shale related production, professional, and business-services workers ranges from \$13.10 to \$22.00 / hour.

Shale Gas Employment Contribution (number of workers)

	2010	2015	2035
Direct	148,143	197,999	360,335
Indirect	193,710	283,190	547,107
Induced	259,494	388,495	752,648
Total	601,348	869,684	1,660,090

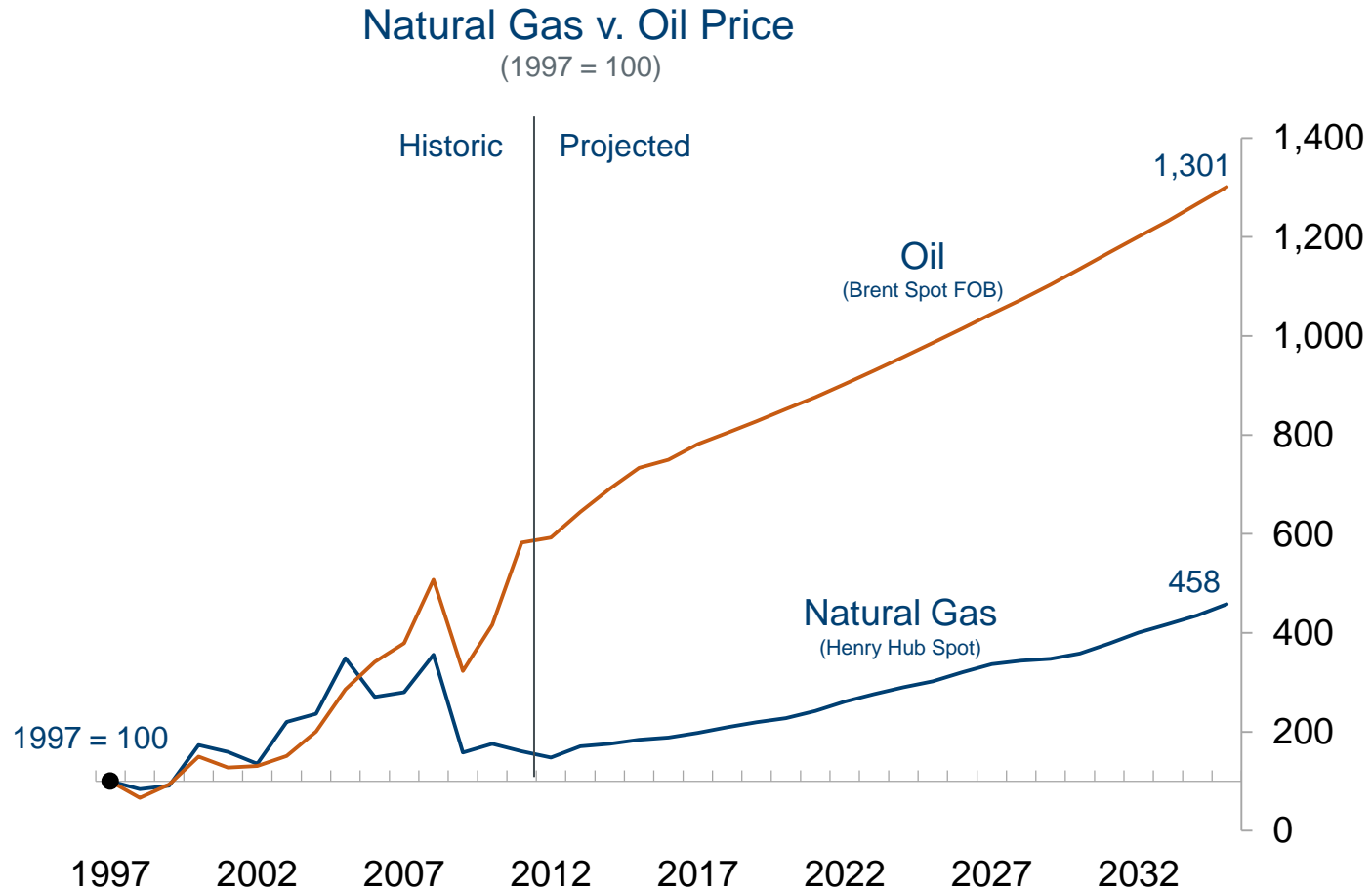
The Historical Perspective of Opportunity

Forecasts for Net Natural Gas and LNG Imports, EIA



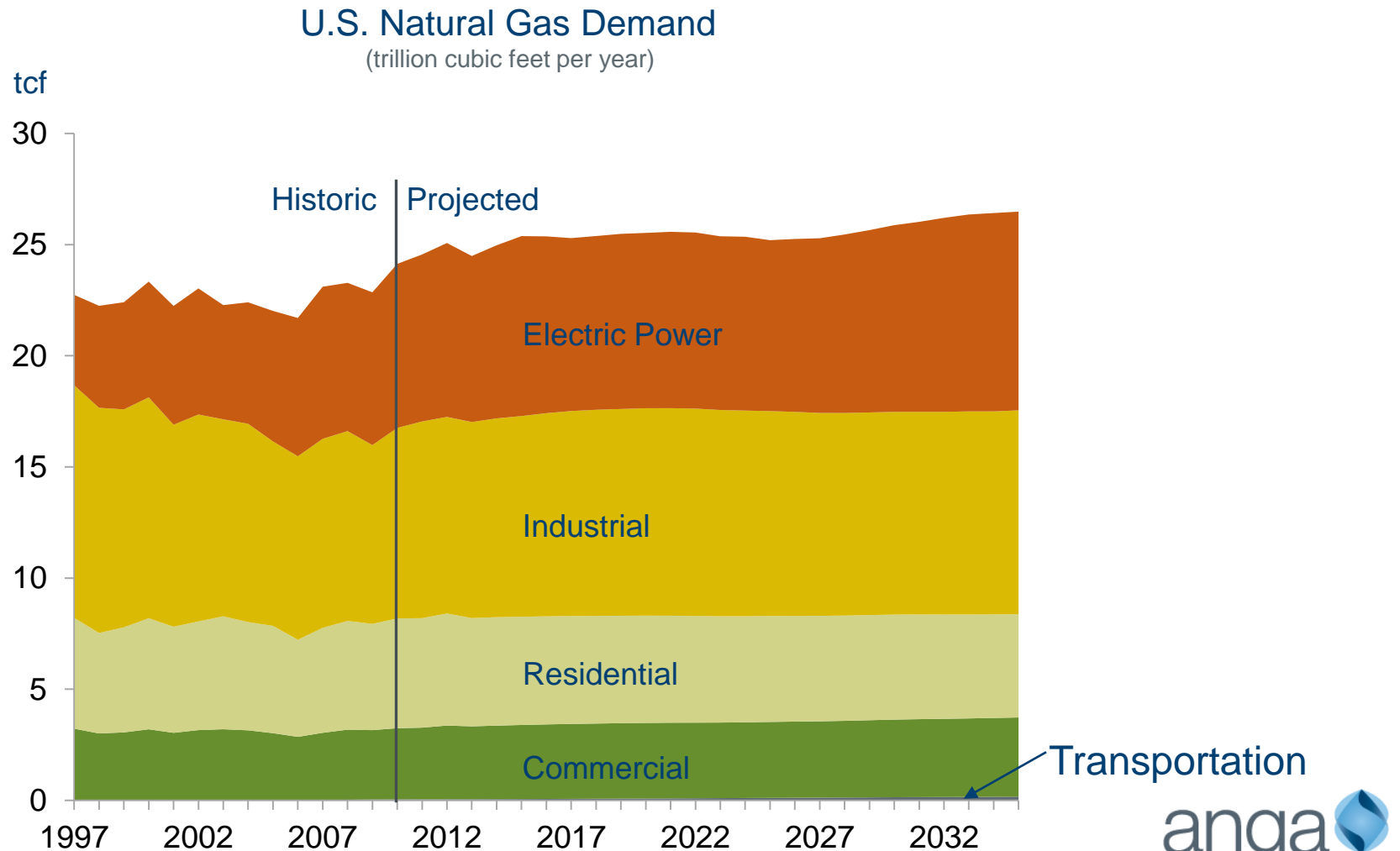
Source: EIA Annual Energy Outlook 2005 & 2011

Natural Gas And Oil Prices Have Decoupled



Source: Projected Prices: EIA Annual Energy Outlook: 2012 (Early Release)
Historic Prices: EIA reported spot prices

Trends in Demand Growth



Projected Data Source: EIA Annual Energy Outlook :2012 (Early Release)

Historic Data Source: EIA Natural Gas Monthly, January 2012

NGV MOU

- Led by CO, OK, PA and WY, states are joining together to use NGVs in state fleets
 - Aggregate vehicle purchase numbers for vehicle manufacturers to issue a joint RFP
 - Commit to converting state fleets (county, municipal, and other government)
 - ME, UT, NM, WV, KY, TX, OH, MS, LA have joined and others are in progress



Memorandum of Understanding

This Memorandum of Understanding (MOU) describes a coordinated effort between the undersigned States (States) to attract automobile manufacturers in the U.S. to develop a functional and affordable original equipment manufacturer (OEM) fleet natural gas vehicle (NGV) that will also meet public demand. The States recognize the benefits and unique attributes of clean burning natural gas and understand the significant opportunity compressed natural gas (CNG) presents to save State and taxpayer dollars by encouraging an energy future that utilizes domestic energy resources to fuel our nation's transportation needs. Through the joint solicitation of a Multi-State Request for Proposal (Joint-RFP) that aggregates annual State fleet vehicle procurements, the States will endeavor to provide a demand base sufficient to support the design, manufacture, and sale of functional and affordable OEM NGVs by automotive manufacturers in the United States.

In anticipation of soliciting a Joint-RFP, the States will endeavor to coordinate with local agencies, municipalities, and companies to determine the number of NGVs each State can commit to purchase and the required specifications necessary to meet fleet needs. The Joint-RFP shall require that the ultimate cost of an OEM NGV should be comparably priced to an equivalent gasoline powered model and that warranty and reliability concerns are not compromised. Simultaneously, the States understand the need for continued development and expansion of CNG fueling infrastructure and should endeavor to encourage private investment, predicated on demonstrating an anticipated increase in State NGVs, to meet growing demand.

Pursuant to the terms of the Joint-RFP, to be executed at a later date, the States intend, where practical, to transition new fleet vehicle acquisitions, in committed volumes, to a resulting OEM NGV. Such future acquisitions should, when economically feasible, rely on traditional distribution channels that incorporate local businesses in procurement processes. In continued recognition of the benefits of CNG, the States should also endeavor to pursue fleet vehicle conversions to CNG, where economically compelling, based on a life-cycle cost analysis. The States will also reach out to fellow Governors to determine broader interest and participation in the principles and process outlined in this MOU.

This MOU embodies the principle understandings of the States but shall not create any legal relationship, rights, duties, or obligations binding or enforceable at law or in equity. Notwithstanding the foregoing, each State shall in good faith endeavor to reach a mutually agreeable and economically beneficial Joint-RFP, as contemplated herein. This MOU does not create additional state power, enhance existing state power, or interfere with federal authority or law. This MOU shall continue to demonstrate the States' understanding until execution of the Joint-RFP, or until otherwise discontinued by either State.

Set forth by:

State of Oklahoma


Mary Fallin, Governor

State of Colorado


John Hickenlooper, Governor