Pennsylvania Utility Commission

NGV Workshop – An Industry Overview

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anga | AGA Transportation Collaboration

Who We Are:

- Fifty-three companies from the natural gas production and distribution sectors;
- Working together to advance the use of natural gas as a clean, safe, cost-effective, domestic fuel for the transportation sector.

History and Technology

Natural Gas Vehicles from 1930

History and Technology (cont'd)

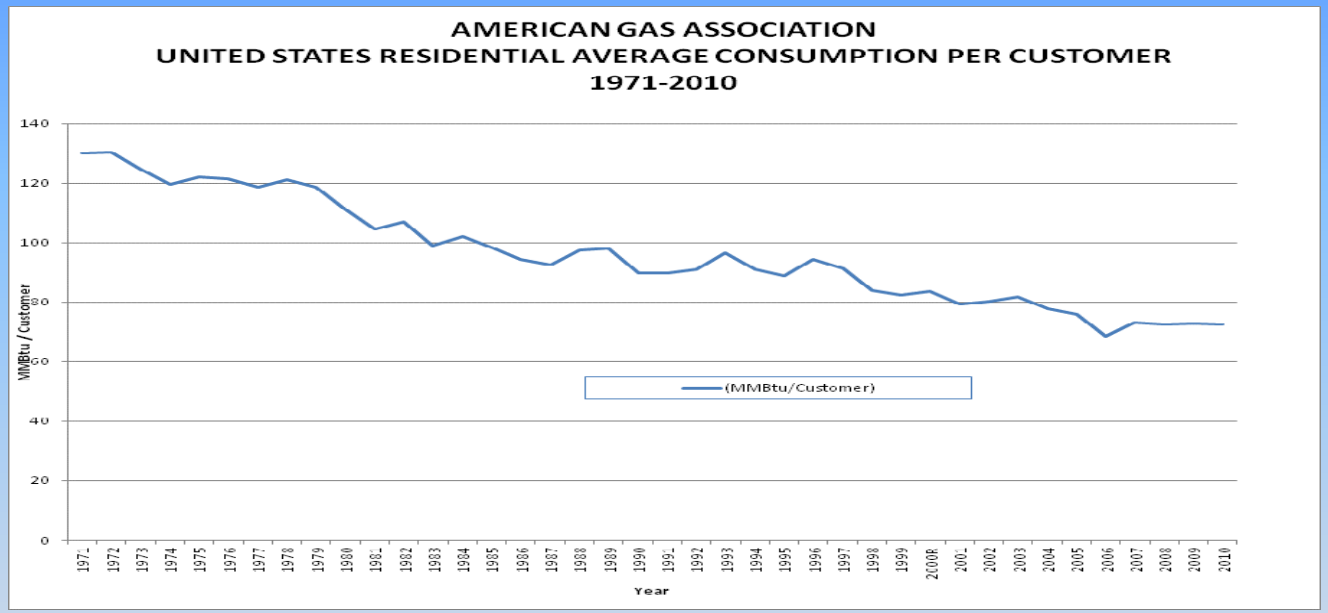
Natural storage tanks and vehicles today

Natural Gas as a Transportation Fuel

- **Proven Technology**
  - CNG has been in commercial use in the US for over 70 years
  - 120,000 vehicles and 1,050 stations in the US; 12 million NGVs in use worldwide
  - Ford/GM/Chrysler/Honda all have light duty vehicles that run on dedicated or Dual Fuel Gasoline and CNG
- **Abundant** – N. American reserves of Natural Gas now exceed 100 years of supply & Pennsylvania is leading the way with its vast shale resources.
- **Domestic** – **98%** of natural gas consumed in the U.S. comes from North America.
- **Energy Security** - Natural Gas is the key to energy self-sufficiency and the US balance of payment deficits.
- **Clean** – NGVs produce ~93% fewer toxins and 30% less GHG emissions than gas / diesel-fueled vehicles.

Why Are Utilities Interested in CNG as a Transportation Fuel?

- The Energy landscape for Natural Gas Utilities is changing.
- Natural gas usage per residential consumer has declined 45% since 1971.



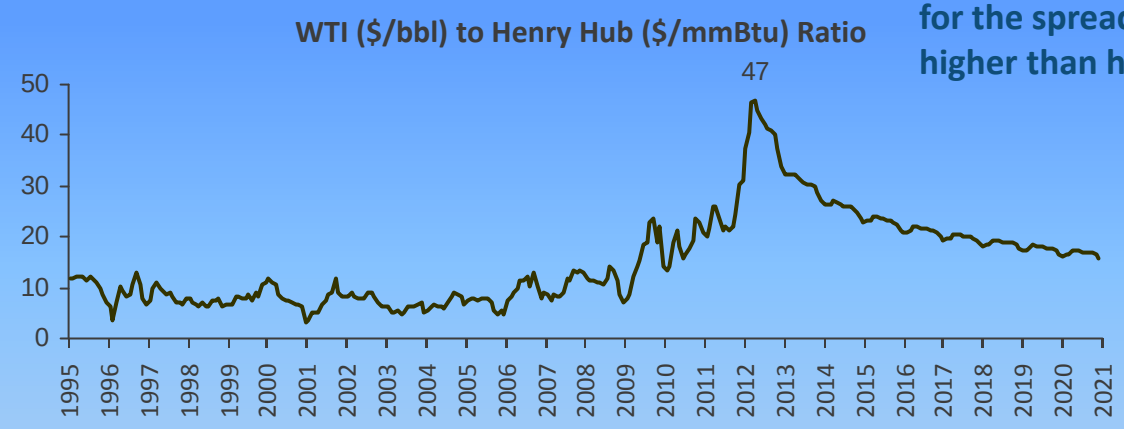
- Reductions in the residential sector are being driven by consumer behavior, energy efficient gas appliances, newer building codes.
- Reductions in the industrial and manufacturing sector due to the continued offshoring of heavy industry.

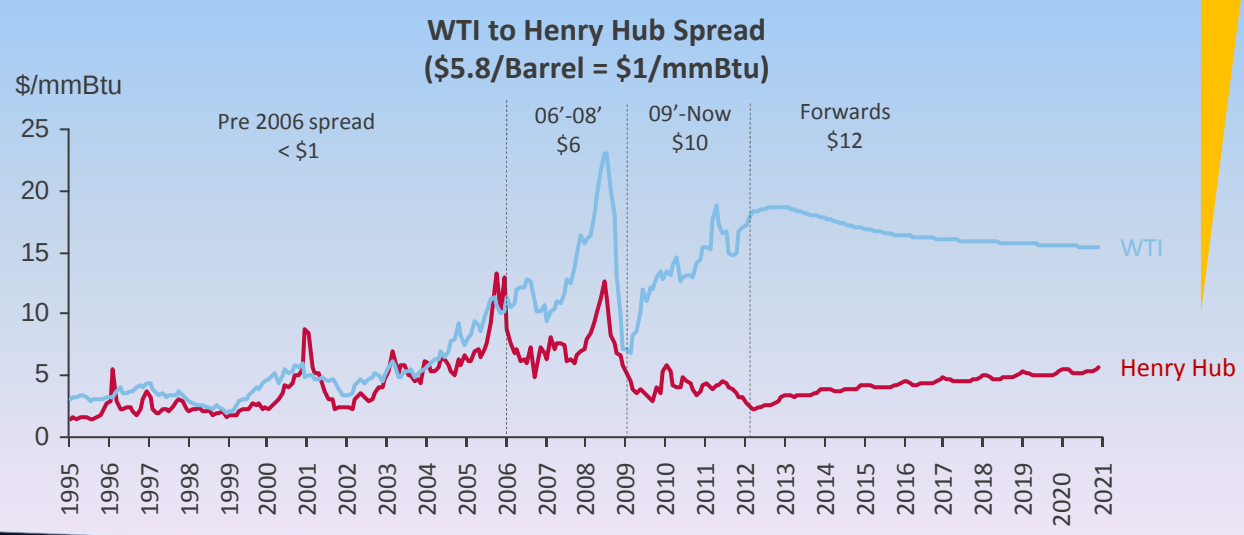
Why Are Utilities Interested in CNG as a Transportation Fuel? (cont'd)

- Current utility asset utilization in North America is approximately 30%.
- Energy affordability is a significant issue for customers, regulators and utilities.
- Without new markets, or new applications for natural gas, the effects of conservation and the outsourcing of heavy industry will mean retail consumers will continue to pay increasing rates for decreasing energy usage.

Natural Gas Pricing

Oil to natural gas ratios are at historic highs; projections are for the spread to moderate from current level but remain higher than historical levels





- Shale gas production is expected to keep natural gas prices low
- Oil to gas ratios, which ranged from 3 to 15 through 1990s and early 2000s, has spiked dramatically since 2009
- Oil to gas ratio stands at its peak 47x as of today, amounting to cost savings on a $/mmBtu basis of more than $16

Source: EIA and NYMEX Forwards (as of 03/12/12)

National roadblocks to rapid CNG Commercialization

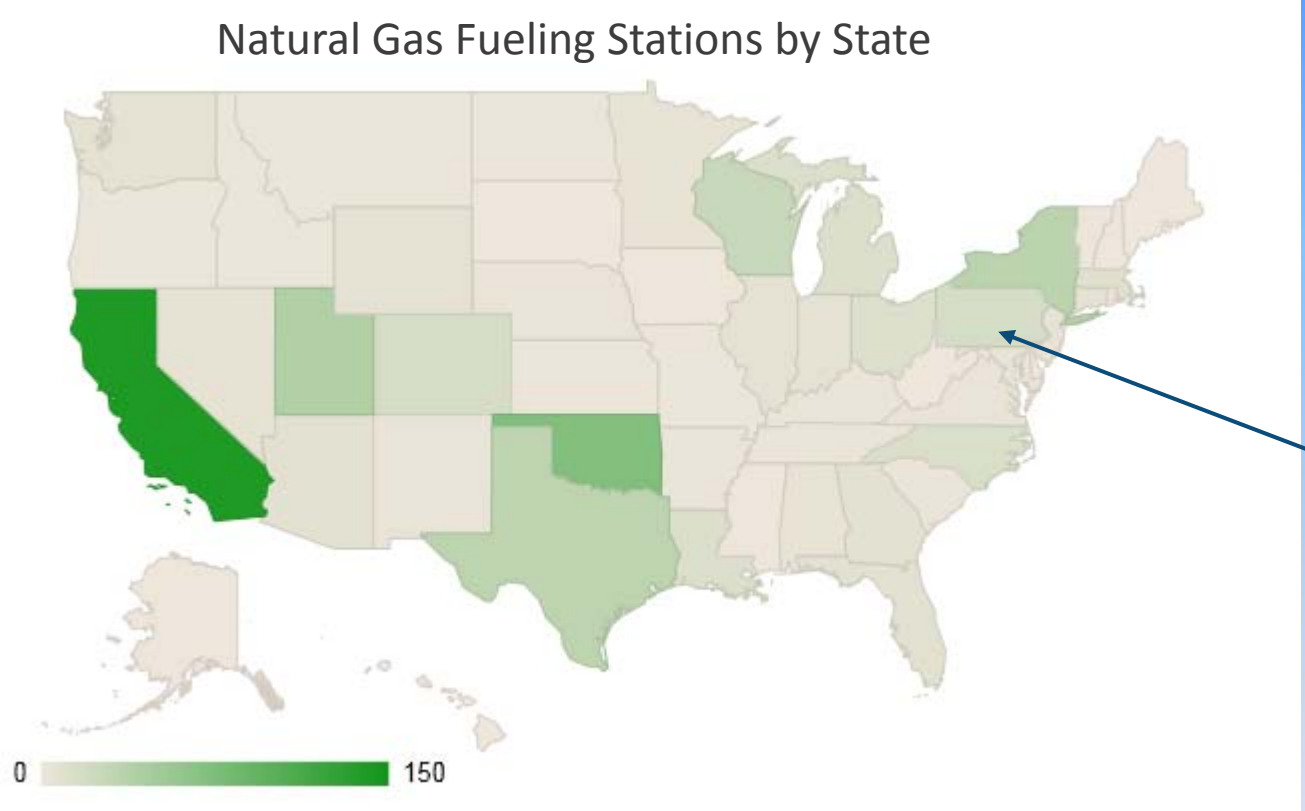
- *2 primary barriers:*
  - **CNG vehicle availability**
  - **CNG infrastructure**

CNG Vehicle Availability

- All of the national and international auto manufactures have active CNG programs.
- The OEMs are expanding their CNG options into light / heavy duty vehicle market as a result of the 2012 revised CAFÉ standards.

- In heavy duty truck market – Cummins/Westport has 2 approved engines that allow heavy duty class 4-8 vehicles to operate on CNG. They are introducing a 15 liter engine in 2015.

CNG Infrastructure



- 1,050 Fueling Stations
- 25% in California
- 800 Public stations
- 17 stations in PA

Business Models for CNG Infrastructure Development

- **Rate Base Model:** The LDCs NGV activities and investment are embedded in their rate-base. Risk is borne primarily by the rate payer.
- **Commercial Model:** Unregulated affiliates of LDCs or 3rd party firms invest at risk capital in the development of their CNG business. Investment in an NGV project is based on a ROI. Risk is borne by the company's investors.
- **Hybrid Model:** A combination of the above that provides shared investment or market development activities to commercialize the CNG market.

Rate-Based Model

- Primary Risk Holder: Ratepayer
- Station development is housed inside the utility with the associated assets embedded in rate base.
  - Level 1: CNG is likely based upon serving a utility's captive fleet and is located on, or adjacent to company property. The pricing at the pump is generally viewed as company used gas.
  - Level 2: Station development is based upon serving a utility's captive fleet/on or adjacent to company property and is also made available for public refueling. The retail pricing at the pump is generally regulated.
  - Level 3: Expanded station development along transportation corridors or to supply public transportation is viewed as serving the public interest and the retail pricing at the pump is generally regulated.
  - Level 4: The leasing, financing or the provision of financial incentives to support the adoption of CNG vehicles or Home Refueling Appliances (HRA's*) is embedded in rate base.

Note: this approach mirrors the methodology utilized in several jurisdictions to support the development of EV charging stations.

Hybrid Model

- Primary Risk Holder: Shared (Ratepayer/Retailer/or Consumer)
- The utility provides regulated support in terms of infrastructure development or activities designed to support the CNG development.
  - Level 1: The utility funds market development activities (research, market identification, sales promotion and incentives).
  - Level 2 : Infrastructure development, which may include system reinforcement, elevated pressure (i.e. compression) services, access to company sites for station development are funded by the utility and the associated costs are embedded in rates.
  - Level 3: Elevated pressure (i.e. compression) is provided by the utility in partnership with commercial retail fuelling firms. The CNG storage and dispensing equipment is owned and operated by the retailer who then publicly resells the fuel at unregulated rates.
  - Level 4: Accesses utility or "Universal Service Funds" to support the commercial 3rd party CNG development or in the case of new technology (HRA's) early commercialization.

Commercial Model

- Primary Risk Holder: Station developer
  - The role of the utility is to provide gas distribution service to the station developer and levies the applicable transport, distribution or gas commodity charges as would apply for any similarly situated end use customer. The retail price at the pump is not regulated.
  - This model has intellectual appeal since it encourages the private sector to assume the full financial risk/reward for station and CNG development.
  - The drawback to this model is that the development of the CNG market is in its early stages of commercialization and the private sector has not yet demonstrated an ability to quickly build out infrastructure.

Which is the 'Right' Model?

- There are significant benefits associated with CNG as a transportation fuel:
  - Energy independence
  - Reduced environmental impacts
  - Employment and capital investment
  - Repatriation of economic value derived from using a US based energy source.
- All of these benefits suggests that a rapid commercialization of CNG technology and infrastructure is in the national interest.
- There are 3 very different models for developing CNG infrastructure, no single model is ideal.
- As a regulator it is critical that:
  - Public policy goals should focus on a creating an environment that supports both near term and long term development of this market and that the policy may evolve as the market develops.
  - The regulatory framework for CNG should not disadvantage the opportunity to develop this market as compared to other AFV technologies; the industry seeks a level playing field.
- The private sector will ultimately drive this industry but there is a critical role for natural gas utilities to play in areas that support the initial development of CNG infrastructure.

Questions?

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