

# Compressed Natural Gas

The most effective transitional motor vehicle fuel

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# What is “compressed natural gas”?

- Most of us are familiar with natural gas. “Compressed natural gas,” or CNG, is a more application-friendly version of natural gas. It is the North American-produced fuel that has been widely overlooked in many energy policies.

# What is “compressed natural gas”?

- CNG is a more cost-efficient fuel, averaging around \$1 per gallon equivalent to gasoline, compared to gasoline prices floating close to \$3 per gallon.
- Compressed natural gas also surpasses gasoline on environmental standards, with 80% fewer carbon dioxide emissions.
- CNG has a higher octane rating equivalent than gasoline.
- CNG could substitute up to 30% of gasoline usage, but this alternative has been ignored by many governmental officials, automakers and everyday consumers.

# What is “compressed natural gas”?

- With higher gasoline prices and in some cases shortened supplies, Americans are wondering if there is any end in sight to our dependence on foreign oil. This dependence is costing America more than \$113 billion per year – more than \$13 million per hour.
- What most Americans do not know is that we have a domestic alternative.

# CNG, Alternate Energy Source

- Substitute for gasoline for up to 30% of the high-fuel-use market
- Cleaner air: more than 80% fewer carbon dioxide emissions than gasoline
- Lower cost: average \$1 per gallon
- Offers alternative to US dependence on foreign oil (99% of natural gas consumed in the US is produced in North America)
- Electric cars are perceived to be clean, but in reality they rely on coal-fired public utility plants to produce the electricity to charge the batteries they operate on.
  - What environmental issues abound with spent batteries?
  - Burning of coal provides more than half of the electricity the US produces. Ohio gets 86% of its electricity from coal.
    - One MWh of electricity from a coal-fired plant generates about one metric ton of CO<sub>2</sub>, while a natural gas-fired electric plant produces that much electricity with half a metric ton of CO<sub>2</sub>.

# CNG, Alternate Energy Source

- Natural gas is a major home heating fuel in the US, so a decrease in supply caused by increased demand may lead to cost increases for consumers to heat their homes
- US natural gas production has increased from 1.4 million cf/month in 1985 to 1.7 cf/month in 2008
- In 2007, direct residential use of natural gas was 22% of demand while vehicle fuel demand on natural gas was less than 1%
  - Due to indirect consumer residential use of natural gas, the 22% might be higher because some utilities use natural gas to produce electricity
- The National Resource Defense Council and the Sierra Club hold that mounting evidence exists to show that bio fuels such as corn ethanol provide little or no reduction in CO<sub>2</sub> emissions compared with gasoline.
  - Mandated increase in ethanol blendings in 2022 under 2007 Energy Bill
    - good energy policy?
  - Can today's cars run on an ethanol blend of more than 10% by volume?

# Ohio Advantages

- **Devonian Shale**
  - Source of natural gas reserves in Ohio
  - Current natural gas production from Ohio sources could be increased
    - More jobs and a resulting larger tax base for Ohio
  - Public lands made available under lease by Ohio for exploration would enhance production
- **Honda**
  - Located in Marysville, Ohio
  - Honda GX – only US car using CNG fuel
  - Cleanest internal-combustion car on the road
  - 2008 America's Greenest Car

# Strategy for Ohio

- Use expanded tax base and direct revenue from leasing public land to production to provide additional incentives for the building of more CNG refueling stations.
- For 2009 and 2010, extend the benefit of the 50% federal tax credit for expenditures for creating alternative fuel refueling facility (up to \$50,000 per location)
- Be the US leader in affordable **Green Technology**
- Need more refueling stations (currently only 3 in the state, located in the Columbus area) to drive consumer demand for cars that run on CNG
- Coordinate efforts of automakers, natural gas fuel producers and fuel distributors.

# Consumer Benefits/Incentives

- Cost savings
  - Gasoline prices at all-time high
  - CNG – average \$1 per gallon equivalent
  - Honda GX – up to \$4,000 federal tax credit for purchasing such a car
- Convenience
  - Home refueling systems – Phill (by FuelMaker)
    - Never have to stop at a gas station again
    - Unit installed into home gas line
    - Refuel overnight
    - Home refueling stations cost about \$3,900 – a \$2,000 federal tax credit is available to purchasers of Phill
  - Save time: some states allow CNG vehicles to drive in carpool lanes
  - Proven, reliable technology

# Background – Honda and CNG cars

- Promote the Ohio automotive industry
  - Honda is selling about 2,000 CNG cars out of its Marysville facility; the new Honda plant in Indiana will also produce CNG cars
  - Government as leader?
    - Ohio Department of Administrative Services (DAS) purchases gasoline-powered vehicles at an average fleet cost of around \$12,500
    - Honda's CNG vehicle costs \$25,000\*. Even with energy savings from using CNG compared to gasoline, DAS is understandably reluctant to commit to CNG-powered vehicles, particularly considering that many of the cars in the state fleet could not be replaced by the CNG-powered Honda cars because of limited production.
      - \* However, Ohio has overlooked the seller's subsidy of \$4,000 per CNG vehicle sold to a not-for-profit buyer that would reduce the cost to DAS to \$20,000 per vehicle (see IRS Sec 30B(h)(6)).

# Other Car Makers and CNG

- Toyota recently announced that it will rejoin the CNG market with a concept version of a CNG Toyota Camry. Toyota will produce the Innova in India as a dual-fuel vehicle.
  - Toyota manufactured a four-cylinder CNG version of the Camry in 1999 with a poor financial showing in fleet sales that led to the vehicle's production demise
- General Motors is considering a CNG version of the Volt to diversify its alternative fuel options
  - Why does the US Treasury not mandate CNG vehicle production as a requirement for its investment in Chrysler and GM?

# Infrastructure

- The distribution cost infrastructure issue remains an impediment.
  - The figure tossed around at a recent meeting of industry “experts” was \$300,000 to \$400,000 per CNG refueling facility, with all other associated costs – not an inconsiderable investment, particularly for an independent dealer\*
    - \* Questionable estimate given that gasoline stations can add a CNG device
  - CNG-powered vehicles will only travel a maximum distance of 200 miles. It would require a pretty significant investment in refueling stations for non-commuters.
  - The network of CNG pipelines has extended to 1.8 million miles in the last few years, with 1,000 refueling stations located nationwide. Less than half of the CNG refueling stations in the US are open to the average consumer.
    - The closest CNG refueling stations are in Columbus (1751 Alum Creek Drive, 43207) and Indianapolis (111 West Raymond Street, 46225; 2150 ML King Street, 46202; 4355 Lafayette Blvd, 46254)

# Infrastructure – Codes & Regulations

- Federal retail excise tax of \$.183 (per energy equivalent to a gallon of gasoline) applies to CNG sold as a motor vehicle fuel (IRC Sec 4041(a)(3))
- Ohio retail excise tax of \$.28 per gallon (plus periodic annual adjustment) does not apply because CNG is not a “liquid” motor fuel (see ORC Sec 5735.01(B))
- Refueling property used in business for an immediate deduction (not required to be depreciated) of up to \$100,000 (IRC Sec 179A) per location and such amount reduces tax basis for regular immediate expensing (IRC Sec 179), bonus and regular tax depreciation under IRC Sec 168 purposes.

# Mass Transit Vehicles

- The folks at DAS suggested that it might be a better idea to pursue equipping more mass transit vehicles with CNG retrofits.
- Ohio Senator Bill Seitz opened discussions with representatives of the mass transit industry and with the Department of Transportation during the new fiscal year. Although this would not be an automotive manufacturer play, since the major manufacturers apparently are not involved in retrofitting buses for CNG use, it might be a more viable solution for state government leadership.

# Business Use of CNG

- A \$4,000 non-refundable federal income tax credit made available for the Honda GX for 2008 under IRC Sec 30B(e).
  - For non-business use of the vehicle, the credit can offset regular and alternative minimum tax.
  - For business taxpayers, the credit is a general business credit (IRC Sec 30B(g)) that requires a basis reduction in the asset for depreciation purposes equal to the amount of the credit (IRC Sec 30(h))
- Business use of CNG vehicles such as the Honda GX are eligible for a \$2,000 immediate deduction (IRC Sec 179A) without regard to the luxury vehicle rules. In addition to all other allowable deductions (such as immediate deduction, bonus and regular depreciation) subject to the overall luxury vehicle limitations (IRC Sec 280F) if they apply.

# Future Energy Talks

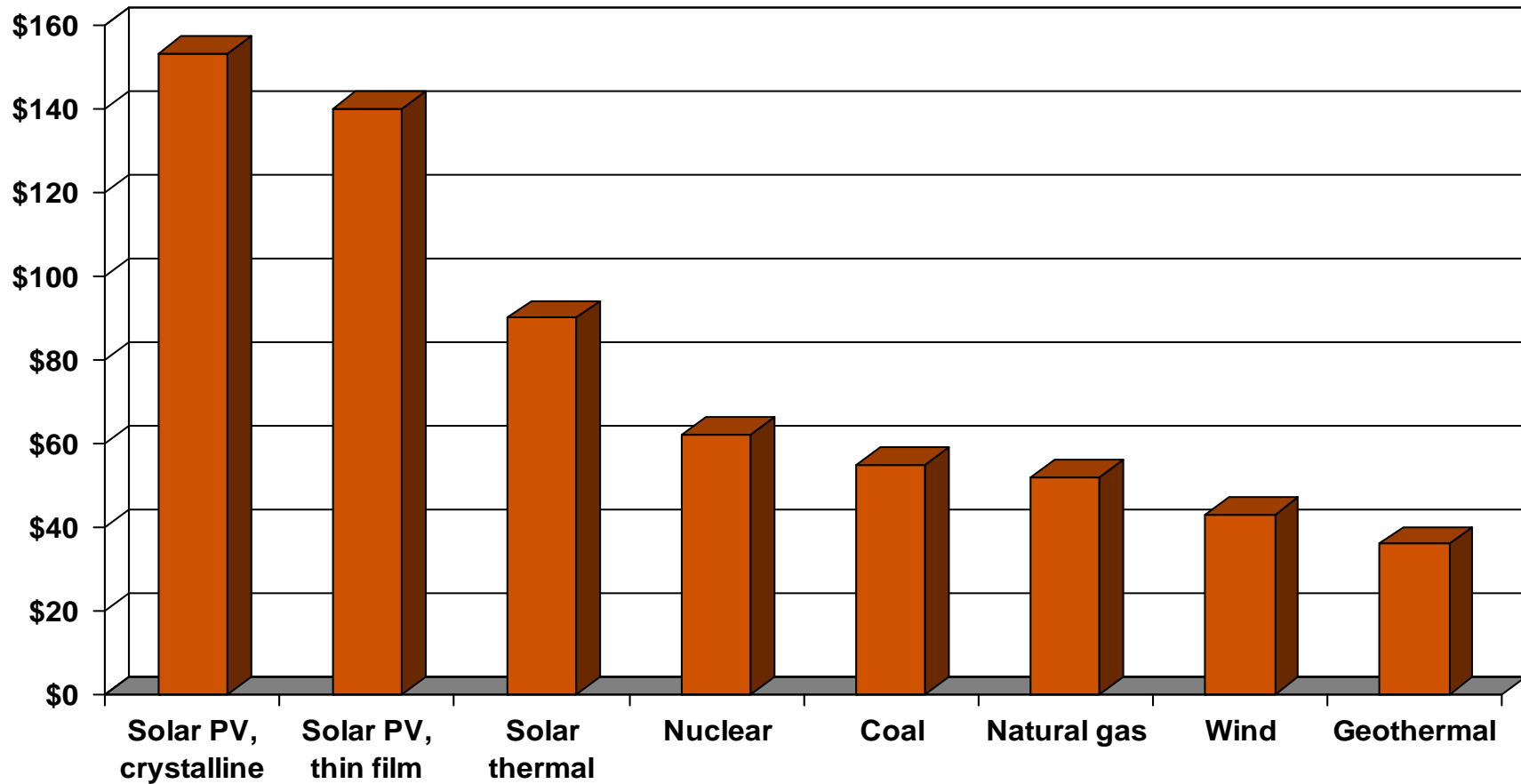
- Lobbyists for Dominion Gas have indicated a strong interest in participating in future Ohio hearings.
- Why Duke Energy is quiet on that front, as a natural gas distributor, is interesting. However, Duke spun off its natural gas production into Spectra Energy a few years ago, so they are purely a distributor now. Perhaps Duke is focused on electricity production these days.

# Lobbying Group

- Newly formed American Natural Gas Alliance is an alliance of 3 natural gas companies who account for 40% of all US gas output.
- This new supply can present an opportunity for the US's energy policy:
  - Gas burns cleaner than coal
  - It is produced domestically
  - Relies on existing technology and infrastructure
  - Production has surged with the finding of gas trapped in tight rock (shale) in Texas, Louisiana, Arkansas and elsewhere.
- Need to be recognized and accounted for
  - Natural gas industry lacked a unified voice, hired spokesman Rodney Lowman
  - The demand of the product
  - No support of natural gas in the stimulus package
  - Weak industrial demand, over-supply of natural gas, prices have collapsed

# Power Prices – *Forbes*, March 16, 2009

■ Cost/MWh



Levelized cost of electricity

Includes current US government subsidies. *Source: Credit Suisse*

# Conclusion

- CNG is a prominent natural resource that Ohio is overlooking.
- Ohio is missing out on a potentially growing revenue source.
- CNG allows Ohio to be less dependent on foreign oil.
- Consumer benefits (cost savings, cleaner air, convenience, etc.)

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