MEASURE: HB 3622
EXHIBIT: D
HOUSE REVENUE COMMITTEE
DATE: 2/20/2011 PAGES: 2
SUBMITTED BY: Rep. Cliff Bentz

OREGON HOUSE CO-CHAIRS OF TRANSPORTATION & ECON. DEV. BENTZ AND READ PRESENT A MEANS OF MAKING LOW COST ALTERNATIVE FUEL AVAILABLE TO OREGON

GOAL: To help Oregon's economy by immediately making lower-cost energy available to all Oregonians.

HOW? By converting school bus fleets to compressed natural gas (CNG) which will pay for and establish CNG filling stations open to all Oregonians throughout the state.

WHY? Many reasons, but the **most important is the cost.**

Cost of Gasoline (west coast average, March 21, 2011, excluding tax)[i]:

- $3.373 per gallon[ii]

Cost of Diesel (west coast average, March 21, 2011, excluding tax)[iii]:

- $3.56 per gallon[iv]

Cost of Compressed Natural Gas (CNG) Compared to Gas:[v]

- **$1.228 per gasoline gallon equivalent (GGE)[vi]**
- **$1.326 per diesel gallon equivalent (DGE)**

Savings:

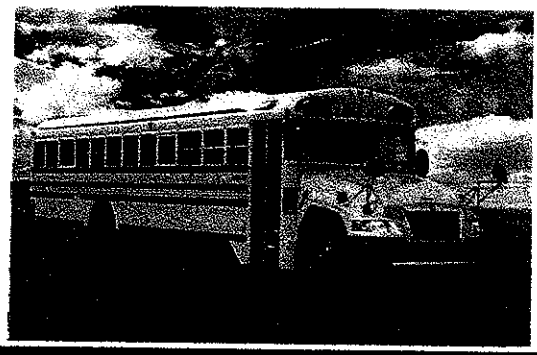
- **Gasoline:** $3.373
- **CNG:** - $1.228

  $2.145 saved ($63%!)

- **Diesel:** $3.56
- **CNG** - $1.326

  $2.234 saved (62%!)

HOW TO CONVERT SCHOOL BUSES TO CNG



1 *CNG School Buses*

Conversion Cost:

$32,000--$67,000 per bus

Cost of New CNG Bus:

$136,000--$156,000

(Cost of new diesel bus: $112,000)

2 *CNG Filling Stations*

Cost of Construction:

$80,000--$100,000

Open to the Public:

For example: Jackson County Motor pool in Medford, OR, is open to the public, charging $1.41/GGE

3 *Grants & Tax Credits*

Federal Grants:

1. Congestion Mitigation & Air Quality Improvement Program
2. Federal Transit Authority Grants
3. Clean Cities Program
4. Clean School Bus Program

Federal Tax Credits:

1. 30% or $30,000 tax credit for Alternative Fuel Infrastructure
2. $0.50 per GGE tax credit for CNG sold as motor fuel

Oregon Tax Credit:

1. BETC Tax Credit: 35% of the cost of CNG fuel infrastructure

4 *Savings on Fuel*

Approximate Cost:

$1.228/Gasoline Gallon Equivalent (GGE)

$1.326/Diesel Gallon Equivalent (DGE)

Example of Potential Savings:

Salem-Keizer school buses travel 3 million miles/year, using over 500,000 gallons of fuel.

--Annual cost if all buses are diesel fueled= $1,780,000

--Annual cost if all buses are CNG fueled= $663,000

--A CNG fueled fleet would save Salem-Keizer $1,117,000/year

LEGISLATION NEEDED:

A) A bill instructing the Oregon Department of Energy (ODOE) to work with schools to:

1) Convert to CNG buses

2) Provide sources of CNG on ODOE's website

3) Publish and educate Oregonians on the availability of alternative fuel

B) A bill that allows school districts to retain Transportation Grant money that is saved by converting to CNG. (HB 2437-3)

SUMMARY:

1) CNG will save Oregon money

2) This process will allow school districts to acquire new school buses for dramatically reduced prices because of tax credits.

3) CNG will improve safety for school children

4) CNG will create an alternative to foreign oil imports

5) CNG will reduce the use of ethanol which will help the world food supply.

6) CNG is the "here and now" solution:

   A. The USA has a 100 year supply of natural gas here in the United States!
   B. The delivery infrastructure is already in place.
   C. The conversion kits for cars and truck already exist.

I) Save Oregon Money

A) Fuel Savings:

Cost of Gasoline (west coast average, March 21, 2011, excluding tax)[vii]:

- $3.373 per gallon[viii]

Cost of Diesel (west coast average, March 21, 2011, excluding tax)[ix]:

- $3.56 per gallon[x]

Cost of Compressed Natural Gas (CNG):[xi]

- $1.228 per gasoline gallon equivalent (GGE)[xii]
- $1.326 per diesel gallon equivalent (DGE)

Savings:

- Gasoline: $3.373 - $1.228 = **$2.145 per gallon saved (63%!)**
- Diesel: $3.56 - $1.326 = **$2.234 per gallon saved (62%!)**

According to the school district's website, Salem-Keizer school buses travel over 3 million miles per year, using over 500,000 gallons of fuel. There are 272 school buses in Salem-Keizer's fleet.

- If every bus was fueled by diesel, the annual cost of fuel would be approximately $1,780,000.
- If every bus was fueled by CNG, the annual cost of fuel would be approximately $663,000.
- **A school bus fleet fueled by CNG would save Salem-Keizer School District approximately $1,117,000 per year.**
- **Savings per bus: $4,106.62 per bus per year**

B) Costs of Converting School Bus Fleets to CNG

Purchasing New CNG Buses[xiii]

- Cost of a new 86-passenger CNG bus: approximately $136,000 - $156,000
- Cost of a new 86-passenger diesel bus: approximately $112,000

Converting Old Buses to CNG[xiv]

- Approximate cost to convert from gasoline to CNG: $32,000 per bus
  - Average time for conversion: 45 days
- Approximate cost to convert from diesel to CNG: $67,000 per bus
  - Average time for conversion: 4 months

C) Cost of Installing a Compressed Natural Gas Filling Station

Filling stations are easily installed at the location where school buses are docked.

- Approximate cost of CNG compressor installation[xv]

        - CNG bus costs $156,000
        - The "incremental cost" is $44,000
        - **The School District is eligible for a tax credit of %15,400** (35% of $44,000)
    - **3) BETC tax credit**
        - 25% (up to $750) of the cost of installing a CNG fueling station in a dwelling
        - ORS 316.115
        - (HB 2524 would extend this credit until 2018)

3) Cleaner Fuel; Safer for Children

Natural gas vehicles emit far fewer pollutants than gasoline powered vehicles

- Reduces **carbon monoxide** emissions 90% - 97%
- Reduces **carbon dioxide** emissions 25%
- Reduces **nitrogen oxide** emissions 35% - 60%
- Potentially reduces non-methane hydrocarbon emissions 50%-75%
- Emits little or no **particulate matter**
- Eliminates evaporative emissions

4) CNG Will Reduce Dependency on Foreign Oil

The United States imported over 4 billion barrels of oil in 2009

- Since the federal tax incentives were introduced in 2006, natural gas use in vehicles increased 25%, which displaced 320 million gallons of gasoline.

5) CNG Will Reduce the Use of Ethanol

The federal ethanol mandates ("renewable fuel standard") have been a major factor in the skyrocketing prices of food.

- Global food prices have risen for eight consecutive months[xvii]
- **Reducing the use of ethanol as fuel will help to steady global food prices**

6) CNG: The "Here and Now" Solution

Here: There is a 120 to 150 year supply of natural gas in the United States
Now: The infrastructure is already in place

- There are approximately 1,300 natural gas stations in the United States
- "Conversion kits" exist and are readily available to the public

Appendix A:

"Gallon Equivalent" Cost of Compressed Natural Gas

- $0.98208 per therm
  - Cascade Natural Gas Corporation[xviii]
- Conversion from therm to **Gasoline Gallon Equivalent (GGE)**
  - 1 therm = 100,000 BTUs
  - 1 gallon of gasoline is approximately 125,000 BTUs
  - Therefore, 1 gallon of gasoline = 1.25 therms of natural gas
  - Therefore, using Cascade Natural Gas's price for CNG, the Gasoline Gallon Equivalent price of natural gas is ($0.98208 times 1.25):
    - **$1.228 per GGE**
- Conversion from therm to **Diesel Gallon Equivalent (DGE)**
  - 1 therm = 100,000 BTUs
  - 1 gallon of diesel is approximately 135,000 BTUs
  - Therefore, 1 gallon of diesel = 1.35 therms of natural gas
  - Therefore, using Cascade Natural Gas's price for CNG, the Diesel Gallon Equivalent price of natural gas is ($0.98208 times 1.35):
    - **$1.326 per DGE**

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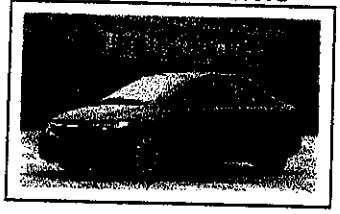
[i] Gasoline taxes: Federal: $0.184 per gallon; Oregon: $0.30 per gallon
[ii] U.S. Energy Information Administration
[iii] Diesel taxes: Federal: $0.244 per gallon; Oregon: $0.30 per gallon
[iv] U.S. Energy Information Administration
[v] Based on Cascade Natural Gas Corporation's CNG rate of $0.98208 per therm (Schedule No. 112)
[vi] See Appendix A for unit conversion
[vii] Gasoline taxes: Federal: $0.184 per gallon; Oregon: $0.30 per gallon
[viii] U.S. Energy Information Administration
[ix] Diesel taxes: Federal: $0.244 per gallon; Oregon: $0.30 per gallon
[x] U.S. Energy Information Administration
[xi] Based on Cascade Natural Gas Corporation's CNG rate of $0.98208 per therm (Schedule No. 112)
[xii] See Appendix A for unit conversion
[xiii] Charles Stone, Transportation Director of Mansfield Independent School District (TX)
[xiv] *Ibid.*
[xv] *Ibid.*
[xvi] Natural Gas Vehicle Coalition, http://www.ngvc.org/
[xvii] "Ethanol Blamed for Record Food Prices." Technology Review (published by MIT) March 23, 2011
[xviii] Cascade Natural Gas Corporation, Compressed Natural Gas Service, Schedule No. 112

Compare Side-by-Side

	Remove 2011 Honda Civic CNG	Remove 2011 Honda Civic
Use Your Gas Prices & Annual Miles Switch Units: Gallons/100 Miles, Liters/100 km		
	Natural Gas Vehicle	
Estimated New EPA MPG		
New MPG tests are more realistic	NATURAL GAS	REGULAR GASOLINE
	28 Combined **24** City, **36** Hwy	**29** Combined **25** City, **36** Hwy
MPG Estimates from Drivers Like You		
Learn more about "Your MPG"	User fuel economy estimates are not yet available for this vehicle	Average based on 1 vehicle. **32.3** View Individual Estimates
Fuel Economics		
Cost to drive 25 Miles	**$1.72**	**$3.08**
Fuel to Drive 25 Miles	0.89 gal	0.86 gal
Cost of a Fill-up	-	**$42.41**
Miles on a Tank	-	345 miles
Tank Size	-	13.2 gal
Annual Fuel Cost*	$1034	$1847
Energy Impact Score		
Annual Petroleum Consumption (1 barrel=42 gallons)	**0.1 barrels**	**11.8 barrels**
Carbon Footprint		
Annual Tons of CO_2 Emitted	5.6	6.5
Personalize Annual Miles	3.5 — 16.2	3.5 — 16.2
EPA Air Pollution Score		
Air Pollution Score	Best 8 (0–10)	Best 5 (0–10)
Safety	NA	NA
EPA Size Class	Subcompact Cars	Subcompact Cars

Disclaimer

Based on 45% highway driving, 55% city driving, 15000 miles/year and Reg.: $3.57 per gallon
CNG: $1.93 per gallon equivalent*
Click to use your gas prices and annual miles

▶Show Scores for California and Northeast States
▶Show Detailed Air Pollution Information

More about emissions....

- What's the difference between air pollution and greenhouse gases?
- Want more info? See EPA's Green Vehicle Guide