

# Mid-Columbia Transportation

Alternative Transportation – The Road Ahead



## Transportation matters...Nationally

Transportation is:

- Economic and social “life-blood” of the world
  - 2.8 million workers — Bureau of labor & statistics for 2010
  - Approximately 2.5 billion VMT annually - USDOT, <http://www.fhwa.dot.gov/ohim/tvtw/tvtpage.cfm>
  - Accounts for 9% of US GDP — US DoT Research and Innovative Technology Administration
- Major Energy user
  - Consumes 25,000 Trillion Btu/yr U. S. Department of Energy, Energy Information Administration, <http://www.eia.doe.gov/emeu/mer/contents.html>
  - Approximately a quarter of total global energy

## The Infrastructure is Vast & Varied

- Connecting cities to suburbs, manufacturers to markets, ports to warehouses, workers to work sites, children to schools
- Is enormous
  - 4 million miles of roads
  - 604,000 road bridges
  - 160,000 miles of rail lines
  - 12,000 miles of navigable inland waterways
  - 1.7 million miles of oil and gas pipelines
  - 10,744 miles of transit rail

Source: Bureau of Transportation Statistics

## Transportation matters...Locally

- Washington State is a National & Global Gateway
- Agriculture (over \$9.5B in Production Value) is our region's and the State's primary employer and economic engine (70% crops, and 30% livestock)
- Over \$1.5Billion in annual Wine Revenue each year — [WAWGG.org](http://WAWGG.org)
- Over \$6Billion in annual fruit tree Revenue — [Wa Tree Fruit Research Commission](http://Wa Tree Fruit Research Commission)
- 85% of eastern Washington wheat is shipped to Asia via Columbia River ports

## Transportation is changing...



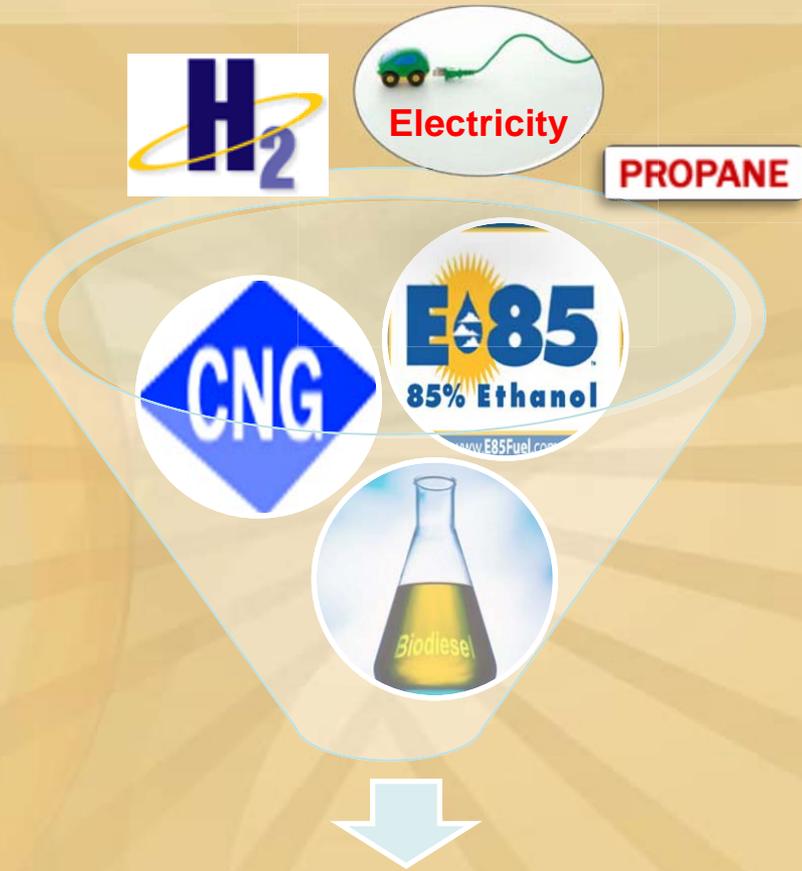
ON THE COLUMBIA AT WHITE BLUFFS, WASH.



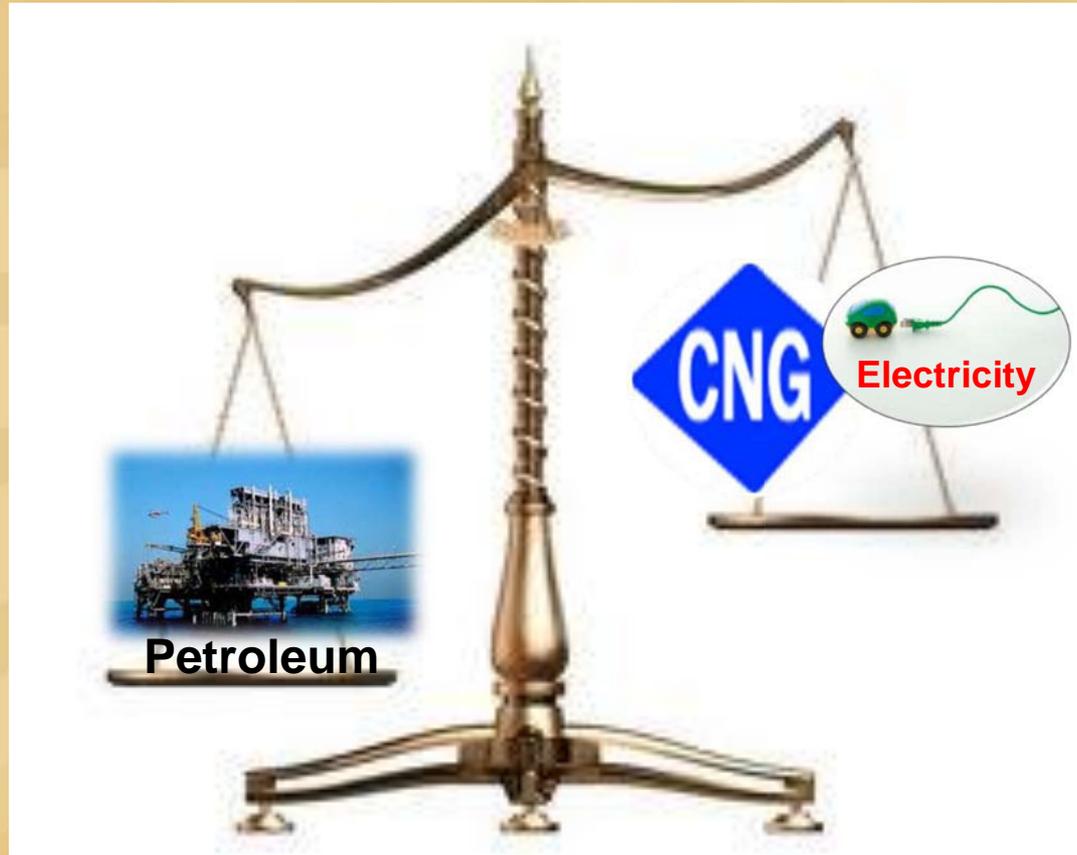
## People...not so much!



Mass Transit aint for everyone



Alternative Fuels



## E.V.'s... "they're here"



## E.V.'s... “Why Here? Why Now?”

- Cost less per mile to operate (\$.03/mi EV vs. \$.18/mi ICE)
- Cost less to maintain (\$.02 EV vs. \$.05/mi ICE)
- Cleaner to Operate (no/low emissions)
- Industry emphasis in PNW (The EV Project)
- Strong Regional Support (PNNL, MCEI, Business)

Source: 2012 AAA Driving Cost Report

## Barriers to Mainstream EV Adoption

### Technology Barriers

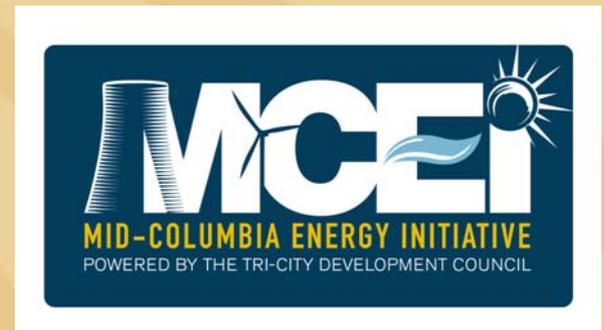
- Battery performance (Driving range)
- Charging Station availability, standardizations (J1772)
- Re-charge time
- EV OEM availability

### Cost Barriers

- EV first Costs 20%-30% higher
- Infrastructure Development

## EV – Local Initiatives

- EV Technologies Education (K-12 and workforce training)
- Renewable Energy Storage & Transportation (REST-TriCities)
- PNNL Grid Friendly™ Charger Controller
- EVSE corridor development (Prosser to Walla Walla)
- Inland Northwest Clean Cities Coalition
- Benton Franklin Transit E-Bus Pilot
- DOE EVSE Build-out

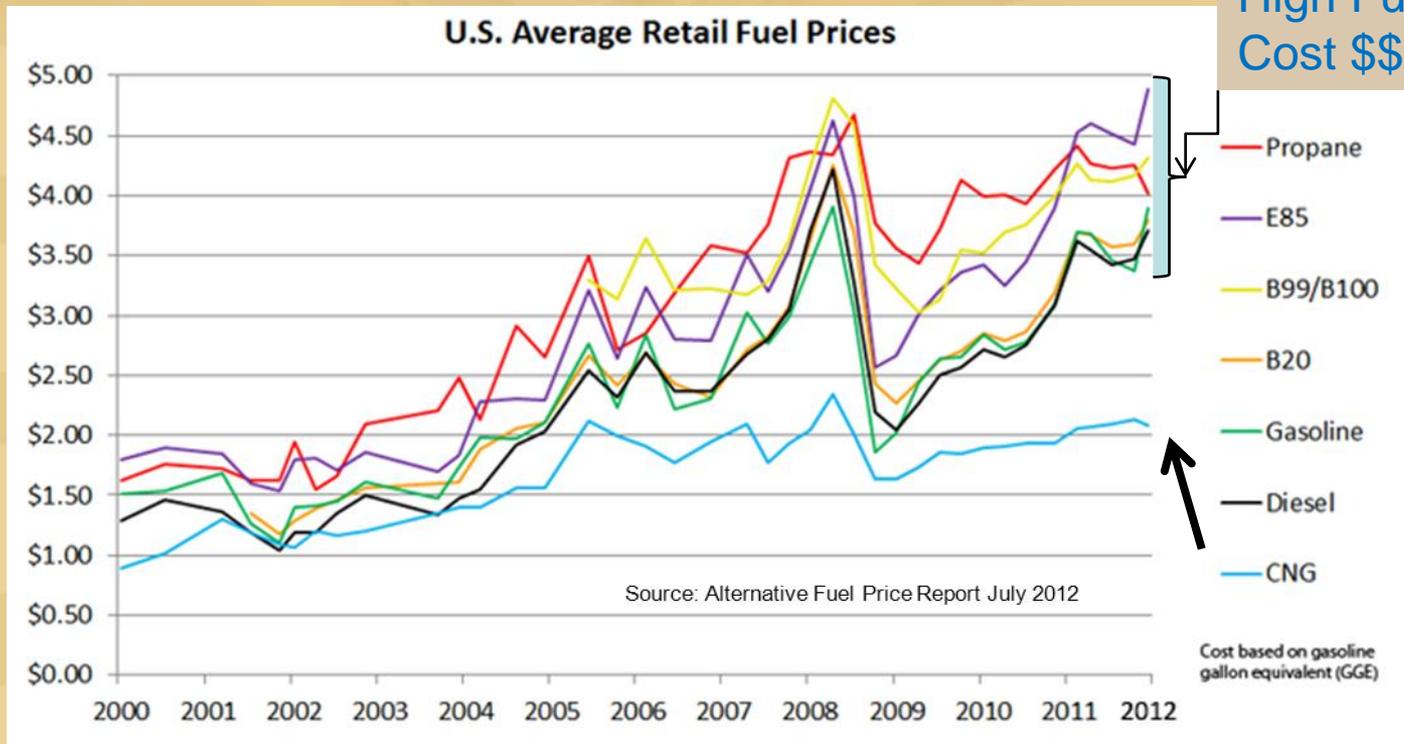


## NGV's – The “Other” Alternative



## Natural Gas...The Probable Path

Why NGV's?...Follow the Money



High Fuel Cost \$\$\$

## Natural Gas...The Probable Path

*“the economics and payback of natural gas are so strong that it dwarfs any other technology.” – Eric Woods, VP of Fleet & Logistics Waste Management*



## Natural Gas...The Probable Path

- Costs 50% less per gge &/or per MBTU
- Abundant and immediate supply
- Existing transmission & distribution systems
- Familiar fuel production and market systems
- Natural gas is a “Drop-in” Fuel for existing baseload heating applications (residential, commercial, industrial)
- Burns 10-20% cleaner (less NO<sub>x</sub>, CO, NMHC ) – DOE Alternative Fuels Data Ctr
- No Technological break-through required for NGV’s
- 40% of all refuse trucks & 30% of transit bus orders in 2011 were for NGV’s – NGVAmerica

## Barriers to Mainstream NGV Adoption

### Technology Barriers

- Energy Density (Driving range)
- Filling Station availability
- Re-fill time
- NGV OEM availability

### Cost Barriers

- NGV first Costs 40%-60% higher
- Revamping fleet maintenance bays

### Safety Barriers

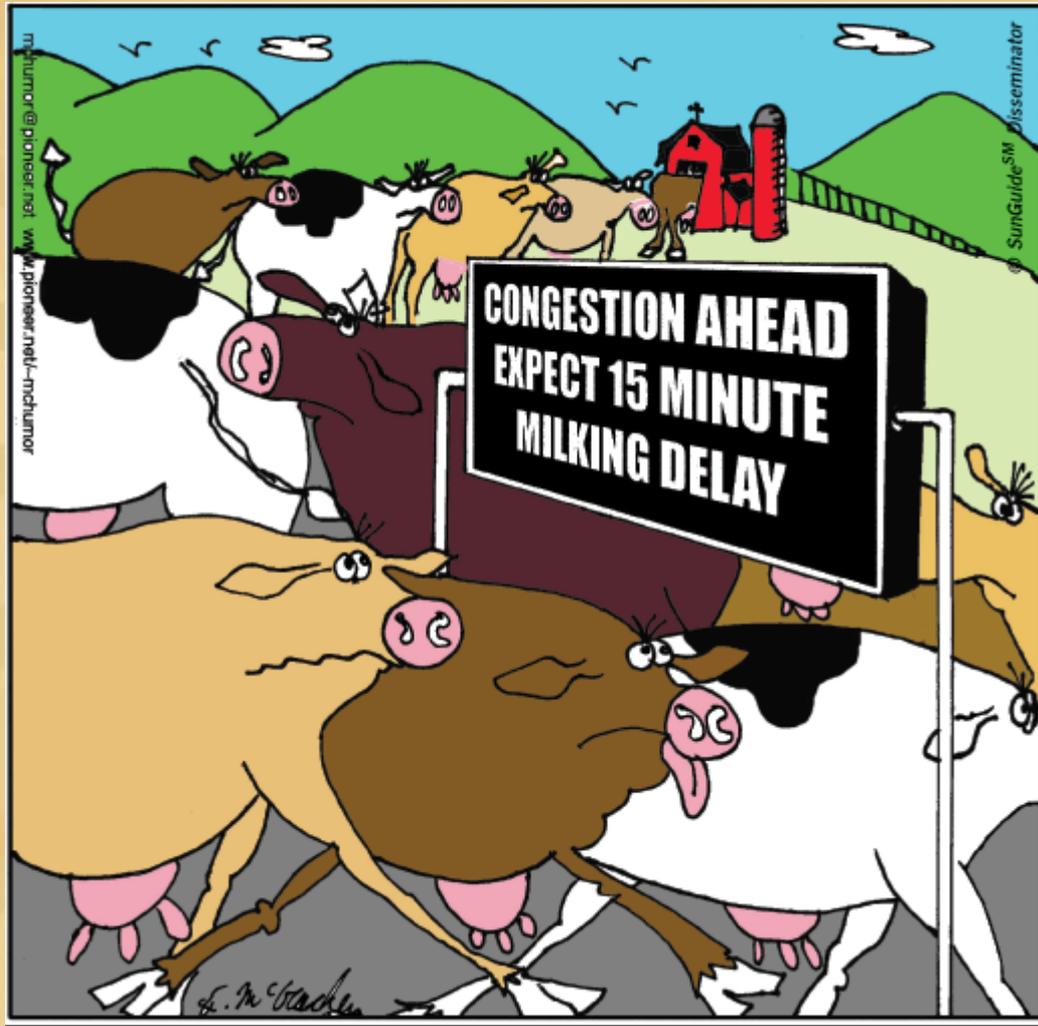
- New Safety protocols

## NGV – Local Initiatives

- Valley Transit NGV
- DOE bio-methane purchase and fleet conversion
- Bio-CNG (LFG to CNG)



## Transportation...We Get it!!



## Transportation...We Get it!!

- Development of Eastern Washington farm-to-market roads, bridges, water-ways.
- Eastern Washington Universities, Businesses, and families depend on adequate long-range planning and funding mechanisms.
- Washington State is the 6<sup>th</sup> highest gas-taxed state in the Nation, we can do better.
- Eastern Washington communities are leading the way with innovate solutions to tough transportation challenges.

THANK YOU!

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