



Governor's
Energy Office



Opportunities and Barriers in Colorado's Alternative Fuels Market

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Vision



JOBS



SECURITY



COST



ENVIRONMENT

The Governor's Energy Office promotes sustainable economic development in Colorado through advancing the state's energy market and industry to create jobs, increase energy security, lower long term consumer costs, and protect our environment.

Key Initiatives: FY'11-'12



1. A Balanced Energy Portfolio in the Electric Power Sector

- Model Development
- Stakeholder Engagement



2. Diversifying Colorado's Transportation Fuels Portfolio

- NGV Analysis, MOU, & Pilots
- EV & Biofuels Planning



3. Unlocking the Potential of Building Energy Efficiency

- Res. EE Valuation & Financing
- Private Sector EPC Grant
- PUC DSM Dockets



4. Supporting the State's Energy Innovation Ecosystem

- Asset Inventory
- ARRA Revolving Loan Fund
- COIN

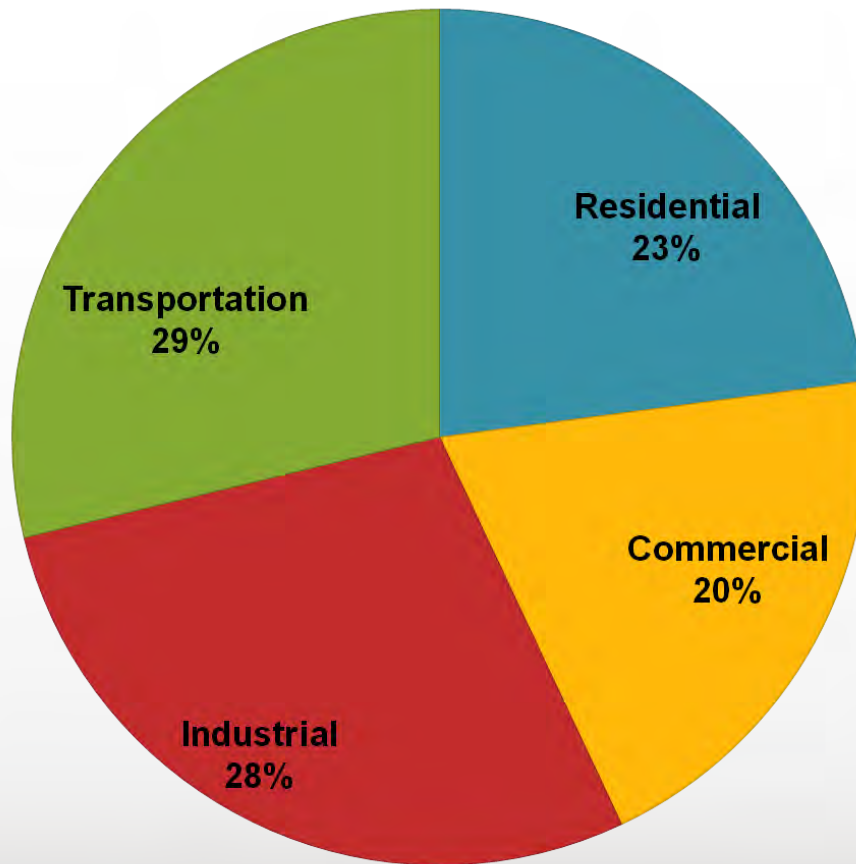


5. Increasing Access to Energy Information

- ReCharge Spin-Out
- Website Launch

Transportation is Our Largest Energy Market

Colorado Energy Consumption by End Use 1,452 Trillion BTUs (2009)



U.S. Department of Energy, Energy Information Administration (2009)

Colorado's Annual Energy Use in Perspective

1,452 Trillion BTUs

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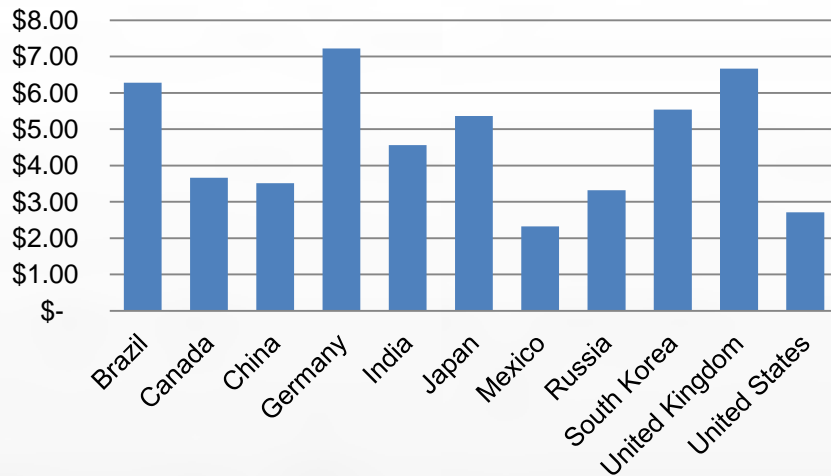
11.7 Billion Gallons of
Gasoline

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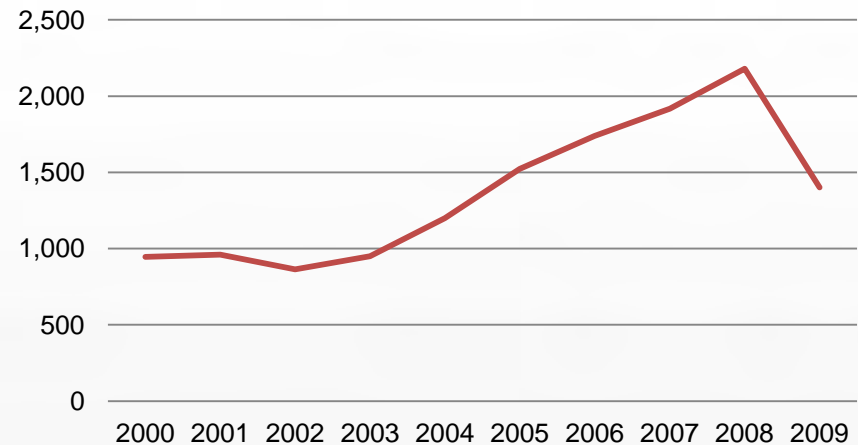
7 Trillion 60W Light
Bulbs

We Have Some of the Lowest Gas Prices in the World, but are Spending Increasingly More on Transportation Fuels

Retail Gasoline Prices (2009)



Colorado Per Capita Transportation Fuel Expenses (2009)

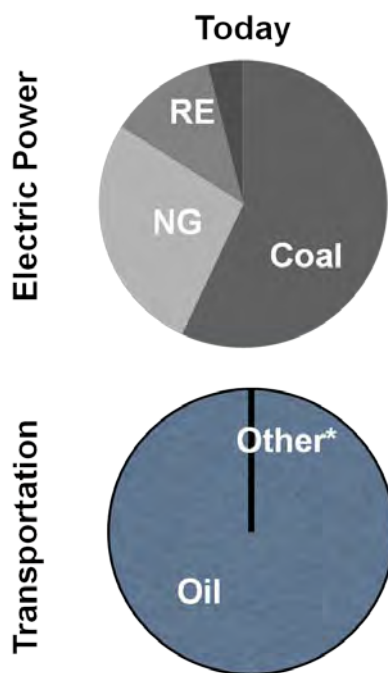


Increasing Global Competition for Resources

The U.S. Energy Information Administration projects that the increase of demand for oil in China and India by 2030 is equal to 2/3 of the total consumption by the United States

Like the Nation, Colorado Depends on One Source

Colorado's Current Energy Mix



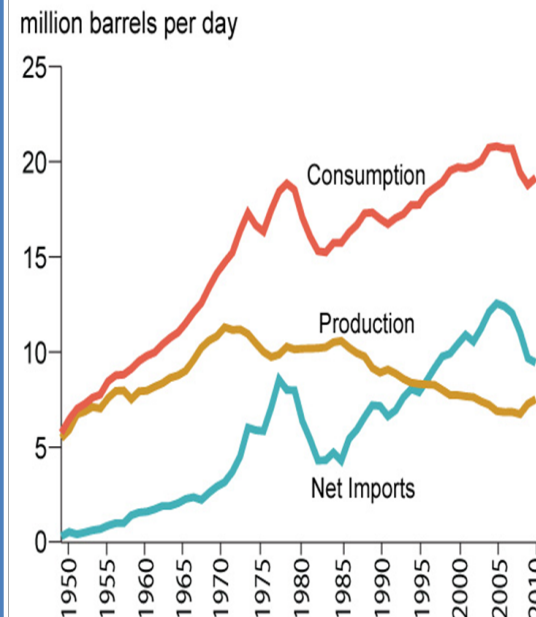
Balanced Portfolio for Transportation

GEO seeks to complete analysis of market segmentation to identify optimal opportunities and geography for a portfolio of fuels (e.g. CNG for fleets, hybrids for rural commuters, EV for urban commuters)

Benefits

Energy security, lower consumer costs, improved environmental performance, and Colorado jobs

Petroleum Consumption, Production, and Import Trends (1949-2010)



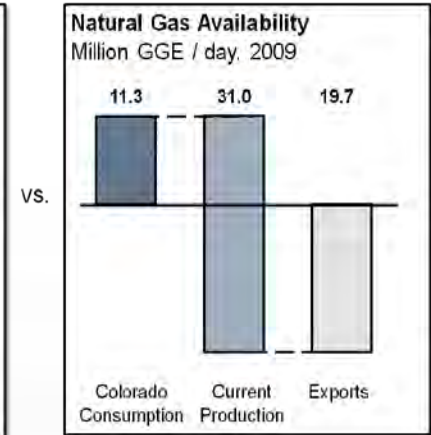
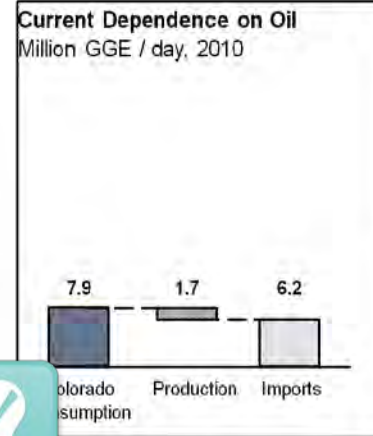
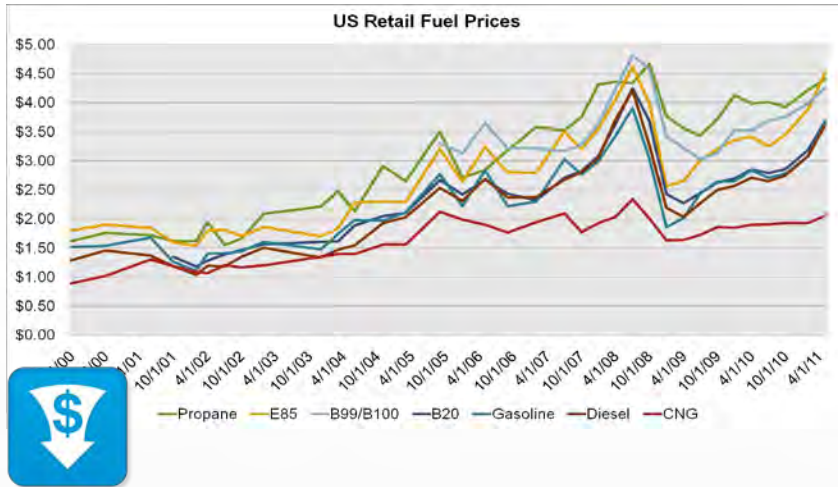
Note: Production includes crude oil and natural gas plant liquids only.

Source: U.S. Energy Information Administration, *Monthly Energy Review* (May 2011), preliminary data, and *Annual Energy Review 2009*, Table 5.1 (August 2010).

Each Alternative Provides Unique Potential but Faces Differing Challenges

Readiness for Commercialization HI ↑ ↓ LO		Pros	Cons	Proposed State Role
	"X" to Liquids (CtL/GtL)	<ul style="list-style-type: none"> Seamless integration into existing consumer behavior, vast resource 	<ul style="list-style-type: none"> Scale/cost, water consumption, emissions 	<ul style="list-style-type: none"> <i>Monitor cost-benefit dynamics</i>
	Natural Gas (CNG/LNG)	<ul style="list-style-type: none"> Technology is commercialized, vast and low-cost resource 	<ul style="list-style-type: none"> Public infrastructure limited, incremental costs, fill time 	<ul style="list-style-type: none"> Fleet aggregation, infrastructure clusters, regulatory
	Biofuels (Various)	<ul style="list-style-type: none"> Renewable, minimal cost impact on vehicles, infrastructure 	<ul style="list-style-type: none"> Cost effectiveness, environmental impact of Gen 1, blend wall 	<ul style="list-style-type: none"> Awareness & promotion, CDA "ACRE" Grants, support/monitor R&D
	Electricity (EVs)	<ul style="list-style-type: none"> No mobile emissions, home charging, grid benefits, resource diversity 	<ul style="list-style-type: none"> Cost of vehicle Range performance Peak demand impacts 	<ul style="list-style-type: none"> Support R&D and deployment pilots, Project FEVER, regulatory
	Hydrogen (H2)	<ul style="list-style-type: none"> Zero mobile pollutants Strong performance 	<ul style="list-style-type: none"> Cost of vehicle Cost/availability of fuel and infrastructure 	<ul style="list-style-type: none"> <i>Monitor technology development and synergies with NG</i>
				Lead Role Active Role Passive Role

NG Offers Clear Jobs, Security, Cost, and Environment Benefits for the Transportation Sector



Current American Road Transport Fuel Mix

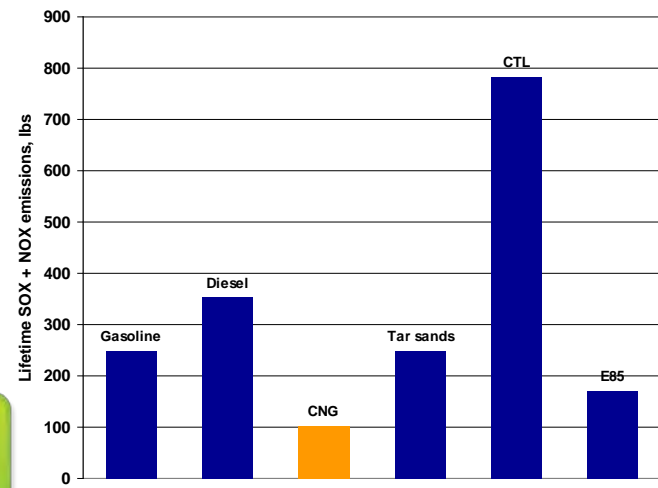
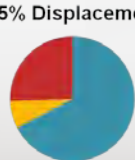
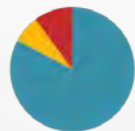
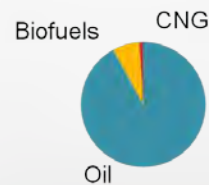
Scenario

10% Displacement

\$570M Invested
32,000+ New Jobs

25% Displacement

\$1.45B Invested
88,000+ New Jobs



Colorado is Building Momentum towards Market Uptake of CNG for Medium and Heavy Duty Fleets

- The Roaring Forks Transit Authority is creating the nation's first rural bus rapid transit (BRT)
- RFTA recently signaled its intent to run that service on CNG; an RFP for the station was issued in January
- Project is expected to displace 300,000 gallons of diesel

RFTA CNG BRT Service



- CNG Station opened in Commerce City in September 2011
- Republic is replacing entire fleet with CNG trucks by 2013 – 3-year payback
- Save an estimated 1.3 million gallons of diesel and reduce GHGs by 25%

Republic Services Station Opening



- RFP for the construction and operation of 4 CNG stations in Weld County
- Stations will have public access with CNG price projected below \$2/GGE

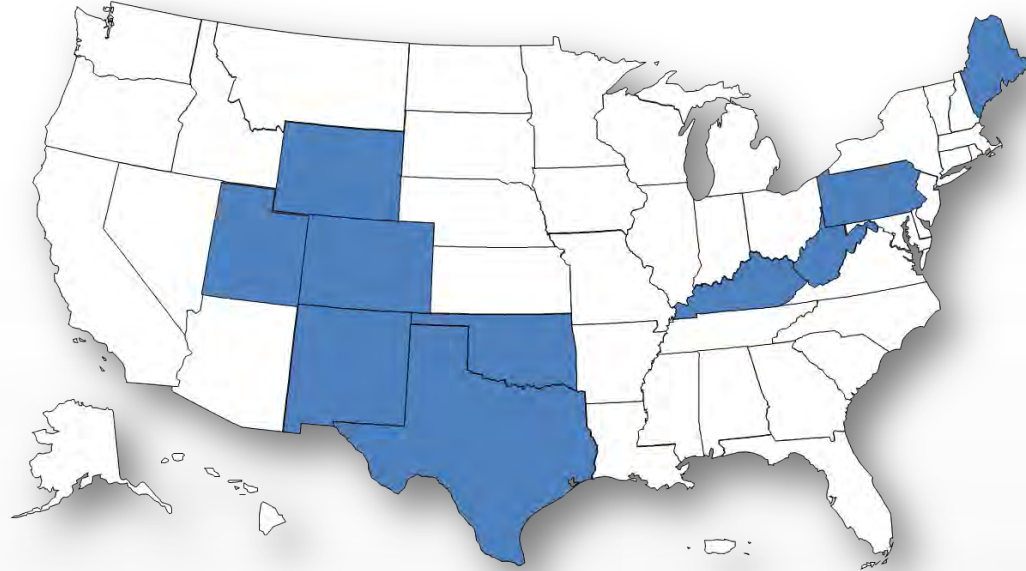
Weld County RFP



Multi-State Natural Gas Vehicle MOU

Bi-Partisan Effort

- Aggregates state vehicle procurement in a Joint RFP; utilize local distribution networks
- OEM NGV should have comparable performance and price to a gasoline vehicle
- Encourage private investment in NGV infrastructure



Promote Policy Objectives

- Energy Security
- Reduce Emissions
- Create Domestic Jobs
- Lower Consumer Costs

Addresses Discrete Market Barriers

- Tackle Chicken and Egg Dilemma (Vehicles/Infrastructure)
- Drive Down Incremental Costs of Vehicles
- Encourage Private Investment and Increase Fuel Price Separation

GEO Efforts to Reduce Market Barriers

Natural Gas Vehicles

Electric Vehicles

Biofuels

Working on state fleet conversion from MOU; refining business cases for private fleet conversions

Support R&D through pilot programs and involvement in industry groups supplying fuels

Seeking partners for potential Energy Performance Contracting projects

Qualified Energy Conservation Bonds: new round to be administered by GEO supporting transportation projects

Identifying regulatory barriers and opportunities

Project FEVER planning for EV implementation

Phase of Effort ↑ On the road
↓ Planning



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