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State Efforts to Promote Alternative Fuels

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NCSL Overview

- **Bipartisan organization**
 - Serves the 7,383 legislators and 30,000+ legislative staff of the nation's 50 states, commonwealths and territories
- **Activities**
 - Research and information on topics of interest to the states
 - Technical assistance and training
 - Opportunities for policymakers to exchange ideas
 - Lobbying at the federal level for states' interests



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Overview

- Benefits and Barriers of Adopting Alternative Fuel Vehicles
- Natural Gas Vehicle Technology and Deployment Efforts
 - State Actions to Promote NGVs
 - Potential Federal Disincentives for NVGs
- Hydrogen Preview
 - Current Opportunities and Challenges
 - States Consider Hydrogen
 - California Pilot Program



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Benefits of Alternative Fuels

- Diversify Transportation Fuels
- Increase Energy Security
 - Reduce dependency on foreign oil
- Decrease Emissions



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Barriers to Vehicle Adoption

- High Up-Front Costs
- Lack of Fueling Infrastructure
- Limited Availability
- Unfamiliarity with Vehicle Types



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Why Natural Gas?

- Domestic, abundant resource
- Lower fuel price
- Reduced tailpipe emissions
- Fuel safety \geq conventional cars



Comparing CNG & LNG

Compressed Natural Gas

- Stored in high-pressure tanks
- Energy density about 4 times less than diesel
- Primarily for light and medium duty vehicles
- Time-fill or fast-fill capability

Liquefied Natural Gas

- Stored as a cryogenic liquid
- Energy density comparable to diesel fuel
- Ideal for medium to heavy duty fleets
- Fast-fill

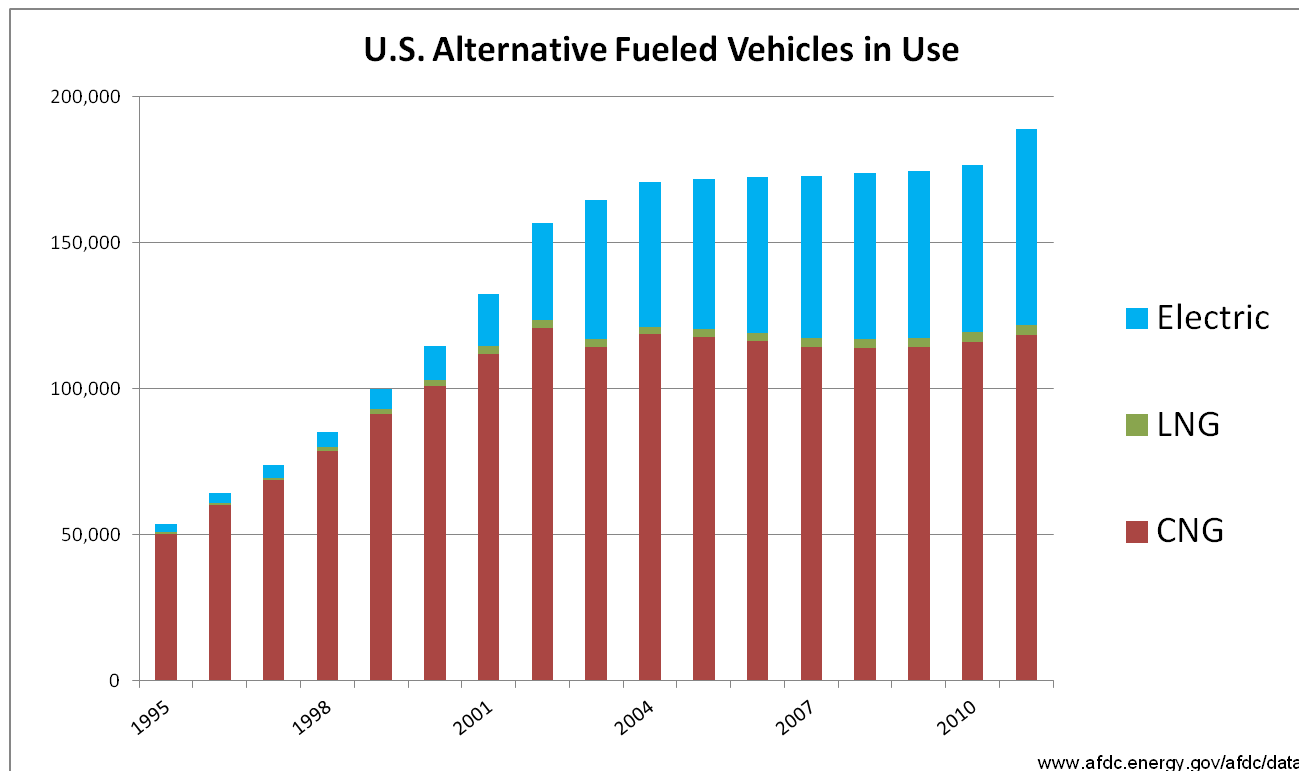


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Market for NGVs



There are about 112,000 dedicated NGVs in the U.S. and 14.8 million worldwide.



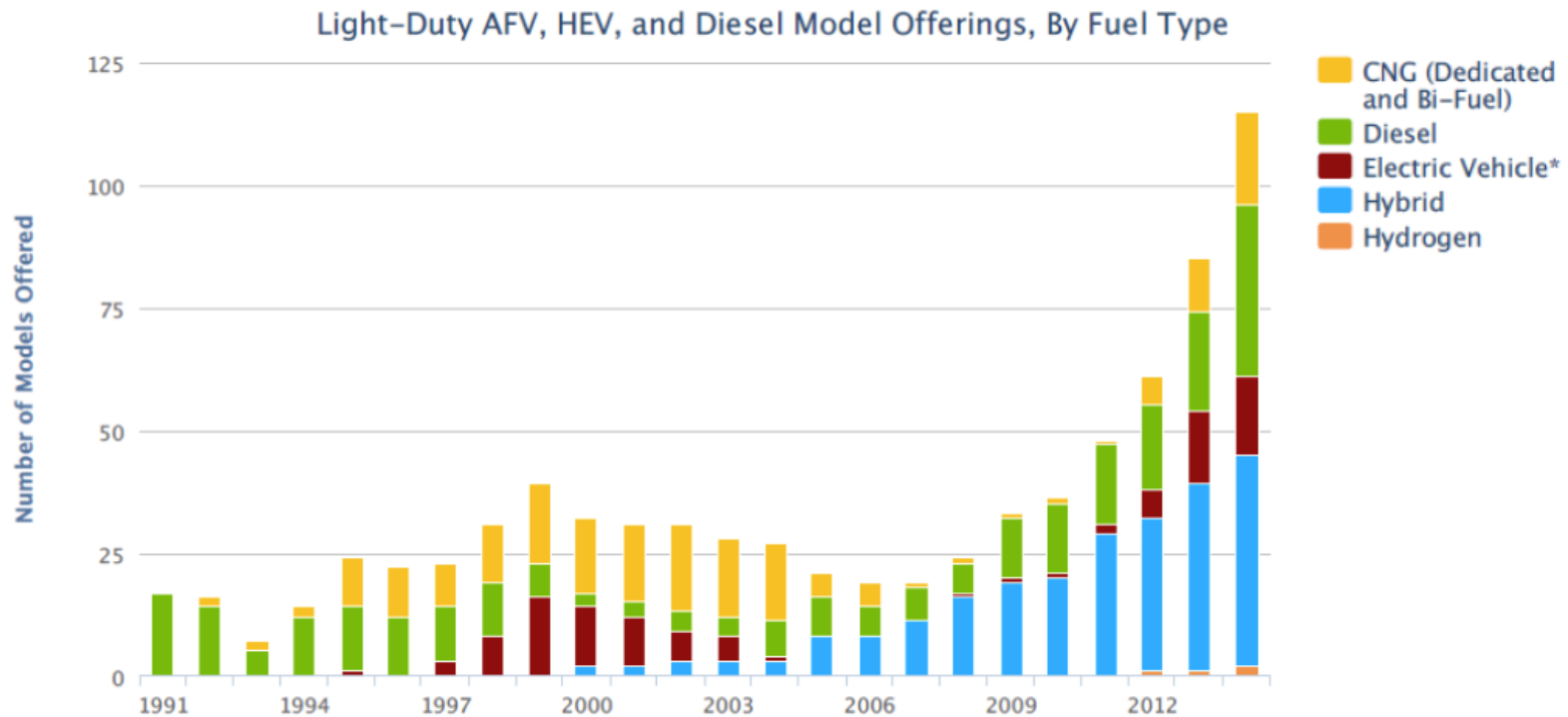
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Vehicle Models Offered

Few light duty NGV models offered by U.S. manufacturers





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Vehicle Availability

- Light Duty (CNG)
- Medium to Heavy Duty (CNG)



- Heavy Duty (LNG)





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Refueling Infrastructure

- CNG fueling stations:
1,471 (743 public)
- LNG fueling stations:
105 (64 public)



- Fleet centric operations
- Additions to existing sites
- New CNG/LNG stations
- Home Refueling



CNG Stations by State

- California: 264
- New York: 114
- Utah: 88
- Wisconsin: 59
- Minnesota: 16

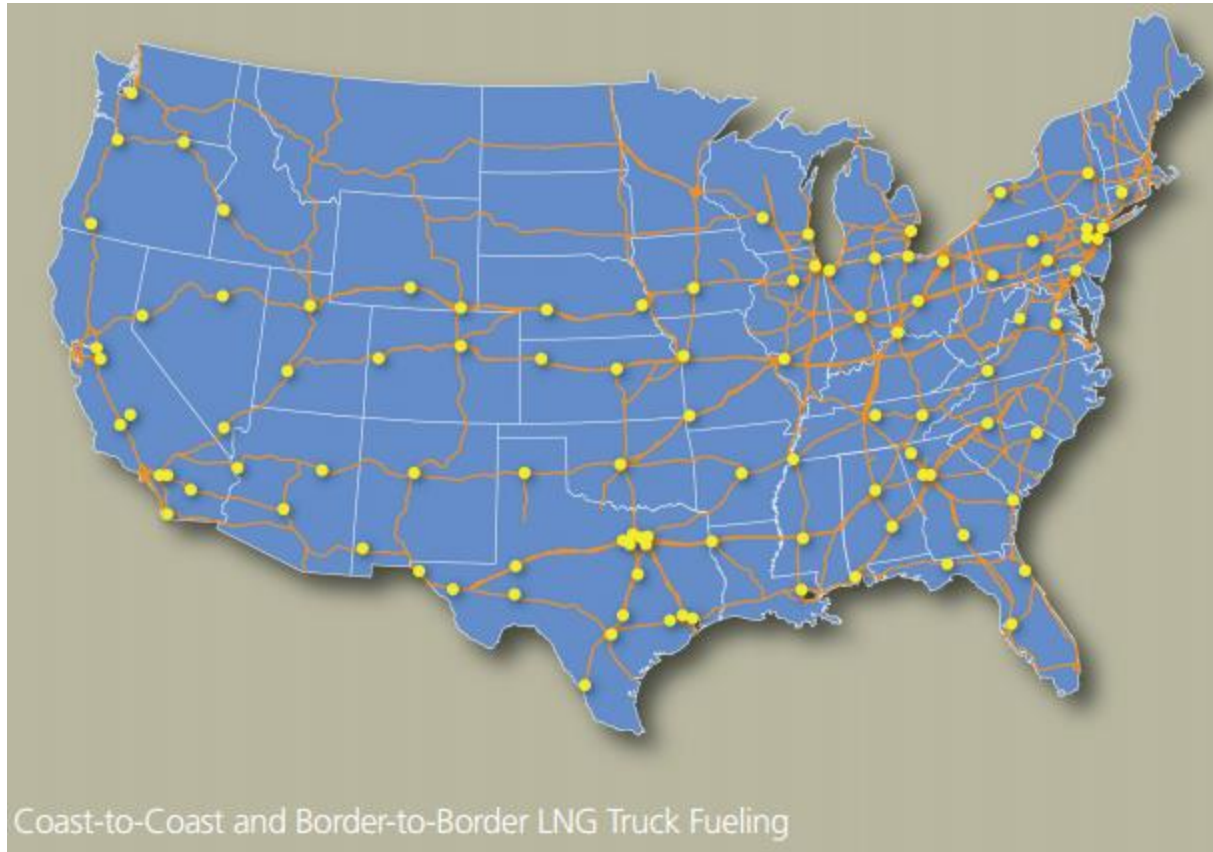


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Refueling Corridors



- I-75 Corridor
- The Texas Clean Transportation Triangle
- Rocky Mountain Corridor
- Interstate Clean Transportation Corridor



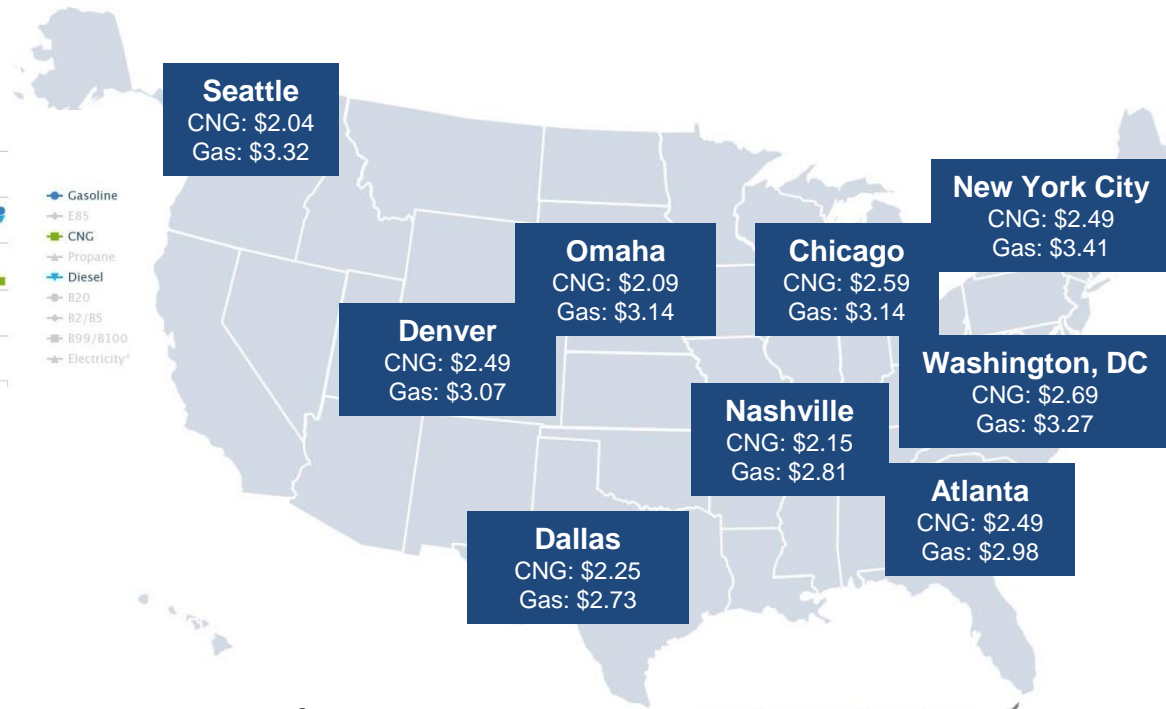
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Natural Gas Versus Conventional Gasoline

Average Retail Fuel Prices in the U.S.



Sources:
CNGPrices.com and
GasBuddy.com



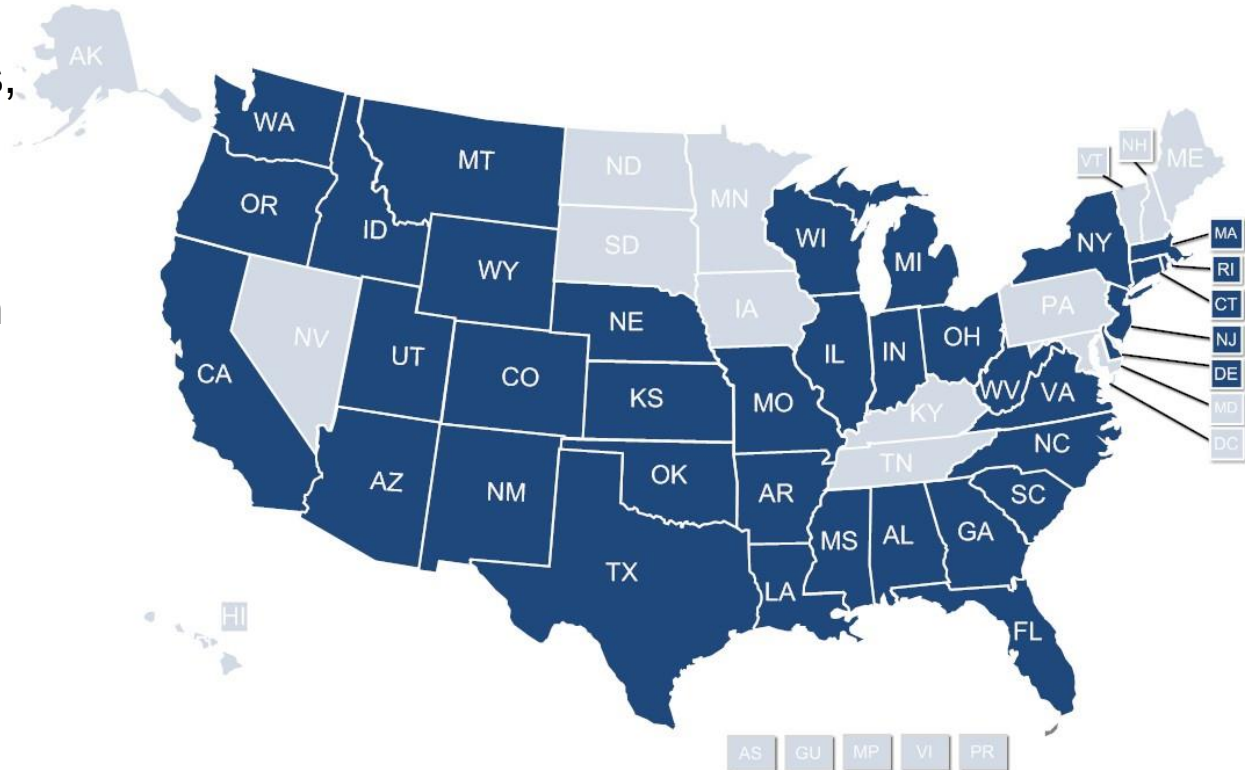
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Types of NGV Incentives

- Financial
 - Credits, rebates, loans, grants, vouchers, tax exemptions, etc.
- Supporting fleet acquisition
- Promoting fueling infrastructure
- HOV lane access
- Inspection/emissions exemptions





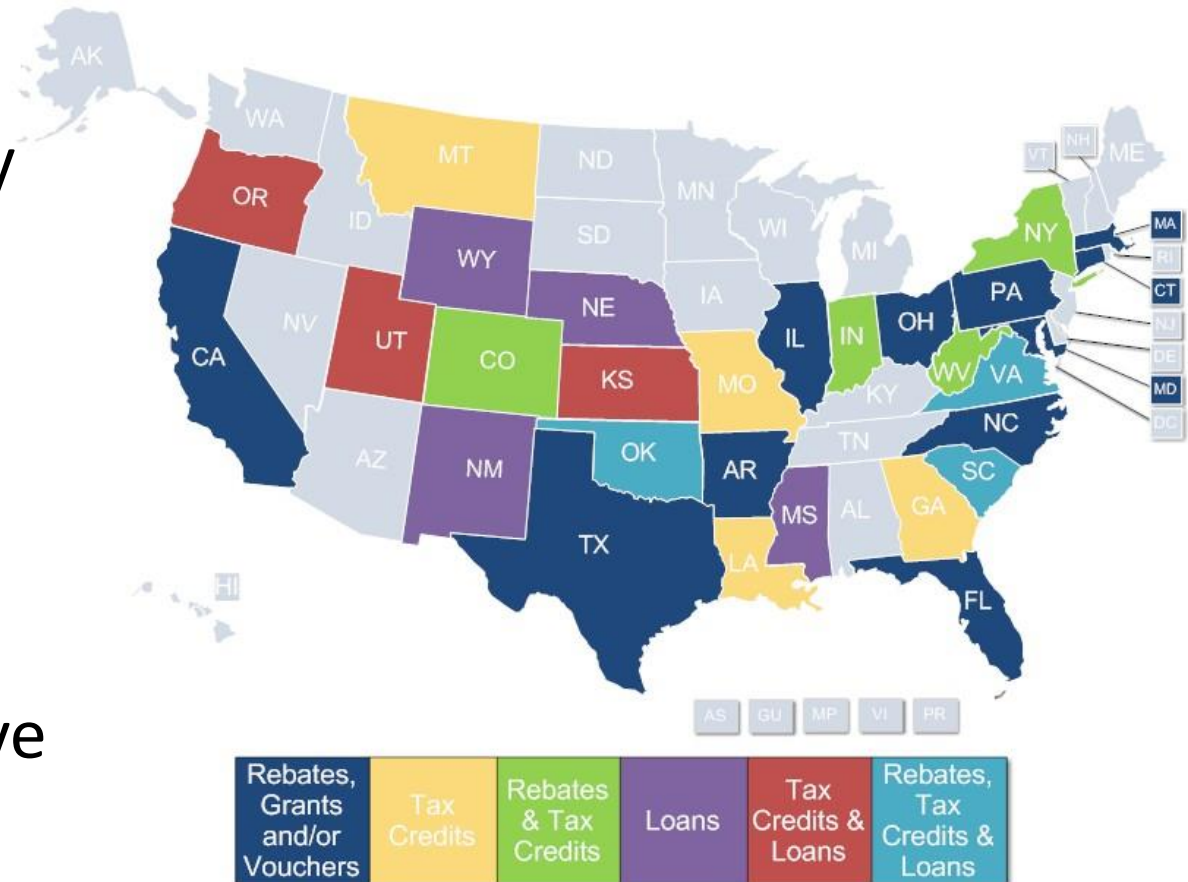
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Financial Incentives

- 29 states have enacted monetary incentives to support NGVs
- At least 10 states offer more than 1 monetary incentive





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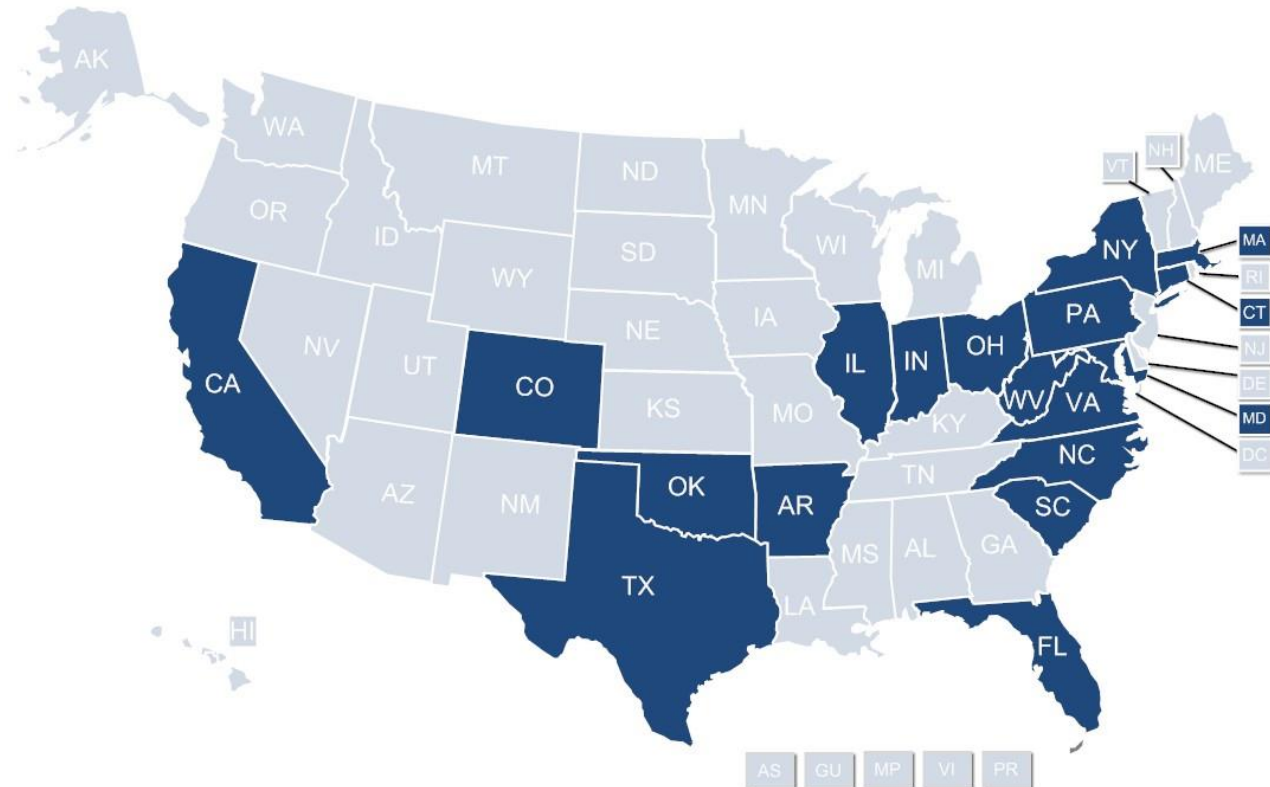


Rebates/Grants/Vouchers

Illinois: Provides 80 percent, up to \$4,000 rebate for the cost of purchasing or converting an alternative fuel vehicle.

Oklahoma: ONG offers a \$1,000 rebate for the purchase of an NGV or toward the cost of CNG home fueling station.

Texas: Provides vouchers of \$3,500 for the purchase of NGVs





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State Coordinated Efforts

- Aggregates state vehicle procurement in a joint RFP
- Engages local government in procurement
- NGVs should have comparable performance and price to a gasoline vehicle
- Encourages private investment in NGV infrastructure
- Encourages participation among governors



Memorandum of Understanding

This Memorandum of Understanding (MOU) describes a coordinated effort between the undersigned States (States) to attract automobile manufacturers in the U.S. to develop a functional and affordable original equipment manufacturer (OEM) fleet natural gas vehicle (NGV) that will also meet public demand. The States recognize the benefits and unique attributes of clean burning natural gas and understand the significant opportunity compressed natural gas (CNG) presents to save State and taxpayer dollars by encouraging an energy future that utilizes domestic energy resources to fuel our nation's transportation needs. Through the joint solicitation of a Multi-State Request for Proposal (Joint-RFP) that aggregates annual State fleet vehicle procurements, the States will endeavor to provide a demand base sufficient to support the design, manufacture, and sale of functional and affordable OEM NGVs by automotive manufacturers in the United States.


In anticipation of soliciting a Joint-RFP, the States will endeavor to coordinate with local agencies, municipalities, and companies to determine the number of NGVs each State can commit to purchase and the required specifications necessary to meet fleet needs. The Joint-RFP shall require that the ultimate cost of an OEM NGV should be comparably priced to an equivalent gasoline powered model and that warranty and reliability concerns are not compromised. Simultaneously, the States understand the need for continued development and expansion of CNG fueling infrastructure and should endeavor to encourage private investment, predicated on demonstrating an anticipated increase in State NGVs, to meet growing demand.

Pursuant to the terms of the Joint-RFP, to be executed at a later date, the States intend, where practical, to transition new fleet vehicle acquisitions, in committed volumes, to a resulting OEM NGV. Such future acquisitions should, when economically feasible, rely on traditional distribution channels that incorporate local businesses in procurement processes. In continued recognition of the benefits of CNG, the States should also endeavor to pursue fleet vehicle conversions to CNG, where economically compelling, based on a life-cycle cost analysis. The States will also reach out to fellow Governors to determine broader interest and participation in the principles and process outlined in this MOU.

This MOU embodies the principle understandings of the States but shall not create any legal relationship, rights, duties, or obligations binding or enforceable at law or in equity. Notwithstanding the foregoing, each State shall in good faith endeavor to reach a mutually agreeable and economically beneficial Joint-RFP, as contemplated herein. This MOU does not create additional state power, enhance existing state power, or interfere with federal authority or law. This MOU shall continue to demonstrate the States' understanding until execution of the Joint-RFP, or until otherwise discontinued by either State.

Set forth by:


State of Oklahoma



Mary Fallin, Governor

November 9, 2011

State of Colorado



John Hickenlooper, Governor

November 9, 2011



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Federal Legislative Concerns

- Expired Tax Credits
 - EPAAct 2005
 - SAFETEA-LU
- LNG Tax Inequity
- Excise Tax on Heavy Trucks



Photo courtesy of NREL



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Hydrogen Fuel Cell Preview



Photos courtesy of
NREL



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Benefits

- Diversifies transportation fuels
- Zero-emission vehicle
- Comparable driving range to conventional engine
- Can be scaled to light-duty and heavy-duty vehicles



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Challenges

- Lack of infrastructure
- High up-front costs
- Few vehicles currently on the road



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Public-Private Partnership

H₂ USA

Mission: To promote the commercial introduction and widespread adoption of FCEVs across America through creation of a public-private partnership to overcome the hurdle of establishing hydrogen infrastructure.

Current partners include (additional in process):





State Action

At least 24 states and the District of Columbia have incentives that apply to hydrogen fuel cells

- **Arkansas:** Provides rebates for up to 50 percent of the conversion cost, or \$4,500, for vehicle conversions to hydrogen fuel cells, CNG, LNG or propane.
- **Iowa:** A taxpayer is eligible for a \$2,000 tax deduction for the purchase of a qualified fuel cell motor vehicle placed into service before January 1, 2015.
- **New York:** Provides an income tax for 50 percent of the cost alternative fueling infrastructure, up to \$5,000. Qualifying infrastructure includes electric vehicle supply equipment and equipment to dispense fuel that is 85 percent or more natural gas, propane, or hydrogen.



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State Coordination

- Eight state agreement - California, Connecticut, Maryland, Massachusetts, New York, Oregon, Rhode Island and Vermont
- 3.3 million vehicles on the road by 2025
 - Coordinate incentives
 - Common standards for signs
 - Harmonize building codes
 - Set purchase targets in public fleets



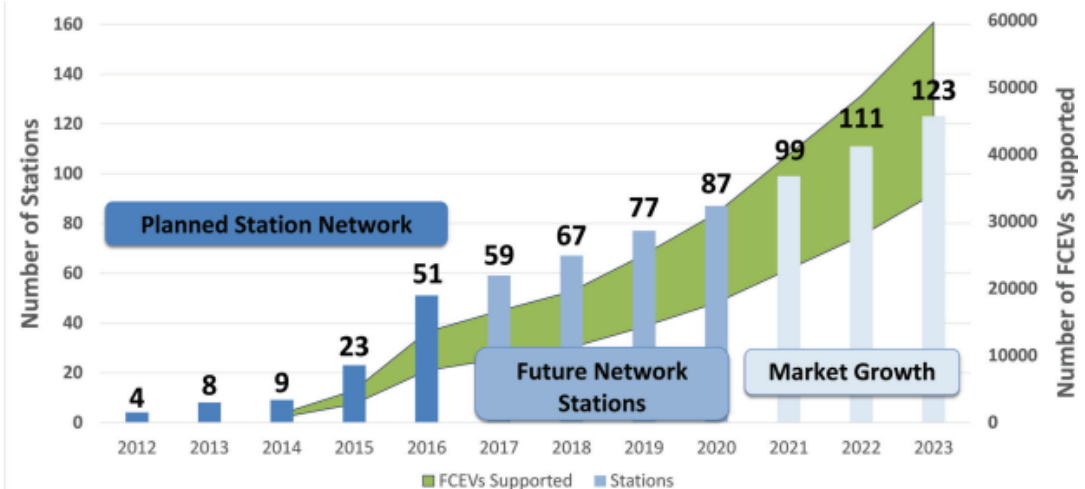
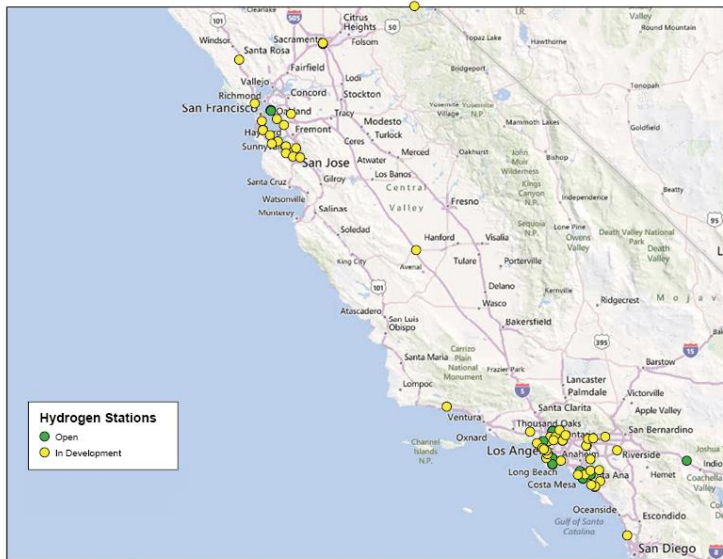
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California Fuel Cell Partnership

- A.B. 8 (2013): Provides funding for a hydrogen station network
- "Stations come before vehicles"
- Approximately 51 stations by 2016, assuming 20,000 fuel cell electric vehicles





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Vehicle Availability

- Honda: Launch in the U.S. in 2015
- Toyota: Launch in 2015 with an initial focus on California
- Hyundai: Launch in 2014 and is available at several Southern California dealers.





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Conclusion

- There are few light duty natural gas/hydrogen vehicle models available, but interest is growing
- Many different types of federal, state, local and private incentives
- Incentives increase vehicle adoption
- Focus on infrastructure and vehicle availability



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Contact & Resources

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NCSL Publications

- *States Adopt Natural Gas Incentives (coming soon)*
- *State Efforts to Promote Hybrid and Electric Vehicles (October 2014)*
- *Transforming Transportation with Electricity (January 2014)*
- *Transportation Energy for the Future: A Guide for Policymakers (March 2012)*

Additional Resources

- [NCSL Energy and Environment Database](#)
- [NCSL Energy Program](#)