

TLU-4a Alternative Fuels Use Bundle

Option Category: Quantified

Policy Description:

Expand the availability and use of alternative fuels for transportation in New Mexico. This should include biodiesel, ethanol, electricity, and renewable hydrogen fuels. Also, expand the use of zero emission vehicles for transportation in New Mexico. Such vehicles would primarily utilize electricity and hydrogen made from verifiable renewable resources (i.e., solar, wind, and biomass generation). Plug-in electric vehicles equipped with batteries would also serve as storage capacity for wind and solar power through grid interconnection (V2G).

Policy Design:

The goals for this policy should be phased in to utilize biofuels to replace the specified percentages of gasoline and diesel consumed for transportation throughout New Mexico by the specified year, as shown under Goal Levels, below. The policy also includes VMT targets for zero emission vehicles and the implementation of a New Mexico “Multi-Fuel Corridor,” composed of a full range of alternative energy refueling options located every 120 miles on New Mexico’s highways.

These goals of this policy would be achieved through a combination of mandates for state government fleets, financial incentives, outreach, and market-based mechanisms.

- **Goal levels:**

The goal levels for biofuels are shown in the following table:

Phase	Percentage of Gasoline to be Replaced by Biofuels	Percentage of Diesel to be Replaced by Biofuels	Year
1	10%	2%	2009
2	20%	20%	2012
3	30%	30%	2030
4	40%	40%	2040

The goals for zero emission vehicles are as follows:

- Replace 10% of VMT from light-duty vehicles in New Mexico with zero emission vehicles by 2010;
- replace 20% of VMT from light-duty vehicles with zero emission vehicles by 2015; and
- replace 40% of VMT from light-duty vehicles with zero emission vehicles by 2040.

The goals for implementing a New Mexico “Multi-Fuel Corridor” are as follows:

- 8 stations located along I-25 and I-40 by 2010,
- 15 additional stations installed along major non-interstate roads by 2015; and
- 15 additional stations along other NM highways by 2020.

- **Timing:** See goal levels.
- **Parties:** State of New Mexico, fuel retailers, fuel wholesalers, business owners, car dealers, biofuels producers, and alternative vehicle advocates and private vehicle owners.

Implementation method(s):

Information and education: Use information and education outreach to focus on voluntary methods of alternative fuel expansion and on incentives and cost benefits of zero emission vehicle acquisition. In addition, include mandated policy mechanisms.

Technical assistance: Provide technical assistance through vehicle dealers, consumer technical support groups and public demonstrations

Funding mechanisms and or incentives: Pursue DOE and State funding for more alternative fuel pumps throughout the State and for introducing appropriate infrastructure throughout the State. Existing multifuel pump in Santa Fe provide model for dispensing three alternative fuels: B20 biodiesel, E85 ethanol, and E10. Create additional fuels options for electric and hydrogen –fuels vehicles.

Codes and standards: This measure should include a mandated Renewable Fuel Standard (RFS), corresponding to the penetration rates listed above. The RFS should include a cost trigger, so that if the cost of alternative fuels exceeds conventional fuels by more than a specified amount, the RFS would be temporarily removed. The cost trigger should be based on costs over a period of time, and not spot prices. Charles will send information on a RFS bill that he is currently helping with. Additionally, production issues should be included in the trigger, such as water use in growing corn (or other crops) for the biofuels, such that the production of the biofuels does not increase GHG emissions or cause other resource problems.

Voluntary and or negotiated agreements: Provide financial incentives for alternative fuels distributors and producers: Provide state funds and/or loan guarantees for construction of alternative fuels production and distribution facilities; Also provide grow receipts tax exemptions, production tax credits and reduction in excise taxes on alt fuel sales.

Market based mechanisms; Provide payment structure for electric vehicle owners to sell stored power back to grid when needed (V2G).

Pilots and demos: Show example of existing multifuel pumps in Santa Fe which provides a model for dispensing three alternative fuels: B20 biodiesel, E85 ethanol and E10. Provide demonstrations of ZEVs charging, fueling and operating in New Mexico

Research and development: Pursue in-state biofuels production from a variety of sources. Analyze and quantify range of cost and health benefits that accrue to alt fuels vehicle owners.

Related Policies/Programs in place: N/A

Types(s) of GHG Benefit(s): (indicate which GHGs to be reduced)

CO2 emissions are reduced by offsetting the use of petroleum-derived gasoline and diesel. ZEVs will also reduce N2O, CH4, and criteria and toxic pollutant emissions.

Estimated GHG Savings and Costs Per Ton:

	<u>2012</u>	<u>2020</u>	<u>Units</u>
GHG Emission Savings	2.6	4.7	MMtCO2e
Net Present Value (2006-2020)			\$million
Cumulative Emissions Reductions (2006-2020)		39.2	MMtCO2e
Cost-Effectiveness			\$/tCO2e

Data Sources, Methods and Assumptions:

- Data Sources:**

Environmental, Economic, and Energetic Costs and Benefits of Biodiesel and Ethanol Biofuels, Jason Hill, et. al., University of Minnesota, published in Proceedings of the National Academy of Sciences of the United States of America, volume 103, no. 30, July 25, 2006.

Well-to-Wheels Analysis of Advanced Fuel/Vehicle Systems— A North American Study of Energy Use, Greenhouse Gas Emissions, and Criteria Pollutant Emissions, General Motors, Argonne National Lab, and Air Improvement Resource, Inc., May 2005.

“Documentation of Inputs to Macroeconomic Assessment of the Climate Action Team Report to the Governor and Legislature,” California Climate Action Team, January 2006.

- Quantification Methods:**

Well-to-wheels CO2e emission factors from a recent Argonne National Laboratory Study were used to estimate the benefits of offsetting conventional gasoline with starch-based ethanol and cellulosic ethanol for the amount of production needed to fulfill the policy goals. Well-to-wheels emission factors take into account the energy required to produce,

process, and transport each fuel type (i.e., starting with the oil well for gasoline and the crop for starch-based ethanol).

The quantity of diesel fuel projected to be replaced in New Mexico with biodiesel were estimated based on the penetration rates of the above goals. A reduction in CO2 emissions of 41% will be applied to the quantity of diesel fuel replaced by biodiesel. (Hill, et al, July 2006).

For zero-emission vehicles, the amount of VMT from conventional vehicles replaced by VMT from zero emission vehicles was converted to the corresponding amount of fuel consumed. A 100% reduction was applied to the CO2 emissions corresponding to the shift from conventional vehicles to zero-emission vehicles, assuming the zero-emission vehicles are powered by a clean fuel source.

- **Key Assumptions:**

See above.

Key Uncertainties:

Ancillary Benefits and Costs, if applicable:

Feasibility Issues, if applicable:

Status of Group Approval: Pending

Level of Group Support: (Unanimous Consent, Supermajority, Majority, or Minority)

Barriers to consensus (if less than unanimous consent):