Transportation and Land Use Technical Work Group
Summary List of Draft Policy Options (13 Total)

#	Lead Staff	Policy Name	Next Steps
		PASSENGER VEHICLE GHG EMISSION RATES	
TLU-1 *p.2*	LL	California GHG Emission Standards	Quantify for TWG review
TLU-2 *p.3*		Procurement of Efficient Fleet Vehicles	Develop straw and quantify
TLU-3 *p.4*	WS	Incentive/Disincentive Options Bundle	Further develop straw and quantify
		ALTERNATIVE FUELS	
TLU-4a TLU-4b *p.5-11*	MM	Alternative Fuels Use Alternative Fuels Production	Quantify for TWG review
		DEMAND –LAND USE / LOCATION EFFICIENCY	
TLU-5 *p.11*	Ken Hughes	Infill, Brownfield Re-development **	Further develop straw and quantify
TLU-6 *p.11*	WS	Transit-Oriented Development **	Quantify for TWG review
TLU-7 *p.13*	WS	Smart Growth Planning, Modeling, Tools **	Quantify for TWG review
TLU-8 *p.14*		Targeted Open Space and Croplands Protection	Develop straw and quantify
TLU-9 *p.14*		GHG Offset Requirements for Large Developments	Develop straw and quantify
		DEMAND – TRANSIT ALTERNATIVES	
TLU-10 *p.14*	WS	Multimodal Transportation Bundle **	Further develop straw and quantify
		FREIGHT / OFF-ROAD OPTIONS	
TLU-11 *p.16*	MM	Diesel Retrofits	Further develop straw and quantify
TLU-12 *p.18*	MM	Truck Stop Electrification/Anti-Idling	Further develop straw and quantify
TLU-13 *p.20*	MM	Intermodal Freight Initiatives	Further develop straw and quantify

** **Note re Options 5, 6, 7 and 10:** These policy options are currently distinct because they work on different parts of the transportation-land use system. The policy designs proposed under each TLU policy option are for the most part distinct. There is some apparent overlap because the same policy tools can be applied in different places and in different ways. However, while the policy tools can be applied individually, they are mutually supportive and in many cases interdependent. Transit-oriented Development (TLU-6) requires transit (TLU-10). Quantification of the benefits this family of policy options is easier, and the results more robust, if the options are bundled. The TWG may consider combining one or more of these options prior to the quantification stage.

Description of Draft Transportation and Land Use Policy Options

PASSENGER VEHICLE GHG EMISSION RATES
TLU-1 California GHG Emission Standards [Lead: Lewison]

Description: Adopt the California GHG emission standards (also known as the "Pavley" standards or "Clean Car Program") in order to reduce the net emissions of GHG's from passenger vehicle operation.

Design: New cars and light trucks in all states must comply with Federal emission standards, and, generally speaking, states have the choice of adopting a stronger set of standards applicable in California. In 2005, California finalized a set of standards that would require reductions of GHG emissions of about 30 percent from new vehicles, phased in from 2009 to 2016, through a variety of means. The standards must still be approved by USEPA, and face a court challenge.

Goals: Implement program beginning with vehicle model year 2011

Related Policies/Programs in place: Federal regulation of tailpipe emissions and fuel economy.

Types(s) of GHG Benefit(s):

Estimated GHG Savings and Costs Per Ton (for quantified actions):

Data Sources, Methods and Assumptions: In progress. CCS is reviewing NM PIRG report and apply similar methodology if appropriate.

- **Data Sources:**
- **Quantification Methods:**
- **Key Assumptions:**

Key Uncertainties: Fleet turnover rates for light duty vehicles and future patterns of consumer purchase choices between passenger cars and light duty trucks (i.e. SUVs).

Contributing Issues: Some reduction in criteria pollutants is likely.

Feasibility Issues, if applicable: Light Duty Vehicle GHG emissions standards can be met with existing 'off-the-shelf' automotive technologies that are already in the marketplace.

Status of Group Approval: (Pending or Complete)

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

Barriers to consensus (if less than unanimous consent):

TLU-2 Procurement of Efficient Fleet Vehicles

Description: IP

Design: IP

Goals: IP

TLU-3 Incentive/Disincentive Options Bundle [Lead: Will]

Option Category: To Be Quantified

Policy Description: The four components of this option create financial incentives for the purchase and operation of vehicles that emit lower levels of GHG.

Policy Design

1. A "feebate" program that charges a fee on purchases of relatively high-emitting vehicles and gives a rebate on the purchase of relatively low-emitting vehicles. Overall, fees/rebates are revenue neutral.
2. A change in light-duty vehicle registration fees that increases fees for relatively high-emitting vehicles and reduces fees for relatively low-emitting vehicles. Overall, registration fee revenue would remain the same.
3. A change in new vehicle excise taxes that increases taxes for relatively high-emitting vehicles and reduces taxes for relatively low-emitting vehicles. Overall, excise tax revenue would remain the same.
4. A consumer labeling program that provides buyers with better information on the GHG emissions of new vehicles.

Together, these incentives would change the vehicle fleet technology mix through a combination of demand- and supply-side changes. First, the feebates would directly affect consumer choices for vehicle purchases as a result of the financial incentives. Second, the feebates could indirectly affect the types of vehicles that automobile manufacturers choose to put into the marketplace.

- **Goal levels: IP.**
- **Timing:** Implement all four components beginning calendar year 2008?.
- **Parties:** Industry, NM DMV, NM Department of Taxation and Revenue

Implementation method(s):

Existing analysis shows that 90% of the benefits of feebate programs are likely to arise from the manufacturing (supply side) response rather than the consumer (demand side) response. Because individual states such as New Mexico have a small share of the national new vehicle market and thus are unlikely to have a significant influence on the supply side by themselves, states in the southwest have been exploring coordinated multi-state programs. A consistent set of feebate

programs across multiple states may include a large enough share of the US market to have a more significant effect on supply side decisions made by automobile manufacturers.

With that in mind, implementation models include:

1. **Feebates** – New Mexico could adopt a feebate similar to that proposed by ACEEE in *Vehicle Efficiency Incentives: An Update on Feebates for States, 9/05 (www.aceee.org/pubs/t051.htm)* See alternative designs and sample feebate structure on pp. 1-5, and note predicted effects of state vs. national programs.
2. **Registration Fees** – This option is modeled after Bill 1038 in North Carolina legislature [Jenkins] (www.ncleg.net/Sessions/2005/Bills/Senate/PDF/S1038v1.pdf) Assess a vehicle registration fee surcharge that equals $1 times miles traveled divided by a factor based on combined EPA Green Vehicle Guide score (www.epa.gov/emissweb/select.htm). The cleanest cars would have factor of 10,000; the worst would have a factor of 1000. For driver with 10,000 annual miles and cleanest car, the surcharge would be: $1 x 10,000/10,000 = $1. The dirtiest car surcharge would be: $1 x 10,000/1,000 = $10. Current New Mexico registration fees for passenger vehicles are based on the weight and year model of the vehicle, and range from $25.50 to $60.50 per year.
3. **Excise Taxes** – This option is modeled after Bill 2438 in the 2005 Massachusetts legislature [Marzelli] (http://www.mass.gov/legis/bills/house/ht02/ht02438.htm). Direct the Secretary of Taxation and Revenue to set a variable excise tax on new passenger vehicles ranging from 0 to 10 percent, based on the vehicle's CO2 emission rate. The tax would be lowest on the lowest emitting vehicles and highest on the highest emitting vehicles, subject to certain guidelines and constrained by maintaining the current average excise tax of 3 percent (an annual adjustment of the schedule of taxes would maintain this average). The excise tax could be set at zero for vehicles that comply with the European Union GHG standards (for discussion of EU standards, see *Pew Center, Comparison of Passenger Vehicle Fuel Economy & GHG Emission Standards Around the World, 12/04 (*http://www.pewclimate.org/global-warming-in-depth/all_reports/fuel_economy/index.cfm, pp. 11-12. New Mexico currently has a zero excise tax for hybrid cars.
4. **Labeling Program** - This option is modeled after an EU program begun in 2001, and a recent proposal by a researcher at Resources for the Future (http://www.rff.org/rff/News/Features/Combating-Global-Warming-One-Car-at-a-Time.cfm). Require dealers to place a GHG label on each new vehicle that includes the estimated amount of CO2 (in pounds) produced annually and places the vehicle into one of five distinct groupings from "best" to "worst."

Related Policies/Programs in place: While feebate proposals have been described in academic studies, there has been no implementation of a full feebate program in the United States. While there are individual 'gas guzzler tax' and tax incentives for hybrid vehicle purchases, there is not yet any history of an on-the-ground example of a comprehensively implemented feebate program.

Types of GHG Benefits: All GHG exhaust emissions through reduced fuel consumption.

Estimated GHG Savings and Costs Per Ton:

Data Sources, Methods and Assumptions:

- **Data Sources:**
- **Quantification Methods:**
- **Key Assumptions:**

Key Uncertainties: Both the United States Department of Energy and the Canadian Transport Ministry have studied the potential impacts of national level feebate programs in recent years. While these studies have informed the debate about the advantages and disadvantages of national feebate programs, there remains considerable uncertainty about the potential benefits and costs of state or multi-state level feebate programs. There is an important need for a greater understanding of the potential effects of single state or multi-state feebate programs on the types of vehicles that manufacturers put into the marketplace.

Contributing Issues:

Feasibility Issues, if applicable:

Status of Group Approval: (Pending or Complete)

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

Barriers to consensus (if less than unanimous consent):

ALTERNATIVE FUELS
TLU-4a Alternative Fuels Use [Lead: Maureen]

Option Category: To Be 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.

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: TBD

Types(s) of GHG Benefit(s): CO2 emissions are reduced by offsetting the use of petroleum-derived gasoline and diesel.

Estimated GHG Savings and Costs Per Ton (for quantified actions):

Data Sources, Methods and Assumptions:

- **Data Sources:**

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.
A Life Cycle Inventory of Biodiesel and Petroleum Diesel for Use in an Urban Bus, Sheehan et al., May 1998.

- **Quantification Methods:** Well-to-wheels CO2e emission factors from a recent Argonne National Laboratory Study will be 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 will be estimated based on the penetration rates of the above goals. A reduction in CO2 emissions of 78% will be applied to the quantity of diesel fuel replaced by biodiesel. (Sheehan, et al, May 1998).

For zero-emission vehicles, the amount of VMT from conventional vehicles replaced by VMT from zero emission vehicles will be converted to the corresponding amount of fuel consumed. A 100% reduction will be applied to the CO2 emissions corresponding to the shift from conventional vehicles to zero-emission vehicles.

Key Assumptions:

Key Uncertainties:

Contributing Issues:

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):

TLU-4b Alternative Fuels Production [Lead: Maureen]

Option Category: To Be Quantified

Policy Description: Increase production of ethanol from starch and cellulosic-based feedstocks and build appropriate production capacity for biodiesel and renewables-generated electricity and hydrogen fuels for transportation purposes.

The proposed policy action is to provide incentives for the production of various carbon-neutral or zero carbon fuels. These would include ethanol produced from crops (starch based) and agricultural and municipal waste (cellulose based). Use of the ethanol will offset fossil fuel use (gasoline) and will provide a new market for corn and other grains as well as forest and municipal solid wastes. Also, incentives would be provided to build substantial biodiesel, renewably-generated electricity and hydrogen production capacity.

Policy Design: Measured increases in the production of corn, sorghum, switch grass and vegetable oil crops such as canola, peanut, sunflower jojoba, mustard, etc) should be achievable and will provide a diversity of starch and oil-based biofuels production New Mexico. However, any increase in crops grown for energy production must be balanced by considerations of demand on water resources and input of petroleum chemical based products (fertilizers, herbicides, pesticides) needed to increase crop production in addition to increased biofuels processing capacity.

- **Goal levels:** Proposed amount of ethanol produced from starch conversion by 2012 is at least 60 million gallons. This will require doubling current capacity for starch conversion at the single plant in New Mexico. Production should be up to 50 million gallons by 2010 and in excess of 150 million gallons by 2020.

The proposed amount of ethanol produced from cellulose conversion is 50 million gallons by 2015. Due to needed research and development at a national scale, production of ethanol will ramp up slowly until 2010 and will be 1 million gallons by 2010. Accelerated ramp up will boost production to 70 million gallons by 2015 and over 100 million gallons by 2020. Amounts proposed for 2050 are 150 million gallons.

The proposed ramp up for biodiesel is one-third the amount of ethanol.

Home electric charging is already technically feasible. Public recharging facilities would be made available as population of electric vehicles increases.

Home hydrogen appliances and hydrogen fueling stations would be encouraged through market and financial incentives as population of hydrogen vehicles increases.

- **Timing:** See above.
- **Parties:** New Mexico Department of Agriculture (NMDA), New Mexico Agricultural Extension Services (NMAES), and New Mexico Energy, Minerals, and Natural Resources Department (NMEMND, biofuels producers and electric utilities.

Implementation method(s):

Information and education: NMDA and NMAES would develop guidance for grain growers to convert current crops to biofuels-compatible crops and practices to grow these crops. NM Energy, Minerals, and Natural Resources would provide guidance on biofuels, electricity and hydrogen production and use in the state and nation.

Technical assistance: Technical assistance will be required but should be available from programs named in the Energy Policy Act of 2005.

Funding mechanisms and or incentives: Expect private investment (e.g., Abengoa and others) and federal and state tax incentives to produce biofuels from cellulose and starch crops and energy investors in power and hydrogen production.

Market based mechanisms: Expect increased biofuels production to increase demand for starch-based crops (corn, sorghum, soybeans) and cellulose-based feedstock such as agricultural and municipal waste.

Provide payment structure for electric vehicle owners to sell stored power back to grid when needed (V2G). Provide special dedicated roads, preferential road access and parking benefits for NZEVs.

Pilots and demos: Demonstration projects featuring cellulosic-based feedstocks used for ethanol production would be useful to test economics of cellulosic ethanol production. Demonstrations of locally-produced alternative fuels e.g. biodiesel, solar power and hydrogen for local use would help spur rapid public acceptance of the technologies. Pilot for cellulose conversion to ethanol needed to show that technology works and can be implemented. .

Research and development: As above, research on cellulose conversion to ethanol and production of renewable electricity and hydrogen will be required in order to implement cost effective process.

Related Policies/Programs in place: TBD

Types(s) of GHG Benefit(s): CO2 emissions are reduced by offsetting the use of petroleum-derived gasoline and diesel. In order to assess the CO2 benefit, energy requirements of producing biofuels from starch and cellulose need to be compared to the energy requirements of producing gasoline and diesel from crude oil and tar sands. CO2 savings from electric and hydrogen fueled vehicles need also to be quantified.

Electric Vehicle Research: In Arizona where 67 percent of power plants are coal-fired, a study concluded that electric vehicles would reduce greenhouse gases such as CO2 by 71 percent. Likewise, a study conducted by the Union of Concerned Scientists found that electric vehicles in the Northeast would reduce CO emissions by 99.8 percent, volatile organic compounds by 90 percent, NOx by 80 percent, and CO2 by as much as 60 percent.

According to the Calif Air Resources Board, electric vehicles in the LA Basin produce 98% fewer hydrocarbons, 89% fewer oxides of nitrogen, and 99% less carbon monoxide than gasoline vehicles when power plant emissions are taken into account. The LA Dept of Water and Power has determined that electricity generation sufficient to power 100,000 miles of EV driving produces less than 100 pounds of pollutants compared to 3,000 pounds produced by gasoline vehicles.

Estimated GHG Savings and Costs Per Ton:

Data Sources, Methods and Assumptions:

- **Data Sources:** Quantification of reductions and costs to be performed in combination with TLU-4a.
- **Quantification Methods:** Monitor grain crop production and conversion to biofuels, compare against state and federal guidelines on ethanol production. Monitor agricultural wastes available and actually used to produced ethanol.
- **Key Assumptions:** Sufficient research and development will be completed and implemented for efficient cellulose conversion to ethanol by 2010. Increased production of crops will result in increased income for New Mexico farmers. Increased energy crop production will not negatively impact water, land resources and will not result in net increase of petroleum products used to provide the offset.

Key Uncertainties: Offsetting petroleum-based gasoline and diesel fuel with biofuels carries the uncertainty that such is sustainable. Another uncertainty is increasing biofuels production capacity to meet the expected increase in demand. Conversion of cellulose to ethanol depends heavily on development of new technology for the conversion. Without improved efficiency and cost-effectiveness of the conversion process, production of ethanol from cellulose will lag behind the accelerating demand.

The main uncertainty related to costs is in the development of biofuels and renewable-based electricity and hydrogen fuels at a price that is competitive to petroleum products and affordable to the public and business community.

Contributing Issues: Benefits include increased production of energy crops and transportation-oriented energy on New Mexico land and creation of new jobs for local workers as production and demand for energy increases.

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):

DEMAND –LAND USE / LOCATION EFFICIENGY
TLU-5 Infill, Brownfield Re-development

Description: IP

Design: IP

Goals: IP

TLU-6 Transit-Oriented Development [Lead: Will]

Option Category: To Be Quantified

Policy Description: Support shifts to lower emitting mode choices by building compact development around transit stops to meet daily needs by foot, bicycle, or transit and/or by clustering employment centers around transit stops. TOD requires transit; this option is ideally paired with TLU-10, Multi-modal Transportation Bundle.

"What makes TODs relevant now is that New Mexico is embarking on one of the most exciting and extensive transportation revolutions in its history. The Governor's commuter rail project soon will be running through downtown Albuquerque between Belen and Bernalillo in its first phase, and continuing on to Santa Fe in its second phase.
"In addition, the City of Albuquerque recently started a rapid transit bus system, going east and west on Central through the city. The intersection of First and Central in downtown Albuquerque will be the best-served transit location in New Mexico by the end of 2005 when the commuter train starts rolling.
"There are numerous opportunities for TODs in New Mexico, including a number that are being started now before the commuter rail system is operational." [1]

[1] "Livability! The Report of the Governor's Task Force on Our Communities, Our Future", January, 2005, p. 16. http://www.state.nm.us/clients/dfa/Files/LGD/PLAN/PDF/livability.PDF.

Policy Design: Continue to implement, and expand, the TOD-supportive policies in recommended by The Report of the Governor's Task Force on Our Communities, Our Future:[2]

1. Tax Increment Financing (TIF) Districts. The state holds the key to implementation of TIF programs through the extension of its credit resources.
2. State Funding Programs. Provide state funds for affordable housing and parks, both of which help make TODs successful.
3. Support of Local Governments
Amend local government enabling laws to give local governments modern, effective tools they need to make their communities better, more resource-efficient, and more livable.
4. Location of State Facilities. Locate state facilities near transit facilities.
5. State Targeting of Infrastructure Investments
Legislatively appropriated capital outlay funds, the State Public Project Revolving Loan Fund, and other state-funded infrastructure initiatives should be used for projects that encourage walkable and traditional communities, and are supportive of transit.

These goals from the Governor's Report can be further developed to become implementable. For example: State and municipalities establish priority funding areas to target state and local public funds to TOD districts as appropriate for growth. Redirect at least [25] percent of new housing and other development assistance to TOD districts.

- **Goals:** IP
- **Timing:** There are no barriers to beginning to implement each of these recommendations immediately. [What is the status of the "Livability Grants for Communities, Regions, and the State" and other recommendations in the Governor's report?]
- **Parties:** State [which agencies?], MPOs, local jurisdictions

Implementation method(s): [What is the status of the "Livability Grants for Communities, Regions, and the State" and other recommendations in the Governor's report?]

Related Policies/Programs in place: [What is the status of the "Livability Grants for Communities, Regions, and the State" and other recommendations in the Governor's report?]

Types of GHG Benefits: All GHG exhaust emissions through reduced fuel consumption. Additional benefits from reduced building energy use, from more compact development.

Estimated GHG Savings and Costs Per Ton:

Data Sources, Methods and Assumptions:
- **Data Sources:**
- **Quantification Methods:**
- **Key Assumptions:**

[2] "Livability! The Report of the Governor's Task Force on Our Communities, Our Future", January, 2005. http://www.state.nm.us/clients/dfa/Files/LGD/PLAN/PDF/livability.PDF.

Key Uncertainties:

Contributing Issues:

Feasibility Issues, if applicable:

Status of Group Approval: (Pending or Complete)

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

Barriers to consensus (if less than unanimous consent):

TLU-7 Smart Growth Planning, Modeling, Tools [Lead: Will]

Policy Description: The components of this option are some of the most effective policies promoting Smart Growth. These policies reduce GHG emissions by shifting development patterns and reducing vehicle trips and total vehicle miles traveled.

Policy Design:

1. Inform and educate developers on the state's building code for the rehab of older buildings (New Mexico adopted an international rehabilitation code).
2. Make maintenance of infrastructure a priority (Fix it First). Revise any state infrastructure programs (transportation, water, sewer) that fund new systems but not maintenance or upgrades for existing systems.
3. Replace "average cost pricing" for utility services with rate structures that charge full marginal costs for both new infrastructure and for water, sewer, electricity, and telephone service delivery. **[Including roads?]**
4. Use the broad set of state discretionary funding to reward localities that plan, zone and build for higher density development
5. Establish regional service agreements that assign responsibility to a single regional agency for major public services (transportation, water, sewers) in ways that reduce costs, improve intergovernmental coordination and support Smart Growth.
6. Require municipalities to designate areas for development where public infrastructure will be provided, and limit development outside these areas or requiring developers to pay the incremental costs for infrastructure in non-designated areas.
7. Encourage and/or incentivize localities to adopt zoning practices, such as Form Based Codes (FBC), that result in compact mixed-use, walkable communities.
8. Abolish or reduce minimum parking requirements in zoning codes, and allow localities to establish parking maximums.
9. Reduce or eliminate acreage standards for K – 12 schools

[Note: Some are similar to policy design elements in TLU-6, TOD, but would be applied more broadly in this TLU option.]

Goals: IP

Implementation method(s): In general, same as in TLU-6.

Related Policies/Programs in place: [What is the status of the "Livability Grants for Communities, Regions, and the State" recommended by the Governor's report?]

Types of GHG Benefits: All GHG exhaust emissions through reduced fuel consumption.

Estimated GHG Savings and Costs Per Ton:

Data Sources, Methods and Assumptions:
- **Data Sources:**
- **Quantification Methods:**
- **Key Assumptions:**

Key Uncertainties:

Contributing Issues:

Feasibility Issues, if applicable:

Status of Group Approval: (Pending or Complete)

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

Barriers to consensus (if less than unanimous consent):

TLU-8 Targeted Open Space and Croplands Protection

Description: IP

Design: IP

Goals: IP

TLU-9 GHG Offset Requirements for Large Developments

Description: IP

Design: IP

Goals: IP

DEMAND – TRANSIT ALTERNATIVES
TLU-10 Multimodal Transportation Bundle [Lead: Will]

Policy Description: The New Mexico 2025 Statewide Multimodal Transportation Plan establishes objectives and implementation strategies that aim to shift the State's focus from roads to an integrated, multimodal system. This option lays out several key actions required to realize

the potential for GHG reductions implicit in the State's plan and that further promote a multimodal transportation systems.

Support shifts in passenger transportation mode choice (auto, bus, rail, bike, pedestrian, etc.) to lower emitting choices, and ensure that transportation serves smart growth development (see TLUs-5, 6, 7).

Policy Design: Includes:

1. Make GHG-optimal use of CMAQ funds;
2. Expand transit infrastructure (rail, bus, BRT);
3. Improve existing transit service,
4. Improve transit promotion and marketing (including tax-free and employer-paid Commuter Benefits, and Parking Cash Out);
5. Improve bike and pedestrian infrastructure;
6. Explore additional commuter rail using existing rail corridors;
7. Review all proposed transportation projects for multi-modal flexibility (e.g., add or reserve room for BRT or light rail if feasible);
8. Conduct research into new transportation technologies and urban planning techniques.

- **Goals:** IP
- **Timing:** There are no barriers to beginning to implement each of these recommendations pre-2010.
- **Parties:** Department of Transportation, Regional Transportation Districts, Metropolitan Planning Organizations, Regional Planning Organizations, municipalties.

Implementation method(s):

Information and education: Expand the State's use of Intelligent Transportation Systems *(2025 Plan, p. 21)*

Technical assistance: Provide ample technical assistance to MPOs, RPOs, and RTDs for implementation of all aspects of the plan, including application of site assessment tools identifying multimodal needs and opportunities within the Strategic Transportation Corridors identified in the plan. *(2025 Plan, p. 14)*

Promote transportation performance measures that explicitly balance mobility and access. Discourage measures based solely on speed-based level of service. *(not explict in plan, but balance of mobility and access results in less sprawl and VMT)*

Funding mechanisms and or incentives:

RTDs – Aggressively support and aid the creation of Regional Transportation Districts (RTDs). New Mexico has authorized created of RTDs that are a critical means of expanding mass transit. RTDs can sell bonds for capital projects, and member governments can levy taxes for operation and maintenance (subject to voter approval). *(2025 Plan, p. 9, 37)*

Expand Rail Service – secure funding for rail passenger service to central New Mexico (within Albuquerque metro area and between it and Santa Fe) by the end of 2008. *(2025 Plan, p. 9)*

Non-Motorized Facilities - Improve and expand transportation facilities with pedestrian, bicycle, and transit-oriented features. *(2025 Plan, p. 9)*

Mode Shift – Integrate needs analysis, planning, and funding to promote the shift of long distance freight from roads to rail or airfreight, including rail initiatives in Governor Richardson's Investment Partnership (GRIP) *(2025 Plan, p. 9, 15)*

Related Policies/Programs in place:

Types of GHG Benefits: All GHG exhaust emissions through reduced fuel consumption.

Estimated GHG Savings and Costs Per Ton:

Data Sources, Methods and Assumptions:
- **Data Sources:**
- **Quantification Methods:**
- **Key Assumptions:**

Key Uncertainties:

Contributing Issues:

Feasibility Issues, if applicable:

Status of Group Approval: (Pending or Complete)

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

Barriers to consensus (if less than unanimous consent):

FREIGHT / OFF-ROAD OPTIONS
TLU-11 Diesel Retrofits [Lead: Maureen]

Option Category: To Be Quantified

Policy Description: Apply diesel retrofit controls to or retire diesel engines with relatively high emission rates.

Policy Design: This program would focus on applying diesel retrofit control devices or retiring heavy-duty diesel engines from small owners/operators. Financial incentives and small business assistance would be used to assist small owners/operators to apply for grants or loans available for this purpose. The focus is on engines that will continue to be in use for a number of additional years. This measure could also include the conversion of older diesel engines to run on biodiesel fuel.

- **Goal levels:** Retrofit, retire, or convert to biodiesel fuel 25% of heavy-duty diesel engines with at least 4 years of remaining vehicle life through model year 2006 by 2010.

- **Timing:** See goal levels.
- **Parties:** Industry, NMED, independent and small truck owners/operators.

Implementation method(s):

Information and education: An information and education component will be needed to provide truck and bus owners, school districts, and municipal organizations with information regarding the significant GHG black carbon emission reductions that could be achieved by retrofitting or retiring certain truck or bus engines with high annual emissions and replacing them with vehicles meeting the new emission standards. Provide information on potential funding partners, grants, or loans available from a number of organizations for this purpose.

Funding mechanisms or incentives: Develop a loan or grant program allow small truck owners to accelerate new vehicle purchases or to apply retrofit technologies to their fleets.

Related Policies/Programs in place: TBD

Types(s) of GHG Benefit(s): This program will reduce black carbon emissions.

Estimated GHG Savings and Costs Per Ton (for quantified actions):

Data Sources, Methods and Assumptions:

- **Data Sources:**

"Diesel Retrofit Technology and Program Experience," prepared for USEPA by Emissions Advantage, LLC, July 29, 2005.

"Texas Emission Reduction Plan Assessment in the Dallas Fort-Worth Area, Final Report," ENVIRON International Corporation, prepared for Houston Advanced Research Center, November 12, 2004.
Data from EPA's MOBILE6.2 model to estimate the mix of Class 8 HDDV VMT, PM10 emissions, and number of vehicles by model year.
"RIA Local Mobile Measures Methodology," EPA memo on the estimation of potential local control measures, May 2006.
Data from USDOE/EIA *Annual Energy Outlook 2005* to estimate the amount of fuel consumed annually per truck.
Information from California's Carl Moyer program

- **Quantification Methods:**
- **Key Assumptions:**

Key Uncertainties:

Contributing Issues: A diesel retrofit/replacement program will also reduce emissions of PM, NOx, and toxics.

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):

TLU-12 Truck Stop Electrification/Anti-Idling [Lead: Maureen]

Option Category: To Be Quantified

Policy Description: Encourage the use of innovative truck stop electrification and other measures to reduce long-term idling of heavy-duty diesel engines. Anti-idling control measures reduce fuel consumption and emissions from stationary freight vehicles (potentially wasted energy). In addition to truck stop electrification, other available technologies that reduce heavy-duty vehicle idling include automatic engine shut down/start up system controls; direct fired heaters (for providing heat only); and auxiliary power units.

Policy Design: Set up truck stop electrification stations at key truck stops and truck rest areas along the major highways in New Mexico. Electricity for powering these stations should come from clean sources, such as solar panels that would cover the trucks and also provide shade. Require truck stops to purchase renewable energy certificates. Consider coordination of this measure with Arizona and other neighboring States. Consider adoption of a statewide ban on idling by heavy-duty commercial trucks and buses.

- **Goal levels:** Reduce fuel consumption from idling of heavy-duty diesel vehicles by 50% by year 2010, and by 80% by 2020.
- **Timing:** See goal levels.
- **Parties:** Industry, NMED, Counties, truck stop owners.

Implementation method(s):

Information and education: Provide information to fleet carriers, shippers, retailers, bus companies, school districts, and others involved in the diesel fleet industry indicating the economic benefits, as well as the environmental benefits, of reducing or eliminating idling. Emphasize the fuel savings benefits, reductions in toxic emissions, and reduced engine wear associated with reducing idling. Also, identifying best practices within the industry and recognizing companies with these best practices in place within New Mexico should be used to encourage companies to select these carriers for their shipments. Develop outreach materials with cost benefits information and toxic diesel health impacts. Outreach materials should also be geared toward making the general public aware of the GHG, toxics, and fuel-saving benefits of eliminating idling on personal vehicles, as well as on trucks and buses.

Technical assistance: Coordinate with anti-idling product manufacturers to organize workshops/outreach programs to regulated community to let them know of technological options that provide alternatives to the need for idling including products for cabin comfort, power for other functions (e.g., refrigerated trucks), and engine warm-up.

Funding mechanisms and or incentives: Propose legislation to partially fund idling technology loan grants for innovative truck stop electrification, focusing grants on high idling areas.

Voluntary and or negotiated agreements: Encourage participation in EPA's SmartWay Transport Partnership (or similar programs).

Codes and standards: Develop a statewide ordinance banning idling by heavy-duty diesel commercial trucks and buses

Pilots and demos: Investigate availability of funding for a pilot project demonstrating the use of solar-powered truck-stop electrification. Evaluate the effectiveness of the pilot program before implementing on a broader scale.

Related Policies/Programs in place: N/A

Types(s) of GHG Benefit(s):

Reducing idling will reduce black carbon emissions, as well as all other GHG exhaust emissions (CO2, CH4, N2O) through reduced fuel consumption. However, it is important to also ensure that any technologies used to reduce idling have lower emissions than the diesel truck idling emissions they are replacing.

Estimated GHG Savings and Costs Per Ton (for quantified actions):

Data Sources, Methods and Assumptions:

- **Data Sources:**
  American Transportation Research Institute, "Idle Reduction Technology: Fleet Preferences Survey," February 2006 for technology costs.
  EPA Smartway Transportation Partnership (http://www.epa.gov/otaq/smartway/idlingtechnologies.htm#truck-mobile) for technology costs.
  "Analysis of Tehcnology Options to Reduce the Fuel Consumption of Idling Trucks," ANL/ESD-43, Argonne National Laboratory, Transportation Technology R&D Center, June 2000 for information on technology impacts.
  Data from EPA's MOBILE6 model to estimate the proportion of CO2 emissions attributable to Class 8 trucks.
  Data from USDOE/EIA *Annual Energy Outlook 2005* to estimate the amount of fuel consumed annually per truck.
- **Quantification Methods:** TBD
- **Key Assumptions:** This analysis will assume idle reductions are achieved only by Class 8 diesel truck population; these trucks idle for an average of 6 hours per day; they consume 0.8 to 1.2 gallons of diesel per hour during idling; and that a 50 (by 2010) or 80 (by 2020) percent reduction of diesel idling from these Class 8 trucks will be achieved.
  The cost analysis will factor in the costs of a combination of idling technology, including truck stop electrification, with a fuel savings (currently estimated at $2.40 per gallon of diesel saved) offsetting a portion of the technology costs.

Program administration costs and enforcement costs will not be factored into the cost analysis. Reduced vehicle maintenance costs will not be factored into the analysis.

Key Uncertainties:

Contributing Issues, if applicable:

Reductions in idling will also reduce emissions of toxics, NOx, and PM. California estimates that 70 percent of toxic risk comes from diesel engines.

Idle emission reductions will reduce fuel consumption, thus leading to a cost benefit from reduced operating costs.

Additional costs are associated with on-board idle reduction technologies, but fuel savings over time typically lead to a net savings.

Feasibility Issues, if applicable:

Status of Group Approval: (Pending or Complete)

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

Barriers to consensus (if less than unanimous consent):

TLU-13 Intermodal Freight Initiatives [Lead: Maureen]

Option Category: To Be Quantified

Policy Description: Transfer freight carried over the roadway system to rail wherever possible.

Policy Design: Carrying freight by rail rather than truck can significantly reduce emissions and fuel consumption, while at the same time reducing congestion on major roadways. A number of small abandoned rail lines already exist in New Mexico. A primary goal of this measure is to restore those lines, which will allow freight to be carried by rail directly to a number of warehouses and industrial sites in existing developed areas. This would also provide an incentive to reduce sprawl from these businesses. Electrifying rail should also be considered.

- **Goal levels:** Reduce VMT from heavy-duty freight trucks by xx% through the transfer of freight to rail.
- **Timing:**
- **Parties:**

Implementation method(s): TBD.

Related Policies/Programs in place: [TBD]

Types(s) of GHG Benefit(s):

Estimated GHG Savings and Costs Per Ton (for quantified actions): TBD.

Data Sources, Methods and Assumptions:

- **Data Sources:** Information from American Association of Railroads. "Industry Options for Improving Ground Freight Fuel Efficiency—Technical Report," prepared for USEPA by ICF Consulting, 2002.
- **Quantification Methods:** TBD
- **Key Assumptions:**

Key Uncertainties:

Contributing Issues, 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):