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Memo

To: New Mexico Climate Action Plan Advisory Group (CCAG) Members
 From: Center for Climate Strategies (CCS)
 CC: New Mexico Environment Department (NMED)
 Re: Draft Policy Options for Consideration
 Date: April 26, 2006

This document provides tables of the 63 draft policy options for consideration at our upcoming CCAG meeting. At our meeting we hope to agree on next steps for action on these individual policy proposals by placing them in one four categories for further action (below). We have suggested a course of action for each as a starting place for our discussion, and will ask the CCAG for approval of this work plan, with modifications as needed. To prepare, it would be helpful for you to be familiar with the detailed descriptions of draft policy options and suggested work plan in this document. These will be provided as handouts at the meeting and are now posted at: www.nmclimatechange.us for CCAG meeting (#4).

Types of Next Steps For Draft Policy Options

Option Category	Status Next Steps	Number of Options
1. <u>Quantifiable options</u> that are now endorsed by the CCAG.	<u>Quantify for TWG review.</u> The Center for Climate Strategies (CCS) can be authorized to quantify benefits and costs as well as draft final language for presentation in the next round of TWG discussions.	33
2. <u>Difficult to quantify options</u> that are now endorsed in concept by the CCAG.	<u>Draft recommendation without quantification.</u> CCS can be authorized to develop draft final language for presentation in the next round of TWG discussions.	11
3. <u>Quantifiable options that lack a clear straw proposal</u> at	<u>CCS develops straw and quantifies.</u> CCS can be authorized to develop a straw proposal based on examples of actions	19

this stage but are now endorsed in general concept by the CCAG.

provided by others states, and to present estimated benefits and costs in the next round of TWG discussions. Informal discussions with TWG members may be used to further specify key parameters.

4. Options that the CCAG does not adequately endorse at this time and require further consideration by the TWG's and CCAG.

Discuss further in the TWG. These options may require further analysis or the development of alternative approaches for consideration by the TWG's in their next discussions.

To be determined in the CCAG meeting

Table 1.
Current Tally of Draft Policy Options

TWG	# Current Draft Policy Options
Energy Supply	14
RCI	20
Transportation and Land Use	12
Agriculture and Forestry	14
Cross Cutting Issues	3
Total	63

Table 2.

Summary of Tables to Follow:

Table #	Contents
3	<ul style="list-style-type: none">• Energy Supply Technical Work Group - Summary List of Draft Policy Options
4	<ul style="list-style-type: none">• Description of Energy Supply Technical Work Group Draft Policy Options
5	<ul style="list-style-type: none">• Residential, Commercial, Industrial Work Group - Summary List of Draft Policy Option
6	<ul style="list-style-type: none">• Description of Residential, Commercial, Industrial Technical Work Group Draft Policy Options
7	<ul style="list-style-type: none">• Transportation and Land Use Technical Work Group - Summary List of Draft Policy Options
8	<ul style="list-style-type: none">• Description of Transportation and Land Use Technical Work Group Draft Policy Options
9	<ul style="list-style-type: none">• Agriculture and Forestry Technical Work Group - Summary List of Draft Policy Options
10	<ul style="list-style-type: none">• Description of Agriculture and Forestry Technical Work Group Draft Policy Options
11	<ul style="list-style-type: none">• Cross Cutting Issues Technical Work Group - Summary List of Draft Policy Options
12	<ul style="list-style-type: none">• Description of Cross Cutting Technical Work Group Draft Policy Options

Table 3.

**Energy Supply Technical Work Group
Summary List of Draft Policy Options (14 Total)**

#	Policy Name	Potential Next Steps
RENEWABLE ENERGY		
ES-1	Mandate(s) for Renewable Energy (RPS, etc.)	Quantify for TWG review
ES-2	Financial Incentives for Distributed Renewables	Quantify for TWG review (jointly with RCI)
ES-3	Renewable Energy Transmission and Storage	Quantify for TWG review
ES-4	Financial Incentives for Centralized Renewables	Quantify for TWG review
ES-5	R&D including Energy Storage	Draft recommendation without quantification
CENTRALIZED NON-RENEWABLE ENERGY		
ES-6	Advanced Coal/Fossil Technologies (e.g., IGCC with carbon capture)	Quantify for TWG review
ES-7	Nuclear Relicensing & Upgrading	Draft recommendation without quantification
GRID AND DEMAND-SIDE POLICIES		
ES-8	Incentives and Barrier Reductions for Combined Heat & Power (CHP)	CCS develops straw and quantifies (jointly with RCI TWG)
ES-9	Demand-Side Management, Energy	CCS develops straw and quantifies

Efficiency, and Integrated Resource
Planning (IRP)

(jointly with RCI TWG)

(Broad demand management of electricity
and natural gas, focused on consumption,
not peaks)

ES-10 Transmission Capacity and Corridors Quantify for TWG review

OIL AND GAS POLICIES

ES-11 CO2 Capture and Storage or Reuse (CCSR)
in oil & gas and other operations; includes
storage or reuse of power sector CO2 (see
ES-6) Draft recommendation without
quantification

ES-12 Methane reduction in oil & gas operations –
Best Management Practices (BMPs) &
Partner Reduction Opportunities (PROs) Quantify for TWG review

ES-13 CO2 reduction from fuel combustion in oil
& gas operations CCS develops straw and quantifies

EMISSIONS POLICIES

ES-14 GHG Cap & Trade (includes offsets policies) Quantify for TWG review (jointly
with RCI TWG)

Table 4.

Description of Draft Energy Supply Policy Options

RENEWABLE ENERGY

ES-1 Mandate(s) for Renewable Energy (RPS, etc.)

Description: A renewable portfolio standard (RPS) is a requirement that utilities must supply a certain percentage of electricity from renewable energy sources. Utilities can meet this requirement by purchasing or generating renewable-based electricity or by purchasing renewable energy credits (RECs). By providing this flexibility, a market in RECs is created, which incentivizes companies that are best able to generate renewable energy. A “safety valve” can be put in place that limits the price of RECs at a specified level by allowing utilities to purchase RECs from the state at the “safety valve” price.

Design: Ramp up the existing 10% RPS starting in 2011 according to the following three scenarios below.

- **Goal levels:**
 - 0.5 % per year to 2021
 - 1% per year to 2021
 - 2% per year to 2021
- **Timing:** As noted above.
- **Parties:** Utilities.

ES-2 Financial Incentives for Distributed Renewables

Description: This policy option reflects a suite of financial incentives to encourage investment in distributed renewables. Financial incentives for distributed renewables could include: (1) direct subsidies for purchasing/selling distributed renewable technologies given to the buyer/seller;¹ (2) tax credits or exemptions for purchasing/selling distributed renewable technologies given to the buyer/seller; (3) tax credits or exemptions for operating distributed

¹ Direct subsidies or incentives would need to be cleared through the New Mexico Attorney General’s Office to ensure that they comport with the anti-donation clause of the New Mexico Constitution.

renewable energy facilities; (4) feed-in tariffs, which provide direct payments to distributed renewable generators for each kWh of electricity generated from a qualifying renewable facility; (5) tax credits for each kWh generated from a qualifying renewable facility; (6) R&D funding to support development of distributed renewable technologies. New Mexico has been striving toward capital buy downs and production incentives such that there is full payback over 25-30 years to those who install distributed renewable options.

Design: Provide incentives for distributed renewable technologies such that the payback period will reflect the following three scenarios:

- **Goal levels:**
 - 25 years (PV only, PNM only)
 - 25 years (PV, wind and biomass; all utilities)
 - 10 years (PV, wind and biomass; all utilities)
- **Timing:** Adopted ASAP; accomplished per above.
- **Parties:** Financial incentives would be administered by a state agency to individuals, commercial enterprises, and industrial enterprises.
- **Other:** A source of funds to cover these financial incentives would need to be determined. Potentially link incentives to or condition them upon the manufacture within New Mexico of associated equipment

ES-3 Renewable Energy Transmission and Storage

Description: Renewable energy from wind and solar is intermittent by nature, while fossil fuel technologies can be called upon to meet demand as needed. A renewable energy transmission and storage authority (RETA) could be created to assist in the development of energy storage technologies and to foster the development of transmission capacity necessary to take advantage of renewable resources.

Design: This recommendation is similar to HB-111 as introduced in the New Mexico Legislature in 2006.

- **Goal levels:** This policy option is difficult to quantify, but the TWG suggested it be analyzed by assuming that, under it, an additional 4,000 MW of wind generation would be built by 2020, along with the necessary transmission.
- **Timing:** As noted above.
- **Parties:** TBD

A RETA would be created as an independent entity, and work with utilities to build new transmission capacity and private companies to develop and deploy storage technologies

ES-4 Financial Incentives for Centralized Renewables

Description: This policy option reflects a suite of financial incentives to encourage investment in centralized renewables. Financial incentives for distributed renewables could include: (1) direct subsidies for purchasing/selling centralized renewable technologies given to the buyer/seller;² (2) tax credits or exemptions for purchasing/selling centralized renewable technologies given to the buyer/seller; (3) tax credits or exemptions for operating centralized renewable energy facilities; (4) feed-in tariff, which is a direct payment to centralized renewable generators for each kWh of electricity generated from a qualifying renewable facility; (5) tax credits for each kWh generated from a qualifying renewable facility; (6) R&D funding to support development of centralized renewable technologies.

Design: Implement the production tax incentives below. Also, eliminate the existing 2 million MWh/year cap; lower the facility size threshold from 10 MW to 1 MW, and extend the tax credit to apply to personal income taxes as well as corporate income taxes.

- **Goal levels:**
 - Solar (including PV and Concentrating Solar Power) = 4 cents per kWh
 - Biomass = 2 cents per kWh
 - Wind = 1 cent per kWh
- **Timing:** ASAP
- **Parties:** A state agency would administer or supervise the financial incentives, and utilities, commercial enterprises, industrial enterprises would receive them.
- **Other:** A source of funds to cover these financial incentives would need to be determined.

Potentially link incentives to or condition them upon the manufacture within New Mexico of associated equipment.

ES-5 R&D including Energy Storage

Description: R&D funding can be targeted toward a particular technology or group of technologies as part of a state program with a mission to build an industry around that technology in the state and/or to set the stage for adoption of the technology for use in the state. Funding can also be given for demonstration projects to help commercialize technologies that have already been developed but are not yet in widespread use.

Design: Establish an R&D program tasked with the development and deployment of concentrating solar energy technologies, hydrogen-based energy storage technologies, and

² Direct subsidies or incentives would need to be cleared through the New Mexico Attorney General's Office to ensure that they comport with the anti-donation clause of the New Mexico Constitution.

compressed air storage.

- **Goal levels:** The volunteer group suggested that this option not be quantified.
- **Timing:** TBD
- **Parties:** The State of New Mexico would implement the R&D program in conjunction with private companies in a public-private partnership model.

CENTRALIZED NON-RENEWABLE ENERGY

ES-6 Advanced Coal/Fossil Technologies (e.g., IGCC with carbon capture)

Description: Advanced fossil technologies are more efficient than conventional fossil technologies and, therefore, have lower CO₂ emission rates. Advanced fossil technologies combined with carbon capture and sequestration or reuse (CCSR) could enable significantly lower zero CO₂ emissions. Policies to promote advanced fossil technologies for new coal plants may include mandates, incentives, or a combination of the two.

Design: The volunteer group suggested as a first step analyzing the cost if all **new** coal plants in New Mexico (reflecting new demand growth and retirement of old fossil facilities) were to be IGCC with CCSR at (1) 60% capture and storage, and (2) 90% capture and storage. The group suggested that the analysis assume there would be no redundant gasifiers. The consensus of the group was that utilities could successfully manage reliability through other plants in the system rather than building in extra reliability for individual plants with redundant gasifiers.

- **Goal levels:** As noted above.
- **Timing:** As new fossil plants are built.
- **Parties:** Utilities would meet the IGCC requirement.

ES-7 Nuclear Relicensing & Uprating

Description: Nuclear relicensing extends the life of existing nuclear facilities. Uprating enables more power to be generated at an existing nuclear facility, typically by improvements on the steam side of the operation. These are important issues in states with nuclear power plants. New Mexico does not have any existing nuclear power plants, but the state may wish to become involved in discussions of relicensing and uprating in surrounding states if these activities affect the importation of nuclear power to New Mexico. The TWG at its March 31, 2006 meeting suggested that the CCAG also consider analysis of new nuclear plant siting and power capacity be developed in New Mexico.

Design: TBD

- **Goal levels:** TBD
- **Timing:** TBD
- **Parties:** Utilities

GRID AND DEMAND-SIDE POLICIES

ES-8 Incentives and Barrier Reductions for Combined Heat & Power (CHP)

Description: Financial incentives for combined heat & power (CHP) could include: (1) direct subsidies for purchasing/selling CHP systems given to the buyer/seller; (2) tax credits or exemptions for purchasing/selling CHP systems given to the buyer/seller; (3) tax credits or exemptions for operating CHP systems; (4) feed-in tariff, which is a direct payment to CHP owners for each kWh of electricity or BTU of heat generated from a qualifying CHP system; and (5) tax credits for each kWh or BTU generated from a qualifying CHP system. There are also numerous barriers to greater penetration of combined heat and power (CHP), including inadequate information, institutional barriers, high transaction costs because of small projects, high financing costs because of lender unfamiliarity and perceived risk, "split incentives" between building owners and tenants, and utility-related policies like interconnection requirement, high standby rates, exit fees, etc. The lack of standard offer or long-term contracts, payment at avoided cost levels, and lack of recognition for emissions reduction value provided also creates obstacles.

Design: The TWG suggested that we look at scenarios for possible CHP penetration as a result of removing barriers. Note: the assumed penetration rate of CHP is just that, an assumption. Empirically relating barrier removal and penetration of CHP is beyond the scope of this analysis.

- **Goal levels:** Ramp up CHP penetration from 2008 to 2020 to equal 3% of total fossil generation.
- **Timing:** See above.
- **Parties:** Depends on which barrier(s).
- **Other:** Note: Analysis of this option is a "what if" exercise assuming CHP penetration of 3% with barrier removal, and determining resulting emission reductions and costs.

The ES TWG anticipates additional input from the RCI TWG, leading to a joint recommendation.

ES-9 Demand-Side Management, Energy Efficiency, and Integrated Resource Planning

Description: This policy option involves increasing the efficiency of electricity use in New Mexico through programs, funds, and/or requirements. This option focuses on what are typically

termed DSM activities, and is designed to work in tandem with other strategies under consideration by the RCI and ES TWGs that can also encourage efficiency gains.

Many different policy configurations are possible³, including various combinations of energy savings targets, utility spending targets, public benefit charges⁴, tariff riders or enabling legislation (recently enacted in NM), and incorporation of energy efficiency in integrated resource planning (IRP) processes, among others.

Design: [Not yet finalized] The ES TWG and RCI TWG are working together to finalize the design of this policy option for analysis. The ES TWG notes that the analysis should assess the cost-effectiveness of underlying activities using an appropriate positive value for carbon (i.e., for avoided carbon emissions) rather than a value of zero.

- **Goal levels:** TBD
- **Timing:** TBD
- **Parties:** TBD

ES-10 Transmission Capacity and Corridors

Description: Satisfying the long-term demand for electricity requires not only new generating capacity, along with demand-side measures, but also measures to improve transmission to reduce line losses and bottlenecks and enhance throughput. Entirely new transmission capacity may also be necessary, though siting new transmission lines can be difficult due to their cost and their actual or perceived impact on health, environment, and the use, enjoyment, and value of property.

Design: The TWG suggested that all new construction and retrofit efforts on the transmission grid incorporate advanced composite conductor technologies, capacitance technologies, grid management software, and other technologies that may become available to increase transmission line carrying capacity as much as threefold. The group suggested a simple analysis accounting for the cost of new and retrofit transmission lines with this technology, and calculating resulting lower line losses and accompanying reductions in GHG emissions.

- **Goal levels:** As noted above.
- **Timing:** Paralleling forecast load growth.
- **Parties:** Transmission and distribution utilities.

³ For an overview of activity in other states, see USDOE/DSIRE summary tables
<http://www.dsireusa.org/summarytables/>

⁴ Public benefit charge funds are in place in about 15 states, typically adopted as part of electricity restructuring policy/legislation. These funds are collected as surcharge on utility bills, and are typically directed to a mix of energy efficiency, renewable energy, and low-income programs.

OIL AND GAS POLICIES

ES-11 CO₂ Capture and Storage or Reuse (CCSR)

Description: Carbon capture and storage or reuse (CCSR) involves capturing carbon and either (1) sequestering it in a geologically sound reservoir or (2) reusing the carbon to aid in natural gas extraction or as a feedstock for industrial processes, and perhaps eventually as a feedstock that when combined with water can be reformed into liquid fuels. Carbon can and is captured in natural gas extraction; natural gas can have only up to 2.5% CO₂, and some gas fields have a much higher concentration. Excess CO₂ is removed and is currently typically emitted to the atmosphere. Carbon can also be captured in the process of gasifying coal to liquid fuels. This process is well established in the chemical industry and forms the basis for Integrated Gasification Combined Cycle electricity generating plants. Potentially, carbon could also be captured directly from the atmosphere.

Policies to encourage CCSR could include a state agency or department within an existing agency tasked with promoting CCSR, evaluation studies to identify geologically sound reservoirs, R&D funding to improve CCSR technologies, financial incentives to capture and store carbon or to capture and reuse it, and/or mandates to capture and store carbon or capture and reuse it.

Design: The TWG proposes to task an existing or new state agency to provide technical resources for carbon sequestration, including an evaluation of suitable storage sites, and possibly the administration of financial incentives. The group has not decided whether implementation should include financial incentives, mandatory measures, or both. Further work is needed to identify regulatory, technical, and economic factors affecting the use of acid gas injection in New Mexico.

The group recommended separate analyses of CCSR for power plants and the oil and gas industry. With respect to the oil and gas industry, the group suggested focusing on acid gas reinjection at natural gas processing plants. In addition, carbon emissions from fluid catalytic cracking units at oil refineries should be evaluated. With respect to the electrical utility industry, the group recommended focusing on carbon sequestration from IGCC and advanced pulverized coal plants, since there are no known commercial examples of carbon sequestration from conventional pulverized coal power plants. The TWG did not offer any specific recommendations for quantification.

- **Goal levels:** TBD
- **Timing:** TBD
- **Parties:** As noted above.

ES-12 Methane Reduction in Oil & Gas Operations (BMPs & PROs)

Description: There are a number of ways in which methane emissions in the oil and gas industry can be reduced. Natural gas consists primarily of methane, so any leaks during production, processing, and transportation/distribution should be addressed. In addition to reducing potent GHG emissions, stopping these leaks is economically beneficial because it prevents the waste of valuable product. The EPA Natural Gas STAR program offers numerous methods of preventing leaks. These methods, called Best Management Practices (BMPs) and Partnership Reduction Opportunities (PROs), are divided by industry sub sector (production, processing, and transportation/distribution).⁵

Design: The proposed policy action would implement all BMPs and PROs through incentives. The TWG suggested that a 40-60% improvement in capturing vented methane by 2012 was a target that could reasonably be achieved. The TWG suggested that by 2050, it might be possible to capture 90–95% of vented methane.

- **Goal levels:** As noted above.
- **Timing:** As noted above.
- **Parties:** Oil and gas production, processing, and transportation/distribution companies.

ES-13 CO2 Reduction from Fuel Combustion in Oil & Gas Operations

Description: There are a number of ways in which CO2 emissions in the oil and gas industry can be reduced, including (1) new efficient compressors, (2) optimize gas flow to improve compressor efficiency, (3) improve performance of compressor cylinder ends, (4) capture compressor waste heat, (5) replace compressor driver engines, and (6) waste heat recovery boilers. Policies to encourage these practices include education/information exchange, financial incentives, and mandates or standards that require certain practices.

Design: [Not yet finalized] Given the wide range of technologies and costs involved, the TWG agreed to focus on three categories: (1) compressor efficiency improvements, (2) waste heat recovery for compressors and boilers, and (3) replacement of gas-driven compressors with electrical generators. Of these three, the TWG suggested focusing on incentives to improve the efficiency of compressors, including deployment of CHP systems that could sell excess power back to the grid, as well as electrically powered compressors.

- **Goal levels:** TBD
- **Timing:** TBD
- **Parties:** Oil and gas production, processing, and transportation/distribution companies.

⁵ For a complete list, see <http://www.epa.gov/gasstar/techprac.htm#tabnav>

EMISSIONS POLICIES

ES-14 GHG Cap & Trade (includes offsets policies)

Description: A cap and trade system is a market mechanism in which GHG emissions are limited or capped at a specified level, and those participating in the system can trade permits (a permit is an allowance to emit one ton of CO₂). By allowing trading, participants with lower costs of compliance can over comply and sell their additional reductions to participants for whom compliance costs are higher. In this fashion, overall costs of compliance are lower than they would otherwise be.⁶ Among the important considerations for New Mexico with respect to a cap and trade program are the sources and sectors to which it would apply, the level of the cap, how allocations would be distributed, what offsets would be allowed, and over what region the program would be implemented (e.g., nationally, regionally, etc.).

Design: Recognizing that its purpose is to generally assess such a policy, not to define the details of a regulatory program, the TWG suggests: (a) Incorporating the Governor's targets as the cap; (b) evaluating such a cap over the WECC states (subject to minor variations as needed to facilitate analysis) and on a national basis; and if possible, (c) seeing how California's new procurement decisions may factor into the program. With respect to (b), the TWG further suggested that this evaluation be done applicable to (1) all sectors (i.e., an economy-wide approach), and (2) the power sector alone.

- **Goal levels:** As noted above.
- **Timing:** TBD
- **Parties:** As noted above.

⁶ The Climate Action Team in California recently assembled a good discussion of cap and trade design issues. It can be referenced at: http://www.climatechange.ca.gov/climate_action_team/reports/2005-12-08_CAP+TRADE_REPORT.PDF

Table 5.

Residential Commercial and Industrial Technical Work Group

Summary List of Draft Policy Options (20 Total)

#	Policy Name	Potential Next Steps
RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL		
1-RCI	Demand Side Management (DSM) Programs, Energy Efficiency Funds, and/or Energy Efficiency Requirements for Electricity	Quantify for TWG review
2-RCI	Demand Side Management (DSM) Programs, Energy Efficiency Funds, and/or Energy Efficiency Requirements for Natural Gas and Other Fuels	Quantify for TWG review
3-RCI	Regional Market Transformation Alliance	Quantify for TWG review
4-RCI	State Appliance Standards	Quantify for TWG review
5-RCI	Green Power Purchasing	Quantify for TWG review
6-RCI	Rate Design (Including Time of Use Rates, Increasing Block Rates, and Seasonal Use Rates)	Quantify for TWG review or Draft recommendation without quantification (TBD)
7-RCI	Improved Building Codes	Quantify for TWG review
8A-RCI	Building Energy Performance Requirements for State-funded and Other Government Buildings (“Reach Codes”)	Quantify for TWG review

8B-RCI	Building Energy Performance Promotion and Incentives for Energy Performance Enhancements (Attaining “Reach Codes”) in Non-Government Buildings (Including Existing Buildings)	Quantify for TWG review
9-RCI	Government Agency Requirements and Goals (including procurement) -- Focus on Operations	Quantify for TWG review
10-RCI	Education and Outreach for Building Professionals	Draft recommendation without quantification
11-RCI	Consumer Education Programs	Draft recommendation (jointly with CC TWG) without quantification
12-RCI	Increased Emphasis on Energy and Environmental Consideration in Higher Education	Draft recommendation (jointly with CC TWG) without quantification
13-RCI	Incentives and Promotion for Renewable Energy and Clean Combined Heat and Power	Draft recommendation (jointly with ES TWG) and quantify
14-RCI	Regulatory/Legislative Grid, Pricing, and other Policies to Support Distributed Generation	Draft recommendation (jointly with ES TWG) without quantification
15-RCI	Support for Switching to Less Carbon-Intensive Fuels	Quantify for TWG review
16-RCI	Participation in Regional (or National) Industry Emissions Cap and Trade Programs	CCS develops straw and quantifies (jointly with ES TWG)
17-RCI	Voluntary Emissions Targets	Quantify for TWG review or Draft recommendation without quantification (TBD)
18-RCI	Use of Alternative Gases (Non-Energy Emissions, Industrial Process Gases)	Quantify for TWG review or Draft recommendation without quantification (TBD)

19-RCI Solid Waste Recycling, Source Reduction, and Composting CCS develops straw and quantifies

Table 6.

Description of Draft Residential Commercial and Industrial Policy Options

RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL

1-RCI--Demand Side Management (DSM) Programs, Energy Efficiency Funds, and/or Energy Efficiency Requirements for Electricity

Description: This policy option involves increasing the efficiency of electricity use in New Mexico through programs, funds, and/or requirements. This option focuses on what are typically termed DSM activities, and is designed to work in tandem with other strategies under consideration by the RCI and ES TWGs that can also encourage efficiency gains.

Design: In fleshing out the policy design parameters, there are two key and linked dimensions: achievable/desirable energy savings and policy/administrative mechanisms to achieve these savings. The TWG will focus initially on goal setting, with implementation mechanism to be determined later.

- **Goal levels:** The following scenarios of energy saving goals will be developed and analyzed⁷:
 - Medium: Under this scenario, spending on electricity efficiency programs rises to the level of 1.5% of utility revenues (i.e. customer bills), as allowed under the recent Efficient Use of Energy Act (see below).
 - High: Under this scenario, spending on electricity efficiency programs increases to a level that that reflects the full, achievable cost-effective energy efficiency potential in New Mexico.
- **Timing:** TBD
- **Parties:** Could include electric utilities, PRC, non-utility energy providers and or new entities. TBD

2-RCI--Demand Side Management (DSM) Programs, Energy Efficiency Funds, and/or Energy Efficiency Requirements for Natural Gas and Other Fuels

Description: This policy option involves increasing the efficiency of natural gas and other fuel use in New Mexico through programs, funds, and/or requirements. The options for pursuing natural gas efficiency savings are similar in nature to those described for electricity efficiency in option 1-RCI above.

Design: In fleshing out the policy design parameters, there are two key and linked dimensions: achievable/desirable energy savings and policy/administrative mechanisms to achieve these savings. The TWG will focus initially on goal setting, with implementation mechanism to be determined later.

- **Goal levels:** The following scenarios of energy saving goals will be developed and analyzed⁸:
 - Medium: Under this scenario, spending on natural gas efficiency programs rises to the level of 1.5% of utility revenues (i.e. customer bills), as allowed under the recent

⁷ In addition to these two scenarios, we will also estimate the current, more modest levels of efficiency program spending that are implicitly reflected in the reference scenario. The policy option will thus reflect the increase in efficiency activity over and above reference case levels.

⁸ In addition to these two scenarios, we will also estimate the current, more modest levels of efficiency program spending that are implicitly reflected in the reference scenario. The policy option will thus reflect the increase in efficiency activity over and above reference case levels.

Efficient Use of Energy Act (see below).

- High: Under this scenario, spending on natural gas efficiency programs increases to a level that that reflects the full, achievable energy efficiency potential in New Mexico.
- **Timing:** TBD
- **Parties:** Could include gas utilities, PRC, and or new entities. TBD

3-RCI--Regional Market Transformation Alliance

Description: Market transformation is a relatively new term for energy efficiency programs that focus on voluntary efforts implemented by non-utility organizations to encourage greater uptake by consumers (residential, commercial, and industrial, as well as the professionals that service energy-using equipment) of cost-effective energy conservation practices.⁹

Design: The formation of a regional market transformation organization, modeled on the successful Northwest Energy Efficiency Alliance (NEEA), and as recommended by the WGA CDEAC EE Task Force, together with nearby states. This organization would be a useful complement to the electricity and natural gas efficiency options 1RCI and 2RCI. Such an organization could focus on products and sectors (e.g. swamp coolers or formation of energy service companies) in a manner that could complement what utilities would otherwise be providing through their efficiency programs.

- **Goal levels:** N/A
- **Timing:** TBD
- **Parties:** TBD

4-RCI--State Appliance Standards

Description: Appliance efficiency standards reduce the market cost of energy efficiency improvements by incorporating technological advances into base appliance models, thereby creating economies of scale. Appliance efficiency standards can be implemented at the state level for appliances not covered by federal standards.¹⁰

⁹ For more description of market transformation programs, see memo prepared for the NM TWG and posted at <http://www.nmclimatechange.us/ewebeditpro/items/O117F7375.pdf>

¹⁰ In recent years, Arizona, Oregon, and Washington, among other states, adopted state standards for several appliances; this led to the inclusion of standards for these appliances in the 2005 federal Energy bill.

Design: This policy option would involve the replication of standards first adopted in California for appliances not covered by federal standards.¹¹ It also involves the State, together with other Western states, advocating for stronger federal appliance efficiency standards where this is technically feasible and economically justified.¹²

- **Goal levels:** N/A
- **Timing:** TBD
- **Parties:** TBD

5RCI--Green Power Purchasing

Description: This option comprises a variety of consumer-driven strategies to increase the production and delivery of low-GHG power sources, above and beyond levels achieved through Renewable Portfolio Standards and other mandatory programs.

Design: This policy would involve several components:

The Public Regulatory Commission would consider adopting and encouraging utilities to develop green power tariff structures that:

- Enable "quantity savings" for large purchases. (e.g. PacifiCorp's blue sky QS program)¹³
- Are stable thus avoiding the volatility associated with standard rates due to fluctuating gas or other fuel prices (e.g. Austin energy's program)
- Are based on cost of service principles

The PRC would also provide for the reporting power sources and emissions data in consumer bills.

The State would set a goal of 10% green power for state and local government electricity purchases, possibly modeled on the federal purchasing requirements in EPACT 2005. [The TWG is debating whether this should be a requirement rather than a goal, and whether such a requirement would apply only to the State rather than local governments.]

The State and other entities would also promote voluntary purchasing of green power (information, promotional materials)

- **Goal levels:** See above

¹¹ California has already established standards for a number of appliances not yet covered nationally including pool pumps, consumer electronics (stand-by power use), and general-service incandescent lamps. <http://www.energy.ca.gov/appliances/>

¹² Note that this is consistent with the recommendation of the WGA CDEAC EE Task Force.

¹³ <http://www.pacificpower.net/Article/Article46988.html>

- **Timing:** TBD
- **Parties:** PRC, utilities, state and local government.

6-RCI—Rate Design (Including Time of Use Rates, Increasing Block Rates, and Seasonal Use Rates)

Description: Electricity rates can be designed in a manner that enhance conservation and load management. Examples include time-of-use rates, seasonal use rates, and increasing block rates, where a given consumer’s price per kWh increases with electricity use.

Design: The state regulatory commission should consider rate designs that promote reduction in GHG emissions and/or energy efficiency. This includes reducing customer charges, discouraging existing decreasing block rates, and encouraging steep inverted block rates for all customer classes as a means of encouraging efficiency and reducing GHG emissions.¹⁴ It will be important to consider interaction with potential decoupling efforts (see 1RCI and 2RCI), and to ensure that higher marginal electricity costs do not lead consumers to switch to other, more GHG-intensive sources (e.g. diesel vs. electric water pumping).

- **Goal levels:** N/A
- **Timing:** TBD
- **Parties:** New Mexico Public Regulatory Commission, electric utilities

7-RCI-- Improved Building Codes

Description: Building energy codes specify minimum energy efficiency requirements for new buildings or for existing buildings undergoing a major renovation. This policy proposes that New Mexico adopt building codes with more stringent energy efficiency requirements, update energy efficiency codes periodically, and provides a goal that all new buildings be “carbon neutral” by 2030.

Design: In fleshing out the policy design parameters, there are two key and linked dimensions: achievable/desirable energy savings and policy/administrative mechanisms to achieve these savings. The TWG will focus initially on goal setting, with implementation mechanism to be

¹⁴ TOU and seasonal use rates will not be analyzed further at this point. Their predominant effects would be a rather a shift consumption from peak to off-peak periods rather than an overall electricity consumption. GHG impacts would likely be rather limited, and may or may not be positive, depending on the relative emission rates of peak and off-peak resources. If production shifts from natural gas peak to coal-based off-peak generation, for example, overall emissions could increase. Determining the direction and magnitude of impact for TOU and seasonal use rates would require dispatch modeling.

determined later.

- **Goal levels:** The following scenarios of energy saving goals will be developed and analyzed¹⁵:
 - **Medium:** Under this scenario, spending on electricity efficiency programs rises to the level of 1.5% of utility revenues (i.e. customer bills), as allowed under the recent Efficient Use of Energy Act (see below).
 - **High:** Under this scenario, spending on electricity efficiency programs increases to a level that that reflects the full, achievable cost-effective energy efficiency potential in New Mexico.
- **Timing:** TBD
- **Parties:** Could include electric utilities, PRC, non-utility energy providers and or new entities. TBD

8A-RCI--Building Energy Performance Requirements for State-funded and Other Government Buildings (“Reach Codes”)

Description: The New Mexico State Government can provide leadership in moving the State toward a stock of buildings with much higher energy efficiency. The proposed policy provides energy efficiency targets that are much higher than code standards for new State-funded and other Government buildings, includes elements to encourage the improvement and review of efficiency goals over time, and to encourage flexibility in contracting arrangements to encourage integrated energy-efficient design and construction.

Design: Energy use in existing buildings is a significant source of greenhouse gases. Energy use (largely electricity and gas) in buildings in New Mexico accounts for about 36 percent of current emissions, or about 20 million metric tons of CO₂ equivalent. New Mexico sets as its goal that all buildings be “carbon neutral” by 2030, meaning that any energy needs in a building, net of on-site renewable energy use, should be supplied by renewable energy sources (“green power”).

Building energy performance standards should be implemented in State-funded government buildings such that new buildings achieve high standards of energy efficiency, and existing buildings are retrofitted to yield significant energy efficiency improvements. In addition to directly influencing energy use in state-funded and government buildings, this policy will help to raise awareness of energy-efficiency improvement methods in building construction and operation, and will help to “drive” such improvements in other market segments. Specifically, it is recommended:

¹⁵ In addition to these two scenarios, we will also estimate the current, more modest levels of efficiency program spending that are implicitly reflected in the reference scenario. The policy option will thus reflect the increase in efficiency activity over and above reference case levels.

- That all State-funded new buildings and building renovation projects of 5,000 square feet and above and/or using over 50 kW electrical demand are mandated to build to a minimum rating of "Silver" using the U.S. Green Building Council's LEED-NC™, LEED-EB™, LEED-CS™, or LEED-CI™ rating system - or verifiable equivalent - in effect as of the project registration date by 2007. In addition to achieving one of the ratings above, or their equivalent, state-funded buildings and building renovations must achieve at least an [50%] reduction in energy use on a weather-normalized per square-foot basis relative to average buildings of the same type in the US, as determined by modeling¹⁶.
- Modify the State procurement process to allow for design-build and construction management at risk contracts, based on pre-qualifications of design and construction professionals. These allow for integrated project teams, which are typically more effective in creating cost-effective projects that meet the aggressive requirements above. Consider incentives for the project team based on performance criteria.
- That the above requirement for percentage reduction in per-unit-area energy consumption in state-funded buildings relative to existing buildings be reviewed and updated every three years so as to make the requirement consistent with necessary progress toward a goal of all new buildings being "carbon neutral" (see above).
- Further, by 2030, to achieve the goal of being carbon neutral, no more than 25% of the building's energy needs (on a weather-normalized basis relative to average buildings of the same type in the US, as determined by modeling) may be met through the use of off-site green power, thus emphasizing energy efficiency improvements and use of on-site renewable energy. The allowed maximum percentage of off-site green power should be revisited, and revised if needed, every three years.
- The above requirements for state buildings (near-term energy efficiency mandates, periodic revision and tightening of efficiency requirements, and "carbon neutrality" by 2030) are intended as a means to establish a "reach code" for state-owned buildings to demonstrate the feasibility of not only achieving the minimum code requirements but also exceeding them. This will encourage the use of advanced energy efficiency products and designs in all new buildings in New Mexico, and will also reward the State with the inherent benefits of more efficient buildings¹⁷.
- That whenever possible, State-funded and other Government buildings be designed and built incorporating features designed not only to reduce energy use within the buildings,

¹⁶ Note that this requirement is similar to the requirement in an Executive Order that is currently in place.

¹⁷ The "reach code" element of this requirement is consistent with and draws upon recommendations in the WGA CDEAC EE report (page 59).

¹⁸ Many of the design principles referred to here are identified as parts of the proposed LEED for Neighborhood Developments (LEED-ND) rating system, a description of which can be found at <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=148>.

but to reduce energy use in the surrounding community through incorporation of considerations of transport access, the availability of necessary commercial services, and other aspects of community life that affect energy use¹⁸

- **Goal levels:** See above
- **Timing:** See above
- **Parties:** All New Mexico State Agencies (for their own new or renovated buildings); New Mexico State Agencies to oversee programs, likely including GSD, EMNRD, and PSFA. Also, there are some state agencies that do not fall under the purview of GSD and so need to implement their own programs

8B-RCI--Building Energy Performance Promotion and Incentives for Energy Performance Enhancements (Attaining “Reach Codes”) in Non-Government Buildings (Including Existing Buildings)

Description: Energy efficiency in existing buildings and in non-government-funded new buildings must also be substantially improved. This policy provides incentives and targets to induce the owners and developers of new and existing non-government buildings to markedly improve the efficiency with which energy is used in those buildings, along with provisions for raising targets periodically and resources to help achieve the desired building performance.

Design: Energy use in existing buildings is a significant source of greenhouse gases. Energy use (largely electricity and gas) in buildings in New Mexico accounts for about 36 percent of current emissions, or about 20 million metric tons of CO₂ equivalent. New Mexico sets as its goal that all buildings be “carbon neutral” by 2030, meaning that any energy needs in a building, net of on-site renewable energy use, should be supplied by renewable energy sources (“green power”). Policies and programs should be developed to promote and implement in new and existing non-State public and private buildings, on a voluntary basis, energy “reach codes”. “Reach codes” are higher-than-prevailing-code energy performance levels for buildings, which are suggested to be mandated for state-owned and state-funded buildings under Policy Option 8A-RCI, above. Specifically, it is recommended to:

- Create a “high performance buildings” initiative that provides incentives, technical support, and other assistance to induce private developers of commercial new buildings and building renovation projects to meet the same requirements of proposed policy 8A, above.
- Include a residential program in the “high performance buildings” initiative that provides incentives for private developers, including designers, developers, and builders of residential and manufactured housing), the program requirements would have the same energy goals as those for commercial buildings.
- Provide incentives for the undertaking of substantial building energy efficiency measures and retrofits in existing buildings (including manufactured housing).
- Provide incentives and other support to encourage that non-government buildings be

designed and built, and, where applicable, retrofitted, incorporating features designed not only to reduce energy use within the buildings, but to reduce energy use in the surrounding community through incorporation of considerations of transport access, the availability of necessary commercial services, and other aspects of community life that affect energy use¹⁹.

- **Goal levels:** As above
- **Timing:** As above
- **Parties:** New Mexico State Agencies to oversee programs, Municipal and County Government Agencies

9-RCI--Government Agency Requirements and Goals (including procurement) -- Focus on Operations

Description: Through a combination of incentives, evaluation and monitoring, and performance targets, this policy is intended to improve the efficiency of energy use in existing government buildings and other facilities by emphasizing energy efficiency as a criterion in procurement of energy-using equipment and systems and in the improvement in operation of buildings and other facilities.

Design: Improvements in energy efficiency in the operation of buildings and other facilities run by government agencies result in reduced energy use and related reductions in greenhouse gas emissions. Energy efficiency improvements in the operation of government buildings and other facilities can be brought about as a result of efficiency requirements or goals applied to the procurement of energy-using equipment and to the day-to-day operations of buildings and facilities. Municipal Energy Management systems and initiatives are included as elements of this policy. Government actions to increase energy efficiency in the operation of buildings and other facilities help to establish a broader and more effective market for energy-efficiency products and services, including activities involving Energy Service Companies (ESCOs).

- **Goal levels:** Tie baseline energy consumption data (currently collected for use related to New Mexico's participation in the Chicago Climate Exchange) to individual State buildings to determine energy use per unit floor area. The resulting rankings would be used to identify where the significant operations use energy problems are and to create a list of priorities for addressing problems. For buildings using above average levels of energy, energy audits and follow-up actions should be required. Financing of such activities could be done through the Energy Efficiency Revenue Bond Act (or other mechanisms).
- **Timing:** Establish the infrastructure for implementation (meters, bookkeeping systems, staff, etc.) as soon as possible. Be able to report results in 2007, [and implement improvements

¹⁹ Many of the design principles referred to here are identified as parts of the proposed LEED for Neighborhood Developments (LEED-ND) rating system, a description of which can be found at <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=148>.

starting in 2008].

- **Parties:** New Mexico State Agencies, all Local Governments, recommended Industry Partnerships, Utilities

10-RCI-- Education and Outreach for Building Professionals

Description: In order to effectively implement the other Buildings policies recommended, specific and targeted education, outreach, and licensing requirements would be required for professionals in a variety of building-related trades in order to ensure that those professionals have the expertise to support aggressive State building energy efficiency policies.

Design: The way that a building is designed and constructed has much to do with how much energy it will use over its (typically long) lifetime. The building code improvement and building energy efficiency options described above depend for their effectiveness on the availability of trained, committed design, construction, and operations professionals to make sure that buildings are designed, constructed, and run so as to make those buildings as energy-efficient as possible within the restrictions of their function. A combination of education of and outreach to building professionals is needed to make sure that as many of those professionals as possible incorporate energy-efficiency and greenhouse gas emissions-reduction considerations as they do their jobs. Specifically, it is recommended²⁰:

- Mandate that State Boards of Licensing for building professionals (architects, engineers, contractors, landscape architects, etc.) require a substantial portion of the licensing exam include knowledge of the improved building codes and building energy performance requirements reflected in policy options 7-RCI and 8A- and 8B-RCI, and including knowledge of concepts related to the design of energy-efficient communities.
- Implement code training and technical assistance for architects, builders, and local code inspectors. If these support activities are sustained over time, builders, designers, and code officials can become allies rather than opponents of state-of-the-art building codes. Federal funding for this purpose may be available in the future through a provision in the Energy Policy Act of 2005.
- Implement programs to train builders and contractors on proper heating and air conditioning sizing and installation.
- Train commercial building energy managers, for example by making use of the building operator training and certification program developed in the Pacific Northwest.
- Train industrial energy and facility managers in techniques for improving the efficiency of their steam, process heat, pumping, compressed air, motors, and other systems, partnering with the U.S. DOE in doing so.

²⁰ Bullets two through five in this list are based on suggestions included in the WGA CDEAC EE report, pages 59 and xiii.

- As appropriate and applicable for each professional discipline, include training and outreach to encourage design of energy-efficient communities.
- **Goal levels:** See above.
- **Timing:** [As needed to support other Building policies.]
- **Parties:** [New Mexico State Agencies? Local Governments? Industry Partnerships?]
- **Other:** [Coverage would include architects, engineers, contractors, landscape architects, realtors, and real estate appraisers, and building operators. Licensing requirements would cover new professionals, and currently practicing professionals would be reached through continuing education programs and license renewal requirements, as applicable. In addition to licensing requirements the State can offer State-sponsored and -organized courses in the disciplines above, State-sponsored curriculum development for such courses, and outreach through professional organizations to individuals and firms.]

11-RCI--Consumer Education Programs

- Description of this policy will be based on the results of joint meetings of RCI members with members of the Cross Cutting Technical Working Group.

12-RCI--Increased Emphasis on Energy and Environmental Consideration in Higher Education

- Description of this policy will be based on the results of joint meetings of RCI members with members of the Cross Cutting Technical Working Group.

13-RCI--Incentives and Promotion for Renewable Energy and Clean Combined Heat and Power

- Description of this policy will be based on the results of joint meetings of RCI members with members of the Energy Supply Technical Working Group.

14-RCI--Regulatory/Legislative Grid, Pricing, and other Policies to Support Distributed Generation

- Description of this policy will be based on the results of joint meetings of RCI members with members of the Energy Supply Technical Working Group.

15-RCI-- Support for Switching to Less Carbon-Intensive Fuels

Description: Encourage consumers to switch to the use of fuels that produce less or no GHG emissions to provide key energy services than the fuels currently in use.

Design: Reductions in greenhouse gas emissions can be achieved in the residential, commercial and industrial end-use sectors when consumers switch to the use of less carbon-intensive fuels to provide key energy services. Fuel switching opportunities can include using natural gas in the place of electricity for thermal end-uses, natural gas in the place of coal for key industrial end-uses, biomass fuels in the place of electricity or natural gas for thermal end-uses, and solar thermal energy in the place of electricity or natural gas for thermal end-uses.

- **Goal levels:** [Shift X% of applicable gas and electricity end-uses to solar thermal energy by 20XX and Y% by 20XX, beyond base case levels. Shift X% of applicable gas and electricity end-uses to biomass energy by 20XX and Y% by 20XX, beyond base case levels. Shift X% of applicable coal or oil-fired end-uses (if significant) to solar, biomass, gas or electric (where GHG savings are possible) energy by 20XX and Y% by 20XX, beyond base case levels.]
- **Timing:** Adoption in 2007, with substantial activity beginning in 2008, in force indefinitely, but review every 3 years.
- **Parties:** Utilities (as a part of a regulatory mandate); State agencies (adopting fuel-switching to help meet their own thermal energy needs, for example); regulatory agencies (to “level the playing field” between fuel options and to provide incentives for fuel switching where applicable).

16-RCI--Participation in Regional (or National) Industry Emissions Cap and Trade Programs

- A description for this policy will be added as drafts are prepared based on the results of joint meetings of RCI members with members of the Energy Supply Technical Working Group.

17-RCI-- Voluntary Emissions Targets

Description: Voluntary emissions targets for large industrial plants and other large users of energy and/or of process gases with climate impacts.

Design: Organizations that use large amounts of energy (electricity, gas, or other fuels) and/or are responsible for large volumes of direct greenhouse gas emissions would be encouraged to set and pursue their own emissions reduction targets. The organizations participating in such a program would typically be large industrial plants, although in some cases large commercial or governmental organizations and facilities might also participate.

- **Goal levels:** [Estimated XX percent reduction for statewide industry relative to base year emissions?]
- **Timing:** [Registry created or joined in 20?? Emissions reductions begin 20xx and continue through 20?]
- **Parties:** [Large industrial firms and other major energy consumers or users of high-GWP

process gases. New Mexico State Agencies or independent body to coordinate reporting, auditing, and compliance.]

18-RCI-- Use of Alternative Gases (Non-Energy Emissions, Industrial Process Gases)

Description: This policy comprises various options to reduce emissions of high global warming potential gases in the RCI sectors. Under current projections, the predominant sources of high GWP emissions are likely to be hydroflouorocarbon (HFCs) releases from leaks in mobile air conditioning and refrigeration applications.²¹

Design: HFC emissions can be reduced through leakage management efforts and the substitution of HFCs with lower GWP refrigerants, including lower GWP HFCs, carbon dioxide, and hydrocarbons (HCs - propane or isobutene/propane blend).²² Many of these opportunities lie in the transportation sector (mobile air conditioning). For the RCI sector, the TWG is discussing the adoption of specifications for new commercial refrigeration. These could limit the global warming potential of refrigerants used in refrigerators in retail food stores, restaurants, and refrigerated transport vehicles (trucks and railcars) and/or require that centralized systems with large refrigerant charges and long distribution lines be avoided in favor of systems that use much less refrigerant and lack long distribution lines. The TWG has noted that this option might not be within the purview of NMED and thus might depend upon the creation of new regulatory authority. Another suggestion is that the state could “lead by example” by implementing such improvements in relevant state facilities.

- **Goal levels:** TBD
- **Timing:** TBD
- **Parties:** TBD

19RCI-- Solid Waste Recycling, Source Reduction, and Composting

Description: Waste reduction, recycling, composting and other waste management activities can reduce overall greenhouse gas emissions.

Design: TBD

- **Goal levels:** TBD

²¹ HFC emissions are projected to grow from under 1 MMtCO₂e or <1% of New Mexico GHG emissions in 2000 to over 2 MMtCO₂e or 2% of state emissions by 2020.

²² Other high GWP gases and applications include the leakage of SF₆ in electricity distribution systems, and the use of HFCs and PFCs in semiconductor manufacture. Current projections suggest that these emissions, combined, could be about an order of magnitude lower in CO₂e terms than emissions of refrigerant HFC emissions. Nonetheless, further reductions may be possible and worth considering.

- **Timing:** TBD
- **Parties:** TBD

Table 7.

**Transportation and Land Use Technical Work Group
 Summary List of Draft Policy Options (12 Total)**

#	Policy Name	Potential Next Steps
PASSENGER VEHICLE GHG EMISSION RATES		
TLU-1	California GHG Emission Standards	Quantify for TWG review
TLU - 2	Procurement of Efficient Fleet Vehicles	CCS develops straw and quantifies
TLU - 3	Incentive/Disincentive Options Bundle	CCS develops straw and quantifies
ALTERNATIVE FUELS		
TLU-4	Alternative Fuels Bundle	Quantify for TWG review
DEMAND –LAND USE / LOCATION EFFICIENCY		
TLU-5	Infill, Brownfield Re-development	CCS develops straw and quantifies
TLU-6	Transit-Oriented Development	Quantify for TWG review
TLU-7	Smart Growth Planning, Modeling, Tools	Quantify for TWG review
TLU-8	Targeted Open Space and Croplands Protection	CCS develops straw and quantifies
TLU-9	GHG Offset Requirements for Large Developments	CCS develops straw and quantifies
DEMAND – TRANSIT ALTERNATIVES		

TLU-10	Multimodal Transportation Bundle	CCS develops straw and quantifies
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FREIGHT / OFF-ROAD OPTIONS

TLU-11	Truck Stop Electrification/Anti-Idling	CCS develops straw and quantifies
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TLU-12	Intermodal Freight Initiatives	CCS develops straw and quantifies
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Table 8.

Description of Draft Transportation and Land Use Policy Options

PASSENGER VEHICLE GHG EMISSION RATES

TLU-1 California GHG Emission Standards

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. Implement program beginning with vehicle model year 2011.

TLU-2 Procurement of Efficient Fleet Vehicles

Description: In progress.

Design: In progress.

TLU-3 Incentive/Disincentive Options Bundle

Description: The four components of this option create financial incentives for the purchase of vehicles that emit relatively low levels of GHG.

Design:

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.

- 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.

- 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.
- A consumer labeling program that provides buyers with better information on the GHG emissions of new vehicles.

ALTERNATIVE FUELS

TLU-4 Alternative Fuels Bundle

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).

Design: The goals for this policy should be phased in as follows to utilize biofuels to replace the specified percentages of gasoline and diesel consumed for transportation throughout New Mexico by year the specified year:

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: 1) Replace 10% of vehicle miles traveled from light-duty vehicles in New Mexico with zero emission vehicles by 2010; 2) replace 20% of vehicle miles traveled from light-duty vehicles with zero emission vehicles by 2015; and 3) replace 40% of vehicle miles traveled from light-duty vehicles with zero emission vehicles by 2040.

The goals for implementing 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 is 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 highways by 2020.

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

DEMAND –LAND USE / LOCATION EFFICIENCY

TLU-5 Infill, Brownfield Re-development

Description: In progress.

Design: In progress.

TLU-6 Transit-Oriented Development

Description: Promote transit-oriented development by giving local communities the needed tools and technical assistance. Build compact development around transit stops to meet daily needs by foot or transit. Meet the growing demand by a larger number of households seeking to live near services, jobs and transit. Cut greenhouse gas emissions by significantly reducing or even eliminating automobile trips generated per household.

Design:

- **TOD Planning Grants:** Expand and sustain the number of planning grants for New Mexico communities to develop diverse public areas for commerce, civic activities, and entertainment, easily accessible through efficient transportation systems that include pedestrian travel. A first round of grants emerged from the *Livability! The Report of the Governor’s Task Force on Our Communities, Our Future*.²³ Planning should coordinate economic development, land preservation, and transportation.
- **Creation of Transit Village Plans:** Allow a local government to adopt a transit village plan that permits a significantly higher density of development than the development that currently exists in the area.
- **Implementation of Transit Village Plans:** Upon adoption of a transit village plan the local government shall take all needed steps to adopt, modify or otherwise make needed changes to existing zoning, building codes and other land use regulations to ensure consistency with the plan. The local government shall also allow use by right for multifamily residential uses on each parcel designated for multifamily residential development. Create various funding

²³ <http://www.state.nm.us/clients/dfa/Files/LGD/PLAN/PDF/livability.PDF>

mechanisms, incentives, and code changes to promote.

TLU-7 Smart Growth Planning, Modeling, Tools

Description: The 14 components of this option are some of the most effective policies promoting Smart Growth. These policies contribute to GHG emission reductions by altering development patterns and reducing vehicle trips and total vehicle miles traveled.

Design:

- Strengthen and encourage growth in existing communities. Locate development in areas with existing infrastructure.
- Include mixed land uses. Mixed-use projects should include residential housing, significant employment opportunities from office or light industrial facilities, retail shopping, outdoor recreation and open spaces. Larger projects should also include schools and entertainment facilities.
- Create a range of housing opportunities. Residential development should be mixed-income and offer a range of single- and multi-family units, with special attention to affordable housing.
- Create “Urban Growth Boundaries” that effectively contain and limit sprawl. Utilize existing zoning laws but create new stronger policies if needed. Urban development should minimize the amount of land used per capita.
- Preserve Open Space, farmland, natural beauty and critical environmental areas. Projects should consume a minimum of green space and avoid fragmenting habitat.
- Provide a variety of transportation choices. Locate projects along transit lines. Communities should support walking and cycling transportation. A connected street patterns should provide multiple routes, maximizing accessibility. Telecommuting should be encouraged.
- Foster walkable, close-knit neighborhoods. Pedestrian-friendly design employs clustered and mixed land uses, and good walking facilities. Neighborhood design and layout should promote interactions among residents.
- Take advantage of existing community assets. New projects should take advantage of existing transit facilities, green space, schools, retail areas and cultural amenities. Brownfield sites should be seen as opportunities for land recycling.
- Promote distinctive, attractive communities with a strong sense of place, including the rehabilitation and use of historic buildings. Whenever historic and older buildings are present, their rehabilitation and reuse should be part of the new design. Architectural criteria and community layout should maximize a sense of local community in harmony with the natural setting.
- Encourage citizen and stakeholder participation in development decisions. Provide

opportunities for all stakeholders to participate in decision makers.

- Make development decisions predictable, fair and cost effective. Local governments with zoning code responsibilities should facilitate innovative community designs consistent with Smart Growth principles, and they should not impose obstacles and delays that may place such designs at a competitive disadvantage to more common “sprawl” projects.
- Create “Location Efficient” mortgages to provide financial incentives to encourage growth in existing communities.
- Introduce concept of “Full Cost Accounting” to planners, developers and consumers which would reflect the true costs of infill vs. sprawl type developments. Require that all new development incorporate its true costs.
- Require Comprehensive Road Pricing whereby the full costs of insurance, parking, land use, weight and distance factors are included in the cost of building new roads.

TLU-8 Targeted Open Space and Croplands Protection

Description: In progress.

Design: In progress.

TLU-9 GHG Offset Requirements for Large Developments

Description: In progress.

Design: In progress.

DEMAND – TRANSIT ALTERNATIVES

TLU-10 Multimodal Transportation Bundle

Description: In progress.

Design: In progress.

FREIGHT / OFF-ROAD OPTIONS

TLU-11 Diesel Retrofits

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

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. Retrofit or retire xx% of heavy-duty diesel engines from model year 19XX or earlier.

TLU-12 Truck Stop Electrification/Anti-Idling

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.

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. Consider coordination of this measure with Arizona and other neighboring States. Reduce fuel consumption from idling of heavy-duty diesel vehicles by xx% by year 20XX.

TLU-13 Intermodal Freight Initiatives

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

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. Reduce VMT from heavy-duty freight trucks by xx% through the transfer of freight to rail by the year 20XX.

Table 9.

**Agriculture and Forestry Technical Work Group
Summary List of Draft Policy Options (14 Total)**

#	Policy Name	Potential Next Steps
FORESTRY		
F-1	Forestland Protection from Developed Uses	Quantify for TWG review
F-2a	Forest Health and Restoration – Residential Lands	Quantify for TWG review
F-2b	Forest Health and Restoration – Other Lands	Quantify for TWG review
AGRICULTURE		
A-1	Manure Digesters	Quantify for TWG review
A-2	Biomass Feedstocks for Electricity or Steam Production	CCS develops straw and quantifies
A-3	Ethanol Production	CCS develops straw and quantifies
A-4	Nutrient Management	Quantify for TWG review
A-5	Manure Management	CCS develops straw and quantifies
A-6	Conservation Tillage/No-Till	Quantify for TWG review
A-7	Convert Agricultural Lands to Grasslands or Orchard	CCS develops straw and quantifies
A-8	Reduce Permanent Conversion of Farm and Rangelands to Developed Uses	CCS develops straw and quantifies
A-9	Organic Farming	CCS develops straw and quantifies

A-10	Programs to Support Local Farming/Buy Local	Quantify for TWG review
A-11	Biodiesel Production	Quantify for TWG review

Table 10.

Description of Draft Agriculture and Forestry Policy Options

FORESTRY

F-1 Forestland Protection from Developed Uses

Description: Reduce the rate at which existing forestlands and forest cover are cleared and converted to developed uses.

Design: A program goal of reducing by 50 percent of the total acres of forestland expected to be lost from land clearing over the project period is recommended. The TWG needs to recommend the timing of implementation of this program.

F-2a Forest Health and Restoration – Residential Lands

Description: Manage sustainable thinning or biomass reduction from residential forestlands (intended to address fire and forest health issues) so that harvested biomass is directed to wood products and renewable energy instead of open burning or decay.

Design: A goal of expanding the current usage rates of biomass extracted from forested residential lands for wood products and/or energy production by 50% is recommended. We recommend a ramp up period beginning in 2007 and reaching full yearly implementation by 2012 continuing through to at least 2020.

F-2b Forest Health and Restoration – Other Lands

Description: Increase sustainable thinning of biomass from forests and direct the harvested wood and wood waste to wood products and renewable energy.

Design: A goal of expanding the current usage rates of biomass extracted from forested non-residential lands for wood products and/or energy production by 50% is recommended. We recommend a ramp up period beginning in 2007 and reaching full yearly implementation by 2012 continuing through to at least 2020.

AGRICULTURE

A-1 Manure Digesters

Description: Reduce CH₄ emissions from livestock manure through the use of manure digesters or other energy capture technologies installed at dairies. Gas captured from the manure digesters is used to create heat or electricity, which offsets fossil fuel-based energy production and associated CO₂ and black carbon emissions.

Design: By 2050, 75% of the dairy and feedlot population shall be participating in either an on-site manure digester/generator facility or as part of a centralized digester/generator facility located in high-density CAFO regions of the state, i.e. Mesquite, Portales, Roswell, Las Cruces, Clayton, Clovis, Hobbs/ Lovington, Artesia, and Albuquerque/Belen/Socorro. By 2010, 15% of total dairy cows (~52,000 out of 345,000) shall be participating in the manure digester program. The percentages participating in 2020 and 2050 shall be 35% (~139,000 out of 398,000) and 75% (~417,000 out of 556,000), respectively.

A-2 Biomass Feedstocks for Electricity of Steam Production

Description: Displace fossil fuel usage through the use of agricultural waste (e.g., pecan waste, other crop residue) as a feedstock for electricity or steam production.

Design: TWG needs to identify the mass of waste of different types to be used as feedstock from 2006-2020. The TWG also needs to identify the application of this waste (e.g. for electricity production or heating). This includes tons of each waste type used in 2010 and 2020.

A-3 Ethanol Production

Description: Provide incentives for the production of ethanol from crops, agricultural waste, or other materials. Use of the ethanol will offset fossil fuel use (gasoline). Different incentive programs will be needed for crop (starch-based) ethanol production versus agricultural waste (cellulosic) ethanol production processes.

Design: An initial policy goal of 5% increase per year in grain production for ethanol conversion with simultaneous increase of production capacity to 60 million gallons by 2012 is proposed. The 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, in excess of 150 million gallons by 2020.

The proposed amount of ethanol produced from cellulose conversion is 70 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 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, in excess of 150 million gallons by 2020.

A-4 Nutrient Management

Description: Between 0.2% and 3% of applied nitrogen in agricultural fields is estimated to be lost as N₂O directly from soil emissions. These N₂O emission rates are directly related to the rates, placement, and timing of applied fertilization. The challenge is to reduce total application of nitrogen without reducing yields or total production.

Agronomic practices that tighten the coupling between soil nitrogen availability and crop growth will improve nutrient use efficiency and reduce the likelihood that nitrogen will escape as N₂O, leach as nitrate into groundwater systems, or be transported to surface water systems. Better synchronization of nutrient applications with active crop needs can be achieved with improved nutrient management. The development and promotion of ‘*nutrient management guidelines and strategies*’ along with support for enhanced extension and outreach of these guidelines can increase adoption of improved nutrient planning and practices, leading to both lower N₂O emissions and lower fertilizer costs.

Design: Measured reductions in total fertilizer use (on a per acre basis) – and consequently in the N₂O and nitrate flux from agricultural soils – are achievable with improved nutrient management and adoption of specific nutrient management strategies (as described below). An initial policy goal is proposed that aims to reduce excessive fertilization by reducing average annual per acre nitrogen fertilizer use by 10% by 2020.

Implementation is estimated as ½ % incremental reduction from 2006 levels in each year from 2006-2015 and 1% incremental reductions from 2015-2020.

A-5 Manure Management

Description: Reduce N₂O emissions from daily spread and other land application of dairy and feedlot cattle manure through the use of better application methods. These application methods are designed to reduce contact of manure nitrogen with air (lowering the rate of denitrification) and the amount of manure nitrogen loss via leaching and runoff.

Design: TWG needs to specify the fraction of the dairy and beef feedlot populations to which these improved application methods will be applied (as well as any information on existing BAU practices, if available). Need to know the fraction of dairy cattle affected by 2010, 2020 and 2050. Need to know the fraction of feedlot cattle affected by 2010, 2020 and 2050.

A-6 Conservation Tillage/No-Till

Description: The amount of carbon stored in the soil can be increased by the adoption of conservation tillage. Reducing mechanical soil disturbance reduces the oxidation of soil carbon compounds and allows more stable aggregates to form. In addition to soil carbon benefits, conservation tillage has numerous co-benefits including reduced wind and water erosion, reduced fuel consumption and improved wildlife habitat.

Other management practices such as decreased summer fallow or an increase in winter cover crops could also affect soil carbon levels, however opportunities for significant implementation for these practices in NM were not identified.

Design: A program goal of bringing 650,000 acres of cropland into new management practices and per acre soil carbon storage rate improvements of 0.22 T CO₂/ac/y; total of ~140,000 T CO₂ equivalent per year is recommended. The recommended timing of implementation is 650,000 acres of cropland brought into no till management practices from 2007-2015; 1,300,000 acres in 2025.

A-7 Convert Agricultural Lands to Grasslands or Orchard

Description: Increase carbon sequestration in agricultural land by converting marginal land used for annual crops to permanent cover (grassland or orchard).

Design: The program goal for this option is to keep lands currently enrolled in CRP in perennial vegetation cover. Of the 598,196 acres currently enrolled in CRP, contracts on 4312 ac expire in 2006; 534,030 ac in 2007; 36,882 ac in 2008; 11,563 in 2009; 10,800 ac in 2012 and beyond. The renewal of CRP contracts for land currently in perennial cover is entirely dependent upon the 2007 Farm Bill provisions. Actions to keep current CRP land in perennial vegetation must be implemented prior to 2007 when almost 90% of the current CRP contracts expire

A-8 Reduce Permanent Conversion of Farm and Rangelands to Developed Uses

Description: Reduce the rate at which existing crop and rangelands are converted to developed uses. The carbon sequestered in soils and aboveground biomass is higher in crop and rangelands than in developed land uses.

Design: The goal of this program is to reduce the rate of crop and rangeland loss to no more than 1% per year. The TWG needs to specify the timing of implementation for this program.

A-9 Organic Farming

Description: Increase acres of farmland using organic farming techniques which improve soil quality and eliminate the use of chemical fertilizers and pesticides. CO₂ emissions are reduced because the manufacturing and transportation of chemical inputs have been eliminated. Organic agriculture also increases the organic matter in soil, which increases carbon in the soils (called “carbon sequestration”). Under some circumstances, with improved soil condition, there can be

less irrigation water pumped, which saves on the emissions from energy generation as well as water usage.

Design: The current acreage in New Mexico that is certified organic by the New Mexico Organic Commodities Commission at the beginning of 2006 is approximately 50,000 acres, the predominance of which at this time is rangeland for livestock- cattle and sheep. Because of the economic premium provided to products certified organic, and increased demand for the benefits of sustainable agriculture, an increase in certified acreage is anticipated. By 2010, with sufficient support, the acreage could be at least 250,000 acres for transitioning to certified (a 3 year process), and another 250,000 for chemical-free sustainable agriculture. Certified could increase to 500,000 acres or more by 2020 depending on drought impacts and the availability of water. A long-term goal of 80% organic for NM cropland in 2050 is also recommended.

A-10 Programs to Support Local Farming/Buy Local

Description: Today's food has enormous hidden embodied energy in its travel and processing from farm to table in current industrial food systems, typically traveling from one to over five thousand miles. Increasing the percentage of "local food for local people" can reduce significant amounts of fossil fuel use and its associated GHG emissions.

Design: The amount of local food consumed in New Mexico is estimated to be about 1 percent, and organizers of farmers' markets suggest that 35% of our food could be produced and consumed locally. A program goal of shifting 8% of New Mexico's food to local sources by 2010 and 25% by 2020 is recommended. Projections to 2050 would depend on the degree that inevitable increased fuel costs force rises in food prices shipped long distances, and the number and magnitude of extreme weather threats to global and national food supplies. These factors could accelerate the commitment for higher levels utilization of local farmers' products, possibly leading to 50% or more of New Mexican food being produced and consumed in state.

A-11 Biodiesel Production

Description: Provide incentives for the production of biodiesel from crops or waste vegetable oil. Biodiesel use will offset diesel fuel derived from fossil fuel and will lead to decreased fossil fuel-based CO2 emissions and increased carbon-neutral fuel sources. Biodiesel production within New Mexico will lead to new job opportunities in the agricultural and industrial sectors.

Design: The TWG recommends a program goal to increase biodiesel production and use to replace 15% of New Mexico's petroleum diesel consumption by 2012. By 2020 New Mexico agriculture and public transportation should be fueled entirely by biodiesel in pure form or a petroleum/biodiesel formulation mostly made up of biodiesel. The recommended timing of implementation is to replace 10% of New Mexico's petroleum diesel consumption by 2010, and increasing to 15% by 2012.

Table 11.

**Cross Cutting Issues Technical Work Group
 Summary List of Draft Policy Options (3 Total)**

#	Policy Name	Potential Next Steps
CROSS CUTTING ISSUES		
CC-1	State Greenhouse Gas Reporting	Draft recommendation without quantification
CC-2	State Greenhouse Gas Registry	Draft recommendation without quantification
CC-3	State Climate Public Education and Outreach	Draft recommendation (jointly with RCI) without quantification

Table 12.

Description of Draft Cross Cutting Policy Options

CROSS CUTTING ISSUES

CC-1 State Greenhouse Gas Reporting

Description: Measurement and reporting of GHG emissions at a statewide, sector or sub-sector level to support tracking and management of emissions.

Design: Generally, the TWG recommendation calls for mandatory reporting when adequate quantification protocols exist for all sectors, sources, and GHGs. See GHG Reporting Design Options Matrix for details.

CC-2 State Greenhouse Gas Registry

Description: Measurement of GHG emissions reductions to support tracking and management of emissions reductions as well as potential recognition, baseline protection, and/or crediting of pro-active actions by implementing parties and programs, in relation to an emissions reduction goal.

Design: Generally, the TWG recommendation calls for development of a state GHG registry and/or participation in a regional GHG registry, with adequate quality verification, allowing project-level reporting, and with costs borne primarily by participants. See GHG Registry Design Options Matrix for details.

CC-3 State Climate Public Education and Outreach

Description: Public education and outreach can support GHG emissions reduction efforts at the macro or micro-scale level in relation to an emissions reduction program, policy or goal.

Design: Generally, the TWG recommendation calls for pro-active public education and outreach efforts by the State, targeting (a) NM's own efforts as a state, and (b) outreach to four specific audiences (policy makers, community leaders and organizations, future generations, and the general public). See GHG Education Design Options Matrix for details. The ES TWG anticipates additional input from the RCI TWG, leading to a joint recommendation.