Appendix 2

Economic Model Results of Core Recommendations

Memorandum

To: Jeanne Herb, New Jersey Department of Environmental Protection; Office of Policy, Planning & Science

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Date: 11/21/2008

Re: Low Emission Vehicle Model Results

New Jersey is implementing California's Low Emission Vehicle II (LEV) standards to reduce greenhouse gas emissions from passenger cars and light duty vehicles. The New Jersey Department of Environmental Protection solicited the Center for Energy, Economic & Environmental Policy and Rutgers Economic Advisory Service to assess the economic impacts of the LEV standards, similar to California's, in New Jersey.

R/ECON Model

R/ECON™ is an econometric model comprised of over 300 equations, based on historical data for New Jersey and the United States, which are solved simultaneously. The historical data covers the period from 1970 to 2006, with some updated through 2007. The following sectors are included in the model:

- Employment and gross state product for 40 industries;
- Wage rates and price deflators for major industries;
- Consumer price index;
- Personal income and its components;
- Population, labor force and unemployment;
- Housing permits, construction contracts, and housing prices and sales;
- Energy prices and usage;
- Motor vehicle registrations and stocks;
- State tax revenues by type of tax, and current and capital expenditures.

The heart of the model is a set of equations modeling employment, wages, and prices by industry. In general, employment in an industry depends on demand for that industry's output and the state's wages and prices relative to the nation's. Demand can be represented by a variety of variables including (but not limited to) New Jersey personal income, population, sectoral output, or U.S. employment in

the sector. The data for the U.S. comes from Global Insight, Inc., a national leader in economic forecasting.

R/ECON Model and the New Jersey Energy Master Plan

R/ECON™ was used to model the macroeconomic effects of New Jersey's Energy Master Plan (EMP) initiatives, using Business as Usual and Alternative Scenarios under different fuel price scenarios. As a part of the EMP modeling, the Regional Greenhouse Gas Initiative was utilized as the carbon dioxide policy for 2010 and 2015 and a national carbon dioxide policy was used for 2020. R/ECON™ does not account for environmental externalities and therefore understates the positive economic impacts of emission reductions. As demonstrated by the R/ECON™ simulations, the economic effects of the EMP were negligible when the environmental benefits of the Energy Master Plan were not accounted for.

R/ECON Model and Low Emission Vehicles

The effects of implementing California LEV standards were also modeled using R/ECON™. Building on the previous EMP work, the assumptions and inputs used for the EMP Business as Usual and Alternative Scenarios were used as a baseline for the LEV simulations. Additional LEV-specific input data were used in conjunction with EMP data.

The model inputs were calculated using the incremental costs of passenger cars and light duty vehicles from NESCAUM's Northeast State GHG Emission Reduction Potential from Adoption of the California Motor Vehicle GHG Standards.[1] California's LEV greenhouse gas emissions standards for carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons leakage from air conditioning systems result in an increase in the cost of passenger cars and light duty vehicles. For modeling purposes, it was assumed that the LEV standards would be implemented in New Jersey on January 1, 2010.

Models

Four R/ECON™ simulations were run to determine the effects of California's Low Emission Vehicle greenhouse gas standards in New Jersey.

1. The Business as Usual Scenario (BAU);
2. The Business as Usual Scenario with the Low Emission Vehicle policy adders;
3. The EMP Scenario;
4. The EMP Scenario with the Low Emission Vehicle policy adders.

[1] NESCAUM. Northeast State GHG Emission Reduction Potential from Adoption of the California Motor Vehicle GHG Standards (October 2005).

R/ECON™ Results

Based on a comparison of the EMP and the EMP with LEV model results in 2020, an LEV standard would have minimal impact on the economy before accounting for the economic benefits of lower environmental emissions. A few of the impacts include:

- New light duty truck and van registrations will decrease by 0.4%;
- Retail sales will decrease 1.6%;
- Gross State Product will decrease 0.3%;
- Vehicle miles traveled will decrease by 0.02%.

Table 1 provides further details of the model results.

Table 1: Macroeconomic Results from R/ECON™

	BAU	**BAU with LEV**	**BAU LEV to BAU**	**EMP**	**EMP with LEV**	**EMP with LEV to EMP**
	2020	*2020*	*%Difference*	*2020*	*2020*	*%Difference*
Non-ag. Employment (thousands)	4,392.1	4,390.0	-0.05%	4,410.7	4,408.6	-0.05%
Unemployment Rate (%)	4.8%	4.8%	0.1%	4.7%	4.7%	0.1%
Personal Income ($billions)	$791.0	$790.7	0.0%	$804.8	$804.5	0.0%
Real Personal Income ($billions, 2000)	$274.0	$273.9	0.0%	$278.5	$278.4	0.0%
Retail Sales ($billions)	$270.3	$266.0	-1.6%	$274.0	$269.7	-1.6%
Real Retail Sales ($billions, 2000)	$93.6	$92.1	-1.6%	$94.8	$93.3	-1.6%
New Vehicle Registrations (thousands)	658.8	657.7	-0.2%	659.0	657.9	-0.2%
New Car Registrations	397.9	397.9	0.0%	398.0	398.0	0.0%
New Light Trucks and Vans	260.9	259.8	-0.4%	261.0	260.0	-0.4%
Residential Building Permits	26,204	26,174	-0.1%	25,466	25,435	-0.1%
Contract Construction ($millions)	$14,818	$14,806	-0.1%	$15,156	$15,145	-0.1%
Consumer Price Index (1982=100)	288.6	288.7	0.0%	289.0	289.0	0.0%
Gross State Product ($2000 billions)	$507.0	$505.3	-0.3%	$507.4	$505.8	-0.3%
Total Tax Revenues ($billions)	$51.2	$51.0	-0.3%	$52.1	$52.0	-0.3%
Vehicle Miles Traveled (Millions)	90,764	90,750	-0.02%	90,766	90,751	-0.02%