NJ GREEN
Feb. 26, 2007
M. C. Trachtenberg
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PHILOSOPHICAL OVERVIEW

I believe in acting as adults, that is: You pay for what you do.

I favor:

- Use Taxes
- Feebates
- Strong standards

I do not favor:

- Detailed accomplishment methods

Setting goals is preferred to defining the path that should be taken.

To the extent possible

- Eliminate subsidies and externalities
- Tie fees to use and responsibility
- Use feebates to offset rulings that would harm the disadvantaged
- Treat the disadvantaged as adults

Whenever possible:

- Intervene by biasing the market towards preferred ends
- Let the market come to a steady state on its own

As the Greeks saw it, government should steer - not row.

Knowledge and belief drive decisions. Therefore, PR campaigns are critical to selling a message to both the public and corporations, and gaining their necessary cooperation.

ENERGY / POWER PRODUCTION

Geothermal

The overwhelming advantage of geothermal energy for all fixed site construction is: decrease in the maximal temperature swing that must be accommodated from 0°-70°F (Δ = 70°F) and 70°-105°F (Δ = 35°F) vs. 58°-70°F (Δ = 12°F) and 70°-58°F (Δ = 12°F). The combined temperature differential with geothermal is 24°F vs. 105°F without, a reduction of 437%. On the basis of average temperatures in Newark the range is 30.6° in winter to 77.8° in summer resulting in a difference of 47.2°F vs. only a 24°F with geothermal.

ACTION: Mandate installation of geothermal for all new construction with initial emphasis on larger construction – town homes, retail and office space. Provide a review of methods and a rating of installers to provide state-of-mind security for purchasers.

Solar

New solar panels (under development) have capture efficiencies up to 45% (3X that of plants) and approximately 40% better than existing material.

ACTION: Tax basis should encourage installation of the most efficient solar panes by tying rebates to performance efficiency.

Wind

Testimony stated that offshore wind could provide 84% of NJ energy. However, NIMBY concerns are preventing installation. Statewide regulations should promote installation. People have accommodated to wind farms elsewhere in the US and the world.

ACTION: Testimony and a PR campaign should be put forth to familiarize and encourage the public to their installation. This could be funded by taxes on large vendors.

Tidal

Tidal energy capture experiments are underway in the East River, NYC.

ACTION: Applicability to other sites in NY harbor should be examined to determine its cost/benefit.

Nuclear

Pebble reactors and other new designs are far safer and more reliable than older generation designs. PSEG and other power companies are prepared to move forward.

ACTION: A PR campaign to acquaint the public with a) daily emissions from coal, natural gas, fuel oil, and nuclear and the attendant costs in terms of illness and environmental damage and b) the same for long term costs and risks allowing that low probability, high potential severity events are grossly overrated while daily events are grossly underrated.

Biofuels

Despite the interest of corn producers there are significant issues with ethanol. First, overall system cost is quite high and may be energy negative. Second, Ethanol has only 70% the energy of gasoline and has a higher vapor pressure, which leads to more evaporative emissions. Cropland production of any kind uses water, and acreage needed for foodstuffs, and negatively adds fertilizer and pesticides to the environment.

ACTION: Carefully examine the cost/benefit tradeoff to determine both economic and environmental balance. Current political and economic drivers should be evaluated to determine the veracity of their assertions.

Hydrocarbons

Obtaining hydrocarbon fuels (gasoline, for example) by drilling for, transporting and refining crude oil has numerous detrimental effects including:

1) adversely affects the US balance of payments
2) creates dependencies on foreign countries and an attendant vulnerability to their form of government
3) contributes to military expenditures to protect the oil
4) distorts the market by providing subsidies and externalities

5) creates environmental vulnerabilities due to spills in drilling and in transport
6) combustion of the product contributes significantly to greenhouse gas levels

One trend and one new technology promise relief.
The trend is the development of hybrid-electric vehicles, which, in the next decade or so will begin to be replaced by electric vehicles (as battery characteristics improve). This will transfer pollutants from mobile to stationary sources, as power plants become the major supplier for energy.

The technology is the ability to reduce (convert) CO_2 back to liquid hydrocarbon fuels. The total amount of CO_2 (on a carbon molar basis) released by power plants in the US almost exactly matches the total amount of gasoline used in the US. If this CO_2 were converted into gasoline it would have two major benefits. First, it would significantly reduce the detrimental effects noted above. Second, it would decrease total US CO_2 emissions by about 23%.

Biotechnology biofuels is a process that captures the chemical reactions of plants and uses them in fermenters to maximize yield, i.e., the cost of supporting the living plant is eliminated. Less than 10% of overall sunlight is available as plant product suitable for conversion to ethanol. The projected cost for using a biotechnology biofuel approach is about $1/gal vs. ~$0.75 for petroleum and $1.90 for ethanol (but controlled for equal energy the cost is ~2.70). Clearly a biofuels approach would be preferred.

TRANSPORTATION

The limits on use of public transportation rest on:
a) inaccessibility of transport,
b) infrequency of transport,
c) inability of public transport to serve a suburban, exurban and rural lifestyle, and
d) inefficiencies in operating transport.

Each of these factors has to be addressed to change the usage profile.

Roadways

NJ relies highly on a road system installed 40-50 years ago as the US Highway system. Many major traffic corridors need to be upgraded to be akin to the Interstate Highway System, though not necessarily becoming part of that program. For example, US 1 between Newark and Trenton needs a major upgrade. It requires widening to 3 traffic lanes in each direction and elimination of intersection traffic lights to promote effective traffic patterns.

These goals can be accomplished by:
a) requiring widening of the corridor on their property line to a total of four lanes (three traffic and one entry/exit from their establishment) with each transfer of property ownership.
b) Placing overpasses at every available site choosing the least controversial first thereby putting political pressure on the least cooperative (e.g., Princeton-West Windsor).
c) In anticipation of electric/electronic vehicles an updated version of the old Intelligent Vehicle Highway Automation has to be started with a 15-year development horizon.

Vehicles
Vehicles present at least three problems:
1) mass damaging road surface and emitting particles as rubber, concrete and asphalt,
2) tailpipe emission pollutants, and
3) fluid leakage.

The particles released have a significant effect on inducing asthma. Thus large vehicles enjoy an externality by transferring their damage to roadways, into health care and productivity losses. Mass is best managed by annual taxation, most likely to the square of the mass. Fuels should be taxed to reflect pollutants and total miles driven (not easy). This is a straightforward use tax. Gas-guzzler taxes should be eliminated; they are deliberately punitive to wealth or selection of inefficiency but not to use of inefficiency.

Rail and Commuter Rail
Large train systems – cars, engines, track, stations, and methods - have to be grossly overhauled to reflect the most modern self-use service modes. As needed, staff must be trimmed, jobs re-described, rigidities eliminated and old work rules abandoned. European models should be examined. A 20-year program should be put in place.

Bus/Light Rail
The model adopted in Curitiba Brazil via Mayor Jaime Lerner must be examined carefully. Lerner should be used as a major consultant.

GREENHOUSE GAS CAPTURE / ABATEMENT

Carbon Dioxide
INDUSTRIAL – Utilities are the major source of CO_2 followed by refineries, metals, cement, paper, food processing, and independent power producers. These sites are large enough point sources to be treated individually. Capture of CO_2 will be able to be done cost efficiently. However, pipeline transportation is likely to run into high cost, delays and permit problems. Geologic storage has distinct problems in various parts of the US particularly the east coast. There is a deep saline reservoir off the coast of NJ, however no other convenient sites exist.

Alternate methods must be found for storage. One is production of carbonates or of bicarbonates. The latter will have to be put in deep wells or in the ocean (bicarbonate, unlike CO_2, is not injurious to ocean biota). A second approach would use the CO_2 as start material for beneficial use, cf. Hydrocarbons, above.

RESIDENTIAL / COMMERCIAL – The CO_2 can be captured and, if pipelines are laid in the street akin to natural gas or water or sewer lines, could be collected and brought to a central site, akin to a water tower, collecting small volume sites into a single large volume point source. This would make it easier and more economical to be treated, cf. Industrial, above.

TRANSPORTATION – Unless and until there are changes in vehicles to replace internal combustion engines (ICE) the only hope of benefit is by increasing efficiency and lowering the

weight of vehicles, adjunct to improvement in public transportation, road structures and road logic.

Methane
Coalmines, pipeline leaks, inefficient burning, animal flatus, landfill releases and soil-based methanogens (included in the agriculture section) are principal sources of methane. Changes to no-till farming could be a major benefit, as would introduction of leak detection systems and replacement of valves, etc.

Nitrous Oxide
Dry cleaning, caprolactam production, oil cracking, wastewater treatment, and domestic animal waste disposal are major sources of NO_2. Supercritical CO_2 is a well-known and commercialized cleaning agent to replace current materials. Taxation should favor this use.

SUSTAINABILITY

General
Replacement with newer, better technology is greatly preferred to rebuilding, and rebuilding is prewferred to refurbishment. Tax structure should encourage large-scale upgrade (including demolishment) at all relevant levels. Aggregating points for improvement benefit does this and provides a multiplier as the savings value increases.

Building Code
NJ needs a uniform, tough building code. The code that exists is minimal and supplemented by townships on a capricious basis. This increases costs for no reasonable or useful reason.

Commercial / Residential
Prefabricated houses have distinct advantages over stick-built, site-built housing. Encouraging this industry will allow for more rapid introduction of improvements.

Despite significant improvements in burners (HHV devices) overall forced air heating and cooling is surprisingly inefficient, in terms of the perception of comfort, and rapidity response in terms of changes of air distribution patterns, and air exchange. Providing a time related comfort index and other guides to the perception of comfort should encourage alternate approaches.

Appliances / Lighting, etc.
The current pricing model is that the new, advanced model, is far more expensive than the old inefficient model. Given the lifetime of appliances 3-7 years, this pricing model (nominally justified on recouping R, D&E costs) discourages rapid replacement. Appliances should be viewed as computers or telephones where the turnover is high. This can be aided by introduction of an energy efficiency tax feebate (the Energy Star approach is inadequate – information is insufficient). People make selections on the basis of capital cost not operating cost with capture of the investment over 3-7 years. A one-year cost capture is needed. The result would be that manufacturers cease to offer low-end machinery replacing it with the higher end goods, whose now increased volume effectively pays back the R, D&E costs, i.e., use volume to drive revenues not price. Introduction of a strategy effectively used in Japan would also help. Here a new

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development must be shared with competitors over a 3-year period giving the developer advantages but preventing egregious use of advantage not in the public interest. (Data exist on these practices and their efficacy).

NJ CT NY
Regional Plan Association

New Jersey Global Warming Response Act (A3301/S2114)
Environment Committee Vote
February 26th, 2007

Statement by
Carlos Rodrigues PP / AICP
Vice President and New Jersey Director
Regional Plan Association

RE: Oversight New Jersey Global Warming Response Act (A3301/S2114)

Thank you for this opportunity to testify and, more importantly, for your interest in helping to address energy and greenhouse gas emissions in the State of New Jersey. The State, through its early action and leadership on climate change, can play an important role in the future of reducing greenhouse gas emissions, increasing energy efficiency and clean energy resources. We appreciate your leadership on this issue.

My name is Carlos Rodrigues. I am Vice President and New Jersey Director for Regional Plan Association (RPA), the Nation's oldest civic group dedicated to regional planning and to improving the quality of life and the economic competitiveness of the 31-county New York-New Jersey-Connecticut region through research, planning, and advocacy. For over 80 years, RPA has been shaping transportation systems, protecting open spaces, and promoting better community design in the region. We anticipate the challenges our region will face in the years to come, and we mobilize the region's civic, business, and government sectors to take action.

RPA is proud to support Governor Corzine's recent Executive Order establishing science-based global warming pollution reduction goals for New Jersey. The bill will require a cap on global warming pollution to below 1990 levels by the year 2020, a 20 percent reduction below current levels. This ground-breaking legislation will turn the Governor's short-term reduction goal into law. We commend the Governor for outlining this remarkable agenda. We look forward to working with the Governor, the State, and the civic community in assessing how best to move from lofty goals to concrete action.

The New Jersey Global Warming Response Act (A3301/S2114) goes beyond the requirements of the Regional Greenhouse Gas Initiative (RGGI) to reduce greenhouse gas emissions from the electricity sector, instead requiring New Jersey Department of Environmental Protection (NJDEP) to establish a mechanism for regulating greenhouse gas emmisions by sectors. The bill is modeled after the California global warming

legislation that passed last year (AB32). The bill also addresses social concerns by requiring that the emission-limiting scheme "does not disproportionately burden low-income and moderate-income households."

To do so, the State should pursue a three part strategy to:

1. Establish a comprehensive and expedited planning process leading to a market-based regulatory program that provides for compliance flexibility;

2. Ensure the safety of our coastal communities, through the protection of irreplaceable wetlands and remaining open spaces, the management of storm water, and the restoration of the hydrologic functions of watersheds, streams and natural shorelines throughout the state;

3. Guarantee that future development will lead to the most energy and location efficient transportation and land use patterns;

1. Establish a comprehensive and expedited planning process leading to a market-based regulatory program that provides for compliance flexibility

Recent New Jersey action and leadership has put the state on track to achieve its goals for global warming pollution reduction. These policies include participation in the Regional Greenhouse Gas Initiative (RGGI) an agreement between 10 Northeastern states to reduce global warming pollution from power plants, a 20 percent reduction by 2020 Clean Energy Standards, Energy Efficiency programs, and the Clean Cars Program which requires an increasing percentage of low-emissions and zero-emissions vehicles to be sold in the state.

In 2004, Former Governor McGreevey signed legislation (S2351/A3393) that applied the "California Clean Car" emissions standards to cars sold in New Jersey. The Clean Cars Program requires an increasing percentage of low-emissions and zero-emissions vehicles to be sold in the state. In 2009, NJDEP will begin implementing the California Low Emission Vehicle (LEV) program, which requires reductions in tailpipe and evaporative emissions of hydrocarbons and nitrogen oxides for all passenger cars, light-duty trucks and sport utility vehicles. The new emissions standards will require carmakers to produce approximately 40,000 gas electric hybrid cars and 128,000 super clean gasoline powered cars. Zero emission vehicles, including those bought for lease will also be exempt from State sales tax and use tax under the new law.

It is vital to ensure New Jersey's commitment to tackling this problem is not superseded by imported electricity generated by coal-fired power plants in nearby states.

The current U.S. Energy Plan contains over a hundred proposals for coal-fired power plants with the potential to wipe out all of the global warming emissions reductions in the RGGI. Another threat is American Electric Power's proposed $3 billion 765-kv transmission line that would pump in dirty energy from West Virginia to New Jersey.

Investments in clean energy and energy efficiency programs are essential to achieving emissions reductions, spur economic growth, and allow for successful cap-and-trade programs. Rutgers university found the states Clean Energy Standard would add approximately 11,700 jobs and related economic benefits to the state economy. The Clean Energy Standard has allowed the state to become a manufacturing leader for solar and wind. The price of clean energy is already declining rapidly. In less that ten years, clean, offshore wind electricity is projected to be 4 to 5 cents/kWh -- half of New Jersey's current 10 cent/kWh electricity prices. The state's Public Benefit Fund demonstrates leadership and continued support of energy efficiency programs spending on average $1.3 million per kWh.

2. Ensure the safety of our coastal communities, through the protection of irreplaceable wetlands and remaining open spaces, the management of storm water, and the restoration of the hydrologic functions of watersheds, streams and natural shorelines throughout the state;

Rising sea levels, due to Climate Change threaten to cause chronic flooding in over 9 percent of New Jersey's land, including the Meadowlands, Atlantic City, Cape May, the Delaware Bay Shore and Long Beach Island. These coastal areas are densely populated and support a $16 billion tourism industry. Fortunately, we have the tools to reduce climate impacts through the immediate reduction of greenhouse gas emissions and the reinforcement and protection of irreplaceable wetlands coastal watersheds. By implementing the Global Warming Response Act, New Jersey will be on the right track minimizing the amount of sea level rise and its potentially devastating consequences.

Key to the success of that effort will be restoring and conserving the estuarine system that New Jersey was built on. Regional Plan Association recently compiled a map of the historic wetlands of New York – New Jersey Harbor. Of the 86 square miles of coastal wetlands that once fringed the edges of the harbor, only 14 miles remain. While we can never replace that green infrastructure – the sponge-like ecosystem that cleaned the Harbor's water and sustained its fisheries and wildlife – we can seek to restore the structure and function of the estuary.

3. Guarantee that future development will lead to the most energy and location efficient transportation and land use patterns;

NJ CT NY
Regional Plan Association

Half of greenhouse gas emissions in New Jersey come from the transportation sector. There are many opportunities for increased use of public transportation and smarter, higher density growth to reduce these transportation-related emissions. The State should aggressively pursue implementation of the policies of the State Development and Redevelopment Plan, in particular its smart growth redevelopment components and redirect State infrastructure investments and subsidies to those areas most capable of absorbing growth while stimulating walking, biking and transit use.

Again, thank you for your interest and for the opportunity to testify on this issue.

New Jersey Business & Industry Association

NJBIA

February 26, 2007

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TO: Members of the Assembly Environment Committee

FR: Sara Bluhm, Assistant Vice President
New Jersey Business & Industry Association

RE: A-3301(Stender/Vanieri Huttle) Global Warming Response Act

On behalf of the 23,600 members of the New Jersey Business & Industry Association, I am here today to oppose A-3301 (Stender, Vanieri Huttle) which expands the regulations for greenhouse gas emissions. Respectfully, NJBIA asks that you hold this bill today as we have serious economic concerns regarding this legislation and its impacts on electric prices which we would like to further address with the sponsor.

New Jersey is already at the forefront on climate change. To be clear: our State is doing something about global warming. For over three years we have been a part of the Regional Greenhouse Gas Initiative (RGGI). In an effort to demonstrate that not one single state in our region can combat global warming on its own, New Jersey has joined other states to urge a national greenhouse gas policy. NJBIA has been a stakeholder in the RGGI process and does not agree with a single state greenhouse gas policy as proposed in this legislation.

In October 2006 Governor Corzine announced the updating of the State's Energy Master Plan (EMP). An aggressive one year timeframe to review, analyze, and plan for the State's future electric, transportation, home heating and natural gas needs. Since December the Board of Public Utilities has been coordinating this interagency planning process that has relied on public working groups to address the problems, challenges, and strategies for the many subgroups of the plan. NJBIA has been a participating stakeholder in virtually all of the working groups. Furthermore, we have represented industry to both CEEEP and NJSSI who have been hired to do the modeling of the EMP. The NJSSI modeling will specifically deal with carbon targets.

The EMP needs to finish before the legislature starts mandating energy policy. Since deregulation occurred the ratepayers of this State, including the commercial and industrial rate payer, have funded the Clean Energy Program. This Program is tasked with providing energy efficiency and renewable energy rebates, incentives and guidance. However, since this Program was begun and deregulation occurred, energy prices have gone up every year. The Board of Public Utilities concluded its annual BGS auction a few weeks ago and again ratepayers of this State will be experiencing double digit increases. Our

industrial rate payers have the 4th highest electric rates in the nation and our commercial ratepayers have the eleventh highest electric rates in the nation. The State needs to have economic modeling to balance any environmental approach.

While this bill aims to protect our State from change in sea level, it does nothing to address energy infrastructure and reliability. In fact, it penalizes instate generators of electricity, oil refineries, natural gas pipelines and industry. Yet, it is often these sources which protect our State from electric blackouts. New Jersey witnessed the devastation of electric grid failure several years ago. Since then steps have been taken to insure the adequate reliable delivery of electricity in our State. Since deregulation, our electric utilities have been forced to sell off their generators. Neither the State nor PJM can compel a generator to run. While PJM and FERC often enter into Reliability Must Run (RMR) agreements with generators to insure electric stability, there are no longer regulations requiring utility companies to run generation.

NJBIA opposes A-3301 on the basis of economics. New Jersey is already a leader in climate change and this bill would be taking a step backward not forward.

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Testimony before the Assembly Environment and Solid Waste Committee
Urging Passage of the Global Warming Response Act (A3301/S2114)
Suzanne Leta Liou, Global Warming and Clean Energy Advocate
February 26, 2007

Thank you for the opportunity to testify before you today. I am Suzanne Leta Liou, the Global Warming and Clean Energy Advocate for Environment New Jersey. Environment New Jersey, the new home of NJPIRG's environmental work, is a non-partisan, non-profit environmental advocacy organization with over 20,000 citizen members across the state. We advocate for clean air, clean water and open spaces and we have a 30-year history of promoting and winning clean energy solutions for New Jersey.

Right now, our top priority is to tackle the greatest and most urgent environmental challenge of our time: global warming. New Jerseyans know that global warming is real. It will devastate our state's economy, ruin our treasured shoreline and wreak havoc on public health if we do not take quick and decisive action to cut our greenhouse gas emissions.

While global warming is very serious, it is solvable. By cutting global warming pollution, primarily carbon dioxide, by roughly 20 percent below current levels by 2020 and 80 percent by 2050, we can avoid the worst effects of global warming, protecting our children and future generations.

We have the solutions available right now to achieve these reductions. These solutions will also grow our economy by promoting investment in clean, renewable energy technologies, protect consumers from rising energy prices and preserve the environment in a multitude of ways.

In order to ensure this becomes a reality, however, we need the state legislature to pass the Global Warming Response Act. This ground-breaking legislation requires mandatory limits on all global warming pollution from all sources statewide to below 1990 levels by the year 2020, about a 20 percent reduction below current levels. The state Department of Environmental Protection (DEP), in consultation with other state agencies, is directed to develop rules and programs to carry out this task. If New Jersey passes of this legislation, we will be the second state in the nation to pass a comprehensive solution to global warming.

New Jersey is incredibly well-positioned to meet the goal of this bill and ensure that we receive the immense benefits from being at the vanguard of global warming solutions. We already have essential building blocks in place -- the Regional Greenhouse Gas Initiative, the Clean Cars Program, the Clean Energy Standard and energy efficiency programs. And while it is true that our global warming pollution is projected to grow by 10 percent in the next two decades if we

don't take further action, if we didn't have these building blocks, our pollution would grow by 26 percent in next two decades.

There are a multitude of strategies to achieve further reductions below current levels -- Environment New Jersey's recently-released "Blueprint for Action" report details 11 specific strategies that the state can employ right away to get us on the right track – strategies that will reduce New Jersey's global warming pollution by 7.5 percent below current levels in the next two decades.

Even more important, we have the ability to dramatically cut our emissions and grow our economy at the same time.

Venture capitalists are chomping at the bit for these solutions because they understand that a high price for carbon is coming and they need to stay ahead of the curve. Right now, the investment community is ramping up their clean energy portfolios with the knowledge that the high price of carbon is just around the corner. They see the urgent need for a new kind of economy, a clean energy economy.

And right now New Jersey is faced with the same opportunity. We can be laggards and continue our reliance on the dirty, polluting, fossil-fuel based industry of the past, or we can be leaders and develop a niche market for our state producing the clean energy technologies of the future. Our leadership will ensure New Jersey is ahead of the curve and receives tremendous economic gain and business opportunities as a result.

And in New Jersey, investments in clean energy and energy efficiency are essential to spurring economic growth. A Rutgers University found that the state Clean Energy Standard would add approximately 11,700 jobs and related economic benefits to the state economy, with even greater benefits if the state becomes a manufacturing leader for solar and wind. Governor Corzine understands the benefits – in his economic growth plan, clean energy is one of six industries to be supported by the Edison Innovation Fund.

The price of clean energy is rapidly declining. According to the National Renewable Energy Laboratory the price of electricity from deep water offshore wind could be less than 7 cents a kWh by 2009 and 5 cents kWh by 2015. For shallow water wind energy, price of electricity be less than 4 cents a kWh by 2015. In comparison, electricity for New Jersey consumers from this year's auction resulted in prices of 10 cents per kWh. So in less than ten years, clean wind electricity is projected to be half the price of our current mix of power plants.

The price of solar energy is also declining and should become cost competitive with conventional sources of electricity within the next ten years. The goal of the U.S. Solar America Initiative, for example, is to reduce solar photovoltaic costs from the current 13 to 22 cents per kWh to 9 to 18 cents per kWh by 2010.

New Jersey's Clean Energy Standard has already created a burgeoning solar industry in our state. 5 years ago, there were 6 solar installations in the state – now there are over 1,800. New Jersey is also home to the first utility scale coastal wind farm in Atlantic County, generating enough electricity to power 2,500 homes.

In the next 20 years, we can meet, beat and further expand our use of clean energy in New Jersey. New Jersey's offshore wind potential is immense – a recent study for the BPU found that wind power developed off New Jersey's shore could potentially exceed the electricity generation of all

the current fossil and nuclear power plants in the state. Even greater potential exists in deeper waters and far offshore areas that have consistent, strong winds. New Jersey also has the potential to be the Saudi Arabia of solar energy – New Jersey boasts 100 sunny days a year and millions of rooftops.

The state's energy efficiency programs have also been very successful; in 2005, the programs saved enough electricity to provide the annual electricity requirements of approximately 50,000 New Jersey homes. Since the programs started in 2001, they have reduced total electricity demand by 450 megawatts, (MW) the equivalent of a mid-sized power plant.

Efficiency programs, which include energy audits, incentives to purchase energy efficient appliances and financial assistance to retrofit power plants to be more efficient. Energy efficiency reduces electricity use and saves ratepayers money. Energy efficiency is actually a boon to consumers in two ways. First, it reduces individual ratepayers' utility bills because they are using less electricity. Second, it reduces the state's total demand for electricity, which reduces the price of electricity overall. In fact, according to the New Jersey Board of Public Utilities (BPU), recently energy efficiency improvements were accomplished for roughly one-fifth the cost of electricity purchases. And our current efficiency programs are only a glimpse of what is possible – we have the ability to reduce our energy demand by as much as 10 percent below current levels by 2020.

The economic growth potential of global warming solutions is further evidenced by a recent study conducted by the University of California at Berkeley which found that cutting California's emissions to below 1990 levels by 2020 could boost the annual Gross State Product by $60 billion and create 17,000 new jobs by 2020. The study found that the gains could be even larger -- $74 billion in annual GSP and 89,000 new jobs -- if climate policies are designed to create direct incentives for California companies to invest in new technology.

And if we don't take action, the economic consequences will be devastating. A lauded study by British economist Sir Richard Stern suggested that global warming could shrink the global economy by 20 percent, but taking action now would cost just 1 percent of global gross domestic product. One example of this for New Jersey is our precious shoreline -- if we don't cut our global warming pollution, our coastal treasures, including Atlantic City, Cape May, Long Beach Island, the Meadowlands and the Delaware Bay Shore, will be submerged completely under water or subject to chronic flooding and devastate New Jersey's $16 billion tourism industry.

Fortunately, by taking action now, we can set New Jersey apart by seizing and developing the global warming solutions that other states, the nation and the world are seeking. By taking action now, we can be visionaries. By taking action now, we can set a vital precedent for national legislation. By taking action now, we can show that solving global warming is more than possible, and we can grow our economy at the same time.

To make all of this a reality – to dramatically cut our global warming pollution, to vastly expand our use of clean energy and energy efficiency, to grow our economy – we need leadership from the state legislature.

The best kind of leadership is to pass the Global Warming Response Act. I urge you vote this bill through this committee and do everything you can to ensure it's swift passage in the Legislature.

We can solve global warming, and New Jersey can lead the way.

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Support the Global Warming Response Act (A3301/S2114)

Prime Sponsors: Assemblywoman Linda Stender and Senator Barbara Buono

Global Warming is Real

New Jerseyans know that global warming is real. It will pack a mean punch, especially for our children and future generations, if we don't curb our emissions. For our state, global warming means more flooding and air pollution.

- Our coastal treasures, including all of our prized beaches, are at risk of flooding from sea level rise. Rising sea levels would also contaminate fresh drinking water sources and cause chronic flooding over 9 percent of New Jersey's land, including the Meadowlands, Atlantic City, Cape May, the Delaware Bay Shore and Long Beach Island.
- Global warming also means more dangerous heat waves and more air pollution, putting seniors and children with asthma and other health problems at risk.

Global Warming Solutions

New Jersey can help put the nation on the path to a secure future by tackling global warming.

- We've had a lot of success here in New Jersey adopting policies to reduce our global warming emissions, but even with those policies in place, our emissions are projected to grow by 10 percent in the next two decades. It is clear that much more must be done.
- To avoid the worst effects of global warming, scientists say that we must cut global warming emissions by 80 percent by the middle of this century. We can do that by making big changes to reduce our energy consumption, shifting to clean, renewable sources of energy and requiring global warming polluters to pay for every pound of global warming pollution they emit.
- New Jersey's commitment to tackling global warming can have a big impact. If New Jersey were it's own country, we would rank 32nd in the world for global warming emissions -- more than Argentina, Greece and Israel. New Jersey can also show other states and the nation that solving global warming is more than possible.

To do this Environment New Jersey urges the New Jersey legislature to pass the Global Warming Response Act (A3301/S2114) requiring mandatory limits on our total global warming emissions.

The Global Warming Response Act

A3301/S2114, sponsored by Assemblywoman Linda Stender (D-22) and Senator Barbara Buono (D-18), requires mandatory limits on New Jersey's global warming emissions from all sources. It is modeled off the California Global Warming Solutions Act, AB32 (Nunez/Pavley).

Specifically, the act requires the New Jersey Department of Environmental Protection (NJDEP) to establish a greenhouse gas reduction program to reduce the global warming emissions, primarily carbon dioxide, produced in New Jersey to below 1990 levels (roughly 20 percent below current levels) by 2020.

- Within a year of the act's passage, the NJDEP is required to establish relevant global warming emissions inventories, prioritize sources for global warming emissions reductions and adopt rules and regulations to achieve reductions below 1990 levels by 2020.

- On or before January 2008, the act requires the NJDEP to establish a global warming emissions monitoring and reduction program and establish a series of interim emissions reduction requirements targeting specific sources to achieve the reductions. The first global warming reduction requirement must be met by January 1, 2012, and the bill lays out that further reductions be phased in, year-by-year, from 2012 through 2020.

- The act requires the NJDEP to identify, monitor and enforce projected and annual emissions from all sources, including emissions from electricity sources located outside of the state that import electricity for use in New Jersey, and to monitor emissions from all sources. According to the most recent data available, 52 percent of New Jersey's global warming emissions comes from transportation, 16 percent is from in-state electricity generation, 13 percent is from direct use of fossil fuels in homes, 11 percent is from direct use of fossil fuels in industry and 8 percent is from direct use of fossil fuels in commercial business. New Jersey also produces emissions through consumption of electricity generated in other states.

- The act requires that on or before January 1, 2009 and annually thereafter, the NJDEP must report back to the Governor and the legislature on current levels of global warming emissions and progress toward meeting the reduction requirements. By January 1, 2015, the NJDEP must evaluate the attainment or maintenance of the 2020 reduction requirement and adopt further regulations to attain or maintain the 2020 requirement or require further reductions beyond the requirement. If further reductions are required, the NJDEP must establish an additional global warming emissions reduction requirement by 2030 and a schedule to attain that level of reduction.

The Global Warming Response Act is ground-breaking legislation. If passed, New Jersey will be one of the first states to adopt mandatory limits on global warming emissions from all sources.

Environment New Jersey is urging all members of the New Jersey Assembly and Senate to co-sponsor A3301/S2114 without delay.

Global Warming Response Act Q&A

Q: This is a worldwide problem that requires a national solution

A: For years, the Bush Administration and Congress have failed the American public by not addressing the most urgent environmental issue of our time. In the case of global warming, just as with the Clean Cars Act, the Clean Energy Standard and the Regional Greenhouse Gas Initiative, the states are taking the lead and setting a strong precedent for national action.

While there are multiple bills that have been introduced in Congress, only one of them, the Global Warming Pollution Reduction Act/Safe Climate Act, requires mandatory, economy-wide science-based emissions reductions (20% by 2020; 80% by 2050) and support for the clean energy solutions associated with those reductions. Sen. Menendez, Sen. Lautenberg and most of New Jersey's congressional delegation support this legislation, but in order to ensure that strong, clean, science-based federal legislation is passed, they need to show that it is possible to achieve it at the state level.

Cutting New Jersey's emissions will also make a big dent in worldwide global warming pollution – if New Jersey were its own country, we would rank 32nd in the world for global warming pollution.

And by taking action early, New Jersey will reap the economic growth benefits associated with investment in the clean energy and energy efficiency technologies that will result from the bill's implementation.

Q: This bill will increase the cost of electricity

A: Global warming solutions save consumers money with proper pollution cap programs that re-invest in energy efficiency. Energy efficiency programs include energy audits, incentives to purchase energy efficient appliances and financial assistance to retrofit power plants to be more efficient. Energy efficiency reduces electricity use, which in turn reduces global warming pollution, and saves ratepayers money.

Energy efficiency is actually a boon to consumers in two ways. First, it reduces individual ratepayers' utility bills because they are using less electricity. Second, it reduces the state's total demand for electricity, which reduces the price of electricity overall. In fact, according to the New Jersey Board of Public Utilities (BPU), recently energy efficiency improvements were accomplished for roughly one-fifth the cost of electricity purchases. Spending one cent on energy efficiency is the same as spending five cents to purchase the amount of energy saved.

The state's current energy efficiency programs have been very successful; in 2005, the programs saved enough electricity to provide the annual electricity requirements of approximately 50,000 New Jersey homes. Since the programs started in 2001, they have reduced total electricity demand by 450 megawatts, (MW) the equivalent of a mid-sized power plant.

Nonetheless, our current efficiency programs are only a glimpse of what is possible – we have the ability to reduce our energy demand by as much as 10 percent below current levels by 2020.

Q: This bill will devastate New Jersey's economy

A: Venture capitalists are chomping at the bit for these solutions because they understand that a high price for carbon is coming and they need to stay ahead of the curve. Right now, the investment community is ramping up their clean energy portfolios with the knowledge that the high price of carbon is just around the corner. They see the urgent need for a new kind of economy, a clean energy economy.

And right now New Jersey is faced with the same opportunity. We can be laggards and continue our reliance on the dirty, polluting, fossil-fuel based industry of the past, or we can be leaders and develop a niche market for our state producing the clean energy technologies of the future. Our leadership will ensure New Jersey is ahead of the curve and receives tremendous economic gain and business opportunities as a result. By taking action now, we can set New Jersey apart by seizing and developing the global warming solutions that other states, the nation and the world are seeking.

And in New Jersey, investments in clean energy and energy efficiency are essential to spurring economic growth. A Rutgers University found that the state Clean Energy Standard would add approximately 11,700 jobs and related economic benefits to the state economy, with even greater benefits if the state becomes a manufacturing leader for solar and wind. Governor Corzine understands the benefits – in his economic growth plan, clean energy is one of six industries to be supported by the Edison Innovation Fund.

This is further evidenced by a recent study conducted by the University of California at Berkeley which found that cutting California's emissions to below 1990 levels by 2020 could boost the annual Gross State Product by $60 billion and create 17,000 new jobs by 2020. The study found that the gains could be even larger -- $74 billion in annual GSP and 89,000 new jobs -- if climate policies are designed to create direct incentives for California companies to invest in new technology.

And if we don't take action, the economic consequences will be devastating. A lauded study by British economist Sir Richard Stern suggested that global warming could shrink the global economy by 20 percent, but taking action now would cost just 1 percent of global gross domestic product.

Q: Global warming is impossible to solve

A: We have the solutions available right now to achieve these reductions. These solutions will also grow our economy by promoting investment in clean, renewable energy technologies, protect consumers from rising energy prices and preserve the environment in a multitude of ways.

In fact, New Jersey's current policies make our state incredibly well-positioned to meet the goal of this bill and ensure that we receive the immense benefits from being at the vanguard of global warming solutions. New Jersey already has the Regional Greenhouse Gas Initiative, the Clean Cars Program, the Clean Energy Standard and energy efficiency programs. While it is true that our global warming pollution is projected to grow by 10 percent in the next two decades if we don't take further action, if we didn't have these building blocks, our pollution would grow by 26 percent in next two decades.

There are a multitude of strategies to achieve further reductions below current levels -- Environment New Jersey's recently-released "Blueprint for Action" report details 11 specific strategies that the state can employ right away to get us on the right track – strategies that will

reduce New Jersey's global warming pollution by 7.5 percent below current levels in the next two decades.

Q: Global warming pollution from other states will offset all of New Jersey's reductions

A: It is true that we cannot allow actions taken in other states to undermine and override all our good progress. New Jersey imports 20-30 percent of our electricity from other states, and much of that electricity is from dirty, coal-fired power plants in Pennsylvania. We are also threatened by proposals for new dirty plant construction and mega-transmission lines.

We can tackle this problem head-on to achieve our goals by requiring a global warming emissions portfolio standard. Put simply, this standard would require all electricity imported to New Jersey to meet our emissions cap. We are working right now on language for this standard and believe that it should be a separate but complementary piece of legislation to the Global Warming Response Act.

We are also part of the Regional Greenhouse Gas Initiative, an agreement between 10 Northeastern states establishing a cap-and-trade program to reduce global warming pollution from power plants. Under this program, New Jersey will reduce global warming pollution from power plants by 10 percent below 2009 levels by 2019, a real contribution toward the goals of the legislation before you today.

Q: Clean energy technology is too expensive

A: The price of clean energy is rapidly declining. According to the National Renewable Energy Laboratory the price of electricity from deep water offshore wind could be less than 7 cents a kWh by 2009 and 5 cents kWh by 2015. For shallow water wind energy, price of electricity be less than 4 cents a kWh by 2015. In comparison, electricity for New Jersey consumers from this year's auction resulted in prices of 10 cents per kWh. So in less than ten years, clean wind electricity is projected to be half the price of our current mix of power plants.

The price of solar energy is also declining and should become cost competitive with conventional sources of electricity within the next ten years. The goal of the U.S. Solar America Initiative, for example, is to reduce solar photovoltaic costs from the current 13 to 22 cents per kWh to 9 to 18 cents per kWh by 2010.

Q: Clean energy technology isn't available

A: New Jersey has one of the best Clean Energy Standards in the nation, requiring that 20 percent of the electricity used in New Jersey comes from clean, renewable sources like wind and solar. This program has created a burgeoning solar industry in our state. 5 years ago, there were 6 solar installations in the state – now there are over 1,800. New Jersey is also home to the first utility scale coastal wind farm in Atlantic County, generating enough electricity to power 2,500 homes.

In the next 20 years, we can meet, beat and further expand our use of clean energy in New Jersey. New Jersey's offshore wind potential is immense – a recent study for the BPU found that wind power developed off New Jersey's shore could potentially exceed the electricity generation of all the current fossil and nuclear power plants in the state. Even greater potential exists in deeper waters and far offshore areas that have consistent, strong winds. New Jersey also has the potential to be the Saudi Arabia of solar energy – New Jersey boasts 100 sunny days a year and millions of rooftops.

Q: This bill doesn't include details about implementation

A: This bill is a comprehensive solution to global warming because it requires the DEP, in consultation with other state agencies, to address all sources of pollution and leave no stone unturned. The state agencies develop the plan, but the legislature sets the bar by requiring a visionary and urgent pollution reduction requirement and gives state agencies the mandate and authority to comply. A flexible, comprehensive approach will be guided by the most cost effective and beneficial solutions at our state's disposal.

A comprehensive plan is necessary to achieve the reduction, as global warming pollution in New Jersey comes from many varied sources. Half of New Jersey's global warming pollution, 52 percent, comes from transportation, primarily cars and trucks. 16 percent of our pollution comes from in-state power plants that generate electricity. We also import 20 to 30 percent of our total electricity use from out of state, including dirty coal-fired power plants in Pennsylvania. 21 percent of our pollution comes from residential and commercial use, primarily heating, and another 11 percent of our pollution comes from industrial facilities. While global warming pollution from heating has stayed relatively constant and industrial facilities has declined in recent years, the two largest sources of pollution, transportation and electricity, are projected to grow significantly.

Q: Fuel efficiency technology is too expensive and can't be deployed on a large-scale

A: There is clear evidence that the technology is available to achieve a 40 miles per gallon standard within the next 10 years. Currently, there are already 13 hybrid gas-electric vehicles on the market, including 5 SUVs and one pick up truck. Another 9 hybrids are expected to come on the market within the next 2 years and another 16 models are in the works. The technology is rapidly developing; plug-in hybrids to renewable electricity sources are a real option, in fact Toyota Prius models that have been converted to plug-in hybrids have achieved 100 miles per gallon.

Americans are also aching for more fuel efficient cars. According to a recently released public opinion survey by the Civil Society Institute, there is a potential market of at least 2.5 million U.S. consumers for the introduction of the more than 100 highly fuel efficient cars now being sold overseas but not in this country. The survey also found that four out of five Americans say they would support "Congress taking the lead to achieve the highest possible fuel efficiency as quickly as possible" by raising fuel economy standards to 40 miles per gallon.

Q: New Jersey can't regulate fuel economy

A: While New Jersey is pre-empted by the federal government from raising fuel economy standards, we can improve fuel efficiency through a variety of state policies. New Jersey has already started to improve fuel efficiency through the Clean Cars Program. The program, passed by the legislature in 2004, requires an increasing percentage of zero-emissions and low-emissions vehicles to be sold in New Jersey. Adopted in 13 states across the country, the Clean Cars Program is a great head start to reduce global warming pollution from cars and trucks.

Using the same type of multi-tiered approach we have used to cut pollution from electricity, we can build on the Clean Cars Program to promote fuel efficiency even more. One way to do that is to establish a statewide cost-neutral "feebate" program to help drive the rapidly growing market for fuel efficient cars. This "feebate" program would charge disincentives, or fees, to purchasers

of the worst gas guzzlers and use the money generated from those fees to provide incentives, or rebates, to purchasers of the most fuel efficient vehicles. Another option for New Jersey is to ensure existing car-owners have the option of purchasing low rolling resistance tires that improve fuel efficiency.

Q: New Jerseyans depend on driving

A: We can take big steps to ensure we stabilize the amount of driving in our state, especially if we address commutes to work. After all, nearly 75 percent of New Jerseyans drive to work alone. We can tackle this by providing incentives for ride reduction programs such as carpooling, shuttle service to transit stations and telecommuting and offering pay-as-you-drive auto insurance. We can also change development patterns to focus on transit villages and ensure mass transit is affordable and accessible.

Q: Clean coal technology will solve this problem

A: There is no such thing as "clean coal". The vast majority of proposed coal-fired power plants are conventional pulverized coal plants, which emits massive amounts of carbon dioxide, the leading greenhouse gas. Coal-fired power plants increase global warming pollution at a time when dramatic cuts in pollution are urgently needed. These plants also make it even more difficult for New Jersey's 13 counties to comply with federal air pollution standards. In addition to carbon dioxide, coal-fired power plants emit sulfur dioxide, fine particle pollution linked to premature death, respiratory and cardiovascular disease, nitrogen oxide, a smog-forming pollutant linked to asthma, and mercury, a neurotoxin that causes birth defects.

The level of added coal-fired electric generating capacity now proposed has not been seen occurring since the 1960s and 1970s. There have been no new coal plants built in New Jersey since 1994, and nationwide, the amount of new coal generation has been declining steeply since 1980, until now. Across the country, 150 new coal-fired power plants have been proposed, including several plants in Pennsylvania and one in West Deptford, New Jersey proposed by LS Power. New Jersey regulators are also considering allowing a currently shut down coal plant in Cape May County to be re-powered and expanded, once it is sold. (The BL England Plant, now owned by Atlantic City Electric Company, is up for sale.)

Coal-fired plants will consume investments that could be otherwise spent on energy efficiency and renewable technology. LS Power's proposal for a coal plant in West Deptford will cost $1 billion just to build. Alternatively, New Jersey's $472 million investment in energy efficiency from 2005-2008 will save consumers $2 billion over the life of the program. If we doubled our spending on New Jersey's energy efficiency programs, we could save consumers in the state as much as $1.4 billion more.

Gasified coal, or IGCC (Integrated Gasification Combined Cycle), with carbon sequestration is an immature technology. Carbon capture and storage would require vast expansion of carbon transportation infrastructure and identification of storage units with huge capacity. The U.S DOE estimates that storing all U.S. power plant coal emissions would require enough infrastructure to liquefy, transport and inject roughly 2 billion metric tons of carbon dioxide annually. According to EPRI, there are currently 21 demonstrations around the world and not one of them is large enough to store the lifetime emissions of even one power plant.

IGCC with carbon storage is also demonstrated to be the least-cost way to reduce global warming emissions consistent with climate-stabilization goals in comparison to renewable energy and

energy efficiency. A December 2005 study by the MIT Joint Program on the Science and Policy of Global Change estimated that adding carbon capture technology and disposing of the carbon in geological formations would increase the plant's levelized cost by nearly $30/MWH or 74 percent.

Q: Nuclear power will solve this problem

A: Nuclear power plants pose safety, security and environmental problems. There are no safe or secure storage options for nuclear waste and as nuclear plants deteriorate with age, they become even more susceptible to a catastrophic accident. This is clearly the case with the Oyster Creek nuclear plant on the Jersey Shore -- the oldest operating nuclear power plant in the country. Nuclear power plants also use cooling systems that devastates the ecosystem of local waterways by taking and discharging billions of gallons of water and associated aquatic life every day.

While the federal Nuclear Regulatory Commission is approving 20-year license extensions for nuclear plants across the country, these plants should be phased out over time. We can meet our future electricity needs and reduce global warming pollution without increasing our reliance on nuclear energy. For example, a 2004 study by Synapse Energy Economics found that the U.S. could reduce carbon dioxide emissions from electricity generation by more than 47 percent by 2025 and meet projected electricity demand while saving consumers $36 billion annually. In fact, it is possible to do this while cutting our reliance on nuclear power in half. By moving forward with and maximizing clean energy and energy efficiency technologies, New Jersey can retire the state's current nuclear plants at the end of their current operating licenses and reduce global warming pollution to necessary levels at the same time.

Even if the safety, environmental and security problems associated with nuclear power did not exist, nuclear power would still not be a viable option to solving global warming. According to reports from MIT and the Institute for Energy and Environmental Research, between 1,000 and 2,000 new nuclear plants would have to be built around the world by mid-century just achieve a noticeable reduction in the expected *increase* in carbon dioxide emissions. Given the long construction time (minimum of 10 years) and tremendous expense of nuclear plants (Since 1948, the nuclear power industry has received tens of billions of dollars in federal subsidies but remains unable to compete economically on its own), building this many reactors is simply unfeasible.

ADDITIONAL APPENDIX MATERIALS
SUBMITTED TO THE

ASSEMBLY ENVIRONMENT AND SOLID WASTE COMMITTEE
for the
FEBRUARY 26, 2007 MEETING

Submitted by Suzanne Leta Liou, Global Warming and Clean Energy Advocate, Environment New Jersey:
"A Blueprint for Action: Policy Options to Reduce New Jersey's Contribution to Global Warming," Executive Summary, Environmental New Jersey Research & Policy Center, 2006.