Clean Ocean Action

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Ocean Advocacy Since 1984

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VIA EMAIL

New Jersey Board of Public Utilities
Office of Policy and Planning
Attention: Draft EMP Comments
Two Gateway Center
Newark, New Jersey 07102

RE: New Jersey Energy Master Plan Comments

To Whom It May Concern:

Clean Ocean Action (COA) is a regional, broad-based coalition of 125 conservation, environmental, fishing, boating, diving, student, surfing, women's, business, service, and community groups with a mission to improve the degraded water quality of the marine waters of the New Jersey/New York coast. COA and the undersigned submit the following comments on New Jersey's Draft Energy Master Plan (EMP or Plan).

Energy use is extremely important as it has a wide range of environmental impacts. From broad impacts such as global climate change, sea-level rise, and ocean acidification to local projects such as building industrial LNG facilities off New Jersey's coast, energy use decisions adversely impact the ocean and coastal ecosystem. The consequences of New Jersey's energy future are profound.

COA applauds Governor Corzine's leadership to address energy policies in the state with the update of New Jersey's Energy Master Plan. It is long overdue and essential to the improved environmental, social, and economic well-being of the State. The Draft EMP takes several steps forward in a few areas, but we believe the State can take more aggressive steps to achieve a cleaner energy future in an economical manner. COA's approach in reviewing the Draft EMP was to find a way to strive for a green plan, both in terms of the environment and economics. That State has limited resources and New Jersey must make the wisest investments so that the State can exceed its goals for conservation, efficiency, and renewable energy.

Goal 1

COA believes the proposed energy conservation and energy efficiency goals are heading in the right direction and COA commends the State for giving much

attention to these measures. However, the evidence proves that the conservation and efficiency goals are not aggressive enough. The State can and must increase the goal of reducing projected 2020 electricity consumption from 20% to 31.11% and increase the goal of reducing projected 2020 natural gas for heating consumption from 21% to 29.11%.

Electricity

In 2005, New Jersey consumed roughly 83,000 GWh of electricity. The Draft EMP seeks a reduction to 80,000 GWh from a projected BAU consumption level of 100,000 GWh in 2020, or a reduction of 20%. Framed another way, New Jersey only seeks to reduce electricity consumption by 3.6% from 2005 levels.

Supporting data shows a reduction in electricity consumption of 31.11% (as opposed to the proposed 20% reduction) is attainable, affordable and makes economic sense. According to an energy efficiency market potential study for the New Jersey Board of Public Utilities (BPU) by KEMA Inc. (herein the "KEMA Report"), if all economically feasible energy efficiency measures analyzed in the study were implemented, by 2020 the State could reduce consumption by 17% from 2004 levels.[1] (KEMA defines "economic potential" as "the technical potential of those measures that are cost-effective when compared to supply-side alternatives."[2]) The Final EMP must adopt this more aggressive goal of 17% reductions in current consumption, as opposed to the goal of 3.6%. Reducing 2005's 83,000 GWh by 17% would be a savings of 14,110 GWhs. As a result, electricity demand in New Jersey would be reduced from 83,000 GWh to 68,890 GWh/year by 2020. As the Draft EMP frames the issue (with the percentage reduction based on projected 2020 consumption, not current consumption), the State must reduce consumption by 31.11% from the projected consumption level of 100,000 GWh for 2020.

Natural Gas – Heating

In 2005, the State consumed 495.18 trillion Btus of natural gas for heating. The Draft EMP seeks a reduction to 397.05 trillion Btus from a projected BAU consumption level of 501 trillion Btus in 2020, or a reduction of 21%.

Again, the KEMA Report finds that greater savings make economic sense. The KEMA report finds that by 2020, New Jersey can save 140 trillion Btus of natural gas off of 2004 levels through economically feasible energy efficiency measures. The Final EMP must seek to reduce New Jersey's 2005 consumption level by this 140 trillion Btus. This means New Jersey would consume 355.18 trillion Btus in 2020. As the Draft EMP frames the issue, this would be a 29.11% reduction from the projected 2020 BAU consumption level of 501 trillion Btus.

[1] New Jersey Energy Efficiency and Distributed Generation Market Assessment, Final Report to Rutgers University, Center for Energy, Economic and Environmental Policy, KEMA Inc, at ES-3, at http://www.policy.rutgers.edu/ceeep/images/Kema%20Report.pdf.

[2] New Jersey Energy Efficiency and Distributed Generation Market Assessment, Final Report to Rutgers University, Center for Energy, Economic and Environmental Policy, KEMA Inc, at 2-2.

Oil – Heating

Currently, the Draft EMP seeks to reduce heating oil consumption to 77.12 trillion Btus in 2020. COA supports the reductions in heating oil through efficiency and conservation measures. The KEMA report did not study the economically feasible potential for reductions in heating oil but COA urges the State to again pursue all measures that are cost effective when compared to supply-side alternatives. The Draft EMP finds that heating oil use would actually decline under BAU. So the additional reductions from the EMP 2020 Alternative scenario come off of current consumption as opposed to a higher projected consumption level. The Draft EMP seeks to reduce consumption by 17% from 2020's BAU consumption level of 93.25 trillion Btus.[3] But this would actually be a 28% from 2004's 107.11 trillion Btus.

Conservative Estimate

It is worth keeping in mind that the KEMA Report did not evaluate all energy efficiency and conservation measures, as the options are numerous. Further, as efficiency and conservation technologies advance, more economically feasible options become available that can out-compete supply side alternatives. In addition, the cost of electricity has increased significantly since the KEMA Report, raising the economic potential of several measures.

These conclusions are further supported by a draft report by Rutgers' Bloustein School commissioned by the BPU as an update to the KEMA Report (herein "Draft Rutgers Report").[4] The Draft Rutgers Report found that *"[s]ince the [KEMA] study was written, several technologies have emerged or in some instances become more readily accepted."*[5] Although the Draft Rutgers Report only studies the savings estimates for the 2009 to 2012 time horizon, it is helpful nonetheless because it demonstrates that the KEMA report is now conservative and in fact the State can achieve even greater economical energy savings.[6] In addition, the conclusions of both the KEMA Report and Draft Rutgers Report are directly relevant to the EMP, as they were both developed under the direction of the BPU to inform future energy efficiency potential for the state of New Jersey.

Externalities

Moreover, these energy savings would prevent the need to build new power plants. It makes no sense for the State to build a new power plant when it actually costs less over the long run to prevent the need through efficiency. COA's position is that efficiency and conservation measures must be implemented at least to the extent where the savings they achieve cost as much or less than a supply side alternative (i.e., if the State could prevent 14,110 GWhs/year of

[3] Modeling Report for the Draft Energy Master Plan, Rutgers Edward J. Bloustein School of Planning and Public Policy, April 17, 2008, at 44.
[4] Review and Update of Energy Efficiency Market Assessment for the State of New Jersey, Draft Report, Rutgers, Edward J. Bloustein School of Planning and Public Policy, April 2008, at 16, at http://www.njcleanenergy.com/files/file/EEAssessment_Final%20Draft.pdf .
[5] Review and Update of Energy Efficiency Market Assessment for the State of New Jersey, Draft Report, Rutgers, Edward J. Bloustein School of Planning and Public Policy, April 2008, at 16.
[6] Review and Update of Energy Efficiency Market Assessment for the State of New Jersey, Draft Report, Rutgers, Edward J. Bloustein School of Planning and Public Policy, April 2008, at 27.

consumption at the same cost as it would take to build and run a power plant, the State should take the former action). This position actually has other inherent benefits beyond wise fiscal policy. There are numerous externalities associated with power plants that are not incorporated into costs. For example, the State would limit pollution and other such externalities that result in costs to its citizens, from asthma to sea level rise. For example, Rutgers has projected the economic benefits of reduced CO_2 emissions could range from $407,981,301 to $12,919,407,850.[7] These environmental externalities actually justify going beyond what is economically feasible to what is technically feasible, which KEMA also studied and would be a 36.09% reduction from projected 2020 electricity consumption and a 31.10% reduction from projected 2020 heating natural gas consumption.[8]

Demand side reductions also reduce the State's most serious energy problems, including reducing the need for new transmission lines, congestion at load centers and peak demand, something building power plants does not.

Jobs

Further, efficiency and conservation measures create and sustain thousands of good, high quality jobs, whereas power plants don't. Under the Draft EMP's goals, it is projected that 6,026 permanent jobs will be created from 2010 to 2020 from energy efficiency audits and installations.[9] Unlike other jobs, such as building a new power plant, this means that every single year over 6,000 people will be put to work. It is highly unlikely that any other energy strategy could create so many jobs. Further, since the Draft EMP's efficiency and conservation goals are below what's economically feasible, the number of jobs created would only increase under COA's recommendation to increase EMP Goal 1 from 20% to 31.11% for electricity and 21% to 29.11% for heating natural gas.

Further, as the Draft Rutgers Report demonstrates, 31.11% and 29.11% goals are now below what's economically feasible, meaning that all of these measures will result in net savings over the long term by costing less than supply-side alternatives. So the State will be creating significant jobs, the air and water quality will improve, and citizens will save money over the long term.

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[7] Modeling Report for the Draft Energy Master Plan, Rutgers, Edward J. Bloustein School of Planning and Public Policy, Apr. 17, 2008, at 14, Table 4.

[8] The KEMA Report finds that achieving technically feasible reductions would result in a 23% decline from 2004 consumption levels. New Jersey Energy Efficiency and Distributed Generation Market Assessment, Final Report to Rutgers University, Center for Energy, Economic and Environmental Policy, KEMA Inc, at ES-3. 23% of 2005's 83,000 GWh would result in reductions of 19,090 to 63,910 GWh. A reduction from 100,000 GWh to 63,910 is a reduction of 36.09%. The KEMA Report finds that achieving technically feasible reductions would result in a reduction of 1.5 billion therms from 2004 consumption levels, or 150 trillion Btus. New Jersey Energy Efficiency and Distributed Generation Market Assessment, Final Report to Rutgers University, Center for Energy, Economic and Environmental Policy, KEMA Inc, at ES-5. Reducing 2005's 495.18 trillion Btus by 150 to 345.18 is a 31.10% reduction.

[9] 1,254 annual jobs would be created from energy efficiency audits and 4,772 annual jobs would be created from energy efficiency installations. Modeling Report for the Draft Energy Master Plan, Rutgers, Edward J. Bloustein School of Planning and Public Policy, Apr. 17, 2008, at 59, Table: Energy Efficiency and Renewables Jobs Assumptions.

KEMA vs. EMP Assumptions

One potential issue is whether the KEMA Report considers projected economic and population growth in its projected energy savings reductions as is done in the Draft EMP. COA makes the above recommendations upon the opinion that the KEMA Report does account for such factors. First, these reports were developed under the direction of the BPU, and we trust that such factors would be part of the decision making process that the BPU would seek to rely upon. Second, the KEMA Report and the Draft EMP discuss the issues in a similar format with one exception – the KEMA Report describes the percentage reductions off of current levels while the Draft EMP describes the percentage reductions off of projected levels. But both documents describe the reductions from 2020 levels. Finally, the Draft Rutgers Report directly compares the KEMA Report projections to the Draft EMP projections. If the KEMA Report did not include projected growth to 2020, it would make no sense for Rutgers to compare the two. For these reasons, COA believes the KEMA Report projections are directly comparable and are capable of setting the economic standards off of which the Final EMP should be based.

Framing the Goal

Finally, as a matter of policy, the Final EMP should seek efficiency and conservation reductions from the current rates of consumption, not projected rates of consumption. Saying the State will achieve a 20% reduction in electricity consumption when it is really only achieving a 3.6% reduction is like Richard Simmons telling a client that her goal is to drop her weight from 400 pounds to 300 pounds when the client only weighs 310. A loss of 100 pounds may sound better, but she's really only losing 10 pounds.

Setting the reduction goal based on future projected needs creates the perception that New Jersey must only curtail future demand. A stronger and more accurate message would acknowledge the State's need to immediately reduce current electricity consumption through efficiency and conservation. How the goal is presented and perceived is important to its acceptance and sends a strong message that will help frame the task ahead for the State. Therefore, Goal 1 should be rephrased to accurately express the need to reduce current consumption. In the interest of being consistent with the Draft EMP and to thus avoid confusion, COA did not follow this recommended approach in our above discussion of our percentages of 31.11% and 29.11%.

Conclusion

For all of these reasons, the Final EMP must change Goal 1 from seeking a 20% reduction to a 31.11% reduction from projected 2020 electricity consumption and from seeking a 21% reduction to a 29.11% reduction from projected 2020 heating natural gas consumption.

Goal 2

COA supports the State's plan to reduce peak demand by 5,700 MW by 2020, including the goals of increasing reliability and decreasing capacity costs by reducing peak demand through tools such as demand response. *"[D]emand rises to peak levels for only a small number of hours*

each year – generally fewer than 50 hours out of 8,760."[10] The Northeast States for Coordinated Air Use Management reported the peak electricity demand is growing two to three times faster than baseload demand, and the electric power plants that are used to meet increasing peak demand can be among the dirtiest power plants in the Northeast. For Example:

> *"A snapshot of one August day during 2002 indicated that high emitting combustion turbines in New Jersey contributed over 50 percent of the state's total Energy Generation Units NOx emissions beginning around 3 p.m. in the afternoon. Most of these sources operating as peaking units in New Jersey do not have any NOx controls."*[11]

In fact, Governor Corzine made use of this unfortunate fact in recent testimony to the U.S. Senate's Committee on Environment and Public Works.

> *"In the summer of 2002, New Jersey had the highest number of ozone violations per monitoring station in the nation. Ground level ozone concentrations throughout the entire state of New Jersey exceed current national health-based standards."*[12]

The cost of electricity also peaks during periods of high demand. It is therefore essential that the EMP focus on maximizing efficiency, conservation, and demand response efforts that directly reduce peak energy demand and the use of dirty electricity generation from peak power plants. Controlling peak demand plays a key role in meeting all four challenges presented in the EMP, including the rapid increase in demand, the rising cost of energy, and increasing greenhouse gas emissions and other pollutants.

COA's recommendations regarding Goal 1 would likely result in even greater reductions in peak demand than 5,700 MW, but it is difficult to determine the actual number. Currently, 3,500 MW of the 5,700 MW reduction would result from Draft EMP Goal 1's 20% reduction in energy consumption by 2020. If that ratio of demand reduction to energy savings held the same if Goal 1 was increased to 31.11%, then 5,444 MW of peak demand would be reduced by 2020 through efficiency and conservation measures.[13] Combined with the Draft EMP's 2,200 MW of peak demand reductions through specific peak demand initiatives, the State could reduce peak demand for electricity by 7,644 MW by 2020.

Goal 3: Meet 22.5% of the State's electricity needs from renewable sources.

Goal 3 is not a "Goal" as it only aims to achieve a milestone that is already required by law. Goal 3 is technically BAU with the only difference being that the other four EMP Goals lower the consumption level upon which the RPS is based. Thus, Goal 3 actually reduces renewable

[10] Draft Energy Master Plan, Apr. 17, 2008, at 8.
[11] High Electricity Demand Days and Air Quality in the Northeast. Prepared by Northeast States for Coordinated Air Use Management, Final White Paper June 2006
[12] TESTIMONY OF GOVERNOR JON S. CORZINE, UNITED STATES SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, JANUARY 24, 2008.
[13] 3500/20 = x/31.11. x = 5444.25.

generation. This must not stand. New Jersey must retain the higher level of renewable energy generation, 22,500 GWh.

The supporting documents for the Draft EMP demonstrates that the State can achieve the BAU's 22,500 GWh from renewable sources. The State has said it can achieve 22,500 GWh of renewable electricity by 2020 and the State must not back down from such an achievement.

COA commends the State for its aggressive goal to develop in-state sources of renewable energy to meet the RPS. However, while it is important to increase energy independence, it is better to rely on as little carbon-based energy as possible. The Final EMP must balance the desire for in-state generation and large-scale electricity generation with the most cost effective choices. Presumably, the BAU scenario relies more on imported renewable electricity because that is most cost effective. After all, the BAU is the scenario in which our capitalistic society decides what investments have the greatest pay off. The more cost-effective choices the State makes, the more likely it can meet and exceed its renewable goals. It is better if the State achieves 22,500 GWh of renewables instead of 16,000 GWh in 2020, even if that means less in-state generation. The State could use such an increase in renewable generation to reduce imports of carbon-based electricity, thus not increasing reliance on overall electricity imports.

In addition, COA has serious concerns about our ability to achieve the RPS under the Alternative Scenarios, due to its heavy reliance on offshore wind and the recent BPU proposal to limit the contribution of solar through a megawatt cap. To achieve and exceed the RPS, New Jersey must employ the most predictable and reliable measures as well as be adaptive as technology evolves.

Don't Block the Sun, Shine More Light on Solar Energy

New Jersey has the second largest solar market in the nation and a recent report commissioned by the BPU to assess New Jersey's renewable energy resources (hereinafter "2008 Assessment Report") found "*the majority of the economic potential capacity for renewables development within New Jersey (64%) is residential and commercial solar (i.e., customer-sited PV).*"[14] But recently proposed amendments at *N.J.A.C. 14:8-2.3(j)* initiated by the BPU would trigger a freeze in the solar electric generation capacity at 1,700 megawatts or 2.12 percent of 80,000 gigawatt-hours annually. Not only is it inappropriate to set a cap based on projected annual electricity demand that might result from yet un-adopted and unachieved energy efficiency measures, but such a restrictive policy could undermine the State's ability to achieve the RPS by effectively limiting the contribution of New Jersey's most developed renewable resource.

Too Many Eggs in One Basket

The Alternative Scenario's substantial reliance on offshore wind energy also jeopardizes the State's ability to achieve the RPS due to the numerous and significant uncertainties regarding

[14] Assessment of the New Jersey Renewable Energy Market, Volume 1, Summit Blue Consulting LLC, March 24, 2008, at http://www.njcleanenergy.com/files/file/NJ%20RE%20Mkt%20Assmt%20Svc%20Rpt%20Vol%201%20FINAL%203-24-08.pdf.

offshore wind that make it difficult to predict its actual rate of development, electricity production, and cost.

The BAU Scenario in the EMP shows the RPS can be met with 350 MW of offshore wind,[15] while the EMP's Alternative Scenario relies on the successful development of 1000 MW of offshore wind by 2020 and a second EMP Scenario, "Alternative A," actually increases the amount of offshore wind to 3000 MW.

It is irresponsible and unnecessarily risky for the State to rely so heavily on the nascent offshore wind industry. The numerous uncertainties associated with offshore wind development listed below are significant, and any one of them could impede the State's plan to meet the RPS through the installation of 1000 – 3000 MW of capacity by 2020.

Current Uncertainties associated with Offshore Wind Development include:

1. COST: The "real costs" to develop offshore wind are substantially higher than the estimated costs of $2,000 - $2,500/kW used in the Draft EMP and $2,972/kW used in a recent report commissioned by the New Jersey Board of Public Utilities (BPU), to assess New Jersey's renewable energy resources (herein "2008 Assessment Report"). The 2008 Assessment Report does clarify that *"[t]he cost estimate for offshore wind is highly speculative as no offshore wind has been built in the US."*[16] The recently published costs associated with Long Island Power Authority's (LIPA) proposed 144 MW Offshore Wind Project located in the Long Island Sound and DelMarVa Power's 450 MW Offshore Wind Project located off the Delaware coast, are now estimated to be $5,634/kW[17] and $3,500/kW,[18] respectively. Financial analysis of the proposed LIPA offshore wind project identified a $1,231/kW increase in costs compared to Europe due to *"known installation differences in North America, contingencies in construction costs associated with the Long Island project and an approximately $500 per kW premium on the North American GE turbine."*[19] Any offshore wind facilities off the New Jersey coast would be subject to similar installation issues. In fact, Engineering, Procurement, and Construction (EPC) concerns (including difficulty of installation, foundation and support requirements, underwater cabling, and interconnection requirements) are likely to be greater for the proposed New Jersey offshore wind pilot project due to its location in the open ocean of the Atlantic compared to the more protected Long Island Sound.

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[15] Modeling Report for the Draft Energy Master Plan, Rutgers Edward J. Bloustein School of Planning and Public Policy, April 17, 2008, at 15.

[16] Assessment of the New Jersey Renewable Energy Market, Volume 1, Summit Blue Consulting LLC, March 24, 2008 http://www.njcleanenergy.com/files/file/NJ%20RE%20Mkt%20Assmt%20Svc%20Rpt%20Vol%201%20FINAL%203-24-08.pdf.

[17] Pace Global Energy Services, Assessment of Offshore Wind Resources for Long Island Power Authority, August 22, 2007. http://www.lipower.org/newscenter/pr/2007/pace_wind.pdf.

[18] Delaware Public Service Commission Staff Report on Term Sheet for proposed power sales to DelMarVa Power, October 29, 2007

[19] Pace Global Energy Services, Assessment of Offshore Wind Resources for Long Island Power Authority, August 22, 2007. http://www.lipower.org/newscenter/pr/2007/pace_wind.pdf.

Additional detailed information on the estimated cost of offshore wind construction, operation, and maintenance can be found in the attached copy of our comments on the "*Modeling Report for the Draft Energy Master Plan"* (herein "EMP Modeling Report").[20] The EMP Modeling Report contained detailed information and assumptions used in the modeling effort designed to inform the EMP.

2. REGULATORY REQUIREMENTS: Any offshore wind facility proposed before 2020, including all but a portion of one of the proposals submitted for the New Jersey pilot project, are likely to be located more than three miles off the New Jersey coast and therefore under the jurisdiction of the federal government, not the state. It is not yet clear what the federal regulatory and permitting requirements will be or how long the process will take. In addition, the State of New Jersey has yet to develop any regulatory structure of its own.

3. U.S. EXPERIENCE: There are currently no offshore wind facilities in US waters. This inexperience cannot be underestimated and will be a challenging hurdle in developing affordable, reliable offshore wind generated electricity. Some important issues are: a) the actual performance and reliability of offshore wind turbines off the US coast are unknown and b) the infrastructure needed to construct, operate, and maintain offshore wind facilities, including specialty service providers, equipment, and manufacturing are based in Europe.

4. CAPACITY FACTOR VALIDITY: The capacity factor (i.e., electricity generating efficiency) for offshore wind turbines is highly speculative and the EMP and Modeling Report utilize the maximum capacity factor of 35% in a majority of their economic and electric generation analyses for offshore wind. This is a value that is not supported by the European offshore wind experience, which has proven to be highly variable. A reduced capacity factor will significantly impact the economics of offshore wind and its ability to generate enough electricity for the State to achieve the RPS.

5. ENVIRONMENTAL IMPACTS: In 2006, the State appointed Blue Ribbon Panel released a final report (herein "BRP Report") on the feasibility of developing offshore wind off the New Jersey coast. The BRP Report included an extensive list of currently unknown ecological and environmental information[21] that is necessary before an informed determination can be made regarding the appropriateness of developing offshore wind in the waters off New Jersey. The BRP Report also established a set of "*Guiding Principles for Development of Renewable Technologies*" including the environmental principals that any renewable energy facility must not cause "*unacceptable adverse impact to wildlife or natural resources,*" and "*must not cause unacceptable interference with critical avian or marine mammal lifecycle habits, or cause unacceptable loss of critical habitats."*[22]

[20] Modeling Report for the Draft Energy Master Plan, Rutgers Edward J. Bloustein School of Planning and Public Policy, April 17, 2008, at 15.
[21] Blue Ribbon Panel on Development of Wind Turbine Facilities in Coastal Waters. Final Report to Gov. Jon S. Corzine. April 2006. Page 8
[22] Blue Ribbon Panel on Development of Wind Turbine Facilities in Coastal Waters. Final Report to Gov. Jon S. Corzine. April 2006. Page 9

One important recommendation of the BRP Report was the need to conduct *"scientific baseline studies that collect basic data about the existence, location and nature of New Jersey's offshore natural resources…"* **prior** to the development of a pilot project.[23] The deliberate and step-wise process outlined in BRP Report was based on serious and legitimate concerns about the potential impact of offshore wind: *"New Jersey can and must take precautions to ensure such development will not create unacceptable and irreversible harm to the state's economic interests or wildlife and natural resources."*[24] Unfortunately, the decision by the Corzine administration to ignore the recommendations of the BRP Report and instead conduct an offshore baseline study **in concurrence with** the pilot project flies in the face of good governance and environmental protection. The State should complete the ecological baseline studies, as well as the associated risk evaluation and assessment process[25] described in the BRP Report, prior to accepting any pilot project proposal. There are also considerable onshore environmental impacts that have yet to be evaluated, including effects of required infrastructure for interconnection and transmission.

Without any federal or state rules or regulations currently in place, no offshore wind facility even under construction in the US, no solid data on its cost and efficiency, and no analysis of environmental impacts, it is unreasonable to assume the State will have 1000 - 3000 MW of offshore wind up and operating in the next 12 years. Setting a more realistic target of 350 MW would allow the State more flexibility without jeopardizing the overall success of the RPS should ongoing environmental studies identify substantial impacts of offshore wind turbines or the yet undetermined regulatory process prove to be long and complex.

Therefore, COA urges the State to rely more on the BAU renewable projections as this will result in more renewables in what is potentially a more cost effective fashion. Such a strategy will significantly reduce the risk of cost overruns, keep electricity rates at a level that will not jeopardize public support for renewable electricity, and increase the State's likelihood of successfully achieve the RPS. New Jersey is well on our way to meeting the more realistic goal of 350 MW of offshore wind with the successful solicitation for pilot project proposals, the State's commitment of $19 million dollars towards the pilot project, and the initiation of the ecological baseline studies. It is important that we utilize the results of the ecological data provided by the baseline studies and the economic and efficiency data collected by the extensive pilot, as well as any available data from other offshore wind facilities proposed along the eastern seaboard, to make an informed decision on how much more of a commitment we should make in developing offshore wind at the expense of other more dependable and reliable renewable energy sources such as biomass and commercial-industrial solar. These data sets, plus an extensive analysis of the cumulative impacts of multiple offshore wind facilities up and down the northeastern U.S. outer continental shelf, must be used to inform any proposed 2021-2025 RPS goals that include future expansion of offshore wind development.

[23] Blue Ribbon Panel on Development of Wind Turbine Facilities in Coastal Waters. Final Report to Gov. Jon S. Corzine. April 2006.
[24] Blue Ribbon Panel on Development of Wind Turbine Facilities in Coastal Waters. Final Report to Gov. Jon S. Corzine. April 2006. Page 9
[25] Blue Ribbon Panel on Development of Wind Turbine Facilities in Coastal Waters. Final Report to Gov. Jon S. Corzine. April 2006. Appendix 1

Encouraging Emerging Technologies

In addition to wind turbines, there are several newly emerging offshore renewable energy technologies (including wave and current driven power) that have already been proposed for inclusion in 2021-2025 RPS goals. In order to prevent the considerable environmental data gap currently facing offshore wind development, New Jersey must begin analyzing the ecological impacts of these new technologies now.

No Renewable Left Behind

COA encourages the State to incorporate all renewable technologies into the EMP, even if they do not generate electricity directly. For example, geothermal installation is a readily available technology that has been shown to effectively reduce electricity and heating oil and gas demand in new residential and commercial construction, but currently does not receive the incentive of being a Class I renewable energy unless it is directly used to generate electricity. In order to successfully reduce future electricity demand, the State must explore, develop, and provide incentives for all available renewable options. Moreover, the State should allow for new and innovative renewable technologies to be easily incorporated, supported, and incentivized

While a higher renewables goal may be more difficult to achieve with in-state generation, the State should more seriously consider all opportunities for imported, renewably generated electricity. After all, the State imports its fossil fuels and nuclear fuels. Choosing the most cost effective means for increasing renewably generated electricity will help the state meet and exceed a goal of 22,500 GWh by 2020.

Goal 4

Goal 4 raises many concerns for COA. Most significantly, COA opposes the State's consideration of new liquefied natural gas (LNG) terminals. But first, COA addresses additional concerns associated with the individual Action Items of Goal 4.

Action Item 1

The Draft EMP considers having the State *"[p]rovide long-term low-interest financing to facilitate the construction of new generation facilities."*[26] These incentives must only be applied to renewable projects. It is unacceptable that the State would help subsidize construction of new power plants other than renewable projects when there are more economical efficiency and conservation measures that could be undertaken.

COA supports the transition to cleaner energy sources. The State can achieve a transition toward cleaner energy by applying measures such as a pollution tax on the dirtiest fuels, such as coal. (Such increased tax revenue should be directed to energy conservation, efficiency, and renewable projects.) So instead of giving incentives to low carbon sources, the State should enact disincentives against high carbon sources. Thus, limited resources could be used to incentivize

[26] Draft Energy Master Plan, Apr. 17, 2008, at 69.

renewable projects while still allowing for low carbon sources to have an advantage over high carbon sources.

Action Item 2

The Draft EMP states that *"[c]ompanies or communities seeking to construct or install low-carbon generation should be given preference by the State. The State will develop economic and regulatory incentives to spur clean generation construction, especially cogeneration, and to smooth regulatory and legal hurdles to turn waste energy into economically smart and environmentally sounder energy."*[27] The Draft EMP goes on to list regulatory incentives to be explored, including attempts to *"streamline and simplify the approval process"*[28] and *"[e]xempt all fuels used by new and existing cogeneration facilities that meet a minimum efficiency from sales and use tax."*[29]

COA does not oppose a goal of 1,500 MW of new cogeneration capacity in New Jersey by 2020 if the State is simultaneously reducing overall consumption and reliance upon dirtier power plants. However, COA opposes any easing of regulations, environmental standards, and taxes of traditional, including fossil, fuels for such developments. It is astonishing to think that the State will allow for fossil fuels to be exempt from taxes, in effect treating them like renewable fuels such as solar and wind energy. Again, the better approach is to provide disincentives against those projects that currently out-compete the more desired energy source, in this case cogeneration. For example, the State could increase the tax rate for fuels that are used in a less efficient manner. It is a poor use of resources to provide incentives for non-renewable energy when it is more economical to spend those resources on increased efficiency and conservation standards.

COA also takes issue with the statement of labeling generation considered under Goal 4 *"clean generation."* COA believes that energy produced from non-renewable energy sources is not clean.

Action Item 3

The Draft EMP says there will be consideration of liquefied natural gas as a supply source to *"ensure a level of stability in prices impacting New Jersey consumers."*[30] The Draft EMP also states that such consideration will include recognition of *"security and Middle East trade issues."*

COA strongly opposes any new LNG terminals within the region. First, LNG is a dirty fuel that is antithetical to progress. The energy intensive lifecycle emissions of LNG increase CO_2 output by up to 44% over domestic natural gas. Second, the Energy Information Administration (EIA), projects that domestic natural production will grow at a faster rate than domestic consumption. Third, LNG is globally priced and is predominately moving towards foreign markets (e.g., Asia

[27] Draft Energy Master Plan, Apr. 17, 2008, at 70.
[28] Draft Energy Master Plan, Apr. 17, 2008, at 70.
[29] Draft Energy Master Plan, Apr. 17, 2008, at 71.
[30] Draft Energy Master Plan, Apr. 17, 2008, at 72.

and Europe) willing to pay up to twice as much as the U.S. Fourth, LNG is antithetical to the national call for Energy Independence— a pedestal onto which nearly all Americans and public policy leaders purport to stand. Currently, 97% of the U.S.'s natural gas comes from North America. If New Jersey opens its doors to LNG, it will become reliant on foreign fossil fuels, which are primarily from the Middle East and Russia. Finally, even if the State for some reason needed LNG to meet an **unplanned**, dramatic increase in natural gas demand, existing LNG port infrastructure is readily available and is projected to remain drastically underutilized through at least 2030.

1. LNG WILL INCREASE NEW JERSEY'S CO_2 FOOTPRINT: Natural gas is not clean, and LNG is even dirtier; at times, LNG can be worse than coal. The Draft Plan proposes an increase in natural gas consumption for electricity production. While natural gas emits less CO_2 than coal per unit of energy produced, natural gas is far from innocent in its contribution to climate change. Indeed, *"[t]he natural gas system is one of the largest sources of greenhouse gas emissions in the United States."*[31]

In New Jersey, natural gas emissions result in almost four times as much CO_2 emissions as coal.[32] Even if you included imported electricity and assumed all of that came from coal generation, New Jersey would still be responsible for one and a half times more CO_2 emissions from natural gas than coal.[33] Even with electricity imports, natural gas is the second biggest contributor to CO_2 emissions in New Jersey, accounting for 27% of all CO_2 emissions and second only to gasoline.[34] When it comes to electricity and heating, there is no greater climate change culprit in New Jersey than natural gas.

LNG will only makes things worse. Given New Jersey's leadership role in addressing global climate change, it is a moral imperative that New Jersey considers the entire life cycle of LNG. LNG significantly increases pollution as compared to domestic natural gas due to its energy intensive lifecycle. In addition to the same stages that get domestic natural gas from the ground to the consumer, LNG must be cooled to -259°F, shipped thousands of miles across the ocean, and then heated back up into a gaseous state. One evaluation of the effects of LNG coming to California demonstrated that "[t]he combined impact of venting CO_2 during processing and the

[31] Paulina Jaramillo, W. Michael Griffin, and H. Scott Matthews, *Comparative Life-Cycle Air Emissions of Coal, Domestic Natural Gas, LNG, and SNG for Electricity Generation*, Environ. Sci. Technol. 2007, 41, 6290.

[32] Draft New Jersey Greenhouse Gas Inventory and Reference Case Projections 1990-2020, New Jersey Department of Environmental Protection, Feb. 2008, Table ES-1 New Jersey Historical and Reference Case GHG Emissions, by Sector, at vi. In 2005, New Jersey emitted 36.74 million metric tons of CO_2e from natural gas, not including from natural gas vehicles which are grouped with other emitters and not broken down separately (8.32 millions metric tons from electricity, 26.4 from residential/commercial/industrial, and 2.02 from the natural gas industry. In 2005, New Jersey emitted 9.62 million metric tons of CO_2e from coal (9.59 from electricity and 0.03 from residential/commercial/industrial). 36.74 is 3.82 times more than 9.62.

[33] Draft New Jersey Greenhouse Gas Inventory and Reference Case Projections 1990-2020, New Jersey Department of Environmental Protection, Feb. 2008, Table ES-1 New Jersey Historical and Reference Case GHG Emissions, by Sector, at vi. In 2005, New Jersey's net imported electricity were responsible for 14.8 million metric tons of CO_2e. 14.8 plus 9.62 is 24.42. 36.74 is 1.50 times greater than 24.42.

[34] Draft New Jersey Greenhouse Gas Inventory and Reference Case Projections 1990-2020, New Jersey Department of Environmental Protection, Feb. 2008, Table ES-1 New Jersey Historical and Reference Case GHG Emissions, by Sector, at vi. In 2005, New Jersey's net emissions were 138.3 million metric tons CO_2e.

energy penalty of the LNG supply chain would increase CO_2 emissions by roughly 20 to 40 percent over California's current emissions from domestic sources of natural gas."[35]

A study by Carnegie Mellon showed that under existing circumstances, the lifecycle from natural gas plants fueled by LNG can actually produce more CO_2 than the lifecycle from coal plants. The lower bound life-cycle emission factor for coal is 2000 lb CO2 equiv/MWH.[36] The upper bound life-cycle emission factor for LNG is 2400 lb CO2 equiv/MWh.[37] Even if you look at the upper bound life-cycle emission factor for coal, 2550 lb CO2 equiv/MWh, *"the range of life-cycle GHG emissions of electricity generated with LNG is significantly closer to the range of emissions from coal than the life-cycle emissions of natural gas produced in North America."*[38] Just the process of liquefaction of natural gas into LNG produces more CO2 emissions than the whole lifecycle of coal prior to combustion, including production, processing, and transport.[39]

A study was also done of the lifecycle emissions resulting from a specific LNG proposal off of California, the Cabrillo Deepwater Port. *"Compared to the emissions from end-use combustion of the gas — which is a common measure of the global warming contribution of natural gas — the rest of the supply chain emits an additional 44 percent."*[40] These *"supply chain emissions from production through end-use of the delivered natural gas equal to 4.3 to 4.9 percent of California's total GHG emissions, and 5.3 to 5.9 percent of CO2 emissions using Energy Information Administration state emissions data. Broadening the comparison — again accounting for emissions from production in Australia to combustion of the gas delivered to end-use customers in California — shows that emissions from BHP's proposed LNG project are equivalent to 0.30 to 0.34 percent of total U.S. emissions (using EIA data for 2004)."*[41] All these numbers could be even higher because the full range of increased emissions ran from 35 to 53 percent.[42]

Finally, an analysis by McKinsey & Co. shows that a coal to gas switch is one of the least cost effective measures for abating CO_2, at over $60 per ton of CO_2, and it would have minimal effect.[43] McKinsey & Co. lists many CO_2 abatement methods that actually have a bigger impact

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[35] John Coequyt, *et al.*, *Liquid Natural Gas: A Roadblock to a Clean Energy Future*, Greenpeace, at 3, at http://www.lngwatch.com/race/docs/GP%20LNG%20Report.pdf.
[36] Paulina Jaramillo, W. Michael Griffin, and H. Scott Matthews, *Comparative Life-Cycle Air Emissions of Coal, Domestic Natural Gas, LNG, and SNG for Electricity Generation*, Environ. Sci. Technol. 2007, 41, 6293.
[37] Paulina Jaramillo, W. Michael Griffin, and H. Scott Matthews, *Comparative Life-Cycle Air Emissions of Coal, Domestic Natural Gas, LNG, and SNG for Electricity Generation*, Environ. Sci. Technol. 2007, 41, 6293.
[38] Paulina Jaramillo, W. Michael Griffin, and H. Scott Matthews, *Comparative Life-Cycle Air Emissions of Coal, Domestic Natural Gas, LNG, and SNG for Electricity Generation*, Environ. Sci. Technol. 2007, 41, 6293.
[39] Paulina Jaramillo, W. Michael Griffin, and H. Scott Matthews, *Comparative Life-Cycle Air Emissions of Coal, Domestic Natural Gas, LNG, and SNG for Electricity Generation*, Figure 3Midpoint Life-Cycle GHG Emissions Using Advanced Technologies with CCS, Environ. Sci. Technol. 2007, 41, 6295.
[40] Richard Heede, *LNG Supply Chain Greenhouse Gas Emissions for the Cabrillo Deepwater Port: Natural Gas from Australia to California*, Climate Mitigation Services, May 7, 2006, at 7.
[41] Richard Heede, *LNG Supply Chain Greenhouse Gas Emissions for the Cabrillo Deepwater Port: Natural Gas from Australia to California*, Climate Mitigation Services, May 7, 2006, at 19.
[42] Richard Heede, *LNG Supply Chain Greenhouse Gas Emissions for the Cabrillo Deepwater Port: Natural Gas from Australia to California*, Climate Mitigation Services, May 7, 2006, at 20.
[43] Jon Creyts, *et al.*, *Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost?*, U.S. Greenhouse Gas Abatement Mapping Initiative, Executive Report, McKinsey & Company, Dec. 2007, at xiii, Exhibit B U.S. Mid-Range Abatement Curve – 2030, at http://www.mckinsey.com/clientservice/ccsi/greenhousegas.asp.

and pay for themselves over time, with savings (as opposed to costs) of as much as nearly $120 per ton of CO_2.

But some say that there is the opportunity address climate change by using use natural gas that would otherwise be flared off in foreign countries. Natural gas flaring is a major problem and a contributor to climate change. Unfortunately, the evidence does not demonstrate that increased LNG imports reduce flaring. Indeed, as Russian, Iran, and Qatar, who hold 58% of the world's natural gas, increased their natural gas exports over the past ten years,[44] they also increased their flaring.[45] International demand for LNG has only grown and so has natural gas flaring.[46] This all comes at a time when other markets have paid at times more than twice what the U.S. paid for LNG. It is unclear how the U.S. further entering the market can provide the economic resources that will result in reduced flaring, even if the U.S. doubled what it pays for LNG. Flaring is a part of doing business in the fossil fuel industry and it appears that the real reductions come through actions such as political pressure from the World Bank's Global Gas Flaring Reduction Partnership and incentives from the Kyoto Protocol's Clean Development Mechanism.[47] Finally, it is worth noting that the U.S. is one of the world's major gas flarers. In 2006, the U.S. vented and flared 98 bcf of natural gas.[48] Between 1996 through 2006, the U.S. vented and flared 1,439 bcf of natural gas.[49]

2. ADEQUATE SUPPLIES OF DOMESTIC SOURCES: According to our own Department of Energy, *"natural* gas production in North America is projected to gradually increase"[50] and *"[a]t current rates of consumption, the Nation has at least 60 years worth of natural gas supplies that are recoverable with current technology. Moreover, as our knowledge of resource characteristics and the potential of new technology increases, estimates of the size of the resource base grow."*[51] In fact, in 2006 U.S. proven reserves were 27% higher than they were in 1996.[52]

The DOE's 60-year projection was made in 2003. Since then, accessing unconventional natural gas has become economical and just *"[o]ver the last few months, big gas discoveries have been*

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[44] World Dry Natural Gas Exports, 1990-2005, International Energy Annual 2005, Energy Information Administration, U.S. Department of Energy, June 21, 2007, at http://www.eia.doe.gov/pub/international/iealf/table44.xls (last visited July 21, 2008).
[45] Wendel Broere, The elusive goal to stop flares, Shell World, May 5, 2008, at 4.
[46] Reported Flaring Data – 2004-2005, Global Gas Flaring Reduction Partnership, The World Bank, at http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTOGMC/EXTGGFR/0,,contentMDK:21348978~pagePK:64168445~piPK:64168309~theSitePK:578069,00.html (last visited July 21, 2008).
[47] Wendel Broere, The elusive goal to stop flares, Shell World, May 5, 2008, at 4.
[48] Annual Energy Review 2006, Table 6.2 Natural Gas Production, Selected Years, 1949-2006, Energy Information Administration, at 185.
[49] Annual Energy Review 2006, Table 6.2 Natural Gas Production, Selected Years, 1949-2006, Energy Information Administration, at 185.
[50] Department of Energy, Oil & Natural Gas Supply & Delivery, Liquefied Natural Gas, at http://www.fossil.energy.gov/programs/oilgas/storage/index.html.
[51] Natural Gas Fundamentals from Resource to Market, DOE/FE-0457, U.S. Department of Energy, Office of Fossil Energy, June 2003, at 4.
[52] U.S. Dry Natural Gas Proved Reserves (Billion Cubic Feet), Natural Gas Navigator, Energy Information Administration, U.S. Department of Energy, at http://tonto.eia.doe.gov/dnav/ng/hist/rngr11nus_1a.htm (last visited June 30, 2008). Proven reserves were 211,085 bcf in 2006 and 166,474 in 1996.

announced in the Northeast, Louisiana, and British Columbia. Together, they could boost natural gas reserves in the United States and Canada by up to 10%."[53]

Some in the natural gas industry put the technically recoverable gas resource base of North America at *"2,705 Tcf – more than 120 years of supply. And that estimate was just increased by 16.6% in the last 2 years for the U.S., with most of the increase being found onshore in the Mid-Continent of the U.S."*[54]

Production is not lagging either. The U.S. was the second largest producer of natural gas in the world in 2006 at 18.51 tcf, accounting for 18.5% of the world's production.[55] According to the Administrator of the EIA, we'll produce more natural gas in 2030 than in 2006.

In fact, according to the EIA, increases in U.S. production will outpace increases in U.S. demand, resulting in net imports declining by 8% between 2006 and 2030. [56] While EIA projects that the decline will come from Canadian pipeline imports and LNG imports will increase slightly, the EIA finds that existing LNG importation capacity, including that under construction, already exists, as discussed below.

While the supply is there, the recent problem that has contributed to higher gas prices in the Northeast is the bottlenecking of the pipelines. *"US domestic pipeline gas supply is growing faster than the infrastructure can keep up."*[57] But, as the proven reserves grow, so do eventually the pipelines. *"Barnett and other shale plays have already generated the construction of hundreds of miles of new pipelines."*[58] *"Last year, a record 14.5 billion cubic feet of pipeline capacity was added in the USA, the EIA says. Much of it transports gas from Texas to a Louisiana hub where it's dispersed to the Southeast, Northeast and Midwest."*[59]

A real constraint might be LNG for the world, including the U.S., as opposed to domestic natural gas for the U.S. According to Exxon, a *"sharp surge in costs to develop liquefied natural gas projects risks halting a growth boom in the industry that has been driven by soaring demand."* [60] *"'There is a cloud hanging over this very optimistic picture for the LNG business and it's the cloud of project cost escalation,' [Tom Cordano, president of Exxon's LNG Market Development unit] told an LNG summit in Rome. 'This is a very significant concern. It has the potential to really derail the great growth that we see coming along in our business.'"*[61]

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[53] Steve Hargreaves, *Abundant clean energy in your backyard*, CNNMoney.com, Apr. 18, 2008, at http://money.cnn.com/2008/04/17/news/economy/natural_gas/index.htm?section=money_mostpopular.
[54] Robust U.S. Natural Gas Production, Supply and Storage, All About Natural Gas, http://www.cleanskies.org/.
[55] BP Statistical Review of World Energy 2007, at 24.
[56] Annual Energy Outlook 2008, Energy Information Administration, DOE/EIA-0383(2008), June 2008, at 13.
[57] Barbara Shook, *Unconventional US Gas Offsets Lower Canadian, LNG Imports*, World Gas Intelligence, Energy Intelligence Group, Inc., Apr. 9, 2008, at http://www.energyintel.com/DocumentDetail.asp?document_id=227860.
[58] Barbara Shook, *Unconventional US Gas Offsets Lower Canadian, LNG Imports*, World Gas Intelligence, Energy Intelligence Group, Inc., Apr. 9, 2008, at http://www.energyintel.com/DocumentDetail.asp?document_id=227860.
[59] Paul Davidson, *Landowners get windfalls from natural gas drilling*, USA TODAY, May 20, 2008, at http://www.usatoday.com/money/industries/energy/2008-05-20-natural-gas_N.htm.
[60] Deepa Babington, Exxon says rising costs risk derailing LNG boom, Reuters UK, Dec. 4, 2007, at http://uk.reuters.com/article/oilRpt/idUKL0414043020071204.
[61] Deepa Babington, Exxon says rising costs risk derailing LNG boom, Reuters UK, Dec. 4, 2007, at http://uk.reuters.com/article/oilRpt/idUKL0414043020071204.

Under the Draft EMP's Alternative 2020 scenario, New Jersey will need 631,905,950 mmBTUs of natural gas for electricity, combined heat and power, and residential, commercial, and industrial usage.[62] To generate that amount of energy the state would need 1.68 bcfd of natural gas.[63] Under 2020 business-as-usual projections, New Jersey would need 633,923,030 mmBTUs of natural gas for all uses.[64] This means New Jersey would need roughly 1.69 bcfd of natural gas, an increase of 0.01 bcfd.[65]

In 2004, New Jersey consumed 1.70 bcfd of natural gas, including for heating (495,180,000 mBTUs[66] or approximately 1.36 bcfd[67]) and electricity (15,986,595 MWhs[68] or 0.30 bcfd[69]).[70] In 1999, New Jersey consumed 1.96 bcfd.[71] Therefore, it's demonstrated that New Jersey has the capacity to bring in more than the State projects it will import in 2020, whether we plan for a greener future or not. Further, there are significant pipeline expansions planned for the Northeast, including new pipelines in New Jersey.

In addition, under the Draft EMP, peak demand for natural gas will also begin to level off, resulting in more efficient use of existing pipeline and storage capacity. Natural gas consumption currently peaks in New Jersey in the winter months because of its strong role as a heating fuel in the State. Under the Draft EMP, New Jersey will decrease its consumption of natural gas for heating by 21%. Even under BAU projections, New Jersey natural gas

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[62] Modeling Report for the Draft Energy Master Plan, Rutgers Edward J. Bloustein School of Planning and Public Policy, April 17, 2008, at 21.

[63] There are 1,028 Btus per cubic foot for natural gas electric power and 1,030 Btus per cubic foot of natural gas for end use sectors. Annual Energy Outlook 2008, Energy Information Administration, DOE/EIA-0383(2008), June 2008, at 215. 192,159,575,000,000 Btus of natural gas for electricity divided by 1,028 equals 186,925,656,614.79. 186,925,656,614.79/365 = 512,125,086.62 or 0.51 bcfd. 66,921,865,000,000 Btus of natural gas for CHP divided by 1,028 equals 65,099,090,466.93. 65,099,090,466.93/365 = 178,353,672.51 or 0.18 bcfd. 372,824,510,000,000 Btus of natural gas for RCI divided by 1,030 equals 361,965,543,689.32. 361,965,543,689.32/365 = 991,686,421.07 or 0.99 bcfd. 0.51 + 0.18 + 0.99 = 1.68 bcfd.

[64] Modeling Report for the Draft Energy Master Plan, Rutgers Edward J. Bloustein School of Planning and Public Policy, April 17, 2008, at 21.

[65] The same formula is used here for calculating but the 2020 Alternative numbers for RCI, CHP, and Electricity are replaced with the respective numbers for 2020 BAU.

[66] Chart from Dr. Bharat Patel, Manager, Planning Unit, New Jersey Board of Public Utilities, May 5, 2008 (on file with author).

[67] 1 bcf is equivalent to 1,000,000 mmBTUs. If x/495,180,000 = 1/1,000,000, then x = 495.18 bcf. Divide that by 365 and you get 1.36 bcfd.

[68] New Jersey Electricity Profile, Table 5: Electric Power Industry Generation by Primary Energy Source, 1990 Through 2006, Energy Information Administration, at www.eia.doe.gov/cneaf/electricity/st_profiles/new_jersey.html.

[69] 1 bcfd equals approximately 6,000 MW of natural gas production. 6,000 MW times 8,760 (the number of hours in a year) equals 52,560,000. 15,986,595 divided by 52,560,000 equals 0.30.

[70] New Jersey Natural Gas Total Consumption (MMcf), Natural Gas Navigator, Energy Information Administration, U.S. Department of Energy, at http://tonto.eia.doe.gov/dnav/ng/ng_cons_sum_a_EPG0_VC0_mmcf_a.htm (last visited July 21, 2008).

[71] New Jersey Natural Gas Total Consumption (MMcf), Natural Gas Navigator, Energy Information Administration, U.S. Department of Energy, at http://tonto.eia.doe.gov/dnav/ng/ng_cons_sum_a_EPG0_VC0_mmcf_a.htm (last visited July 21, 2008).

consumption for heating would only increase by 1% by 2020.[72] Natural gas consumption is projected to increase for electricity generation under the Draft EMP. Peaking for electricity, unlike heating fuels, occurs in the summer. Therefore, New Jersey plans to bring in more natural gas at a time when it is currently not at highest demand in the state and less at a time when it is currently at peak demand. Again, New Jersey will start to level demand over the year.

3. LNG WOULD DRAMATICALLY INCREASE NEW JERSEY'S ENERGY COSTS: First, it is worth noting that natural gas itself is an expensive fuel compared to most other fuels. For natural gas, *"its cost per BTU is roughly three times the cost for coal."*[73] Natural gas peaking units are among those plants that *"have the highest cost to generate a megawatt-hour of electricity."*[74] Combined-cycle natural gas plants are among those at the second highest cost to consumers.[75] In the Draft EMP, natural gas is the only specific energy source that is listed as one of the four factors that *"will combine to push wholesale energy and capacity costs higher unless policies are enacted to counteract them."*[76]

LNG is even more expensive—up to twice a much as domestic natural gas. This is due to the additional requirements to create LNG. It must be cooled to -259°F, tanked and shipped thousands of miles across the ocean, and re-heated to return to gaseous state, all leading to additional costs which are then to passed on to customers. Additionally, the whole world competes for LNG with tankers easily able to re-direct and steer towards the highest bidder. What's more, LNG is commonly indexed to crude oil, which has seen shockingly high price spikes in the past few months.[77]

In determining the costs of domestic natural gas, the Draft EMP's modeling update numbers project prices at $9.66/MMBtu in 2020, with a peak natural gas price of $11.36/MMBtu in the first quarter of 2011.[78] This range of costs is not sufficient to attract LNG shipments to the U.S.

"In Spain, gas is over $13 a thousand cubic feet, and in Asia they pay $16 to $17."[79] While contract prices are usually unavailable, the industry does provide some information. Recently, Argentina reportedly agreed to pay $14MMBtu.[80] Analysts put a recent contract for Singapore

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[72] Chart from Dr. Bharat Patel, Manager, Planning Unit, New Jersey Board of Public Utilities, May 5, 2008 (on file with author). Natural gas for heating in 2004 was 495,180,000 mBTUs and is projected to decrease to 397,050,000 mBTUs.
[73] Draft Energy Master Plan, Apr. 17, 2008, at 72.
[74] Draft Energy Master Plan, Apr. 17, 2008, at 41.
[75] Draft Energy Master Plan, Apr. 17, 2008, at 41.
[76] Draft Energy Master Plan, Apr. 17, 2008, at 40.
[77] Marianne Lavelle, *Feds Weigh Long Island Sound LNG Terminal*, US News and World Report, Mar. 17, 2008, at http://www.usnews.com/blogs/beyond-the-barrel/2008/3/17/feds-weigh-long-island-sound-lng-terminal.html#Comments.
[78] Possible Assumption Updates for "Final" NJ Energy Master Plan Modeling Rules, June 13, 2008, at 1, at http://nj.gov/emp/home/docs/pdf/061608AssumpUpdates.pdf (last visited June 30, 2008).
[79] Steve Hargreaves, *Abundant clean energy in your backyard*, CNNMoney.com, Apr. 18, 2008, at http://money.cnn.com/2008/04/17/news/economy/natural_gas/index.htm?section=money_mostpopular.
[80] *Argentina Set To Get First LNG -- For $14*, World Gas Intelligence, Apr. 23, 2008, at http://www.energyintel.com/DocumentDetail.asp?document_id=229044.

at $16/MMBtu for LNG from Indonesia and Qatar.[81] A tanker of LNG *"pulling into port in Japan can command close to $20 per million BTUs, roughly double the price of the U.S. benchmark."*[82]

In fact other countries are driving up the costs of LNG through global competition and LNG once expected to supply the U.S. is being re-directed to new markets. *"China apparently outbid Europe and the U.S. for the last uncommitted volumes from Qatar, the world's leading producer of liquefied natural gas."*[83] That same gas was originally expected to go to U.S. markets.[84] Of course this means little to *"Qatari Energy Minister Abdullah bin Hamad al-Attiyah who explained, 'We are not in the charity business. Whoever will give me the best price, I will follow him.' He added, 'We are sold out.'"*[85] China currently has five LNG terminals *"under construction, with more likely to follow."*[86]

As another example, *"[t]he Snohvit volumes Statoil was expected to deliver from Norway to Cove Point, Maryland, instead went to Europe."*[87] Terminal manager Steven Arbelovsky of the new Freeport LNG port said running near capacity *"is unlikely in the foreseeable future because LNG ships are going to greener pastures such as Asia, where the price of LNG is double what it is in the United States."*[88] Even contracting the gas supply does not guarantee performance, *"[e]ven contracted volumes destined for US regas plants are vulnerable to rerouting when a higher profit can be realized at a plant anywhere else in the world."*[89]

Projections are that LNG prices will only remain high. A Credit Suisse analyst noted $16/MMBtu *"looks to be the level where current prices are moving."*[90] (As noted, New Jersey is projecting Henry Hub prices at $9.66/MMBtu in 2020, with a peak natural gas price of $11.36/MMBtu in the first quarter of 2011.)[91] French oil giant Total stated that *"the industry*

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[81] Erwin Chan and Angus Rodger, *Singapore's Not-So-Secret LNG Hub Trading Ambitions*, World Gas Intelligence, Apr. 23, 2008, at http://www.energyintel.com/DocumentDetail.asp?document_id=228843.
[82] Ann Davis and Russell Gold, *Surge in Natural-Gas Price Stoked by New Global Trade*, The Wall Street Journal, Apr. 18, 2008, at A7.
[83] Kurt Wulff, *Natural Gas Sold Out: Stage Set for Long-Term Price Doubling*, Seeking Alpha, May 05, 2008, at http://seekingalpha.com/article/75648-natural-gas-sold-out-stage-set-for-long-term-price-doubling.
[84] *Qatar in China*, World Gas Intelligence, Apr. 16, 2008, at http://www.energyintel.com/DocumentDetail.asp?document_id=228458.
[85] Kurt Wulff, *Natural Gas Sold Out: Stage Set for Long-Term Price Doubling*, Seeking Alpha, May 05, 2008, at http://seekingalpha.com/article/75648-natural-gas-sold-out-stage-set-for-long-term-price-doubling.
[86] *China Fast-Tracks Five LNG Terminals*, World Gas Intelligence, Apr. 23, 2008, at http://www.energyintel.com/DocumentDetail.asp?document_id=228844.
[87] *Topsy Turvy US LNG Import Record Year*, World Gas Intelligence, Energy Intelligence Group, Inc., Jan. 2, 2008, at http://www.energyintel.com/DocumentDetail.asp?document_id=220465.
[88] Hunter Sauls, *Coast Guard preparing for port shutdowns*, The Facts, Apr. 14, 2008, at http://www.thefacts.com/story.lasso?ewcd=f482d0ca682cb716.
[89] Leslie Palti, *LNG UPDATE: New French LNG Terminals Set to Raise Global NatGas Competition*, Natural Gas Week, Jan. 14, 2008, at http://www.energyintel.com/DocumentDetail.asp?document_id=221086.
[90] Annika Breidthardt, *Indonesian term LNG deal sets new Asian benchmark*, Reuters India, Mar. 31, 2008, at http://in.reuters.com/article/asiaCompanyAndMarkets/idINSP31415020080331?sp=true.
[91] Possible Assumption Updates for "Final" NJ Energy Master Plan Modeling Rules, June 13, 2008, at 1, at http://nj.gov/emp/home/docs/pdf/061608AssumpUpdates.pdf (last visited June 30, 2008).

could face an LNG shortage in five years."[92] The National Petroleum Council predicts that *"LNG imports may be affected after 2015, as world natural gas prices rise, attracting LNG to other markets."*[93]

Further, other countries are likely to out-compete the U.S. for LNG out of sheer necessity. *"Japan, for example, imports 97% of its natural gas supply as LNG (over 11 times as much LNG as the United States in 2001)."*[94] The E.U. Commission expects that Europe will be *"dependent on foreign producers for 85 percent of its gas"* by 2020. Those 85% reliant will certainly compete and pay more for LNG than those well under 20% reliant on foreign sources. At 3% of our imports, the U.S. could survive a global shortage in LNG while others would likely pay the cost.[95]

In addition, the global bidding war will only increase as cost overruns make LNG liquefaction projects unattractive.[96] The EIA projects that world consumption of natural gas in 2030 will be 182 tcf.[97] Yet the EIA also projects that world production on natural gas in 2030 will only be 157.7 tcf.[98] That means demand will be 15% higher than supply. Demand exceeding supply is also the case for 2010, 2015, 2020, and 2025, with global demand for natural gas greater than global production.[99,100] New competitors on the scene include China and India where natural gas consumption is expected to increase from 2003 to 2030 by 483%[101] and 350%, respectively.[102]

If the U.S. wants more LNG, the answer is clear, we have to stomach paying a lot more for natural gas. *"Two economists for the U.S. Federal Reserve Bank of Dallas predict that, as LNG imports to the United States increase, gas prices in the U.S. market will trend towards the higher prices seen in the global LNG market. According to Platts LNG Daily, the economists wrote that '[o]nce LNG imports become the marginal source of U.S. supply, much higher international*

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[92] Angus Rodger, Perth, and Jill Junnola, *Personnel Shortages, Costs Put Brakes On LNG Projects*, World Gas Intelligence, Apr. 16, 2008, at http://www.energyintel.com/DocumentDetail.asp?document_id=228345.
[93] *Hard Truths: Facing the Hard Truths About Energy*, National Petroleum Council, July 2007, p. 143.
[94] CRS Report for Congress, *Liquefied Natural Gas (LNG) Infrastructure Security: Background and Issues for Congress*, Congressional Research Service, The Library of Congress, Order Code RL 32073, Sep. 9, 2003, at CR-2, citing *World LNG Imports by Origin, 2001*, Energy Information Administration (EIA), Oct. 17, 2002.
[95] James Kraus, *U.S., Canada Dispute Intensifies Over LNG Terminals, WSJ Says*, Bloomberg.com, Dec. 21, 2007, at http://www.bloomberg.com/apps/news?sid=atHZgIyEDpVs&pid=20601082.
[96] Deepa Babington, Exxon says rising costs risk derailing LNG boom, Reuters UK, Dec. 4, 2007, at http://uk.reuters.com/article/oilRpt/idUKL0414043020071204.
[97] International Energy Outlook 2006, Energy Information Administration, p. 88, at http://www.eia.doe.gov/oiaf/ieo/pdf/ieoreftab_5.pdf.
[98] Energy Information Administration, Report #:DOE/EIA-0484(2008), June 2008, at http://www.eia.doe.gov/oiaf/ieo/excel/figure_5data.xls.
[99] Energy Information Administration, Report #:DOE/EIA-0484(2008), June 2008, at http://www.eia.doe.gov/oiaf/ieo/excel/figure_5data.xls.
[100] International Energy Outlook 2006, Energy Information Administration, p. 88, at http://www.eia.doe.gov/oiaf/ieo/pdf/ieoreftab_5.pdf.
[101] From 1.2 tcf in 2003 to 7.0 tcf in 2030. International Energy Outlook 2006, Energy Information Administration, p. 88, at http://www.eia.doe.gov/oiaf/ieo/pdf/ieoreftab_5.pdf.
[102] From 1.0 tcf in 2003 to 4.5 tcf in 2030. International Energy Outlook 2006, Energy Information Administration, p. 88, at http://www.eia.doe.gov/oiaf/ieo/pdf/ieoreftab_5.pdf.

natural gas prices should prevail.'"[103] *"Platts LNG Daily reports that several energy industry experts told the Offshore Technology Conference in Houston this week that the U.S. market may have to pay prices indexed to crude oil in order to attract LNG cargos to North America. One analyst noted that U.S. LNG importers may have to begin signing long-term supply agreements that are not linked to Henry Hub prices."*[104]

Paying higher prices for LNG will also serve as a bad investment by diverting resources from actions that could potentially lower natural gas prices. Unlike LNG, pipeline investments to increase access to domestic reserves can actually lower prices. The study by the Federal Reserve Bank of Dallas found *"that a lack of pipeline capacity contributes to the volatility of regional natural gas prices in the United States."*[105] The study also noted that increased storage might bring down prices.[106] But pipeline capacity expansions and storage from LNG terminals won't solve these problems because they will only distribute and store more expensive, globally priced LNG.

Investing in domestic infrastructure and retaining natural gas independence will help to ensure a more dependable supply of lower cost natural gas. If New Jersey invests in LNG infrastructure instead of domestic infrastructure, like New England has, it will be reliant on an international natural gas supply that sees far greater competition and is vulnerable to a global bidding war.

Since so much of LNG comes from unstable regions, the pricing is also inherently volatile, yet again, making it a bad energy choice for New Jersey.

In addition to the going rate for global LNG, additional costs will be incurred with new LNG terminals. First, there are potential expensive retrofit costs for existing natural gas electricity plants. Recently, operators of gas-fired power plants in New England raised concerns that LNG could harm their equipment, affect the reliability of their plants and customer reliability, and force them to make expensive modifications.[107] This is because *"foreign gas introduced into the nation's transportation system is often different from domestic supply in its heat content and physical composition. Those variables, according to electric power generation companies, could potentially cause disruptions for equipment that is calibrated to precise specifications."*[108]

There are also the costs of the terminals that will be passed along in the gas prices, the supporting tugs that someone must buy, the *"additional $0.30-0.80/MMBtu transportation cost*

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[103] Economists Predict Higher Natural Gas Prices with Increased LNG Imports, LNGlawblog.com, May 1, 2008, at http://www.lnglawblog.com/.
[104] *Industry Analysts: U.S. Market May Have to Pay Oil-Based Prices to Attract LNG*, lnglawblog.com, May 9, 2008, at http://www.lnglawblog.com/BlogEntry.aspx?_entry=4929784a-3602-488f-9537-09633302e2df.
[105] Stephen P.A. Brown and Mine K. Yucel, *Deliverability and Regional Pricing in U.S. Natural Gas Markets*, Research Department Working Paper 0802, Federal Reserve Bank of Dallas, 2008, at 2.
[106] Stephen P.A. Brown and Mine K. Yucel, *Deliverability and Regional Pricing in U.S. Natural Gas Markets*, Research Department Working Paper 0802, Federal Reserve Bank of Dallas, 2008, at 13.
[107] Rob Linke, *Natural gas worry triggers U.S. hearing*, Telegraph-Journal, June 17, 2008, at http://nbbusinessjournal.canadaeast.com/journal/article/328178.
[108] Katie Teller, *LNG Lowdown: New York rejects Broadwater; British Columbia may hold advantage over Oregon*, Power & Natural Gas – Operations and Strategy, April 16, 2008, at http://www.snl.com:80/InteractiveX/article.aspx?CDID=A-7636216-11619&KPLT=2.

for deliveries [from the Atlantic Basin and Middle East] to the U.S. market,"[109] and the costs of Coast Guard protection and security measures, which the Congressional Research Service projects at $25,000 per shipment.[110] The latter comes at a time when, in 2007, the Government Accountability Office found that *"units of the Coast Guard . . . report insufficient resources to meet its own self imposed security standards, such as escorting ships carrying liquefied natural gas."*[111] Thus, taxpayers are paying high security costs to under-enforce the necessary security measures.

The Draft EMP states that *"[u]nlike the price of electricity, the prices of heating oil and natural gas are essentially immune to any influence by New Jersey."*[112] While New Jersey may not be able to lower the price of domestic natural gas, it can guarantee ratepayers a higher energy bill if the State allows us to become dependent on LNG. In a recent report, analysts with Barclays Capital said that *"if the United States becomes dependent on LNG to meet natural gas demand increases, tightness in the global liquefaction market and strong demand in Japan, South Korea, and Spain could trigger 'substantial price spikes' for natural gas in the U.S. market."*[113]

4. SOURCES OF LNG ARE FOREIGN AND UNRELIABLE: LNG is antithetical to the national call for Energy Independence— a pedestal onto which nearly all Americans and public policy leaders purport to stand. Currently, LNG accounts for about 3% of the U.S.'s natural gas supply.[114] Canadian and Mexican pipeline imports account for some of our natural gas supply but domestic reserves account for about 80% of the U.S.'s consumption.[115] The U.S. also

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[109] Press Release, PFC Energy, North America Facing LNG Regasification Terminal Overbuild (Mar. 18, 2008), at http://www.pfcenergy.com/viewNew.aspx?id=40.

[110] CRS Report for Congress, *Liquefied Natural Gas (LNG) Infrastructure Security: Background and Issues for Congress*, Congressional Research Service, The Library of Congress, Order Code RL 32073, Sep. 9, 2003, at CR-17.

[111] Government Accountability Office, Report to Congressional Requesters, Maritime Security, *Federal Efforts Needed to Address Challenges in Preventing and Responding to Terrorist Attacks on Energy Commodity Tankers*, GAO-08-141, Dec. 2007, at 2 of 112.

[112] Draft Energy Master Plan, Apr. 17, 2008, at 47.

[113] Analysts: Tight Global Liquefaction Market Could Result in Price Spikes for U.S. Natural Gas, LNG Law Blog, July 10, 2008, at http://www.lnglawblog.com/BlogEntry.aspx?_entry=d14d0ed2-8ca3-42f7-b230-6060874ce014.

[114] In 2006, the U.S. consumed 21,653,086 mcf of natural gas. Annual Energy Outlook 2008, Energy Information Administration, DOE/EIA-0383(2008), June 2008, at 13. In the same year, the U.S. imported 583,537 mcf of LNG. U.S. Natural Gas Imports by Country (Annual), Natural Gas Navigator, Energy Information Administration, U.S. Department of Energy, at http://tonto.eia.doe.gov/dnav/ng/ng_move_impc_s1_a.htm (last visited July 1, 2008). 583,537/21,653,086 x 100 = 2.69%. In 2007, the U.S. consumed 23,056,814 mfc of natural gas. Natural Gas Consumption by End Use (Annual), Natural Gas Navigator, Energy Information Administration, U.S. Department of Energy, at http://tonto.eia.doe.gov/dnav/ng/ng_cons_sum_dcu_nus_a.htm (last visited July 1, 2008). In the same year, the U.S. imported 770,812 mcf of LNG. U.S. Natural Gas Imports by Country (Annual), Natural Gas Navigator, Energy Information Administration, U.S. Department of Energy, at http://tonto.eia.doe.gov/dnav/ng/ng_move_impc_s1_a.htm (last visited July 1, 2008). 770,812/23,056,814 x 100 = 3.34%. LNG imports are currently down from 2006 and 2007 rates. U.S. Liquefied Natural Gas Imports (MMcf) (Monthly), Natural Gas Navigator, Energy Information Administration, U.S. Department of Energy, at http://tonto.eia.doe.gov/dnav/ng/hist/n9103us2m.htm (last visited July 1, 2008).

[115] In 2007, the U.S. consumed 23,056,814 mcf. Natural Gas Consumption by End Use (Annual), Natural Gas Navigator, Energy Information Administration, U.S. Department of Energy, at http://tonto.eia.doe.gov/dnav/ng/ng_cons_sum_dcu_nus_a.htm. In 2007, the U.S. imported 4,602,035 mcf of natural gas. U.S. Natural Gas Imports by Country (Annual), Natural Gas Navigator, Energy Information Administration, U.S. Department of Energy, at http://tonto.eia.doe.gov/dnav/ng/ng_move_impc_s1_a.htm (last visited July 2, 2008).

exports more natural gas through pipelines and LNG than it imports through LNG.[116] As noted above, our proven reserves and production are continuing to grow with the EIA expecting the U.S. to increase production at a greater rate than consumption between now and 2030.

The U.S. is primarily self-reliant for natural gas. If we increase our reliance on LNG, we will increase our reliance on those countries with the greatest reserves. The Middle East and Russia together have over two thirds of the world's proven reserves.[117] While the United States is in the top ten of proven natural gas reserves, the other nine are Russia, Iran, Qatar, Saudi Arabia, United Arab Emirates, Nigeria, Algeria, Venezuela, and Iraq.[118] The U.S. is already dependent on many of those same countries for driving our cars. Increasing our LNG imports as much as the Big Oil companies want would make the U.S. reliant on those countries for generating our electricity and heating our homes.

There are numerous problems with becoming reliant on the foreign countries who possess the greatest quantities of natural gas. Problems of relying on the Middle East for foreign fossil fuels are well known and a topic of great concern to numerous Americans. Russia has a history of cutting off natural gas exports when buyers would not agree to higher prices.[119] Nigerian rebels are known to attack offshore oil and gas rigs, which threatens supply stability.[120] The LNG tankers frequenting the U.S. are commonly staffed by crew from these same foreign countries, many of which the U.S. considers hostile to American interests and security. State run corporations from the Middle East are also gaining controlling interest in U.S. LNG terminals.[121] Finally, there's the threat of an OPEC for natural gas: *"The big exporters [of natural gas] include Russia, Iran and Venezuela, countries now talking about forming a cartel. Basically, we are re-creating the same mistake we made with oil."*[122]

5. EAST COAST HAS ACCESS TO SUBSTANTIAL EXISTING LNG CAPACITY: Even if New Jersey thinks LNG should play a role in the State's energy portfolio, existing LNG facilities in the service area are drastically underutilized and will remain so through 2030. If the U.S. starts no new construction of LNG terminals and only finishes what is under construction, the U.S. will have 19.54 bcfd of capacity.[123] All of this capacity is on the East Coast or the Gulf of

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[116] In 2007, the U.S. exported 822,445 mcf of natural gas. U.S. Natural Gas Exports by Country (Annual), Natural Gas Navigator, Energy Information Administration, U.S. Department of Energy, at http://tonto.eia.doe.gov/dnav/ng/ng_move_expc_s1_a.htm (last visited July 2, 2008). In 2007, the U.S. imported 770,812 mcf of LNG. U.S. Natural Gas Imports by Country (Annual), Natural Gas Navigator, Energy Information Administration, U.S. Department of Energy, at http://tonto.eia.doe.gov/dnav/ng/ng_move_impc_s1_a.htm (last visited July 2, 2008).

[117] 40.5% of the world's natural gas reserves are in the Middle East. 26.3% of the world's natural gas reserves are in the Russian Federation. BP Statistical Review of World Energy 2007, BP, at 22.

[118] "Hard Truths," National Petroleum Council, p. 133, Figure 2-45 (July 2007).

[119] Andres Cala, *Europe Looks to LNG*, Energy Tribune, Mar. 20, 2008, at http://www.energytribune.com/articles.cfm?aid=830.

[120] Ron Scherer, *Some signs of relief on gasoline prices*, The Christian Science Monitor, June 23, 2008, at http://news.yahoo.com/s/csm/20080623/ts_csm/apricepause.

[121] Welcome to the Golden Pass LNG (Liquefied Natural Gas) webe site, Golden Pass LNG, at http://www.goldenpasslng.com/ (last visited Jun. 29, 2008).

[122] Mike Thomas, Guest Op Ed, *Offshore drilling could reduce global warming*, Orlando Sentinel, Jan. 31, 2008, at http://www.orlandosentinel.com/news/orl-miket3108jan31,0,1177108.column.

[123] The U.S. has 10.74 bcfd online and now another 8.8 bcfd is under construction. North American LNG Import Terminals – Existing, Office of Energy Projects, Federal Energy Regulatory Commission, Department of

Mexico, whose pipeline infrastructure runs to the Northeast, including New Jersey. More construction and capacity is likely as an additional 22.25 bcfd is federally approved.[124]

In March of 2008, the Administrator of the EIA stated that even if only 15.62 bcfd came online, *"[g]iven global LNG supply constraints, overall capacity utilization at the U.S. LNG import facilities is expected to remain below 50 percent through 2030."*[125] In its Annual Energy Outlook 2008 released in June, 2008, the EIA states that we could stop LNG terminal construction at 14.25 bcfd by the end of 2009 *"with no further increase through 2030"* and still have sufficient capacity through 2030.[126] This is because net LNG imports are expected to grow to 7.67 bcfd in 2030.[127] The EIA estimates that imports could be as low as 4.66 bcfd under a high price case scenario. The EIA projects that even under a low price scenario, the U.S. would only import 12.33 bcfd.[128] At 19.54 bcfd and more likely on the way, the Big Oil companies are no longer building to meet projected demand, they're building to have their own terminals to sell their own gas.

There are also no projected needs for additional capacity in the near term, before 2030. The most the U.S. has ever imported was 2.11 bcfd, in 2007.[129] Currently in 2008, imports are even less. In a May 5, 2005 speech, Pat Wood, III, then Chairman of FERC, stated that the U.S. only needed six more LNG terminals to meet short term demand.[130] That projection consisted of two terminals each on the East Coast, Gulf Coast, and West Coast.[131] Since 2005, two new terminals have come online and four are under construction in the Gulf Coast. On the East Coast, one new terminal has come online, one new terminal is under construction, and two expansions,

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Transportation, Apr. 21, 2008, at pdf from http://www.ferc.gov/industries/lng.asp (last visited June 30, 2008); North American LNG Import Terminals – Approved, Office of Energy Projects, Federal Energy Regulatory Commission, Department of Transportation, Apr. 21, 2008, at pdf from http://www.ferc.gov/industries/lng.asp (last visited June 30, 2008). The Neptune project off Boston began construction in July of 2008, adding an additional 0.4 bcfd. Jay Fitzgerald, Company set to start building its LNG system off N. Shore, Boston Herald, July 23, 2008, at http://www.bostonherald.com/business/general/view/2008_07_23_Company_set_to_start_building_its_LNG_system_off_N__Shore/.

[124] North American LNG Import Terminals – Approved, Office of Energy Projects, Federal Energy Regulatory Commission, Department of Transportation, Apr. 21, 2008, at pdf from http://www.ferc.gov/industries/lng.asp (last visited June 30, 2008). The Neptune project off Boston began construction in July of 2008, adding an additional 0.4 bcfd. Jay Fitzgerald, Company set to start building its LNG system off N. Shore, Boston Herald, July 23, 2008, at http://www.bostonherald.com/business/general/view/2008_07_23_Company_set_to_start_building_its_LNG_system_off_N__Shore/.

[125] Statement of Guy Caruso, Administrator, Energy Information Administration, U.S. Department of Energy, before the Committee on Energy and Natural Resources, U.S. Senate, Mar. 4, 2008, at http://energy.senate.gov/public/index.cfm?FuseAction=Hearings.Testimony&Hearing_ID=5b36f179-e51f-ac22-e7f2-6930233ef767&Witness_ID=d72b1a96-fddb-4581-9d65-1a9206b63ac1.

[126] Annual Energy Outlook 2008, Energy Information Administration, DOE/EIA-0383(2008), June 2008, at 78.

[127] Annual Energy Outlook 2008, Energy Information Administration, DOE/EIA-0383(2008), June 2008, at 78.

[128] Annual Energy Outlook 2008, Energy Information Administration, DOE/EIA-0383(2008), June 2008, at 79.

[129] U.S. Natural Gas Imports by Country (Annual), Natural Gas Navigator, Energy Information Administration, U.S. Department of Energy, at http://tonto.eia.doe.gov/dnav/ng/ng_move_impc_s1_a.htm (last visited July 1, 2008). The U.S. imported 770,812 million cubic feet in 2007.

[130] Pat Wood, III, Chairman, Federal Energy Regulatory Commission, *Stanford Washington Research Group 2005 Institutional Policy Conference*, May 5, 2005, p. 19, at http://www.ferc.gov/news/statements-speeches/2005.asp.

[131] Pat Wood, III, Chairman, Federal Energy Regulatory Commission, *Stanford Washington Research Group 2005 Institutional Policy Conference*, May 5, 2005, p. 19, at http://www.ferc.gov/news/statements-speeches/2005.asp.

equivalent in size to new terminals, are taking place at existing terminals.[132] Thus, as of now, there will be ***six more terminals than deemed necessary*** for the eastern U.S.

According to a report from consultant PFC Energy, *"[t]he U.S. will have almost four times more liquefied natural gas import capacity than it can use by 2012 because of a shortfall in fuel supply."*[133] The report goes on to note that *"[t]he east coast of North America is faced with a significant oversupply of LNG import capacity which will persist well into the next decade."*[134] *"Even if all currently uncontracted and flexible LNG in the Atlantic Basin and Middle East were to be added to North American supply, PFC Energy still estimates that the gap between terminal capacity and available LNG on the east coast of North America could reach . . . [9.32 bcfd] by 2012. And the gap could become larger as these estimates only include existing and under construction terminals – if additional regasification capacity is added, the gap will be greater."*[135]

The above comments on LNG are derived from a COA LNG White Paper that addresses the above matters in greater detail and discusses additional matters such as the environmental destruction caused by these facilities beyond their CO_2 footprint. COA will submit this LNG White Paper when the paper is completed, no later than August 8, 2008.

Goal 5

COA strongly supports Goal 5. Investing in clean energy technologies and businesses is a wise fiscal policy that looks to long-term solutions for meeting the goals of the EMP. Strong investments now will allow for the State to set higher standards with each subsequent EMP. While it is crucial to invest in the technologies that can lead the State to advancements now, it is just as important to create an environment that will spur innovation and drive further progress.

COA also commends the State on recognizing the benefits of "green collar" jobs that will result from pursuing Goal 5. Appropriately, green collar jobs tend to be more sustainable than jobs created by construction of new power plants. As a result, New Jersey will be ensuring a more stable workforce. Also, as noted in the Draft EMP, these jobs keep energy dollars in state, as opposed to, for example, buying expensive, dirty, fossil fuels from unstable foreign regions.

"Goals 6 & 7"

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[132] North American LNG Import Terminals – Existing, Office of Energy Projects, Federal Energy Regulatory Commission, Apr. 21, 2008, at http://www.ferc.gov/industries/lng.asp; North American LNG Import Terminals – Proposed, Office of Energy Projects, Federal Energy Regulatory Commission, Apr. 21, 2008, at http://www.ferc.gov/industries/lng.asp. The Neptune project off of Boston began construction in July of 2008. Jay Fitzgerald, Company set to start building its LNG system off N. Shore, Boston Herald, July 23, 2008, at http://www.bostonherald.com/business/general/view/2008_07_23_Company_set_to_start_building_its_LNG_system_off_N__Shore/.

[133] *U.S. faces LNG shortfall on terminal capacity*, Calgary Herald, March 19, 2008.

[134] Press Release, PFC Energy, North America Facing LNG Regasification Terminal Overbuild (Mar. 18, 2008), at http://www.pfcenergy.com/viewNew.aspx?id=40.

[135] Press Release, PFC Energy, North America Facing LNG Regasification Terminal Overbuild (Mar. 18, 2008), at http://www.pfcenergy.com/viewNew.aspx?id=40.

While not stated as Goals, the Draft EMP also sets out two additional objectives, which we will deem Goals 6 and 7: (6) the State must lead by example and (7) continued advocacy and analysis. COA generally supports both of these goals. In particular, COA supports the concept of Action Item 4 for Goal 6, which is to have the State optimize its Energy Supply Portfolio to reduce greenhouse gas emissions.

Under the first action item for Goal 7, COA urges caution in the State's advocacy for fixing the flaws of the Reliability Pricing Model. In considering modifying, as opposed to replacing, the RPM, COA urges the State not to advocate a system that will provide incentives for building new fossil fuel power plants. Resources are limited and all incentives that the State subsidizes should go to conservation, efficiency, and renewables, in that order.

COA Recommendations by the numbers

Based on all of the above information, COA's recommendations would allow the State to become more energy independent, exceed the Global Warming Response Act's 2020 goal, and negate the need for any new LNG facilities in the region. Following is COA's summary of the above sections and how they interrelate.

Meeting Electricity Demand

As stated previously, COA's reasonable recommendation of decreasing electricity consumption by 31.11% by 2020 through energy conservation and efficiency measures, would result in New Jersey only needing 68,890 GWh/year of electricity. Meeting the Draft EMP's cogeneration goal would reduce the demand/supply deficit further to 58,890 GWh in 2020. Achieving COA's recommended goal of 22,500 GWh of renewables would further reduce the deficit to 36,390 GWh, which is 18,000 GWh lower than projected 2020 electricity demand/supply deficit under the Draft EMP.

The question remains how the State will meet the additional 36,390 GWh. While COA does not have a position on nuclear energy, COA believes it is highly unlikely that the State will close Salem 1, Salem 2, or Hope Creek before 2020. However, COA and many other groups oppose continued operation of the Oyster Creek Nuclear Generating Station (OCNGS). It is the oldest nuclear power plant in the country, has a history of safety problems, and is a massive force of environmental destruction. Despite the Governor Corzine's past statements against this facility, his Department of Environmental Protection recently reversed their position, finding OCNGS consistent (with some pathetic mitigation measures) with New Jersey's Coastal Zone Management Plan, clearing the pathway for a 20-year license renewal from 2009 to 2029. Thus, COA's comments include the closure of the OCNGS.

Thus, if the remaining three reactors continue to generate the same amount of electricity as they did in 2007, they will supply 26,932 GWh.[136] Thus, the 2020 electricity deficit would be only 9,458 GWh compared to 27,068 GWh under the EMP.

[136] New Jersey generated 32,010,376 MWh of electricity from nuclear power in 2007. 5,077,932 MWh of that came from Oyster Creek. Monthly Nuclear Utility Generation by State and Reactor 2007, Energy Information

If New Jersey decided to meet the additional 9,458 GWh of demand with natural gas, it would need approximately 0.18 bcfd of natural gas.[137] If we add the additional 10,000 GWh from cogeneration as proposed by the Draft EMP we would need an additional 0.18 bcfd of natural gas. Thus, the total need for natural gas for electricity would be 0.36 bcfd.

Meeting Heating Fuel Demand

In addition to electricity, COA calls for an increase in efficiency and conservation measures for heating fuels. If the State met the economically feasible 29.11% reduction in heating natural gas consumption, New Jersey would only consume 355.18 trillion Btus in 2020. Therefore, COA's recommendations would reduce New Jersey needs to only 0.94 bcfd of natural gas.[138]

Overall Energy Portfolio

Combining the above calculations, New Jersey needs a total of 1.30 bcfd of natural gas to meet energy demands. Recall that in 2004, New Jersey consumed 1.70 bcfd of natural gas, including 0.30 bcfd for electricity[139] and 1.36 bcfd for heating. [140] Thus New Jersey would be well supplied and have a cleaner, greener, economical, energy path.

On the other hand, under the worst case scenario, if New Jersey follows the Draft EMP, the State would still not need to increase its the amount of natural gas it consumes as compared to recent years. By meeting the Draft EMP's goal of reducing heating natural gas to 397.05 trillion Btus,[141] New Jersey would need 1.06 bcfd of natural gas.[142] If the State filled the 54,000 GWh demand/supply deficit with existing nuclear (except for Oyster Creek) and natural gas, New Jersey will only need 0.69 bcfd for electricity, including cogeneration.[143] Thus the State would need a total of 1.75 bcfd. This is 0.05 bcfd below 2004's level and well below 1999's 1.96

Administration, U.S. Department of Energy, at http://www.eia.doe.gov/cneaf/nuclear/page/nuc_generation/usreact07.xls.

[137] 1 bcfd equals approximately 6,000 MW of natural gas production. 6,000 MW times 8,760 (the number of hours in a year) equals 52,560,000. 9,458,000 divided by 52,560,000 equals 0.18.

[138] There are 1,030 Btus per cubic foot of natural gas for end use sectors. Annual Energy Outlook 2008, Energy Information Administration, DOE/EIA-0383(2008), June 2008, at 215. 355,180,000,000,000 Btus of natural gas for heating divided by 1,030 equals 344,834,951,456. 344,834,951,456/365 = 944,753,292 or 0.94 bcfd.

[139] 1 bcfd equals approximately 6,000 MW of natural gas production. 6,000 MW times 8,760 (the number of hours in a year) equals 52,560,000. 15,986,595 divided by 52,560,000 equals 0.30.

[140] 1 bcf is equivalent to 1,000,000 mmBTUs. If x/495,180,000 = 1/1,000,000, then x = 495.18 bcf. Divide that by 365 and you get 1.36 bcfd.

[141] Chart from Dr. Bharat Patel, Manager, Planning Unit, New Jersey Board of Public Utilities, May 5, 2008 (on file with author).

[142] There are 1,030 Btus per cubic foot of natural gas for end use sectors. Annual Energy Outlook 2008, Energy Information Administration, DOE/EIA-0383(2008), June 2008, at 215. 397,050,000,000,000 Btus of natural gas for heating divided by 1,030 equals 385,485,436,893. 385,485,436,893/365 = 1,056,124,485 or 1.06 bcfd.

[143] 1 bcfd equals approximately 6,000 MW of natural gas production. 6,000 MW times 8,760 (the number of hours in a year) equals 52,560,000. 27,068,000 divided by 52,560,000 equals 0.51. As discussed above, 0.18 bcfd would be needed for 10,000 GWh of cogeneration. 0.51 + 0.18 = 0.69.

bcfd.[144] Clearly, with U.S. production of natural gas production growing at a rate faster than consumption and no projected decreases of pipeline capacity into New Jersey, it is clear the State will not need any new LNG terminals in the region. In addition, the change in consumption of natural gas would reduce its winter peak, eliminating the need to build new pipelines for the purpose of meeting increased peak demand.

However, the approach suggested by COA is far more advantageous as energy efficiency and conservation measures will be maximized to their economic potential, and the State will achieve a greener environment with increased renewables.

In sum, following COA's proposals, New Jersey's energy portfolio would:

- Close Oyster Creek,
- Stop burning coal,
- Stop burning oil for electricity,
- Stop importing all non-renewable energy including coal, oil, and natural gas
- Burn less natural gas for heating, and
- Burn less oil for heating.

On the green side, adopting COA's recommendations would allow the State to achieve and substantially surpass the Global Warming Response Act's (GWRA) 2020 goal of reducing CO_2 emissions to 120 million metric tons (MMT). The combination above would eliminate 36.2 MMT of CO_2.[145] If all other 2005 emissions remained the same, New Jersey would have 2020 net emissions of 102.1 MMT.

Governor Corzine has been a leader for strong action on global warming and his recent executive order sets one of the most aggressive goals of reducing global warming emissions in the country. In his recent testimony in front of the U.S. Senate's Committee on Environment and Public Works, Corzine stated "*Global warming is the most urgent environmental issue we face. It is*

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[144] New Jersey Natural Gas Total Consumption (MMcf), Natural Gas Navigator, Energy Information Administration, U.S. Department of Energy, at http://tonto.eia.doe.gov/dnav/ng/ng_cons_sum_a_EPG0_VC0_mmcf_a.htm (last visited July 21, 2008).

[145] New Jersey would eliminate the following 2005 emissions: 9.59 MMT from coal, 1.14 MMT from oil, and 14.8 MMT from non-renewable imports, for a total of 25.5 MMT. Draft Energy Master Plan, Apr. 17, 2008, at 21. COA estimates a reduction of approximately 7.5 MMT of CO_2 if the State reduces heating natural gas to 355.18 trillion Btus. COA used 2004 consumption data but 2005 greenhouse gas data so their may be a slight discrepancy. If 495.18 trillion Btus (2004) results in approximately 26.4 MMT of emissions (2005), then x = 18.94 if x/26.4 = 355.18/495.18. 26.4 – 18.9 = 7.5. COA estimates a reduction of approximately 5.5 MMT of CO_2 if the State reduces heating oil to 77.12 trillion Btus. If 107.11 trillion Btus (2004) results in approximately 19.6 MMT of emissions (2005), then x = 14.1 if x/19.6 = 77.12/107.11. 19.6 – 14.1 = 5.5. New Jersey would increase emissions from more natural gas consumption for electricity. In 2005, New Jersey generated 15,197,165 MWh of electricity and was responsible for 8.32 MMT of CO_2 emissions. New Jersey Electricity Profile, Energy Information Administration, U.S. Department of Energy, Table 5 – Electric Power Net Generation by Primary Energy Source and Industry Sector, 1990, 1995, and 2001 Through 2006, at http://www.eia.doe.gov/cneaf/electricity/st_profiles/new_jersey.html; Draft Energy Master Plan, Apr. 17, 2008, at 21. Under COA's above scenario, New Jersey would generate 19,458,000 MWh in 2020. If x/8.32 = 19,458,000/15,197,165, then x = 10.65. 10.65 – 8.32 = 2.3 MMT. This estimate is conservative as more than half of that electricity will come from cogeneration, which will result in less CO_2 emissions. Reductions of 25.5, 7.5, and 5.5 plus an increase of 2.3 equals a total reduction of 36.2 MMT.

having a serious impact on New Jersey's public health, environment and economy in several ways."[146] Given the growing threat of climate change and the need for immediate action, we expect New Jersey to embrace this opportunity to surpass the GWRA 2020 goal. Further, such a portfolio would put New Jersey in a much stronger position to achieve the GWRA 2050 goal of approximately 28 MMT.

TO SUMMARIZE COA's BASIC RECOMMENDATIONS:

While the Draft EMP takes a step in the right direction, New Jersey can and must do better. Therefore, COA recommends the following revisions to the Final EMP:

- Increase electricity reductions to 31.11%
- Increase heating natural gas reductions to 29.11%
- Increase renewable generation to 22,500 GWh
- Aggressively implement all currently available renewable energy sources as well as encourage and plan for tomorrow's renewable sources
- Replace non-renewable energy imports with renewable energy that may also be more cost effective, thus allowing the State to surpass its renewable goals
- Reject any new liquefied natural gas importation facilities

Sincerely,

Cindy Zipf
Executive Director

Jennifer Samson, Ph.D.
Principal Scientist

David Byer, Esq.
Water Policy Attorney

Tim Dillingham
Executive Director
American Littoral Society

Joe Reynolds
Co-chair
Bayshore Regional Watershed Council

Jim Lovgren
Commercial Fisherman
Fishermen's Dock Cooperative, Pt. Pleasant

Mary Turner
Conservation Chair

[146] TESTIMONY OF GOVERNOR JON S. CORZINE, UNITED STATES SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, JANUARY 24, 2008

Garden Club of Long Beach Island

Sr. Thomas Mary
Administrator
Maris Stella Retreat & Conference Center, Harvey Cedars, NJ

Margo Pellegrino
Miami2Maine

Ed Dlugosz
Vice President
Monmouth County Friends of Clearwater

Scott Thompson
Director General
paddleout.org

Bill Schultz
Raritan Riverkeeper

Mary-Beth Thompson
Club Advisor
Rumson Fair Haven Regional High School Environmental Club

John Weber
Northeast Regional Manager
Surfrider Foundation

Richard Lee
Treasurer
Surfers Environmental Alliance

Suzanne Golas, csjp
Director
WATERSPIRIT

James Scarcella
Trustee
Natural Resources Protective Asso. of SI, Inc

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Energy Master Plan
Two Gateway Plaza, 8th Floor
Newark, NJ 07102

June 27, 2008

RE: Modeling Report for the Draft Energy Master Plan and Possible Assumption Updates for Final NJ Energy Master Plan Modeling Runs

VIA ELECTRONIC MAIL

To Whom It May Concern:

Clean Ocean Action (COA) is a regional, broad-based coalition of 125 conservation, environmental, fishing, boating, diving, student, surfing, women's, business, service, and community groups with a mission to improve the degraded water quality of the marine waters of the New Jersey/New York coast. These comments are in response to the *"Modeling Report for the Draft Energy Master Plan[1]"* (herein "NJ Modeling Report") and the corresponding *"Possible Assumption Updates for "Final" NJ Energy Master Plan Modeling Runs[2]"*. These two documents contain detailed information on the assumptions to be used in a modeling effort meant to inform decisions regarding the Business As Usual (BAU) Scenario and the Alternative Scenario described in New Jersey's draft Energy Master Plan (EMP) to *"determine which policies have a relatively greater impact on the state's energy, environmental, and economic landscape than others.[3]"* The NJ Modeling Report describes the function and utility of the EMP model, as well as the many limitations inherent in modeling something as volatile and dynamic as energy. This volatility was also the subject of considerable debate during the June 19, 2008 public meeting to discuss the proposed assumptions, with many concerned stakeholders questioning the accuracy of the assumptions currently being proposed for each energy sector in the EMP model. Although it was somewhat reassuring to learn from both the authors of the EMP model and representatives from the New Jersey Board of Public Utilities that the EMP model would be subject to regular updating as real-time information and data become available and these updates will result in additional annual modeling runs, COA still has serious concerns about the accuracy of some of the costs currently being proposed for the EMP Model. We feel some corrections must

[1] Modeling Report of the Draft Energy Master Plan, Rutgers Edward J. Bloustein School of Planning and Public Policy, April 2008
[2] Possible Assumption Updates for "Final" NJ Energy Master Plan Modeling Runs, June 16, 2008 http://nj.gov/emp/home/docs/pdf/061608AssumpUpdates.pdf
[3] Modeling Report of the Draft Energy Master Plan, Rutgers Edward J. Bloustein School of Planning and Public Policy, April 2008

be made prior to conducting the final EMP model run, as the results will have significant implications for New Jersey's immediate and long-term energy plans. Below, please find COA's specific concerns, along with documented support for our proposed changes to the cost assumptions proposed in the NJ Modeling Report.

Offshore Wind Price Assumptions

The costs associated with offshore wind construction, operation and maintenance proposed in the NJ Modeling Report do not reflect available information on actual project costs in both the United States and Europe. The table below is reproduced from the NJ Modeling Report.[4]

Wind	**Overnight Installed Cost ($/kW)**		**Variable Operation & Maintenance Cost ($/MWh)**		**Fixed Operation & Maintenance Cost ($/kW-yr)**		**Capacity Factors**	
	Min	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
Offshore	$ 1,500	$ 2,200	$ 1.00	$ 2.00	$ 28.00	$ 32.00	25%	35%
Onshore	$ 2,000	$ 2,800	$ 1.00	$ 2.00	$ 28.00	$ 32.00	25%	35%

New Jersey currently has access to the "real costs" of two proposed offshore wind projects located along the eastern seaboard, including the Long Island Power Authority's (LIPA) 144 MW Offshore Wind Project located in the Long Island Sound and DelMarVa Power's 450MW Offshore Wind Project located off the Delaware coast. These two projects are further along in development then the New Jersey Offshore Wind Pilot Project and more accurately reflect actual costs. Unfortunately, these two relevant and credible sources are not included in either the NJ Modeling Report or the Updated Assumptions document, and although it may seem logical for New Jersey to utilize cost estimates from the recently submitted pilot project proposals, the experiences of both LIPA and DelMarVa make it clear these initial cost estimates are generally not realistic. Both of these projects now have revised cost estimates that are substantially higher than the initial, accepted proposals. The published costs associated with these two offshore wind projects are now estimated to be $5,634/kW[5] and $3500/kW[6], respectively. Both of these real-time cost analyses also cite significantly higher operation and maintenance costs than are proposed in the above Table from the NJ Modeling Report. The LIPA cost analysis also provides information on the current cost of European offshore wind projects at $4000/kW, along with verification that building windfarms in the United States is more expensive than European installation costs. Therefore, it doesn't make any sense for New Jersey to use an assumed cost that is half the cost of already installed European development projects. In fact, there is every reason to believe the cost of offshore wind is actually going up.

[4] Modeling Report of the Draft Energy Master Plan, Rutgers Edward J. Bloustein School of Planning and Public Policy, April 2008, pg 55.
[5] Pace Global Energy Services, Assessment of Offshore Wind Resources for Long Island Power Authority, August 22, 2007. http://www.lipower.org/newscenter/pr/2007/pace_wind.pdf
[6] Delaware Public Service Commission Staff Report on Term Sheet for proposed power sales to DelMarVa Power, October 29, 2007

Cambridge Energy Research Associates (CERA) recently published new research[7] warning that prices for offshore wind installation costs will rise dramatically due to several different factors including:

a) the increasing cost of commodities such as steel and copper used in the production of turbines,
b) a major imbalance in supply and demand for turbines and the specialty equipment and personnel needed to install and maintain turbines offshore,
c) the ever increasing cost of transportation.

The proposed EMP model also incorrectly assumes that offshore wind installation, operation and maintenance costs are the same as onshore wind. While there is little evidence to support such an assumption, there is an abundance of documented, legitimate sources that find offshore wind costs are at least double those of onshore wind. Vesta, a major supplier of wind turbines, recently stated

> *"Offshore wind represents less than one per cent of the wind energy market and that is likely to continue…The simple reason is that it costs double to build and operate an offshore farm – we just don't have the people and the cranes to do the job.*[8]*"*

These comments, coming directly from the wind industry, further support the statements cited above from CERA. In addition, the LIPA cost analysis report found that offshore wind cost is substantially higher than onshore wind due to the difficulty of installation, additional foundation and support requirements, underwater cabling and interconnection requirements.[9] Considering the obvious challenges of working several miles offshore in the harsh marine environment, these elevated cost assumptions are both logical and justified. Even websites devoted to promoting offshore wind admit the cost differential between offshore and onshore wind is creating major problems for expansion.

> *"Cost is currently a major drawback of offshore wind energy. Land based projects cost significantly less and since their potential in North America is still strong, developers are currently focusing most of their efforts on onshore wind projects. Several offshore projects have signaled cost concerns including LIPA, Georgia Tech, and Gulf wind.*[10]*"*

Therefore, the EMP Model must be adjusted to provide a more realistic estimate of the cost of offshore wind that is more in line with available data and information on actual US and European project costs. COA would like to make it clear that we do not oppose the implementation of offshore wind energy as long as the technology is proven to be a viable and sustainable option, the environmental consequences are well balanced and the economic factors are thoroughly and objectively explored.

Solar Energy Job Impact Assumptions

The Table entitled "Renewable and Energy Efficiency Job Impact Assumptions"[11] in the NJ Modeling Report must include jobs benefits resulting from solar maintenance, in addition to installation.

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[7] http://www.cera.com/aspx/cda/public1/news/pressReleases/pressReleaseDetails.aspx?CID=9512
[8] http://www.businessgreen.com/business-green/news/2217931/vestas-calls-greater-focus
[9] Pace Global Energy Services, Assessment of Offshore Wind Resources for Long Island Power Authority, August 22, 2007. http://www.lipower.org/newscenter/pr/2007/pace_wind.pdf
[10] http://www.offshorewind.net
[11] Modeling Report of the Draft Energy Master Plan, Rutgers Edward J. Bloustein School of Planning and Public Policy, April 2008, pg 60.

Future Energy Efficiency Savings
Although there are substantial "upfront" or capital costs of enacting many of the aggressive energy efficiency and conservation measures described in the Alternative Scenario, over time, these investments are projected to reduce total electricity demand and consequently reduce or eliminate projected increases in electricity costs to consumers. It is not clear whether these anticipated future cost savings to consumers (and consequential economic impacts of the savings) are included in the model.

Characterization of Total Energy Production/Reduction
Please clarify that the model is using the same method to characterize the total amount of electricity production and/or reduction to be realized from all the different energy sectors. For example, the BAU scenario for offshore wind shows a total of 350 MW of electricity coming from the pilot project. This value represents the nameplate capacity of the project, not the actual amount of electricity that will be produced (which according to the minimum and maximum capacity factors included in the assumptions would be either 25% or 35% of 350MW). Is this the same for all the different energy sources in the model or do some of the values represent actual electricity production? It is very important to the accuracy of the model output that all of the different sectors be characterized using the same method.

The Importance of Getting it Right the First Time
Governor Corzine has repeatedly publicized his stance on the need to make smart choices about how to spend New Jersey's limited funds in a fiscally responsible manner.

> *"We must turn away from the era of spending and borrowing beyond our means, once and for all," he said. "In practical terms, failing to take on the tough choices will only force New Jersey into a deeper fiscal swamp.*[12]*"*

> *"I have heard firsthand the public's frustration and anger generated by too many years of overspending, borrowing and false rhetoric," he said. "And they're right.*[13]*"*

Clean Ocean Action feels this same vigilance must be used to decide how best to spend our limited dollars allocated to deal with New Jersey's most challenging energy issues, including reducing peak energy use and relieving overburdened load centers. Therefore, COA urges the modeling effort to utilize the "real costs" for offshore wind that are currently available from the two proposed offshore wind projects located along the eastern seaboard, LIPA and DelMarVa. These cost estimates are not only more realistic, but would also put the model's assumptions more in line with the reasonable and documented experiences that offshore wind construction, operation and maintenance costs are substantially higher than onshore wind. If the assumptions included in the EMP modeling effort are not *"reasonable, credible, and objective*[14]*"*, the results will not lead us to make the correct *"tough choices"* that are needed to provide the most energy savings for the dollars spent. Clean Ocean Action firmly believes that cost effective energy efficiency and conservation must be the first choice for meeting New Jersey's increasing energy demand. However, COA also strongly supports the development of renewable resources if the

[12] Governor Corzine's 2008 Budget Proposal Presentation to the New Jersey Assembly, February 26, 2008
[13] Governor Corzine's 2008 Budget Proposal Presentation to the New Jersey Assembly, February 26, 2008
[14] Modeling Report of the Draft Energy Master Plan, Rutgers Edward J. Bloustein School of Planning and Public Policy, April 2008

source presents a viable and productive option, in terms of both the proposed technology and the thoroughly researched and well-documented environmental consequences. An EMP that strictly enforces energy efficiency/conservation and supports productive and cost effective renewable energy sources will result in a reliable and environmentally sensitive strategy to combat the state's energy consumption issues.

Sincerely,

Cindy Zipf
Executive Director

Jennifer Samson, Ph.D.
Principal Scientist

David Byer, Esq.
Water Policy Attorney