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Subject: Supplemental AES Comments to Connecticut on State Implementation of RGGI

One February 1, 2007 the State of Maryland released a report entitled Economic and Energy Impacts from Maryland's Potential Participation in the Regional Greenhouse Gas Initiative ("Maryland Report"). AES respectfully submits that this Report should be critically evaluated by the State of Connecticut as it develops its RGGI program because it contains valuable and relevant information. As such, attached please find supplemental comments to our January 24, 2007 submission which are derived in large part from information contained in the Maryland Report.

If you have any questions please contact me at 607/272-5970, ext. 1116.

Sincerely,

Chris Wentlent, Director
Regulatory Affairs

Supplemental AES Comments

March 7, 2007

The Maryland Department of the Environment contracted with the University of Maryland through its Center for Integrative Environmental Research, in collaboration with Resources for the Future, The Johns Hopkins University and Towson University, to conduct an independent study of the economic and energy impacts related to Maryland's potential participation in the Regional Greenhouse Gas Initiative (RGGI). The results are contained in Economic and Energy Impacts from Maryland's Potential Participation in the Regional Greenhouse Gas Initiative, which was released on February 1, 2007 (the "Maryland Report" or the "Report"). The Report contains up do date, valuable information which should help inform Connecticut on issues associated with RGGI implementation. Included in the Report are the following findings:

1. Generators locked into long- term contracts for their respective output will suffer inordinate harm under RGGI;

2. The cost of base load power will increase and merchant generators will experience significant declines in profitability;

3. Substantial leakage will occur as electric generation shifts to higher-emitting non-participating states as a result of RGGI.

The following supplemental comments are thus derived from our review of the Maryland Report.

- **The Impact On Contracted Plants Is Acknowledged But Not Evaluated**

It first must be emphasized that review and interpretation of the results of the Maryland Report needs to be made with the understanding that, as was the case with the RGGI IPM modeling, the assessment of the impact of Maryland joining RGGI on the profitability and viability of the state's generating facilities is based exclusively on merchant plants. *Further, the modeling was based on the assumption that 75% of allowances would be allocated directly to sources.* Report conclusions cannot be assumed to apply to the much more severe proposal that sources receive no direct allocation, but have to attempt to obtain all of their allowances in an auction. The impact on Maryland's merchant plants is projected to be significant (a decrease in annual profit of 3% in 2015, worsening to nearly an 8% decrease in 2025). The profits of coal-fired plants decline by 13% in 2015, and by over 20% in 2025. The magnitude of the financial impact with a 100% auction was not modeled. Based on the reported results of a 25% auction, it is apparent that adverse financial impacts will be magnified by a 100% auction.

As noted in our previous comments, plants with long-term contracts for power do not have the ability to incorporate any of the costs to acquire allowances into their price structure as do merchant plants. Even though showing significant impact on coal-fired plants, the conclusions in the Maryland modeling report (as well as the RGGI IPM modeling) cannot be applied to contracted plants and do not address impacts to generators that cannot seek to recover allowance costs in the wholesale market. Before any decisions can be made as to the program's impact on plants across the state, or on Connecticut's allowance allocation methodology, the state must assess this key distinction between merchant and contract plants. The Maryland Report recognizes that this distinction exists, through the statement on page 59 that, "… utilities that have long-term energy contracts for power, from sources with high CO2 emissions, may have to pay more for the emissions and suffer from reduced competitiveness in energy markets," but does not further evaluate or model its implications.

Without properly assessing this critical difference between contracted and merchant plants, implementation of RGGI in Connecticut would have the unintended and paradoxical consequence of causing significant financial harm to one of the most environmentally efficient clean coal facilities in the RGGI region.

- **Allowance Allocation to Sources**

The Maryland modeling clearly demonstrated that even allocating 75 percent of Maryland's RGGI CO2 allowance budget to existing generators still resulted in substantial increased compliance costs, reduced gross margins, eroding facility profitability (**not windfall profits**), and increases in the marginal cost of in-region electric supplies.

As noted in the Report, this finding regarding generator impact is at variance with earlier work by Palmer et al (2006) which suggested that roughly 30 percent of the allowances would need to be given away to compensate the industry as a whole in the Classic RGGI region for all facilities' losses. ***This is a critical finding of the detailed Maryland Report, and clearly refutes the contention that allocating allowances to sources will provide them with windfall profits.*** The earlier work done by Resources for the Future, which concluded that only a relatively minor percent of allowances are needed to keep generators whole, was the foundation behind the call for a significant public benefit set-aside. The fact that this assumption is not valid for Maryland (and, by extrapolation, to dual fuel and coal-fired generators in other states) should clearly point to the conclusion that a 100% auction concept being contemplated in Connecticut and other states is based on false assumptions and, at a minimum, should be reconsidered. The original Model Rule struck a proper balance of 25% auction, and 75% allocation to source. This specific issue was debated throughout the three year RGGI regional process. A dramatic shift to 100% auction can not be done in a vacuum but rather would require other components of the RGGI program to be modified to avoid substantial economic risks to consumers and suppliers.

- **Leakage**

Units are dispatched in the wholesale markets serving the RGGI states largely on economics. The Maryland Report finds that as a consequence of RGGI, relative electric prices will be higher in the RGGI region than in the surrounding regions. Also, transfer limits into the RGGI region will be maximized and generation levels from within the RGGI region will be supplanted by a larger amount of imports. As noted in the Maryland Report, Pennsylvania has excess capacity and could absorb some of this "carbon leakage," most likely to the detriment of the primary goal of CO2 reduction. Its CO2 emissions in 2002 alone exceeded the annual cap for the seven RGGI states as defined by the states in their MOU. In addition, new generation in states west or south of the RGGI region, combined with transmission upgrades leading into Maryland, will facilitate the shift of generation away from originating within Maryland, Delaware and New Jersey, and towards generation from within non-participant states. Ironically, the report (at page 67) credits imports resulting from RGGI with "holding down the price effects of the Maryland joins RGGI scenario." However, the Maryland Report neglects to analyze or mention the affects of these imports on the efficacy of the program and ambient air quality. Further, the report fails to capture the additional congestion costs that could arise by becoming even more dependent on imported energy. Currently, within the RGGI region, Maryland, Delaware, New Jersey, New York, Connecticut, Massachusetts, and Rhode Island are in need of additional generation capacity. In addition, Washington, DC, Baltimore, central Maryland, eastern PA, northern New Jersey, New York City, Long Island, southwest Connecticut, and Boston are all subject to congestion risk. These additional congestion costs have not been captured within the modeling except at the RTO control area borders.

- <u>CO2</u>

The Maryland Report notes that, "Depending on how they are grouped, states outside of RGGI could either see a reduction in carbon dioxide emissions when Maryland joins RGGI, or an increase. In general, this leakage will be small." We suggest that, in fact, the CO2 leakage is quite large. As indicated in the Report's *Table 9.9: Looking for Leakage: Effect of Maryland Joining RGGI on Cumulative Emissions of CO2 from Fossil Generators (2010-2025)*, when considering the entire Eastern Interconnect, fully 35% of the CO2 benefit (emissions reductions plus offsets) derived by Maryland joining RGGI is offset by CO2 emissions increases in surrounding Eastern Interconnect states that are outside of the RGGI region. While the Report notes that an argument could be made that it is more appropriate to look at the response of the nation as a whole to Maryland joining RGGI (which the modeling predicts showing overall CO2 reductions), it would seem that the basis for this look and attendant modeling conclusion is somewhat more tenuous. Regardless, it is apparent that leakage will be significant as a result of RGGI, and needs to be addressed to ensure the desired results of the program.

- SO2, NOx, Hg

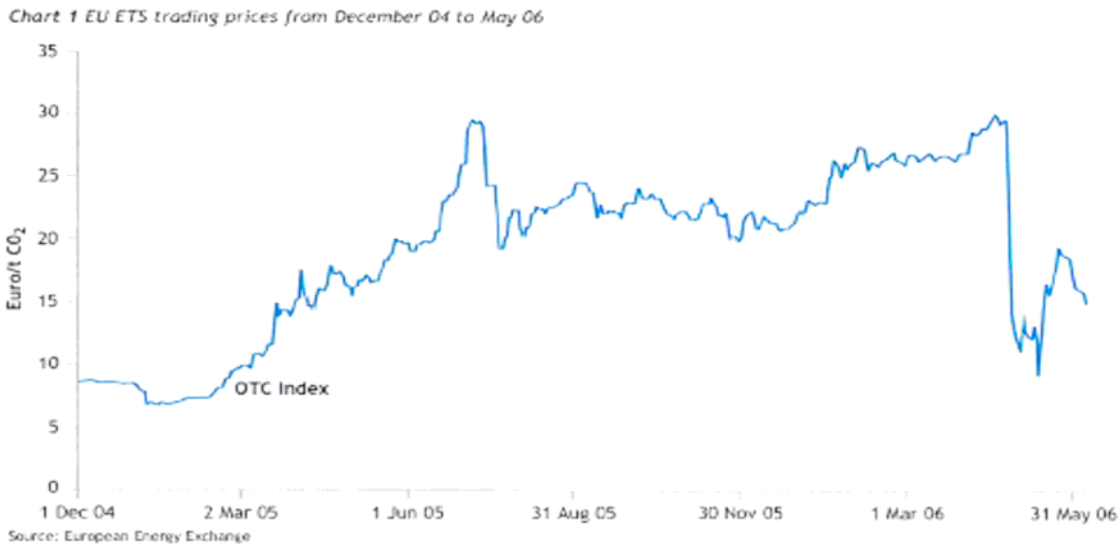
Due to the fact that power plant SO_2, NOx and Hg emissions from RGGI states are generally at lower levels than surrounding areas, reduced generation within the RGGI states and resultant increased generation from non-RGGI states as a result of the RGGI program could actually result in overall increased SO_2, NOx and Hg emissions from power plants in surrounding states and the entire Eastern Interconnect Region. Due to different emission characteristics between different plants and fuels, it is not possible, at least at this time, to extrapolate SO_2, NOx and Hg emissions leakage from CO2 emission leakage data. However, as has been demonstrated through climate and transport analysis by various Northeast states, increased emissions from surrounding states will cause adverse ambient impacts in the RGGI region

We appreciate the fact that other air pollution control programs are expected to assure that SO_2, NOx and Hg emissions will be controlled over large geographic regions; however, the nature of cap and trade programs will nonetheless allow for leakage issues to arise in the RGGI region. For example, the Clean Air Interstate Rule (CAIR) caps SO_2 and NOx emissions over most of the Eastern U.S. but does not require that emissions will be controlled in any specific state or region (e.g., the Northeast) – only that, overall, reductions will occur within the Eastern U.S. Under SO_2 and NOx cap and trade programs, it is probable that some sources in states immediately upwind of the RGGI states will increase their import levels to the RGGI region, and hence, their emissions. Similarly, the Clean Air Mercury Rule implements emission reductions through a cap over the entire nation. While the cap and trade provisions of this rule are being challenged, nothing in the promulgated rule assures that increased imports in to the RGGI region will not bring with them increased mercury emissions into the region. States participating in a RGGI initiative must carefully review whether SO2, NOx and Hg emissions leakage resulting from upwind, non-RGGI regions will negate any emissions reductions and cause adverse ambient impacts within the RGGI region.

- **Modeling Assumptions** - In reviewing the Maryland Report it is important to consider the following limitations and concerns:

    - Contracted Plants - The modeling was based on all plants in the state being merchant facilities. This is not correct, and conclusions drawn as to the projected impact on merchant plants **CANNOT** be applied to contracted plants. Modeling of how RGGI would impact a contracted plant needs to be performed before any decisions can be made as to how these plants should be handled under RGGI.

    - Allowance Price - The model used imposes a constraint that the rate of change in the price of CO2 emissions allowances must be no greater than the interest rate. This is unrealistic. The following table illustrates the price volatility that has been observed in the EU trading program.



Clearly, the assumption used in the modeling is not appropriate, and modeling results and conclusions that are sensitive to allowance price volatility should be questioned.

- Fuel Price – We agree with the author of the Maryland RGGI modeling study that, "…one might want to investigate the impact of higher fuel prices on the resulting electricity rates. While the Haiku model results have shown that Maryland joining RGGI has a negligible impact on electricity rates, the same might not be true if, for example, higher natural gas prices were considered."

- 316(b) Implications – On January 25, the United States Court of Appeals for the Second Circuit issued its decision in *Riverkeeper, Inc. v. EPA* regarding the July 9, 2004 final Phase II cooling water intake structures rule EPA promulgated pursuant to section 316(b) of the Clean Water Act. A number of provisions in the Phase II rule provided for flexibility and the ability to incorporate cost-benefit analysis in the evaluation of Best Available Technology. As a consequence of the January ruling, it can be expected that there is a reasonable probability that plants with once-through cooling will be required to install additional and very costly fish protection devices. This additional significant capital and O&M cost burden cannot be ignored in determining the financial viability of existing generating plants with once-through cooling, and needs to be incorporated in the assessment of the ability of plants to absorb additional costs to comply with RGGI requirements. In other words, the cost of a RGGI program, while daunting on its own, must be looked at cumulatively with other impending program costs.

- Offset Constraints – It is suggested that modeling should be performed removing all offset constraints on the overall costs and environmental consequences of the program.

- Timing of Energy Efficiency Programs - The timing of the energy efficiency programs appears to be instantaneous with the start of RGGI. Is that realistic? Won't there be a lag between program start, fee collection, energy efficiency program startup, and actual energy efficiency gains? If so, how much lag would there be and shouldn't the modeling incorporate this more realistic assumption?

- Electric Demand – An evaluation of Table 14.4 indicates that the cumulative annual growth rate of electric demand in the mid-Atlantic Region appears to be higher using EIA's Annual Energy Outlook (AEO) vs. the PJM projection (1.61% vs 1.51%). The Maryland RGGI modeling study used AEO numbers which are represented as being "more conservative". However, the PJM growth rate includes a negative number in 2005 which distorts the average. In fact, the PJM growth in 2010 and every later year is significantly higher than the AEO estimate. Using the PJM growth rate for electric demand would result in higher demand during the years 2010-2015 and possibly beyond, when RGGI - mandated CO2 reductions are needed. Therefore, we suggest that the modeling should not be overly constrained in this important area and should be done using PJM 2010 and beyond projections.

- Impact of Auction Revenues on Demand – The report should provide all of the assumptions used to model the impacts of auction revenues on demand and energy efficiency. According to the figures provided in Table 9.2, energy efficiency programs funded by the sale of RGGI allowances will result in electric demand increasing 25.9% from 2010 – 2025 versus an increase of 27.5% without RGGI. The Report concludes that the 1.6% decrease in demand relative to the baseline scenario counteracts increased costs of electricity supply that would otherwise result from RGGI as shown in Figure 12.1. The economic effect of this relative decrease in demand is a core underpinning for the report's conclusion that RGGI will have little net impact on the Maryland's economy, notwithstanding increasing supply curve costs.

  According to the Report, the relatively lower demand results from the Maryland energy efficiency programs funded by annual allowance auction revenues of $38 mm in 2010 increasing to $96 mm in 2025. The Report does not contain or explain the coefficient used in the model as the relationship between efficiency expenditures and projected demand reduction other than stating that the analysis employed supply curves for energy savings "developed using information on technology costs provided by ACEEE" (American Council for an Energy Efficient Economy). The Report states that the analysis allocated the energy

efficiency funds based on data from Connecticut's energy efficiency fund and conversations with staff at ACEEE. According to the report, "a number of assumptions" went into the development of the energy efficiency supply curves acknowledging that "if any of the myriad assumptions were to change this could have important implications for the results." Because the impact of energy efficiency expenditures on demand is fundamental to the conclusions in the report, we suggest that all of the assumptions need to be presented to assess the validity of the analysis.