Attachment A: CTDEP's Detailed Comments on the Proposed Transport Rule

Background

The Connecticut Department of Environmental Protection (CTDEP) greatly appreciates that EPA recognizes interstate air pollution transport for the significant environmental and public health problem that it is. CTDEP also strongly supports EPA's actions to address this transport, provided it is done in a manner that achieves actual air quality and public health goals. CTDEP recognizes that the proposed Transport Rule is an improvement to the Clean Air Interstate Rule of 2005, which the D.C. Circuit Court of Appeals found legally and technically insufficient in *North Carolina v. EPA*. There are many provisions of the proposed Transport Rule that CTDEP supports, such as requiring substantial reductions in sulfur dioxide emissions, which will help in reducing levels of fine particulate pollution throughout the eastern United States.

The federal Clean Air Act (CAA) section 110(a)(2)(D) sets forth the legal requirements that must govern EPA's actions in the Transport Rule. The CAA requires each state to adopt a State Implementation Plan (SIP) within three years after promulgation of a national ambient air quality standard (NAAQS) containing adequate provisions:

> *"(i) prohibiting, consistent with the provisions of this title, any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will*
>
> > *(I) contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard, or*
> >
> > *(II) interfere with measures required to be included in the applicable implementation plan for any other State under part C to prevent significant deterioration of air quality or to protect visibility."*
>
> *(ii) insuring compliance with the applicable requirements of sections 126 and 115 (relating to interstate and international pollution abatement);"*

To meet the requirements of CAA section 110(a)(2)(D), a SIP (i.e., a "transport SIP") must demonstrate that it will achieve sufficient emission reductions to ensure that the upwind state no longer significantly contributes to nonattainment or interferes with maintenance of the applicable NAAQS in a downwind state. CTDEP supports the use of modeled contributions of 1% or greater of a NAAQS level as the definition of "significant contribution" to any downwind state with nonattainment or maintenance issues. Sources in any state, whether alone or in combination, that exceed this level of contribution are to be considered significant contributors, regardless of the state's relative impact to downwind nonattainment in comparison to other upwind state contributors. Notwithstanding the significant contribution test, it is self evident that a transport SIP must address nonattainment or interference with maintenance at a monitor located at an upwind border of a downwind state (i.e., a monitor

overwhelmingly influenced by out-of-state sources). Although control costs should be considered when selecting appropriate strategies to ensure compliance, Section 110(a)(2)(D) of the CAA can only be satisfied when an upwind state's contributions are no longer significant, or when the downwind state has reached attainment and is successfully maintaining compliance with the NAAQS.

In *North Carolina* v. *EPA* the D.C. Circuit Court found numerous legal deficiencies with CAIR. For purposes of these comments, the key deficiencies include:

- The approach EPA used in CAIR to measure each state's significant contribution was insufficient.
- The emissions trading program in CAIR was not linked to air quality impacts in that the regional trading program did not address the impact of source emissions from one state on another state.
- No independent meaning was given to the "interfere with maintenance" prohibition set forth in CAA section 110(a)(2)(D)(i)(I).
- Compliance deadlines in CAIR were not linked to attainment requirements.

Based on these legal flaws, the Court remanded CAIR to EPA and directed EPA to replace CAIR. However, the first phase of CAIR remains in place and has led to emission reductions in many states.

Connecticut Perspective

Attaining the federal health-based air quality standards for ozone remains a challenge in Connecticut even though we have adopted a stringent regulatory framework to reduce emissions from power plants, factories and motor vehicles. These actions have reduced total 2005 in-state emissions of nitrogen oxides (an ozone and particulate matter precursor pollutant) by over 45% from 1990 levels. Connecticut also reduced power plant sulfur dioxide (SO_2) emissions (a fine particulate matter precursor pollutant) by almost 86% from 1990-2005 levels according to EPA's own data. [1] However, despite these notable in-state emissions reductions, EPA's modeling shows that Connecticut will continue to struggle to maintain the 1997 NAAQS and 2006 24 hour PM NAAQS. The primary cause of our attainment/maintenance challenge is attributed to air pollution transport from upwind states.

The impressive emission reductions achieved in Connecticut over the years have come at a significant cost to the state's economy. Ironically, given the small geographic size of Connecticut, much of the air quality benefits resulting from those reductions have been realized in downwind states. Although Connecticut is poised to pursue additional reductions to achieve the upcoming NAAQS revisions, EPA must develop its current and future transport rules to account for the control costs already incurred by states such as Connecticut, so as to ensure overall equity with states that historically have not been required to reduce their emissions to the same degree.

[1] 1990 Connecticut EGU SO_2 emissions = 52480 tons; 2005 Connecticut EGU SO_2 emissions = 7059 tons

EPA's proposed Transport Rule does not provide significant health benefits to Connecticut. EPA's modeling shows that on high ozone days well over 90% of the peak ozone monitored in southwest Connecticut can be attributed to transport from upwind states. Unfortunately, the anticipated emissions reductions from the proposed Transport Rule are projected to reduce peak ozone levels in Connecticut by less than 1 ppb. **The net additional benefit of the proposed Transport Rule is insignificant for the citizens of Connecticut.**

As listed below and described in more detail in these comments, EPA must, through either strengthening the proposed Transport Rule or subsequent federal actions:

- Set an ozone season emission budget in this proposed rule necessary to address interstate air pollution as measured against the 1997 8-hour ozone standard and include a tighter NOx budget for 2014 that will set a strong framework in advance of the anticipated reconsidered 2008 8-hour ozone standard and any subsequent Transport Rule. Doing so will provide regulatory certainty to the numerous sources subject to the Transport Rule both in Connecticut and throughout the Eastern United States.

- Structure the Transport Rule so that it reflects how all electric power is generated for the grid; specifically, EPA should adopt performance standards for sources subject to the Transport Rule because state-wide emission caps do not ensure that emission reductions occur where they are needed. For example, emission reductions in upstate New York State do little to address transport from the greater New York City metro area into southwest Connecticut. As such, careful examination of the operation and emissions from EGUs and other sources, such as diesel generators, that operate in close proximity to Connecticut on high electric demand days (HEDDs) will show that performance standards are necessary to protect Connecticut's air quality.

- Adopt stronger national rules for source categories identified by the Ozone Transport Commission. These national rules should cover:
    - Performance standards for all electric generating units;
    - Light and medium duty vehicles;
    - Industrial, Commercial and Institutional (ICI) Boilers;
    - Cement Kilns;
    - Locomotive Engines; and
    - Marine Engines

Identify Appropriate Cost Thresholds

Transport cannot be considered completely addressed pursuant to CAA section 110(a)(2)(D) if the remedy, based solely on a cost threshold, leaves residual nonattainment. In the event that EPA persists with the use of cost thresholds to set the proposed remedy, EPA must identify thresholds necessary to level the playing field between Connecticut and upwind states. Based on the level and cost of controls already in place in Connecticut and other Northeast states, the proposed Transport Rule's $500/ton cost threshold (2006 dollars) for NOx is far below the costs already incurred by electric generating units in

Connecticut. EPA must recognize the costs already incurred and the reductions already achieved by Connecticut and other states that are impacted by transport when devising this and future Transport Rules. Since EPA acknowledged (75 FR 45288) in the 2003-04 NOx SIP Call that highly cost-effective ozone season compliance costs of $3200/ton (in 2006 dollars) are reasonable, the Transport Rule would achieve much greater health benefits if EPA used a similar cost threshold.

Connecticut's increasingly stringent emission limits, coupled with market forces and CTDEP's efforts to encourage cleaner energy generation through participation in the New England Independent System Operator (ISO-NE) and Connecticut Department of Public Utility Control (DPUC) processes, have resulted in installation of new electric generating facilities that are much lower emitting than in the past. In addition, at least 80 new units, many of which are small distributed generators that also utilize combined heat and power to increase efficiency, resulted in the net capacity of a 350MW base-loaded facility (representing almost 10% of total new capacity). Table A-1 summarizes emission limits for new facilities that are subject to the Transport Rule sited in Connecticut over the last 14 years, with all units permitted at NOx emission limits ranging from 0.008 to 0.09 lbs/MMBtu:

Table A-1. Emissions Limits of Connecticut's New Facilities

Facility Name	*Total Capacity*	*First Operation*	*NOx Limit (lbs/MMBtu)*
Devon Station Units 11-14	160 MW	Summer 1996	0.090
Bridgeport Energy	520 MW	1998	0.022
Lake Road Gen.	810 MW	2001-2002	0.008
Milford Power	520 MW	2004	0.0074
Devon Station Units 15-18	200 MW	2010	0.090
Kleen Energy	600 MW	2011-2012	0.008
TOTALS →	2810 MW		

These newer, cleaner installations have transformed the emission characteristics of Connecticut's EGU sector. Table A-2 displays the NOx emission rate of Connecticut's EGUs that report to EPA's Clean Air Markets Division (CAMD) compared to emission rates of similar EGUs in upwind states.

Table A-2. 2007 NOx Emissions Rates For Northeast States (CAMD)

STATE	*Average EGU NOx Rate (lbs/MMBtu)*
CT	0.069
DC	0.252
DE	0.245
MA	0.047
MD	0.215
ME	0.017
NH	0.089
NJ	0.118
NY	0.116
OH	0.182
PA	0.178
RI	0.015
VA	0.171
VT	0.170

Table A-2 shows that Connecticut's EGUs have an average NOx rate of 0.069 lbs/MMBtu, which is significantly lower than the average NOx rate of key upwind states such as Pennsylvania at 0.178 lbs/MMBtu and Ohio at 0.182 lbs/MMBtu. Furthermore, the average NOx rate for new capacity added in Connecticut since 1996 is 0.021 lbs/MMBtu. EPA should account for states with lower emitting, higher efficiency EGU infrastructure by ensuring that the final Transport Rule and future Transport Rules are structured to level the playing field with upwind states whose EGU sectors are higher emitting and less efficient. **CTDEP recommends EPA adopt EGU performance standards by 2014. However, if EPA persists in using cost to establish the scope of the proposed remedy, EPA must use a more appropriate cost threshold, such as the cost per ton of actual EGU controls in downwind states most impacted by transport.**

Peak Emissions, HEDD

Connecticut's electric distribution companies (EDCs) are required to develop an Integrated Resource Plan (IRP) through which adequate generation resources are identified and, if necessary, contractually secured to ensure the State of Connecticut will have sufficient electric generating capacity to meet its demand over a ten year planning horizon. In support of the IRP, the EDC's contractor ran an electric grid bid-stack model to better predict the future operation of EGUs in Connecticut. The IRP model shows that load following boilers (LFBs) in Connecticut are projected to continue to operate on High Electric Demand Days (HEDD). When Connecticut's LFBs operate on HEDD, daily NOx emissions increase by as much as 29 tons per day, which is a significant amount.

As currently proposed, EPA's framework for addressing significant contribution does not help states address the short-term (e.g., one-hour to 24-hour) public health effects of ozone, PM 2.5, NOx and SO_2 exposures. It may, in fact, exacerbate this problem. Analyses indicate that, in the Northeast, NOx emissions are much higher, and in Connecticut can be as much as five times higher, on HEDD than during average summer days (see Table A-3):

Table A-3. NOx Emissions are higher on High Electric Demand Days

State	Typical day Total NOx 6/10/2009	HEDD Total NOx 8/18/2009	Increased Tons of NOx on HEDD
MD	46	77	33
NY	84	180	96
PA	291	426	135
CT	4	29	25
MA	23	29	6
DE	21	29	9
NJ	15	55	40
TOTAL	484	825	341

The proposed Transport Rule does not guarantee that a specific source that has a significant impact on a downwind area will control its emissions, and in such case those states will be in violation of Section 110(a)(2)(D) of the CAA. Therefore, any regulatory approach that sets standards, caps, or budgets that are based on annual or seasonal averaging will be insufficient to address peak ozone exposures that typically occur on HEDD. Consistent with Ozone Transport Commission (OTC) comments on the proposed Transport Rule, EPA should incorporate short term performance standards for electric generating units that apply to each upwind source. Furthermore, in order to address high electric demand days, performance standards should apply on a 24-hr basis. Such performance standards should be in addition to the proposed Transport Rule trading program and any subsequent trading program to ensure such emissions are addressed as required by *North Carolina v. EPA*.

Maintenance of the 1997 O3 NAAQS in CT is not Adequately Demonstrated

EPA used its air quality assessment tool (AQAT) in combination with IPM analyses of emission reductions anticipated at different marginal cost/ton levels to identify the proposed $500/ton NOx remedy for addressing significant impact/maintenance issues in downwind states. The AQAT assumes a linear relationship between the reduction in an upwind state's ozone season NOx reductions and the reduction in that state's contribution to downwind ozone levels. For example, if a given upwind state reduced its ozone season NOx emissions by 20 percent, AQAT estimates there would also be a 20

percent reduction in the state's contribution to downwind ozone. EPA explains that the linear AQAT tool was used to minimize the number of time-consuming and resource-intensive CAMx runs that would be needed to analyze the full suite of potential control-level scenarios with the more refined air quality model. **The AQAT/IPM methodology is inaccurate and overstates the benefits achieved by the proposed Transport Rule.**

EPA ran the CAMx model to identify monitor locations expected to have nonattainment or maintenance issues in 2012 and 2014 for a base case emissions scenario (not including either the proposed Transport Rule remedy or the CAIR Program it would replace). The 2012 base case run was also used to identify and quantify upwind state contributions to downwind monitors with nonattainment/maintenance issues. EPA employed these source apportionment results for 2012 to establish the AQAT linear relationship between emission reductions and upwind states' contributions. After EPA identified the proposed remedy with AQAT, the CAMx model was run one last time to provide a more thorough analysis of projected ambient impacts in the 2014 remedy case as a check on the AQAT result.

EPA's base case CAMx modeling identifies several monitors in the New York/New Jersey/Connecticut nonattainment area (including multiple monitors in southwest Connecticut) as having potential nonattainment or maintenance problems in 2012 and/or 2014 for the 1997 8-hour ozone NAAQS. When the simplified linear AQAT procedure is applied, EPA projects that the proposed $500/ton NOx marginal cost remedy will be sufficient to eliminate any potential problems by 2014. However, when EPA applies the more technically refined CAMx model (consistent with their modeling guidance), ozone levels at monitors in two (downstate) New York counties are projected to have continuing maintenance issues in 2014.

EPA requested comment on whether it should consider and analyze NOx reductions that could be achieved for greater than $500/ton in states linked to the New York area sites. EPA goes on to indicate that any future analysis deemed necessary would be conducted as part of a future notice that would also consider similar issues identified for the Houston and Baton Rouge areas.

As a moderate area for the 1997 NAAQS, the statutory attainment date for the New York/New Jersey/Connecticut nonattainment area was June 15, 2010. Under the current proposal, the CAMx modeling projects that full relief from transport would still not be achieved by 2014. Delaying further action addressing the 1997 NAAQS to a future rulemaking is simply not fair to the citizens of this area who must breathe unhealthy air, and it is inconsistent with Clean Air Act Section 110(a)(2)(D)(i).

CTDEP strongly urges EPA to strengthen the current proposal with appropriate additional control requirements to ensure that states fully meet CAA section 110(a)(2)(D) transport obligations as soon as possible for the 1997 8-hour ozone NAAQS. EPA should base all proposed and final decisions regarding appropriate transport control remedies on analyses conducted with the more refined CAMx

model, which includes algorithms to simulate non-linear photochemistry and the spatial differences associated with emissions from the various source sectors.

Addressing Future NAAQS

EPA developed the proposed Transport Rule with the goal of addressing Section 110(a)(2)(D) transport attainment/maintenance requirements for the 1997 8-hour ozone and annual PM2.5 NAAQS and the 2006 24-hour PM2.5 NAAQS. The timing of the proposed remedy comes well after the CAA requirement that states modify their SIPs to address transport within three years after a new NAAQS is promulgated, yet still does not address all significant impacts. Therefore, it is imperative that EPA adopt a framework to address transport on a time frame compliant with CAA requirements.

EPA indicates in the proposed Transport Rule that the agency intends to propose additional rules to address transport as new or revised NAAQS are promulgated. It is important that these subsequent transport rules be proposed and finalized on a timetable tied to NAAQS promulgation to ensure that states implement timely SIP revisions to meet their transport obligations under Section 110(a)(2)(D).

CTDEP recommends that EPA concurrently evaluate significant transport when setting or revising a NAAQS and develop a Federal Implementation Plan (FIP) backstop when issuing a SIP call to ensure the requirements of CAA section 110(a)(2)(D)(i) are met in a timely manner. Based on the timing requirements of the CAA, CTDEP recommends that the process adhere to the following schedule:

<u>Year 0 (of new or revised NAAQS)</u>

- EPA promulgates a new or revised NAAQS
- EPA proposes a Transport SIP call for the new or revised NAAQS and a Transport FIP as a backstop to SIP Call.
- EPA releases all modeling and technical information with the proposed Transport SIP call to help inform the process and to assist states in developing their Transport SIPs.

<u>Year 1 (of new or revised NAAQS)</u>

- States recommend to EPA NAAQS designations (maximum one year after NAAQS)
- EPA finalizes Transport SIP call and FIP

<u>Year 2 (of new or revised NAAQS)</u>

- EPA finalizes NAAQS designations (maximum two years after NAAQS is promulgated)

<u>Year 3 (of new or revised NAAQS)</u>

- States submit to EPA final Transport SIPs (maximum three years after NAAQS is promulgated)
- EPA implements transport FIPs for states that do not submit Transport SIPs or submit inadequate SIPs. This is triggered in any state that fails to submit a complete Transport SIP on time, and helps ensure that transport is dealt with in a timely manner.

Year 5 (of new or revised NAAQS)

- States submit attainment SIPs (maximum three years after designations)
- Transport SIP/FIP controls are implemented (three years prior to attainment deadlines)

Year 7 (of new or revised NAAQS)

- Attainment deadline under Clean Air Act, Part D, subpart 1 for non-ozone NAAQS

Year 8, 11, 14, and onward (of new or revised NAAQS)

- Attainment deadline for moderate, serious, severe, and other ozone areas under Clean Air Act, Part D, subpart 2

Significant Impact Not Addressed Adequately for Connecticut

The procedure EPA proposed for determining upwind states' emissions that significantly contribute to nonattainment or interfere with maintenance downwind is overly influenced by cost considerations and inadequate emphasis is given to addressing air quality. EPA's current procedure will result in adoption of a remedy where some downwind states will remain subject to post-remedy transport levels that will prevent them from reaching attainment solely through adopting additional local emission control programs.

This issue is best illustrated with an example from Connecticut. Connecticut operates an ozone monitor in Greenwich (AQS ID 90010017), located at the extreme southwest edge of the state, on a peninsula jutting out into Long Island Sound[2]. During peak ozone events, southwest winds transport ozone and precursor emissions to the monitor from upwind states, with minimal impacts from Connecticut emissions due to the monitor's location. EPA's Transport Rule Air Quality Modeling Technical Support Document (TSD, page D-5) presents CAMx modeling indicating that Connecticut emissions contribute 2 ppb to 8-hour ozone levels at the Greenwich monitor in 2012 without the emission reductions from CAIR or the proposed Transport Rule. Total CAMx modeled impacts at the Greenwich monitor are 85 ppb (see page B-4 of the TSD), illustrating that overwhelming transport dominates the ambient concentrations measured at that monitor.

The measured 2009 8-hour ozone design value at the Greenwich monitor is 80 ppb, only 4 ppb below the effective 1997 8-hour-ozone NAAQS of 84 ppb. Given the potential increase in transport from upwind sources likely to occur during the eventual economic recovery, CTDEP cannot ensure its ability to maintain the current design value in Greenwich without an enhanced final Transport Rule. Furthermore, EPA is expected to finalize a revised 8-hour ozone NAAQS later this year in the range of 60 to 70 ppb and to propose a second Transport Rule in 2011 to establish a mechanism for states to comply with the CAA transport provisions for that revised NAAQS. Clearly, given the location of the Greenwich monitor and the minimal influence of Connecticut emissions on that monitor, Connecticut will be dependent on the second Transport Rule to provide substantial upwind emission reductions to provide the 10 to 20 ppb improvement needed to attain the revised NAAQS at that monitor. The level of

[2] A map showing the location of the Greenwich monitor is available here.

necessary upwind reductions will even be greater, depending on the growth of upwind emissions resulting from economic recovery.

Throughout the preamble and the various technical support documents, EPA describes that the procedure to quantify significant contribution is a multi-step process that analyzes both costs and air quality impacts.

- In step one, EPA identifies what emissions reductions are available at various costs, quantifying emissions reductions that would occur within each state at ascending costs per ton of emissions reductions.
- In step two, EPA uses an air quality assessment tool to estimate the impact that the combined reductions available from upwind contributing states and the downwind state, at different cost-per ton levels, would have on air quality at downwind monitor sites that had nonattainment and/or maintenance problems.
- In step three, EPA examines cost and air quality information to identify cost breakpoints, where a large reduction occurs because a certain type of emissions control becomes cost effective. EPA then uses a multi-factor assessment to determine the amount of emissions that represents significant contribution to nonattainment and/or interference with maintenance. The factors considered include both the air quality and cost considerations used in developing the breakpoints along with additional air quality and cost considerations.
- In step four, EPA quantifies the emissions reductions available in each linked state at the appropriate cost threshold. This information is then used to develop state budgets, representing the remaining emissions for each state in an average year, and to identify a variability limit associated with those budgets.

EPA's 4-step procedure to quantify significant contribution does not take into account the concerns illustrated by the Greenwich ozone monitor in the example presented above. That is, the procedure doesn't account for the magnitude of the affected downwind state's contribution to its own nonattainment/maintenance monitors or the downwind state's corresponding ability to address any remaining nonattainment/maintenance issues strictly through additional in-state controls. Furthermore, on page 45271 of the proposed rule's preamble, EPA seems to shift the remaining burden of any "residual" nonattainment/maintenance concerns entirely to the downwind state:

> "The Act requires upwind states to eliminate significant interstate pollution transport under section 110(a)(2)(D). It also requires each state to assure attainment and maintenance of the NAAQS within its borders. Thus, a downwind state must adopt controls to demonstrate timely attainment of the NAAQS despite any pollution transport from upwind states that is not eliminated under section 110(a)(2)(D)."

The final Transport Rule must satisfy each upwind state's interference with maintenance or it will fail to satisfy EPA's obligation pursuant to the CAA. Some states will be left with "residual"

nonattainment/maintenance issues that cannot be rectified with additional in-state emission reductions. EPA's failure to fully address transport will become even more pronounced as future, more stringent NAAQS are promulgated, and transport becomes an even larger portion of the air quality challenges faced by downwind states.

Allocations Using CT's Integrated Resource Plan vs. the Integrated Planning Model

EPA's allocation methodology is inconsistent and does not reflect reality. The Integrated Planning Model (IPM) has historically been used to predict large regional trends in EGU operations and the associated emissions from these stationary sources. IPM results at the state and local levels are less reliable and using IPM for predicting operations of individual EGUs is simply not accurate. For example, the IPM Base Case model run for 2012 projects that the 9 oil/gas LFBs in Connecticut (see Table A-4) will not operate in 2012. However, all 9 LFBs have already bid into the ISO-NE Forward Capacity Market through May 2013 and are contractually obligated to be available through that date, making it highly unlikely that they will cease operations by 2012. Furthermore, 8 of the 9 LFBs are contractually obligated to be available in the Forward Capacity Market through May 2014 (only Bridgeport 2 is not contractually obligated through May 2014).

Table A-4. Connecticut's Load Following Boilers

Connecticut Load Following Boilers
Montville Station 5
Montville Station 6
NRG Norwalk Harbor 1
NRG Norwalk Harbor 2
Middletown 2
Middletown 3
Middletown 4
Bridgeport Station 2
New Haven Harbor

The IPM also led to incorrect source specific allowance allocations. The EPA proposed allocation to AES Thames is 847 SO_2 allowances in 2012 based on IPM projections. EPA identified this allocation because AES Thames does not have reported SO_2 data in the CAMD data system. However, AES Thames reported SO_2 emissions to CTDEP in 2009 were 2298 tons (see Attachment D). AES Thames units operate under permits that require flue gas desulfurization accomplished by in-bed injection of limestone into the boilers for a minimum 75% SOx control efficiency. No additional controls are planned and cannot be reflected in 2012-2014 allocations. Furthermore, AES Thames operates under a long-term power purchase agreement that contractually obligates them to deliver their electrical output under a fixed price through 2015. The allocation to AES Thames must be corrected in the final Transport Rule.

EPA has indicated that SO_2 allocations to Bridgeport Station 3 are based on operating data during the 4th quarter of 2008 and the first 3 quarters of 2009. The 2009 operations of Bridgeport Station 3 were notably lower than previous years due to the cool wet summer, poor economic conditions and natural gas prices that pushed Bridgeport Station 3 down the bid stack.

The IPM is also internally inconsistent. It projected that LFBs will not operate in Connecticut in 2012[3] yet still allocated 634 SO_2 allowances to these sources. In contrast to the IPM projections that all 9 LFBs in Connecticut will shut down by 2012, the IRP model, described in the Peak Emissions discussion above, projects a more rational outcome; that 4 LFBs (Bridgeport 2, Middletown 3 and Norwalk 1 & 2) may shut down in 2013 and 2 additional LFBs (Middletown 4 and Montville 6) may shut down in 2016. Given the poor correlation between the IRP and IPM models and the inability of the IPM to track the reality of contractual agreements such as long term power purchase agreements and the operation of the forward capacity market in ISO-NE, the IPM cannot accurately predict unit level operations and should not be used by EPA to base unit level allocations in Connecticut.

Given the demonstrated flaws inherent in the IPM, CTDEP recommends EPA utilize the IRP modeling data in Attachment C in its allocation methodology for the Connecticut LFBs. CTDEP also requests that EPA revise its NOx and SO_2 allocations to Connecticut consistent with the data provided in Attachments B-D based on historical electricity output basis. Additional Connecticut-specific allocation issues are set forth in Attachment B.

Variability

CTDEP does not agree with EPA's proposed variability provisions, which are intended to cover a range of operational contingencies that may affect both electric reliability and resulting emissions of NOx and SO_2. The concept of variability is critical to states like Connecticut that have very tight emission budgets coupled with a large percentage of electric generation capacity that is non-fossil based, but variability should not be applied to emissions that fluctuate based on changing electric demand due to weather. Variability provisions should be reserved for truly exceptional events such as natural disasters or the loss of significant generation resources that pose a threat to electric system reliability. In this event, states like Connecticut would require access to a substantially greater allowance pool than the proposed variability limits to ensure electric system reliability would not be compromised by a source's inability to access sufficient allowances to ensure lawful operation. Absent such access, electric load would likely shift to smaller higher emitting backup generators that are not subject to the Transport Rule.

By way of an example, in 1996, Millstone II and III nuclear powered EGUs were unexpectedly shut down by the Nuclear Regulatory Commission for an extended period of time (all of 1996 and 9 months in 1997). These shutdowns caused a serious capacity shortage in Connecticut. As a result, NOx emissions from all fossil-fuel generation capacity increased, and required emergency regulation by CTDEP to authorize the restart of previously retired EGUs as well as the use of emergency generators as a last line

[3] EPA did not allocate any NOx allowances to LFBs in Connecticut.

of reliability before voltage reductions and blackouts. If this scenario were to reoccur, approximately 25% of Connecticut's generation capacity would need to be replaced in short order (see Table A-5).

Table A-5. Percentage of Surrounding States Total Generating Capacity Produced by the Two top Generating Facilities of Each State.

State	Total Capacity (MW)	State's Largest 2 Generators (MW)		Top 2 as a % of Total	Comments
CT	8,555	1,236	882	24.8%	Both Nuclear
RI	1,745	189	163	20.2%	Both CCNG/Oil
MA	14,200	685	612	9.1%	1 Nuclear 1 Coal
VT	1,121	620	52	59.9%	1 Nuclear 1 Biomass
NH	4,299	1,244	400	38.2%	1 Nuclear 1 Oil/Gas Steam
ME	3,880	604	280	22.8%	Both Oil/Gas steam
NY	40,265	1,311	1,025	5.8%	Both Nuclear
PA	45,539	1,288	1,283	5.6%	Both Nuclear
NJ	18,703	1,194	1,174	12.7%	Both Nuclear
VA	23,653	940	926	7.9%	Both Nuclear
MD	12,548	885	874	14.0%	Both Nuclear
DE	3,028	445	405	28.1%	1 Oil/Gas Steam 1 Coal
D.C.	806	275	275	68.2%	Both Oil/Gas Steam

Connecticut has greatly improved both its generation fleet and transmission infrastructure since 1996-97. Nearly 2,400 MW of clean new generating capacity is now operational and another 800 MW are expected to be available by the end of 2011. Additionally, the state has added approximately 350 MW of base-loaded distributed generation (see Table A-6). Regardless of these improvements and the fact that some displaced generation could be replaced by increasing power imports into Connecticut, internal transmission and distribution constraints would still require significant additional in-state generation in order to keep the lights on.

Table A-6. Connecticut's Additional EGU's Since 1996-97 Nuclear Shut Down.

Facility Name	*Total Capacity*	*First Operation*
Devon Station Units 11-14	160 MW	Summer 1996
Bridgeport Energy	520 MW	1998
Lake Road Gen.	810 MW	2001-2002
Milford Power	520 MW	2004
Distributed Generation (Base-loaded)	350 MW (80 units)	2007
Cos Cob (Greenwich)	40 MW	2009
Devon Station Units 15-18	200 MW	2010
Kleen Energy	600 MW	2011-2012
TOTAL →	3200 MW	

During this same period Connecticut has only lost approximately 150 MW from the retirement of two older EGUs while seeing in state peak electric demand rise to 7367 MW up from 6030 MW in the 1996-1997 timeframe.

Nonetheless, if Millstone II and III were to become unavailable today, CTDEP believes two scenarios highlight the range of impacts on Connecticut:

- **Scenario 1** All energy lost from nuclear shutdowns is replaced by new natural gas-fired combined cycle units with selective catalytic reduction:
    - 2090 MW/h * 8760 hours/year * 0.95 capacity factor * 0.135 lbs/MWh/2000 lbs/ton = 1,174 additional tons per year NOx
- **Scenario 2** All energy lost from nuclear shutdowns is replaced by existing Connecticut load following boilers:
    - 2090 MW/h * 8760 hours/year * 0.95 capacity factor * 1.5 lbs/MWh/2000 lbs/ton = 13,044 additional tons per year NOx

If Scenario 1 and 2 are bookends, the likely outcome in the event that electric capacity from Millstone II and III is lost for a year is that between 1,174 and 13,044 additional tons of NOx would be emitted. Using the average emission increase, this means that annual emissions of NOx in Connecticut would increase by 7,100 tons per year. EPA's proposed 1-year variability limit of 5,000 additional tons of NOx per year would be inadequate in this instance.

EPA should define an exceptional event as a natural disaster or mandated safety related shutdown that interrupts non-fossil based EGU operation for more than 30 days and requires the use of new EGUs or the increased use of existing EGUs to offset lost power generating capacity. EPA should establish a national set-aside allowance pool for exceptional events (e.g., 1-5% of the budgets) that EPA would administer and distribute only during an exceptional event. In order to determine the appropriate size of the set-aside, EPA should model the impact of exceptional, but reasonably foreseeable, events so as to establish a set aside of an appropriate size.

In the event that EPA chooses not to pursue CTDEP's initial recommendation and maintains the proposed variability provisions, CTDEP recommends that EPA adopt the proposed variability limits instead of the alternative variability limits set out in the proposed Transport Rule. However, EPA should recognize that this may jeopardize electric reliability in Connecticut should an exceptional event, such as the 1996-97 shutdown of Millstone Units II and III, occur again.

SO_2 Groups 1 & 2

EPA used its simplistic AQAT to identify the level of control needed in each upwind state to address significant contributions to downwind attainment or maintenance of the 24-hour PM2.5 NAAQS in downwind states. The AQAT results indicated that certain "Group 2" states (including Connecticut) could fully address their transport obligations through less costly controls in 2012, while other "Group 1" states would require additional, more costly reductions that could not be achieved until 2014 to satisfy their transport obligations[4].

Although the AQAT analysis was used to establish the proposed 2012 and 2014 annual SO_2 budgets, EPA also followed up its AQAT analysis with a more thorough analysis using the CAMx model. In contrast to the AQAT results for the proposed remedy, the more refined CAMx air quality modeling results show a remaining 24-hour $PM_{2.5}$ problem, with 10 nonattainment and 4 maintenance areas impacted. Connecticut is one of seven Group 2 states which are linked to one or more states with remaining nonattainment/maintenance problems, as identified by the CAMx modeling. As a result, EPA requests comments on whether any of the Group 2 states should be moved to Group 1 for SO_2.

As EPA discusses in the preamble (pages 45283-45284), CAMx air quality modeling more accurately reflects the complex nature of the winter portion of the 24-hour $PM_{2.5}$ problem than does the AQAT procedure. Sulfate typically is a lesser contributor to $PM_{2.5}$ levels in the winter than the summer, likely making winter SO_2 reductions less effective at reducing $PM_{2.5}$ levels. EPA also notes that during the winter, $PM_{2.5}$ contains a larger nitrate component than in summer months, partially due to the fact that some nitrates that are particles in cooler weather volatilize into the gaseous form during warmer weather. EPA acknowledges that more study of the winter portion of the problem is warranted to address the issues raised by the CAMx modeling.

Without further analysis to determine the relative benefit of additional SO_2 and NOx reductions, it is not possible to determine whether the added SO_2 reductions provided by moving Connecticut and other

[4] EPA notes that the AQAT analysis identifies Allegheny County, PA as the sole remaining problem site.

states from group 2 to group 1 would lower winter $PM_{2.5}$. Therefore, CTDEP encourages EPA to do supplemental CAMx modeling to sufficiently quantify the level of additional SO_2 and/or NOx emission reductions needed to fully address the remaining 24-hour $PM_{2.5}$ transport and nonattainment issues that the modeling indicates will occur with the proposed 2012 and 2014 budgets. EPA should then modify the SO_2 and/or NOx budgets accordingly and place states in the appropriate SO_2 groups based on the more complete CAMx technical analysis. When making final Group 1/Group 2 determinations, EPA must take into account the level of reductions already achieved within states like Connecticut that have reduced power plant SO2 emissions by over 85% since 1995 and ensure that allowance allocations are correctly determined.

Other Policy Issues

- **No incentives for energy efficiency.** The proposed Transport Rule does not encourage energy efficiency. Clearly, the most cost effective emissions reductions are attributable to reduced operation of power plants. On the supply side, state budgets must be stringent enough so that every source subject to the Transport Rule will take steps to ensure they operate as efficiently as possible. Unfortunately, the proposed Transport Rule does little to incentivize demand-side energy efficiency investments in the absence of strong pre-existing state energy efficiency policies. EPA should view electricity as a product and recognize that it is influenced by both demand and supply side economics.

- **Allocation proposal rewards dirtier units.** CTDEP does not support the proposed allocation methodology in the Transport Rule because it rewards dirtier units. EPA states that "…all units are allocated allowances consistent with their projected emissions; this means that a unit that installs control equipment receives fewer allowances than a similar unit that did not install control equipment." (75 FR 45311) EPA requested comment on an alternative methodology that would distribute allowances equal to a state's emissions budget without variability to each covered source in the state based on each source's proportional share of total state heat input. **EPA should base allocations on individual EGU's electricity output provided that EPA continues to link each state's budget to significant contribution.**

- **FIP vs. SIP.** CTDEP understands EPA's proposal of a FIP instead of a SIP for rule implementation due to timing concerns. In subsequent transport rules, CTDEP recommends that EPA provide SIP guidance to states and allow states to choose a SIP or FIP path, as was done under CAIR. This would allow states to choose their own allocation methodologies to address differing energy resource portfolios, provided that such methodologies do not result in individual sources violating Section 110(a)(2)(D) of the CAA.

- **Banking.** CTDEP strongly supports EPA's proposal to preclude the use of any banked pre-2012 CAIR allowances in the transport rule NOx programs. CTDEP also strongly supports EPA's proposal to create a new SO_2 allowance currency for the new transport rule SO_2 program.

- **Allocations to non-operating units.** CTDEP does not support EPA's proposal to continue allocating allowances to non-operating units for up to 6 years following non-operation. CTDEP

believes that allowances should be allocated on the basis of recent history of operations, preferably output based, in proportion to the unit's generation the previous year. At a minimum, allowance allocations should cease after 3 years of non-operation. The financial incentive gained from receiving allowances beyond the 3 year period after non-operation will play a limited role in determining future EGU operations and is insignificant compared to operating costs associated with fuel use.

- **Lowering applicability threshold in ozone season.** EPA requests comment on lowering the greater than 25 MW applicability threshold for EGUs during the ozone season, and whether a trading program offers the right approach for addressing NOx emissions from these smaller EGUs. (75 FR 45309) In Connecticut, CAIR applicability includes units at and above 15 MW, and several 20 MW peaking turbines have been included in CTDEP's existing trading programs. CTDEP supports lowering the applicability threshold for EGUs during the ozone season to between 2 - 15 MW, but recommends that any control program for these smaller EGUs be based on short-term performance standards since these smaller peaking units tend to emit at high rates and operate on the worst air quality days.