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November 15, 2010

VIA EMAIL and U.S. MAIL

Mr. Charles P. Nicholson
National Environmental Policy Act Project Manager
Tennessee Valley Authority
400 West Summit Hill Drive
WT 11D
Knoxville, Tennessee 37902
Attention: Docket ID No. OAR-2002-0056

Re: "Environmental Impact Statements; Notice of Availability," 75 Fed. Reg. 58376 (September 24, 2010)

Dear Mr. Nicholson:

The Southern Environmental Law Center ("SELC") respectfully submits these comments in response to the Notice of Availability of the Tennessee Valley Authority ("TVA") Draft Integrated Resource Plan ("IRP") and programmatic environmental impact statement ("EIS"). SELC is a non-profit, regional environmental organization dedicated to the protection of natural resources throughout the Southeast. SELC works extensively on issues concerning air and water quality and energy resources in six Southeastern states, five of which include portions of the Tennessee Valley served by TVA. As such, SELC has a keen interest in TVA's IRP and EIS processes.

SELC appreciates the opportunity to comment on TVA's draft plans for its environmental and energy future. We commend TVA for undertaking a planning process essential to providing affordable and reliable energy to meet system demand in an environmentally-responsible manner, as required by statute. We agree with TVA both that the Draft IRP is a major milestone in the identification of TVA's long term planning approach and that there are still many issues that need to be resolved before the issuance of the Final IRP.

However, to be of lasting value to TVA customers and residents of the Valley, this IRP cannot stand alone. The IRP process is best done in iterations. TVA last completed an IRP in 1995, and this fifteen-year lag between IRPs far exceeds the time frame established in most states in the Southeast. In North Carolina and Virginia, for example, regulated utilities must file

IRPs biennially. N.C.U.C. Rule R8-60;[1] Va. Code Ann. § 56-599. Georgia law requires regulated utilities to file their IRPs every three years. O.C.G.A. § 46-3A-2. There is no reason why TVA's integrated resource planning should not also be an iterative and collaborative process. SELC therefore strongly recommends that TVA undergo integrated resource planning, including collaboration with stakeholders and interested parties, on a regular basis occurring at least every three years. Ongoing review of and updates to TVA's IRP will help TVA plan for its environmental and energy future in a way that best accounts for uncertainties and risk, such as changes in the regulatory landscape, as well as the environmental impacts of its resource portfolio.

The Draft EIS and IRP are a good start. However, as we discuss below, we find that TVA's draft plans are inadequate for several reasons. We note that these reasons do not encompass all of the areas in which TVA needs to conduct further analysis and/or improve its plans. Rather, we focus here on a few critical deficiencies that render the Draft IRP flawed and the Draft EIS inadequate under the National Environmental Policy Act ("NEPA").

The remainder of these comments addresses these deficiencies in detail. Part I outlines the legal framework and requirements of NEPA as they pertain to TVA's programmatic EIS process. Part II discuss the shortcomings of TVA's Draft EIS, and how those issues render the Draft EIS inadequate under NEPA.

I. Legal Framework

NEPA "is our basic national charter for protection of the environment." 40 C.F.R. § 1500.1(a). In enacting NEPA, Congress recognized the "profound impact" of human activities, including "resource exploitation," on the environment and declared a national policy "to create and maintain conditions under which man and nature can exist in productive harmony." 42 U.S.C. § 4331 (a). To further this policy, NEPA "establishes 'action-forcing' procedures that require agencies to take a 'hard look' at environmental consequences." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 348 (1989). Chief among these procedures is the preparation of an environmental impact statement for "major Federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(C).

TVA, as a federal agency, is subject to the requirements of NEPA and must consider the potential environmental impacts of its proposed actions. The IRP evaluates the means by which TVA will supply power to its customers over the next 20-year period, and the potential courses of action discussed in the IRP trigger NEPA review because they "significantly affect[] the quality of the human environment." 42 U.S.C. § 4332(2)(C). As such, in addition to the draft IRP, TVA prepared a draft EIS. The draft EIS is a programmatic EIS, which TVA concluded "is appropriate when a decision involves a policy or program, or a series of related actions by an agency over a broad geographic area." Draft EIS at 13. Therefore, the environmental impacts analysis is performed "at a regional level with some extending to a national or global level," and a site-specific analysis of the effects of implementing the IRP would be addressed later in time. *Id*.

[1] North Carolina also requires utilities to file annual updates to their IRP in the off-years. N.C.U.C. R8-60(h)(2).

TVA's Draft EIS must evaluate the "environmental impacts" of the proposed action, any unavoidable adverse environmental effects if the proposal is implemented, and alternatives to the proposal. 42 U.S.C. § 4332(2)(C). In conducting this "hard look" analysis, TVA must use high quality information and accurate scientific analysis rather than rely on incorrect assumptions or data, 40 C.F.R. § 1500.1(b); "consider every significant aspect of the environmental impact of a proposed action," *The Lands Council v. Powell*, 395 F.3d 1019, 1026 (9th Cir. 2005); and "[r]igorously explore and objectively evaluate all reasonable alternatives" and "disclose any responsible opposing view." 40 C.F.R. § 1502..9(b), 14(a). Put simply, the EIS process requires that TVA considers all reasonable alternatives so that it "sharply defin[es] the issues and provid[es] a clear basis for choice among options by the decisionmaker and the public." 40 C.F.R. § 1502.14.

II. Deficiencies In The Draft EIS And IRP

A. The Draft EIS Fails To Take A "Hard Look" At The Energy Efficiency And Demand Response And Renewables Focused Portfolio Alternative.

TVA failed to take a hard look at the Energy Efficiency and Demand Response ("EEDR") and Renewables Focused Portfolio alternative, contrary to NEPA and the fundamental principles of integrated resource planning. TVA did not properly assess the Tennessee Valley's potential for energy efficiency and renewable energy resources, and therefore did not allow this alternative to compete fairly with the others.[2] Energy efficiency and renewables are critical to a clean energy future. Thus, TVA's failure to adequately analyze energy efficiency and renewable energy resources has significant environmental impacts.

i. TVA Fails To Adequately Consider Energy Efficiency As A Resource Option.

A fundamental principle of integrated resource planning is that all resources should be considered on a "level playing field." A "level playing field" means that demand-side resources, like energy efficiency and demand response, are considered on equal footing with all types of supply-side resources, such as coal-fired generating units. According to TVA, however, energy efficiency is a "defined model input," Draft IRP at 89, which means that energy efficiency is a load modifier that alters the generation resource stack rather than being a component of the resource stack itself. It appears that TVA has subtracted energy efficiency from its load forecast and modeled supply-side resources to meet the reduced forecast. Done this way, TVA's modeling treats energy efficiency as a fixed amount, rather than a resource that can increase in amount based on need, and "plans around" this fixed amount to meet the load forecast. *Id.* at 88. Put simply, energy efficiency is not treated as a potential resource for model selection. This type of resource planning does not integrate demand- and supply-side resources, and therefore is

[2] We focus on the EEDR and Renewables Focused Resource Portfolio alternative because it contains the most energy efficiency and demand response resources, and the most renewable capacity additions of the five planning alternatives. However, TVA's errors concerning energy efficiency and renewable implicate each planning alternative given that each alternative contains some efficiency and renewable resources.

biased against energy efficiency. All resources should be modeled as such so that the model can select the optimal combination of resources, including energy efficiency, to minimize costs. This proper method of integrated resource planning likely would result in more energy efficiency and therefore reduced environmental impacts.

A related flaw in TVA's analysis is that it does not discuss the potential of energy efficiency in TVA's service territory. TVA does not discuss any potential studies it has conducted or commissioned, but rather it only provides for a range of avoided capacity of 1400-6,000 MW. Draft IRP, Figure 5 at 16. A critical component of resource planning is determining the availability of all cost-effective resources in a given jurisdiction. Therefore, in order for TVA to develop an effective energy efficiency resource portfolio, it must begin with an efficiency potential study, which identifies the achievable energy efficiency available in the Tennessee Valley and provides TVA's rationale behind such potential. SELC is unable to determine, based on the drafts, whether TVA has undertaken a potential study and TVA does not provide any analysis or discussion of what it could accomplish with aggressive energy efficiency. Instead, TVA provides a cursory look at its current and future programs, and their environmental impacts. Draft EIS at 44-50, 177. This is unacceptable. Without fully analyzing cumulative energy reduction options, TVA's analysis underestimates energy efficiency as a resource and is therefore inadequate under NEPA. *See, e.g.*, *Fund for Animals v. Norton*, 294 F. Supp. 2d 92, 111 (D.D.C. 2003) (holding that an agency's failure to gather the relevant information results in an inadequate EIS analysis).

When incomplete or missing information is essential, as it is here, NEPA requires federal agencies to conduct independent research or otherwise gather the missing information and include it in the EIS. 40 C.F.R. § 1502.22(a); *Oregon Envtl. Council v. Kunzman*, 817 F.2d 484, 495 (9th Cir. 1987). Absent this information, the EIS fails to adequately inform the public and decisionmakers of the cost-effectiveness of EEDR as an alternative. Therefore, TVA must conduct and provide to the public a complete analysis of the potential of energy efficiency as a resource that will bring TVA closer to meeting future electricity demand. Specifically, TVA must conduct a potential study that provides quantitative assessment of the amount of energy savings that (1) technically exists, (2) may be economic to acquire, and (3) can be realistically achieved through the implementation of effective, well-supported programs and policies (often referred to as maximum achievable potential).

ii. TVA Fails To Adequately Develop And Consider Renewable Resource Option.

While TVA examined renewable resources in the EEDR and Renewables Focused Portfolio alternative, the analysis of this alternative in the Draft EIS underestimates the value of developing renewable resources and fails to provide the information necessary to meaningfully analyze its potential. The primary reason for this deficiency is that TVA has not performed the requisite examination to understand the potential for renewable energy resources to serve as a robust source for meeting TVA's energy needs. The Draft IRP incorporates arbitrary model inputs for solar and wind resource viability rather than evaluate their true cost-effective potential. When analyzing wind energy potential, TVA notes that its region has an estimated wind potential of 1,247 MW, Draft EIS at 127, but TVA's model includes a maximum of 360MW of

wind capacity by 2029. *Id.* at 144. Similarly, when analyzing solar resources, TVA states that solar PV rooftop potential currently is about 23,000 MW but is expected to grow to 30,000 MW by 2015. Draft EIS at 129. Yet, TVA's models include a maximum of 350 MW of solar PV capacity by 2029. For both of these renewable resources, TVA neither performs the necessary studies to develop a precise resource estimate for the region nor explains the gap between the model inputs and the true estimated potential. TVA's reliance on unsupported and incomplete information violates NEPA. *See* 40 C.F.R. § 1500.1(b); *see also Western Watersheds Project v. Kraayenbrink*, 620 F.3d 1187 (9th Cir. 2010) (To take the required "hard look" at a proposed project's effects, an agency may not rely on incorrect assumptions or data, but must rely on "accurate scientific analysis" and information that is "high quality"). TVA should therefore resubmit the EIS after conducting the analysis necessary to identify the potential for wind and solar resources within the Tennessee Valley.

In addition, the Draft EIS fails to provide cost estimates for both solar PV resources and wind resources in the TVA service territory. As such, we are unable to determine whether these estimates are too high, resulting in an underestimation of their true value. The Draft EIS provides no discussion of forecasted cost trends for solar and wind. TVA should perform this analysis by factoring in future declines in the capital cost for or improvements in the output of new and maturing technologies for solar and wind. This analysis should incorporate the risks of non-renewable resources that can cause rate spikes (including the costs associated with emissions of greenhouse gases and other pollutants) and the potential for greater grid stability, neither of which the Draft EIS analyzes. The failure to provide this information violates NEPA by limiting the ability of decisionmakers and the public to view the full potential of renewable resources and achieve a true comparison of resource alternatives. *See* 40 C.F.R. § 1502.14; *see also Kootenai Tribe of Idaho v. Veneman*, 313 F.3d 1094, 1120 (9th Cir. 2002) (The purpose of the requirement that agencies consider all reasonable alternatives is to "sharply defin[e] the issues and provid[e] a clear basis for choice among options by the decisionmaker and the public.").

B. The EIS Fails To Adequately Consider And Explain The Impacts Of Environmental Regulation On Coal-Fired Generation.

TVA appears to ignore or short-change the risks and uncertainties posed by the costs of environmental regulation. A number of new environmental regulations are on the horizon that will likely alter the energy landscape by imposing substantial costs on existing coal-fired generation. However, TVA did not adequately address, or at the very least explain, these considerations in its Draft EIS. TVA must amend the EIS by including a detailed and accurate discussion of the expected environmental regulations, including new pollution control standards. While the exact regulatory requirements are not currently known, TVA is well-aware that a number of pollution control regulations are forthcoming,[3] and therefore should identify a wide

[3] For example, the Clean Air Mercury Rule ("CAMR") was vacated because the proposed regulations were not stringent enough and, therefore, it is clear that regulated utilities will need to go beyond the vacated CAMR standard to meet the more stringent maximum achievable control technology ("MACT") standard in the very near future. *See New Jersey v. Enviro. Prot. Agency*, 517 F.3d 574 (D.C. Cir. 2008).

range of potential costs for key input assumptions, consistent with the traditional way of addressing uncertainty in resource planning.[4]

i. TVA's Assumptions For The Environmental Uncertainties Impacting Existing Coal-Fired Generation For Many Scenarios Are Unreasonable.

TVA's assumptions for the Environmental Outlook and the Greenhouse Gas Requirements uncertainties for many scenarios are unreasonably low, need clarification, or both.

Environmental Outlook Uncertainty

For the Environmental Outlook uncertainty, in the Base Case Scenario and Scenarios 1, 4, 5, and 6, TVA assumes "SCR all units by 2017[;] FGD all units by 2018[; and] HAPs MACT by 2015." Draft IRP, Fig. 5-10, at 101. This description raises several concerns. First, it fails to provide the detail necessary to evaluate the reasonableness of the assumption. TVA identifies two particular pollution control systems, selective catalytic reduction ("SCR") and flue gas desulfurization ("FGD" or "scrubber"), but does not provide the assumed costs of installing and running such devices. The phrase "HAPs MACT" is even more opaque. TVA does not explain what control devices it assumes will be necessary to comply with that regulation, which will set strict emissions standards for mercury and other hazardous air pollutants from coal- and oil-fired units. *Am. Nurses Assoc. et al. v. Jackson*, Civ. No. 1:08-cv-02198-RMC (D.D.C April 15, 2010) (consent decree establishing deadlines for the electric utility industry HAPS rulemaking). For TVA units that burn bituminous coal, it is reasonable to assume that both an SCR and FGD will be required to achieve compliance. Bernstein Report, at 29-30. At the very least, activated carbon injection and a fabric filter will be required. *Id.*; Government Accounting Office Report 10-47, Mercury Control Technologies at Coal-Fired Power Plants Have Achieved Substantial Emissions Reductions, (October 2009).

Second, TVA does not provide any explanation for its installation timeline of the SCRs in 2017, or the FGDs in 2018, or for whatever control strategy it may assume is necessary for the HAPs MACT in 2015. We agree that TVA should assume that the HAPs MACT emissions standards will go into effect for existing coal units in early 2015.[5] However, at least for bituminous-fired units, TVA should assume that the compliance with the HAPs MACT rule will require installation of an SCR and an FGD. Therefore, TVA should also assume that all such units that operate beyond 2014 must have SCRs and FGDs installed. Even if the HAPs MACT

[4] In addition to coverage of the issue in various media outlets, the potential impact of these regulations on thee existing coal-fired plant fleet has been the subject of numerous reports from financial analysts and industry consultants. *See, e.g.*, Bernstein Research, U.S. Utilities: Coal-Fired Generation Is Squeezed in the Vice of EPA Regulation; Who Wins and Who Loses, October 2010 (Attachment 1) ("Bernstein Report"); UBS, Clean Air Regulations: Impact of Proposed EPA Rules – Call with ICF International, September 16, 20210 (Attachment 2) ("UBS/ICF Presentation"). For a condensed compilation of recent and upcoming regulations, see Exhibit 17 in the Bernstein Report, at 17, and the UBS/ICF Presentation at 5.

[5] Pursuant to a court-entered consent decree in the *American Nurses Association* case, EPA must issue the emission standards by November 16, 2011. Under the Clean Air Act, existing coal-fired units generally cannot be allowed more than three years to achieve compliance with those standards, although on a case-by-case basis EPA has some discretion to allow an extension of up to one year. Clean Air Act, Sec. 112(i)(3).

rule does not require these controls, TVA cannot assume a 2017 and 2018 installation date for SCRs and FGDs, respectively. Under the rule EPA has proposed to replace the Clean Air Interstate Rule, the Clean Air Transport Rule ("CATR"), 75 Fed. Reg. 45210 (August 2, 2010) (proposing to limit the interstate transport of SO_2 and NOx emissions from electric generating units across the eastern U.S.), TVA would either have to install SCRs and FGDs on all coal-fired units in 2012 or 2014 or purchase allowances for its emissions of SO_2 and NOx. Because allowance trading is sharply limited under EPA's preferred alternative in CATR, id. at 45305-45326, these allowance prices would be considerable, and TVA has not explained whether and how it would pursue an allowance purchasing strategy. Thus, TVA has not sufficiently justified its assumption that SCR and FGD installation must occur by 2017 and 2018, respectively.

TVA's assumptions for the Environmental Outlook uncertainty are also unreasonable for the remaining two scenarios, the Environmental Priority Scenario and the Economic Malaise Scenario. Under the former, TVA makes assumptions that are more plausible than those for the Base Case Scenario, but are nonetheless deficient. TVA assumes "SO_2 controls 2017[;] NOX controls Dec 2016[;] Hg MACT 2014[;] and HAP MACT 2015." Draft IRP, Fig. 5-10, at 101. This description is open to some of the same criticisms discussed above. First, by not specifying the actual control devices, TVA fails to explain how it would comply with requirements under this scenario, nor does it identify the cost of that compliance. Second, while we think a 2014 date for a MACT rule for mercury emissions is appropriate for this scenario, we see no reason to suppose that all the non-mercury HAPs will be regulated a year later, in 2015. Likewise, as discussed above, it seems plausible to expect that CATR will compel the installation of SO_2 and NOx controls in 2012 and 2014, not 2016 and 2017. While TVA's assumptions are closer to common projections for this scenario, the shortcomings may be more egregious than those under the Base Case given that this scenario supposedly reflects a world in which environmental protection is a national priority.

Finally, in the Economic Malaise Scenario, TVA assumes "[n]o additional requirements (CAIR requirements, with no MACT requirements)." Draft IRP, Fig. 5-10, at 101. Setting aside the unlikely nature of this scenario, it simply is implausible to assume that within the 20-year planning period that HAP emissions from coal-fired units will go unregulated and CAIR will not be replaced with a tighter regulation, as EPA has proposed in CATR.

Greenhouse Gas Requirements Uncertainty

We are also concerned about TVA's treatment of the GHG uncertainty in the Economic Malaise Scenario. Even assuming the particular tilt of this "world", it is simply implausible to assume a $0/ton price for CO_2 emissions over the planning period. *Id.* If Congress does not pass comprehensive climate change legislation in response to continued public pressure fueled by the scientific consensus that CO_2 reductions are necessary to begin to combat climate change, EPA's regulations on GHG emissions from major stationary sources will almost assuredly go into effect.[6] These regulations will require installation of pollution controls or practices when a generation unit undergoes a major modification and increases its annual CO_2 emissions by

[6] EPA recently issued guidance to help state permitting agencies implement the "Tailoring Rule," 75 Fed. Reg. 31514 (June 3, 2010) (establishing the regulatory framework for New Source Review permitting of GHG emissions). EPA's guidance, "PSD and Title V Permitting Guidance for Greenhouse Gases," is available at http://www.epa.gov/nsr/ghgpermitting.html.

75,000 tons. These installations will not necessarily be significantly expensive at the outset, but as the CO_2 control technology develops, so too will the capital investment required to comply. To account for these dynamics, we suggest adopting a very conservative price, along the lines of $7/ton, as discussed in an authoritative study by Synapse Energy Economics. Synapse Energy Economics, Climate Change and Power: Carbon Dioxide Emissions Costs and Electricity Resource Planning, at 50-55.

For the Environmental Outlook and GHG regulatory uncertainties, TVA's implausible assumptions unreasonably minimize the risk and cost associated with carbon-intensive resources, such as coal, and unfairly boost the scores of strategies that are more heavily dependent on those resources than others. The Draft EIS does not reasonably compare alternatives because it does not fully consider or quantify a number of "environmental costs" resulting from these regulatory uncertainties. Therefore, the Draft EIS, which fails to provide accurate economic information associated with the regulatory costs of the various alternatives, is inadequate under NEPA. *See Hughes River Watershed Conservancy v. Glickman*, 81 F.3d 437, 447-48 (4th Cir. 1996) (holding that federal agency's reliance on a study that inflated "the project's recreation benefits violated NEPA because it impaired fair consideration of the Project's adverse environmental effects").

ii. TVA Fails to Provide Meaningful Information On How Environmental Compliance Costs Factored Into Selecting the Coal Layups Input For Each Strategy.

Each strategy, except for the Limited Change Strategy, includes an input for the existing coal-fired capacity to be mothballed. In the EIS, TVA explains that it assigned a score to each of its coal-fired units to determine which should be mothballed based on a number of factors, including "anticipated expenditures for environmental compliance." Draft EIS at 138. TVA also states that the units identified as layup candidates generally had "high operating costs and high anticipated environmental compliance costs." *Id.* However, TVA provides no explanation of the environmental compliance issues it assessed nor what cost it associated with those requirements. If TVA assumed low costs, ignored certain environmental regulations, or adopted an extended timeline for when regulations would require compliance, too few units would have been considered for layup. Without more information, it is impossible for the public to gauge whether TVA has estimated these costs fully and reasonably. TVA must provide information sufficient to permit a reasoned choice of alternatives as far as environmental aspects are concerned, and TVA's failure to do so violates NEPA's "hard look" requirement. *See Environmental Defense Fund, Inc. v. Andrus*, 619 F.2d 1368, 1375 (10th Cir. 1980) ("The thrust of NEPA is that all pertinent environmental data be gathered in one place, i.e., the 'statement', there constituting a discussion of all relative environmental impacts of a proposed course or alternative courses of action which reflects that the agency has given all pertinent environmental matters a 'hard look'…").

iii. TVA Fails to Provide Meaningful Information On What Environmental Compliance Costs Were Used In The Capacity Planning Model Or How They Influenced The Ranking Metrics.

After developing the strategies, TVA generated resource portfolios to match those strategies under each of the seven scenarios. Draft EIS at 32-33. TVA used a capacity planning model to find the optimum combination of resource options under each unique scenario-strategy combination. *Id.* TVA explains that an optimized portfolio has the lowest net PVRR subject to a number of constraints, including environmental compliance requirements. *Id.* But, again, as in the context of TVA's determination of layup candidates, TVA provides no information on what those requirements are, how TVA plans to comply with them, and at what cost. Without access to this information, it is not possible to assess whether the optimized portfolio chosen by the model – because of its low PVRR – is reasonable. This is significant because unrealistic assumptions about environmental compliance requirements could skew the PVRR of the portfolios, and the PVRR is a crucial element in scoring the portfolios.

Similarly, in scoring the strategies, first using ranking metrics, TVA apparently relies on assumptions about environmental compliance costs for which no explanation is given. For instance, one of the ways TVA ranks the strategies is by their financial risk, *i.e.*, the potential of exceeding the expected PVRR. Because a strategy's revenue requirement (the total costs to operate and maintain the power system under that strategy) appears to be partly dependent on the assumptions TVA made regarding environmental compliance costs, the financial risk ratio is also dependent on TVA's environmental compliance assumptions. Draft IRP at 92-93. TVA's failure to provide meaningful information both in the capacity planning model and in the ranking metrics contravenes NEPA as it renders the decisionmaker and the public unable to make an informed comparison between the alternatives. *See Animal Defense Council v. Hodel*, 840 F.2d 1432, 1439 (9th Cir. 1988) ("Where the information in the initial EIS was so incomplete or misleading that the decisionmaker and the public could not make an informed comparison of the alternatives, revision of an EIS may be necessary to provide a reasonable, good faith, and objective presentation of the subjects required by NEPA.") (internal quotations omitted).

iv. TVA's Assumptions Regarding Environmental Compliance Requirements Must Be Consistent Between The Draft IRP And Draft EIS.

TVA's characterization in the Draft EIS of the environmental impacts of alternative resource strategies and portfolios relies on assumptions about the installation pollution control devices that are not reflected in the Draft IRP. For instance, in discussing the air quality impacts of the alternative strategies, TVA provides graphs that show that for SO_2, NOx, and, especially, mercury, emissions rapidly decrease up to 2015, then quickly level off. Draft EIS at 181-183. This seems consistent with an assumption that regulatory requirements for those pollutants go into effect at the start of 2015. Likewise, when discussing the scrubber waste component of coal combustion waste, TVA notes that scrubber waste production goes up in all scenarios because "scrubbers are anticipated to be installed on the unscrubbed coal plants that continue to operate after about 2015." *Id.* at 196. It then observes that among the compared scenarios, this "increase is greatest for Strategy B which, with the fewest coal unit layups, continues to rely more on coal-fired generation than do Strategy C or Strategy E." *Id.* Finally, in discussing the impact of the strategies on water consumption, TVA states the "increase in consumption for all strategies is due to the increased proportion of energy that will be generated by thermal plants with closed-cycle cooling." *Id.* at 189.

Yet, in the Draft IRP, TVA never makes such express assumptions about scrubbers or water cooling tower installations. The closest the draft IRP appears to come to matching the assumptions in the Draft EIS for scrubbers is in theorizing about the Environmental Outlook uncertainty for the seven scenarios. Otherwise, assumptions about scrubber installation are not spelled out. The idea of closed-cycle cooling or water towers doesn't make an appearance in the Draft IRP. This discrepancy between the Draft IRP and Draft EIS suggests that TVA may have been operating under one set of environmental compliance assumptions when assessing the environmental impact of the possible strategies and another when assessing the costs of those strategies. Fundamental IRP principles and requirements under NEPA require TVA to address and rectify any such discrepancy.

C. **The EIS And IRP Fail To Adequately Consider Environmental Impacts.**

i. TVA Should Be Consistent And Expansive In Its Consideration Of Water Issues In The EIS And IRP.

TVA's discussion of environmental water issues raised by energy generation, especially thermoelectric generation, appears to be a moving target at times. In the general Existing Environment section of the Draft EIS, TVA provides an overview of how power generation can effect water quality. *Id.* at 93-94. TVA discusses wastewater from fossil and nuclear pants, heat releases from fossil and nuclear plants, runoff and air pollution, and low dissolved oxygen levels and low flow downstream of dams. TVA also addresses water use and water consumption, particularly form surface waters in that EIS section. *Id.* at 95-101. However, when breaking down the environmental attributes of generation options for water, TVA provides information for only water use and water consumption. *Id.*, Table 7-1, at 166-169 And in describing the environmental impacts of alternative strategies under selected scenario, the water discussion briefly mentions wastewater and heat releases, but focuses on water consumption and, particularly, water use. *Id.* at 189-190. Finally, in the IRP, TVA attempts to justify relying solely on heat releases for measuring the water component of the environmental stewardship strategic metric on the ground that it is the major way that thermal generating plants impact water. Draft IRP at 94-95. While we do not downplay the effect of heat releases, the other ways that thermoelectric generation impacts water cannot be ignored. For its water environmental strategic measure, TVA cannot assume that heat release is a sufficient proxy for the impacts of electric generation on water and in all contexts should at a minimum incorporate water consumption, water use, and wastewater data.

ii. TVA Should Adjust The Environmental Attributes For Woody Biomass If The Underlying Assumptions Are Not Present.

In describing the environmental attributes of the generation options, TVA assigns zero or low CO_2 and lifecycle GHG emissions to the three biomass generation options that could use woody biomass as feedstock (biomass co-firing, dedicated biomass boiler conversion, and new dedicated biomass facility). Draft EIS at 168-169, 175-76. The key assumption for these attributes is that most of the woody biomass is from wood waste and not whole trees. At the levels of generation in the alternative strategies, this assumption should be a reasonable one.

However, as EPA has recently noted, not all biomass is carbon neutral. U.S. EPA, PSD and Title V Permitting Guidance for Greenhouse Gases, November 2010, at 9-10. We believe that TVA can pursue more biomass generation in an environmentally-sound manner, but TVA cannot simply assume that all woody biomass combustion projects are inherently low-carbon or carbon-neutral.

D. The Draft EIS Fails To Provide Adequate Information Concerning The Resource Alternatives.

As discussed throughout are comments, the Draft EIS is short on details and provides either unsupported or absent information on the costs and benefits of pursuing various resource alternatives. The Draft EIS fails to provide a discussion of the cost estimates used in the Draft IRP and does not include future cost trends that may alter the viability of resources. Rather, the Draft EIS should incorporate specific year-by-year comparisons of costs for different resources, resource plans, and sensitivity cases. In addition, as discussed above, TVA has not performed the necessary analysis on the potential for renewable resource development or energy efficiency projects over the planning period, which would illustrate the true value of the EEDR and Renewables Focused Portfolio alternative. Without this information, which is necessary to determine whether TVA has undervalued or overvalued the resource alternatives in the Draft EIS, TVA has failed to provide the type of information necessary for decisionmakers and the public evaluate which alternative serves as the optimal resource portfolio. *See* 40 C.F.R. § 1502.24 ("The regulations require an agency undertaking an EIS to insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements."). TVA should perform these studies, along with a cost benefit analysis of resource potential, in order to incorporate model inputs that reflect the true potential of each energy portfolio.

A lack of information also plagues TVA's forecast for growth. A reasonable IRP must be founded on an accurate load forecast, but TVA's load growth documentation is sparse with no data and statistical measure of the load forecast. Moreover, the unjustifiably high sales growth forecast leads to overreliance on traditional generation in the alternatives analysis. The failure to develop a proper load forecast undermines virtually every other assumption and plan analyzed in the Draft EIS. If the forecast is overly aggressive, the utility will plan for and construct more generation sources than will be needed, leading to unnecessary rate increases for consumers, stranded generation assets, and potentially worsening environmental degradation. Given the fundamental importance of the load forecast in the alternatives analysis, TVA must provide a more realistic, better substantiated forecast to satisfy NEPA. Failure to put forth an accurate scientific analysis of this forecast renders the Draft EIS inadequate under NEPA. *Center for Biological Diversity v. U.S. Forest Serv.*, 349 F.3d 1157, 1167 (9th Cir. 2003) (An agency is obligated to "make available to the public high quality information, including accurate scientific analysis, expert agency comments and public scrutiny, before decisions are made and actions are taken.") (citing 40 C.F.R. § 1500.1(b)).

Finally, we note that although TVA may have provided the Stakeholder Review Group ("SRG") with some of this information, the lack of transparency toward the public in general renders TVA's Draft EIS inadequate under NEPA. Public disclosure is a central purpose of

NEPA, and therefore, an EIS that does not include all of the necessary information that may not be cured because the information was distributed to certain members of the public but was not incorporated in the EIS itself. *See Grazing Fields Farm v. Goldschmidt*, 626 F.2d 1068, 1073 (1st Cir. 1980) ("We find no indication in the statute that Congress contemplated that studies or memoranda contained in the administrative record, but not incorporated in any way into an EIS, can bring into compliance with NEPA an EIS that by itself is inadequate."); *see also National Resources Defense Council, Inc. v. Morton*, 458 F.2d 827, 836 (D.C. Cir. 1972) (holding that the EIS "must set forth the material contemplated by Congress in form suitable for the enlightenment of the others concerned"). While TVA may withhold disclosure of information that it would keep from the public under the exemptions in the Freedom of Information Act ("FOIA"), 5 U.S.C. § 552, those exemptions are not applicable here. *See, e.g., Hudson River Sloop Clearwater, Inc. v. Department of Navy*, 891 F.2d 414, 420 (2d Cir. 1989) ("FOIA's exemption (1), 5 U.S.C. § 552(b)(1), allows the government to deny public disclosure of matters properly classified pursuant to an executive order in the interest of national defense."). Therefore, TVA must incorporate into the Draft EIS all information necessary to make an informed assessment of the alternatives, including cost estimates and rationales for choosing model input figures.

We thank you for the opportunity to submit these comments.

Respectfully submitted,

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