

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

**BEFORE THE ATOMIC SAFETY AND LICENSING BOARD**

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**In the Matter of  
Luminant Generation Company, LLC  
Comanche Peak Nuclear Power Plant  
Units 3 and 4  
Combined License Adjudication**

**Docket Nos. 52-034 and 52-035**

**September 7, 2010**

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**INTERVENORS' MOTION FOR LEAVE TO FILE NEW CONTENTIONS  
BASED ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT**

Intervenors hereby move for leave to file new contentions that are derived from the Draft Environmental Impact Statement (DEIS) prepared by the NRC Staff for the Comanche Peak Nuclear Power Plant Units 3 and 4. This motion is made under 10 CFR 2.309(f)(2) and this Panel's October 28, 2009, Initial Scheduling Order, §D.1, 2. The proposed contentions are listed and discussed below.

**Legal Standards for DEIS Contentions**

Contentions related to the DEIS are to conform to the pleading requirements of 10 CFR 2.309(f)(1)(i)-(vi). *In the matter of Tennessee Valley Authority (Bellefonte Nuclear Power Plant, Units 3 and 4)*, 68 NRC 361, 385 (2008), and the Initial Scheduling Order, §D.1.

Each of the following contentions is summarized in a specific supported statement related to the requirement that the DEIS cover issues related to the (1) need for power

(required by NUREG 1555, §8,10, CFR 51.45(c)), (2) water needs/impacts of the proposed units (required by NUREG 1555, §§4.0, 5.0, 10 CFR 52.79(a)(1)(iii)), (3) consideration of comparisons to alternate generation modes (required by NUREG 1555, §9)<sup>1</sup> and (4) greenhouse gases and climate change (see *Duke Energy Carolinas LLC*, CLI 09-21 requiring consideration of greenhouse gases and climate change in licensing cases ). Because each contention is related to specific requirements under the National Environmental Policy Act, 42 U.S.C. 4332 (NEPA), NUREG 1555 or a Commission Order they are within the scope of the COLA proceeding and therefore material to the NRC's consideration of the application.

NEPA requires agencies to consider and give effect to the environmental objectives in the act and “not just to file detailed impact studies which will fill governmental archives.” *Environmental Defense Fund, Inc. v. Corps of Engineers of U. S. Army*, 470 F.2d 289(8<sup>th</sup> Cir. 1972) cert. denied 93 S.Ct. 675, 409 U.S. 1072, 34 L.Ed.2d 661, certiorari denied 93 S.Ct. 2749, 412 U.S. 931, 37 L.Ed.2d 160. The DEIS related to this adjudication falls short of this requirement as related to the need for power, water impacts, comparisons of alternative generation modes and climate change impacts.

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<sup>1</sup> NEPA requires a consideration of alternatives to the Applicant's proposed project. 42 U.S.C. 4332(c), *In the matter of Dominion Nuclear North Anna, LLC (Early Site Permit for North Anna ESP Site)*, 65 NRC 539,587(2007).

## **DEIS Contention 1**

**The DEIS analysis of the need for power is flawed, incomplete and internally contradictory.**

A. The DEIS fails to consider ERCOT information that call into question whether Comanche Peak Units 3 & 4 will produce adequate net revenue to justify the proposed project based on market conditions.<sup>2</sup> The DEIS concluded that market conditions justify the proposed project. However, the ERCOT report indicates otherwise.<sup>3</sup>

B. The DEIS analysis does not address the ERCOT information that suggests energy to meet peak loads is needed more than baseload energy.<sup>4</sup>

C. The DEIS understates the continued growth of wind capacity in Texas and the ERCOT region.<sup>5</sup>

D. The DEIS analysis does not account for increases in wind carrying capacity.<sup>6</sup>

E. The DEIS does not account for more efficient deployment and dispatch that is expected from the transition to nodal deployment anticipated for December 2010.<sup>7</sup>

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<sup>2</sup> David Power Report, pp. 1-2, attached.

<sup>3</sup> Id. at pp. 2-3.

<sup>4</sup> Id., p. 3.

<sup>5</sup> Id.

<sup>6</sup> Id. at p. 4.

F. The DEIS does not account for increases in responsive reserve power sources.<sup>8</sup>

G. The DEIS does not account for the ability of natural gas generation to increase generation capacity in a cost-effective manner.<sup>9</sup>

H. The DEIS does not fully account for reduced demand caused by the adoption of energy efficiency programs.<sup>10</sup> The DEIS's attenuated consideration of the effects of energy efficiency/demand side management (DSM) programs has the effect of overstating the Applicant's need for power. Additionally, the assumption in the DEIS that the contribution to load reduction from DSM will remain static at 242 MW through 2024<sup>11</sup> is not reasonable in light of on-going efforts to reduce loads through DSM.<sup>12</sup>

I. The DEIS does not account for the additional capacity anticipated from the Texas mandate to include non-wind in the renewable portfolio standard.<sup>13</sup>

J. The DEIS fails to account for new building codes that are expected to reduce demand.<sup>14</sup>

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<sup>7</sup> Id., at p.4.

<sup>8</sup> Id.

<sup>9</sup> Id at pp. 4-5.

<sup>10</sup> Id. at p. 5.

<sup>11</sup> DEIS, Table 8-2, p. 8-16.

<sup>12</sup> Power Report, pp.5-6.

<sup>13</sup> Id. at p. 6.

<sup>14</sup> Id.

K. The DEIS does not acknowledge that energy efficiency is expected to reduce the number of new power plants needed in the future.<sup>15</sup>

L. The DEIS does not account for all government funds available and reasonably expected for energy efficiency applications.<sup>16</sup>

M. The DEIS does not fully account for CAES capacity reasonably available in Texas and ERCOT.<sup>17</sup>

N. The DEIS acknowledges that ERCOT's high-wind generation case does not assume the addition of any new Comanche Peak Units 3 & 4 capacity and a reserve margin of 12.5% is still maintained.<sup>18</sup> Despite this finding the DEIS still concludes that Comanche Peak Units 3 & 4 are needed to meet reserve targets.<sup>19</sup> The DEIS makes no attempt to reconcile these contradictory conclusions nor does it address why the ERCOT high-wind scenario that excludes Comanche Peak Units 3 & 4 should not be relied upon. This analytical omission is contrary to NUREG 1555, Ch. 8, that requires the need for power analysis be systematic and comprehensive. In this case the unexplained

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<sup>15</sup> Id. at p.7.

<sup>16</sup> Id.

<sup>17</sup> Id. at pp. 7-8.

<sup>18</sup> DEIS, §9.2.4, p.9-29; the ERCOT report referenced in the DEIS may be accessed at: [http://www.ercot.com/content/news/presentations/2008/ERCOT\\_Long-Term\\_System\\_Assmt\\_Dec\\_2008.pdf](http://www.ercot.com/content/news/presentations/2008/ERCOT_Long-Term_System_Assmt_Dec_2008.pdf). The specific reference is found at p. 33 of the ERCOT report.

<sup>19</sup> DEIS, §8.5, p. 8-22.

contradictory conclusions about the need for power from Comanche Peak Units 3 & 4 casts doubt on whether the DEIS has been prepared in a systematic fashion.

The reference to the ERCOT analysis that excludes Comanche Peak Units 3& 4 was not placed in the DEIS Chapter 8 that discusses need for power. Rather, it was placed in Chapter 9 that addresses alternatives to the proposed project. While the reference to the ERCOT report in Chapter 9 may have been appropriate, its omission from the discussion of need for power in Chapter 8 is inexplicable. The Staff properly relies on ERCOT for data and analysis thereof. But when ERCOT's analysis of at least one of its scenarios excludes Comanche Peak Units 3 & 4 and still finds that reserve margins would be met the absence of discussion of this finding in the DEIS chapter on need for power is conspicuous by omission.

This inconsistency/contradiction calls into question whether the DEIS Chapter 8, Need for Power, was prepared in a systematic and/or comprehensive manner consistent with NUREG 1555.

## **DEIS Contention 2**

**The DEIS distorts the CO<sub>2</sub> emissions in the comparison of nuclear power and the combination of alternatives.**

The DEIS addresses compressed air energy storage (CAES) as an alternative to the proposed project. The DEIS briefly notes that a project planned for Texas by ConocoPhillips/General Compression will be available for baseload capacity.

Significantly, the ConocoPhillips/General Compression project will not utilize natural gas for combustion.<sup>20</sup> However, the DEIS comparison of CO2 emissions for energy alternatives still attributes 180,000,000 metric tons of CO2 that would result from using the combination of alternatives.<sup>21</sup> The effect of attributing the CO2 emissions to CAES in light of the ConocoPhillips/General Compression's near- isothermal technology that will have little or no GHG emissions has the effect of distorting the relative GHG burdens attributable to nuclear power and CAES. Assuming use of isothermal technologies for CAEs the CO2 emissions for the combination of alternatives in Table 9-6 would no longer favor nuclear power.

Furthermore, Table 9-6 distorts the relative CO2 contributions of nuclear by omitting emissions for workforce transportation, construction and decommissioning. The combination of adding CO2 emissions to CAES and not accounting for all such emissions related to the nuclear option<sup>22</sup> calls into doubt whether the DEIS has been prepared in a systematic and comprehensive manner as required by NUREG 1555.

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<sup>20</sup> DEIS, §9.2.3.1, pp.9-21- 22; §9.2.4, p.9-28.

<sup>21</sup> DEIS, Table 9-6, p. 9-33.

<sup>22</sup> DEIS, p. 9-30.

### **DEIS Contention 3**

#### **The DEIS understates the effect of global warming on the cumulative impacts of Comanche Peak Units 3 & 4.**

A. The DEIS conclusion that cumulative effects of greenhouse gas emissions are projected to be “noticeable but not destabilizing”<sup>23</sup> is contradicted by the EPA’s April 27, 2010 report “Climate Change Indicators in the United States”.<sup>24</sup> *Inter alia*, the EPA report finds compelling evidence that composition of the atmosphere and many fundamental measures of climate are changing.<sup>25</sup> However, by understating the effects of climate change the DEIS effectively minimizes the contributions to the GHG inventory attributable to construction and operation of Comanche Peak Units 3&4.<sup>26</sup> This has the further effect of marginalizing the importance of selecting the lowest GHG alternatives to

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<sup>23</sup> DEIS §7.6.2, pp.7-25-26.

<sup>24</sup> The EPA report “Climate Change Indicators in the United States” is attached hereto. This report will be referenced as the EPA Climate Change Report.

<sup>25</sup> EPA Climate Change Report, p. 4.

<sup>26</sup> The DEIS conclusion that GHG emissions attributable to Comanche Peak Units 3 & 4 is not destabilizing lacks any indicia of quantitative or qualitative discussion of the levels of GHG that are likely to cause significant changes to the climate. The DEIS excuses the projected quantities of GHG from the Units 3 & 4 because their proportionate contribution is relatively small. However, the contributions are cumulative and it is clear that the accumulation of GHG is the primary cause of anthropomorphic climate change. See EPA Report, Climate Change Indicators in the United States, p.1.



generate electricity. A full accounting for all stages of the UFC shows that nuclear power has significantly greater GHG burdens than wind, solar power or geothermal.<sup>27</sup> The DEIS comparison of GHG emissions is incomplete and distorted. For example, while Table 9-6 states that the CO<sub>2</sub> emissions for nuclear plant operations is 20,000 metric tons the text at section 9.2.5 states that the CO<sub>2</sub> emissions are 45 million metric tons and this still does not account for construction or decommissioning emissions. This omission calls into question whether the DEIS has been prepared in a systematic and comprehensive manner as required by NUREG 1555.

B. The DEIS water use and quality summary states “Impacts would be comparable to the impacts for a new nuclear power plant.” Based on this conclusion the DEIS states that the environmental impact of water use and quantity for the combination of alternatives is moderate.<sup>28</sup> But the DEIS also states that, according to the D.O.E., substantial water savings will be realized as wind power increases.<sup>29</sup> The DEIS makes no attempt to reconcile these conflicting statements. Moreover, the assertion that water use quantities related to nuclear plant operations are comparable to the combinations of alternatives is not quantified in the DEIS. Even a brief review of the water quantity data in the Comanche Peak ER betrays this comparison. Comanche Peak Units 3 & 4 are expected to consume 1,317,720 gpm for its circulating water system, alone.<sup>30</sup> The DEIS

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<sup>27</sup> "[Greenhouse Emissions and Nuclear Energy](#)," *Modern Energy Review* 1, no. 1 (August 2009): 54-57.

<sup>28</sup> DEIS, Table 9-4, p. 9-31.

<sup>29</sup> DEIS, p. 9-23.

<sup>30</sup> Comanche Peak Environmental Report, Table 3.3-1, p.3.3-5.

does not quantify water use quantities for the combination of alternatives but it is difficult to imagine that such could even approach the quantities anticipated for Comanche Peak Units 3 & 4. In the absence of quantitative evidence to support this assertion in the DEIS there is also a question about how systematic and comprehensive the DEIS actually is. cumulative impacts on surface water and groundwater quality<sup>31</sup> but fails to compare cumulative impacts to surface water quality from alternatives such as wind and solar. The failure to compare water quality impacts from alternatives including wind, solar, geothermal, etc. has the effect of distorting the relative advantages of nuclear power. Further, this failure to make the comparison calls into the DEIS has been prepared in a systematic and comprehensive manner as required by NUREG 1555.

#### **DEIS Contention 4**

**The DEIS fails to discuss increases in ambient water temperatures caused by global warming as such would affect the capacity of the Squaw Creek Reservoir to maintain water temperatures consistent with operational requirements.**

The DEIS fails to consider the effect of global warming on operations of Comanche Peak Units 3 & 4 related to increased ambient temperatures of air and the effect of higher cooling water temperatures and limited quantities of water.<sup>32</sup> The failure to consider these adverse impacts has the effect of omitting material information concerning water usage and temperature thereof and effects on plant operations. This

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<sup>31</sup> DEIS, pp. 7-16-21.

<sup>32</sup> Report of Tom “Smitty” Smith, pp.1-3, attached.

omission has the effect of overstating advantages of nuclear power and understating environmental impacts.

The DEIS discusses the changes caused by global warming on surface water that is intended for use by Units 3 & 4.<sup>33</sup> However, the DEIS omits discussion of increased ambient water temperatures that would cause the nuclear units to decrease power output or cease operations altogether. Ambient water temperature that reaches 95 F causes a loss in plant production and at 101 F operations must cease.<sup>34</sup> This surface water impact was not compared to surface water impacts related to alternatives for generating power. This omission is material because it bears on the suitability of the nuclear generation option when compared to other generation options that are not constrained by ambient temperatures of surface water.

#### **DEIS Contention 5**

**The DEIS fails to compare the CO2 emissions of the uranium fuel cycle (UFC) to the CO2 emissions of wind and solar power.**

Appendix I of the DEIS discusses the CO2 footprint of a LWR. However, this discussion omits any direct comparison to similar emissions related to alternatives such

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<sup>33</sup> DEIS, p.7-11-12.

<sup>34</sup> Smith Report, pp.4-5 citing Intake Water Temperature Reduction Alternatives, prepared by ERM for Comanche Peak, attached.

as wind, solar, geothermal, etc. The only reference to a comparison is the study by B.K. Sovacool.<sup>35</sup> This study consists of a literature survey and concludes that alternatives such as wind, solar and geothermal have much smaller CO2 footprints than nuclear powered generation.<sup>36</sup> However, other than the flawed Table 9-6 (see Contention DEIS 2, above) the DEIS otherwise makes no attempt to compare the CO2 footprints of alternative generation modes. Additionally, comparisons of CO2 emissions related to alternatives are not covered in other contexts of the DEIS.<sup>37</sup>

The failure of the DEIS to comprehensively compare CO2 impacts related to alternative generation modes with nuclear is particularly noteworthy considering the DEIS's recognition that GHG increases and effects of climate change have profound environmental impacts.<sup>38</sup> Moreover, the omission of any discussion of the lower GHG profiles for renewable generating sources compared to the UFC has the effect of distorting the putative advantages of nuclear powered generation. Further, this failure to make the comparison calls into question whether the DEIS has been prepared in a systematic and comprehensive manner as required by NUREG 1555.

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<sup>35</sup> DEIS Appx. I, p.I-4.

<sup>36</sup> Sovacool, p. 2950, Table 8. See also "[Greenhouse Emissions and Nuclear Energy](#)," *Modern Energy Review* 1, no. 1 (August 2009): 54-57.

<sup>37</sup> For example, no such comparison is attempted related to construction and preconstruction activities (§4.7.1), air quality operational impacts (§5.7.1), fuel cycle, transportation and decommissioning (§6.0), decommissioning (§6.3), cumulative impacts (§7.0), water use impacts (§7.2.1) (see also DEIS Contention 3.B., above), water quality impacts (§7.2.2), ecology impacts (§7.3), alternatives requiring new generation capacity (§9.2.2).

<sup>38</sup> For example see DEIS §§ 7.2.1, 7.6.2.

## **DEIS Contention 6**

**Combinations of wind and solar without storage for baseload are not discussed in the DEIS.**

This DEIS conclusion mistakenly assumes that alternatives such as wind and solar (or the combination thereof) are not viable baseload alternatives without storage.<sup>39</sup> Additionally, the DEIS omits any discussion of the combination of wind and solar power to provide baseload generation, as discussed by Dr. Dean in his report.<sup>40</sup> Dr. Dean discusses the viability of combining wind and solar without storage to produce a uniform generation profile because of their complimentary characteristics. Wind speeds tend to be greater at night while solar generates power during sunlight hours. These complimentary qualities make the combination of wind and solar without storage a practicable alternative for baseload generation. Exclusion of the discussion of this combination is unreasonable given NEPA's requirement that practicable alternatives be discussed in environmental impact studies.<sup>41</sup> Further, the omission of the combination of wind and solar calls into question whether the DEIS has been prepared in a systematic and comprehensive manner as required by NUREG 1555.

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<sup>39</sup> DEIS, p. 9-28.

<sup>40</sup> Raymond H. Dean, Ph.D. Comments Regarding Luminant's Revision to the Comanche Peak Nuclear Power Plant, Units 3 & 4 COL Application Part 3, p.1-2, attached.

<sup>41</sup> NRC's duty under NEPA is to study all alternatives that are reasonable and appropriate for study when the DEIS is drafted and significant alternatives suggested during public comment. *Strahan v. Linnon*, 967 F.Supp. 581, 602 (D.Mass 1997) aff'd. 187 F.3d 623 (1<sup>st</sup> Cir. 1998).

## **Conclusion**

The Intervenor urge that leave be granted for the contentions herein to be admitted for consideration by this ASLB Panel and for adjudication.

Respectfully submitted,

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**CERTIFICATE OF SERVICE**

I hereby certify that on September 7, 2010 a copy of the above and foregoing was served by the Electronic Information Exchange on the following recipients:

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