UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of
Luminant Generation Company, LLC — **Docket Nos. 52-034 and 52-035**
Comanche Peak Nuclear Power Plant
Units 3 and 4
Combined License Adjudication

INTERVENORS' CONTENTIONS REGARDING APPLICANT'S REVISIONS TO ENVIRONMENTAL REPORT CONCERNING ALTERNATIVES TO NUCLEAR POWER

Introduction

The following contentions are derived from the Applicant's revisions to its Environmental Report section 9.2.2.11 et seq.[1] The contentions are consistent with 10 CFR 2.309(f)(1)(iii)(iv)(v) because they raise issues related to alternatives to the proposed action, bear on issues to be decided in this proceeding, and are supported by facts and/or expert opinions.

Summary of Contentions[2]

Alt-1 The Applicant overstates and mischaracterizes, without substantiation, the impacts of wind power generation and CAES.

Alt-2 The Applicant inadequately characterizes, without substantiation, the impacts of solar with storage.

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[1] December 8, 2009 Luminant Letter to Board, with ER Revisions Attachment, hereinafter "ER Revisions"
[2] The Intervenors will refer to these contentions as Alt-1 – Alt-6 in order to distinguish these contentions from previously filed contentions.

Alt-3 The Applicant's determination that nuclear is environmentally preferable to renewable energy with storage, supplemented by natural gas is based on fundamentally flawed assumptions about the nature and extent of environmental impacts related thereto.

Alt-4 The Applicant's assertion that renewable energy sources and energy storage options are not viable baseload generating options ignores the United States Department of Energy National Renewable Energy Laboratory (NREL) findings that "Wind energy systems that combine wind turbine generation with energy storage and long-distance transmission may overcome these obstacles and provide a source of power that is functionally equivalent to a conventional baseload electric power plant. A "baseload wind" system can produce a stable, reliable output that can replace a conventional fossil or nuclear baseload plant, instead of merely supplementing its output. This type of system could provide a large fraction of a region's electricity demand, far beyond the 10-20% often suggested as an economic upper limit for conventional wind generation deployed without storage."

Alt-5 In evaluating alternatives, the Applicant has not taken into account new ERCOT demand data and the positive impacts of modular additions of renewable/storage combinations in meeting a declining and uncertain demand.

Alt-6 Applicant does not meet Criterion 1: Developed, proven, and available in the relevant region ERCOT.

Contentions

Alt-1 The Applicant overstates and mischaracterizes, without substantiation, the impacts of wind power generation and CAES.

Applicant has overstated and mischaracterized the impacts of wind power generation and compressed air energy storage (CAES). Intervenors' Expert Ray Dean, Ph.D., asserts that the Applicant uses "misleading statements about environmentally impacted areas" and "abuses *Criterion 4 – No unusual environmental impacts or exceptional costs*."[3] The Applicant does not acknowledge, *inter alia*, that the land necessary for wind generation is, aside from the small footprint for each turbine, available for other activities and enterprises. Nor does the Applicant acknowledge that the regulatory requirements related to, *inter alia*, security of nuclear plants (eg. 10 CFR 50.54(hh), 10 CFR 50.150), water use, radioactive waste management, radiaoactive contamination of air, water and soil, and radiation monitoring, do not apply to wind/CAES. This list is not exhaustive but is illustrative of environmental impacts that the Applicant disregards in its so-called comparison of wind/CAES to nuclear. The Applicant's attenuated comparison of the environmental impacts of nuclear and wind/CAES is inadequate to adequately inform decision makers about the competing choices. *Department of Transportation v. Public Citizen*, 541 U.S. 752, 768-69 (2004).

A. Applicant substantially overstates wind power and CAES land use impacts

The Applicant states "the size of a wind farm to generate 3200 MW of energy was estimated to be between 452,000 to 816,000 ac of land."[4] Intervenors' experts Ray Dean, Ph.D., Arjun Makhijani, Ph.D. and Paul Robbins all question the Applicant's assertion that wind has a large adverse impact on land use.

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[3] Ray Dean Report, January 4, 2009. p.5. Intervenors incorporate by reference their Response to Applicant's Motion to Dismiss Contention 18, January 4, 2009, pp. 5-7 that discuss the impacts of wind generation and CAES.
[4] ER Revisions, p.9.2-40

The "land use of wind power is consistent with other uses such as agriculture and ranching,"[5] and "the actual physical footprint of wind facilities plus CAES facilities on land is quite small."[6]

> The Applicant does not acknowledge that the individual wind turbines plus the roads and buildings serving these wind turbines actually occupy only a very small fraction of the land in which they reside. The area actually used (including service roads) is only about 3.5% of the stated area, and most of this area (the roads) can also be used for other purposes. The rest of the area (96.5% of the supposed impacted area) can still be used for other important purposes, like farming and ranching…the numbers given in the application *overstate the environmental impact by two orders of magnitude*.[7]

The Applicant similarly asserts that wind power generation combined with CAES storage would have a large adverse impact on land use, and that the CAES facility itself could "cover between 63,289 and 114,420 ac of land."[8] Both Robbins and Dean question the Applicant's "misleading use" of the word "cover," because Applicant includes the underground reservoir as part of the above-ground footprint.[9]

> The CASE facility would not *cover* that amount of land. The indicated area is the area of a 10-meter thick aquifer, which is two or three thousand feet *under*ground. The only above-ground impacts of CAES are the building that houses the compressors, expanders, heat exchangers, and combustors, plus scattered well heads and (probably) buried pipes connecting those well heads to the building. Since the net power coming out of a CAES expander is two or three times greater than the net power coming out of a combustion turbine having the same diameter, the CAES equipment building will be substantially smaller than a building housing conventional combustion turbines capable of the same electrical output.[10]

Dean continues by comparing Comanche Peak with the Applicant's assertion that wind with CAES has a large impact on land use.

> The site for Comanche Peak's reactors and related facilities occupies 7950 acres. The area actually occupied by the foundations of the 4000 wind turbines could range from 1000 to 2000 acres, plus the area of the CAES facility and scattered CAES well heads. The Applicant's use of the term "LARGE" to describe the relative environmental impact of an alternative wind-and-storage system is not justified.[11]

B. <u>Applicant does not consider the benefits of using CAES in Texas</u>

The Intervenors incorporate by reference their Response to Applicant's Motion to Dismiss Contention 18, pp.3-4.

The Dean Report discusses the geological advantages that weigh in favor of CAES in Texas:

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[5] Paul Robbins Report, January 15, 2009, p.3.
[6] Arjun Makhijani Report, January 4, 2009. P.2.
[7] Dean Report, p.6
[8] ER Revisions, p.9.2-40
[9] Dean Report, p.6 and Robbins Report, p.3
[10] Dean Report, pp.6-7
[11] Dean Report, p.7

> The relatively slow development of CAES in a porous aquifer in Iowa may be the basis of the applicant's deprecation of this technology, but the applicant does not acknowledge the fact that the development task is much harder in Iowa than it would be in Texas. Iowa's problem is that it does not have old gas wells, and it does not have the vast amount of the geological data that was previously gathered to support drilling, developing, and producing such wells. This is an important example of where a technology being developed in a different region would be easier, not harder, to develop in the "relevant region."[12]

The Robbins Report also points out the inherent advantages of developing CAES capacity in Texas compared to the relatively less advantageous circumstances related to the proposed Iowa facility and the extant McIntosh facility.[13]

Alt-2 The Applicant inadequately characterizes, without substantiation, the impacts of solar with storage.

A. <u>Applicant inappropriately characterizes and overstates adverse socioeconomic impacts and ignores the potential positive socioeconomic impacts of solar with storage</u>

The Applicant inappropriately characterizes solar with storage as having a LARGE adverse socio-economic impact. They base this assertion on economic losses the company would incur due to energy stored during peak hours being sold for a lower cost at non-peak hour prices.[14] Intervenors contend that this characterization of socioeconomic is inaccurate and that a more accurate characterization of socioeconomic impacts is one that concerns both social and economic factors.

The Applicant's characterization of socioeconomic impacts appears to be limited to economic losses and gains that might be realized by the Applicant.[15] The Applicant does not consider the cost savings and reliability gained with storage.

> According to Sargent and Lundy, solar with thermal storage would reduce the Applicant's O&M costs that would result in a savings. Further because solar generated electricity can be sold at peak and surplus energy can be stored and sold, this represents additional sources of revenue that would be realized with solar and thermal storage.

[12] Dean Report, pp.3-4
[13] Robbins Report, pp.3-4
[14] ER Revisions, p.9.2-43
[15] Id.

> Therefore, there is no basis for the Applicant's claim of "substantial economic losses."[16]

Robbins further explains that solar energy generated during peak demand can still be sold for peak prices. Storage simply "allows the option to capture excess heat generated at the time and use it to generate electricity later if desired. Having storage ability does not require that all energy be stored, or that it be sold later at lower prices."[17]

Robbins questions this inappropriate negative characterization of solar with storage causing economic losses for the Applicant due to peak power being sold at non-peak prices.

> If it is less profitable to generate electricity at intermediate and non-peak times, investing in Comanche Peak Units 3 & 4 is called into question since it is a baseload plant. More profit could be generated by facilities that produced power at peak.[18]

Given a more accurate characterization of socioeconomic impacts as those that concern both social and economic factors, Robbins discusses how solar could have positive local economic impacts in terms of jobs, a socioeconomic impact ignored by the Applicant.

> The applicant ignores positive job impact to regions of Texas with sparse employment. A 2004 study measuring the local economics of a 100-MW solar plant in New Mexico estimated a minimum of 1,588 jobs would be created in the two-year period of construction, which would generate $57.4 million in wages. During operation, the plant would create 85 permanent jobs, which would generate $3.1 million in wages.[19]

Solar is a viable baseload source alternative. SCCS Integrated Solar Combined Cycle Systems are the newest integrated solution for applying solar solutions to baseload needs. These are attractive where a suitable fossil fuel (natural gas is preferred though fuel oil can be used) is available due to excellent performance, cost and emission characteristics.

> The CC plant consists of a combustion (gas) turbine (GT), heat recovery steam generator (HRSG) and steam turbine (ST). Fuel is combusted in the gas turbine in the normal way, and the hot exhaust gases pass through the HRSG. Here the energy from the gases generates and superheats steam to be used in the ST

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[16] Robbins Report, p.5 referencing Sargent & Lundy Consulting Group, Assessment of Parabolic Trough and Power Tower Solar Technology Cost and Performance Forecasts, SL-5641, October 2003, PDF page 75, Report page 4-24. Figure 4-5 and description that follows below. http://www.nrel.gov/csp/pdfs/35060.pdf

[17] Robbins Report, pp.5-6

[18] Robbins Report, p.6

[19] Robbins Report, p.6 referencing The University of New Mexico, Bureau of Business and Economic Research, Economic Impact of Concentrating Solar Power in New Mexico, December 2004. pp.19-20. http://www.emnrd.state.nm.us/ECMD/Multimedia/PublicationsandReports.htm

> bottoming cycle. Hence, the energy in the gas, or other fossil fuel, is used much more efficiently than in a GT alone. Modern cycles can achieve overall thermal-to-electric efficiencies of up to 55%.
>
> Solar energy from a parabolic trough solar field can be integrated with a CC to increase the efficiency ever further and to decrease the already low emissions. This is accomplished in an integrated solar-combined cycle system (ISCCS). The ISCCS calls for part of the heat recovery steam generator (HRSG) to be either replaced or paralleled by equipment serviced by solar thermal energy to supplement turbine exhaust gases. This approach increases thermal energy input which produces more electrical output. [20]

Also, steam augmentation technology is a solar powered source that can deliver solar steam to conventional power stations that would enable the production of additional electricity without additional fuel.[21]

The solar technologies described above could be integrated into the Applicant's existing steam electric plants.[22] One advantage to such an application would be the minimal impact on land use. The solar technology could be deployed with existing generation capacity and increase efficiency. This is another option that the Applicant has neglected.

Additionally, thermal energy storage overcomes the variability of sunlight as a constraint on baseload.

> Applying a Thermal Energy Storage (*TES*) breaks this direct link between solar irradiation and electricity production. A TES allows for storing the collected heat at one point in time and releasing it to generate electricity at a different time. Solar-Thermal Power Plants with TES can allow for adapting electricity production to the electricity demand, a more predictable/manageable power output which increases the stability of the electrical grid, higher usage of the electrical grid capacity since more electricity can be supplied annually to the used grid connection point [23]

Conventional engineering on this type of plant allows for a specific size generation plant to be developed according to the system developer's guidelines. The solar production array size is then increased to provide additional energy. This excess energy is put into a storage containment structure to closer match the market demand for energy (which doesn't follow the solar diurnal cycle for maximum energy

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[20] http://www.flagsol-gmbh.com/flagsol/cms/front_content.php?idcat=19
[21] http://www.ausra.com/products/augmentation.html
[22] Id.
[23] http://www.flagsol-gmbh.com/flagsol/cms/front_content.php?idcat=45

production) thereby extending the production capability to match the peak load demand, maximizing the value of the energy produced. An integrated gas turbine can then be designed into the system as needed. Adding wind generation capacity into the generation mix can provide a seamless transition to the load need by providing energy when the production of both technologies is overlapped.[24]

B. Applicant overstates solar with storage land use impacts and fails to consider solar technologies with no land use impacts

Robbins questions the Applicant's assertion that solar with storage would have a LARGE adverse impact on land use.

> The applicant states that 55,510 to 76,000 acres would be needed for a solar facility to generate solar and store the energy, which would be 86.73 to 118.75 square miles. This is far from the reality of the Mojave Solar Park, set to be completed in 2011. This 553 MW solar thermal facility will take up 9 square miles of land, so even if storage facilities were added, it would be no where close to the 86.73 to 118.75 square miles claimed by the applicant.[25]

The Applicant also ignores the possible contributions to capacity from rooftop solar applications, which would involve no additional land use.

Alt-3 The Applicant's determination that nuclear is environmentally preferable to renewable energy with storage, supplemented by natural gas is based on fundamentally flawed assumptions about the nature and extent of environmental impacts related thereto.

A. By asserting that each technology needs to be capable of generating 3200 MW "individually," the Applicant overstates the environmental impacts of the combinations of wind and CAES, supplemented by natural gas or solar and storage supplemented by natural gas.

[24] Also see Dean Report, pp.1-2
[25] Robbins Report, p.5 referencing World's Largest Solar Plant, SEGS, http://solar.calfinder.com/blog/news/worlds-largest-solar-plant-segs

The Applicant asserts that each technology in the combination needs to be capable of generating 3200 MW individually.[26] This premise is questionable in light of NUREG 1555, which states, "a competitive alternative could be composed of combinations of individual alternatives." 9.2.3-1. The Applicant concludes, when the impacts of the technologies, each at 3200 MW are considered cumulatively, that the renewable energy with storage supplemented by natural gas scenario is not environmentally preferable to nuclear.

Moreover, because the Applicant has overstated land area requirements for wind/solar/CAES it has overstated environmental impacts.[27] And the Applicant ignores the well-known fact that wind generation allows multiple uses of the same land including farming and ranching that has the effect of minimizing consequential socioeconomic dislocations.[28]

Adopting the Applicant's methodology would cause the analysis of the viability of renewable fuels in combination with storage technologies and/or natural gas to be considered in an overly restrictive and artificial way. *Druid Hills Civic Association, Inc. v. Federal Highway Administration*, 772 F. 2nd 700, 709 11th Cir. (1985) Moreover it would ignore substantial evidence that contradicts the Applicant's assertion. *Ohio River Valley Environmental Coalition, Inc. v. Kempthorne*, 473 F.3d 94,102 (4th Cir., 2006)

[26] The Applicant claims in Section 9.2.2.11.4.1, that renewable energy with storage supplemented by natural gas, would result in "cumulative impacts since each technology would have to have the capacity to produce 3200 MW of power individually." p. 9.2-46 The Applicant's claim that a natural gas plant of 3200 MW would be needed is directly contradicted by Drs. Dean and Makhijani, who opine that wind and CAES alone can suffice as baseload. A 3200 MW natural gas plant is not needed in the Applicant's scenario of using natural gas only to supplement renewable energy with storage.

[27] See Intervenor's Response to Motion to Dismiss Contention 18, pp.5-6

[28] Id.

B. The Applicant uses inadequate characterizations of the impacts of renewable energy with storage to conclude that renewable energy with storage, supplemented by natural gas is not environmentally preferable to nuclear power.

As discussed in Alt-1 and Alt-2, solar with storage could have a positive socioeconomic impact and wind with CAES could have a positive impact on land use as opposed to the large adverse impacts that the Applicant asserts. Therefore, the determination that the combination of renewable energy with storage, supplemented by natural gas "would be expected to have significant adverse environmental impacts and would not be environmentally more preferable than CPNPP Units 3 and 4,"[29] should be rejected.

C. The Applicant did not consider wind ***and*** solar energy combined.

In the ER Revisions, the Applicant only considered wind ***or*** solar.[30] The introduction of coastal wind, which has production curves that closely match the fall off in solar production, allows the production curve to match the load curve. North and West Texas wind provide energy in the night load hours, solar with storage provides for peak demand production and coastal wind can provide overlap in the production curve in the late afternoon and early evening hours to provide a smooth generation curve that closely follows the load need.[31]

The Applicant bases its determination that nuclear is environmentally preferable to renewable energy with storage, supplemented by natural gas on the flawed assumption that each technology needs to be capable of generating 3200 MW "individually," the inadequate characterizations of the impacts of renewable energy with storage, and the failure to consider employing both wind and solar power technologies. Dean also points to four "tricks" the Applicant uses to justify its determinations.[32] The Applicant's questionable

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[29] ER Revisions, p.9.2-47

[30] See Intervenors' Response to Motion to Dismiss Contention 18, pp.3,8

[31] Also see Dean Report, pp.1-2

[32] "The Applicant tries to justify its position with four tricks: (1) They restrict the alternatives considered. (2) They frame evaluation criteria narrowly around the form of the CP COL ER's desired solution (a large nuclear power plant) rather than its function (providing the requisite electricity), even though this form has significant problems

analysis and determination that nuclear is environmentally preferable to the alternatives discussed above allows the Applicant to avoid an economic cost comparison.[33]

Alt-4 The Applicant's assertion that renewable energy sources and energy storage options are not viable baseload generating options ignores the United States Department of Energy National Renewable Energy Laboratory (NREL) findings that "Wind energy systems that combine wind turbine generation with energy storage and long-distance transmission may overcome these obstacles and provide a source of power that is functionally equivalent to a conventional baseload electric power plant. A "baseload wind" system can produce a stable, reliable output that can replace a conventional fossil or nuclear baseload plant, instead of merely supplementing its output. This type of system could provide a large fraction of a region's electricity demand, far beyond the 10-20% often suggested as an economic upper limit for conventional wind generation deployed without storage."[34]

The Applicant asserts that "[O]ptions which rely on renewable energy sources and energy storage are best suited for power peaking or stabilizing purposes. Renewable energy sources and energy storage options are not currently, or projected to be, used for baseload power applications."[35] This issue has been considered by the United States Department of Energy National Renewable Energy Laboratory (NREL) and it has arrived at a diametrically opposed conclusion.[36]

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that other forms do not have. (3) They argue in contradictory ways at different times. (4) They use quantitative facts out of proper context and stretch truths beyond reasonable limits." Dean Report, p.1

[33] In NUREG 1555 at 9.2.3-2, the analysis of alternatives is described as a two-step process: "(1) comparing the environmental and health impacts of the competitive alternatives to the proposed action, and (2) comparing the economic costs of any competitive alternatives found to be environmentally preferable to the proposed action."

[34] NREL, "Creating Baseload Wind Power Systems Using Advanced Compressed Air Energy Storage Concepts," October 3, 2006, attached. (NREL Baseload Factsheet)

[35] ER Revisions, Sec. 9.2.2.11.5, p.9.2-50.

[36] "A "baseload wind" system can produce a stable, reliable output that can replace a conventional fossil or nuclear baseload plant, instead of merely supplementing its output." NREL Baseload Factsheet, attached.

The Applicant's doctrinaire conclusion that renewables either standing alone or in combination with, for example, CAES, are not yet ready for deployment as baseload may have been a plausible conclusion in the past. However, as concluded by NREL and Drs. Dean and Makhijani, renewables and storage technologies such as CAES and molten salt are capable of meeting baseload generation requirements. Adopting the Applicant's premise that wind/solar/storage are not capable of providing baseload generation skews its analysis of the viability of renewable fuels in combination with storage technologies and/or natural gas. This is an overly restrictive methodology with artificial constraints. *Druid Hills Civic Association, Inc., supra.* Moreover it ignores substantial evidence that contradicts the Applicant's assertion. *Ohio River Valley Environmental Coalition, Inc., supra.*

The Applicant's failure to acknowledge that renewables and storage are viable baseload generation sources is stated in the concluding paragraphs of the Environmental Report revisions; but this premise is pervasive throughout its discussion about alternatives to nuclear power. This premise colors Applicant's entire analysis, and the Applicant makes no attempt to show how combined/ integrated renewable fuel systems augmented by storage and possibly supplemented by natural gas can meet baseload requirements. Accordingly, this contention should advance to adjudication in order to determine whether combinations of renewable fuel sources with and without storage and with and without natural gas as a supplemental fuel is a viable alternative to Comanche Peak Units 3 and 4.

Alt-5 In evaluating alternatives, the Applicant has not taken into account new ERCOT demand data and the positive impacts of modular additions of renewable/storage combinations in meeting a declining and uncertain demand.

There is a discrepancy between the Applicant's Criterion 2, "Capacity equivalent to the planned generation"[37] and the criterion in NUREG 1555 that "the alternative energy source should provide generating capacity substantially equivalent to the capacity need established."[38] (emphasis added)

Both Drs. Dean and Makhijani discuss the economic risks of pursuing a large nuclear power plant project rather than a phased approach of renewable combinations which can be adjusted with changing demand. The Applicant failed to consider the benefits of a modular approach over nuclear in meeting the need for power in an uncertain demand environment.[39]

Dr. Dean discusses this circumstance as follows:

> The misleading "Large Project" concept:
> The application abuses *Criterion 2 – Capacity equivalent to the planned generation*. The application also abuses *Criterion 3 – Available during the same time frame*. Although micro-nuclear systems have been informally proposed, commercial nuclear power needs to be very large to be economically viable. However, large size is also an economic liability. It creates a very large financial gamble on projected future electrical-energy demand, and it minimizes real options. Compared to a typical wind farm, a large nuclear plant takes a relatively long time to build. So the large initial investment must be made a long time before the benefits of that investment can start to be realized. Moreover, when a large nuclear power plant does finally come on line, it changes the generating capacity of the system by a very large amount in one big step. In contrast, market demand does not change in giant steps widely separated in time. So a nuclear plant's large size is inherently poorly matched to changes in actual market demand. On the other hand, combinations of gas, renewable energy sources, and storage can be committed to and installed gradually over time – with ongoing flexibility in the size of the ultimate commitment and ongoing flexibility in the detailed mix of components. In spite of the inherent riskiness (and suppression of real options) in a single large fixed investment in a nuclear plant, the Applicant essentially infers that the ability to implement wind-storage-gas systems gradually over time as market demand develops disqualifies those wind-storage-gas systems alternatives. In effect, they claim that the most conservative approach to a large long-duration hard-to-estimate future need should be "not allowed" because it is different from a more reckless approach

37 ER Revisions, p.9.2-38, 42, 46, 48
38 NUREG 1555, NRC Environmental Standard Review Plan, Revision 1, July 2007 at 9.2.2-4
39 Demand for electricity is dropping across the nation as recently reported by the Wall Street Journal. Smith, Rebecca. "Turmoil in Power Sector, Falling Electricity Demand Trips Up Utilities' Plans for Infrastructure Projects," January 14, 2010 http://online.wsj.com/article/SB10001424052748704675104575001322373417024.html

> that happens to be the only approach available to nuclear power. The applicant's demand that proposed alternatives to nuclear power must similarly put “all their eggs in one big basket” is very unreasonable.[40]

Dr. Makhijani also addresses a modular approach to generation capacity additions:

> Finally, the fact that CPNPP is an order of magnitude larger than existing CAES facilities is also technically irrelevant; in fact, it could be economically very advantageous. Facilities that are in the ~100 MW to 300 MW range can be scaled up or, preferably, be built on a modular basis. Given the great uncertainties in demand projections eight to ten years hence, a modular approach is much less risky since growth in supply can be more closely tailored to growth in demand. The one requirement that this strategy would require is the acquisition of a suitable number of sites for wind and CAES development.
>
> Solar thermal with heat storage facilities are currently being built on a scale that modules could be built that would add up to the equivalent of CPNPP. There is no technical reason for a ~3,000 MW facility to consist of just one or two units. [41]

The Applicant’s restrictive assumption that a one-time addition of 3200 MW is the most prudent way to meet demand fails to recognize that growth in demand is declining. The Applicant’s approach to meeting declining demand is to add 3200 MW on the assumption that at some point demand will grow sufficiently to justify Comanche Peak Units 3 & 4. Drs. Dean and Makhijani suggest a phased approach that can be achieved with smaller increments of renewable fuels generating capacity that can more closely match actual demand increases.

This contention should advance to adjudication because there is a material dispute between the Applicant and Intervenors about whether meeting the projected demand *via* renewable fuels/storage makes the renewable option environmentally preferable.

Alt-6 Applicant does not meet Criterion 1: Developed, proven, and available in the relevant region ERCOT.

The Applicant measures renewables/storage against the criteria that the alternative be developed, proven, and available in the relevant region ERCOT. Yet CPNPP Units 3 & 4 clearly do not meet this criterion.

[40] Dean Report, p.5
[41] Makhijani Report, pp.2-3.

As noted by Dean, the US-APWR reactor design "has never been built before, it has never been designed before, and the design that is being worked on now is not likely to be certified until after 2011." All three experts, Dean, Makhijani, and Robbins, point out that the Applicant fails to account for the fact that the US-APWR reactor design is not yet certified by the NRC.[42] "The proposed reactors themselves fail to meet Criterion 1 although this is the standard the Applicant applies to all other technologies."[43]

Applicant is silent on the point that the US-APWR is not developed, proven or available. This is a material omission and as a result this contention should proceed to adjudication. *North Anna*, LBP-08-15, 68 NRC (slip op. at 27) (quoting Pa'ina Hawaii, LLC (Materials License Application), LBP-06-12, 63 NRC 403, 414 (2006)).

Conclusion

Based on the arguments and authorities above, Intervenors urge that the contentions specified herein be admitted for adjudication and that a hearing pursuant to 10 C.F.R. Part 2, Subpart L be ordered for these contentions.

Respectfully submitted,

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[42] Dean Report, pp.8-10, Makhijani Report, p.2, Robbins Report, p.1
[43] Robbins Report, p.1

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CERTIFICATE OF SERVICE

I hereby certify that on January 15, 2010 a copy of "Intervenors' Contentions Regarding Applicant's Revisions to Environmental Report Concerning Alternatives to Nuclear Power" was served by the Electronic Information Exchange on the following recipients:

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