UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

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

PETITION FOR INTERVENTION AND REQUEST FOR HEARING

Pursuant to 10 CFR Section 2.309 and the notice published by the Nuclear Regulatory Commission at 74 Fed. Reg. 6177 on February 5, 2009, the Sustainable Energy and Economic Development Coalition (SEED), Nita O'Neal, Public Citizen, Don Young, True Cost of Nukes, J. Nile Fisher and Representative Lon Burnam, hereby petition to intervene in the combined operating license application (COLA) filed by Luminant Generation Company, LLC (Applicant) to build and operate two new nuclear power plants known as Comanche Peak Nuclear Power Plant Units 3 and 4. The plants are proposed to be located at the existing Comanche Peak Nuclear Power Plant site in Somervell County, Texas. The Petitioners also request an oral hearing in this matter.

DESCRIPTION OF THE PROCEEDING

This proceeding is related to a COLA for construction and operation of the Comanche Peak Nuclear Power Plant Units 3 and 4 at the Comanche Peak site in Somervell County, Texas. The Applicant submitted its application on September 19, 2008 and supplemented it by letters dated November 4, 5, 6,

and 10, and December 18, 2008. The application was accepted for docketing on December 2, 2008, and the docket numbers established for units 3 and 4 are 52-034 and 52-035, respectively. A notice for hearing was published at 74 Fed. Reg. 6177-6181 on February 5, 2009.

DESCRIPTION OF THE PETITIONERS

This Petition is submitted on behalf of the Sustainable Energy and Economic Development (SEED) Coalition, Public Citizen, True Cost of Nukes, and Texas State Representative Lon Burnam. See: List of Petitioners, attached.

Lon Burnam is the elected representative of House District 90 of the Texas House of Representatives. The district he represents is in Fort Worth, Texas and falls wholly within the 50-mile impact zone of the Comanche Peak Nuclear Power Plant. Representative Burnam represents over 150,000 residents. He resides in Fort Worth within 50 miles of the Comanche Peak Nuclear Power Plant site. See: List of Petitioners and Burnam declaration, attached.

SEED Coalition is a statewide nonprofit working for clean air and clean energy in Texas. The SEED Coalition office is at 1303 San Antonio, #100 in Austin, Texas, 78701. The organization advocates for safe energy alternatives and opposes the development of nuclear power generally, including the proposed Comanche Peak Units 3 and 4. SEED Coalition has members that reside within fifty miles of the proposed site for Comanche Peak Units 3 and 4. The members of SEED Coalition who live within fifty miles of the proposed Comanche Peak Units 3 and 4 include Nita O'Neal who resides in Everman, Texas. Ms. O'Neal wishes to be represented by SEED Coalition in this case. See: List of Petitioners and O'Neal Declaration, attached.

Public Citizen is a non-profit, non-partisan membership organization based in Washington, D.C. with over 100,000 members nationwide. Public Citizen advocates for safe, clean energy alternatives and

opposes the development of nuclear power generally, including the proposed Comanche Peak Units 3 and 4. Public Citizen's Texas office is at 1303 San Antonio, Austin, Texas, 78701. Public Citizen has members within fifty miles of the site for the proposed Comanche Peak Units 3 and 4. Those members include Don Young who wishes to be represented by Public Citizen in this case. He resides in Weatherford, Texas. See: List of Petitioners and Young Declaration, attached.

True Cost of Nukes is a local Fort Worth, Texas, citizen organization established to educate citizens about the risks and disadvantages of nuclear power. The group opposes the expansion of the Comanche Peak Nuclear Power Plant and favors the use of energy efficiency and renewable energy instead. True Cost of Nukes has members within fifty miles of the proposed reactors. True Cost of Nukes seeks to intervene on behalf of one of its members, J. Nile Fisher, resides at in Fort Worth, Texas, within 40 miles of the Comanche Peak Nuclear Power Plant site. True Cost of Nukes can be contacted at Mr. Fischer's address and phone number. See: List of Petitioners and Fischer Declaration, attached.

An accident at the proposed nuclear power plant could result in radiological releases and environmental contamination that would adversely affect the health of Representative Lon Burnam, Nita O'Neal, Don Young, and J. Nile Fisher, and the value of their property. These parties and the organizations representing them seek to avoid or minimize those risks by ensuring that safety and environmental concerns are fully addressed in the NRC's licensing proceeding for the proposed Comanche Peak Nuclear Power Plant Units 3 & 4.

As set forth below, the Petitioners have standing, both individually and organizational/representational, to make this request.

STANDING

Pursuant to 10 CFR 2.309, a request for hearing by these petitioners must:

> Set forth with particularity the interest of the petitioner in the proceeding, how that interest may be affected by the result of the proceeding, including the reasons why the petitioner should be permitted to intervene with particular reference to the factors set forth in 10 CFR 2.309(d)(1), and the specific aspect or aspects of the subject matter of the proceeding as to which the petitioner can't and wishes to intervene.
>
> *In the Matter Pacific Gas & Electric Co.,* (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), LBP-02-23, 56 NRC 413, 426 (2002).

According to the Atomic Safety and Licensing Board (ASLB) standing requirements are described as following:

> In determining whether a petitioner has sufficient interest to intervene in a proceeding, the commission has traditionally applied judicial concepts of standing. See Metropolitan Edison Co., (Three Mile Island Nuclear Station, unit 1), CLI-83-25, 18 NRC 327, 332 (1983)(citing Portland General Electric Co.(Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610(1976). Contemporaneous judicial standard for standing require a petitioner to demonstrate that (1) . It has suffered or will suffer any distinct and palpable harm that constitutes injury-in-fact within the zone of interests arguably protected by the governing statutes (e.g. the Atomic Energy Act of 1954 (AEA), the National Environmental Policy Act of 1969 (NEPA); (2) the injury can be fairly traced to the challenged action; and (3) the injury is likely to be redressed by a favorable decision. See *Carolina Power and Light Co.*,(Shearon Harris Nuclear Power Plant), LBP-99-25, 50 NRC 25, 29 (1999). In organization that wishes to intervene in a proceeding may do so either in its own right by demonstrating harm to its organizational interests, or any representational capacity by demonstrating harm to its members. *See Hydro Resources, Inc. (2929 Coors Road, Suite 101, Albuquerque, NM 87120),* LBP-98-9, 47 NRC to 61, 271 (1998). To intervene in a representational capacity, an organization must show not only that at least one of its members would fulfill the standing requirements, but also that he or she has authorized the organization to represent his or her interests. See *Private Fuel 3 Storage*, LLC (Independent Fuel Storage Installation), LBP-98-7, *47 NRC 152, 168, aff'd on other grounds,* CLI-98-13, 48 NRC 26 (1998). *Diablo Canyon*, *supra*, 56 NRC at 426. *See Also, Southern Nuclear Operating Co.* (Vogtle Electric Generating Plant), 52-011-ESP, Board Memorandum and Order (March 12, 2007) (Ruling on Standing and Contentions) at 5-6.

The Petitioners herein have standing to participate in this proceeding as demonstrated by the declarations attached hereto. The individual Petitioners have authorized their affiliated organizations named herein to represent their interests in this proceeding. *See: Diablo Canyon*, 56 NRC at 426.

The attached declarations establish that the individual Petitioners reside within 50 miles of the proposed Comanche Peak Units 3 and 4. Accordingly, the individual Petitioners have presumptive standing because of their proximity to the proposed Comanche Peak Units 3 and 4. *Diablo Canyon*, *supra*, 56 NRC *at* 426-27, citing *Florida Power & Light Co.,* (Turkey Point Nuclear Generating Plant, Units 3 and 4), LBP-01-6, 53 NRC 138, 146, affirmed, CLI-01-17, 54 NRC 3 (2001)(petitioners who reside within 50 miles of a proposed nuclear power plant have presumptive standing in nuclear reactor construction permit and operating license cases due to an "obvious potential for off-site consequences"). Further, the declarations establish that each would suffer a distinct and palpable harm to constitute injury-in-fact within the zone of interests that are to be protected by the Atomic Energy Act, 42 USC 2011, et seq. (AEA) and the injury can be fairly traced to the challenged action and the injury is likely to be redressed by a favorable decision.

The Petitioners' objectives in this matter are to protect public health and safety, and the environment by opposing the construction and operation of any new nuclear plants, including the proposed Comanche Peak Units 3 and 4. Accordingly, the Petitioners' intent is to assure that no combined operating license (COL) is issued by the NRC unless the applicant can establish that it meets the requirements of the AEA, 42 U.S.C. 2133(b)(d), that require the public's health, safety and property will not be jeopardized by the Applicant's operation of a nuclear plant.

SUMMARY OF CONTENTIONS

1. The COLA adjudication should be stayed and COLA proceedings held in abeyance until the completion of the reactor design certification rulemaking process.

2. The Comanche Peak Environmental Report erroneously assumes that there will be high-level waste/spent nuclear fuel disposal capacity available at a federal site, presumably Yucca

Mountain, Nevada. But even if Yucca Mountain is available as a federal repository for spent nuclear fuel and high-level nuclear waste, its capacity would be reached by waste from the current generation of operating reactors. Therefore, the spent nuclear fuel and high-level waste generated by Comanche Peak Units 3 and 4 would have to be dispositioned to a subsequent repository that has been neither sited nor authorized.

3. Because no spent nuclear fuel and high-level radioactive waste repository site is now available and future availability of such site is problematic, the COLA adjudication should consider the environmental consequences and public health impacts from long-term storage of high-level waste and spent fuel on site at Comanche Peak.

4. The Comanche Peak Environmental Report assumes that there will be no release to the environment from management of spent nuclear fuel and high-level wastes. This is a false assumption that is contradicted by the Environmental Protection Agency's Final Yucca Mountain radiation release regulations and the Department of Energy findings that significant radioactivity releases from Yucca Mountain would occur over time.

5. The COLA should consider environmental impacts and public health consequences of accidents and releases related to off-site radioactive waste disposal.

6. The COLA adjudication should consider the public health impacts and environmental consequences of requiring governmental units to become the custodian of high-level waste and spent nuclear fuel at the Comanche Peak site after the operating license has lapsed and post-closure activities have been completed.

7. The Applicant's COLA is incomplete because it fails to include the requirements of 10 CFR

52.80(d) that require the applicant to submit a description and plans for implementation of the guidance strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities with the loss of large areas of the plant due to explosions and/or fires as required by 10 CFR 50.54(hh)(2).

8. The COLA is inadequate because it fails to fully analyze the radiological hazards that will occur from operation of the Comanche Peak nuclear plants based on discharge of water that contains radioactive particulates and tritium to Squaw Creek Reservoir.

9. The Applicant's calculations of radiation doses to the general public as a result of consuming radioactively contaminated fish and invertebrates are incorrect. The calculations are done using the LADTAP II model which is obsolete and systematically underestimates doses to the public.

10. Comanche Peak Units 3 and 4 will utilize MOX fuel but the COLA fails to account for the radiological and public health impacts associated with MOX fuel.

11. The COLA is inadequate because it assumes there will be an adequate supply of fresh water for purposes of plant operations. This assumption is faulty because of the failure of the Comanche Peak Environmental Report to analyze impacts of global warming on rainfall and the hydrological cycle.

12. The uranium fuel cycle has substantial greenhouse gas impacts must be considered in each phase of the uranium fuel cycle.

13. Impacts from severe radiological accident scenarios on operation of other units at the

Comanche Peak site have not been considered in the Environmental Report.

14. Dependence on foreign sources for uranium should be considered for environmental and public health consequences.

15. The COLA should consider all radiological, environmental, public health and cost impacts related to decommissioning of Comanche Peak Units 3 and 4.

16. The Decommissioning Funding Assurance described in the application is inadequate to assure sufficient funds will be available to fully decontaminate and decommission Comanche Peak Units 3 and 4. Applicant must use the prepayment method of assuring decommissioning funding.

17. The Comanche Peak Environmental Report makes unrealistic assumptions about the efficacy of the emergency evacuation model and plan.

18. The Comanche Peak Environmental Report is inadequate because it fails to make reasonable assumptions about alternatives to the proposed action of constructing and operating Comanche Peak Units 3 and 4.

19. The Comanche Peak Environmental Report fails to consider methods to prevent an aircraft attack on Comanche Peak Units 3 and 4 and the resulting environmental and public health consequences.

CONTENTIONS

1. The COLA adjudication should be stayed and COLA proceedings held in abeyance until

the completion of the reactor design certification rulemaking process.

The Petitioners herein have filed a Petition for Order to Stay Comanche Peak Nuclear Power Units 3 and 4 Combined Construction and Operating License Application Proceedings and Hold the Combined Construction and Operating License Proceedings in Abeyance Pending Completion of the US-APWR Application Rulemaking. That Petition is incorporated herein by reference.

The Atomic Energy Act (AEA) requires that the NRC issue licenses for new nuclear power plants only to applicants that demonstrate the capacity to protect health and minimize harm to life and property. Applicants must also provide the NRC with any technical information and data necessary to assure that licensed facilities are capable of protecting the health and safety of the public. 42 U.S.C. 2133(b)(2)(3). Safety standards have been promulgated by the NRC for licensing nuclear power plants and are codified at 10 CFR parts 20, 50, 51, 55, 73, 100, and 140.

The Administrative Procedure Act, 5 USC 554 et seq., (APA) the docketing standards at 10 CFR 2.101(a)(2) and 10 CFR 2.104(b) require notice of the factual issues that are subject to a COLA hearing. However, because the underlying reactor design rulemaking is not completed a proper notice consistent with these legal requirements is not possible.

Under 10 CFR Pt. 52, the NRC may either conduct an adjudication on the entire Comanche Peak Units 3 and 4 COLA, including issues related to the US-APWR design or, alternatively, complete the US-APWR design certification rulemaking prior to commencing an adjudicatory hearing on the COLA. The Part 52 regulations do not allow the NRC to carve out unresolved reactor design related issues from the scope of the COLA adjudication and refer such to a separate rulemaking for resolution subsequent to the AEA to assure that the proposed nuclear plants will not jeopardize public health and safety. The Petitioners contend that to do so would violate the NRC's statutory duty under the AEA, 42 USC 2133(c).

a. The US-APWR is a significantly different design from current operating US four-loop plants. These differences and the lack of an operating history for the US-APWR require that the COLA either be held in abeyance pending completion of the reactor design certification process or the applicant should be required to submit an amended application and make all reactor design related issues part of the COLA adjudication pursuant to an amended hearing notice.

The failure to complete the reactor design certification process is all the more important because of the differences between the US-APWR and the most closely comparable US 4-loop plants- the Standardized Nuclear Unit Power Plant System (SNUPPS). See US-APWR Design Control Document (DCD) Table 1.3-1. These comparative data indicate that the proposed US-APWR has generally greater dimensions and capacities than current US 4 loop plant counterparts. These differences may impact other operational and technical aspects of the nonreactor parts of the plant and may have radiological ramifications as well. The differences should be carefully considered and issues related thereto resolved in the subject rulemaking before proceeding with the COLA adjudication.

For example, the gross electrical output of a US-APWR is projected to be approximately 1700 MW compared with the typical US current 4 loop plant at 1186 MW. The thermal output of the US-APWR is projected to be 4451 (MWt) compared with the US current 4 loop plant of 3411 (MWt). There is a significantly larger thermal design flow for the US-APWR, 112,000 gpm, compared to 95,700 gpm for the US 4 loop plant.

The fuel assemblies the US-APWR are 14 feet long compared with 12 feet in the US 4 loop plants. And while both have a 17 X 17 fuel assembly lattice, the US-APWR has 257 fuel assemblies compared to 193 in the US current 4 loop plants. There are 53 rod cluster control assemblies in the US 4 loop plants compared to 69 in the US-APWR. Additional rod control assemblies will increase the volume of irradiated materials required for management during decommissioning even if their operational efficacy is presumed.

The internal volume of the pressurizer in a US 4 loop plant is 1800 ft.^{3}. The US-APWR internal volume is 2900 ft.^{3}. The reactor coolant pipes on the US-APWR are projected to be 31 inches in diameter. The reactor coolant pipes for the US 4 loop plants range from 27 1/2 inches to 31 inches in diameter. The US current 4 loop plant has two residual heat removal pumps, while the US-APWR will have four such pumps.

The containment structure of the US-APWR is considerably larger than its US 4 loop counterpart. The inner diameter of the US-APWR is projected to be 149 feet compared with 140 feet for the US 4 loop plant. The inner height of the US-APWR is 226.5 feet compared to 205 feet for the US 4 loop plant.

The US-APWR also has additional equipment not found on the US 4 loop plant. For example, the 4 loop plant does not use a residual heat exchanger. However, the US-APWR uses four residual heat exchangers. The US 4 loop plant uses 197 containment spray nozzles while the US-APWR is projected to have 348 such nozzles. Again, even if operational efficacy is presumed related to these components (which Petitioners submit that such a presumption is unwarranted in the absence of a design certification rule) there is additional irradiated material to deal with at the end of the plant's operation.

The high-pressure safety injection pump systems on the two designs are also significantly different and the US-APWR equipment is significantly larger. The US 4 loop plant uses two high-pressure safety injection pumps while its US-APWR counterpart uses four such pumps. However, the size of the US-APWR pump is significantly larger with a 1540 gpm capacity compared to 440 gpm capacity for the US four-loop plant. While this is significant for purposes of core coolant capacity, it also represents a considerably larger volume of irradiated materials that will need to be dealt with eventually and be the source of greater radiation exposures.

Both designs use an accumulator as a safety feature. However, the US-APWR requires 15,850 gallons of water for the accumulator compared to 6,358 gallons for the US 4 loop plant. Not only is the

increased volume of water consumption for the US-APWR significant it also represents more irradiated water that would be discharged to the Squaw Creek Reservoir.

The emergency water storage pit for the US four loop plant requires a 394,000 gallon capacity compared to a 607,640 gallon capacity for the US-APWR. Again, this is a significantly larger water requirement for the US-APWR emergency water storage pit and represents additional volumes of irradiated water that would be discharged to Squaw Creek Reservoir.

The US four loop plant relies on two diesel generators compared with the US-APWR that utilizes four gas turbine generators. While the relative merits of gas compared to diesel may be significant, in any event, the additional equipment still represents more irradiated material that will have to be dealt with and that will cause more exposures.

Another significant difference between the US-APWR and its US 4 loop counterpart is in the reactor internals. The US-APWR utilizes ring block type neutron reflectors rather than the baffle structures of current 4 loop plants. DCD, page 1.5-1. The DCD acknowledges that this is a unique reactor internal design but it was only tested at room temperature utilizing a 1/5 scale model using a simulated 12 foot core type APWR. Whether the verification methodology to determine the efficacy of the reactor vessel and internals is valid should be carefully evaluated in the context of the NRC's design certification process because this is a unique design. There should be no assumptions concerning this important component.

In fact, there appear to be problems with the neutron deflectors in a 1/5 scale model of an APWR vessel in Japan, specifically in terms of flow induced vibration. A ScienceDirect article *Hydraulic flow tests of APWR reactor internals for safety analysis,* states the following:

> The APWR, featuring many innovative technologies for safety and economic improvement, is expected to be a future standardized PWR in Japan. One of the most important design improvements is the concept of a radial neutron reflector which

> replaces the baffle structures in current PWRs. This new reflector is designed to improve the reliability of the reactor structure and the efficient use of uranium resources. On the other hand, this new design brings about safety problems relevant to the flow induced vibration of reactor internals including the neutron reflector and coolability and thermal deformation of radial reflector blocks… A vibration of the core barrel caused by the turbulent flow in the downcomer shakes the radial reflector through the water between them (Fig. 1). When the radial reflector vibrates, it may make contact with and shake the adjacent fuel bundles and could result in fretting, and possibly rupture, of the fuel pin cladding.[1]

The DCD also makes comparisons between reactor design parameters for the US-APWR and typical 12 foot and 14 foot PWRs. See DCD Table 4.1.1. The most meaningful comparison would appear to be with the 14 foot PWRs since the US-APWR also assumes a 14 foot fuel assembly. Some of the more significant differences between the US-APWR and 14 foot PWRs include the core thermal output-for the US APWR that is anticipated to be approximately 14 percent greater at 4450 MWt compared with 3853 MWt for the 14 foot PWRs.

The vessel formal design flow for the US-APWR is also larger at168.210 lbm/hr compared to 145 lbm/hr for the 14 foot PWRs.

The core barrel diameter is larger or for the US-APWR with an inside diameter of 175.8 inches and an outside diameter 181.97 inches. The 14 foot PWRs measures 148 inches for the inside diameter and 152.5 inches for the outside diameter.

The effective heat transfer area on the fuel surface is considerably greater for the US-APWR compared to the 14 foot PWRs. The US APWR has 91,360 ft.² of effective heat transfer area on the fuel surface compared to 69,700 ft.² for the 14 foot PWRs, approximately a twenty-five percent difference.

[1] Morii, Tadashi, ScienceDirect, Nuclear Engineering and Design 238 (2008) 469-481, Hydraulic flow tests of APWR reactor internals for safety analysis. www.sciencedirect.com, and www.elsevier.com/locate/nucengdes

The effective flow area for core cooling in a US-APWR is 68 ft.² compared to 51.3 ft.² for a 14 foot PWR.

These quantitative differences are significant and highlight the importance of considering carefully the characteristics of the US APWR in a design certification rulemaking process. The differences also emphasize the imprudence of proceeding with the COLA adjudication without a reactor design rule. The US-APWR does not have a track record to judge. The reactor design certification rulemaking is intended to assure that the reactor is safe. If the US-APWR does not receive a certification rule the COLA adjudication on all other issues will have been pointless, costly and a waste of resources.

The NRC should stay the Comanche Peak COLA adjudication and hold in abeyance proceedings related thereto pending completion of the US-APWR design certification rulemaking. Alternatively, the NRC should find that the Comanche Peak COLA is subject to an adjudication that includes all issues, including the US-APWR design certification application that is referenced in the Comanche Peak COLA, and publish an amended notice of hearing that incorporates this finding.

2. The Comanche Peak Environmental Report erroneously assumes that there will be high-level waste/spent nuclear fuel disposal capacity available at a federal site, presumably Yucca Mountain, Nevada. But even if Yucca Mountain is available as a federal repository for spent nuclear fuel and high-level nuclear waste, its capacity would be reached by waste from the current generation of operating reactors. Therefore, the spent nuclear fuel and high-level waste generated by Comanche Peak Units 3 and 4 would have to be dispositioned to a subsequent repository that has been neither sited nor authorized.

The Environmental Report for the Comanche Peak Units 3 and 4 asserts that there will be a federal repository available for disposition of spent nuclear fuel and other high-level irradiated waste generated by these plants. This is a fundamentally flawed assumption. The Comanche Peak

Environmental Report at Section 5.7.1.6 assumes that Yucca Mountain will be available as a federal geologic disposal repository for spent nuclear fuel and high-level nuclear waste. This assumption is not based on a sound factual basis and undermines the entire premise that the uranium fuel cycle does not have significant adverse consequences to the public and environment.

Arguably, the Applicant has relied on the NRC's Waste Confidence Decision issued in 1984 and its subsequent amendments. However, the Waste Confidence Decision is inapplicable because it only applies to reactors that are currently operating and not new reactors such as the proposed Comanche Peak Units 3 and 4. Moreover, the Waste Confidence Decision, as amended in 1999, has determined that there is a reasonable assurance that at least one repository will be available by 2025 and that sufficient repository capacity will be available within 30 years beyond the license life for a currently operating reactor. Waste Confidence Decision Review: Status, 64 Fed. Reg. 68,005, 68,006. (December 6, 1999).

The 1999 Waste Confidence Review revised the original decision that a federal geologic repository for spent fuel/high-level waste would be available by 2007-2009. It must be assumed that this revised finding applied only to reactors currently operating including those which have licenses that are renewed. The NRC has provided no indication that it has any confidence that federal repository capacity

will be established for spent fuel and other high-level radioactive waste from new reactors licensed after December, 1999.

The volume of spent nuclear fuel and other high-level radioactive wastes generated by the current generation of nuclear reactors exceeds the anticipated capacity at Yucca Mountain. The maximum amount Yucca Mountain can accept is limited to 63,000 metric tons of commercial high-level radioactive waste and spent nuclear fuel pursuant to the Nuclear Waste Policy Act, 42 U.S.C. 10134(d). Under Department of Energy policy, the first 70,000 metric tons of irradiated nuclear fuel and high-level radioactive waste to be dispositioned at Yucca Mountain will be comprised of 90% commercial nuclear waste and 10% Department of Energy waste from the nuclear weapons production complex and energy research activities and Department of Defense nuclear Navy related wastes. A limitation of 90% of 70,000 metric tons yields

a maximum capacity of commercial spent fuel and high-level waste of 63,000 metric tons that could be dispositioned at Yucca Mountain. See: Yucca Mountain Environmental Impact Statement, page A-1 and Nuclear Waste Technical Review Board (NWTRB), Disposal and Storage of Spent Nuclear Fuel: Finding a Right Balance, page 11 (March 1996).

Moreover, according to a report prepared in 2000 and by the United States Department of Energy Office of Civilian Radioactive Waste Management, as of 1998 there was over 38,000 metric tons of high-level waste from commercial reactors in the United States. The report further stated that this amount would more than double by 2035. United States Department of Energy, Civilian Radioactive Waste Management Program Plan, Revision 3,DOE/RW 0520, page 1. This projection of the volume of the spent nuclear fuel and high-level radioactive waste stream betrays the assumption in the Comanche Peak Environmental Report that assumes Yucca Mountain would be available for disposition of waste generated at Units 3 and 4. Therefore, assuming that Yucca Mountain becomes available as a federal repository at sometime in the future, spent nuclear fuel and high-level radioactive wastes generated at Comanche peak units 3 and 4 would not be eligible for disposition therein. Therefore, the spent nuclear fuel and high-level waste generated by Comanche Peak Units 3 and 4 would have to be dispositioned to a second federal repository that has neither been sited nor authorized. Reliance on such a second site is speculative and unwarranted in the context of the subject COLA. In effect, the applicant is betting on the availability of a 2nd federal repository without any reasonable assurance that such facility will ever be available.

The 1999 Waste Confidence analysis does not conclude that there is a likelihood that more than one geologic repository will be licensed. While the 1984 Nuclear Waste Confidence Decision stated that one or more repositories would be available between 2007 and 2009 this, obviously, has not occurred. The 1999 Waste Confidence Status Report assumed that at least one repository would be available by 2025. 64 Fed. Reg. at 68, 006. The reality is that there is a very little likelihood of a geologic repository will be available even by 2025.

As further support for this contention, on March 5, 2009 United States Secretary of Energy

Steven Chu stated during testimony to a United States Senate Committee that Yucca Mountain was no longer an option as a repository for spent nuclear fuel and high-level radioactive waste. See: *Chu: Yucca No Longer Option for Nuclear Waste,* Associated Press. March 5, 2009. Therefore, at least for the next four years of the current administration, Yucca Mountain will not be developed as a potential repository for spent nuclear fuel and high-level radioactive waste. This development extends the time for off-site disposition of this waste stream and casts further doubt on whether a federal repository will be available to handle the wastes from the current generation of reactors let alone wastes from a new generation of reactors such as that represented by Comanche Peak Units 3 and 4.

Accordingly, the COLA should be withdrawn and resubmitted with an analysis of how the management of spent nuclear fuel and high-level radioactive wastes generated by Comanche peak units 3 and 4 will be handled based on an assumption that a federal repository will not be available for disposition of those wastes.

In further support of this contention the expert report of Gordon Thompson Ph.D., is attached hereto. Dr. Thompson is well-qualified to analyze the material issues related to spent nuclear fuel and other high-level wastes.

The Comanche Peak Environmental Report is seriously flawed and incomplete regarding the question of future management of spent nuclear fuel and other high-level wastes. Accordingly, the Petitioners contend that the Environmental Report should be either disregarded or withdrawn by the Applicant and amended based upon the premise that a federal repository for disposition of spent nuclear fuel and high-level waste streams from Comanche Peak Units 3 and 4 will not be available.

3. Because no spent nuclear fuel and high-level radioactive waste repository site is now available and future availability of such site is problematic, the COLA adjudication should consider the environmental consequences and public health impacts from long-term storage of high-level waste and spent fuel on site at Comanche Peak.

The Comanche Peak Environmental Report at page 5.7-3 concedes that there is presently no means by which to dispose of spent nuclear fuel or high-level waste. Management of spent nuclear fuel and high-level waste on-site is limited to spent fuel pools or dry cask storage units. Alternatively, the Environmental Report speculates that for plants with inadequate wet or dry on-site storage capacity, spent fuel could to be transferred off-site to another plant that has adequate storage capacity. The COLA does not consider the long-term environmental and public health consequences of spent fuel remaining on-site at Comanche Peak indefinitely. Moreover, the Environmental Report makes no attempt to identify any other plant or facility that may have adequate capacity to deal with radioactive wastes generated by Comanche Peak Units 3 and 4.

The Environmental Report for Comanche Peak Units 3 and 4 is deficient and inadequate because it fails to analyze the environmental and public health implications that will occur as a result of the absence of a permanent disposal repository for high-level waste and spent nuclear fuel. Additionally, the NRC has failed to adequately assess the degree of confidence the public should have regarding whether the spent nuclear fuel and high-level wastes from Units 3 and 4 will ever be dispositioned in a federal geologic repository or, alternatively, whether alternative off-site disposal capacity will be available. Final Waste Confidence Decision, 49 Fed. Reg. 34, 658 (August 31, 1984).

Long term spent fuel management on-site represents risks that are not assessed in the Environmental Report. The Environmental Report infers by the absence of any discussion of long term risks, that such risks even exist. This is a glaring omission and defies both the history of efforts to solve problems related to the back end of the uranium fuel cycle and obvious risks associated with long term on-site presence of spent nuclear fuel and high-level wastes.

Dry cask storage represents a serious risk for extensive radiological harm if, for example, the storage units were attacked by motivated terrorists. The dry cask storage units represent high-value stationery targets that, if breached, could contaminate widespread areas with long-lived radionuclides.

Therefore, risks associated with on-site long term/permanent dry cask storage should be considered in the COLA.

Even if the dry cask storage units are not breached they still represent significant long-term sources of radiation. These radiation exposures should be calculated and added to the current projections for exposures to the extent that the Environmental Report understates such based on the assumption that spent fuel will eventually be moved off-site. The COLA should assume that the dry cask storage units will remain on Comanche Peak's site indefinitely and make radiation exposure projections accordingly. See also: Thompson Declaration, pp.9-13, attached.

Accordingly, the Petitioners contend that the Comanche peak Environmental Report is seriously flawed and incomplete because it fails to consider the public health and environmental consequences of long-term/permanent spent fuel and high-level waste management at Comanche Peak. Therefore, the Comanche Peak Environmental Report should either be disregarded or withdrawn by the Applicant and amended to account for the public health and environmental consequences of long-term management on the Comanche Peak site of spent nuclear fuel and other high-level wastes.

4. The Comanche Peak Environmental Report assumes that there will be no release to the environment from management of spent nuclear fuel and high-level wastes. This is a false assumption that is contradicted by the Environmental Protection Agency's Final Yucca Mountain radiation release regulations and the Department of Energy findings that significant radioactivity releases from Yucca Mountain would occur over time.

The Comanche Peak Environmental Report at Section 5.7.1.6 also assumes that there would be no significant releases of radioactivity to the environment related to management of radioactive waste. This statement is flatly contradicted by the United States Department of Energy which recognizes that

significant radioactivity releases from a Yucca Mountain repository would occur over time. See US Department of Energy, Office of Civilian Radioactive Waste Management, “NWTRB Repository Panel Meeting: Postclosure Defense and Design Selection Process", January 25, 1999.

Additionally, the US Environmental Protection Agency's final Yucca Mountain radiation release regulations are premised on the assumption that there will be significant releases of radiation from a federal repository. In fact, the EPA regulations recognize that such releases extend to 1 million years after wastes would be placed in the repository. The EPA's analysis indicates that such releases will continue for many hundreds of thousands of years after waste is presumably dispositioned at the Yucca Mountain repository. EPA's proposed dose limit fromtime of burial to 10,000 years after burial is 15 mrem per year from all pathways of exposure. EPA's proposed dose limit for the timeframe 10,000 to 1,000,000 years after burial is one hundred millirems per year from all pathways of exposure. This indicates that the radiation protection standards for 10,000 years after the disposition of waste a Yucca Mountain would allow a 6 to 7 times higher radioactivity doses to persons downstream than the standards imposed for the years prior to 10,000 years after burial. The analyses by the Department of Energy and the EPA contradict the assertion made by the Comanche Peak Environmental Report at section 5.7.1.6 that there will be no significant releases of radiation related to the disposition of spent nuclear fuel and high-level waste.

Accordingly, the Comanche Peak Environmental Report should be disregarded or withdrawn and resubmitted with an analysis of the environmental and public health impacts of releases of radiation as projected by the EPA and DOE.

5. The COLA should consider environmental impacts and public health consequences of accidents and releases related to off-site radioactive waste disposal.

The Comanche Peak Environmental Report assumes that there will be no significant radioactive releases to the environment related to off-site disposal of the radioactive waste streams that originate at Units 3 and 4. Comanche Peak Environmental Report, p. 5.7-8. The COLA should not adopt this

assumption. The COLA should fully consider the public health and environment consequences of major releases to the environment of radioactive materials as a result of off-site disposal activities. The off-site releases could originate from on-site processing, transportation accidents, off-site processing, and long-term releases from the disposal site because of either improper or inadequate waste site characterization, natural events such as earthquakes, and intentional or unintentional releases. Irrespective of the cause of the releases such should be considered for the impacts to the environment and public health consequences.

6. The COLA adjudication should consider the public health impacts and environmental consequences of requiring governmental units to become the custodian of high-level waste and spent nuclear fuel at the Comanche Peak site after the operating license has lapsed and post-closure activities have been completed.

Based on the assumption that a federal repository will not be available for spent fuel management, the COLA should consider the environmental and public health consequences of either of the State of Texas or the United States government becoming the *de facto* custodians of spent fuel and high level wastes at the Comanche Peak site after the operating license has lapsed and post-closure activities of the licensee have been completed. If, at the end of the post-closure responsibilities of the licensee, spent fuel remains on site it will have to be managed and secured for the indefinite future. The only institutional capacity for long-term spent fuel management is a unit or units of government. To the extent that units of government are responsible for managing on-site spent fuel, calculations for employee exposures and public exposures should be included in the COLA. Additionally, other public health environmental consequences and reasonably associated with indefinite governmental management of spent fuel on site should also be considered in the COLA.

The Comanche Peak Environmental Report should also consider specifically what governmental entity will actually have legal ownership of the spent fuel and high-level waste after the operating license has lapsed and post-closure activities have ceased. Will the ownership of the spent fuel default to some

unit of government? If so, what costs can be reasonably anticipated by the *de facto* custodian/owner of spent fuel? Do the costs anticipated have environmental and public health consequences? The Comanche Peak Environmental Report should resolve these questions.

Accordingly, the Petitioners contend that the Comanche Peak Environmental Report should either be disregarded or, alternatively, withdrawn and amended to resolve the questions related to long-term custody and ownership of spent nuclear fuel and high-level waste that remains on-site indefinitely. Additionally, a proper Comanche Peak Environmental Report should quantify the costs related to the long-term custody in ownership of spent nuclear fuel and high-level radioactive waste that remains on site after the termination of an operational license and post-closure activities.

7. The Applicant's COLA is incomplete because it fails to include the requirements of 10 CFR 52.80(d) that require the applicant to submit a description and plans for implementation of the guidance strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities with the loss of large areas of the plant due to explosions and/or fires as required by 10 CFR 50.54(hh)(2).

On October 3, 2007, the NRC published a proposed rule that applies to combined operating license applicants that requires an evaluation of the effects of an impact of a large commercial aircraft on nuclear power plants. 72 Fed. Reg. 56287, Consideration of Aircraft Impacts for New Nuclear Power Reactor Designs; Proposed Rule.

In a letter dated July 18, 2008 to the NRC chairman, the Advisory Committee on Reactor Safeguards (ACRS) stated that the proposed rule would add requirements for a COLA to identify and incorporate design features and functional capabilities that avoid or mitigate, as practical, and with reduced reliance on operator actions, the ramifications of an aircraft impact on core cooling capability, containment integrity, spent fuel cooling capability, and spent fuel pool integrity. The ACRS viewed this as an additional requirement that would apply to COL applications already filed with the NRC. The ACRS letter also noted that the NRC staff had performed aircraft impact assessments for four new reactor

designs (AP1000, ABWR, ESBWR, and EPR) and that an analysis of the US-APWR was proceeding. The ACRS correspondence also noted that the impact of a large commercial aircraft on a nuclear reactor should be considered a beyond-design-basis-event.

On March 27, 2009 the NRC amended its security regulations and added requirements pertaining to COLAs as related to 10 CFR 50.54(hh) that concern mitigative strategies and response procedures for potential or actual aircraft attacks. Specifically, 10 CFR 52.80 has been amended by adding subsection (d) to require combined license applicants to submit a detailed description and plans for implementation of the guidance and strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under the circumstances that result with the large loss of the areas of the plant due to explosions or fire. The requirements under 10 C.F.R. 50.54(hh) are mitigative strategies similar to operational programs that are required as a part of a COLA and implemented prior to plant operation. 74 Fed. Reg. 13926, 14004.

The new requirements in 10 C.F.R. 50.54(hh) concern procedures to deal with certain events that are the cause of large fires and explosions that effect a substantial portion of the nuclear plant and its functioning components but are not limited or directly linked to an aircraft impact. 73 Fed. Reg. 19443 (April 10, 2008). In announcing the new requirements related to the requirement for COL applicants to include detailed mitigative strategies that address losses of large areas of the plant and the related losses of plant equipment from a variety of causes including aircraft impacts and beyond design basis security events, The NRC stated that the description of the program should be a part of the combined license application. 74 Fed. Reg. 13926, 13945.

Chapter 7 of the Comanche Peak Environmental Report addresses the environmental impacts of postulated accidents involving radioactive materials. Among other things, design basis accidents and mitigation alternatives are addressed. However, absent from the discussions in Chapter 7 of the Environmental Report is a detailed analysis of the means by which to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities when there is a large loss of the plant due to explosions or fires. Accordingly, the Environmental Report is deficient under the new requirements

imposed by 10 CFR 52.80(d) and 50.54(hh).

Additionally, the US-APWR Design Control Document (DCD) Probabilistic a Risk Assessment And Severe Accident Evaluation, Section 19.1, is representative of the failure to take account of fires that result in a large functional loss of significant plant components due to fires and explosions. In fact, the DCD assumes that fires in existing plants are generally extinguished by automatic suppression systems or manual action before the fires grow and cause the functional damage of safety components. DCD, p. 19.1-85. Additionally, the DCD Probabilistic Risk Assessment and Severe Accident Evaluation generally understates the effects of a major fire. For example, the DCD simulation assumes that the temperature of a compartment during a fire does not reach the level required to damage thermoplastic cable. In this regard, the DCD concludes "that the fire influence due to a transient combustible fire will be negligible. Considering requirements of 10 CFR 52.80 and 10 CFR 50.54(hh) this is a seriously flawed assumption.

Further, the DCD does not consider a multiple compartment fire scenario inside the containment vessel. DCD, page 19.1-77. The failure to develop a containment vessel fire scenario analysis that assumes that there will be multiple compartments that will be involved in a major fire cannot be reconciled with the requirements of the amended 10 CFR 52.80(d) and 10 CFR 50.54(hh).

These are serious and fundamental omissions even without the requirements now imposed by 10 CFR 52.80. That the DCD would assume a fire in the containment vessel would be limited to a single compartment and not reach the temperature to damage thermoplastic cable is unreasonable. It is also wholly unreasonable that the fires would be extinguished by automatic suppression systems or manually. And under the amended regulation at 10 CFR 52.80 it is impermissible. The amended regulation requires the applicant to assume a that there will be a large loss of the plant functional components that would affect core cooling, the containment vessel and spent fuel pool cooling capabilities. Neither the COLA nor DCD address these scenarios.

The regulatory requirements of 10 CFR 52.80(d) make large parts of the risk assessment in the Comanche Peak Environmental Report at Chapter 7 obsolete. The absence of a plan to deal with a major fire/explosion that is postulated at a nuclear plant because the Applicant assumes such an event is a low

probability is now replaced by the specific regulatory requirement to plan for catastrophic fires/explosions that would cause the loss of major critical functional components in the plant.

Relying on local firefighting capacity for a major fire at Comanche Peak Units 3 and 4 is unreasonable. Both Hood County and Somervell County are served by volunteer fire departments. Comanche Peak Environmental Report, sections 2.5.2 .7 .2 .1, 2.5.2.7.2.2.Therefore, in the event of a major fire at Comanche Peak that would cause a loss of large areas of the plant reliance on local volunteer fire departments to render assistance and suppression assistance would not be feasible.

Fire hazards represent about half of the risk of a nuclear reactor meltdown.[2] In other words, the chance of a reactor meltdown caused by a fire roughly equals the chances of meltdown from all other causes combined.[3] The NRC has identified the "need to protect the safety of redundant electrical cables in nuclear power plants that were needed to achieve and maintain safe shutdown of the nuclear reactor in the event of a fire."[4] A report by the Office of the Inspector General, U.S. Nuclear Regulatory Commission found that the Hemyc fire barrier installed in the existing Comanche Peak reactors failed to meet National Institute of Standards and Technology testing for the one hour endurance period, lasting only 23 minutes.[5] Sandia labs confirmed the finding. The Thermo-Lag barrier also used at the existing reactors has been found defective as well.

Fire retardant deficiencies at existing plants, combined with the fact that there is only a volunteer fire department, increase risks at the Comanche Peak site, and the COLA fails to analyze the potential

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[2] Jack Grobe, Associate Director for Engineering and Safety Systems, Nuclear Regulatory Commission, Transcript of Nuclear Regulatory Commission Briefing on Fire Protection Issues, July 17, 2008, .page 58, line 22 to page 59, line 1. Transcript available at http://www.nrc.gov/reading-rm/doc-collections/commission/tr/2008/20080717.pdf

[3] United States House of Representatives Committee on Interior and Insular Affairs Subcommittee on Oversight & Investigations, "Calculation of Reactor Accident Consequences (CRAC2) for U.S. Nuclear Power Plants (Health Effects and Costs) Conditional on an "SST1" Release," November 1, 1982. As cited in an Oct. 29, 2008 letter to Chairman David Price, Subcommittee on Homeland Security, from the Directors of Beyond Nuclear, Union of Concerned Scientists Nuclear Safety Project and North Carolina Waste Awareness and Reduction Network.

[4] January, 2008 United States Nuclear Regulatory Commission, Office of the Inspector General Special Inquiry, "NRC's Oversight of Hemyc Fire Barriers" Page 2

[5] January, 2008 United States Nuclear Regulatory Commission, Office of the Inspector General Special Inquiry, "NRC's Oversight of Hemyc Fire Barriers" Page 5

impact of a fire that could spread between reactor units, magnifying impacts and radiation risks. This oversight should be remedied.

The failure to describe and plan for the implementation of strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities when there is a loss of a large area of the plant due to a fire or explosion needs to be remedied in the COLA. Therefore, the Petitioners contend that the Environmental Report and DCD should be disregarded because neither meet the requirements of 10 CFR 52.80(d) and 10 CFR 50.54(hh).

8. The COLA is inadequate because it fails to fully analyze the radiological hazards that will occur from operation of the Comanche Peak nuclear plants based on discharge of water that contains radioactive particulates and tritium to Squaw Creek Reservoir.

Squaw Creek Reservoir (SCR) is the discharge water body for cooling water from plant operations. The Comanche Peak Environmental Report candidly admits that the SCR is a radiological problem that has no solution.

> Remediation and reclamation of SCR is the only radiological impact. Outside of the power plant itself that is being cumulatively impacted by each passing year of operational activities. This impact is not just from the proposed project, it is a cumulative impact from the continued operations of CPNPP Units 1 and 2 combined with the operations of the proposed CPNPP units 3 and 4. Radioactive particulate matter that is permitted and released to SCR in liquid effluents is deposited onto the settlement layer of the reservoir bottom, particularly in the area of the circulating water discharge release point. Unlike the tritium being diluted and removed by rainfall and lake water makeup, the particulates have no removal mechanism other than radioactive decay. Comanche Peak Environmental Report, page 5.11-3.

In effect, SCR is and will continue to be an unlicensed radioactive waste disposal facility for Comanche Peak Nuclear Plant operations. Discharging radioactive particulate into SCR hardly meets the definition of "disposal" under 42 USC 2021b that requires "permanent isolation" of radioactive materials.

Notwithstanding this definitional requirement, and as conceded in the Environmental Report, there is no plan to do anything to remove or remediate the radioactive contamination that is systematically being placed in the SCR. Rather, the applicant evidently will rely solely on the mechanism of radioactive decay for its "removal".

The Comanche Peak Environmental Report assumes that the dam that forms the SCR will remain intact and structurally reliable for indefinite duration of time. There is no discussion in the Environmental Report of any contingencies for a dam failure or the environmental and public health consequences when radioactive laden sediment would be transported downstream as a result. The dam that forms the SCR is a man-made structure that presumably has a useful life. However, the Comanche Peak Environmental Report, while acknowledging the radiological impact of the deposition of radioactive particulate matter in the sediment, makes no attempt to analyze the environmental or public health impacts of this circumstance. Likewise, there is no discussion of the downstream mortality and morbidity impacts that would be expected in the event of a failure of the dam and a transport of radioactive sediments downstream. The assumption that the dam will remain intact indefinitely and/or longer than the hazardous life of the radioactive particulates in the settlement of SCR is unreasonable.

Additionally, the Comanche Peak Environmental Report assumes that the SCR will always have sufficient inflow of water to keep the sediment intact at the bottom of the reservoir. However, during periods of protracted drought and the anticipated effects of global warming require a contingency that assumes dewatering of SCR. In the event that SCR eventually becomes a dry lakebed the sediment will turn to dust and the radioactive particles will be subject to airborne transport. Given the prevailing winds, these radioactive particulates would eventually be transported to, among other places, the Dallas-Fort Worth metroplex and cause human exposures with attendant mortality and morbidity consequences. Again, the Comanche Peak Environmental Report has no discussion about such a contingency. Instead, the Environmental Report assumes that there will always be sufficient water to stabilize the sediment in SCR and prevent it from becoming airborne. This is a dubious assumption particularly in Texas that frequently experiences protracted droughts. For example, as recently March 6, 2009, Governor Rick

Perry requested the U.S. Secretary of Agriculture to declare all 254 counties in Texas a disaster area because of severe drought.

Further, according to the Final Safety Analysis Report (FSAR) it is anticipated that when all four units at Comanche Peak are operating tritium levels may be exceeded. FSAR, p. 11.2-2. The applicant proposes various means to dilute and divert some of the tritium laden water from SCR. However, the Applicant fails to provide any plan for regular monitoring SCR to determine when tritium levels are exceeded while all four units are operating.

Moreover, the Applicant assumes that there will be adequate inflow to SCR to provide a dilution factor that will be sufficient to avoid excessive tritium levels. FSAR p.11.2-2. The Applicant also relies on adequate rainfall to provide a dilution source. The Applicant fails to make any allowance for protracted drought or the effects of global warming that are anticipated to cause an intensification of protracted drought periods.

SCR is a problem for the applicant and instead of addressing it in an affirmative manner the Applicant is willing to simply ignore it and rely on natural forces to take care of its radioactive waste problem. As mentioned above, SCR is essentially an unlicensed radioactive waste dump. The Applicant is gambling that the dam will be stable for the duration of the time that the radionuclides in the sediment remain hazardous. The applicant is also gambling that there will always be adequate water to prevent the SCR from becoming a dry lakebed and allowing airborne radionuclides to be transported by wind. These are unacceptable risks given the radiological hazards that are attendant thereto.

Moreover, the COLA fails to analyze the potential for radioactive groundwater contamination from plant operations. See Declaration of George Rice, attached.

Accordingly, the Petitioners contend that the Environmental Report and FSAR should be either disregarded in this adjudication or withdrawn by the applicant and amended to address the radiological hazards that are anticipated to occur as a result of using SCR as a radioactive waste disposal facility.

9. The Applicant's calculations of radiation doses to the general public as a result of consuming radioactively contaminated fish and invertebrates are incorrect. The calculations are done using the LADTAP II model which is obsolete and systematically underestimates doses to the public.

The Comanche Peak Environmental Report uses the LADTAP II to calculate estimated radiation doses caused by radionuclide releases as liquid effluents from light water nuclear reactors during routine operations. Comanche Peak Environmental Report, p.5.4-2. However, as analyzed by Arjun Makhijani,Ph.D., the LADTAP II program is woefully out of date and grossly underestimates radiation exposures. Makhijani Declaration, attached. Therefore, the data in table 5.4-8 are unreliable. Based on those data, the applicant asserts that it is unlikely that any individual would receive the doses of the magnitude calculated in table 5.4-8. In fact, because LADTAP II so grossly underestimates the actual maximum individual does from liquid effluents the actual exposures would be significantly higher.

One comparison of the results of the LADTAP II model with an updated version, LADTAP XL, shows that LADTAP II underestimates doses from commercial fish by almost eight times; it underestimates doses from saltwater invertebrates by over 700 times. While the specifics of this study relate to the Savannah River facility, the systematic underestimation of doses is inherent in the mode since the doses are calculated for the same source term for each case and each radionuclide. Further, the dose conversion factors used even in the more recent model are for adults. The factors for children are considerably higher and under many circumstances, doses to children from the same environmental contamination are higher than those for adults even when differences in consumption are taken into account. The FSAR needs to be completely redone using the most recent validated approaches for estimating dose and estimating dose to the most exposed members of the public.

Accordingly, The Petitioners contend that the Environmental Report that asserts the estimated maximum individual dose limits from liquid effluents shown in Table 5.4-8 should be either disregarded in this adjudication or withdrawn by the Applicant and amended using LADTAP XL as the analytical tool to determine individual doses from liquid effluents. Moreover or any other exposure data that rely on the

LADTAP II conclusions should likewise be rejected and the applicant should withdraw the subject data and utilize LADTAP XL in order to derive more precise calculations of anticipated exposure limits.

10. Comanche Peak Units 3 and 4 will utilize MOX fuel but the COLA fails to account for the radiological and public health impacts associated with MOX fuel.

M0X fuel fabrication has remote handling requirements not associated with other uranium fabrication facilities. MOX fuel includes plutonium, a strong alpha emitter, which has a higher specific radioactivity than uranium. The plutonium, if inhaled, presents a well-recognized health hazard. A M0X fuel fabrication facility, while subject to more stringent requirements than a uranium fuel fabrication facility still involves handling increased amounts of plutonium. The environmental and public health impacts associated with increased use and handling of plutonium should be a part of the COLA. However, the Comanche Peak Environmental Report fails to make any analysis of the mortality and morbidity consequences of increased use of plutonium to manufacturer MOX fuel. Additionally, the Comanche Peak Environmental Report fails to account for increased radiation exposures from the additional plutonium content in MOX fuel. The Applicant's Environmental Report assumes that there are no adverse consequences from the use of MOX fuel . Comanche Peak Environmental Report, page 5.7-4. However, this cannot be reconciled with the increased levels of the plutonium that are an inevitable part of MOX fuel.

The COLA should include analyses of environmental impacts associated with routine operations of a M0X fuel fabrication facility as well as accident scenarios that could involve such a facility. Additionally the COLA should consider the impacts to reactors that result from use of MOX fuel. According to the Nuclear Information and Resource Service MOX fuel attacks commercial nuclear reactors where they are the weakest due to high neutron flux levels, the reactor pressure vessel can become embrittled and fail during accident conditions. A nuclear accident involving MOX fuel could cause a meltdown more serious than Three Mile Island or Chernobyl because the levels of radiation inside a reactor using MOX are even higher than in reactors that do not use MOX fuel.

These increased risks and the related increased worker and terrorism risks and potential resulting economic impacts from utilization of MOX fuel should be included in the COLA. The environmental and public health impacts associated with increased use and handling of plutonium should be a part of the COLA. The Petitioners contend that the radiological hazards associated with MOX fuel must be carefully considered both in the fabrication, utilization and back end of the fuel cycle. The Applicant's Environmental Report wholly neglects these impacts amd accordingly, Petitioners contend the MOX fuel part of the Environmental Report should be either disregarded in this adjudication or withdrawn by the Applicant and resubmitted after a full analyses has been prepared that considers the full range of environmental and public health impacts relate to MOX fuel.

11. The COLA is inadequate because it assumes there will be an adequate supply of fresh water for purposes of plant operations. This assumption is faulty because of the failure of the Comanche Peak Environmental Report to analyze impacts of global warming on rainfall and the hydrological cycle.

Global warming and its impacts on rainfall are better understood now and must be considered in the context of determining whether adequate water resources will be available for nuclear plant operations. It is clear that nuclear plants require enormous amounts of water for operations. In fact, the Comanche Peak Environmental Report states that 30,000 gallons of water are needed for each reactor every minute, and shows in Figure 2.3-30 that approximately two-thirds of this water would evaporate. It is also clear, based on the Comanche Peak Environmental Report assumes that there will be adequate water resources for purposes of plant operations associated with Comanche Peak Units 3 and 4. However, impacts from global warming will include protracted drought that may seriously compromise water resources required for plant operations. The compromised water resources should be considered from a quantitative perspective and a temperature sensitive analysis since plant operations are dependent on a narrow band of water temperatures.

Additionally, Comanche Peak Units 1 and 2 already utilize Squaw Creek Reservoir as a discharge water body that receives radionuclides including tritium and radioactive particulates. Dr. Arjun Makhijani, president of the Institute for Energy and Environmental Research has noted the relatively high levels of tritium at this site compared to other nuclear reactors, which should be examined and compared to other sites in the COLA and additional anticipated radiological cumulative impacts should be analyzed.

The Environmental Report indicates that Squaw Creek Reservoir will be the receiving body of water for various discharges from Comanche Peak Units 3 and 4. The Environmental Report concedes that radioactive particulate matter released to Squaw Creek Reservoir in liquid effluents will be deposited into the sediment layer of the reservoir bottom and remain there indefinitely. Comanche Peak Environmental Report, p.5.11-3. In the event of a protracted drought, and inadequate flow into Squaw Creek Reservoir the sediment layer could become exposed and, if adequately deliquified, would become dust and subject to transport by wind with anticipated public health and environmental consequences. Therefore, it is crucial that the COLA include a complete radiological profile of the existing sediment in Squaw Creek Reservoir and an analysis of the cumulative radiological impacts expected from operations on it from Units 3 and 4. This analysis is required in order to fully gauge the environmental and public health impacts from the use of the Squaw Creek Reservoir as a discharge point for radioactive effluent from Comanche Peak Units 3 and 4.

Part of this analysis should be an assumption that the Squaw Creek Reservoir dam will at some point fail and release the sediment that is burdened by radioactive particulates. Downstream impacts on water quality, use, and impacts on mortality and morbidity must be a part of the COLA. The Squaw Creek Reservoir dam should also be analyzed for structural integrity. Protracted drought, seismic activity, or other natural events have the potential to weaken the dam and if a failure of the structure occurs radioactive sediment could be carried downstream with significant potential for environmental and public health impacts.

Additionally, given the very long term nature of the radiological hazard represented by the accumulation of radioactive particulates discharged during plant operations, it should be assumed that the

reservoir will require, at a minimum, management and perimeter security for a time that extends far beyond the term of operation license.

Questions surrounding post-license ownership of and responsibility for Squaw Creek Reservoir should be addressed and resolved in the COLA. Accordingly, the COLA should fully consider the structural reliability of the Squaw Creek Reservoir dam and analyze adverse environmental and public health consequences that could occur as a result of its failure.

The COLA should also include an analysis of pollution impacts downstream from water contaminated by chemical treatment such as biocides, algaecides, pH adjustors, corrosion inhibitor and silt dispersant chemicals injected at the reactor site as well as chlorine, salts and non-radioactive effluent. The differential impact of treatment of 100 percent of the water versus the lesser amount of treatment proposed by the applicant should be considered.

The COLA should also consider whether regional waterways will be impacted in terms of water quantity and quality by the use of vast quantities of water for Units 3 and 4, including Lake Granbury, the Brazos River, the Paluxy River, Whitney Lake, a popular fishing lake, and popular recreational areas such as Possum Kingdom. According to the Texas Parks and Wildlife Department web site, the drinking water at Possum Kingdom State Park is currently non-potable due to a high salt content and visitors must bring their own water for consumption. The potential to increase salt content of waterways in the region by further drawdown of water levels, including impacts to the local aquifer and drinking wells should be examined thoroughly in the COLA. Coastal environmental impacts are known to result from alterations of freshwater flow into the Gulf of Mexico, affecting lagoons, estuaries and wetlands, altering salinity patterns, nutrients, dissolved oxygen levels and therefore impacting productivity of coastal plant and animal populations. The biological impacts must be considered in the COLA including the possibility of eutrophication, productivity and sediment impacts and potential contamination. See Report of Joseph F. Trungale, P.E., attached.

The most prevalent global warming impacts come from increased heat and humidity in the atmosphere.At a nuclear power plant two-thirds of the heat energy gets emitted into the air and heated

water vapor is released into the air. Thus nuclear reactors themselves are global warming agents in terms of heat, including water vapor from steam and heat radiating from cooling towers and ponds. The COLA should contain an analysis of the production of heat energy emitted into the atmosphere and water by Comanche Peak Units 3 and 4 in terms of contributions to global warming.

12. The uranium fuel cycle has substantial greenhouse gas impacts must be considered in each phase of the uranium fuel cycle.

The uranium fuel cycle is a contributor to greenhouse gases. The COLA should carefully consider the greenhouse gas impacts that are unavoidable as a result of mining, processing, fuel fabrication, transportation, fuel burn up, waste streams management, decommissioning and long-term site maintenance that are an integral part of the uranium fuel cycle. While the proponents of expanded nuclear power posit that there will be fewer greenhouse gases produced as a result of the operations of Comanche Peak units 3 and 4 compared to fossil fueled plants, there are inevitable greenhouse gas emissions associated with each phase of the fuel cycle. These conditions need to be carefully considered to determine the full impact of Comanche Peak Units 3 and 4.

The decision in *Massachusetts V. EPA*, 549 U.S 497 (2007) requires that carbon dioxide be considered a pollutant under the Clean Air Act. Carbon dioxide emissions are inevitable in, *inter alia*, the production of fuel for nuclear plants. Likewise, carbon dioxide emissions can be anticipated during construction and routine operations of a nuclear plant and are foreseeable as a plant is decommissioned. See Eg. Comanche Peak Environmental Report, p. 10.2-4. Any benefits derived by operation of a nuclear plant in terms of avoidance of greenhouse gases should be considered in light of greenhouse gas production as it occurs in various stages in the fuel cycle. Petitioners contend the COLA should include such an analysis.

13. Impacts from severe radiological accident scenarios on operation of other units at the Comanche Peak site have not been considered in the Environmental Report.

Comanche Peak Units 3 and 4 are proposed to be co-located with Comanche Peak Units 1 and 2. Comanche Peak Environmental Report, p. 1.1-2. This has potentially significant implications in the event that a major radiological accident or release occurs at any one of the four operating units. The Comanche Peak Environmental Report at Chapter 7 deals with severe accidents but has no discussion or analysis of the impact of a severe radiological accident at any one of the four units as it would impact the other remaining three units. There is no discussion or analysis of how operations at undamaged units would be continued in the event that the entire site becomes seriously contaminated. Moreover, there is no discussion of how the other units would be protected in the event of a major fire or explosion at one of the other units.

Petitioners contend that the location of the Comanche Peak Units 3 and 4 with Units 1and 2 should be considered in light of various accident and radiological release scenarios. The Comanche Peak Environmental Report implies by the absence of any discussion or analysis this regard that a serious accident or radiological release at one plant would have no adverse affects on the operations of the remaining units. Petitioners contend that this is a serious analytical flaw in the Environmental Report.

Accordingly, the Petitioners contend that the failure to consider disruptions in operations due to an accident or radiological release from one unit and the collateral impacts on undamaged units renders the discussion of serious accidents in chapter 7 of the Environmental Report seriously flawed. The Environmental Report should be withdrawn by the applicant and a discussion and analysis of this circumstance be completed before the adjudication of the COLA.

14. Dependence on foreign sources for uranium should be considered for environmental and public health consequences.

The Comanche Peak Environmental Report recognizes that the overall reduction of demand for uranium fuel and the elimination of legal restrictions on importation of foreign uranium most domestic uranium mines and mills have been closed. The economic conditions pertaining to the uranium market favor utilization of foreign uranium rather than uranium mined in the United States. The Comanche Peak

Environmental Report suggests that these changes have made uranium mining and milling and enrichment more “environmentally friendly". Comanche Peak Environmental Report, p. 5.7-4. However, there is no analysis in the environmental report of environmental or public health impacts of mining and milling uranium in foreign countries.

Dependence on foreign sources for uranium should also be considered in the COLA as a potentially harmful environmental and public health consequence. Recent experience with dependence on foreign sources for oil has heightened awareness that supplies may be interrupted or artificially inflated in costs. The economic impacts from such dependence can be far ranging and adverse. Accordingly, such impacts should be considered in the COLA.

The COLA should also consider the vulnerability of the uranium fuel cycle to disruption by terrorists or others and the radiological, environmental and public health consequences related thereto. This is particularly important in the context of reliance on foreign sources for uranium. Long supply lines make access to foreign sources of uranium especially vulnerable to attack by terrorists or others. Therefore, the COLA should consider the environmental and public health impacts of disruptions of uranium from foreign suppliers both in terms of public health and environmental impacts as well as determining impacts from interrupted fuel supplies and the disruption of electric generating capacity as a result.

15. The COLA should consider all radiological, environmental and public health impacts related to decommissioning of Comanche Peak Units 3 and 4.

The Comanche Peak Environmental Report acknowledges that it does not provide anything more than an initial projection of expected future environmental impacts related to decommissioning. The Environmental Report concedes that even the methods of decommissioning are unknown. Environmental Report, p. 5.11-3. The details related to environmental impacts expected from decommissioning are put off to a future unspecified date. *Id.*

The Comanche Peak Environmental Report assumes impacts related to decommissioning are

either negligible or require, at most, a site specific assessment. However, the Environmental Report assumes that site-specific and off-site land use activities and aquatic ecology activities beyond the operational area, terristerial ecology activities beyond the operational area, threatened and endangered species, environmental justice, and cultural historic resource impacts beyond the operational area are expected to be negligible. However, there is no analysis in the environmental report whatsoever of any of these impacts either from a public health or environmental consequence standpoint. Environmental Report, p. 5.9-1.

Accordingly, the COLA should carefully consider decommissioning impacts including the likelihood that a decommissioned plant will be disassembled and transported to a site that will be the recipient of highly irradiated materials. Additionally, the COLA should consider contingent possibilities that off-site removal of a decommissioned nuclear plant will not be a practicable alternative. In that scenario, the environmental consequences and public health impacts of the *in situ*, long-term radioactive decay of Comanche Peak units 3 and 4 should be considered in the COLA.

Decommissioning has its own waste stream issues, as well. The COLA should consider the radiological and public health impacts from the various decommissioning waste streams and environmental justice and other implications of disposition of highly irradiated materials off-site. Additionally, the COLA should consider whether off-site disposition of decommissioning materials is even feasible. The decommissioning of nuclear plants is an evolving technology and the land use, environmental and public health implications of decommissioning activities are not well understood. The COLA should fully analyze the probability that there will be significant resistance to transportation and disposition of highly irradiated decommissioned plant materials to a remote site.

Moreover, in promotional materials published by the reactor manufacture Mitsubishi, it is acknowledged that technology for decommissioning is still in the process of being developed. Mitsubishi Nuclear Plants, p. 27. Hence, there is currently inadequate technology to carry out decommissioning. The assumption appears to be that adequate technologies will be developed in the future. Environmental Report, p. 5.11-3. However, the COLA should consider the scenario that adequate technologies for

decommissioning are not developed in the future or proved to be inadequate for the task. The COLA should take into account contingencies that would require long-term secure storage of Comanche Peak Units 3 and 4 because either decommissioning technology is inadequate or there is no remote site available to disposition wastes from decommissioning activities. This analysis would require a consideration of radiological impacts related to the long-term delay in decommissioning and public health and environmental consequences related thereto.

16. The Decommissioning Funding Assurance described in the application is inadequate to assure sufficient funds will be available to fully decontaminate and decommission Comanche Peak Units 3 and 4. Applicant must use the prepayment method of assuring decommissioning funding.

10 CFR 50.75 provides for most commercial nuclear reactors three ways of assuring that adequate funds will be available to decontaminate and decommission a reactor when its operating life is finished. These are a) prepayment; b) external sinking fund; and c) surety or other form of guarantee. Applicants have chosen b) as their method. The applicant states in its application, Part 1: Administrative and Financial Information Section 1.4, that it "will provide decommissioning funding assurance for its obligations for decommissioning using the external sinking fund method." Yet Luminant admits that it "**does not technically qualify to use the sinking fund method** as its exclusive mechanism under the provisions of 10 CFR 50.75(e)(1)(ii)(A)&(B)."

Even though Luminant does not qualify for the sinking fund method as its exclusive mechanism, it contends that "exclusive reliance of this mechanism should be acceptable, because House Bill 1386 passed by the Texas Legislature on May 28, 2007 and signed into law by the Governor on June 15, 2007…provides that ratepayers would be obligated to fund the total cost of decommissioning in the event that Luminant fails to periodically set aside funds as planned…Thus if Luminant does not provide

periodic funding from its own revenues, Texas Law would provide for a mechanism for funding decommissioning that does meet the requirements of 10CFR 50.75(e)(1)(ii)(A)."

The applicant uses circular reasoning to try and appear that their decommissioning funds are covered, when in fact neither the requirements of federal or state law have been met. If Luminant does not comply with federal law, they are not complying with Texas law. The applicant, however, misuses Texas law in order to appear in compliance with federal law.

The applicant depends on HB 1386[6], passed by the Texas Legislature in 2007 to guarantee its funding and rely exclusively on the external sinking fund mechanism. This reliance is dubious in many respects. First, Luminant does not take into account the possibility that the Texas Legislature could repeal the Act passed in 2007, with a simple majority vote in the future.

Even though Luminant contends that Texas Law will provide the mechanism for funding decommissioning of Luminant does not provide periodic funding, the Act in Section (B)(d) states that the must provide funding on an annual basis.

> A power generation company that owns a nuclear generating unit shall fund out of operating revenues on an annual basis: (1) the costs associated with funding the decommissioning obligations for the nuclear generating unit; or (2) the power generation company's portion of the decommissioning costs for the nuclear generating unit in proportion to the company's ownership interest in the nuclear generating unit if the unit is owned by more than one person.

Moreover, the applicant misconstrues and simplifies the purpose of HB 1386, which requires that the applicant comply with federal regulations first.

Section (B)(f) of the Act states:

> The terms of the trust must be consistent with trust terms and conditions the federal Nuclear Regulatory Commission requires for providing financial assurance for decommissioning.

[6] Available at http://www.legis.state.tx.us/tlodocs/80R/billtext/pdf/HB01386F.pdf

Section (B)(g) states:

> The commission by order shall establish for a nuclear generating unit the amount of annual decommissioning funding necessary to meet the decommissioning obligations for the nuclear generating unit over the unit's operating license period as established by the federal Nuclear Regulatory Commission or over a shorter period of time at the election of the power generation company.

Section (B)(j) states:

> The company, as funds administrator, shall invest the trust funds in accordance with guidelines established by commission rule and consistent with the federal Nuclear Regulatory Commission guidelines so that the decommissioning funds, plus the amounts earned from investment of the funds, will be available at the time of decommissioning.

According to the Act Luminant relies on for its proposed decommissioning funding method, section (B)(k)(1) states that rules shall be adopted to ensure that:

> A power generation company remits sufficient funds to a nuclear decommissioning trust on an annual basis, including projected earnings to approximate the amount remaining to be accumulated to cover the cost of decommissioning a nuclear generating unit at the end of its operating license period divided by the remaining years of the license and in accordance with applicable state and federal laws and regulations or over a shorter period of time at the election of the power generation company.

Under its own admission in the COLA, Luminant does not currently qualify to use the sinking fund method, and is relying on Texas Law for its qualification. The Act relied upon clearly requires that the power generation company first comply with federal regulations and additional guidelines in the Act for funding the decommissioning costs for the units, *before* it can rely on the ratepayer to fund decommissioning. This circular reasoning is unsound. Luminant must qualify to use the sinking fund method in its own right first. Since this is not the case, petitioners argue that the applicant must use the prepayment method of assuring decommissioning funding.

We do not know the anticipated costs for decommissioning of Comanche Peak Units 3 and 4, as the applicant's decommissioning report and calculations for anticipated decommissioning costs has been withheld from the public for proprietary reasons.

As discussed in Dr. ArjunMakhijani's attached declaration, Energy Future Holding Company, the parent company of Luminant, is burdened with $39 billion in debt and a poor credit rating. Due to a combination of the current economic crisis and poor financial position, Luminant fails the parent guarantee test for option c) surety or other form of guarantee, and must use a different means of assuring decommissioning financing.

As Luminant does not qualify for the sinking fund method nor the guarantee method, in order to assure adequate decommissioning funds, the applicant must make a prepayment of the full amount of anticipated decommissioning costs in 2009 dollars. As further support for this contention please see the attached report, entitled "Nuclear Costs and Alternatives," produced by Arjun Makhijani, Ph.D. and the Sustainable Energy and Economic Development (SEED) Coalition.

17. The Comanche Peak Environmental Report makes unrealistic assumptions about the efficacy of the emergency evacuation model and plan.

The Comanche Peak emergency evacuation plan assumes that 100% of the affected population from radiological emergency would be evacuated. Comanche Peak Environmental Report, p. 7.2-3. The model is further compromised because it does not adequately account for evacuees that are transported over 25 miles from the Comanche Peak site because they "disappear" from the emergency evacuation analysis. *Id.* Accordingly, the results of the dose and dollar risk assessments for severe accident analysis are understated in the Comanche Peak Environmental Report at Table 7.2-5. The COLA should not assume that 100% of the affected population will be evacuated. Rejecting this assumption requires that the data in Table 7.2-5 be adjusted to account for increased dose risk, dollar risk, early fatalities, latent fatalities and water ingestion dose risk. Moreover, there should be an accounting for evacuees and the

doses to which they have been exposed even if those evacuees are moved 25 miles beyond the Comanche Peak site.

18. The Comanche Peak Environmental Report is inadequate because it fails to make reasonable assumptions about alternatives to the proposed action of constructing and operating Comanche Peak Units 3 and 4.

The Comanche Peak Environmental Report generally understates the efficacy of alternative sources of electric power generation. Environmental Report, p. 9.2-1, et seq. The COLA should evaluate alternative sources of generating capacity based on the current data available regarding capacity factors, technological advances that overcome intermittency objections regarding wind and solar power, and historical operational experience.

The Comanche Peak Environmental Report assumes that renewable fuels such as wind and solar cannot provide adequate baseload generating capacity. However, recent advances in technology such as compressed air energy storage and improved battery storage capacity cast doubt on some of the Environmental Report's assumptions concerning problems with intermittency. Additionally, events on the ground are overtaking the assumptions about renewable fuels made in the Environmental Report. Expansions of renewable energy capacity occur daily. In contrast, nuclear powered capacity, as a percentage of total generating capacity, is shrinking. The COLA should evaluate the competing technologies in light of current energy policy that places a greater emphasis on renewable fuels than on previous energy policy that favored nuclear power and fossil fuels.

The technique of analysis used in the Comanche Peak Environmental Report to determine the relative advantages of renewable fuels compared to nuclear power is inherently flawed. For example, the Environmental Report essentially eliminates conservation/energy efficiency as an alternative that should be considered. p. 9.2-3. The Environmental Report excuses the consideration of conservation/energy efficiency because Comanche Peak Units 3 and 4 will be merchant power plants; and as such, conservation and demand side management programs to encourage consumers to modify levels of

electricity usage "are not within the capability or responsibility of the wholesale baseload merchant generator." Id. The environmental report attempts to rationalize omission of conservation/energy efficiency measures by citing to NRC policy that has determined that conservation measures are not reasonable alternatives to merchant power plants that sell wholesale power. Id. However, the COLA should not be controlled by the same artificial constraint. The Comanche Peak nuclear power plant expansion proposal should be viewed in the larger context of other means by which to influence electricity usage. Adopting the Environmental Report's conclusions essentially allows merchant power plants to ignore the proven effectiveness of conservation and energy efficiency programs that have been tested numerous time by various utilities as a means to curtail demand.

The Comanche Peak Environmental Report is also flawed to the extent that it fails to make a realistic comparison between the environmental impacts and public health consequences of nuclear power compared to renewable fuels. For example, there should be a side-by-side comparison of mortality and morbidity consequences of nuclear power compared to renewable fuels in order to accurately determine the consequences of each. Of course, the comparisons would indicate that renewable fuels do not cause increased mortality and morbidity while nuclear fuel clearly does.

Additionally, there should be a side-by-side comparison of nuclear fuels and renewable fuels related to the effects of catastrophic accidents. Such a side-by-side comparison would indicate that a catastrophic loss of, for example, a wind generating capacity would be negligible compared to a major loss of cooling accident at Comanche Peak units 3 and 4. The COLA should engage such a comparative analysis in order to fairly determine the environmental consequences and public health impacts of each.

The Comanche Peak Environmental Report also fails to carefully compare the greenhouse gas effects expected from each of the alternative technologies. This analysis is crucial because of the relationship between greenhouse gases and global warming and because it is expected that the use of fossil fuels to support the uranium fuel cycle will become more expensive over time. This circumstance will be aggravated by the anticipated use of foreign produced uranium that will have a greater greenhouse

gas impact because of, among other reasons, a longer transportation supply line. In contrast, renewable fuel technologies are expanding manufacturing capacities domestically. Hence, the COLA should project and anticipated greenhouse gas emissions related to the competing technologies.

As further support for this contention please see the attached report, entitled "Nuclear Costs and Alternatives," produced by Arjun Makhijani, Ph.D. and the Sustainable Energy and Economic Development (SEED) Coalition.

19. The Comanche Peak Environmental Report fails to consider methods to prevent an aircraft attack on Comanche Peak Units 3 and 4 and the resulting environmental and public health consequences.

The reality of a terrorist attack on a nuclear power plant cannot be discounted. The policy decision of the NRC that terrorist attacks on a nuclear power plant are highly speculative and therefore not amenable to analysis under NEPA has been rejected by the 9th Circuit Court of Appeals in *San Luis Obpispo Mothers for Peace v. NRC*, 449 F. 3rd 1016,1030-31 (9th Cir. 2006), cert. den. 127 S.Ct. 1124 (2007). The Ninth Circuit opinion criticized the NRC's policy position and said that it was inconsistent with the government's own efforts to combat terrorist attacks on nuclear facilities. *Id.* Accordingly, the COLA for Comanche Peak Units 3 and 4 should include a detailed analysis of the potential threats represented by terrorist attacks. The COLA should consider a variety of attack scenarios, breach of perimeter security and forced entry into the control room and other critical areas of the plants and the full range consequential impacts of radiological releases caused thereby. 10 CFR 73.1.

Recently, in the case of *In the Matter of Pacific Gas and Electric Co*., NRC, CLI-08-26, 2008 WL 4683677 (Oct.23, 2008) the NRC rejected a proposal to include aircraft attack scenarios in 10 CFR 73.1. The Petitioners urge the Commission to reconsider this decision in the context of this proceeding. The Comanche Peak site is in close proximity (about 58 miles) to Dallas-Fort Worth International Airport. The frequency of flights in the area increases the probability that an aircraft attack or accident might occur on the Comanche Peak site.

CONCLUSION

Petitioners request that their Petition for Intervention be granted, that their request for an oral hearing be granted and the above contentions be admitted.

Respectfully submitted,

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