Duke Energy Carolinas, LLC
Response to Department of Energy
Federal Loan Guarantee Application

PART I and II– SECTION B
Project Description
I-B-1 and II-B-I

The data contained in pages B-3, B-5, B-6, B-13, B-40, B-41, B-42, B-43, B-51, and B-52 of this document or electronic file which hereby forms a part of the Application have been submitted in confidence and contain trade secrets or proprietary information, and such data shall be used or disclosed only for evaluation purposes; provided that, if this applicant is issued a loan guarantee under Title XVII of the Energy Policy Act of 2005 as a result of or in connection with the submission of this Application, DOE shall have the right to use or disclose the data herein, other than such data that have been properly reasserted as being trade secret or proprietary in the loan guarantee agreement. This restriction does not limit the Government's right to use or disclose data obtained without restriction from any source, including the applicant.

WLS/I/B/1/Executive Summary

B.I.1 Executive Summary: Provide a description of the nature and scope of the proposed project including the purpose, design features, capacity and estimated total capital cost. Provide a top level description of the site location, facility and construction plans. Include your target date to close a loan guarantee, to commence site preparation, for first fuel date and for grid connection. Describe any potential legal or regulatory risks to the project. Describe status of NRC license application and any submissions to NRC.

Response:

Scope and Purpose:

The purpose of Lee Nuclear Station is to provide needed baseload generation capacity in a way that allows Duke Energy Carolinas, LLC ("Duke Energy Carolinas") to reduce its carbon footprint. Through its integrated resource planning process, Duke Energy Carolinas has identified the need for significant capacity additions to meet the current and future needs of the customers within the Duke Energy Carolinas service territory. Duke Energy Carolinas is under a statutory obligation in both North and South Carolina to fulfill its customers' energy needs in a reliable and economic manner. Duke Energy Carolinas believes that Lee Nuclear Station will enable it to support the projected substantial load growth in the most reasonable and appropriate manner.

Design Features:

The WEC Advanced Passive pressurized water reactor ("PWR") AP1000 is a 1117 MWe nuclear reactor based closely on the AP600 design. The AP1000 is a "new or significantly improved technology" that builds and improves upon the established technology of major components used in current Westinghouse Electronic Company ("WEC") designed plants with proven, reliable operating experience over the past 50 years. The AP1000 design includes advanced passive safety features and extensive plant simplifications to enhance the safety, construction, operation, and maintenance of the plant.

Enhancements and Simplification

The AP1000 design includes advanced passive safety features and extensive plant simplifications to enhance the safety, construction, operation, and maintenance of the plant. Enhancements to the following components will improve the overall efficiency of the plant:

- Steam generators,
- Digital instrumentation and controls,
- Fuel assemblies,
- Pressurizers,
- Reactor vessels

In addition to improving existing design features, simplification was a significant objective for the AP1000 design. This simplification approach has resulted in a plant that is expected to be easier and less expensive to build, operate and maintain. Examples of important simplifications in the AP1000 design include:

- 50% fewer safety-related valves
- 80% less safety-related piping
- 85% less control cable
- 35% fewer pumps

• 45% less seismic building volume.

Safety Systems

The safety systems of the AP1000 apply passive protection, which is designed to yield such a high degree of safety that there is no need for nuclear safety related diesel generators which in today's reactors provide the equipment with power in the case of a loss of electrical supply. In the event of an accident the AP1000 requires little operator intervention, reducing the opportunity for human error and other failures. The safety systems in the AP1000 are passive, relying on the forces of nature (e.g., gravity and natural recirculation) rather than active systems such as pumps. The Passive Core Cooling System ("PCCS") is the AP1000's passive analogue to the Emergency Core Cooling System in currently operating reactors. The PCCS is passive because none of the systems are reliant on AC power and the actuation for the safety systems is automatic. The valves required for alignment are usually fail-safe and are powered by energy stored in batteries, springs, or compressed gas.

Risk Informed Design Features

A Probabilistic Risk Assessment was performed in support of this advanced design which enables a minimization of risks. As a result, the overall safety of the plant will be an order of magnitude safer than today's extremely safe operating nuclear power plants.

Capacity:

Each AP1000 unit has a net anticipated generation capacity of 1,117 MW. The projected annual capacity factor of the Lee Nuclear Station is expected to exceed 90% based upon estimates from WEC studies and based on current Duke Energy Carolinas nuclear fleet performance. It is important to note that the AP1000, while new technology, builds on earlier ~~while new relies on~~ proven technology, incorporating decades of operating experience, and thus incurs no significant technology risk. Additionally, the initial Lee Nuclear Station operating staff will include experienced operators from nearly identical technology. These key factors (using proven technology, incorporating decades of operating experiences and employing experienced operators) are expected to be a key to achieving high capacity factors from the outset of operation.

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Total Capital Cost:

Based on current cost figures [redacted] and based on its own internal estimates of [redacted] estimates the total project cost (excluding escalation and finance charges) to be [redacted] in 2008 dollars. More detailed cost information is provided in response to WLS/I/B/12.

Site Location

Lee Nuclear Station Units 1 and 2 will be located in the eastern portion of Cherokee County in north central South Carolina. The proposed site, owned by Duke Energy Carolinas, is approximately 35 miles southwest of Charlotte, North Carolina, approximately 25 miles northeast of Spartanburg, South Carolina, and approximately 7.5 miles southeast of Gaffney, South Carolina. Further information about the site is provided in response WLS/I/B/7.

Facilities

Lee Nuclear Station will include all typical AP1000 power block structures including:

- Nuclear Island (includes Containment, Shield and Auxiliary buildings)
- Turbine building
- Annex building
- Diesel generator building
- Radwaste building

In addition to the AP1000 power block structures, additional buildings planned at the Lee Nuclear Station site include a Visitors Center, Maintenance Building, Administration Building, Warehouses, and Training Building. All of these structures along with other ancillary structures are shown on **Appendix 2 [File name: 11 Appendix 2 WLS/I/B/1.pdf],** Lee Nuclear Station Site Layout Plan. Other structures to be constructed include a 500kv switchyard, a 230kv switchyard, and three mechanical draft condenser circulating water cooling towers per unit. Alterations will also need to be made to existing make-up water and hold-up ponds currently located on site. Additional details on planned facilities are included in the Construction Plan in response WLS/III/C/2/1a`.

Construction Plans:

Duke Energy Carolinas expects to sign ~~is currently negotiating~~ the Engineering Procurement Construction ("EPC") Contract with a consortium of Westinghouse Electric Company and Shaw Group Inc. ("WEC/Shaw") ~~and expects to complete the negotiations by year end 2008~~before submitting a CPCN and Baseload Review to the Public Service Commission of South Carolina. Plans are to deploy to the site in early 2012 as shown on the table of target dates and begin implementation of the site development and construction activities defined in the Construction Execution Plan ("CEP") summarized in response WLS/III/C/12~~/a~~. Because recent developments in the market for EPC services could have a significant positive impact on project economics for the Lee Nuclear Station, Duke Energy Carolinas is utilizing this cushion of time to its benefit in negotiations with WEC/Shaw. The CEP is a Lee Nuclear Station site specific document being developed in accordance with ~~the constructor's,~~ Shaw's, Nuclear Construction and Startup Procedure ("NCSP") 2-2 "Construction Execution Plan." The CEP is a living document that will continue to evolve as plans are refined and lessons learned are incorporated. The CEP establishes the WEC/Shaw construction philosophy and planned approach such that work execution will be completed in accordance with the requirements of project contract documents and quality requirements.

The Lee Nuclear Station construction scope includes site development, installation of construction facilities, constructing two AP1000 Standard Plants (Unit 1 and Unit 2), installation of all site-specific systems and structures, and erection of site permanent support buildings at the site.

The first 24 months of construction, referred to as month -24 through month -1, are identified as Site Development and focus on development of the site, completion of major earthwork, installation of utilities, installation of mechanically stabilized earth ("MSE") walls, installation of construction facilities, installation of underground piping and ductbanks for site-specific systems, commencement of assembly of major modules and preassemblies on-site, and preparation for placement of the Nuclear Island basemat.

The Lee Nuclear Station CEP also defines site-specific scope and defines processes for planning and for constructability reviews that are currently in progress. Site-specific work is divided into four categories: Temporary Buildings, Permanent Buildings and Structures, Site-specific Yard, and Site-specific Systems.

Modularization, which has been used successfully in nuclear construction projects overseas, is a key feature of the CEP. Prefabrication, preassembly, and modularization are construction techniques that are being used extensively in the standard plant. The AP1000 has 274 modules and over 100 equipment assemblies. On-site (but out of the hole) fabrication will be extensive.

The latest construction techniques and construction management tools, developed since the time of construction of the current generation of operating nuclear plants, are also being employed. A key to successful construction will be a Site Information Management System discussed in WLS/III/C/1~~/a~~, implementing the most current technology available. This integrated system will implement those processes, technologies, practices, and principles and support successful project delivery.

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Target Dates:

The Lee Nuclear Station development plan target timeframes are shown below. Our Integrated Resource Planning process continues to support the Company's effort to preserve ~~identify the need for the new baseload generation output of~~ the proposed Lee Nuclear Station as an option to serve customers' needs in the 2018 timeframe. Target dates below represent current direction for key milestones related to placing Unit 1 of the Lee Nuclear Station in commercial operation in 2018 and Unit 2 in commercial operation in 2019.

[redacted] Agree to EPC terms with WEC/Shaw consortium and make initial Long Lead Material reservation payments

[redacted] Apply for Certificate of Environmental Compatibility and Public Convenience and Necessity ("CPCN") and Baseload Review with the Public Service Commission of South Carolina

[redacted] Apply for Need Determination and Cost Estimate Review with North Carolina Utilities Commission

[redacted] Receive CPCN and Baseload Review Order from the Public Service Commission of South Carolina

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[redacted] Receive Need Determination and Cost Estimate/Schedule Approval from North Carolina Utilities Commission

[redacted] Receive NRC Final Environmental Impact Statement ("EIS")

[redacted] Request approval from the Federal Energy Regulatory Commission ("FERC") of the purchase power agreements ("PPAs") between Newco and Duke Energy Carolinas

[redacted] Receive NRC Final Safety Evaluation report with no Open Items and commence ASLB COL Hearings on any admitted late-filed contentions

[redacted] Receive PPA Order from FERC

[redacted] Close on Loan Guarantee

[redacted] Receive COL and deploy to site

[redacted] Complete Construction of Unit 1 and complete Unit 1 Initial Fuel Load

[redacted] Commence Unit 1 Commercial Operation

[redacted] Complete Construction of Unit 2 and complete Unit 2 Initial Fuel Load

[redacted] Commence Unit 2 Commercial Operation

Project Structure:
The Lee Nuclear Station is intended to be owned by a yet-to-be-formed special purpose entity expected at this time to be wholly-owned, directly or indirectly, by Duke Energy Carolinas ("Newco"). After formation of Newco, the EPC Contract will be assigned to Newco, with Duke Energy Carolinas providing some form of guarantee for Newco's obligations thereunder.] Newco will enter into power purchase and sale agreements with Duke Energy Carolinas (one agreement for each unit of the Lee Nuclear Station, which agreements will be virtually identical) under which Duke Energy Carolinas will be obligated to purchase 100% of the capacity, energy and other products from Newco (the "PPAs"). Duke Energy Carolinas ultimately may choose to have other load serving entities or others which may be non-load serving become equity owners in Newco. In such event, it likely would be the case that those other load serving entities would have "mirror" PPAs with Newco in proportion to their equity interests in Newco. The current structure, however, is based upon the assumption that Duke Energy Carolinas will be the 100% off-taker from the Lee Nuclear Station. The PPAs will provide for the long-term sale by Newco and purchase by Duke Energy Carolinas of all of the capacity, energy, ancillary services and other energy products produced by the Lee Nuclear Station, with pricing generally tracking the capital and operating costs incurred by Newco for the Lee Nuclear Station.

Under the proposed ownership structure, at the appropriate time the COL for the Lee Nuclear Station will be transferred to Newco, which will be deemed the "owner" under the license, while Duke Energy Carolinas will remain on the license as the "operator." Newco will enter into a Project Development and Operation and Maintenance Agreement with Duke Energy Carolinas, pursuant to which Duke Energy Carolinas will operate and maintain the Lee Nuclear Station.

Under this arrangement, Newco will be liable for decommissioning and will be responsible for maintenance of the Decommissioning Trust Fund.

Duke Energy Carolinas presently anticipates that Newco will fund the construction of the Lee Nuclear Station by borrowing from the Federal Financing Bank ("FFB") 80% of eligible costs with repayments to be made over a 30 year term. The balance of plant costs will be funded with sponsor equity from Duke Energy Carolinas and possibly, as discussed above, other owners. Duke Energy Carolinas' investment in the project will be assigned to Newco when it is created, which will be on or prior to funding under the DOE guarantee. Subsequent to Newco's formation, Duke Energy Carolinas will make capital contributions or subordinated loans in respect of its equity commitment. Duke Energy Carolinas plans to work with state regulatory agencies and policymakers to ensure that appropriate regulatory frameworks are in place to address the unique aspects of this financing plan.

Duke Energy Carolinas' application assumes that part of the state regulatory arrangements will include a provision for recovery of construction work in progress ("CWIP") financing costs. This will enable the project to service its debt obligations and pay a dividend to the equity owner(s) during the construction period and will further lower the installed cost of the project (and associated revenue requirement during the operating phase) by eliminating capitalization of interest and reducing AFUDC. South Carolina law has a mechanism for the recovery of such costs outside of a rate case, while existing North Carolina law allows potential recovery to be initiated and updated through periodic general rates cases. As contemplated, Duke Energy Carolinas will act as a "Receivable Servicer" under a separate Receivable Servicing Agreement to segregate the applicable portion of revenues received from customers designed to cover Newco's CWIP financing costs and remit these funds to a trustee acting on behalf of the project lenders. These funds will be used to pay interest on the debt financing used for construction, while remitting the balance periodically to the equity owner(s) after fully funding all required reserves. Upon commercial operation of each Unit, this arrangement will cease as the PPA for that Unit commences, ensuring that the project has sufficient revenues to cover its operating costs and debt service obligations and to fund standard project-finance reserve accounts at the required levels, with any surplus paid to the equity owner(s) on or after each debt service payment date during the operational period.

Taken together, the proposed business plan and structure of the project provide a firm basis for concluding that there is a reasonable prospect that the applicant will be able to repay the guaranteed portion of the DOE-guaranteed obligation (including interest) from project revenue according to the terms proposed herein. While the Lee Nuclear Station is not anticipated to be rate-based in the traditional sense due to the legal separation of the project and its assets from the business and assets of Duke Energy Carolinas, it will have many of the advantages of a traditional rate-based project, as briefly noted below.

First, Duke Energy Carolinas' 2008 Integrated Resource Plan filed with the North Carolina Utilities Commission and the Public Service Commission of South Carolina and attached to this Application as Appendix 16 continues to support the Company's efforts to preserve the proposed Lee Nuclear Station as an option to serve customers' needs in the 2018 timeframe. Second, Duke Energy Carolinas has taken a number of steps, which are outlined in the section below entitled "Project Execution," that will help to assure that the design and construction of the Lee Nuclear Station will proceed with as little delay and related cost overruns as is possible. Third,

once construction is complete, the long-term PPAs to be entered into between Duke Energy Carolinas and Newco for 100% of the output of the facility at a price that is tied to the capital and operating costs incurred by Newco should ensure that Newco will have the financial resources necessary at all times to operate and discharge its financial obligations. Fourth, the fact that the Lee Nuclear Station will be operated by Duke Energy Carolinas, one of the preeminent nuclear facility owners and operators in the United States, with a proven track record, will help to assure that the Lee Nuclear Station will be operated in a manner consistent with the exemplary operational philosophy, values, programs, culture and processes in place within the existing Duke Energy Carolinas nuclear fleet. Finally, Duke Energy Carolinas has already begun to work with state regulatory agencies and policymakers in both North Carolina and South Carolina to effectuate the ownership and ratemaking treatment contemplated for the Lee Nuclear Station in order to assure recovery of the costs of constructing and operating the facility.

Legal, Regulatory and other Key Risks

Legal Risks

NRC Adjudicatory Process

There is some degree of legal risk, common to any combined license application, associated with the NRC adjudicatory process. This risk results from the fact that the Atomic Safety and Licensing Board ("ASLB") has the authority to condition or deny issuance of the COL. With respect to the Lee Nuclear Station COL, on April 28, 2008, the NRC published a Notice of Opportunity for Hearing related to the application in the Federal Register (73 Fed. Reg. 22,978 (April 28, 2008)). A petition to intervene was filed by the Blue Ridge Environmental Defense League ("BREDL") on June 27, 2008. The petition proposed ten contentions for hearing that focused on a number of different topics, including several environmental concerns. Duke Energy Carolinas and the NRC filed responses to this petition on July 22, 2008, opposing admission of all ten contentions. On September 3, 2008, the ASLB held a pre-hearing conference in Gaffney, South Carolina to hear oral argument on a select few contentions. The ASLB issued an order on September 22, 2008, concluding that BREDL failed to submit an admissible contention as required by 10 C.F.R § 2.309(a). Consequently, BREDL's request for an evidentiary hearing was denied. BREDL ~~has~~ had until October 2, 2008, to file an appeal of this decision with the NRC Commission, but at this point, there is no contested hearing for the Lee Nuclear Station. A small ongoing risk of an admitted late-filed contention exists, and under current regulations, a mandatory hearing will occur in any event. However as indicated above, these risks are common to all combined license applications, and Duke Energy Carolinas believes it is well-positioned to successfully defend its application in the NRC adjudicatory process.

Possible Federal and State Regulatory Hearings

Duke Energy Carolinas will be seeking federal approval from the Federal Energy Regulatory Commission ("FERC") and state regulatory approvals from the Public Service Commission of South Carolina ("PSCSC") and the North Carolina Utilities Commission ("NCUC") related to the Lee Nuclear Station. These federal and state regulatory proceedings involve public notice and participation and allow interested parties the opportunity to intervene in the proceedings.

Prior to commencing to construct the Lee Nuclear Station, Duke Energy Carolinas must apply for and receive a Certificate of Environmental Compatibility and Public Convenience and Necessity ("CPCN") from the PSCSC pursuant to S.C. Code Ann. §58-33-10 *et. seq*. Duke Energy Carolinas plans to file a "combined application" pursuant to S.C. Code Ann. §58-33-210

et. seq, which combines a CPCN application with a base load review application. The CPCN would authorize the construction and operation of the Lee Nuclear Station, and the base load review order would establish that if the Lee Nuclear Station is constructed in accordance with an approved construction schedule, approved capital cost estimates, and approved projections of in-service expenses, the plant is considered to be used and useful for utility purposes such that its capital costs are prudent utility costs and are properly included in rates. Duke Energy Carolinas currently anticipates filing such a combined application by the end of the first quarter of ~~2009~~2010. The PSCSC combined application provides for public notice and participation by the public and interested parties. Duke Energy Carolinas anticipates that there could be challenges to Duke Energy Carolinas' combined application from certain anti-nuclear intervenors in any forthcoming PSCSC proceeding.

Additionally, Duke Energy Carolinas plans to file an application with the NCUC pursuant to N.C. Gen. Stat. §62-110.6 for a determination of need for an out-of-state generating plant for the Lee Nuclear Station. Duke Energy Carolinas anticipates that there could be challenges to Duke Energy Carolinas' NCUC application from certain anti-nuclear intervenors.

Finally, Duke Energy Carolinas and Newco must make a filing with FERC pursuant to Federal Power Act ("FPA") § 205 to obtain approval of the rates, terms and conditions for the wholesale sales of energy from Newco to Duke Energy Carolinas under the PPA. Duke Energy Carolinas anticipates that there could be challenges to the filing from certain intervenors.

Although there are risks associated with the approval of any utility application in the federal and state regulatory process, and Duke Energy Carolinas cannot anticipate specific challenges that may be raised in the future proceedings related to the Lee Nuclear Station, Duke Energy Carolinas is confident that it will meet its burden of proof when it files for the federal and state regulatory approvals for the Lee Nuclear Station.

Regulatory Risks

Design Certification Document Revision

Consistent with the approach for all other members of the AP1000 Design-Centered Work Group ("CWG"), Duke Energy Carolinas elected to incorporate by reference into the Lee Nuclear Station COL application, Revision 16 to the AP1000 Design Control Document (DCD), rather than the NRC-approved DCD Revision 15. This was a strategic decision by the DCWG reflecting the fact that, at the time of submittal of the Lee Nuclear Station COL application, the certified design (based on DCD Revision 15) had been amended by several dozen technical reports, which were under review by the NRC. DCD Revision 16 incorporated the results of those technical reports, thus minimizing regulatory risk by precluding the need to incorporate the numerous technical reports separately and providing for a more efficient review. The NRC staff agreed that this approach was preferable.

Subsequent to submittal of the COL application, additional technical reports have been prepared and submitted to the NRC for review. In consultation with the NRC staff, WEC has elected to update their design certification amendment with the submittal of DCD Revision 17. As with the previous revision, Duke Energy Carolinas expects to amend the Lee COL application in the future to incorporate Revision 17.

Although there is some risk of delay associated with these revisions of the AP1000 certified design due to the fact that no COL incorporating the revised AP1000 design can be issued until the revisions have been approved through the rulemaking process, there are also significant benefits to be gained. These benefits include more standardization across the AP1000 fleet which will minimize construction and operation risk, decreased risk in litigation since design changes in these revisions will be resolved through rulemaking instead of individual COL hearings, and less resources spent by individual COL applicants to develop plant specific design changes. Duke Energy Carolinas believes that these benefits greatly outweigh the minimal risk of delay in receiving the COL.

Licensing Certainty and Implementation of 10 CFR Part 52

One regulatory risk applicable to every COL applicant is the implementation of the NRC's new licensing framework. The COL applications currently under review are the first to be reviewed and approved under the NRC's "one-step licensing process" in 10 CFR Part 52.

Today's 104 U.S. operating nuclear power units were licensed using 10 CFR Part 50. Under the Part 50 regulations, the NRC initially issued a construction permit ("CP") based on a preliminary design. While design completion and construction were concurrently underway, an application for an operating license ("OL") was submitted to the NRC for review. An opportunity for a hearing existed prior to issuance of both the CP and the OL. This two-step process resulted in situations where safety issues (i.e., compliance with safety standards) were not fully resolved until plant construction was essentially complete.

In 1974, Congress passed the Energy Reorganization Act which, among other things, required the NRC to provide a "long-term plan for projects for the development of new or improved safety systems for nuclear power plants." In response, the NRC published 10 CFR Part 52. Part 52 provides for the issuance of early site permits ("ESP"), standard design certifications ("DC") and COLs for nuclear power reactors. The NRC's authority to issue Part 52 was challenged, albeit unsuccessfully, when it was initially issued. Subsequently, the Energy Policy Act of 1992 provided explicit and expanded statutory authority for the licensing concepts set forth in Part 52. The Lee Nuclear Station application utilizes two of these concepts, a certified design and a combined operating license. These concepts, associated processes and their benefits are discussed below.

A certified design is a reactor design that has been reviewed and approved by the NRC through a rulemaking process. Issues that have been addressed in the rulemaking are barred from subsequent technical review and cannot be raised as contentions in any site specific licensing proceeding. The AP1000 design was certified using the 10 CFR Part 52 process.

A combined operating license grants the holder both a construction permit and an operating license. The COL application is reviewed by the NRC staff and is supported by formal and informal interaction with the applicant. There is an opportunity for an informal hearing associated with a COL application. Once any hearing is complete and the NRC staff has finished its review, a COL can be issued authorizing the applicant to construct and operate the facility. There is an opportunity for a second hearing as the date for fuel load and initial plant operation approaches. However, the only issues to be resolved at this stage are whether the "as-built" plant meets a number of relatively straightforward inspection, testing, and analysis acceptance criteria ("ITAAC"). This hearing, if it occurs, is narrowly focused, and the Commission itself will

review contentions to determine admissibility. In addition, if the Commission determines there will be reasonable assurance of adequate protection of the public health and safety if the plant is allowed to operate, the Commission can allow interim operation while the ITAAC hearing is ongoing. While a challenge to such decision is possible, the federal courts have shown reluctance to stay or enjoin NRC licensing actions, even when remanding issues to the agency for further consideration.

While implementation of portions of Part 52 has not yet been tested, the rule itself has been analyzed by the industry for potential ambiguities and vulnerabilities. In addition, the NRC has also developed Regulatory Guides, which provide detailed guidance to companies on how to comply with various sections of the rule. There are 275 Regulatory Guides associated with the Part 52 rule, as well as a Standard Review Plan, which sets out the procedures and practices the NRC staff will follow in reviewing applications for ESPs or COLs. In addition, the NRC staff is organized into Design-Centered Review Groups, each focused on one of the new reactor designs. All license applications for specific reactor designs will be managed by the same NRC review team. This mirrors the industry's Design-Centered Working Groups, which ensure consistency and standardization in design, licensing and construction. In addition, all applications for licenses to build a specific reactor will be identical – virtually word for word – except for site-specific variations. This advance work on the rule and the infrastructure for implementation provides a high degree of confidence that the Part 52 process is workable and indicates the NRC staff and the industry share a common understanding of how to comply with its terms and conditions.

Other Key Risks

Design Certainty

One of the factors that historically caused complication and construction delays for the first nuclear units was that the plant detailed design was being completed while the plant was being constructed. Duke Energy Carolinas is actively working to mitigate this risk by consciously sequencing mobilization to the site *after* the detailed design has been completed. A Commercial Operation Date ("COD") of third quarter 2018 for Lee Nuclear Station requires mobilization to the site in early 2012. The AP1000 detailed design is scheduled to be completed by mid-2011 and the COL is scheduled to be approved as early as November 2011. This schedule allows the design to be completed prior to commencing significant site construction activities at the Lee site.

Additionally, several utilities are aggressively moving forward on plans to construct AP1000 facilities in the 2016-2017 timeframe. By planning for a 2018 COD, Duke Energy Carolinas can implement lessons learned from the other utilities' implementation of the design and can incorporate any changes that are identified during construction of these other projects prior in a proactive manner. Duke Energy Carolinas will also benefit from the further development of the supply chain and human capital required for plant construction by those other utilities. Duke Energy Carolinas anticipates that the construction force used at the Lee site will have direct experience at one of the other AP1000 sites, thereby mitigating the impact of many "first of a kind" problems experienced during construction.

Assurance of Investment Recovery

A key risk management strategy for Duke Energy Carolinas is to take early, proactive steps to ensure that the costs of developing nuclear as an option for its customers, as well as the ultimate

costs associated with building and operating the nuclear plant, are assured of recovery. Such cost recovery is critical for minimizing risk associated with a project of this size.

In 2007, the legislatures in North Carolina and South Carolina passed statutes providing for Nuclear Project Development investment protection. Project Development Applications seek state utility commission concurrence that investing in the development of a nuclear plant is in the best interest of customers. On December 7, 2007, Project Development Applications ("PDA") were submitted to the North Carolina Utilities Commission and the Public Service Commission of South Carolina. The applications sought approval of the prudence of Duke Energy Carolinas' decision to incur project development costs of up to $230M through 2009 for the Lee Nuclear Station. The Public Service Commission of South Carolina issued a Project Development Order on June 9, 2008 and the North Carolina Utilities Commission issued a similar order on June 11, 2008. Each of these orders stated that continuing the development work associated with Lee Nuclear Station is prudent.

Duke Energy Carolinas intends to file a combined application for a certificate of environmental compatibility and public convenience and necessity and a baseload review in South Carolina in the first quarter of ~~2009~~2010. The combined application process enables the Public Service Commission of South Carolina to evaluate fundamental project aspects: the need to construct the facility and its environmental impact. A successful evaluation demonstrates that the public convenience and necessity require the construction of the facility and that the impact of the facility upon the environment is justified. Environmental impacts addressed include: water use, hydrology, terrestrial, aquatic and archaeological impacts. If the Public Service Commission of South Carolina issues a CPCN, Duke Energy Carolinas is assured of cost recovery for prudent costs incurred within the parameters of the approved construction schedule and capital cost estimate (including contingencies).

After the combined application is filed in South Carolina, Duke Energy Carolinas intends to request that the North Carolina Utilities Commission perform a need determination and cost estimate/schedule review for the proposed Lee Nuclear Station. This proceeding is designed for facilities to be constructed outside of North Carolina but intended to serve retail customers within North Carolina. Approval by the North Carolina Utilities Commission demonstrates that the Commission finds that the construction will be needed to assure the provision of adequate public utility service within North Carolina, and that the Commission approves the construction cost estimate and a construction schedule for the facility.

Finally, Duke Energy Carolinas and Newco will make a filing with FERC pursuant to Federal Power Act ("FPA") § 205 to obtain approval of the rates, terms and conditions for the wholesale sales of energy from Newco to Duke Energy Carolinas under the PPA. The filing will request approval of a rate that recovers the costs of the investment in the facility, including 100% recovery of CWIP and approval of recovery of prudently-incurred abandonment/cancellation costs. The filing also will request permission to establish a regulatory asset that will include expenses not included in CWIP that are incurred in connection with the project.

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A transfer of the proposed Lee Nuclear Station to Newco, with PPAs between Newco and Duke Energy Carolinas, would create uncertainty regarding the interpretation and/or applicability of certain statutory provisions summarized above. Therefore, as early as 2009, Duke Energy Carolinas intends to seek legislation in both North Carolina and South Carolina to ensure that the regulatory framework outlined above can be fully adapted to the project financing structure reflected in Duke Energy Carolinas' loan guarantee application. Additionally, Duke Energy Carolinas intends to pursue legislation in North Carolina that would enable the utility (as part of the implementation of the loan guarantee) to recover financing costs incurred during construction without filing a general rate case to initiate or update (on an annual basis) such a recovery mechanism (i.e., current North Carolina law, as explained above, requires a general rate case to initiate or update the recovery of financing costs).

Project Execution

Potential delays during project execution present a major risk for cost overruns due to the significant costs required on a daily basis to execute a nuclear project, and due to costs associated with replacing the power lost during the delay period. Many of today's operating reactors experienced numerous construction delays when they were being built. The primary causes of these past construction delays are well understood by Duke Energy Carolinas. Over the last several years, industry teams have conducted systematic assessments of what caused those delays, and developed a detailed inventory of lessons-learned that are shared industry-wide. Based on these assessments, Duke Energy Carolinas believes it has developed a strategy to mitigate such delays and the resulting cost overruns with the following approach:

- Detailed design complete before construction. The detailed design of the AP1000 is scheduled to be complete before construction is started.

- Standardized, design-specific pre-build preparation. Starting in 2006, the U.S. nuclear industry formed design-centered working groups ("DCWG") with each reactor vendor. These groups are charged with maintaining standardization within each reactor design, which makes licensing, preparation for construction, and construction, more likely to succeed. Duke Energy Carolinas has been an active participant in the AP1000 DCWG.

- A highly integrated Project Execution team with clear lines of authority and control to manage the schedule, cost, change, and risks of a complex construction project.

- Focus on quality assurance. In 2005, the U.S. nuclear industry formed a New Plant Quality Assurance Task Force. One of its tasks is to conduct a systematic lessons-learned review of past and present nuclear construction projects in the United States and around the world. Duke Energy Carolinas has been an active participant in this task force.

- Corrective action programs. Lee Nuclear Station will utilize a standard framework for a corrective action program ("CAP") for new plant construction that was developed by the

Nuclear Energy Institute. A CAP includes a structured database containing thousands of categorized items, enabling constructors to identify and trend quality deficiencies, record that corrective action was taken, and report to the appropriate levels of management.

- Focus on safety culture as part of construction. Implementation of safety culture principles through corrective action programs and employee concerns programs that encourage employees to raise safety concerns is an essential part of a construction program, and ultimately, operation of a nuclear facility. A focus on safety culture and maintaining a safety conscious work environment will ensure that any issues during construction will be raised immediately and resolved before they can negatively impact the overall success of the project.

- Preparation for construction inspection. In 2001, the U.S. nuclear industry formed a New Plant Construction Inspection Program Task Force comprised of utilities, reactor vendors and major construction companies. The task force is formulating guidance and developing programs and processes to implement the inspections, tests, analyses, and acceptance criteria ("ITAAC") that the NRC will use to determine whether the plant is built according to the approved design and is ready to operate safely. Duke Energy Carolinas is an active participant in this task force.

- Improved planning and construction management tools. Project and construction management at new nuclear plants will benefit from a suite of sophisticated construction planning and management tools equal to the complexity of the task. None of these tools had been developed when the last nuclear plants were built.

- Improved construction techniques. Construction of new nuclear plants in the U.S. will also benefit from improved construction techniques (such as modular construction), many of which were developed overseas or in the U.S. nuclear navy.

Status of NRC License Application

The William States Lee III Nuclear Station ("Lee Nuclear Station") construction and operating license ("COL") application was submitted to the U.S. Nuclear Regulatory Commission ("NRC") on December 13, 2007. On February 25, 2008, the NRC determined the application was sufficient for docketing and a more detailed review, and on April 2, 2008, the NRC published a schedule indicating a license may be issued in late 2011 or early 2012.

The NRC completed their Environmental Report site visit and audit the week of April 28, 2008 and conducted the Environmental Impact Statement Public Scoping Meeting on May 1, 2008. The NRC also completed a FSAR Hydrology audit the week of May 18, 2008. Currently, the NRC is submitting, and Duke Energy Carolinas is responding to, requests for additional information from the NRC on the Lee Nuclear Station COLA.

In addition to the technical and environmental reviews that are currently ongoing, the Lee COL is involved in the NRC adjudicatory process. In response to the publication of a notice of opportunity for a hearing in the Federal Register, one petition to intervene was filed by the Blue Ridge Environmental Defense League ("BREDL"). This petition proposed ten contentions, and admission of all ten of these contentions was opposed by both Duke Energy Carolinas and the

NRC staff. The Atomic Safety and Licensing Board ("ASLB") held a pre-hearing conference on Sept. 3, 2008, to hear oral argument related to four of these contentions. The ASLB issued an order on September 22, 2008, concluding that BREDL failed to submit an admissible contention as required by 10 C.F.R § 2.309(a). Consequently, BREDL's request for an evidentiary hearing was denied. Duke Energy Carolinas believes it is highly likely that a COL could be granted by 1Q12.

Execution of Spent Fuel Disposal Contract with the DOE

On November 4, 2008, Duke Energy Carolinas, LLC (DE Carolinas) and the U.S. Department of Energy (DOE) executed a contract providing for the disposal of spent nuclear fuel generated by its proposed William States Lee III Nuclear Station. The contract provides for the DOE to accept and permanently dispose of spent fuel generated by Lee Nuclear Station, with all spent fuel to be removed from the Lee Nuclear site no later than 10 years following the termination of the operating license. In exchange for this service, the company will pay 1.0 mill per kilowatt-hour of electricity generated and sold from Lee Nuclear. The execution of this contract with the Department of Energy is a vital step in supporting the timely issuance of a construction and operating license for Lee Nuclear Station.

Concluding Summary of Project Strengths:

At the highest level, Duke Energy Carolinas believes that successful project execution is most dependent on (1) appropriate assurance of recovery of construction and operating costs, (2) predictable licensing, (3) final and complete design prior to deployment of the contractor to the Lee Nuclear Station site, and (4) adherence to budget and schedule expectations developed through a rigorous and informed process. Duke Energy Carolinas has undertaken substantial efforts, both prior to and since the formation of its formal project team in 2005, to ensure deliberate and appropriate management of each of these aspects. Duke Energy Carolinas believes the results obtained thus far, as well as the thoughtful planning undertaken to effectively minimize or manage outstanding risks, reflect the strength of the Lee Nuclear Station project and are a positive indicator of its likely success. In addition to these strengths, there are certain benefits inherent to the Lee Nuclear Station site that will further support the successful construction and operation of the proposed facility.

Cost Recovery Assurance

As a traditional rate-regulated utility, Duke Energy Carolinas recognized early on the effect of the traditional rate regulation on its ability to minimize and recover costs associated with the construction of a nuclear generating facility. The most significant of these is the tremendous financial risk to a utility to undertake the effort without assurance of cost recovery. Accordingly, Duke Energy Carolinas has been active with its Commissions and state legislatures to educate them on these issues and support the development and implementation of reforms to the regulatory framework to support the careful consideration and, as appropriate, the development of new nuclear generation. Utilizing this framework, Duke Energy Carolinas has already received orders in support of recovery of development costs incurred through 2009 in both NC and SC. In ~~2009~~2010, Duke plans to file the estimated construction costs and schedule for the

Lee Nuclear Station project with its state regulators, with the intent of obtaining a) upfront cost recovery assurance from the Public Service Commission of South Carolina for the construction costs to be allocated to South Carolina retail customers, and b) confirmation of the need for the Lee Nuclear Station and approval of the total cost estimate from the North Carolina Utilities Commission (i.e., the regulatory proceeding in North Carolina is focused on scenarios such as the Lee Nuclear Station project whereby a facility is built outside of North Carolina, but intended to serve North Carolina retail customers). The longest expected time frame for a ruling from each state is approximately nine months from time of application, thus ensuring that both SC and NC will have completed their rulings years in advance of deployment of the contractor to the Lee Nuclear Station site. These are significant advances in modernizing the state regulatory processes to accommodate a future that will require substantial investment in new generation facilities. While additional work remains to easily accommodate some of the unique project structuring requirements required to minimize the costs to the customer, Duke Energy Carolinas has a proven track record in successfully educating state officials on such needs and the sound public policy behind it.

Predictable Licensing

Duke Energy Carolinas has been an active participant in industry efforts to improve the predictability of the Nuclear Regulatory Commission ("NRC") licensing process. It has relied upon its historic initial licensing experience, as well as more recent significant licensing actions, to advocate meaningful changes in support of a more predictable licensing process.

The fruit of these efforts were most recently recognized in a decision issued by the Atomic Safety and Licensing Board ("ASLB") assigned to the Lee Nuclear Station Combined Construction and Operating License ("COL") application. In a decision issued on schedule on September 22, 2008, the ASLB stated that none of the ten proposed contentions were admissible. This decision is a clear demonstration of the ability and willingness of the ASLB panels to exercise discipline in application of the standards for admissibility and to do so in a timely fashion. While this does not foreclose the possibility of an appeal or late-filed contentions, it does remove a number of issues from further consideration. With this decision in hand, approval of the Lee Nuclear Station COL is on or possibly ahead of schedule. Most importantly, this demonstrates Duke Energy Carolinas' ability to effectively prepare for and participate in a contested licensing proceeding to support timely issuance of the COL.

Final and Complete Design Prior to Deployment to the Lee Site

Duke Energy Carolinas is utilizing the AP1000 design, the amendment to which is expected to be completed by mid-2011. This provides Duke Energy Carolinas sufficient time to make any necessary adjustments to its plan and schedule to accommodate any modifications. With a final design and COL in hand prior to deployment of the EPC contractor to the Lee Nuclear Station site in early 2012, expenditure of significant amounts of money prior to establishing finality regarding project scope and content will be minimized.

In addition, design optimization for the AP1000 is being completed in a cooperative approach with other AP1000 owners (one design team). Duke Energy Carolinas is heavily involved in the design reviews, thereby bringing its substantial operating experience to the table to support inclusion of appropriate operational margins and opportunities for monitoring and trending in the design.

Adherence to Budget and Schedule Expectations

The Duke Energy Carolinas team has already demonstrated its ability to complete significant aspects of the Lee Nuclear Station project on schedule and on budget. Significant accomplishments in this area include submittal of the COL application to the NRC, timely and effective litigation related to proposed contentions regarding the COL application, and site demolition. Similarly, Duke Energy Carolinas has worked effectively with state commissions to obtain appropriate recovery of nuclear development costs for Lee Nuclear Station in a timely manner.

While these accomplishments are significant, Duke Energy Carolinas recognizes key milestones with significant financial impacts are ahead. With this in mind, Duke Energy Carolinas has identified and is developing plans to implement the following measures designed to support timely and cost effective project management.

First, Duke Energy Carolinas led the effort to join with other potential AP1000 owners to form a limited liability company (APOG LLC) to facilitate achievement of economies of scale during development activities and commercial operation. Through this organization, the benefits currently derived in licensing and design areas will be extended to the period of start-up and commercial operation. Particular examples of planned benefits during operation include standard engineering models, calculations and drawings, identical operating maintenance and other procedures, and the ability to stock and share common spare parts among AP1000 owners.

Second, not only will all design work be completed prior to field deployment, but this fully engineered plant (i.e., no field routing) will be developed with extensive use of 3-D models. In addition, constructability reviews will be incorporated into the design. Finally, while the design is advanced, the AP1000 uses proven technology in a variety of important components. This allows for advance testing of such components to demonstrate their performance prior to deployment to the site.

Third, while the Lee Nuclear Station project will include advanced schedule management tools and a detailed construction schedule well ahead of deployment to the Lee Nuclear Station site, the proposed timeline for the Lee Nuclear Station project will allow Duke Energy Carolinas to benefit significantly from the EPC contractor experience gained from the international and domestic AP1000 projects that precede the Lee Nuclear Station project. For example, the AP1000 construction at China's San Men project is scheduled to be complete prior to Lee Nuclear Station field deployment. Other domestic AP1000s are also currently on a timeline ahead of Lee Nuclear Station such that Lee Nuclear Station should also benefit from those lessons learned. Finally, construction experience from other nuclear (Okiluto 3, Flamanville, LES, MOX) as well as non-nuclear projects, will also support Duke's efforts to incorporate lessons learned into its planning process. Duke Energy Carolinas intends to develop a

programmatic approach that will allow it to maximize the benefit from lessons learned on other construction projects, thus providing greater assurance of execution on schedule and on budget.

Fourth, Duke Energy Carolinas has identified a contracting approach for Lee Nuclear Station that will allow for timely construction of the facility, as well as the seamless transition to operations and maintenance. Specifically, Duke Energy Carolinas is negotiating three simultaneous contracts to ensure alignment and effectiveness. These contracts include the EPC contract, a fuel fabrication contract, and a services contract. The contracts are being structured such that Contractor/Owner interests are aligned and operational exposure is limited. Duke Energy Carolinas is relying on its significant experience in successfully negotiating such agreements and managing them through performance to support appropriate risk allocation**.**

Fifth, Duke Energy Carolinas has a mature workforce development plan. Staffing models were developed early in the project and workforce needs were integrated with the existing Duke Energy Carolinas fleet. Duke Energy Carolinas' hiring plans for the last several years have included hundreds of persons and this proactive approach allows Duke Energy Carolinas to effectively manage an aging workforce for existing units and Lee Nuclear Station. The Lee Nuclear Station staffing plan blends experienced personnel into plant staff and includes strategic alliances with local schools to grow the talent necessary for decades to come.

Sixth, Duke Energy Carolinas utilized a proven transmission siting process that included early engagement and involvement of the community, local workshops, and timely and direct communication of transmission routing results. A thorough process, combined with proactive engagement of the community supports timely acquisition of necessary transmission rights of way prior to field deployment.

Seventh, the Lee Nuclear Station project includes a proactive facility plan, ensuring that all aspects of the facility are included in project scope and are carefully considered in parallel with the design of the power generation portion of the project. This plan has received a comprehensive, multidisciplinary review from across the Duke Energy Carolinas' Nuclear Generation fleet. Facility Plan requirements are being included in contractor specifications.

Finally, Duke Energy Carolinas has a matrix organization that allows it to take advantage of subject matter experts to support the project schedule and needs. These subject matter experts include individuals with expertise in nuclear design and operations; project and regulatory finance; state and federal environmental issues, state and federal utility regulatory issues; EPC contract negotiation and management, human resources, and all related legal issues.

Collectively, these proactive steps support timely and cost effective project management.

Lee Nuclear Station Site Benefits

The Lee Nuclear Station Site was previously approved and partially developed by Duke Energy Carolinas for a nuclear generation facility. This is an indication of its viability as well as its advantages with respect to the considerable site preparations that are already in place. Additionally, the surrounding community is familiar with Duke Energy Carolinas and its reputation and is a strong supporter of the development of the Lee Nuclear Station site as a

nuclear generation facility. Finally, the state of South Carolina is familiar and comfortable with nuclear technology. The state and county have demonstrated their support for the development of the Lee Nuclear Station site, not only by legislative declarations and regulatory determinations, but also by offering state and county incentives, and cooperating with Duke Energy Carolinas in building educational programs to support nuclear construction and workforce development. Duke Energy Carolinas intends to use a number of different forums to continue its early and effective engagement of the community in the project.

In addition to its experience with and support of nuclear development, South Carolina generally, and Cherokee County specifically, offers an attractive location for construction workers and plant operating personnel.

Corporate Strengthening of New Nuclear Organization

Consistent with the company's commitment to new nuclear generation, Duke Energy Corporate CEO, Mr. Jim Rogers recently announced: "To help us further the development of new nuclear generation in the Carolinas, including the development of the Lee Nuclear Station in South Carolina, I am creating a new position that will report directly to me. Responsibilities of this leader will include working to strengthen the state regulatory and legislative framework in support of new nuclear, and seeking potential partners interested in developing regional generation. This leader will also ensure that our various nuclear development efforts across the company are well-integrated.

Ellen Ruff**,** currently president of Duke Energy Carolinas, will become president, Office of Nuclear Development, reporting directly to me. Ellen understands the legislative issues in both states, and has developed excellent relationships with various stakeholders. Her experience and expertise make her the hands-down choice for this position. She will coordinate closely with Dhiaa Jamil, Keith Trent and Jim Turner as she works to further the development and construction of new nuclear generation in the Carolinas."

Conclusion

In addition to the strengths noted above, Duke Energy Carolinas' strong operating nuclear platform and mature operational philosophy, values, programs, processes, and culture provide intangible, but nonetheless significant, benefits. Duke Energy Carolinas has undertaken substantial efforts, both prior to and since the formation of its formal project team in 2005 to ensure deliberate and appropriate management of project risks. Duke Energy Carolinas' approach ensures that three of the four major categories of construction risk are eliminated prior to deployment to the field, a critical factor in the overall financial success of the project. With respect to project execution, the results obtained thus far, as well as the thoughtful planning undertaken to effectively minimize or manage outstanding risks, reflect the strength of the Lee Nuclear Station project and are a positive indicator of its likely success.

WLS/I/B/2/Technology Description

B.I.2 Technology Description: Provide a description of the new technology to be employed and its commercial feasibility. Discuss why it is not now in general use and how the applicant intends to employ such technology in the project. Describe the applicant's rights to such technologies, including the status and expiration date of all licensing agreements required for the project. Finally, explain how the applicant intends to assure, to the extent possible, the further commercial availability of the technology(ies) in the United States. (See Section 609.7(a) and (b) of the Final Regulations.)

Response:

The Westinghouse Advanced Passive PWR AP1000 is a 1117 MWe pressurized water reactor ("PWR") based closely on the AP600 design. The AP1000 maintains the AP600 design configuration utilizes the previously certified AP600 licensing basis by limiting the changes to the AP600 design. The AP1000 design includes advanced passive safety features and extensive plant simplifications to enhance the safety, construction, operation, and maintenance of the plant. While new and innovative, the AP1000 uses proven components and proven technology, built on over 35 years of operating PWR experience. PWRs represent 76 percent of all Light Water Reactors around the world, and 67 percent of the PWRs are based on WEC PWR technology.

The AP1000 is designed to achieve a high safety and performance record. It is conservatively based on proven PWR technology, but with an emphasis on safety features that rely on natural forces. Safety systems use natural driving forces such as pressurized gas, gravity flow, natural circulation flow, and convection. Safety systems do not rely on active components (such as pumps, fans or diesel generators) and are designed to function without safety-grade support systems (such as AC power, component cooling water, service water, HVAC). The number and complexity of operator actions required to control the safety systems are minimized; the approach is to eliminate operator action rather than automate it.

The AP1000 is designed to meet NRC deterministic safety criteria and probabilistic risk criteria with large margins. Safety analysis has been completed and documented in the Design Control Document ("DCD") and Probabilistic Risk Analysis ("PRA"). The extensive AP600 testing program, which is applicable to the AP1000, verifies that the innovative plant features will perform as designed and analyzed. PRA results show a very low core damage frequency, which meets the goals established for advanced reactor designs and a low frequency of release due to improved containment isolation and cooling.

An important aspect of the AP1000 design philosophy focuses on plant operability and maintainability. The AP1000 design includes features such as simplified system design to improve operability while reducing the number of components and associated maintenance requirements. In particular, simplified safety systems reduce surveillance requirements by enabling significantly simplified technical specifications.

Selection of proven components has been emphasized to ensure a high degree of predictability, reliability and low maintenance. Component standardization reduces spare parts, minimizes maintenance, training requirements, and allows shorter maintenance durations. Built-in testing capability is provided for critical components.

Plant layout ensures adequate access for inspection and maintenance. Laydown space provides for staging of equipment and personnel, equipment removal paths, and space to accommodate remotely operated service equipment and mobile units. Access platforms and lifting devices are provided at key locations, as are service provisions such as electrical power, demineralized water, breathing and service air, ventilation and lighting.

The AP1000 design also incorporates radiation exposure reduction principles to keep worker dose as low as reasonably achievable ("ALARA"). Exposure length, distance, shielding and source reduction are fundamental criteria that are incorporated into the design. Various features have been incorporated in the design to minimize construction time and total cost by eliminating components and reducing bulk quantities and building volumes.

WEC was a principal participant in the development of the EPRI sponsored Utility Requirements Document ("URD") and continues to be involved with EPRI on changes to that document. Therefore, an objective of the AP1000 design is to remain as consistent as possible with the EPRI URD. Additional design objectives for the AP1000 are to provide a greatly simplified plant with respect to design, licensing, construction, operation, inspection and maintenance.

Because the AP1000's design is based upon already certified technology, and the extensive experience and history of WEC in the nuclear field, Duke Energy Carolinas believes in the extended availability of the AP1000 technology. Nine COL applications for new nuclear power plants have been submitted to date to the NRC. Of these submittals, a total of five COL applications utilize the WEC AP1000 design. In addition to the domestic proposed plants, internationally, numerous AP1000 plants are being proposed, most notably in China.

WLS/I/B/3/Project Eligibility

B.I.3 Project Eligibility: Provide a detailed explanation of how and to which measure the proposed project will meet all applicable requirements of Section 1703 of Title XVII, especially with respect to:

a. Achieving substantial environmental benefits (i.e., avoid, reduce or sequester air pollutants and/or anthropogenic emissions of greenhouse gases) and describing how to measure and verify those benefits, and
b. Employing new or significantly improved technology compared to commercial technologies currently in service in the U.S. (See Sections 609.2 and 609.7 of the Final regulations.)

Response:

As described further below, Lee Nuclear Station is an eligible project that will achieve substantial environmental benefits and will meet the applicable requirements discussed in 10 C.F.R. § 609.2 and 609.7 and 42 U.S.C. 16513 because it: (1) will be located in the U.S.; (2) will achieve substantial environmental benefits; (3) employs new or significantly improved technology that is not a commercial technology; and (4) meets all applicable requirements of 42 U.S.C. 16513. The Lee Nuclear Station project involves construction and operation of two advanced light water nuclear power reactors based on the Westinghouse Electric Company ("WEC") AP1000 pressurized water reactor (PWR) design (the AP1000 design). The AP1000 design, while based on established technology of major components used in current WEC-designed plants, is a substantial improvement to existing PWR technology because it employs a simplified and innovative approach to nuclear power production and safety. As a nuclear power reactor, electricity production at Lee Nuclear Station will not produce any greenhouse gases.

a. Achieve Substantial Environmental benefits (*i.e.*, avoid, reduce or sequester air pollutants and/or anthropogenic emissions of greenhouse gases) and describe how to measure and verify those benefits.

1. Achieve Substantial Environmental Benefits

As a nuclear power site, Lee Nuclear Station will not produce any greenhouse gases as a direct result of power production. Accordingly, Lee Nuclear Station will achieve substantial environmental benefits. As with all nuclear power plants, however, some standby diesel equipment is required. These standby diesel generators are only run for testing and during rare occasions when power is lost from off-site sources.

2. Measurement and Verification of Benefits

As discussed in Section 3.6 of the Lee Nuclear Station Environmental Report ("ER") submitted to the NRC as part of the COL application, for both units, the Lee Nuclear Station site will have four standby diesel generators, four ancillary diesel generators, two secondary diesel driven fire pumps (the primary fire pump is electric) and one Technical Support Center diesel generator. None of these diesel generators or diesel-driven pumps will be used in the normal production of electricity from Lee Nuclear Station. Table 3.6-

2 in the Lee Nuclear Station ER lists the annual emissions (lbs/yr) for this equipment and Table 3.6-3 lists the annual hydrocarbon emissions (lbs/yr) for the associated diesel fuel oil storage tanks. All emissions are below Federal and State emission limitation requirements, as well as the emission limits discussed in 42 U.S.C. 16513(d).[1]

Section 5.7 of the Lee Nuclear Station ER addresses "Uranium Fuel Cycle Impacts," which references Table S-3 found in 10 C.F.R. § 51.51. Table S-3 was developed to address, on a generic industry-wide basis, the need to consider the environmental effects of the uranium fuel cycle. Table S-3 summarizes and codifies the NRC's assessment and determinations for evaluating the environmental effects of the uranium fuel cycle, including gaseous emissions. As discussed in further detail in Section 5.7 of the Lee Nuclear Station ER, all environmental impacts from the Lee Nuclear Station Uranium Fuel Cycle will be SMALL. Accordingly, even when the Uranium Fuel Cycle impacts are included in the environmental analysis, Lee Nuclear Station will achieve substantial environmental benefits.

b. Employing new or significantly improved technology compared to commercial technologies currently in service in the U.S. (See Sections 609.2 and 609.7 of the Final Regulations.)

1. The AP1000 Design is a New or Significantly Improved Technology

The AP1000 design is a New or Significantly Improved Technology as defined in 10 C.F.R. § 609.2. The Lee Nuclear Station project will be an advanced nuclear power facility based on the NRC-certified WEC AP1000 design. The AP1000 design is a substantial improvement over existing PWR designs, principally because increased simplification and improved safety. Simplification in overall safety systems, normal operating systems, the control room, construction techniques, and instrumentation and control systems results in a plant that is easier and less expensive to build, operate and maintain. At the same time, the safety margins for the AP1000 have been increased significantly over currently operating plants.

2. The AP1000 Design is Not a Currently Deployed Commercial Technology

The AP1000 design is not a commercial technology as defined in 10 C.F.R. § 609.2 because the AP1000 design is currently not in use in the U.S. While there is considerable interest in constructing and operating the AP1000 in the U.S. and abroad, construction has not begun in the U.S. on any AP1000. As a result, there will not be three or more commercial AP1000 projects in the U.S. when the DOE Loan Guarantee Term Sheets are expected to be issued.

3. The AP1000 Design has the Potential to Replicate the Technology in Other Commercial Projects in the U.S.

[1] **[Calculations needed to show that the total project emissions are below: (1) 0.05 lb/MMBtu sulfur dioxide emissions in flue gas; (2) 0.08 lb/MMBtu nitrogen oxide emissions in flue gas; and (3) 0.01 lb/MMBtu total particulate emissions in flue gas.]**

The AP1000 is currently one of only three reactor designs and the only advanced reactor design to be certified by the NRC in the United States. Having received the Design Certification, several U.S. utilities have selected the AP1000 design for their COL applications. As the first of these projects become operational, their success will likely encourage other new projects based on the AP1000 design.

4. The AP1000 is a Commercially Viable Technology

The AP1000 is a commercially viable technology. The original Design Certification for the AP1000 was approved in 2006 and the AP1000 has the highest degree of design completion of any advanced light water reactor. An amendment to the Design Certification, which is referenced in the Duke Energy Carolinas COL application, is currently under NRC review. Approval of the Design Certification Amendment is expected in early 2011. Commencement of construction of the first AP1000 reactor began in China in February 2008.[2]

5. The AP1000 is not a Research, Development or Demonstration Project

The AP1000 is not a research, development or demonstration project. The site will consist of two production nuclear reactors, each producing approximately 1117 MW of power.

[2] http://english.gov.cn/2008-02/27/content_902648.htm

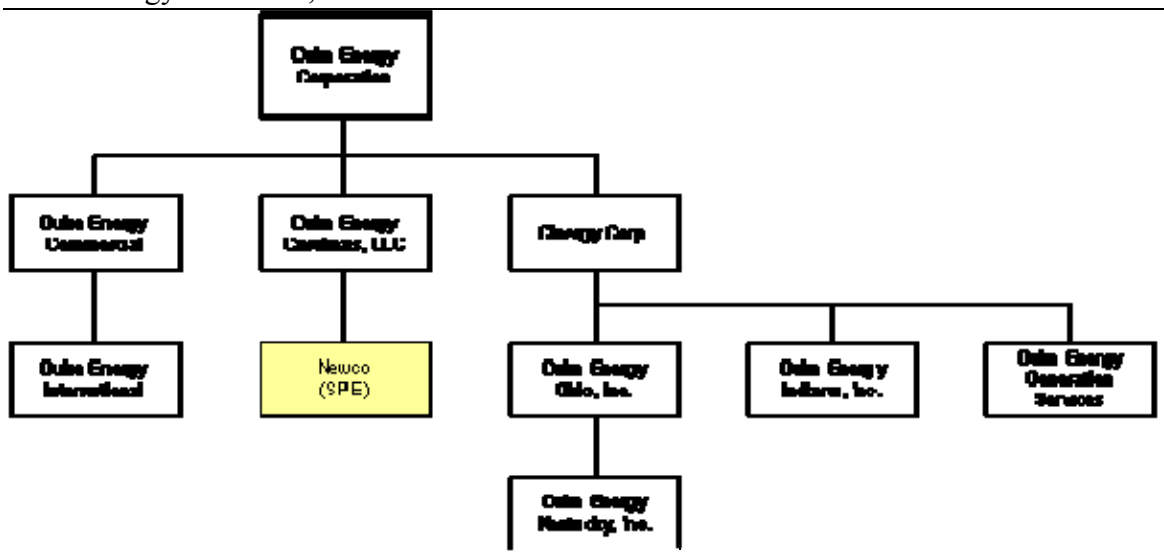
WLS/I/B/4/Organization

B.I.4 Organization: Provide a current organizational chart showing the applicant's structure, relationship to any subsidiaries or affiliates, and to the project. Advise if there are any proposed changes to the current organizational structure. List the full names (including middle name or initial), home address (including zip code), date of birth and taxpayer identification/social security number of key staff to be involved with the project. DOE will use this information for background check purposes and, with respect to certain key staff providing credit support to the project, for credit history verification purposes. DOE may request additional documentation as part of the project evaluation process.

Response:

Duke Energy Carolinas, LLC, a wholly owned subsidiary of Duke Energy Corporation, will own and operate Lee Nuclear Station Units 1 and 2. Duke Energy Carolinas, LLC, is a limited liability company duly organized and existing under the laws of the State of North Carolina. Duke Energy Carolinas, LLC is engaged in the business of generating, transmitting, distributing and selling electric power and energy. It is a "public utility" under the laws of North Carolina and subject to the jurisdiction of the North Carolina Utilities Commission with respect to its operations in that State. The Company also transacts business and is an "electrical utility" under the laws of the State of South Carolina; accordingly, its operations in that State are subject to the jurisdiction of the Public Service Commission of South Carolina. Duke Energy Carolinas, LLC is also a public utility under the Federal Power Act, and certain parts of its operations are subject to the jurisdiction of the Federal Energy Regulatory Commission. The Company owns and operates regulated electric facilities, including seven (7) nuclear units licensed by the NRC, as well as electric distribution and transmission facilities.

Duke Energy Corporation, as the holding company of Duke Energy Carolinas, LLC, is one of the largest electric holding companies in the United States. Duke Energy Corporation is a corporation duly organized and existing under the laws of the State of Delaware. The Company's general office and principal place of business is located in Charlotte, North Carolina. It is an investor-owned corporation focused on electric power and gas distribution operations, and other energy services in both North and South America. Its public utility subsidiaries also transact business on a regular basis in South Carolina, Kentucky, Ohio, and Indiana. Duke Energy Corporation, through its regulated electric and gas utility operating companies, Duke Energy Carolinas, Duke Energy Ohio, Duke Energy Indiana and Duke Energy Kentucky, operates more than 28,000 MW of regulated electric generation and 8,100 MW of unregulated electric generation in the United States. A diverse fuel mix of nuclear, coal-fired, hydro-electric and combustion-turbine generation allows the Duke Energy Corporation public utility subsidiaries to provide this generating capacity to approximately 4 million electric and 0.5 million gas customers located in their combined service territories. The shares of Duke Energy Corporation are publicly held and listed for trading on the New York Stock Exchange under the symbol DUK.



In order to conform to the project financing model of the DOE Federal Loan Guarantee program, Duke Energy Carolinas intends to structure its Lee Nuclear Station project as a "Special Purpose ~~Vehicle/~~Entity" (~~"SPV" or~~ "SPE"). This entity has not yet been created, and is represented in the above diagram as "Newco"~~WLS Nuclear Energy, LLC~~. Duke Energy Carolinas plans to work with state regulatory~~s~~ agencies and policymakers in North Carolina and South Carolina to ensure that appropriate regulatory frameworks exist that will permit the implementation of this SPE~~V~~ and provide clarity as to the entity's transactions with its parent. At the time of formation of the SPE~~V~~, Duke Energy Carolinas intends to amend its DOE Federal Loan Guarantee Application with the appropriate SPE~~V~~ as the new project sponsor.

The business of Duke Energy Carolinas, LLC, is conducted by its own Board of Directors, although for internal governance purposes, the Duke Energy Corporation Board of Directors also has approval authority over certain types of transactions. Additionally, the corporate executive and chief nuclear officer of Duke Energy Carolinas, LLC, reports to James E Rogers, Chairman, President and Chief Executive Officer, Duke Energy Corporation.

Home addresses, birth dates, and social security numbers of key staff have not been included as no individual is providing credit support to the corporation. This information can be provided at a later time if the DOE determines it is necessary. All contacts are US citizens and can be reached at the below address, phone, and fax number:

Duke Energy Carolinas, LLC
526 South Church Street
Charlotte, North Carolina 28202-1803
Phone: (704) 594-6200
Fax: (704) 382-3814

Members of the Board of Duke Energy Carolinas, LLC	
Name	**Position / Title**
Rogers, James E.	Director
Hauser, David L.	Director
Turner, James L.	Director
Officers of Duke Energy Carolinas, LLC Involved in the Lee Nuclear Station Project	
De May, Stephen Gerard	Vice President and Treasurer
Dolan, Bryan J.	Vice President, Nuclear Plant Development
Geer, Thomas C.	Vice President, Nuclear Engineering
Hauser, David Lee	Group Executive and Chief Financial Officer
Haviland, Richard W.	Senior Vice President, Construction and Major Projects
Jamil, Dhiaa M.	Group Executive and Chief Nuclear Officer
Kinney, Jennings Bryant	Vice President, Regulatory and Government Affairs
Manly, Marc E.	Group Executive and Chief Legal Officer
Rogers, James E.	Chief Executive Officer
Carter, Brett C.	President
Ruff, Ellen T.	President, Office of Nuclear Development
Trent, B. Keith	Group Executive and Chief Strategy, Policy and Regulatory Officer
Turner, James L.	Group Executive
~~Barnes, L. Ron~~	~~Vice President, Major Projects - Carolinas~~
Other Duke Energy Carolinas, LLC Employees Involved in the Lee Nuclear Station Project	
Hastings, Peter S.	Manager, Nuclear Plant Development Licensing
Thrasher, John S.	Manager, Nuclear Plant Development Engineering
Morgan, Robert L. Jr.	Project Manager, Nuclear Plant Development
Bowling, Theodore J.	Sr. Project Manger, Waste & Remediation Management
Nolan, Kathryn B.	Assistant General Counsel, Nuclear
Brown, Mary Jo	DOE Federal Loan Guarantee Project Manager

WLS/I/B/5/Prior Experience

B.I.5 Prior Experience: Describe the prior experience of each organization that comprises the project team as it relates to carrying out projects similar to the one being proposed. Include the applicant's track record of completing projects on time and on budget, and operational results.

Response:

Duke Energy Carolinas Prior Experience

Duke Energy Carolinas enjoys a reputation as one of the preeminent nuclear utilities in the United States and in the world. Unusual among existing nuclear utilities, Duke Energy Carolinas designed and constructed its own nuclear plants, and continues to operate those plants in exemplary fashion. As a result of numerous significant plant modifications, and through various non-reactor collaborations, Duke Energy Carolinas has a wealth of experience and an outstanding track record in successfully managing major projects.

Oconee Nuclear Station
Duke Energy Carolinas decided to join the nuclear power industry in 1966 when it entered into an agreement with Babcock & Wilcox to develop the Oconee Nuclear Station on Lake Keowee near Clemson, South Carolina; construction began in 1967 and unit 1 entered commercial operation in 1973, followed by units 2 and 3 in 1974, at a total cost of $500 million. These three 846-MWe (net) units utilize B&W designed reactors.

Oconee Nuclear Station, like all existing Duke Energy Carolinas nuclear plants, was designed, constructed and is operated by Duke Energy Carolinas employees. In 2000, the NRC issued renewed licenses for Oconee Units 1, 2 and 3, with expiration dates in 2033 (units 1 and 2) and 2034 (unit 3).

Oconee Nuclear Station has safely and reliably generated more than 500 million megawatt-hours of electricity—the first nuclear station in the United States to achieve this milestone.

McGuire Nuclear Station
Construction of the William B McGuire Nuclear Station on Lake Norman, north of Charlotte, began in 1971. McGuire units 1 and 2 entered commercial operation in 1981 and 1984, respectively, at a cost of $2 billion. These twin units utilize 1,100 MWe, four-loop, WEC-designed reactors.

In 2003, the NRC issued renewed licenses for the McGuire Units 1 and 2, with expiration dates in 2041 and 2043, respectively.

Catawba Nuclear Station
The two Catawba Nuclear Station reactors located in York County, South Carolina, were purchased as options ($75 million each) to the McGuire purchase contract with WEC. However, the nuclear auxiliaries and power block were specified and designed separately. Due to the timing of this design effort, many of Catawba's design engineers, particularly in mechanical systems and equipment, had also participated in the Oconee design, but had not participated in the McGuire design. While some McGuire lessons were incorporated into the Catawba design,

in many cases, with more time to address the new requirements coming from the NRC's response to industry events, a "better way" was found. Thus, while some design aspects of Catawba are very similar to McGuire, others are quite different. Additionally, due to the warm, shallow nature of Lake Wylie, the plant utilizes cooling towers as opposed to the once-through cooling at McGuire and Oconee.

Initial excavation for Catawba Nuclear Station, located in York County, South Carolina, began in 1974, but was curtailed for financial reasons. Significant construction of Catawba Nuclear Station began in 1975; commercial operation began in 1985 (unit 1) and 1986 (unit 2). The total cost was $3.6 billion. Due to the financial pressures affecting the company in 1974, combined with a reduction in the projected native load growth and high interest rates, the Company relied on alternative financing structures to complete construction of the facility. To accommodate this, 75 percent of Catawba unit 1 and 100 percent of Catawba unit 2 were sold to a majority of Duke Power's then existing wholesale customers, i.e., municipal power agencies and rural electric cooperatives.[3] The municipal power agencies used state-backed bonds for financing; the electric cooperatives used U.S. Department of Agriculture, Rural Utility Service (RUS)-backed financing.

In 2003, the NRC issued renewed operating licenses for Catawba Units 1 and 2, with expiration dates for both units in 2043.

Cherokee and Perkins

In 1974, the Duke Power Board of Directors approved design and construction of the Thomas L. Perkins Nuclear Station to be located along the Yadkin River in Davie County near Mocksville, North Carolina, and the Cherokee Nuclear Station to be located along the Broad River in Cherokee County near Gaffney, South Carolina. Each of these plants was to have three 1,280 MWe units, utilizing reactors supplied by Combustion Engineering.

With a reduction in the projected native load growth and high interest rates, the Perkins plant and Cherokee units 2 and 3 were cancelled in 1982. Cherokee unit 1 was cancelled in 1983. The NRC had not issued a construction permit for the Perkins plant. Construction of Cherokee unit 1 was well underway, with approximately $600 million expended. Under an agreement with the utility regulators in North Carolina and South Carolina, the cost was collected through rates over the following ten years without recovery of the cost of money on the outstanding investment during this ten year period.

Duke Energy Carolinas continues to own the Perkins site. The Cherokee site was purchased by a subsidiary of the Southern Company. Subsequent negotiations resulted in the Company's repurchase of the Cherokee site for purposes of developing the Lee Nuclear Station.

Evaluation of Nuclear Construction Program

In August, 1983, Arthur D. Little, Inc., a large corporate and governmental consulting firm, conducted a survey of the latest cost and schedule information for U. S. nuclear generating

[3] North Carolina Electric Membership Cooperative (NCEMC) purchased 56.25 percent and Saluda River (S.C.) Electric Cooperative purchased 18.75 percent of Catawba Unit 1; North Carolina Municipal Power Agency (NCMPA) purchased 75 percent and Piedmont (S.C.) Municipal Power Agency purchased 25 percent of Catawba Unit 2.

stations. This survey showed that there were 60 nuclear generating plants under construction in the United States. This included some plants that were complete, but not yet declared commercial. The Arthur D. Little, Inc. report showed that the Oconee and the McGuire plants were constructed at the lowest cost of nuclear plants which began commercial operation in the same time period as these plants. The Company continued its favorable experience of building plants at low cost compared to others with the construction of the Catawba plant. There were 20 nuclear units planned for service between June, 1984 and June, 1986 with an estimated average cost in excess of $2700 per kw, as compared to actual costs of $909 and $1594 per kw for the McGuire and Catawba nuclear stations, respectively (i.e., the two Duke Energy nuclear stations completed during this timeframe).

Operational Performance

The primary objective of Duke Energy Carolinas' nuclear generation department is to provide safe, reliable and cost-effective electricity to our Carolinas customers. This objective is achieved through our focus in a number of key areas. Operations personnel and other station employees are well trained and execute their responsibilities to the highest standards, in accordance with detailed procedures. Duke Energy Carolinas maintains station equipment and systems reliability, and ensure timely implementation of work plans and projects that enhance the performance of systems, equipment and personnel. Station refueling and maintenance outages are conducted through the precise execution of well-planned, quality work activities, which effectively ready the plant for operation until the next planned outage.

In 1990, Duke Energy Carolinas' nuclear units were operating at a 72 percent capacity factor, and the industry average was 67 percent. For the last eight consecutive years, the system average nuclear capacity factor has been above 90 percent. The Company's improvements in nuclear operations, with consistent recent capacity factors of 90 percent or greater as described above, have allowed Duke Energy Carolinas to serve thousands of additional customers without having to add new base load generation. The Company's nuclear performance has improved dramatically for a number of reasons. In particular, shorter refueling outages and improved forced outage rates have contributed to increasing the capacity factors achieved by the Company's nuclear fleet. Historically, Duke Energy Carolinas' nuclear fleet has been recognized for its excellent operational performance by the Institute of Nuclear Power Operations ("INPO"). Duke Energy Carolinas continues to be a leader in nuclear performance; however, the Company is not alone in its excellence. The nuclear industry as a whole has been making great strides in improving operating performance which is reflected in benchmarking data, such as the North American Electric Reliability Council's ("NERC") Generating Availability Report.

Operations & Maintenance ("O&M") expenditures for the Company's nuclear facilities are made up of both fuel and non-fuel items. In 2007, approximately 24 percent of the required O&M expenditures for the nuclear fleet were fuel related. Non-fuel items comprise the remainder of O&M expenditures for the nuclear fleet. Nuclear power plant operations are very labor intensive and therefore, a significant portion of these O&M costs are related to internal and contracted labor. Other costs include NRC fees, project-related costs and material and employee expenses. Operating costs for the Company's nuclear fleet are among the lowest in the nation. During 2007, the average electricity production cost (encompassing expenses for uranium fuel and operations and maintenance) for Duke Energy's nuclear fleet was 1.57 cents/kwh, which was lower that the average production cost for the 104 nuclear plants operating in the United States

(i.e., according to NEI data released in February 2008, the average production cost for all nuclear plants in the United States was 1.68 cents/kwh in 2007, which was a record low for the industry).

Westinghouse Electric Company Prior Experience

Westinghouse Electric Company ("WEC"), majority owned by Toshiba Corporation, is the world's pioneering nuclear power company and is a leading supplier of nuclear plant products and technologies to utilities throughout the world. WEC technology today is the basis for approximately one-half of the world's operating nuclear plants. WEC has a long-standing commitment to excellence in commercial nuclear reactor technology.

WEC is a leader in the design of advanced pressurized water reactor (PWR) systems for worldwide applications. Its new nuclear power plant design portfolio includes specific customer-driven designs including:

- The AP1000 pressurized water reactor is based on demonstrated, licensed technology with simplified safety systems that rely solely on natural forces
- The System 80® nuclear steam supply system, which forms the basis for the proven and highly successful Korea Standard Nuclear Power Plant ("KSNP")
- BWR 90+, an advanced boiling water reactor, with improved safety and operability

A leader in technology transfer, WEC has successfully transferred design and manufacturing capabilities to many countries, including France, Japan, and Korea. Its most recent efforts in technology transfer have allowed Korea to become self-reliant in the design and construction of nuclear power plants, components and fuel. International cooperation continues with companies in Korea and Japan toward the development of the Korean Next Generation Reactor ("KNGR") in Korea and the Advanced Pressurized Water Reactor ("APWR") in Japan. The technology basis for the KNGR is our 1350 MWe System 80+™ advanced plant design, the only large evolutionary PWR that has received design certification from the U.S. NRC under its one-step licensing process.

In July 2007, Westinghouse Electric Company and Shaw Group, Inc. ("WEC/Shaw") signed contracts to provide four AP1000s in China, where initial work is now underway. Additionally, the AP1000 has been identified as the new plant technology of choice for no less than a total of 10 additional nuclear plants that could be built in the United States.

WEC has also been part of a very successful nuclear program in South Korea. One of its recent reactor projects in Korea was the Yonggwang 3 & 4 units. Commercial operations began in March 1995 and January 1996, respectively. These are Combustion Engineering (which was purchased by WEC in 2000) System 80-type PWRs producing 950 MWe each. The design features two primary system loops with two reactor coolant pumps and one steam generator per loop, the same configuration as the AP1000. WEC, or its predecessor Combustion Engineering ("CE"), was the Prime lead for the design, major equipment manufacturing and technology transfer for this 2 unit plant. The major equipment which WEC/CE manufactured includes the Reactor Vessel Internals, Control Rod Drive Mechanisms, Reactor Coolant Pumps and Motors, some Nuclear Steam Supply Systems, and Instrumentation & Control NSSS Safety and Non-Safety Systems. The Yonggwang 3 & 4 units were completed on schedule and within budget.

WEC/CE also contributed a shared design for the Yonggwang 5 & 6 and the Ulchin 3 & 4 plants. All of the equipment listed in the paragraph above was also provided for these (4) units by WEC/CE. The equipment was delivered on schedule and within the "as sold" budget. These (4) units are currently operational.

There are also several units which are currently under construction in Korea which are also based on the System 80 PWR design. WEC is the Prime equipment supplier for the units at Shin Kori 1 & 2 and the units at Shin Wolsung 1 & 2. These projects are currently on time and on budget.

There are currently two units which are under construction at Shin Kori 3 & 4 which will be the first of the APR-1400 design series, a design evolution of the System 80+. WEC is providing all of the equipment listed above plus the Main Control Room, which has similar I&C technology as the AP1000. Currently this project is on schedule and on budget.

The following table summarizes the Korea units discussed above (note Westinghouse = "WEC").

Plant	# of Loops	Engineering - Lead	Equipment Supply - Lead	COD Date	Construction Schedule (in months)	On Schedule	On or Under Budget
Yonggwang 3 & 4	2	WEC	WEC	1995, 1996	64	X	X
Ulchin 3 & 4	2	WEC/Doosan	WEC	1998, 1999	62	X	X
Yonggwang 5 & 6	2	WEC/Doosan	WEC	2002	58	X	X
Ulchin 5 & 6	2	Doosan	WEC	2004, 2005	56	X	X
Shin Kori 1 & 2	2	Doosan	WEC		54	X	X
Shin Kori 3 & 4	2	Doosan	WEC		TBD	X	X
Shin Wolsung 1 & 2	2	Doosan	WEC		TBD	X	X

Shaw Group Inc. Prior Experience

Westinghouse Electric Company ("WEC") is partnering with Shaw Group, Inc. ('Shaw"), a global engineering, design, construction and operations firm, on engineering work for the Lee Nuclear Station project. Shaw, a Fortune 500 company, is a major engineering, construction and manufacturing company with annual revenues of more than $5 billion. Shaw's Nuclear Division has provided quality-driven innovative and cost-effective services in nuclear power development to more than 100 nuclear power plants worldwide including 95% of the operating plants in the U.S. Shaw's nuclear maintenance contracts cover approximately 40 percent of the operating units in the U.S. Shaw's power uprates have added more than 2000 MWe to the U.S. grid.

- Shaw is rated number 1 in power design from among the top 500 design firms by Engineering News Record (ENR) in their April 2008 edition.
- Shaw purchased Stone & Webster in 2000, which designed/constructed 18 commercial nuclear plants in the U.S. and developed the first NRC-approved Nuclear Quality Assurance Program.
- Shaw builds, modifies and maintains all types of large power and process facilities in addition to nuclear plants.

Recent Major Nuclear Projects

- WEC//Shaw consortium was awarded two AP1000 units each by Georgia Power and South Carolina Gas & Electric. Ongoing.
- WEC/Shaw Consortium was selected to supply four new reactors for the Haiyang project in Shandong Province and the Sanmen project in Zhejiang Province, PRC. Ongoing.
- National Enrichment Facility, Eunice, New Mexico. Engineering and design. Ongoing.
- Lungmen Units 1&2, Taiwan, a two-unit (1350 MWe each) EABWR nuclear plant. Engineering, design and procurement support. Complete.
- Mixed Oxide Fuel Fabrication Project, Savannah River, SC. EPC; construction began in 2007. Ongoing.
- Browns Ferry Unit 1 Restart, Tennessee. Recipient of the ENR Energy Construction Project of the Year Award. Construction; complete.
- Connecticut Yankee and Maine Yankee Decommissioning. Construction; complete.
- Maintenance and Construction Services for 41 U.S. nuclear units plus 28 industrial and process non-nuclear facilities. Ongoing.

Some Recent Major Non-Nuclear Power Projects

- Marshall Flue Gas Desulfurization Retrofit of four units totaling 2160 MWe, Terrell, North Carolina, Duke Power. Completed 2007.
- Astoria Energy, New York, a 540 MWe combined cycle dual-fuel (natural gas and fuel oil) turbine power plant EPC. Completed May 2006.
- APEX Unit No. 1 Generating Station, Mirant Corporation Location, engineering, design, procurement, construction and startup for this 550 MWe, combined-cycle power plant located in Apex Industrial Park, 20 miles north of Las Vegas, Nevada. Completed in May 2003.
- Centralia Power Plant in Lewis County, Washington, PacifiCorp. Design and engineering, procurement, and construction of a flue gas desulfurization system for two units totaling 340 MWe. Completed 2001/2002.

- Currant Creek, 2525 MWe combined cycle units for PacifiCorp in Mona, Utah. Engineering, procurement and construction. Completed 2005/2006.

The above projects demonstrate Shaw's capability to perform large power projects on schedule and budget.

WLS/I/B/6/Project Sponsors' Capabilities

B.I.6 Project Sponsors' Capabilities: Describe the Project Sponsor' capabilities, financial strengths and investment both in the project to date and as anticipated during the operational phase of the project (e.g. continuing financial support). Detail the project's strategic significance to the Project Sponsors.

Response:

This response, in its entirety, was replaced by WLS/II/D/3/Project Sponsors' Capabilities. The updated Part II response has no impact on Duke Energy Carolinas Loan Guarantee Application proposed financing structure or Lee Nuclear Station COD.

WLS/I/B/7/Proposed Project Location

B.I.7 Proposed Project Location: Identify the proposed location and the rationale for the site location.

Response:

Site Location:

Lee Nuclear Station units 1 and 2 are located in the eastern portion of Cherokee County in north central South Carolina, approximately 35 miles southwest of Charlotte, North Carolina, approximately 25 miles northeast of Spartanburg, South Carolina, and approximately 7.5 miles southeast of Gaffney, South Carolina.

Rationale:

Duke Energy Carolinas purchased the property on which the Lee Nuclear Station is to be located following a comprehensive site selection process conducted in accordance with EPRI *Siting Guide: Site Selection and Evaluation Criteria for an Early Site Permit Application* (Siting Guide), March 2002; and, consistent with guidance contained in AP1000 *Siting Guide: Site Information for an Early Site Permit*, April 2003.

The overall objective of the siting process was to identify a nuclear power plant site that:

- Satisfied applicable Nuclear Regulatory Commission ("NRC") site suitability requirements,
- Complied with National Environmental Policy Act ("NEPA") requirements regarding the consideration of alternative sites, and
- Met the Company's business objectives for the COL project which include: providing base load power for the Duke Energy Carolinas service area; minimizing transmission losses, and minimizing capital and operating costs.

Prospective sites were evaluated based on the assumption that a twin-unit plant using the AP1000 design will be built and operated at the site.

The Region Of Interest ("ROI") was defined as the Duke Energy Carolinas service area. The Siting Study process began with screening the ROI and then reducing the area under consideration in successive steps to potential sites. A two-phased screening process was used to identify candidate sites. The first screening process was a coarse screen using nine criteria to identify a smaller set of potential sites to be sent through the fine screening process.

Coarse Screening Criteria
1. Cooling Water Supply
2. Flooding
3. Population
4. Hazardous Land Uses
5. Ecology
6. Wetlands
7. Railroad Access
8. Transmission Access
9. Land Acquisition

The fine screening process used a larger set of criteria to further evaluate the remaining potential sites that passed the coarse screening process, to select the four candidate sites and to select the proposed site. The proposed site was selected based on this evaluation and consideration of how well the alternative sites satisfy Duke Energy Carolinas' business objectives; and was environmentally preferred due to less environmental impact. The 1900-ac. site, the area within the site boundary, is bounded by the Broad River to the north and east by McKowns Mountain Road to the south, and private properties to the south and west. There are no public transportation routes that cross the Lee Nuclear Station site.

The location for the Lee Nuclear Station is an industrial site that was evaluated and licensed for the construction of three nuclear units in the 1970s. Approximately 750 ac. of ground were disturbed by this early construction, which began in 1977 and was halted in 1982. These construction activities resulted in extensive alterations of the site. The site was purchased by Earl Owensby Studios in 1986 and used for the production of a movie and commercials. The site was acquired in 2005 by Cherokee Falls Development Company LLC (a subsidiary of Southern Company). Duke Energy Carolinas purchased all outstanding ownership shares from Cherokee Falls Development Company in early 2007.

Previous construction activities on the site left in place a large excavated area, partially constructed power unit buildings (one partially completed power block and containment/shield building), and numerous other large and small on-site buildings that were used as warehouses, shops, construction support facilities, and a guard house. Concrete pads and remnant vehicle parking areas are present at various locations on the site. These constructed surface features are linked by a system of paved roads and a related system of unpaved roads that serve peripheral areas of the site. Buried utility pipelines, overhead electric power lines, and communications lines that once served the buildings and construction areas are still present on the site. The electrical lines are suspended by wooden poles and metal towers. An abandoned railroad spur enters the site at a point on its northern boundary, extends across the north half of the site, and ends in a former construction area. The rails have been removed, so all that remains is the graded bed of the former spur. The site contains three major surface water impoundments that were established by previous construction activities on the site. These are the large Make-Up Pond B on the west side of the site, Make-Up Pond A on the east side of the site, and Hold-Up Pond A on the north end of the site. The majority of the site is surrounded by a chain link fence with gates.

Units 1 and 2 are (upstream) approximately 1 mi. northwest of the Ninety-Nine Islands Hydroelectric Dam. The closest communities to Lee Nuclear Station are the city of Gaffney, South Carolina (8.2 mi. northwest), the city of East Gaffney, South Carolina (7.5 mi. northwest), and the town of Blacksburg, South Carolina (5.8 mi. north). According to 2005 U.S. Census Bureau population estimates, the city of Gaffney, South Carolina had a population of 12,934 and is the largest community within 10 mi. of the Lee Nuclear Station. The city of Blacksburg, South Carolina, the second largest community within 10 mi. of the Lee Nuclear Station, had a population of 1,898.

The nearest population center (as defined by 10 CFR 100.3) to the Lee Nuclear Station is Gastonia, North Carolina. Gastonia's urban border, as defined by the U.S. Census Bureau, is situated 16 mi. to the northeast and was estimated in 2005 to have a population of 68,964.

Interstate 85, passing through the northern side of Gaffney, South Carolina and connecting Greenville, South Carolina and Spartanburg, South Carolina with Charlotte, North Carolina, is located approximately 7 mi. north-northwest of the site.

From an environmental perspective, as a result of the site preparation that occurred at Cherokee in the 1970's and 1980's, it is anticipated that there will be less environmental impact at the Cherokee site than at the other greenfield sites that were considered. The Cherokee site has been graded, roads installed, three reservoirs and associated dams constructed and filled, switchyard graded, cooling tower pads constructed, powerhouse area excavated, laydown/storage areas graded, warehouses constructed, and a rail line was previously constructed to the site. (The rails have been removed but the rail bed remains in excellent shape and minimal work will be required to re-establish the rail line.)

The former Cherokee site was identified as the site that best satisfies the overall business objectives for the Duke Energy Carolinas COL. The former Cherokee site was also environmentally preferred due to less environmental impact than the other sites under consideration, due to the previous construction activities at the Cherokee site. Duke Energy Carolinas believes that building on this site also offers other construction advantages. Most other utilities have announced plans for adding new nuclear units to existing nuclear generation sites. Duke Energy Carolinas believes that a construction site free from potential encumbrances associated with an operating nuclear plant is a positive. The fact that the site had undergone extensive earthwork including construction of water impoundments on site is also viewed as a positive. The site was also previously served with a railroad spur. While new rail lines must be layed, the rail bed is essentially in tact.

WLS/I/B/8/State and Local Support

B.I.8 State and Local Support: Describe the status of potential and actual forms, amounts and conditions of state and local support for the project. Provide timelines for such assistance.

Response:

North Carolina and South Carolina, as well as the local community surrounding the proposed Lee Nuclear Station Project site, continue to demonstrate strong support for the Project.

Local Support and Engagement

The local community has been very supportive in terms of both grassroots support of the project and in the local political arena. Local opinion leaders, elected officials and members of the immediate Lee Nuclear Station community have voiced support for the project at Nuclear Regulatory Commission ("NRC") public meetings and local information meetings. Several local groups, including county councils, chambers of commerce and economic development boards, passed resolutions supporting the project and presented these to the NRC. Additionally, many in the community have visited the site and communicated support for the project, shared support through local media outlets and provided information to assist in project activities (e.g., serving on the traffic advisory board formed to evaluate the potential traffic impact during the construction and operation of Lee Nuclear Station).

Since the Lee Nuclear Station project site selection was announced in 2006, a total of four community newsletters have been mailed to local residents (two in 2006, one in 2007 and one to date in 2008) providing information on the project. The first newsletter was sent to households within a two-mile radius (approximately 2,000 residences). The subsequent newsletters were sent to a 10-mile radius (approximately 20,000 residences). The first community newsletter included an invitation to a community picnic which was held on May 6, 2006. Approximately 800 neighbors attended the picnic, were provided project information by Duke Energy Carolinas' project employees, given the opportunity to ask questions and offered bus tours of the site.

Duke Energy Carolinas' employees, including the chief nuclear officer and vice president of nuclear plant development, have met with the community leaders in Cherokee County, South Carolina (where Lee Nuclear Station will be located) on three occasions to provide project updates and answer questions. These meetings were held at Limestone College and invitees included local and state elected officials, leaders from local government, the chamber of commerce, economic development groups, local colleges/universities, large businesses, local school system personnel, media, etc. In addition, Duke Energy Carolinas' employees have provided project updates for annual chamber of commerce planning retreat attendees (three consecutive years).

The following information contained within this box section contains proprietary information that Duke Energy Carolinas, LLC, requests not be released to persons outside the Government, except for purposes of review and evaluation.

Local Support – Financial

In 2005, Cherokee County, South Carolina approved a Fee in Lieu of Taxes ("FILOT") program for the Lee Nuclear Station Project that will result in annual property tax relief during the first thirty years of commercial operation for the proposed nuclear plant. There are two components to this program: (1) the FILOT arrangement, which will reduce the tax assessment ratio from 10.5% to 4% during the life of the incentive program, and (2) the "50% infrastructure improvement credit," which further reduces the annual property tax payment during the life of the incentive program, from 4% to 2%. Aggregate tax relief under this incentive program is estimated to be [redacted] per year during the [redacted] of commercial operation. The realized value of the relief will be based on the actual investment in taxable property.

State Support – Legislative and Regulatory

In 2005, the Public Service Commission of South Carolina issued a directive expressing support for the "next generation" of new nuclear generation. The General Assembly of South Carolina also expressed its support for new nuclear generation in its June 1, 2006, Joint Resolution, "A Concurrent Resolution to Advance the Need for Electric Utilities to Build New Nuclear Power Plants in South Carolina and to Urge the Office of Regulatory Staff and the Public Service Commission to Encourage Such Consideration," H. 5236. The PSCSC directive and the Joint Resolution are included with the application in **Appendix 3 [File name: 12 APPENDIX 3 WLS/I/B/8.doc]**. In addition, in 2007, the legislatures in both South Carolina and North Carolina passed legislation ("Base Load Review Act" in SC; "Senate Bill 3" in NC) that expressly provide for commission approval of a utility's decision to incur pre-construction costs for new nuclear generation, as well as provide for additional cost recovery assurances and for recovery of nuclear financing costs incurred during construction (refer to WLS/I/E/2 of this application for more information).

Duke Energy Carolinas filed Lee Nuclear Station Project Development Applications with the North Carolina and South Carolina state regulatory commissions on December 7, 2007. The applications sought approval of the prudence of Duke Energy Carolinas' decision to incur project development costs of up to $230 million through 2009 for the Lee Nuclear Station. On June 9, 2008, the Public Service Commission of South Carolina issued its approval order for the Lee Nuclear Station Project Development Application. On June 11, 2008, the North Carolina Utilities Commission issued its approval. The approval orders, which are further evidence of state support for Lee Nuclear Station, are included with the application in **Appendix 3 [File name: 12 APPENDIX 3 WLS/I/B/8.doc].**

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State Support – Financial

In December 2005, Duke Energy Corporation filed an 'Application for Qualification of Enterprise Program Incentives' with the South Carolina Advisory Coordinating Council for Economic Development in order to obtain certain incentives for the proposed Lee Nuclear Station available under the provisions of the South Carolina Enterprise Zone Act. The incentive program was developed in accordance with guidelines and requirements established under S.C. statutes designed to promote economic development, and the resulting tax relief for the Company will be proportional to the relief provided by S.C. to other companies that have made very large investments in taxable property. As a result, the state of South Carolina approved an incentive program that will provide the following benefits to the Company upon commercial operation of the plant:

Job Development Credit (in the form of cash rebates)

- In December 2005, the S.C. Department of Commerce approved a Job Development Credit program that will enable Duke Energy Carolinas to defray a small portion of the capital expenditures associated with a new nuclear power plant. The effective date of the preliminary agreement is 12/19/05.
- This incentive program was developed in accordance with well-defined S.C. Department of Commerce guidelines, and the value of the credit will be based on three variables: (1) the number of new jobs created to operate the plant, (2) the average hourly wage associated with the new jobs, and (3) the development designation of the County (note that Cherokee County is currently designated as a "Least Developed County," which enables the Company to qualify for the maximum credit).
- The credits cannot be claimed until Duke Energy Carolinas meets the minimum job creation targets agreed upon with the State (i.e., [redacted] for a two-unit station, or [redacted] for a one-unit station). The Company will be able to claim the credits for up to [redacted], and this incentive will be realized in the form of cash rebates of withholding taxes paid by Duke Energy Carolinas. The rebates paid under this program are based on the new jobs created by Duke Energy Carolinas in operating the Lee Nuclear Station, as described above. The Job Development Credits are estimated to be [redacted] over the [redacted] duration of the program.

Jobs Tax Credit (applied against state income)

- Due to the new jobs that will be created in South Carolina as a result of the nuclear plant, Duke Energy Carolinas is eligible for a tax credit against its annual state corporate income tax liability. This Jobs Tax Credit is available for a [redacted] beginning in the year after the new jobs are created (i.e., the first [redacted] of commercial operation). The value of these credits will be based on the number of new jobs created to operate the plant and the development designation of the relevant county. If Cherokee County retains its "Least Developed County" designation, at the time of job creation, the Company will qualify for the maximum credit. This is currently estimated to be [redacted] over the [redacted] period or an estimated [redacted]

WLS/I/B/9/Project Time Lines

B.I.9 Project Time Lines: Provide a time line of the estimated start and completion dates of each major phase or key milestone of the project from construction through start of operations. Include early site preparation start, first fuel, and first grid connection. Indicate current progress on time lines.

Response:

The following information contained within this box section contains proprietary information that Duke Energy Carolinas, LLC, requests not be released to persons outside the Government, except for purposes of review and evaluation.

Time Line:

- [redacted] Submitted Project Development Applications with the Public Service Commission of South Carolina ("PSCSC") and North Carolina Utilities Commission ("NCUC")
- [redacted] Submitted application for Combined Construction and Operating License ("COLA") with U.S. Nuclear Regulatory Commission ("NRC")
- [redacted] NRC docketed Lee Nuclear Station COLA
- [redacted] PSCSC and NCUC issued Project Development Orders
- [redacted] ASLB pre-hearing conference
- [redacted] Agree to EPC terms with WEC/Shaw consortium and make initial Long Lead Material reservation payments
- [redacted] Apply for Certificate of Environmental Compatibility and Public Convenience and Necessity ("CPCN") and Baseload Review with the Public Service Commission of South Carolina
- [redacted] Apply for Need Determination and Cost Estimate Review with North Carolina Utilities Commission
- [redacted] Receive CPCN and Baseload Review Order from the Public Service Commission of South Carolina
- [redacted] Receive Need Determination and Cost Estimate/Schedule Approval from North Carolina Utilities Commission
- [redacted] Receive NRC Environmental Impact Statement
- [redacted] Request approval from the Federal Energy Regulatory Commission ("FERC") of the purchase power agreements ("PPAs") between Newco and Duke Energy Carolinas
- [redacted] Receive NRC Final Safety Evaluation report with no Open Items and commence ASLB COL Hearings on any admitted late-filed contentions
- [redacted] Receive PPA Order from FERC
- [redacted] Close on Loan Guarantee

The following information contained within this box section contains proprietary information that Duke Energy Carolinas, LLC, requests not be released to persons outside the Government, except for purposes of review and evaluation.

[redacted] Receive COL and deploy to site
[redacted] Complete Construction of Unit 1 and complete Unit 1 Initial Fuel Load
[redacted] Commence Unit 1 Commercial Operation.
[redacted] Complete Construction of Unit 2 and complete Unit 2 Initial Fuel Load
[redacted] Commence Unit 2 Commercial Operation

WLS/I/B/10/Key Material Components

B.I.10 Key Material Components: Describe the key material components in the success of the project and describe any risk in availability (e.g., water, construction materials, site access, power distribution infrastructure, and fuel).

Response:
Key Material Components discussed below include: Water, Supply Chain, Power Distribution, Workforce, Fuel and Site Access.

Water:
Water for plant operation will come from the nearby Broad River. Availability of water was a key parameter evaluated during the site selection study. The site was previously approved by the NRC for three reactors as part of the cancelled Cherokee Nuclear Station. The Lee Nuclear Station Site currently has Make-Up Ponds A and B, built during initial Cherokee Nuclear Station construction, as sources of usable water storage to support the operation of Lee Nuclear Station during low flow conditions on the Broad River. Make-Up Pond A has approximately 11 days of usable water storage and Make-Up Pond B has approximately 30 days of usable water storage to support two units operating at 100% power.

Supply Chain:

The availability of nuclear quality materials to supply the next generation of nuclear construction continues to be a very important consideration to plant owners and developers. Current global demand for nuclear grade material and equipment may result in increases to price and delivery lead times. Ultra-large forgings are currently only produced by foundries abroad, and availability will need to be monitored closely. U.S. domestic supply could also potentially play a significant role in global nuclear construction due to the weakened dollar and increased market potential. Existing nuclear suppliers are investing in capacity and product development which should aid to alleviate supply shortfalls. Other domestic manufacturers are showing renewed interest in opportunities to provide nuclear grade materials to the industry. Duke Energy Carolinas is not currently aware of any specific supply risk associated with nuclear grade materials.

The availability of commercial materials to supply nuclear construction is also an important variable to monitor. Domestic demand for construction material remains strong, putting increasing price pressure on commodities. It is yet to be seen how the existing construction material demand projections will affect nuclear projects in the 2012-2018 timeframe. Supply side is responding to the increased demand through increased manufacturing capacities, but the timeframe for more balanced supply and demand for these products is unclear. Duke Energy Carolinas is not currently aware of any specific supply risk associated with commercial construction materials.

Overall, market response appears appropriate at this stage, but supply chain dynamics must be monitored closely to ensure actions are taken to mitigate potential supply and schedule risks.

Westinghouse Electric Company and Shaw Group, Inc. ("WEC/Shaw") have developed a detailed risk management plan for the supply of key components necessary to complete planned AP1000 projects. The risk management plan considers factors such as the diversity, capacity and quality of the potential supply base. Duke Energy Carolinas and WEC/Shaw are working together to develop specific supply risk prevention and mitigation strategies pertaining the Lee Nuclear Station project.

Power Distribution:

Connection of the proposed Lee Nuclear Station to the electric grid will be direct to the Duke Energy Carolinas' transmission system. Connection to the electric grid was applied for in 2006 using applicable FERC process. Subsequently, three studies were conducted: a Generation Interconnection Feasibility Study, a Generator Interconnection System Impact Study, and a Generator Interconnection Facilities Study. The System Impact Study summarized all thermal, short circuit, stability and reactive capability constraints resulting from the proposed interconnection. The Facilities Study quantifies the work scope and cost associated with the design and installation of all required Interconnection Facilities and all required System Network Upgrades. All such estimated costs identified in the Facility Study are included within the Owners Cost portion of the cost estimate.

Workforce:

The projected need for construction management and craft labor is significant in comparison to the existing workforce. Although the majority of the construction workforce will be provided by Shaw, Duke Energy Carolinas is very involved in construction workforce development as that will serve as a major pipeline for the future operating staff for Lee Nuclear Station. Therefore, the Company is working cooperatively with Shaw and the entire U.S. nuclear industry to address workforce needs.

On a national level, the Company is working in conjunction with, and as part of, the NEI Workforce Taskforce to develop an industry wide-approach for accelerating workforce development. At a regional level, Duke Energy Carolinas is working with both NC and SC Energy Workforce Consortiums whose mission is to provide a sustainable, qualified workforce to support the energy infrastructure in the Carolinas. These teams include energy company owners, major energy constructors, community college systems as well as the Departments of Labor and Commerce. On the local front, Duke Energy Carolinas and Shaw are working collaboratively to partner with local community colleges to communicate the labor needs, expand existing programs and develop new curriculum where appropriate.

As an example of such partnership, Duke Energy Carolinas partnered with Spartanburg Community College to develop a new curriculum in the form of an AAS in Radiation Protection Technology to maintain a pipeline of radiation protection technicians. The program teams college professors and Duke Energy Carolinas' instructors to teach the two year curriculum which is based on INPO ACAD requirements. In addition, students in the program intern on the Duke Energy Carolinas' system during two refueling outages to provide additional on site training. The program produced the first set of graduates in May of 2008, the majority of which are now employed across the Duke Energy Carolinas' fleet.

Additional partnerships include:

1. Gaston College – established maintenance technician internships, evaluating creation of a new nuclear operations technology curriculum to support staffing needs of the operating fleet and the future Lee Nuclear Station site. Gaston College is centrally located to McGuire, Catawba and Lee Nuclear Station sites.
2. York Tech – established maintenance internships, Return to Industry program (professor is loaned to Duke Energy Carolinas) with Catawba Nuclear Station.
3. Central Piedmont Community College - working to establish an Internship with new Non Destructive Examination program.
4. Catawba Valley Community College - established maintenance internships
5. Cleveland Community College - supporting Shaw in development/upgrade of welding program to support new construction needs.
6. UNCC - supporting development of Energy Production & Infrastructure Center (EPIC) which will provided an energy specific curriculum to existing engineering programs.

Operational Workforce Planning is integrated with other Nuclear Generation hiring. A total permanent support staff in the range of additional 1000 teammates will be required for Lee Nuclear Station. The dollar impact of hiring, training and preparing this workforce is included within the Owners Costs of the overall project cost estimate.

The requirements for some level of background checks and fitness for duty currently being considered by the NRC, while well understood in the current operating fleet, were not in existence during the previous Duke Energy Carolinas and industry nuclear construction projects. The industry consortiums such as WEC/Shaw are participating in industry forums (e.g., NEI) so that they are appropriately prepared for these workforce differences.

Fuel:

According to the World Nuclear Association, at the current consumption rate of ~65,000 tonnes U/yr by the world's conventional nuclear reactors, uranium resources recoverable at a cost of up to ~$50/lb is more than 5.4 million tonnes and could satisfy the demand from existing commercial nuclear reactors for more than 80 years. While this represents a higher level of assured resources than is normal for most minerals, ongoing exploration and higher prices will, on the basis of present geological knowledge, yield additional resources as existing ones expire. For example, while very little uranium exploration occurred between 1985 and 2005, between 2005 and 2006, the world's present measured resources increased 15%.

In addition, a report jointly created by the International Atomic Energy Agency ("IAEA") and OECD Nuclear Energy Agency, Uranium 2007: Resources, Production and Demand, attempted to quantify all conventional uranium resources in the world. Excluding unconventional resources such as phosphate/phosphorite deposits and seawater, conventional uranium resources are estimated to be ~10.5 million tonnes in addition to the 5.4 million tonnes known economic resources.

In a separate report, the IAEA recently updated their projections of nuclear power generation for the period to 2030. The high case estimate for total worldwide nuclear capacity in 2030 is approximately twice that of the current generation rate. Assuming that a doubling of nuclear

generation capacity by 2030 would result in a doubling of uranium consumption, the conventional uranium resources would appear to be more than sufficient to satisfy the Lee Nuclear Station fuel requirements during the operating life of the facility.

References:
For more information, refer to the information paper available on the World Nuclear Association website at:
http://www.world-nuclear.org/info/inf75.html?terms=uranium+supply and
http://www-pub.iaea.org/MTCD/publications/PDF/RDS1-28_web.pdf.

Site Access:

The primary access to the site is from McKowns Mountain Road via South Carolina State Highway 329 and Interstate 85, at South Carolina exit number 96. The site is approximately 10 miles from Interstate 85. The property boundary adjoins the Broad River. However, the river is not a navigable river for shipping. All construction deliveries will either be by rail or by truck.

There is a Duke Energy Carolinas 44 kv transmission line crossing the site. However, this line will not interfere with the construction of the plant. There are no other existing right of ways that cut across the site. During construction of the former Cherokee facility a rail spur of approximately seven miles was constructed providing rail access to the site. The rail spur was abandoned, track was removed and the rights of way returned to existing property owners. The rail bed is essentially intact and significant progress has been made in re-acquiring needed rights of way as plans are to re-establish rail service to the site. Railroad right of way acquisition should complete in early 2010, allowing for construction and completion of the rail line prior to site deployment, planned for 2012.

There is a system of paved and gravel roads that were built during the construction of the former Cherokee facility that facilitate access around the site. Appendices 2 and 4 show additional access details.

WLS/I/B/11/List and Status of Licenses/Permits/Approvals

B.1.11 List and Status of Licenses/Permits/Approvals: Provide a list of Federal, state and local licenses, permits and approvals that will be required to complete this project and the current status and estimated approval date for each. Include status of construction and operating license ("COL") approval, site approval and reactor design certification. Explain whether governmental entities (other than DOE) are required to approve the activities of the applicant under this Solicitation, the funding of activities or the carrying out of activities described in the application. Include relevant documentation.

Response: This response is replaced, in its entirety, by WLS/II/C/4/Permits and Approvals. The updated Part II response has no impact on Duke Energy Carolinas Loan Guarantee Application proposed financing structure or Lee Nuclear Station COD.

WLS/I/B/12/Detailed Total Project Cost

B.I.12 Detailed Total Project Cost: Provide an estimated total cost of the project and an estimated breakdown by cost category and purpose.

Response:

This response, in its entirety, is replaced by WLS/II/B/1/Detailed Total Cost. The updated Part II response has no impact on Duke Energy Carolinas Loan Guarantee Application proposed financing structure or Lee Nuclear Station COD.

WLS/I/B/13/Loan Guarantee Impact

B.I.13 Loan Guarantee Impact: Provide an explanation of what estimated impact the loan guarantee will have on the interest rate, debt term and overall financial debt structure of the project.

Response:

Federal loan guarantees are expected to lower the credit spread on the debt by approximately 125-150 basis points (1.25-1.5%) compared to Duke Energy Carolinas long-term cost of funds. Furthermore, loan guarantees will enable the use of project finance principles for allocating risk that will permit higher leverage than is possible on Duke Energy Carolinas' balance sheet given the constraints on capitalization imposed by its corporate rating and regulatory mandate. This will further lower capital costs by substituting lower cost guaranteed debt for a portion of the equity that would normally be required for balance sheet financing.

Together, reducing debt costs and lowering the proportion of high-cost equity can reduce the annualized ratepayer cost by up to 20%. Further reductions are possible through structuring of the purchase contract payments. Note that higher leverage will reduce Duke Energy Carolinas' equity earnings and increase the financial risk (financial leverage) of its residual equity investment in the project. This incremental risk may justify a higher return on equity ("ROE") for the project than is applicable to Duke Energy Carolinas' rate base financed under its target capital structure, and the Company plans to explore this matter with state regulators and policymakers. Subject to appropriate regulatory treatment for the overall loan guarantee structure, the Company is willing to forego substantial future earnings in order to lower ratepayer costs over the economic life of the plant.

The term of the debt can be up to 30 years, but is generally less than or equal to the term of the guarantee (which cannot exceed 30 years or 90% of the useful life of the plant). Longer tenors permit greater ratepayer savings if it is assumed that the debt must be fully repaid during the term of the guarantee. However, given that the principal risks for a project such as Lee Nuclear Station are during construction and the early operational period, it is possible to retain the benefits of lower ratepayer cost by structuring the debt to partially amortize over a shorter term with a "balloon" repayment. This approach introduces refinancing risk as there will be a balance due at the termination date of the guarantee; however, once fully operational (perhaps following a couple successful refueling cycles), the project should be able to refinance this obligation in the debt capital markets and limit the exposure of the Guarantor. There are numerous examples of such financing for existing, independently-owned nuclear plants, so refinancing risk is expected to be limited.

WLS/II/B/1 Detailed Total Cost

B.II.1 Detailed Total Cost: Provide a detailed estimate of total project costs, including a breakdown by cost category, year of expenditure and basis for amounts and include a description of the methodology and assumptions used to make such estimate. Also indicate whether these costs are firm or subject to change. Distinguish between program eligible and non-eligible costs as determined for the loan guarantee program in Section 609.12 of the Final Regulations.

The following information contained within this box section contains proprietary information that Duke Energy Carolinas, LLC, requests not be released to persons outside the Government, except for purposes of review and evaluation.

Response:

In millions of 2008 dollars and not including escalation or financing; i.e., overnight cost is shown below for two units, 1117 MWe each, with assumed CODs of 07/18 and 07/19 for units 1 and 2, respectively:

	$/kW	Total	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19
Unit 1	[redacted]																
Unit 2	[redacted]																
Total	[redacted]																

With escalation included: 2005 thru 2007 are actual dollars expended; 2008 and 2009 dollars include escalation; 2010 and 2011 dollars escalated at [redacted] per annum; and, 2012 and beyond escalated at [redacted] per annum, the estimate becomes:

	$/kW	Total	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19
Unit 1	[redacted]																
Unit 2	[redacted]																
Total	[redacted]																

The following information contained within this box section contains proprietary information that Duke Energy Carolinas, LLC, requests not be released to persons outside the Government, except for purposes of review and evaluation.

1. Breakdown of costs in terms of Direct Plant Cost, Soft Plant Cost and Escalation in millions of 2008 dollars:

Direct Plant Cost	[redacted]
Soft Plant Cost	[redacted]
Escalation	[redacted]
Total Cost	[redacted]

   - All costs included in the table above meet the definition of Project Costs, defined by 10 CFR 609.12, that are directly related to the project and are eligible for loan guarantees.
   - Direct Plant Cost is [redacted]
     - "Consortium Costs" include all costs to be included in the Engineering Procurement and Construction ("EPC") contract proposed to be entered into with a consortium of [redacted] (together the "Consortium")
     - [redacted] include [redacted] costs for: [redacted]
   - Soft Plant Cost is the [redacted]

2. Estimate of Consortium Costs is based on a September 16, 2008, consortium offer.
3. Estimate of Owner's Costs is based [redacted]
4. For both categories of costs; i.e., Consortium and Owner's, a Monte Carlo risk analysis was performed to help evaluate potential cost ranges.
5. The estimated costs presented above are not firmed or fixed with a signed EPC contract.

WLS/II/B/2 Legal Opinions/Material Reports

B.II.2 Legal Opinions/Material Reports: Provide a copy of all legal opinions, and other material reports, analyses and reviews concerning the project.

Response:

At this point in time, Duke Energy Carolinas does not have any legal opinions or material reports, other than the PSCSC directive dated August 10, 2005, SCH.5236 Joint Resolution dated June 1, 2006, the Public Service Commission of South Carolina Order Approving Application of Duke Energy Carolinas' Decision to Incur Nuclear Generation Pre-Construction Costs dated June 9, 2008 and the North Carolina Utilities Commission Order Approving Decision to Incur Project Development Costs dated June 11, 2008, that were provided with the Part I application. In addition, please see the Duke Energy Carolina's Integrated Resource Plan attached hereto at Appendix 16, the Term Sheets for the Power Purchase and Sale Agreement, the EPC Agreement, the Alliance Agreement, the Fuel Fabrication, Technology and Related Services Agreement, the Spent Nuclear Fuel Disposal Contract, the Nuclear Development & Operations and Maintenance Agreement, and the Project Debt attached hereto as Appendices 17 through 23; and the Standards & Poor Preliminary Credit Rating attached hereto as Appendix 31. Duke Energy Carolinas will provide copies of all legal opinions and other reports to the DOE as they become available.