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March 31, 2010

Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Subject: Duke Energy Carolinas, LLC  
William States Lee III Nuclear Station - Docket Nos. 52-018 and 52-019  
AP1000 Combined License Application for the William States Lee III  
Nuclear Station Units 1 and 2  
Ltr# WLG2010.03-09

Reference: Letter from Bryan J. Dolan (Duke Energy) to NRC Document Control  
Desk, *2009 Integrated Resource Plan*, Ltr# WLG2009.09-02, dated  
September 14, 2009 (ML092590318).

Duke Energy's 2009 annual Integrated Resource Plan (IRP) was completed and concluded that a commercial operation date (COD) of 2021 represents a lower-cost option for Duke Energy ratepayers. Duke Energy notified the NRC of the decision to delay the COD for the William S. Lee III Nuclear Station (Lee Nuclear Station) until 2021 in the referenced letter. Duke Energy has evaluated the Lee Nuclear Station Combined License Application for impacts due to the change in commercial operation date and determined the change in COD does not significantly impact any conclusions reached in the Environmental Report (ER). [Changes to other portions of the application were reflected in a recent update.]

This letter provides the Duke Energy editorial text changes to the ER in response to the change of COD from 2018 to 2021 in the attached enclosures. These changes will be made in a future revision of the ER.

As noted in the referenced letter, regulatory certainty is one of the key considerations in making a final decision to build. Duke anticipates regulatory certainty is needed by the end of 2012 in order to support the revised project schedule described in the enclosed ER text changes.

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If you have any questions or need any additional information, please contact Peter S. Hastings, Nuclear Plant Development Licensing Manager, at 980-373-7820.

A handwritten signature in black ink, appearing to read "Bryan J. Dolan". The signature is written in a cursive style with a large initial "B".

Bryan J. Dolan  
Vice President  
Nuclear Plant Development

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Enclosure:


- 1) Duke Energy Editorial Text Revisions for the Environmental Report

AFFIDAVIT OF BRYAN J. DOLAN

Bryan J. Dolan, being duly sworn, states that he is Vice President, Nuclear Plant Development, Duke Energy Carolinas, LLC, that he is authorized on the part of said Company to sign and file with the U. S. Nuclear Regulatory Commission this supplement to the combined license application for the William States Lee III Nuclear Station and that all the matter and facts set forth herein are true and correct to the best of his knowledge.

  
\_\_\_\_\_  
Bryan J. Dolan

Subscribed and sworn to me on March 31, 2010

  
\_\_\_\_\_  
Notary Public

My commission expires: April 19, 2010



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xc (w/o enclosure):

Loren Plisco, Deputy Regional Administrator, Region II  
Jeffrey Cruz, Branch Chief, DNRL  
Robert Schaaf, Branch Chief, DSER

xc (w/enclosure):

Michelle Moser, Project Manager, DSER  
Brian Hughes, Senior Project Manager, DNRL

## **Duke Energy Text Revisions for the Environmental Report**

### **Evaluation of Commercial Operation Date Change**

In Environmental Report (ER) Revision 1, Duke Energy evaluated a change of Lee Nuclear Station commercial operation date (COD) from 2016 to 2018. The result indicated that the change was not significant enough to warrant changes in the ER's conclusions.

Subsequently, Duke Energy's 2009 annual Integrated Resource Plan (IRP) was completed and concluded that a commercial operation date of 2021 represents a lower-cost option for Duke Energy ratepayers. Duke Energy notified NRC in a letter dated 09/14/2009 (Reference 2) of the decision to delay the COD for the William Lee Station until 2021.

The change of the COD from 2018 to 2021 necessitated an evaluation of the sections within the ER referencing population data, where supporting analyses are based on a COD of 2016. The results of this evaluation follow:

#### Subsection 1.1

Since Subsection 1.1 of the ER does not contain any analysis, there are no findings that require evaluation. Editorial revisions of the text to account for the change in COD from 2018 to 2021 are provided in Attachment 1.

Table 1.1-1 should be revised to reflect changes in the schedule resulting from the COD change. Revisions are provided in Attachment 2.

#### Subsection 2.5.1.1.1

Since Subsection 2.5.1.1.1 of the ER does not contain any analysis sensitive to COD, there are no findings that require evaluation. Editorial revisions of the text to account for the change in COD from 2018 to 2021 are provided in Attachment 3.

#### Subsection 2.5.1.3

Since Subsection 2.5.1.3 of the ER does not contain any analysis sensitive to COD, there are no findings that require evaluation. Editorial revisions of the text to account for the change in COD from 2018 to 2021 are provided in Attachment 4.

#### Subsection 4.1.1.1

Since Subsection 4.1.1.1 of the ER does not contain any analysis sensitive to COD, there are no findings that require evaluation. Editorial revisions of the text to account for the change in COD from 2018 to 2021 are provided in Attachment 5.

#### Subsection 4.4.2

Of the impacts addressed in ER Subsection 4.4.2, only the estimates for police and fire protection services were developed using projected population values. Other estimates for community services, such as education, transportation, public utilities, tourism, and recreation, were developed using the latest available data for usage or capacity and peak construction workforce data. Because these latter projections do not rely on projected population estimates and the number of construction workers has not changed with the change of COD, their estimates remain valid and do not require further evaluation.

The police and firefighter portion of the social services discussion based its analysis on projected population values for 2015. The year 2015 was originally selected because it was the closest year to the peak construction date for which projected population data was available. The equivalent year within the COD change is 2022; therefore, the evaluation of police and fire services is based

on that year's population data. Therefore, a change in the COD is not anticipated to be an impact on the findings presented in this subsection.

Subsection 4.4.2.1 states that the influx of on-site workers and families during peak construction would likely represent a 4.5 percent increase in population in Cherokee County and a 1.3 percent increase in population in York County. The revised estimates based on the change of the COD are 4.3 and 1.0 percent increases for Cherokee and York counties, respectively. These estimated increases are less because the effect of in-migrating population to the larger estimated population of 2022 is less than originally evaluated. Therefore, a change in the COD is not anticipated to be an impact on the findings presented in this subsection.

Subsection 4.4.2.3 provides the resident-to-firefighter and resident-to-police officer ratios of for Cherokee and York counties. Using the 2022 population data will increase these ratios slightly. The revised resident-to-firefighter ratios would become 193:1 and 346:1, respectively. The resident-to-police officer ratios would become 626:1 and 906:1 in Cherokee and York counties, respectively. This represents an increase of approximately 12 residents per firefighter and 23 residents per police officer for Cherokee County, and an increase of approximately 31 residents per firefighter and 81 residents per police officer for York County.

As stated, in Subsection 4.4.2.3, according to the U.S. military, proper ratio of police officers to population is between 1 and 4 officers per 1000 citizens, with the U.S. having approximately 2.3 police officers per 100 residents. Because the revised ratio of resident-to-police officer remains between the U.S. military ratios listed in the subsection, the findings stated in the ER remain valid. This does not account for the fact that as county population increases, the number of police and firefighters would also be expected to increase.

While no information is available on the national average of resident-to firefighter ratios, the ER states that local officials consider police and fire protection adequate, but future expansion and facility upgrades may be needed to accommodate future population growth. Since the 43-person increase of residents per firefighter for the two-county area is due to change in estimated county population growth rather than a change in construction population numbers, the findings stated within the ER are not impacted. Therefore, a change in the COD is not anticipated to be an impact on existing police and firefighter infrastructures and the current ER remains valid and no changes to the impact statements in ER Subsection 4.4.2 are required.

#### Subsection 5.4.2

NUREG-1555, ESRP 5.4.2 advises that dose to members of the public be based on population data for five years after the licensing action under consideration. For a COL issue date of 2012, dose to the public should use population data for 2017.

The liquid pathway dose analysis given in ER Subsection 5.4.2.1 is based on the 2036 projected population. This population projection was based on the 50-mile radius population estimates presented in FSAR Tables 2.1-203 and 2.1-204. The 2036 population projection used in the dose analysis bounds the 2017 projected population estimate applicable to the COL. Therefore, the dose analysis presented in ER Subsection 5.4.2.1, based on the 2036 population projection, is conservative. As a result, no change to the ER is required.

The gaseous pathway doses analysis presented in ER Subsection 5.4.2.2 are based on the 2056 projected population. This population projection was based on the 50-mile radius population estimates presented in FSAR Tables 2.1-203 and 2.1-204. The 2056 population projection used in the dose analysis bounds the 2017 projected population estimate applicable to the COL. Therefore, the population dose given in ER Subsection 5.4.2.2 is conservative and bounds the

population dose that would be calculated from a 2017 population projection. As a result, no change to the ER is required.

#### Subsection 5.8.2

Of the operational impacts addressed in Subsection 5.8.2, only the estimates for police and fire protection services were developed using projected population values.

The police and firefighter portion of the social services discussion based its analysis on projected population values for 2019, which was the commercial operation date of Unit 2 and the end of construction. The equivalent year for analysis within the COD change is 2026; therefore, the following evaluation of the revised COD on police and fire services is based on that year's population data.

Subsection 5.8.2.1 states that the influx of on-site workers and families during operation would likely represent a 1.0 percent increase in population in Cherokee County and a 0.3 percent increase in population in York County. The revised estimates based on changing the COD are 0.9 and 0.2 percent increases for Cherokee and York counties, respectively. These revised estimates are less than the values currently reported in the ER because the effect of in-migrating population to the larger estimated population of 2026 is less. Therefore, a change in the COD is not anticipated to be an impact on the findings presented in this subsection.

Subsection 5.8.2.3.1.2 provides the Cherokee and York counties, South Carolina resident-to-firefighter ratios and resident-to-police officer ratios. The revised resident-to-firefighter ratios would become 195:1 and 364:1, respectively. The resident-to-police officer ratios would become 649:1 and 953:1 in Cherokee and York counties, respectively.

As stated in the construction impacts discussion above, according to the U.S. military, proper ratio of residents-to-police officers is between 1 and 4 officers per 1000 citizens, with the U.S. having approximately 2.3 police officers per 100 residents. Because the revised resident-to-police officer ratio during operation falls within this range, the findings stated within the ER remain valid and no changes to the impacts statements for police officers in ER Subsection 5.8.2 are required. This does not account for the fact that as populations rise in each county, the number of police and firefighters would also be expected to increase.

While no information is available on the national average of resident-to firefighter ratios, the ER states that local officials consider police and fire protection adequate, but future expansion and facility upgrades may be needed to accommodate future population growth. Subsection 4.4.2.3 of the ER states that fire suppression plans and personnel are in place for the construction and operation periods. Therefore, the estimated 43-person increase of residents per firefighter for the two-county area is not anticipated to impact the findings stated within the ER.

As such, a change in the COD is not anticipated to be an impact on existing police and firefighter infrastructures and the current ER remains valid. No changes to the impact statements in ER Subsection 5.8.2 are required.

#### Subsection 7.2.2

The severe accident consequences analysis presented in ER Section 7.2 was based on the 2016 population distribution. It is not anticipated that the severe accident analysis using 2017 population data would significantly differ from the analysis using 2016 population data and the environmental impact would remain SMALL. Therefore, the conclusions in the ER remain valid.

**Associated Revision to the Lee Nuclear Station Combined License Application:**



- Attachment 1 Revision to ER Subsection 1.1
- Attachment 2 Revision to ER Table 1.1-1
- Attachment 3 Revision to ER Subsection 2.5.1.1.1
- Attachment 4 Revision to ER Subsection 2.5.1.3
- Attachment 5 Revision to ER Subsection 4.1.1.1

**Attachment 1**

**Revision to ER Subsection 1.1**

Duke Letter Dated: March 31, 2010

COLA Part 3, ER Chapter 1, Subsection 1.1, last two paragraphs are revised as follows:

As discussed later in the Environmental Report, Duke Energy's ~~2008~~ 2009 annual plan reflects a commercial operation date of ~~2018~~ 2021 for the first unit of the Lee Nuclear Station. The annual plan is sensitive to assumptions made for various factors such as market conditions, commodity costs, environmental compliance costs, customer growth, and customer usage patterns. The precision with which these factors can be predicted diminishes as the forecast period increases. Although the current optimal timeframe for commercial operations is ~~2018~~ 2021, this plan will be updated annually, increasing the precision of this forecast as the licensing process progresses. The construction schedule in Table 1.1-1 provides for completion of the plant in a timeframe that would support commercial operation beginning in ~~2018~~ 2021, and provides for an adequate planning window to accommodate changes due to uncertainties in the federal and state regulatory processes, construction schedule, availability of critical components, and market forces. The construction of Unit 2 is nominally planned to follow Unit 1 by one year. The actual schedule will be influenced by many of the same factors discussed above.

Some population-sensitive impacts projected in Environmental Report Revision 0 were based on a projected operation date of 2016. ~~Duke Energy performed a sensitivity study to evaluate the sensitivity of population to a change in commercial operation from 2016 to 2018. The results of this sensitivity study indicated that the population change at the end of license (2056—2058) was less than 2 percent. Consequently, Duke Energy concluded that the change in operation date from 2016 to~~ 2021 does not affect the validity of the data or impact conclusions in the Environmental Report.

**Attachment 2**

**Revision to ER Table 1.1-1**

COLA Part 3, ER Chapter 1, Table 1.1-1, is revised as follows:

TABLE 1.1-1  
 ANTICIPATED SCHEDULE FOR CONSTRUCTION AND OPERATION OF TWO AP1000  
 REACTORS AT THE LEE NUCLEAR SITE

Activity	Start	Finish	Duration
Unit 1			
Site Preparations	<u>1<sup>st</sup> Q 2012</u> <u>3<sup>rd</sup> Q 2014</u>	<u>1<sup>st</sup> Q 2014</u> <u>3<sup>rd</sup> Q 2016</u>	24 mo.
First Safety-Related Backfill Below the Nuclear Island	<u>4<sup>th</sup> Q 2012</u> <u>2<sup>nd</sup> Q 2015</u>		
First Nuclear Island Concrete	<u>1<sup>st</sup> Q 2014</u> <u>3<sup>rd</sup> Q 2016</u>		
Site Construction to Fuel Load	<u>1<sup>st</sup> Q 2014</u> <u>3<sup>rd</sup> Q 2016</u>	<u>1<sup>st</sup> Q 2018</u> <u>3<sup>rd</sup> Q 2020</u>	48 mo.
Fuel Load – Start Up	<u>1<sup>st</sup> Q 2018</u> <u>3<sup>rd</sup> Q 2020</u>	<u>3<sup>rd</sup> Q 2018</u> <u>1<sup>st</sup> Q 2021</u>	6 mo.
Commercial Operation	<u>3<sup>rd</sup> Q 2018</u> <u>1<sup>st</sup> Q 2021</u>	<u>2058</u> <u>2061</u>	40 yrs.
Unit 2			
First Nuclear Island Concrete	<u>1<sup>st</sup> Q 2015</u> <u>3<sup>rd</sup> Q 2017</u>		
Site Construction to Fuel Load	<u>1<sup>st</sup> Q 2015</u> <u>3<sup>rd</sup> Q 2017</u>	<u>1<sup>st</sup> Q 2019</u> <u>3<sup>rd</sup> Q 2021</u>	48 mo.
Fuel Load – Start Up	<u>1<sup>st</sup> Q 2019</u> <u>3<sup>rd</sup> Q 2021</u>	<u>3<sup>rd</sup> Q 2019</u> <u>1<sup>st</sup> Q 2022</u>	6 mo.
Commercial Operation	<u>3<sup>rd</sup> Q 2019</u> <u>1<sup>st</sup> Q 2022</u>	<u>2059</u> <u>2062</u>	40 yrs.

Q – Quarter.

**Attachment 3**

**Revision to ER Subsection 2.5.1.1.1**

COLA Part 3, ER Chapter 2, Subsection 2.5.1.1.1, first paragraph is revised as follows:

Tables 2.5-1 and 2.5-2 provide population projections in 10-year increments from 2016. The population projections were calculated in 10-year increments to 40 years beyond the estimated 2016 start-up date for Lee Nuclear Station. Projections were derived from county estimates that were based on the cohort-component method (References 1 and 2). ~~Duke Energy performed a sensitivity study to evaluate the sensitivity of population to a change in commercial operations from 2016 to 2018. The results of this sensitivity study indicated that the population change at the end of license (2056-2058) was less than 2%. Duke Energy evaluated the change in operation date from 2016 to 2021 and concluded that it does not affect the validity of the conclusions in the Environmental Report.~~

**Attachment 4**

**Revision to ER Subsection 2.5.1.3**



COLA Part 3, ER Chapter 2, Subsection 2.5.1.3, 12<sup>th</sup> paragraph is revised as follows:

Transient population data by sector were summed to develop transient population projections. Each sum was multiplied by the corresponding sector growth ratio, derived from the county growth ratios described above, for each year. Because the method for collecting transient data provides point locations, some sectors have a zero value. Table 2.5-4 lists the projected transient population for each sector with a non-zero value for 2007, 2016, 2026, 2036, 2046, and 2056. The estimated start-up date for the station is ~~2016~~2021.

**Attachment 5**

**Revision to ER Subsection 4.1.1.1**

Duke Letter Dated: March 31, 2010

COLA Part 3, ER Chapter 4, Subsection 4.1.1.1, 2<sup>nd</sup> paragraph is revised as follows:

The total area to be disturbed is provided in Table 4.3-1 and includes permanent structures and construction laydown areas. Construction laydown areas are portions of the site that are temporarily disturbed during construction. Permanent structures are buildings, roads, walls, etc. that are built during the construction period and remain once construction is completed. Construction on the Lee Nuclear Site is scheduled to be completed in ~~2015~~ 2021. Landscaping for the site is described in Section 3.1.