

1
2 BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

3 DOCKET NO. E-7, SUB 790
4
5

In the Matter of)
)
Application of Duke Energy Carolinas for) Rebuttal Supplemental Testimony of
Approval for an Electric Generation Certificate) William R. McCollum, Jr.
of Public Convenience and Necessity to) For Duke Energy Carolinas
Construct Two 800 MW State of the Art)
6

7 **Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.**

8 A. My name is William R. McCollum, Jr., and my business address is 526 South Church
9 Street, Charlotte, North Carolina. I am Group Executive, Chief Regulated Generation
10 Officer for Duke Energy Corporation and am responsible for leading all of the regulated
11 fossil and hydroelectric generation operations for all of the Duke Energy electric utilities.

12 **Q. DID YOU PREVIOUSLY SUBMIT DIRECT AND REBUTTAL TESTIMONY IN**
13 **THIS MATTER, AS WELL AS SUPPLEMENTAL TESTIMONY REGARDING**
14 **THE NEW COST INFORMATION SUBMITTED BY DUKE ENERGY**
15 **CAROLINAS?**

16 A. Yes, I did.

17 **Q. HAVE YOU REVIEWED THE PRE-FILED SUPPLEMENTAL TESTIMONY AND**
18 **EXHIBITS OF INTERVENORS FILED IN THIS DOCKET ON JANUARY 8, 2007?**

19 A. Yes, I have.

20 **Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL SUPPLEMENTAL**
21 **TESTIMONY?**

1 A. The purpose of my rebuttal testimony is to respond on behalf of Duke Energy Carolinas to
2 portions of the prefiled direct testimony of Douglas H. Cortez submitted on behalf of
3 Southern Alliance for Clean Energy and Environmental Defense and the Southern
4 Environmental Law Center. I will also respond to portions of the prefiled direct testimony
5 of Kevin W. O'Donnell on behalf of the Carolina Utility Customers Association, Inc.
6 Specifically, I will discuss the status of a draft Duke University report and respond to Mr.
7 Cortez' testimony concerning IGCC cost data and the status of certain CO₂ capture and
8 sequestration technology. In addition, I will provide additional information on the federal
9 clean coal tax credits received for the Cliffside Project.

10 **Q. IN YOUR SUPPLEMENTAL TESTIMONY AT PAGES 6 AND 7, YOU DISCUSSED**
11 **CERTAIN FEDERAL CLEAN COAL TAX CREDITS THAT WERE PENDING A**
12 **DECISION AT THAT TIME. PLEASE UPDATE THE STATUS OF THESE**
13 **CLEAN COAL TAX CREDITS.**

14 A. In my supplemental testimony, I discussed that Duke Energy Carolinas had applied for
15 federal tax credits available for advanced clean coal projects pursuant to the Energy Policy
16 Act of 2005. On November 30, 2006, the U.S. Department of Energy and Department of
17 Treasury announced that the Cliffside Project was one of two advanced clean coal
18 electricity generating projects in the country selected to receive \$125 million in federal tax
19 credits. We are pleased to have this federal recognition that the Cliffside Project and its
20 emission controls are state of the art. In her rebuttal testimony, Ms. Hager discusses the
21 impact of these clean coal tax credits on the updated IRP analysis.

22 **Q. IN HIS TESTIMONY, MR. O'DONNELL DISCUSSES A CONFIDENTIAL,**
23 **AUGUST 2006 DRAFT REPORT FROM THE NICHOLAS INSTITUTE AT DUKE**

1 **UNIVERSITY. WHAT IS THE STATUS OF THIS DRAFT REPORT AND HOW**
2 **HAS DUKE ENERGY CAROLINAS CONSIDERED IT AS PART OF ITS**
3 **DECISION TO PURSUE THE CLIFFSIDE PROJECT?**

4 A. The August 2006 draft of the Nicholas Institute report, “Are IGCC and carbon capture and
5 storage viable for Duke Energy in North Carolina?” discussed by Mr. O’Donnell was an
6 early draft of the report. As Mr. O’Donnell noted in his testimony, on November 28, 2006,
7 Duke Energy sent the Nicholas Institute a list of concerns and suggestions regarding the
8 draft. Since then, Duke Energy and the Nicholas Institute have discussed these issues,
9 central to which are Duke Energy’s belief that the cost information contained in the August
10 draft report is out of date. The Nicholas Institute is revising its draft report and we expect
11 to receive another draft in the coming weeks. While Duke Energy Carolinas appreciates the
12 ongoing work of the Nicholas Institute, the Company did not rely upon the draft Nicholas
13 Institute report as part of its analysis to pursue the Cliffside Project, as the Company
14 believes that the IGCC cost information it has developed, in conjunction with equipment
15 and engineering services providers, is more reflective of the actual scope and current market
16 pricing than the information contained in the Nicholas Institute report.

17 **Q. IN HIS TESTIMONY, MR. CORTEZ CLAIMS THAT DUKE ENERGY**
18 **CAROLINAS’ COST ESTIMATES FOR IGCC TECHNOLOGY ARE HIGHER**
19 **THAN THOSE IN OTHER PRIVATE STUDIES WITH WHICH HE IS FAMILIAR.**
20 **IS DUKE ENERGY CAROLINAS CONFIDENT IN THE COST ESTIMATES IT**
21 **USED FOR IGCC?**

22 A. Yes, we are. As I have testified to previously, the cost estimates for the IGCC technology
23 considered as an alternative to the Cliffside Project are based on the most recent

1 information for the currently ongoing design efforts for Duke Energy Indiana’s proposed
2 Edwardsport 632 MW IGCC project. I note that Mr. Cortez’s IGCC capital cost range of
3 ***** CONFIDENTIAL** is not significantly different than Duke Energy Carolinas’ IGCC
4 estimate of ***** CONFIDENTIAL**, and without more information as to how Mr. Cortez’s
5 cost range was developed, it is difficult to determine if this is truly an “apples to apples”
6 comparison. I don’t doubt that Mr. Cortez could review many “private studies” or other
7 sources of pricing estimates for hypothetical IGCC projects that would have different
8 estimated capital or O&M costs. In fact, when Mr. Cortez was employed by Fluor
9 Corporation, his group made proposals to Duke Energy Indiana for its Edwardsport IGCC
10 project. However, Duke Energy Indiana did not simply select the lowest estimated \$/kW
11 bid for the Edwardsport IGCC project, but instead selected the GE/Bechtel technology, in
12 part, because it offered the most reliable and flexible system for Duke Energy Indiana’s
13 needs. As I have also testified to previously, there are no existing 600 MW IGCC plants in
14 the world today. Duke Energy Indiana’s Edwardsport project is an effort to scale up and
15 develop this technology, and we are confident that the IGCC cost estimate we have
16 developed is based upon our best available vendor information to build such a project and
17 is, therefore, an appropriate estimate to rely upon.

18 **Q. MR. CORTEZ EXPRESSES HIS OPINION THAT RETROFITTING**
19 **SUPERCRITICAL PULVERIZED COAL PLANTS WITH CO₂ CAPTURE**
20 **EQUIPMENT IF ENVIRONMENTAL REGULATIONS BECOME MORE**
21 **STRINGENT IN THE FUTURE WOULD BE SUBSTANTIALLY MORE**
22 **EXPENSIVE THAN RETROFITTING IGCC PLANTS FOR CO₂ CAPTURE. DO**
23 **YOU AGREE WITH MR. CORTEZ’S CONCLUSIONS?**

1 A. I believe that it is premature to reach conclusions about the overall cost-effectiveness of
2 future CO₂ capture and sequestration equipment for both scaled up IGCC and supercritical
3 pulverized coal generating units, given the current level of demonstration of such
4 technologies. While Mr. Cortez discusses the “amine scrubber” carbon capture systems for
5 supercritical pulverized coal plants, there are newer technologies that are being developed.
6 As an example, Duke Energy is participating in a pilot demonstration project with the
7 Electric Power Research Institute (“EPRI”) and others to capture CO₂ from a pulverized
8 coal unit through chilled ammonia technology. This chilled ammonia carbon capture
9 technology would be substantially less expensive, and with substantially less parasitic load,
10 than the amine scrubber carbon capture technology, and may bring the cost of carbon
11 capture from pulverized coal units more in line with the projected cost and performance of
12 IGCC carbon capture technology.

13 **Q. IN HIS TESTIMONY, MR. CORTEZ ALSO DISCUSSES HIS BELIEF THAT A**
14 **CO₂ PIPELINE COULD POSSIBLY BE BUILT IF AN IGCC PLANT WERE**
15 **CONSTRUCTED AT THE CLIFFSIDE SITE. MR. CORTEZ DOES NOT DISCUSS**
16 **THE POTENTIAL COSTS OF SUCH AN ENDEAVOR. HAS DUKE ENERGY**
17 **CAROLINAS EVALUATED THE POTENTIAL FOR A CO₂ PIPELINE AND ITS**
18 **COSTS?**

19 A. We have not evaluated the possibility of constructing a CO₂ pipeline from the Cliffside site
20 to a possible geological sequestration location in West Virginia, Kentucky or Ohio as Mr.
21 Cortez discusses. However, such a 500 or more mile high pressure pipeline across the
22 Appalachian Mountains as Mr. Cortez discusses would certainly face substantial hurdles in
23 multi-jurisdictional regulatory oversight, right-of-way acquisition, and significant costs –

1 possibly in the hundreds of millions of dollars. The cost estimate for the Edwardsport
2 IGCC project, as well as for the IGCC alternative at Cliffside, do *not* include the additional
3 significant costs of carbon capture or sequestration equipment, should such technologies
4 become demonstrated. For these reasons and the reasons provided previously in my
5 testimony, IGCC is not a viable option for Duke Energy Carolinas to meet the 2011-2012
6 needs of its customers.

7 **Q. DOES THIS CONCLUDE YOUR REBUTTAL SUPPLEMENTAL TESTIMONY?**

8 A. Yes, it does.