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February 19, 2010

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HAND DELIVERED

Ms. Renne Vance
Chief Clerk
North Carolina Utilities Commission
430 N. Salisbury Street
Raleigh, NC 27603

*Re: Investigation of Integrated Resource Planning and REPS Compliance in
North Carolina - 2010
Docket E-100, Sub 124*

Gruber ✓
Dear Ms. Vance:

Please find enclosed the original and thirty-two (32) copies of the Direct Testimony of Don C. Reading on behalf of CPI USA North Carolina LLC in the above referenced docket. We would appreciate your filing the same and returning one "filed" stamped copy via our courier.

If you have any questions or comments regarding this filing, please do not hesitate to call me. Thank you in advance for your assistance and cooperation.

Sincerely,

Sherry K. Purvis

Sherry K. Purvis
Legal Assistant to M. Gray Styers, Jr.

Full Dig. my
Enclosures

Cc: All Parties of Record

**STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH**

DOCKET NO. E-100, SUB 124

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of:

**Investigation of Integrated Resource
Planning and REPS Compliance in North
Carolina - 2010**

DIRECT TESTIMONY OF

DON C. READING

**ON BEHALF OF
CPI USA NORTH CAROLINA LLC**

February 19, 2010

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N.C. Utilities Commission

1 **Q. WHAT IS YOUR NAME, POSITION AND BUSINESS ADDRESS?**

2 A. My name is Don C. Reading. I am Vice President and Consulting
3 Economist with Ben Johnson Associates, Inc. My business address is
4 6070 Hill Road, Boise, Idaho, 83703.

5
6 **Q. WHAT IS YOUR EDUCATIONAL EXPERIENCE AND**
7 **BACKGROUND?**

8 A. I have more than 30 years experience in the field of economics. I
9 have a Bachelors of Science in Economics from Utah State University, a
10 Masters of Science in Economics from the University of Oregon, and a
11 Ph.D. in Economics from Utah State University. Since 1986, I have been
12 employed by Ben Johnson Associates, Inc. At Ben Johnson Associates,
13 Inc., I have been involved in more than 35 expert testimonies concerning
14 economic and regulatory issues.

15
16 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY AT THIS**
17 **HEARING?**

18 A. Our firm has been retained by CPI USA North Carolina LLC ("CPI
19 USA") to analyze Progress Energy Carolinas, Inc.'s ("PEC"), 2009 IRP
20 filed with the Commission on September 1, 2009. My testimony will
21 comment on how PEC's 2009 IRP treats renewables, biomass generation
22 costs, generation plant mix, and purchased power.

1 **Q. PLEASE DESCRIBE CPI USA NORTH CAROLINA LLC.**

2 **A. CPI USA NORTH CAROLINA LLC is a limited liability company**
3 **under the laws of the State of Delaware, with its principal office located at**
4 **2000 York Road, Suite 129, Oak Brook, Illinois, 60523. CPI USA owns**
5 **two generating facilities in North Carolina (which together constitute**
6 **substantially all of its assets): a) the "Southport Facility" located at 1281**
7 **Powerhouse Drive SE, Southport, North Carolina; and b) the "Roxboro**
8 **Facility" located at 331 Allie Clay Road, Roxboro, North Carolina.**

9 The Roxboro and Southport facilities are referred to individually as
10 a "Facility" and together as the "Facilities." The Roxboro Facility was
11 originally a nominal 56 MW coal cogeneration facility. The Facility is
12 undergoing modification to utilize a blend of biomass, tire-derived fuel
13 ("TDF") and coal such that the facility can qualify for renewable energy
14 credits ("RECs") under the North Carolina renewable energy portfolio
15 standards ("REPS") contained in Senate Bill 3. Following the completion
16 of the renovations, the nominal capacity of the Facility will be reduced to
17 approximately 47 MWs. The Roxboro Facility is a qualifying small power-
18 producing facility under PURPA based on the percentage of biomass and
19 alternative fuel utilized. Currently, output from the Facility is sold to
20 Progress Energy Carolinas, Inc. pursuant to a power purchase agreement
21 that expired December 31, 2009, but whose terms remain in effect
22 pursuant to the Commission's Order Providing Interim Relief and

1 Scheduling Arbitration Proceedings, in Docket No. E-2, Sub 966, issued
2 December 18, 2009.

3 The Southport Facility was originally a nominal 112 MW coal-fired
4 cogeneration facility. The Facility is undergoing modifications to burn a
5 blend of biomass, TDF and coal such that the facility can qualify for RECs.
6 Following completion of the renovations, the nominal capacity of the
7 Facility will be reduced to approximately 86 MWs. The Facility sells steam
8 to Archer Daniels Midland and is a qualifying cogeneration facility ("QF")
9 under PURPA. Currently, electric output from the Southport Facility is
10 sold to Progress Energy pursuant to a power purchase agreement that
11 expired December 31, 2009, but whose terms remain in effect pursuant to
12 the Commission's Order Providing Interim Relief and Scheduling
13 Arbitration Proceedings, in Docket No. E-2, Sub 966, issued December
14 18, 2009.

15
16 **Q. HAVE THERE BEEN SIGNIFICANT CHANGES IN PEC'S**
17 **RESOURCE PLANNING SINCE THE TIME IT FILED ITS 2009**
18 **INTEGRATED RESOURCE PLAN (IRP) ON SEPTEMBER 1, 2009?**

19 A. Yes, for example on December 1, 2009 PEC filed a plan to retire
20 550MW of coal-fired generation in Docket No. E-2 Sub 960, and on
21 December 18, 2009 they filed an application for a certificate of public
22 convenience and necessity for a 620MW natural gas-fired combined cycle
23 plant in New Hanover County, Docket No. E-2 Sub 968.

**Q. DOES PEC'S IRP ADEQUATELY FULFILL SENATE BILL 3 AND
PEC'S STATED RENEWABLE GOALS IN THE NEAR-TERM AND
OVER THE IRP'S PLANNING HORIZON?**

A. No. PEC's preferred resource plan is depicted in Tables 1 and 2 of their IRP, pp. 22-23. With the exception of 228MW of existing company-owned hydropower (generated by 15 units) and 25MW of renewable (biomass) QF capacity, no other renewable resources are shown for 2010 in the resource plan. As PEC's hydro capacity is not regarded as "new", it is not eligible to generate RECs¹. Accordingly, the only in-state source of RECs in the resource plan in 2010 (and 2011) is the 25MW non-utility owned QF.

From the perspective of current capacity capable of generating RECs, the aforementioned 25MW of renewable QF capacity represents only 0.18% of PEC's total supply resources in 2010.

With respect to future supply, the growth in REC-producing renewables is nearly non-existent over the planning horizon, and in fact, these renewable resources are shown to decline in 2015 (Table 1), representing only 0.12% of total resources. IRP, p. 22.

¹ Under Senate Bill 3, a "new renewable energy facility" means a renewable energy facility that either, among other attributes, was placed into service on or after January 1, 2007, or is a hydroelectric power facility with a generation capacity of 10MW or less. N.C. Gen. Stat. § 62-133.7(a)(5). Only 8 of 15 units, representing 31MW of PEC's hydro capacity, are rated at below 10MW. In Exhibit 7 of the 2008 IRP, p. D-12, PEC-owned hydro generation was shown to generate 600GWh of RECs in 2009, and 599GWh each year thereafter through 2023, however, in Exhibit 7 of the 2009 IRP, p. D-13, no PEC owned hydro resources are shown to generate RECs. Hydro is represented only by 11GWh of "contracted purchases" in each of 2009 and 2010.

| TABLE 1 | | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|------------------|----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| NUG QF-Renewable | MW | 25 | 25 | 28 | 35 | 40 | 19 | 19 | 19 | 23 | 23 | 23 | 23 | 23 | 24 | 24 |

This current level of REC-producing renewable supply is so small it is not visually represented in the IRP's pie-chart illustrating projected capacity and energy by fuel type for 2009. Figure 4, IRP, p. 24. The only renewable capacity and fuel type depicted is PEC's company-owned hydro resources, which as stated above, do not produce RECs. As indicated on Exhibit 7 of PEC's IRP, p. D-13, in order to fulfill the REPS requirement, more than 8,300GWh of total RECs are required through and including 2016. See Table 2 below. Of this requirement, 25% (2,075GWh) are projected by PEC to be satisfied by energy efficiency, and another 36% (3,001GWh) are showing as fulfilled with "contracted purchases". Nearly 17% (1,400GWh) of the entire 5-year REPS requirement is met through the purchase of out-of-state wind RECs, and wind RECs comprise nearly half of the contracted RECs.

Given that Senate Bill 3 mandates that no more than 25% of the REPS requirement may be satisfied by out-of-state RECs, N.C. Gen. Stat. § 62-133.7(b)(2)e., only an additional 679GWh of out-of-state REC purchases are possible. There is a concern that more than 3,200GWh (nearly 40%) of the RECs needed to fulfill the requirement through 2016 are forecast to be generated by undesignated "projected resources". Included in this total is swine and poultry generation, both of which PEC indicates will not be sufficient to meet the statewide requirement by 2012,

1 and, PEC expresses concerns with respect to the scale and viability of the
2 technology associated with this type of generation². IRP, p. D-4. The
3 balance of the "projected resources" are marked as "other", and represent
4 the largest contribution – nearly 2,500GWh of the 3,200GWh required. On
5 an annual average basis these undesignated resources represent more
6 than 640GWh per year. To satisfy this need would require 146MW of
7 renewable capacity, assuming a 50% capacity factor. This is nearly six
8 times the size of the current supply of in-state REC-producing generation
9 (i.e., the aforementioned 25MW QF shown in Table 1 on page 22 of PEC's
10 IRP).

11 To illustrate the magnitude of the need for in-state REC-producing
12 renewable resources from a different perspective, in each of the first 3
13 years starting in 2012, the total need for RECs is more than 1,140 GWh
14 per year (and grows each year in synch with retail load growth). At the
15 75% in-state requirement, this translates into a need of more than
16 850GWh of in-state RECs per year. To generate this level of RECs,
17 based on a renewable facility operating at a 50% capacity factor, would
18 require nearly 195MW of in-state renewable capacity, nearly 8 times what
19 is shown in PEC's current resource supply.³ Moreover, the need for in-

² PEC indicates that the majority of the responses received in their RFP for swine resources received "were associated with small-scale or test projects", and that "the technology appears to be less developed than other biomass fuels". IRP, p. D-4.

³ Based on a more typical capacity factor for renewables of 35% or lower (wind and solar), the need for in-state capacity increases accordingly. At an average 35% capacity factor, more than 277MW of capacity is required to generate 850GWh of RECs. This is more than 10 times what is shown in PEC's current total resource supply for each of 2010 and 2011. IRP, p.22.

state RECs will double starting in 2015 when the RPS requirement increases to 6% of retail load. Given the significant lead time required to construct new renewable resources, PEC's ability to fulfill the requirements of Senate Bill 3 with in-state RECs is in doubt.

Table 2

(source: Derived from IRP, p. D-13)

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | % of Need | TOTAL |
|----------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|
| PEC REPS Requirement (GWh) | | | | 1,144 | 1,160 | 1,184 | 2,397 | 2,429 | | 8,314 |
| Less contracted purchases | | | | | | | | | | |
| Wind RECs contracted | | 809 | 591 | | | | | | 16.8% | |
| Solar | 4 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 1.1% | |
| Biomass | 266 | 245 | 245 | 245 | 245 | 245 | | | 17.9% | |
| Hydro | 11 | 11 | | | | | | | 0.3% | |
| TOTAL RECS PURCHASED | 281 | 1077 | 848 | 257 | 257 | 257 | 12 | 12 | 36.1% | 3,001 |
| EFFICIENCY | | 2 | 2 | 285 | 289 | 295 | 597 | 605 | 25.0% | 2,075 |
| NET REQUIRED: | | | | | | | | | | 3,238 |
| PROJECTED RESOURCES | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | TOTAL | |
| Poultry - undesignated | 0 | 0 | 0 | 0 | 51 | 90 | 90 | 90 | 321 | |
| Solar - undesignated | 0 | 10 | 23 | 33 | 42 | 52 | 61 | 71 | 292 | |
| Swine - undesignated | 0 | 0 | 0 | 19 | 19 | 19 | 19 | 19 | 95 | |
| Other - undesignated | 0 | 0 | 0 | 477 | 477 | 477 | 477 | 587 | 2,495 | |
| | 0 | 10 | 23 | 529 | 589 | 638 | 647 | 767 | 3,203 | |

Finally, with respect to the balance of the planning horizon, and renewables in general (without regard to REC production), PEC's projection through the end of 2024 shows an overall *reduction* in renewable capacity and energy, with renewables representing only 1.3% of capacity, and renewable fuel representing less than 1% of total energy produced. By contrast, both nuclear and gas-fired resources increase from more than 51% of capacity in 2009 to nearly 69% by 2024, and from 48.9% of energy generated in 2009 to more than 73% by 2024. See Table 3 below. None of the capacity additions cited in PEC's resource

plan are renewable in nature. See Table 4 below. As a result, PEC's
"strong commitment" to renewables is questionable. See IRP, pp. 3, 17
and 28.

Table 3

(source: IRP, pp 24-25; New Hanover CPCN Application, Docket No. E-2,
Sub 968, p. 22)

Resource Mix Capacity

| | 2009 | 2024 |
|-----------|---------------|---------------|
| Coal | 37.10% | 27.30% |
| Gas & Oil | 26.30% | 35.60% |
| Nuclear | 24.90% | 33.00% |
| Hydro | 1.60% | 1.30% |
| Purchases | 10.00% | 2.70% |
| | <u>99.90%</u> | <u>99.90%</u> |

Resource Mix Energy

| | 2009 | 2024 |
|-----------|----------------|----------------|
| Coal | 46.00% | 24.80% |
| Gas & Oil | 3.90% | 12.70% |
| Nuclear | 45.00% | 60.70% |
| Hydro | 1.10% | 0.90% |
| Purchases | 4.10% | 0.90% |
| | <u>100.10%</u> | <u>100.00%</u> |

Resource Mix Energy: New Hanover CPCN Application, Docket E-2, Sub 968, p. 22
Before & After Wayne County and Sutton coal plants
are replaced with CC's

| | 2010 | 2014 |
|-----------|----------------|----------------|
| Coal | 48.30% | 35.30% |
| Gas & Oil | 3.20% | 16.80% |
| Nuclear | 44.00% | 43.50% |
| Hydro | 1.10% | 1.00% |
| Purchases | 3.40% | 3.40% |
| | <u>100.00%</u> | <u>100.00%</u> |

Table 4
(source: IRP p. 21)

The 2009 resource plan includes the following capacity additions:

| Name | Capacity (MW) | Type | In-Service date |
|--------------------|---------------|----------|-----------------|
| Richmond County CC | 635 | CC | 06/11 |
| Undesignated | 126 | CT | 12/12 |
| Wayne County CC | 950 | CC | 01/13 |
| Undesignated | 169 | CT | 06/2017 |
| Undesignated | 338 | CT | 06/2018 |
| Undesignated | 1105 | Baseload | 06/2019 |
| Undesignated | 1105 | Baseload | 06/2020 |
| Undesignated | 169 | CT | 06/2024 |

**Q. ARE THERE OTHER SOURCES OF IN-STATE RECS
AVAILABLE TO PEC?**

A. In PEC's Table 1, it indicates that the megawatts "include potential sources that have not yet been identified but are expected to be obtained to meet PEC's Renewable Portfolio Standard requirements". IRP, p. 22. As mentioned above, the only renewable resource included in Table 1 of the IRP that is capable of generating RECs is the 25MW QF Renewable facility. According to Table 1 above, this resource category declines in capacity over time. Other potential sources could include poultry or swine waste generation. However, as mentioned above, PEC is concerned that these resources identified for development in the near term will not be sufficient to meet the statewide requirement by 2012, and that these resources are challenged by technology that appears to be less developed than other biomass fuels. IRP, p. D-4.

Two other sources of in-state RECs are now available. These facilities are listed in Appendix C of the IRP as "Primary Energy – Roxboro" and "Primary Energy – Southport". These facilities are owned by CPI USA and have undergone significant capital upgrades to utilize a biomass fuel blend incorporating wood and tire-derived materials. These facilities now qualify for RECs under Senate Bill 3. The facilities are QFs, and have been upgraded from traditional stoker coal boilers into state-of-the-art facilities at an aggregate upgrade cost of more than \$85 million. In combination, the two facilities offer 134MW of capacity and the ability to generate more than one-half of one REC for every megawatt-hour of electricity produced, more than 275GWh of RECs annually at a capacity factor of 47.5%. At this assumed output, the combined facilities would supply more than 55% of the unfulfilled RECs identified in the IRP as "undesignated other renewables." IRP, Exhibit 7, p. D-13. Moreover, these facilities are dispatchable, and thus provide capacity in addition to energy, a favorable characteristic that is not common to all renewables, as evidenced by PEC's acknowledgement that only "a limited number" of the renewable purchase contracts in the resource plan provide capacity. IRP, p. 10.

**Q. DO YOU HAVE ANY COMMENTS WITH RESPECT TO PEC'S
LEVELIZED BUSBAR COST FOR ALL TECHNOLOGIES WITHOUT
CARBON?**

1 A. Yes. In Figure 1-1 of the IRP, biomass technology is represented
2 by an orange line that, on interpolating from the graph, starts at
3 approximately \$670/kW-year at a 0% capacity factor and rises to
4 approximately \$870/kW-year at a 47% capacity factor. The comments at
5 the bottom of the figure indicate that the costs presented are based on
6 “generic capital, O&M, and delivered fuel costs data without transmission
7 or other site specific criteria”. IRP, p. 12. This cost structure is well in
8 excess of the cost associated with two existing biomass facilities situated
9 within the State of North Carolina. The facilities in question are CPI USA's
10 Southport and Roxboro facilities, described earlier in my testimony. On an
11 aggregate basis, these facilities represent 134MW of newly-modified
12 capacity with state-of-the-art boilers that burn fuel comprised of more than
13 50% renewable biomass⁴.

14 At a zero capacity factor, the Facilities' aggregate revenue
15 requirement (i.e., all fixed costs including a financial return) totals under
16 \$30 million, which translates to just under \$225/kW-year, well below half
17 the cost indicated by PEC for biomass technology. Assuming a 47.5%
18 capacity factor, the facilities' aggregate revenue requirement is under \$65
19 million, or \$485/kW-year. This is 45% less than PEC's stated cost for
20 biomass at this dispatch level.

⁴ The Roxboro Facility's fuel blend is 55%/20%/25% wood, tire-derived fuel (TDF) and coal, and based on a State of North Carolina determination approving 25% of TDF as renewable, approximately 60% of the output is considered biomass or “renewable”. The Southport Facility's fuel blend is 45%/21%/34% wood, tire-derived fuel (TDF) and coal, for an average output that is 50% renewable.

1 Furthermore, the costs outlined above for the Roxboro and
2 Southport Facilities are below not only those depicted for biomass, but
3 also below those presented in PEC's Figure 1-1 for a combined-cycle
4 natural gas-fired facility (whether "conventional" or "advanced"). The
5 conventional combined cycle facility ("CCGT") presented in Figure 1-1
6 indicates a cost in excess of \$300/kW-year at zero percent capacity factor.
7 This is more than \$75/kW-year higher than the CPI USA Facilities, and at
8 a dispatch of 47.5%, the CCGT facility shows a cost of just under
9 \$600/kW-year, more than \$100/kW-year higher than the CPI USA facilities
10 at the same output. The lower cost for the CPI USA facilities is also
11 demonstrated by comparing the levelized cost per megawatt-hour of the
12 Roxboro and Southport facilities to PEC's proposed Wayne County facility,
13 a 950MW gas-fired combined-cycle plant. See Application for a Certificate
14 of Public Convenience and Necessity to Construct a 950MW Combined
15 Cycle Natural Gas Fueled Generation Facility in Wayne County and
16 Motion for Waiver of Rule R-8-61, Docket No. E-2, Sub 960, p.6, filed
17 August 18, 2009. Based on PEC's recommended facility configuration,
18 the Wayne County plant's levelized busbar cost is projected by PEC to be
19 \$147/MWh based on a 40% capacity factor. At this same capacity factor,
20 the average aggregate cost for the Roxboro and Southport Facilities is
21 under \$120/MWh. It should be noted that, in making operational
22 comparisons, both the CPI USA facilities and PEC's Wayne County plant
23 would be considered intermediate resources, and both are dispatchable.

1 The key difference, however, is that PEC's Sutton facility would not be
2 capable of generating RECs, unlike the Roxboro and Southport Facilities.

3
4 **Q. DOES PEC'S IRP MEET SENATE BILL 3'S REQUIREMENTS**
5 **FOR REPS IN A COST-EFFECTIVE MANNER?**

6 A. PEC indicates that it is "not fully known at this time...exactly how
7 the requirements of the REPS will be achieved, and through which
8 technologies". IRP, pp. 16-17⁵. Based on the foregoing cost comparisons,
9 it is apparent that cost-effective resources that materially contribute to
10 satisfying PEC's in-state REPS needs are available in North Carolina.

11
12 **Q. DO YOU SEE ANY INCONSISTENCIES WITHIN PEC'S**
13 **RESOURCE PLAN?**

14 A. Yes. PEC states that it "advocates a balanced approach" and
15 claims that such a diversified approach "helps to insulate customers from
16 price volatility with any one particular fuel source." IRP, p. 3. PEC defines
17 "balanced" to include a commitment to investing in renewables, yet this is
18 not effectuated in their resource plan to any material degree. Indeed, as
19 noted earlier in my testimony, the renewable component of PEC's capacity
20 and energy supply is extremely low. Further, renewable energy and
21 capacity are declining in relative terms over the planning horizon. All of

⁵ Indeed, as noted above, PEC has expressed its reservations with respect to the current viability and availability of poultry and swine waste renewable resources, and moreover, that proposals to date have been "small-scale or pilot projects". IRP, p. D-4.

1 PEC's projected capacity additions are gas-fired (denoted by PEC as "CC"
2 or "CT") or "baseload". Presumably, the baseload capacity is either
3 nuclear or natural gas-fired since each proposed baseload resource is
4 shown as 1,105MW. See Table 4, above. The only exception to this is
5 the addition of 10-15MW of "QF Renewable" incremental capacity by 2013
6 and 2014, which then drops back down to a total of 19MW by 2015. This
7 is *less* than the current 25MW of QF Renewable capacity. See Table 1,
8 above. A balanced plan would reflect a significantly greater commitment
9 to renewables. A balanced plan would include far more renewables than
10 just over one-tenth of one percent of PEC's total resources (represented
11 by QF Renewables in 2015). Aside from not adequately embracing
12 renewables as a means of diversifying fuel risk to mitigate rate impacts – a
13 stated objective of PEC's balanced approach, IRP, p. 28 – it is apparent
14 that as an added consequence, PEC is creating a further price risk
15 exposure for ratepayers given their "short" position with respect to
16 contracted in-state RECs.

17
18 **Q. DO YOU HAVE ANY OBSERVATIONS WITH RESPECT TO THE**
19 **USE OF PURCHASED POWER AS SET FORTH IN THE IRP?**

20 **A.** Yes. Tables 1 and 2, IRP, pp. 22-23, reflect a significant decline in
21 the level of purchased power. In particular, the QF "Cogen" category has
22 been reduced to zero (2010 through 2024) in the 2009 IRP from the
23 179MW level (through 2024) shown in the 2008 IRP. Additionally, the

"renewables undesignated" category has been reduced from 44MW starting in 2012 (rising to over 100MW by 2015 through 2024) in PEC's 2008 IRP to just 25MW through 2011 in the 2009 IRP. See Table 5 below. On balance, and over the long term, as indicated in PEC's Figures 4 and 5, IRP, pp. 24-25, capacity purchases decline from 10% in 2009 to just 2.7% in 2024, and energy purchases decline from 4.1% down to under 1% Id. This sharply declining percentage of purchased power indicates a less – rather than more – robust and balanced resource plan, as the benefits of supply diversity and an active competitive procurement process are greatly diminished. Furthermore, PEC indicates that its "assessment of purchase power options has not yet been conducted" IRP, p. 21. However, judging by PEC's projections for purchased power, it seems a foregone conclusion that this future capacity need will be met with PEC-built resources.

Table 5
(source: 2008 IRP, p. 18 and 2009 IRP, p. 22)

| 2008 IRP | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|-------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Purchases* | | | | | | | | | | | | | | | |
| NUG QF - cogen | 179 | 179 | 179 | 179 | 179 | 179 | 179 | 179 | 179 | 179 | 179 | 179 | 179 | 179 | 179 |
| Renewables | 28 | 25 | 25 | 25 | 25 | 25 | | | | | | | | | |
| Renewables Undesignated | | | | 44 | 44 | 44 | 98 | 98 | 98 | 102 | 102 | 102 | 103 | 103 | 103 |
| NUG QF - Other | 9 | | | | | | | | | | | | | | |
| | 216 | 204 | 204 | 248 | 248 | 248 | 277 | 277 | 277 | 281 | 281 | 281 | 282 | 282 | 282 |

* Purchases are assumed to be renewed unless information available indicates otherwise.
Undesignated renewables are projections.

| 2009 IRP | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Purchases | | | | | | | | | | | | | | | |
| NUG QF - cogen | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NUG QF - Renewable** | 25 | 25 | 28 | 35 | 40 | 19 | 19 | 19 | 23 | 23 | 23 | 23 | 23 | 24 | 24 |
| NUG QF - Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 25 | 25 | 28 | 35 | 40 | 19 | 19 | 19 | 23 | 23 | 23 | 23 | 23 | 24 | 24 |

** Renewables are assumed to be provided by sources that are dispatchable and/or high capacity factor sources and therefore are counted towards capacity margin. The MW shown include potential sources that have not yet been identified but are expected to be obtained to meet PEC's Renewable Portfolio Standard requirements.

1 **Q. HOW DOES THE IRP REFLECT PEC'S RESOURCE**
2 **PROCUREMENT PHILOSOPHY?**

3 **A. PEC claims that as a general policy it solicits the wholesale market**
4 **before making resource decisions. Further, PEC claims that it evaluates**
5 **alternatives to identify the feasible options to meet the identified need, and**
6 **uses detailed economic analysis to identify the most cost-effective**
7 **resource plan. PEC also indicates that "before proceeding with a self-**
8 **build option it must be determined whether there are any purchase power**
9 **alternatives available that might maintain the system reliability level in a**
10 **more cost-effective manner" IRP, p. 20; Progress Energy Carolinas, Inc's**
11 **Resource Planning Philosophy Concerning Purchased Power, p. 4,**
12 **Docket No. E-100, Subs 118 and 122. However, this stated procurement**
13 **policy is not consistent with the drastic reductions in purchased power**
14 **shown in the IRP.**

15
16 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

17 **A. Yes it does, at this time.**

CERTIFICATE OF SERVICE

The undersigned certifies that he has served a copy of the foregoing **Direct Testimony of Don C. Reading** upon the parties of record in this proceeding, or their attorneys, by hand delivery, electronically, facsimile, or by depositing a copy of the same in the United States Mail, postage prepaid and properly addressed as follows:

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This 19th day of February, 2010.



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