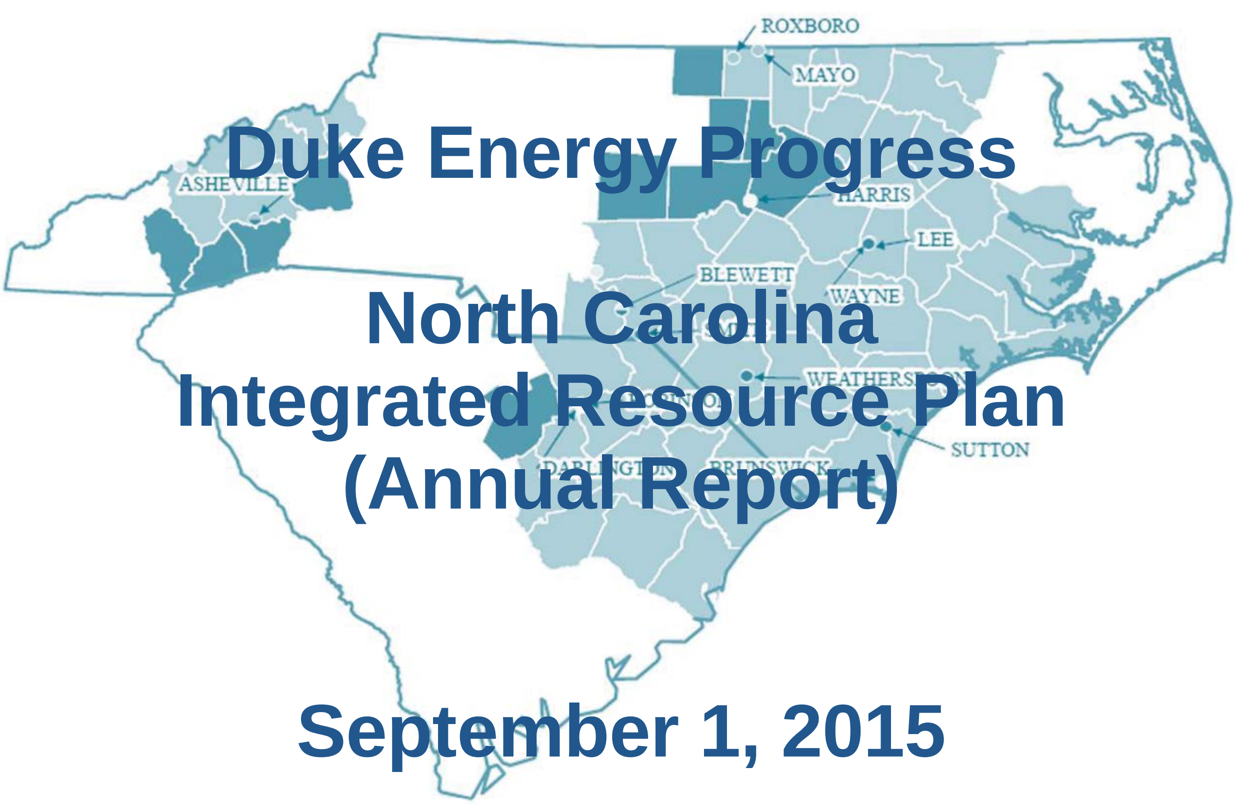
DUKE ENERGY® PROGRESS




# Duke Energy Progress

# North Carolina Integrated Resource Plan (Annual Report)

## September 1, 2015

PUBLIC

**DEP NC 2015 IRP**
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# 1. INTRODUCTION

For more than a century, Duke Energy Progress (DEP) has provided affordable and reliable electricity to customers in North Carolina (NC) and South Carolina (SC) now totaling more than 1.5 million in number. Each year, as required by the North Carolina Utilities Commission (NCUC) and the Public Service Commission of South Carolina (PSCSC), DEP submits a long-range planning document called the Integrated Resource Plan (IRP) detailing potential infrastructure needed to match the forecasted electricity requirements for our customers over the next 15 years.

The 2015 IRP is the best projection of how the Company's energy portfolio will look over the next 15 years, based on current data assumptions. This projection will change as variables such as projected load forecasts, fuel prices, new environmental regulations and other outside factors change.

On July 20, 2015, the NCUC ordered that the IRP process between biennial IRPs be significantly streamlined. As such, the remainder of this document provides the information ordered by the NCUC for this update (odd year) IRP.

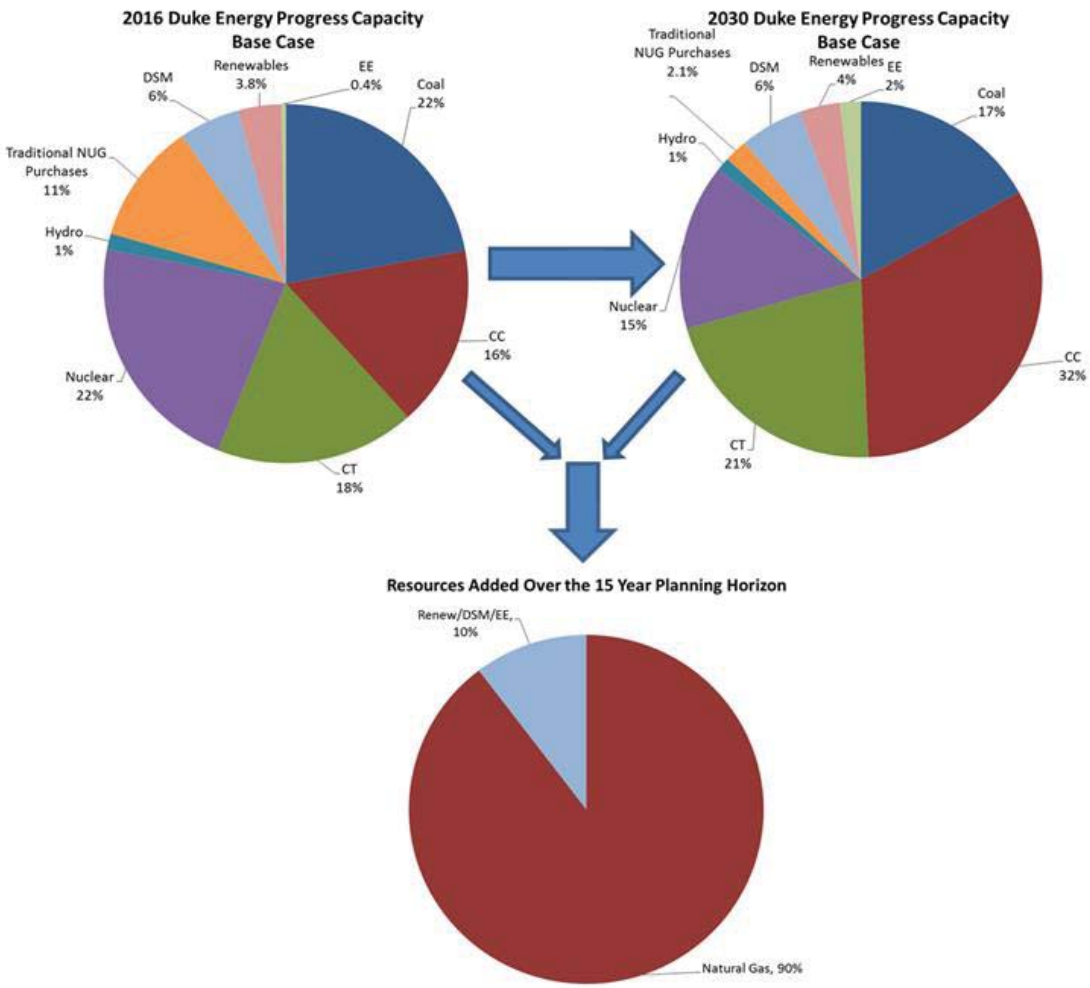
The Company files separate 2015 IRPs for North Carolina and South Carolina. However, the IRP analyzes the system as one DEP utility across both states including customer demand, energy efficiency (EE), demand side management (DSM), renewable resources and traditional supply-side resources. As such, the quantitative analysis contained in both the North Carolina and South Carolina filings is identical, while certain sections dealing with state-specific issues such as state renewable standards or environmental standards may be specific to that state's IRP.

## 2. 2015 IRP SUMMARY

As 2015 is an update year for the IRP, DEP developed two cases based on the results of the 2014 IRP. The first case, or the "Base Case" is an update to the presented Base Case in the 2014 IRP which includes the expectation of carbon legislation beginning in 2020. Additionally, a "No Carbon Sensitivity" was developed in which no carbon legislation is considered. All results presented in this IRP represent the Base Case, except where otherwise noted.

As shown in the 2015 IRP Base Case, projected incremental needs are driven by load growth and the retirement of aging combustion turbine (CT) and coal-fired resources. The 2015 IRP seeks to achieve a reliable, economic long term power supply through a balance of incremental renewable resources, EE, DSM, nuclear, and traditional supply-side resources planned over the coming years. In order to reliably and affordably meet our customers' needs into the future, the Company projects the need for incremental investments in these resources as depicted in the charts below.

**Chart 2-A 2016 and 2030 Base Case Summer Capacity Mix and Sources of Incremental Capacity**




The additional assets included over the 15 year planning horizon were selected as the most reliable and affordable resource mix to meet customer demand into the future. Furthermore, the selected mix of renewable resources, EE programs, DSM programs, nuclear generation, and state-of-the-art natural gas facilities also help the Company maintain a diversified resource mix while reducing the environmental footprint associated with each unit of energy production.

## 3. IRP PROCESS OVERVIEW

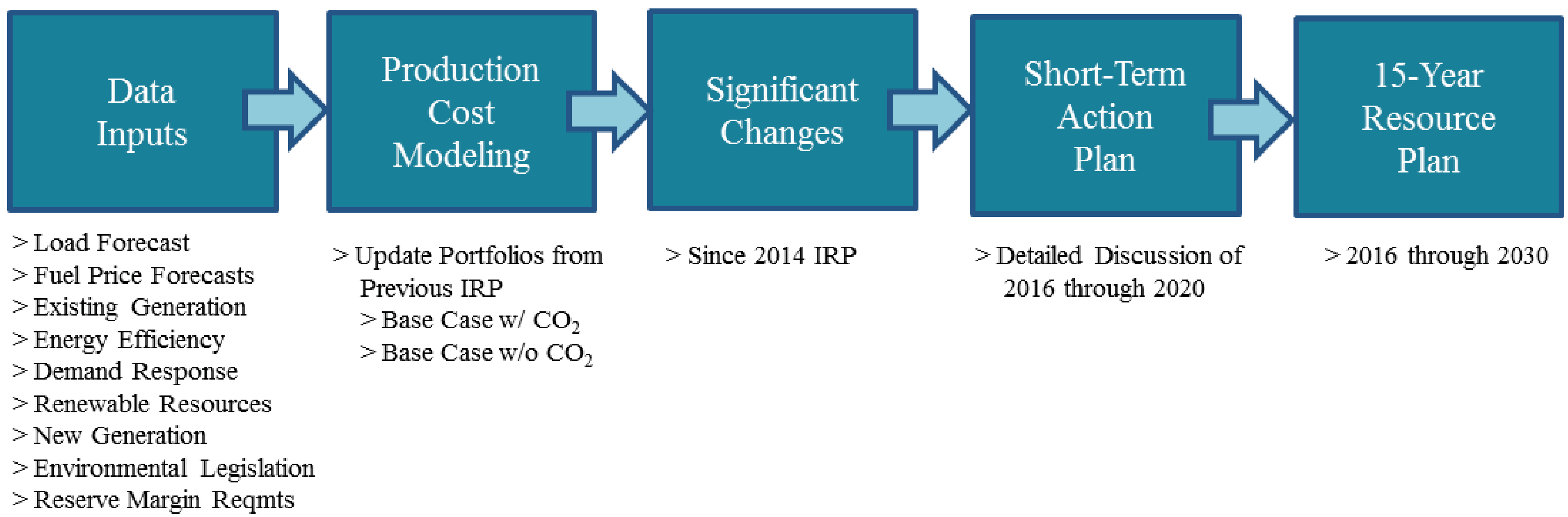
To meet the future needs of DEP's customers, it is necessary for the Company to adequately understand the load and resource balance. For each year of the planning horizon, the Company develops a load forecast of cumulative energy sales and hourly peak demand. To determine total resources needed, the Company considers the peak demand load obligation plus a 17% minimum planning reserve margin. The projected capability of existing resources, including generating units, EE and DSM, renewable resources and purchased power contracts, is measured against the total resource need. Any deficit in future years will be met by a mix of additional resources that reliably and cost-effectively meet the load obligation and planning reserve margin while complying with all environmental and regulatory requirements. It should be noted that DEP considers the non-firm energy purchases and sales associated with the Joint Dispatch Agreement (JDA) with Duke Energy Carolinas (DEC) in the development of its independent Base Case. To accomplish this, DEP and DEC plans are determined simultaneously to minimize revenue requirements of the combined jointly-dispatched system while maintaining independent reserve margins for each company.

The use of a 17% reserve margin represents an increase over last year's IRP that is discussed in more detail in Chapter 4. As discussed in Chapter 4, this increase does not materially impact the near-term resource needs of the Company as projected in the Short-Term Action Plan but rather influences the subsequent years of the plan.

For the 2015 Update IRP, the Company presents a Base Case with a $CO_2$ tax beginning in 2020. The current assumption of a $CO_2$ tax is intended to serve as a placeholder for future carbon regulation. Consistent with this assumption, the final Environmental Protection Agency (EPA) Clean Power Plan (CPP) was released in mid-August and each state is in the process of developing individual state plans to comply with the rule as discussed in Chapter 4. Furthermore, a primary focus of this update IRP is the Short-Term Action Plan (STAP) which runs from 2016 to 2020. It was determined that the inclusion of the $CO_2$ tax did not have a significant impact on the STAP, and therefore the majority of the data presented in this report is taken from the $CO_2$ case (Base Case).

Figure 3-A represents a simplified overview of the resource planning process in the update years (odd years) of the IRP cycle.

**Figure 3-A Simplified IRP Process**



## 4. SIGNIFICANT CHANGES FROM THE 2014 IRP

As an initial step in the IRP process, all production cost modeling data is updated to include the most current and relative data. Throughout the year, best practices are implemented to ensure the IRP best represents the Company's generation system, conservation programs, renewable energy and fuel costs. The data and methodologies are regularly updated and reviewed to determine if adjustments can be made to further improve the IRP process and results.

As part of the review process, certain data elements, with varying impacts on the IRP, inevitably change. A discussion of newly included or updated data elements that had the most substantial impact on the 2015 IRP is provided below.

### a) Load Forecast

The 2015 DEP Spring Load Forecast is updated to include the most current data available at this time. The process and models for the load forecast remain the same, however the method by which utility energy efficiency (UEE) [1] impacts are incorporated into the load forecast has changed since the 2014 IRP. UEE programs are energy efficiency programs that were developed and offered to customers by the Company The impacts of UEE on the load forecast do not include load reductions from free-riders. Free-riders are those customers who would have adopted the energy efficiency program regardless of incentives provided by the Company.

Program lives of UEE programs were previously considered indefinite in the IRP process, but in this year's IRP, are more clearly incorporated in the load forecast. Many UEE programs have a finite program life, much like the useful life of any generating resource. By including the useful life of the programs, the Company is better able to account for the UEE programs available to the DEP system, and as such represent a more realistic and accurate representation of these programs. A numerical representation of the impacts of these changes and impacts to the load forecast are included in Chapter 5.

In the development of the load forecast, many variables may cause the load forecast projection to change. A brief comparison of the growth of the DEP load forecast is presented in Table 4-A and a more detailed discussion can be found in Chapter 5.

[1] The term UEE is utilized in the load forecasting sections which represents utility-sponsored EE impacts net of free riders. The term "Gross EE" represents UEE plus naturally occurring energy efficiency in the marketplace.

**Table 4-A 2015 DEP Load Forecast Growth Rates vs. 2014 Load Forecast Growth Rates (Retail and Wholesale Customers)**

| | 2015 Forecast (2016 – 2030) | | | 2014 Forecast (2015 – 2029) | | |
|---|---|---|---|---|---|---|
| | **Summer Peak Demand** | **Winter Peak Demand** | **Energy** | **Summer Peak Demand** | **Winter Peak Demand** | **Energy** |
| ***Excludes*** impact of new EE programs | 1.5% | 1.3% | 1.2% | 1.6% | 1.5% | 1.3% |
| ***Includes*** impact of new EE programs | 1.3% | 1.2% | 1.2% | 1.4% | 1.3% | 1.0% |

## b) Renewable Energy

The Company is committed to full compliance with the North Carolina Renewable Energy Portfolio Standard (NC REPS). Currently signed projects and additional resources needed to fully comply with NC REPS are included in the 2015 IRP. There is currently a large influx of solar resources in the interconnection queue in the DEP system. With this influx, more solar projects are utilized to meet the NC REPS general compliance requirement, replacing biomass and wind resources that were represented in the 2014 IRP.

Additionally, the newly approved South Carolina Distributed Energy Resource Program (SC DERP) has been included. The SC DERP was approved by the PSCSC on July 15, 2015. The Company's commitment to meet the increasing goals of this program through 2020 is included in the 2015 IRP.

Finally, growing customer demand for renewable generation is driving the need for additional solar resources. These resources are included as Utility-owned projects and are projected in the IRP. Such projects are incremental to NC REPS or SC DERP compliance renewables. Utility-owned projects include the expected projects procured by the Company that will increase the capacity of renewable generation on the DEP system.

As mentioned above, DEP has seen a large influx of solar resources in the interconnection queue. A summary of the projects currently in the interconnection queue is represented in Table 4-B. The table shows not only the amount of resources, but also the type of resources.

**Table 4-B DEP QF Interconnection Queue**

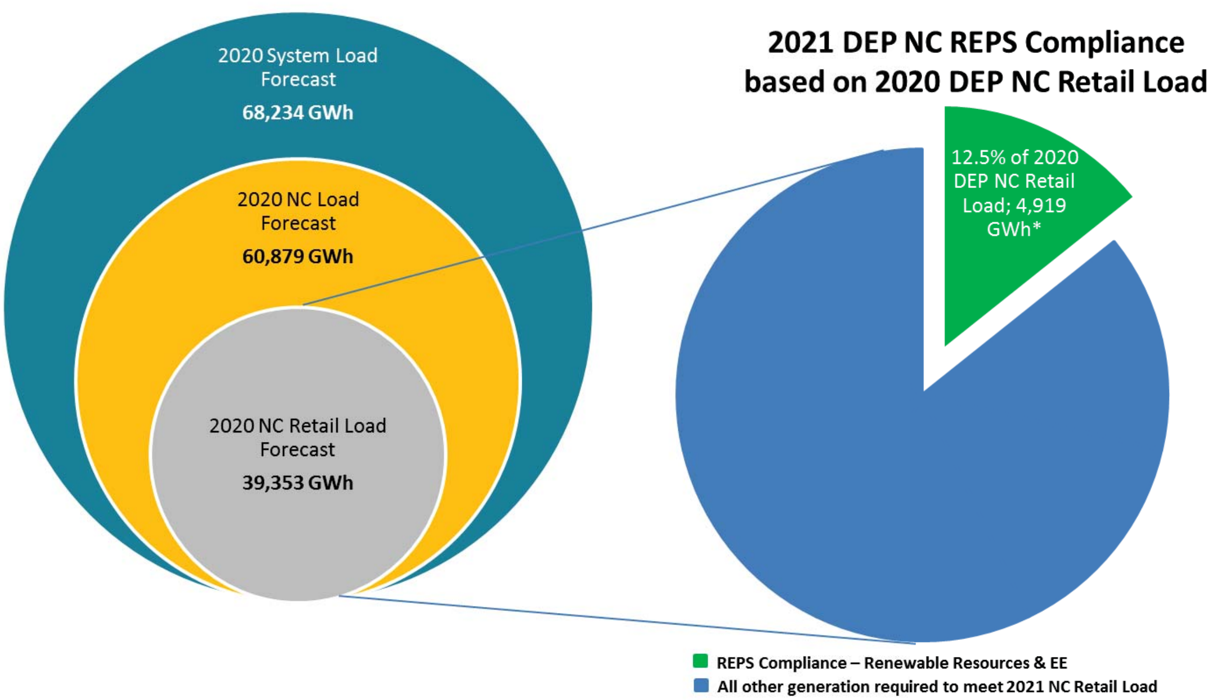
| Utility | Facility State | Energy Source Type | Number of Pending Projects | Pending Capacity MW AC |
|---|---|---|---|---|
| **DEP** | **NC** | Biogas | 2 | 7 |
| | | Biomass | 3 | 53 |
| | | Landfill Gas | 2 | 16 |
| | | Other | 2 | 1 |
| | | Solar | 436 | 3244 |
| | | Wood Waste | 1 | 5 |
| **DEP** | **NC Total** | | **446** | **3326** |
| | **SC** | Solar | 37 | 605 |
| | **SC Total** | | **37** | **605** |
| **DEP Total** | | | **483** | **3931** |

**Renewables Compliance**

A large portion of the renewable resources added over the planning horizon are a result of complying with NC REPS. The pie charts presented in Chapter 2 above represent the capacity of each asset by fuel type. However, the NC REPS compliance plan sets compliance targets based upon retail energy sales. As such, the renewable *capacity* percentage detailed above is not adequate for determining the Company's compliance with the NC REPS *energy* target.

In an effort to explain NC REPS compliance needs, Chart 4-A shows the energy forecasts and the ultimate NC REPS compliance need for DEP.

**Chart 4-A DEP - Meeting NC REPS Compliance**




* 4,919 GWh represents the projected amount of Renewables and EE required to meet REPS compliance in 2021 based on the NC Retail load forecast for the year 2020. The cumulative EE and renewables energy on the DEP system is expected to be greater than what is represented here. Additionally, NC REPS allows 65% of the 2021 target to be met by EE and Out of State Renewable Energy Certificates (RECs).

**c) <u>Addition of Combined Heat & Power (CHP) to the IRP</u>**

Combined Heat and Power (CHP) systems, also known as cogeneration, generate electricity and useful thermal energy in a single, integrated system. CHP is not a new technology, but an approach to applying existing technologies. Heat that is normally wasted in conventional power generation is recovered as useful energy, which avoids the losses that would otherwise be incurred from separate generation of heat and power. CHP incorporating a CT and heat recovery steam generator (HRSG) is more efficient than the conventional method of producing usable heat and power separately via a gas package boiler.

Duke Energy is exploring and working with potential customers with good base thermal loads on a regulated Combined Heat and Power offer. The CHP asset will be included as part of Duke Energy's IRP as a placeholder for future projects as described below. The steam sales are credited back to the revenue requirement of the projects to reduce the total cost of this generation grid resource. Along with the potential to be a competitive cost generation resource, CHP can result in $CO_2$ emission reductions, and present economic development opportunities for the state.

Projections for CHP have been included in the following quantities in the 2015 IRP:

2019: 20 MW
2021: 20 MW

As CHP continues to be pursued, future IRP processes will incorporate additional CHP as appropriate.

Additional technologies evaluated as part of the 2015 IRP are discussed in Chapter 6.

**d) <u>Reserve Margin</u>**

In 2012, DEP and DEC hired Astrape Consulting to conduct a reserve margin study for each utility. Astrape conducted a detailed resource adequacy assessment that incorporated the uncertainty of weather, economic load growth, unit availability and transmission availability for emergency tie assistance. Astrape analyzed the optimal planning reserve margin based on providing an acceptable level of physical reliability and minimizing economic costs to customers. The most common physical metric used in the industry is to target a system reserve margin that satisfies the one day in 10 years Loss of Load Expectation (LOLE) standard. This standard is interpreted as one firm load shed event every 10 years due to a shortage of generating capacity. From an economic perspective, as planning reserve margin increases, the total cost of reserves increases while the costs related to reliability events decline. Similarly, as planning reserve margin decreases, the cost of reserves decreases while the costs related to reliability events increase, including the costs to customers of loss of power. Thus, there is an economic optimum point where the cost of additional reserves plus the cost of reliability events to customers is minimized. Based on past reliability assessments, results of the Astrape analysis, and to enhance consistency and communication regarding reserve targets, both DEP and DEC had adopted a 14.5% minimum summer planning reserve margin for scheduling new resource additions.

In 2015, DEP and DEC contracted again with Astrape Consulting to perform an updated resource adequacy study. The Companies believe that the study was warranted at this time due to several factors. First, the severe, extreme weather experienced in the service territory the last two winter periods was so impactful to the systems that additional review with the inclusion of recent years' weather history was warranted. Second, since the last reliability study the system has added, and projects to add, a large amount of resources that provide meaningful capacity benefits in the summer only. From a peak reduction perspective such summer oriented resources include solar generation, HVAC load control and chiller uprates to existing natural gas combined cycle units. The interconnection queue for solar facilities shows potential to add significantly to the solar resources already incorporated in the system.

Initial results of this updated study indicate that a 17% summer planning reserve margin is required to maintain the one day in 10 year LOLE standard. As such, DEP has utilized a 17% planning reserve margin in the 2015 IRP as opposed to the 14.5% reserve margin used in the 2014 IRP. However, preliminary findings also indicate that a summer-only reserve margin target may not be adequate for providing long term reliability given the increasing levels of summer-only resources. Additional study is needed to determine whether dual summer/winter planning reserve margin targets are required in the future. Once the final results are determined, any changes will be included in the 2016 IRP.

**Adequacy of Projected Reserves**

DEP's resource plan reflects reserve margins ranging from 17.0% to 21.9%. Reserves projected in DEP's IRP meet the minimum planning reserve margin target and thus satisfy the one day in 10 years LOLE criterion. The projected reserve margin exceeds the minimum 17% target by 3% or more in 2016-2018 primarily due to a decrease in the load forecast compared to earlier projections. The projected reserve margin exceeds the target by 3% or more in 2022 as a result of the economic addition of a large combined-cycle facility.

A significant increase in projected solar capacity causes reserves to exceed 3% of the target in 2023. The projected reserve margin also exceeds the target by 3% or more in 2027 as a result of the economic addition of a large block of combustion turbine capacity.

The IRP provides general guidance in the type and timing of resource additions. Since capacity is generally added in large blocks to take advantage of economies of scale, it should be noted that projected planning reserve margins in years immediately following new generation additions will often be somewhat higher than the minimum target. Large resource additions are deemed economic only if they have a lower Present Value Revenue Requirement (PVRR) over the life of the asset as compared to smaller resources that better fit the short-term reserve margin need. Development of detailed self-build projects and utilization of the Request for Proposals (RFP) process to consider purchased power alternatives will ensure the Company selects the most cost-effective resource additions. Reserves projected in DEP's IRP are appropriate for providing an economic and reliable power supply.

**e) <u>Fuel Costs</u>**

In the 2014 IRP, the first 5 years of natural gas prices were based on market data and the remaining years were based off of fundamental pricing. Market prices represent liquid, tradable gas prices offered at the present time, also called "future or forward prices." These prices represent an actual contractually agreed upon price that willing buyers and sellers agree to transact upon at a specified future date. As such, assuming market liquidity, they represent the markets view of spot prices for a given point in the future. Fundamental prices developed through external econometric models, on the other hand, represent a projection of fuel prices into the future taking into account changing supply and demand assumptions of the changing dynamics of the external marketplace. The natural gas market has become more liquid, and there are now multiple buyers and sellers of natural gas in the marketplace that are willing to transact at longer transaction terms. Due to the evolving natural gas market, DEP and DEC are using market based prices for the first 10 years of the planning period (2016 – 2025). Following the 10 years of market prices, the Companies transition to fundamental pricing over a 5 year period with 100% fundamental pricing in 2030 and beyond.

As in the 2014 IRP, coal prices continue to be based on 5 years of market data in the 2015 IRP. In order to account for the impact on coal prices by using a longer market based natural gas price, the companies are transitioning to fundamental coal pricing over a 10 year period (2021 to 2030), using the same growth rate as natural gas through that time period. Previously the Companies moved to fundamental coal prices once market prices were unavailable, but the

Companies believe this creates an unrealistic disconnect between coal and natural gas prices in the medium term.

## f) New Resource Retirements/Additions

### Asheville Plant

As part of the Western Carolinas Modernization Project (WCMP) announced in the spring of 2015, the combined 376 MW Asheville 1 & 2 coal units are planned to be retired no later than January 31, 2020. The retired units are expected to be replaced with a 663 MW natural gas combined cycle unit on site in November 2019, along with necessary and associated natural gas delivery and electric transmission infrastructure projects. Additionally, an undetermined amount of solar generation is planned for installation at the same site shortly after the retirement of the coal plants. The Certificate of Public Convenience and Necessity (CPCN) for the new combined cycle unit is expected to be filed with the NCUC in the fourth quarter of 2015. As part of the WCMP, the three fuel oil combustion turbine units totaling 126 MW that were planned for Asheville in 2019, as included in the 2014 DEP IRP Short-Term Action Plan, are no longer necessary and have been removed from the 2015 IRP.

This retirement date for the Asheville coal units represents an acceleration of approximately 10 years from previous planning assumptions. The retirements of the units, and the corresponding investments in the required infrastructure to replace those units, are being accelerated due to a culmination of several factors. These factors include continued declines in natural gas prices, the unique opportunity to take advantage of an economic gas delivery project by the local gas distribution company, and the opportunity to avoid significant investment in additional environmental controls at the coal units that would be required by 2020.

In summary, benefits from the WCMP include, but are not limited to:

- Significant fuel cost reductions through the construction of new transmission infrastructure and combined cycle plant coupled with eliminating the uneconomic utilization of the coal units.
- Avoidance of significant capital expenditures for further environmental controls on the coal units.
- Avoidance of costs associated with three fuel oil combustion turbine units that would be required in the absence of the WCMP.
- Engagement in a unique opportunity to partner with the local gas distribution company to bring cost-effective natural gas supply to the western Carolinas.
- Enhanced reliability following multiple polar vortex events.

**Sutton and Lee Inlet Air Chillers**

The 2014 IRP called for installation of 137 MW of inlet air chiller technology at Sutton and Lee combined cycle plants prior to the summer of 2018. The most recent analysis of summer reserves shows that these chillers can be delayed until at least the summer of 2019. The 2015 IRP shows installation in May 2019, and a slight downward adjustment of capacity to 135 MW (77 MW at Lee CC and 58 MW at Sutton CC). The benefits to winter capacity from these chillers is not included in the plan as the chiller technology only provides summer peaking capability.

**Purchase of NCEMPA Portion of Assets**

The North Carolina Eastern Municipal Power Agency (NCEMPA) previously owned partial interest in several Duke Energy Progress plants, including Brunswick Nuclear Plant Units 1 and 2, Mayo Plant, Roxboro Plant Unit 4 and the Harris Nuclear Plant. The Power Agency's ownership interest in these plants represented approximately 700 megawatts of generating capacity. DEP's prior IRPs included NCEMPA's ownership share of the jointly owned assets along with the associated load obligation.

Boards of directors of Duke Energy and the NCEMPA approved an agreement for Duke Energy Progress to purchase the Power Agency's ownership in these generating assets. All required regulatory approvals have been completed and the agreement closed on July 31, 2015. DEP is now 100% owner of these previously jointly owned assets. Under the agreement, Duke Energy Progress will continue meeting the needs of NCEMPA customers previously served by the Power Agency's interest in Duke Energy Progress' plants.

**g) EPA Clean Power Plan (CPP)**

On August 3, 2015, the EPA signed the final $CO_2$ emission limits rule for existing fossil-fuel power plants, known as the "Clean Power Plan". The regulation is promulgated under Section 111(d) of the Clean Air Act and is sometimes referred to as "111(d)". The rule is both lengthy (over 1550 pages) and complex. There have been considerable legal questions raised since the initial proposal and the rule remains controversial both at the state and federal levels.

EPA has made substantial changes from the proposed rule it released in June 2014 and a complete analysis will take time. The rule maintains a building block approach and preserves the first three building blocks of heat rate improvement, re-dispatch to natural gas and construction of renewables. Building block 4, which in the proposal established energy efficiency targets, has been eliminated from the final rule. There are new elements in the final rule including additional compliance options, a model trading program and a "clean energy incentive program" to encourage early investments in renewable generation and demand-side energy efficiency.

Regulation under Section 111(d) of the Clean Air Act requires EPA to set the program requirements in a guideline document it issues to the states. The document must include:

"An emission guideline that reflects the application of the best system of emission reduction … that has been adequately demonstrated for designated facilities," taking into account both the "cost of achieving such emission reductions" as well as the "remaining useful life of sources."

States use the EPA guidance document to develop their own regulations – often referred to as a state implementation plan (SIP). States have primary implementation and enforcement authority and responsibility for the regulation.

State emission reduction goals were calculated based on EPA's determination of the "Best System of Emission Reduction" (BSER) for existing plants. Since no technology is commercially available to reduce $CO_2$ emissions at fossil fueled power plants, EPA proposed that the application of building blocks across the entire electric generation system was appropriate for determining the degree of emission reduction that would be achievable.

States have until September 6, 2016 to submit a complete plan or a partial plan with an extension request. States receiving an extension must submit a final state implementation plan (SIP) by September 6, 2018. EPA plans to take one year to review state plans (this could be a significant challenge for the Agency to accomplish). Duke Energy's compliance obligations will be finalized once a state compliance plan has been approved. If a state chooses not to submit a plan or a plan is deemed to be inadequate, EPA will impose a federal plan on the state.

***North Carolina***

The North Carolina 2030 rate target increased from 992 lbs. $CO_2$/MWh (proposed rule) to 1,136 lbs./MWh (final rule). In addition, the final rule includes a 2030 mass cap for North Carolina of 51,266,234 tons of $CO_2$. It remains unclear if the increased rate will make it easier or more difficult to comply given the uncertainty surrounding the treatment of new natural gas combined cycle (NGCC) units. Early indications are that the NC Department of Environment and Natural Resources (NC DENR) will pursue submittal of a final plan based on what utilities can achieve at the individual affected unit, referred to as 'Building Block 1', to the EPA by the September 2016 deadline. With seven operational coal-fired stations and a growing fleet of NGCC units, the final rule and implementation plan will certainly impact generation in North Carolina, but the extent of these impacts remains unclear.

***South Carolina***

The South Carolina 2030 rate target increased from 772 lbs. $CO_2$/MWh (proposed rule) to 1,156 lbs./MWh (final rule). In addition, the final rule includes a 2030 mass cap for South Carolina of 25,998,968 tons of $CO_2$. The SC Department of Health and Environmental Control has a robust stakeholder group evaluating options and intends to apply for the two year extension, pushing back the date for submittal of a final rule to September 2018. Duke Energy operates no coal-fired generation in South Carolina, so the impact of the rule is anticipated to be minimal.

## h) Transmission Planned or Under Construction

This section contains the planned transmission line and substation additions since the 2014 IRP. Only those projects added since the 2014 IRP are included. A discussion of the adequacy of DEP's transmission system is also included. Table 4-C lists the transmission projects that are planned to meet reliability needs. This section also provides information pursuant to the North Carolina Utilities Commission Rule R8-62.

**Table 4-C: DEP Transmission Line and Substation Additions**

| | Location | | Capacity | Voltage | |
|---|---|---|---|---|---|
| **Year** | **From** | **To** | **MVA** | **KV** | **Comments** |
| **2016** | Falls | - | 336 | 230/115 | New |
| **2016** | Selma | - | 336 | 230/115 | Upgrade |
| **2018**[2] | Vanderbilt | West Asheville | 307 | 115 | Upgrade |
| **2018**[3] | Richmond | Raeford | 1195 | 230 | Relocate, new |
| **2018**[4] | Ft. Bragg Woodruff St. | Raeford | 1195 | 230 | Relocate, new |
| **2019** | Craggy | Enka | 799 | 230 | New |
| **2019** | Asheville Plant | - | 448 | 230/115 | New |
| **2020** | Jacksonville | Grants Creek | 1195 | 230 | New |
| **2020** | Newport | Harlowe | 681 | 230 | New |

[2] The date for this project in the 2014 IRP was 2016. The project has been re-scheduled for 2018.
[3] This project was included in the 2014 IRP, however some parameters have been made and are represented on the following pages.
[4] This project was included in the 2014 IRP, however some parameters have been made and are represented on the following pages.

**Rule R8-62:** Certificates of environmental compatibility and public convenience and necessity for the construction of electric transmission lines in North Carolina.

(p) Plans for the construction of transmission lines in North Carolina (161 kV and above) shall be incorporated in filings made pursuant to Commission Rule R8-60. In addition, each public utility or person covered by this rule shall provide the following information on an annual basis no later than September 1:

*(1) For existing lines, the information required on FERC Form 1, pages 422, 423, 424, and 425, except that the information reported on pages 422 and 423 may be reported every five years.*

Please refer to the Company's FERC Form No. 1 filed with NCUC in April, 2015.

(p) Plans for the construction of transmission lines in North Carolina (161 kV and above) shall be incorporated in filings made pursuant to Commission Rule R8-60. In addition, each public utility or person covered by this rule shall provide the following information on an annual basis no later than September 1:

*(2) For lines under construction, the following:*

*a. Commission docket number;*
*b. Location of end point(s);*
*c. Length;*
*d. Range of right-of-way width;*
*e. Range of tower heights;*
*f. Number of circuits;*
*g. Operating voltage;*
*h. Design capacity;*
*i. Date construction started;*
*j. Projected in-service date;*

The following pages represent those projects in response to Rule R8-62 parts (1) and (2).

DEP has no transmission line projects currently under construction.

(p) Plans for the construction of transmission lines in North Carolina (161 kV and above) shall be incorporated in filings made pursuant to Commission Rule R8-60. In addition, each public utility or person covered by this rule shall provide the following information on an annual basis no later than September 1:

(3) For all other proposed lines, as the information becomes available, the following:

*a. County location of end point(s);*
*b. Approximate length;*
*c. Typical right-of-way width for proposed type of line;*
*d. Typical tower height for proposed type of line;*
*e. Number of circuits;*
*f. Operating voltage;*
*g. Design capacity;*
*h. Estimated date for starting construction (if more than 6 month delay from last report, explain); and*
*i. Estimated in-service date (if more than 6-month delay from last report, explain). (NCUC docket no. E-100, sub 62, 12/4/92; NCUC docket no. E-100, sub 78a, 4/29/98.)*

The following pages represent those projects in response to Rule R8-62 part (3).

Richmond – Raeford 230 kV Line Loop-In

Project Description: Loop-In the existing 230 kV transmission line from the Richmond 230 kV Substation in Richmond County to the Ft. Bragg Woodruff St 230 kV Substation in Cumberland County at Raeford 230 kV Substation in Hoke County.

a. County location of end point(s); Hoke County
b. Approximate length; 5 miles
c. Typical right-of-way width for proposed type of line; 125 feet
d. Typical tower height for proposed type of line; 80 -120 feet
e. Number of circuits; 1
f. Operating voltage; 230 kV
g. Design capacity; 1195 MVA
h. Estimated date for starting construction; September 2015
i. Estimated in-service date; June 2018

Ft. Bragg Woodruff St – Raeford 230 kV Line loop-in

Project Description: Loop-In the existing 230 kV transmission line from the Richmond 230 kV Substation in Richmond County to the Ft. Bragg Woodruff St 230 kV Substation in Cumberland County at Raeford 230 kV Substation in Hoke County.

a. County location of end point(s); Hoke County
b. Approximate length; 5 miles
c. Typical right-of-way width for proposed type of line; 125 feet
d. Typical tower height for proposed type of line; 80 – 120 feet
e. Number of circuits; 1
f. Operating voltage; 230 kV
g. Design capacity; 1195 MVA
h. Estimated date for starting construction; September 2015
i. Estimated in-service date; June 2018

Craggy – Enka 230 kV Line

Project Description: Construct new 230 kV transmission line from the Craggy 230 kV Substation in Richmond County to the Enka 230 kV Substation in Buncombe County.

a. County location of end point(s); Buncombe County
b. Approximate length; 10 miles
c. Typical right-of-way width for proposed type of line; 125 feet
d. Typical tower height for proposed type of line; 80 – 120 feet
e. Number of circuits; 1
f. Operating voltage; 230 kV
g. Design capacity; 799 MVA
h. Estimated date for starting construction; September 2016
i. Estimated in-service date; December 2019

Jacksonville – Grants Creek 230 kV Line

Project Description: Construct new 230 kV transmission line from the Jacksonville 230 kV Substation in Onslow County to the Grants Creek 230 kV Substation in Onslow County.

a. County location of end point(s); Onslow County
b. Approximate length; 15 miles
c. Typical right-of-way width for proposed type of line; 125 feet
d. Typical tower height for proposed type of line; 80 – 120 feet
e. Number of circuits; 1
f. Operating voltage; 230 kV
g. Design capacity; 1195 MVA
h. Estimated date for starting construction; September 2016
i. Estimated in-service date; June 2020

<u>Newport – Harlowe 230 kV Line</u>

Project Description: Construct new 230 kV transmission line from the Newport 230 kV Substation in Carteret County to the Harlowe 230 kV Substation in Carteret County.

a. County location of end point(s); Carteret County
b. Approximate length; 8 miles
c. Typical right-of-way width for proposed type of line; 125 feet
d. Typical tower height for proposed type of line; 80 – 120 feet
e. Number of circuits; 1
f. Operating voltage; 230 kV
g. Design capacity; 681 MVA
h. Estimated date for starting construction; September 2016
i. Estimated in-service date; June 2020

## DEP Transmission System Adequacy

DEP monitors the adequacy and reliability of its transmission system and interconnections through internal analysis and participation in regional reliability groups. Internal transmission planning looks 10 years ahead at available generating resources and projected load to identify transmission system upgrade and expansion requirements. Corrective actions are planned and implemented in advance to ensure continued cost-effective and high-quality service. The DEP transmission model is incorporated into models used by regional reliability groups in developing plans to maintain interconnected transmission system reliability. DEP works with DEC, NCEMC and ElectriCities to develop an annual NC Transmission Planning Collaborative (NCTPC) plan for the DEP and DEC systems in both North and South Carolina. In addition, transmission planning is coordinated with neighboring systems including South Carolina Electric & Gas (SCE&G) and Santee Cooper under a number of mechanisms including legacy interchange agreements between SCE&G, Santee Cooper, DEP, and DEC.

The Company monitors transmission system reliability by evaluating changes in load, generating capacity, transactions and topography. A detailed annual screening ensures compliance with DEP's Transmission Planning Summary guidelines for voltage and thermal loading. The annual screening uses methods that comply with SERC policy and NERC Reliability Standards and the screening results identify the need for future transmission system expansion and upgrades. The transmission system is planned to ensure that no equipment overloads and adequate voltage is maintained to provide reliable service. The most stressful scenario is typically at peak load with certain equipment out of service. A thorough screening process is used to analyze the impact of potential equipment failures or other disturbances. As problems are identified, solutions are developed and evaluated.

Transmission planning and requests for transmission service and generator interconnection are interrelated to the resource planning process. DEP currently evaluates all transmission reservation requests for impact on transfer capability, as well as compliance with the Company's Transmission Planning Summary guidelines and the FERC Open Access Transmission Tariff (OATT). The Company performs studies to ensure transfer capability is acceptable to meet reliability needs and customers' expected use of the transmission system. Generator interconnection requests are studied in accordance with the Large and Small Generator Interconnection Procedures in the OATT and the North Carolina Interconnection Procedures.

Southeastern Reliability Corporation (SERC) audits DEP every three years for compliance with NERC Reliability Standards. Specifically, the audit requires DEP to demonstrate that its transmission planning practices meet NERC standards and to provide data supporting the

Company's annual compliance filing certifications. SERC conducted a NERC Reliability Standards compliance audit of DEP in the fall of 2014. DEP received "No Findings" from the audit team.

DEP participates in a number of regional reliability groups to coordinate analysis of regional, sub-regional and inter-balancing authority area transfer capability and interconnection reliability. Each reliability group's purpose is to:

- Assess the interconnected system's capability to handle large firm and non-firm transactions for purposes of economic access to resources and system reliability;

- Ensure that planned future transmission system improvements do not adversely affect neighboring systems; and

- Ensure interconnected system compliance with NERC Reliability Standards.

Regional reliability groups evaluate transfer capability and compliance with NERC Reliability Standards for the upcoming peak season and five- and ten-year periods. The groups also perform computer simulation tests for high transfer levels to verify satisfactory transfer capability.

Application of the practices and procedures described above have ensured DEP's transmission system is expected to continue to provide reliable service to its native load and firm transmission customers.

## 5. LOAD FORECAST

The Duke Energy Progress Spring 2015 Forecast provides projections of the energy and peak demand needs for its service area. The forecast covers the time period of 2016 – 2030 and represents the needs of the following customer classes:

- Residential
- Commercial
- Industrial
- Other Retail
- Wholesale

Energy projections are developed with econometric models using key economic factors such as income, electricity prices, industrial production indices, along with weather and appliance efficiency trends. Population is also used in the Residential customer model. While regression analysis has consistently yielded reasonable results over the years, processes are continually reviewed and compared between jurisdictions in an effort to improve upon the forecasting process. Large unforeseen events however, such as the “great recession” or the loss of large wholesale customers, will cause forecasts to differ from actual results.

The economic projections used in the Spring 2015 Forecast are obtained from Moody’s Analytics, a nationally recognized economic forecasting firm, and include economic forecasts for the states of North Carolina and South Carolina.

The Retail forecast consists of the three major classes: Residential, Commercial and Industrial.

The Residential class sales forecast is comprised of two projections. The first is the number of residential customers, which is driven by population. The second is energy usage per customer, which is driven by weather, regional economic and demographic trends, electric price and appliance efficiencies.

The usage per customer forecast was derived using a Statistical Adjusted End-Use Model (SAE). This is a regression based framework that uses projected appliance saturation and efficiency trends developed by Itron using Energy Information Administration (EIA) data. It incorporates naturally occurring efficiency trends and government mandates more explicitly than other models. The outlook for usage per customer is essentially flat through much of the forecast horizon, so most of the growth is primarily due to customer increases. The projected growth rate of Residential in the Spring 2015 Forecast after all adjustments for Utility EE programs, Solar and Electric Vehicles from 2016-2030 is 1.3%.

The Commercial forecast also uses a SAE model in an effort to reflect naturally occurring as well as government mandated efficiency changes. The three largest sectors in the Commercial class are Offices, Education and Retail. Commercial is expected to be the fastest growing class, with a projected growth rate of 1.5%, after adjustments.

The Industrial class is forecasted by a standard econometric model, with drivers such as total manufacturing output, textile output, and the price of electricity. Overall, Industrial sales are expected to grow 0.9% over the forecast horizon, after all adjustments.

County population projections are obtained from the North Carolina Office of State Budget and Management as well as the South Carolina Budget and Control Board. These are then used to derive the total population forecast for the counties that comprise the DEP service area.

Weather impacts are incorporated into the models by using Heating Degree Days and Cooling Degree Days with a base temperature of 65. The forecast of degree days is based on a 10 year average.

The appliance saturation and efficiency trends are developed by Itron using data from the EIA. Itron is a recognized firm providing forecasting services to the electric utility industry. These appliance trends are used in the residential and commercial sales models.

Peak demands were projected using the SAE approach in the Spring 2015 Forecast. The peak forecast was developed using a monthly SAE model, similar to the sales SAE models, which includes monthly appliance saturations and efficiencies, interacted with weather and the fraction of each appliance type that is in use at the time of monthly peak.

**Assumptions**

Below are the projected average annual growth rates of several key drivers from DEP's Spring 2015 Forecast.

| | 2016 - 2030 |
|---|---|
| Real Income | 2.7% |
| Mfg. IPI | 2.1% |
| Population | 1.0% |

In addition to economic, demographic, and efficiency trends, the forecast also incorporates the expected impacts of utility-sponsored energy efficient programs, as well as projected effects of electric vehicles and behind the meter solar technology.

## Wholesale

The wholesale contracts that are included in the load forecast are listed in Table 10-A in Chapter 10.

## Historical Values

It should be noted that the long-term structural decline of the Textile industry and the recession of 2008-2009 have had an adverse impact on DEP sales. The worst of the Textile decline appears to be over, and Moody's Analytics expects the Carolina's economy to show solid growth going forward.

In tables 5-A & 5-B below the history of DEP customers and sales are given. As a note, the values in Table 5-B are not weather adjusted.

**Table 5-A Retail Customers (Thousands, Annual Average)**

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Residential** | 1,123 | 1,149 | 1,174 | 1,195 | 1,207 | 1,216 | 1,221 | 1,231 | 1,242 | 1,257 |
| **Commercial** | 205 | 210 | 214 | 216 | 215 | 216 | 217 | 219 | 222 | 222 |
| **Industrial** | 4 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 4 |
| **Total** | 1,332 | 1,363 | 1,392 | 1,415 | 1,426 | 1,437 | 1,443 | 1,455 | 1,468 | 1,484 |

**Table 5-B Electricity Sales (GWh Sold - Years Ended December 31)**

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Residential** | 16,003 | 16,664 | 16,259 | 17,200 | 17,000 | 17,117 | 19,108 | 17,764 | 16,663 | 18,201 |
| **Commercial** | 13,019 | 13,314 | 13,358 | 14,033 | 13,940 | 13,639 | 14,184 | 13,709 | 13,581 | 13,887 |
| **Industrial** | 13,036 | 12,741 | 12,416 | 11,883 | 11,216 | 10,375 | 10,677 | 10,573 | 10,508 | 10,321 |
| **Military &Other** | 1,431 | 1,410 | 1,419 | 1,438 | 1,467 | 1,497 | 1,574 | 1,591 | 1,602 | 1,614 |
| **Total Retail** | 43,490 | 44,129 | 43,451 | 44,553 | 43,622 | 42,628 | 45,544 | 43,637 | 42,355 | 44,023 |
| **Wholesale** | 12,439 | 12,210 | 12,231 | 12,656 | 12,868 | 12,772 | 12,772 | 12,267 | 12,676 | 13,578 |
| **Total System** | 55,928 | 56,340 | 55,682 | 57,209 | 56,489 | 55,400 | 58,316 | 55,903 | 55,031 | 57,601 |

## Utility Energy Efficiency

A new process for reflecting the impacts of UEE on the forecast was introduced in Spring 2015. In the latest forecast, the concept of 'Program Life' for a program was included in the calculations. For example, if the accelerated benefit of a residential UEE program is expected to have occurred 7 years before the energy reduction program would have been otherwise adopted, then the UEE effects after year 7 are subtracted ("rolled off") from the total cumulative UEE. With the SAE models framework, the naturally occurring appliance efficiency trends replace the rolled off UEE benefits serving to continue to reduce the forecasted load resulting from energy efficiency adoption.

The table below illustrates this process.

- Column A: Total energy demand for DEP before any reduction for UEE
- Column B: Total incremental cumulative UEE
- Column C: Roll-off amount of the historical UEE programs
- Column D: Roll-off amount of the incremental future UEE programs
- Column E: Total net UEE benefits (column B less columns C & D)
- Column F: Total DEP energy demand after incorporating UEE (column A less column E)

**Table 5-C UEE Program Life Process (MWh)**

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| | Forecast Before EE | Total Cumulative EE | Roll-Off Historical UEE | Roll-Off Forecasted UEE | UEE to Subtract From Forecast | Forecast After UEE |
| 2016 | 66,805,005 | 1,611,837 | 37,998 | 0 | 1,573,839 | 65,231,166 |
| 2017 | 67,539,168 | 1,789,279 | 104,966 | 0 | 1,684,313 | 65,854,855 |
| 2018 | 68,364,378 | 1,968,176 | 206,527 | 0 | 1,761,649 | 66,602,728 |
| 2019 | 69,176,185 | 2,144,881 | 351,978 | 0 | 1,792,903 | 67,383,282 |
| 2020 | 70,004,351 | 2,321,586 | 533,731 | 17,605 | 1,770,249 | 68,234,102 |
| 2021 | 70,639,854 | 2,498,291 | 733,010 | 65,593 | 1,699,688 | 68,940,166 |
| 2022 | 71,379,803 | 2,674,996 | 882,119 | 172,724 | 1,620,152 | 69,759,651 |
| 2023 | 72,151,810 | 2,851,701 | 999,141 | 298,876 | 1,553,685 | 70,598,125 |
| 2024 | 73,065,309 | 3,028,406 | 1,068,137 | 438,547 | 1,521,722 | 71,543,587 |
| 2025 | 73,863,360 | 3,205,111 | 1,098,140 | 595,656 | 1,511,315 | 72,352,045 |
| 2026 | 74,748,903 | 3,381,816 | 1,106,441 | 765,119 | 1,510,256 | 73,238,647 |
| 2027 | 75,636,152 | 3,558,521 | 1,106,441 | 948,224 | 1,503,856 | 74,132,296 |
| 2028 | 76,674,488 | 3,735,226 | 1,106,441 | 1,139,861 | 1,488,924 | 75,185,564 |
| 2029 | 77,495,104 | 3,911,931 | 1,106,441 | 1,338,884 | 1,466,606 | 76,028,497 |
| 2030 | 78,426,888 | 4,088,636 | 1,106,441 | 1,540,020 | 1,442,175 | 76,984,713 |

**Note: UEE Data is net of free riders**

## Results

Tabulations of class forecasts and sales are given in Table 5-D and Table 5-E. The sales forecasts are after all adjustments for UEE, Solar and Electric Vehicles.

**Table 5-D Retail Customers (Thousands, Annual Average)**

| | Residential Customers | Commercial Customers | Industrial Customers | Other Customers | Retail Customers |
|---|---|---|---|---|---|
| **2016** | 1,292 | 225 | 4 | 1 | 1,523 |
| **2017** | 1,309 | 227 | 4 | 2 | 1,542 |
| **2018** | 1,325 | 229 | 4 | 2 | 1,560 |
| **2019** | 1,342 | 231 | 4 | 2 | 1,578 |
| **2020** | 1,358 | 233 | 4 | 2 | 1,596 |
| **2021** | 1,373 | 235 | 4 | 2 | 1,614 |
| **2022** | 1,389 | 237 | 4 | 2 | 1,632 |
| **2023** | 1,404 | 239 | 5 | 2 | 1,649 |
| **2024** | 1,419 | 241 | 5 | 2 | 1,667 |
| **2025** | 1,434 | 244 | 5 | 2 | 1,683 |
| **2026** | 1,448 | 246 | 5 | 2 | 1,700 |
| **2027** | 1,463 | 248 | 5 | 2 | 1,717 |
| **2028** | 1,478 | 250 | 5 | 2 | 1,734 |
| **2029** | 1,492 | 252 | 5 | 2 | 1,751 |
| **2030** | 1,507 | 255 | 5 | 2 | 1,767 |

**Table 5-E Electricity Sales (GWh Sold - Years Ended December 31)**

| | Residential Gwh | Commercial Gwh | Industrial Gwh | Other Gwh | Retail Gwh |
|---|---|---|---|---|---|
| **2016** | 17,967 | 14,043 | 10,412 | 1,620 | 44,042 |
| **2017** | 18,166 | 14,207 | 10,497 | 1,618 | 44,487 |
| **2018** | 18,383 | 14,418 | 10,574 | 1,615 | 44,990 |
| **2019** | 18,620 | 14,635 | 10,658 | 1,612 | 45,525 |
| **2020** | 18,878 | 14,863 | 10,758 | 1,610 | 46,107 |
| **2021** | 19,095 | 15,048 | 10,836 | 1,607 | 46,587 |
| **2022** | 19,354 | 15,252 | 10,920 | 1,605 | 47,130 |
| **2023** | 19,615 | 15,476 | 11,020 | 1,602 | 47,713 |
| **2024** | 19,897 | 15,734 | 11,120 | 1,600 | 48,351 |
| **2025** | 20,125 | 15,952 | 11,219 | 1,597 | 48,894 |
| **2026** | 20,402 | 16,201 | 11,316 | 1,595 | 49,514 |
| **2027** | 20,681 | 16,460 | 11,416 | 1,593 | 50,150 |
| **2028** | 21,042 | 16,756 | 11,514 | 1,591 | 50,904 |
| **2029** | 21,304 | 17,008 | 11,611 | 1,589 | 51,511 |
| **2030** | 21,616 | 17,311 | 11,723 | 1,587 | 52,236 |

Tabulations of the utility's forecasts, including peak loads for summer and winter seasons of each year and annual energy forecasts, both with and without the impact of UEE programs, are shown below in Tables 5-G and 5-H.

Load duration curves, with and without UEE programs, follow Tables 5-G and 5-H, and are shown as Charts 5-A and 5-B.

The values in these tables reflect the loads that Duke Energy Progress is contractually obligated to provide and cover the period from 2016 to 2030.

For the period 2016-2030, the Spring 2015 Forecast resulted in the following growth rates:

**Table 5-F Growth Rates of Retail and Wholesale Customers (2016-2030)**

| | **2015 Forecast (2016 – 2030)** | | |
|---|---|---|---|
| | **Summer Peak Demand** | **Winter Peak Demand** | **Energy** |
| ***Excludes*** impact of new EE programs | 1.5% | 1.3% | 1.2% |
| ***Includes*** impact of new EE programs | 1.3% | 1.2% | 1.2% |

The peaks and sales in the tables and charts below are at the generator, except for the Class sales forecast, which is at meter.

**Table 5-G Load Forecast without Energy Efficiency Programs & Before Demand Reduction Program**

| YEAR | SUMMER (MW) | WINTER (MW) | ENERGY (GWH) |
|---|---|---|---|
| 2016 | 13,048 | 12,767 | 66,805 |
| 2017 | 13,224 | 12,938 | 67,539 |
| 2018 | 13,402 | 13,133 | 68,364 |
| 2019 | 13,595 | 13,342 | 69,176 |
| 2020 | 13,949 | 13,531 | 70,004 |
| 2021 | 14,208 | 13,703 | 70,640 |
| 2022 | 14,444 | 13,882 | 71,380 |
| 2023 | 14,709 | 14,062 | 72,152 |
| 2024 | 14,901 | 14,278 | 73,065 |
| 2025 | 15,082 | 14,437 | 73,863 |
| 2026 | 15,264 | 14,621 | 74,749 |
| 2027 | 15,440 | 14,797 | 75,636 |
| 2028 | 15,636 | 15,022 | 76,674 |
| 2029 | 15,814 | 15,183 | 77,495 |
| 2030 | 15,981 | 15,352 | 78,427 |

**Chart 5-A** **Load Duration Curve without Energy Efficiency Programs & Before Demand Reduction Programs**

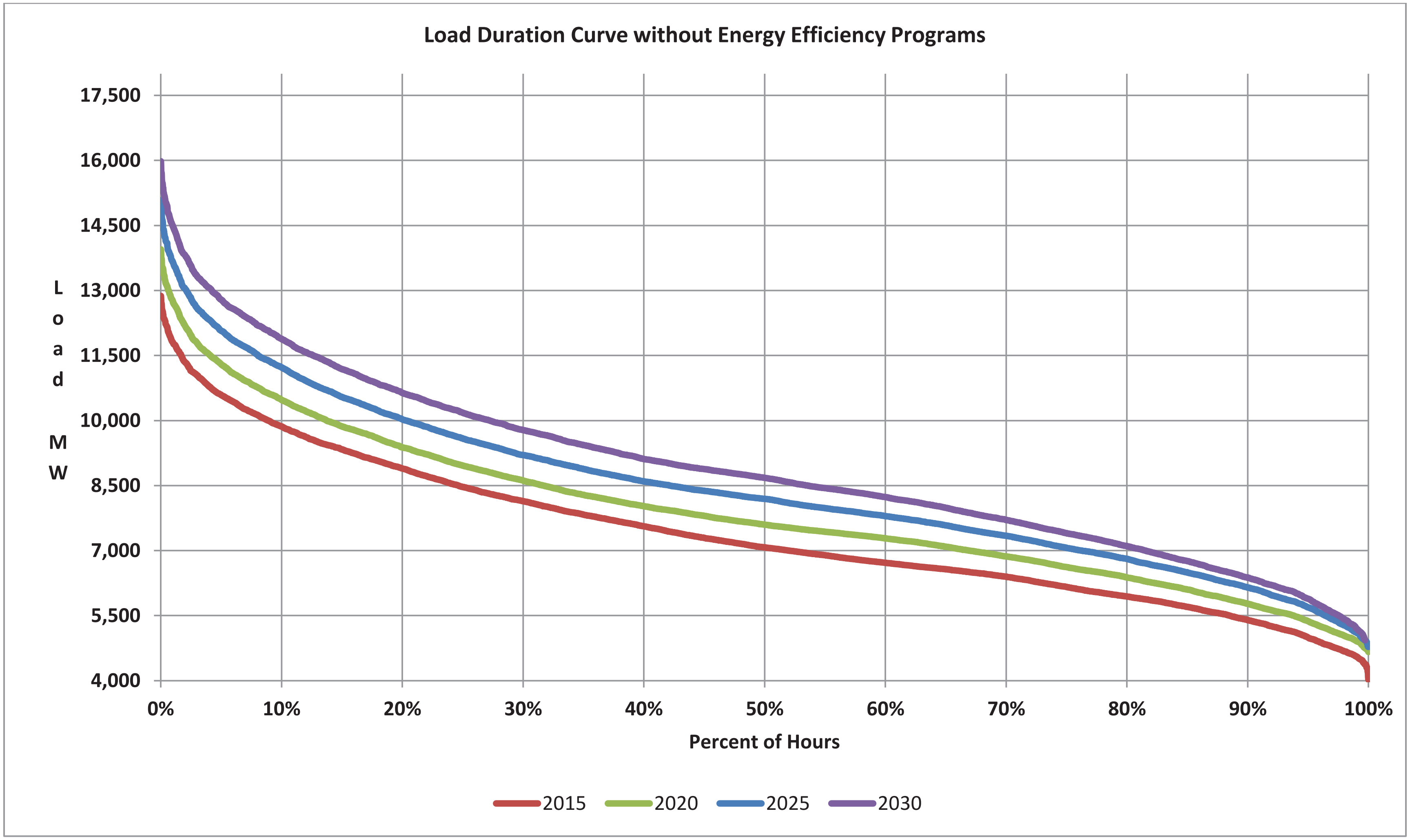
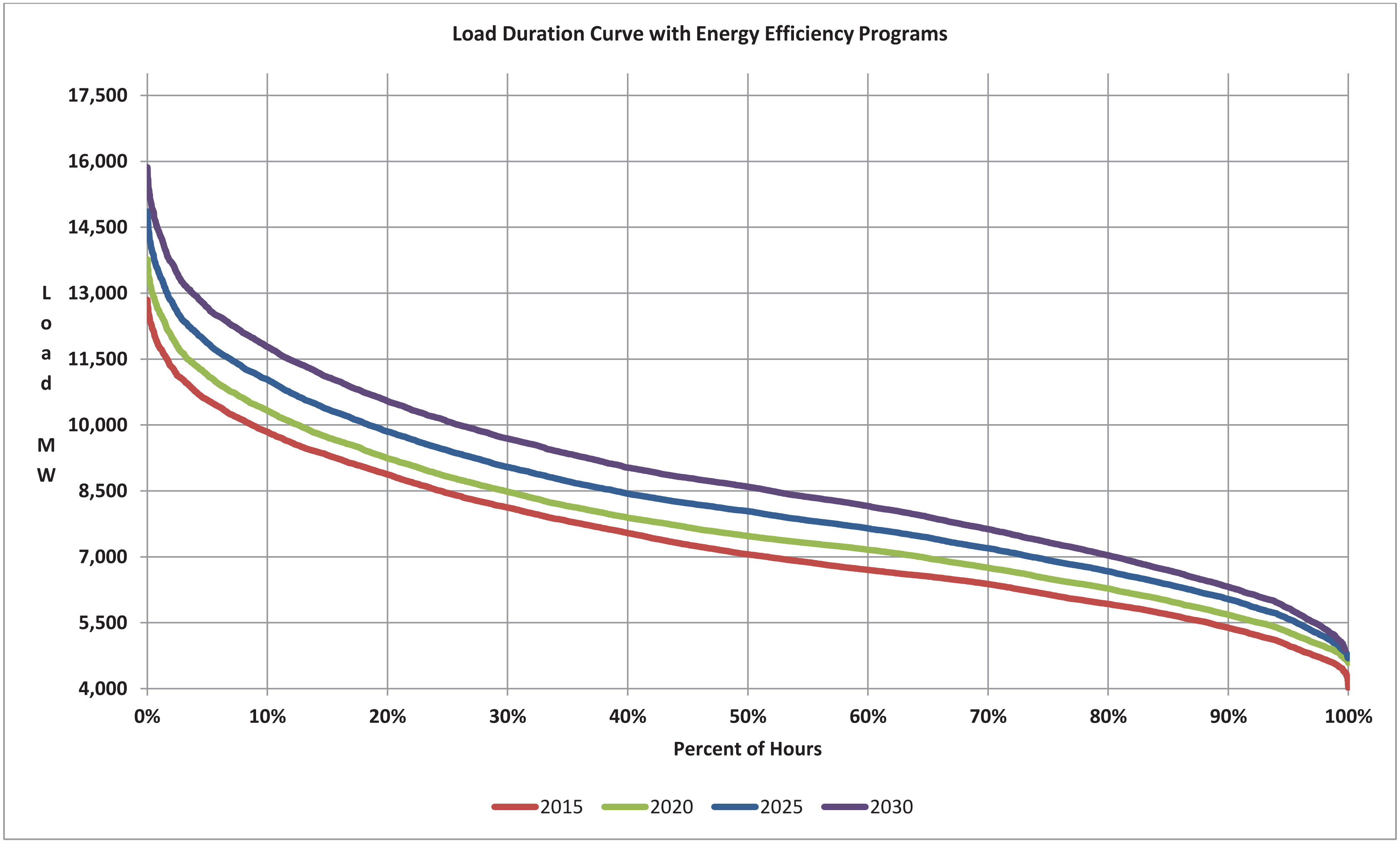


**Table 5-H Load Forecast with Energy Efficiency Programs & Before Demand Reduction Programs**

| YEAR | SUMMER (MW) | WINTER (MW) | ENERGY (GWH) |
|---|---|---|---|
| 2016 | 12,981 | 12,727 | 65,231 |
| 2017 | 13,127 | 12,877 | 65,855 |
| 2018 | 13,277 | 13,050 | 66,603 |
| 2019 | 13,440 | 13,236 | 67,383 |
| 2020 | 13,766 | 13,403 | 68,234 |
| 2021 | 13,996 | 13,552 | 68,940 |
| 2022 | 14,205 | 13,711 | 69,760 |
| 2023 | 14,445 | 13,872 | 70,598 |
| 2024 | 14,611 | 14,070 | 71,544 |
| 2025 | 14,770 | 14,211 | 72,352 |
| 2026 | 14,934 | 14,381 | 73,239 |
| 2027 | 15,098 | 14,548 | 74,132 |
| 2028 | 15,292 | 14,772 | 75,186 |
| 2029 | 15,465 | 14,930 | 76,028 |
| 2030 | 15,629 | 15,096 | 76,985 |

**Chart 5-B Load Duration Curve with Energy Efficiency Programs & Before Demand Reduction Programs**



## 6. DEVELOPMENT OF RESOURCE PLAN

The following section details the Company's expansion plan and resource mix that is required to meet the needs of DEP's customers over the next 15 years. The section also includes a discussion of the various technologies considered during the development of the IRP, as well as, a summary of the resources required in the "No Carbon" sensitivity case.

# Table 6-A Load, Capacity and Reserves Table – Summer

**Summer Projections of Load, Capacity, and Reserves
for Duke Energy Progress 2015 Annual Plan**

| | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Load Forecast*** | | | | | | | | | | | | | | | |
| 1 Duke System Peak | 13,048 | 13,224 | 13,402 | 13,595 | 13,949 | 14,208 | 14,444 | 14,709 | 14,901 | 15,082 | 15,264 | 15,440 | 15,636 | 15,814 | 15,981 |
| 2 Firm Sale | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 Cumulative New EE Programs | (67) | (96) | (125) | (155) | (183) | (212) | (239) | (265) | (290) | (313) | (330) | (342) | (344) | (349) | (352) |
| **4 Adjusted Duke System Peak** | **13,131** | **13,277** | **13,427** | **13,590** | **13,916** | **14,146** | **14,355** | **14,595** | **14,761** | **14,770** | **14,934** | **15,098** | **15,292** | **15,465** | **15,629** |
| ***Existing and Designated Resources*** | | | | | | | | | | | | | | | |
| 5 Generating Capacity | 12,776 | 12,776 | 12,813 | 12,828 | 12,963 | 13,194 | 12,844 | 12,844 | 12,844 | 12,844 | 12,844 | 12,844 | 12,664 | 12,664 | 12,664 |
| 6 Designated Additions / Uprates | 0 | 98 | 15 | 135 | 1,013 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 Retirements / Derates | 0 | (61) | 0 | 0 | (782) | (350) | 0 | 0 | 0 | 0 | 0 | (180) | 0 | 0 | (741) |
| **8 Cumulative Generating Capacity** | **12,776** | **12,813** | **12,828** | **12,963** | **13,194** | **12,844** | **12,844** | **12,844** | **12,844** | **12,844** | **12,844** | **12,664** | **12,664** | **12,664** | **11,923** |
| ***Purchase Contracts*** | | | | | | | | | | | | | | | |
| **9 Cumulative Purchase Contracts** | **1,919** | **1,930** | **1,930** | **1,761** | **1,616** | **861** | **528** | **528** | **528** | **528** | **478** | **477** | **452** | **419** | **407** |
| Non-Compliance Renewable Purchases | 177 | 188 | 188 | 188 | 188 | 132 | 131 | 130 | 130 | 130 | 80 | 80 | 58 | 25 | 12 |
| Non-Renewables Purchases | 1,742 | 1,742 | 1,742 | 1,574 | 1,429 | 729 | 397 | 397 | 397 | 397 | 397 | 397 | 394 | 394 | 394 |
| ***Undesignated Future Resources*** | | | | | | | | | | | | | | | |
| 10 Nuclear | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 Combined Cycle | 0 | 0 | 0 | 0 | 0 | 895 | 895 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 895 |
| 12 Combustion Turbine | 0 | 0 | 0 | 0 | 0 | 828 | 0 | 0 | 0 | 0 | 0 | 828 | 0 | 0 | 0 |
| 13 CHP | 0 | 0 | 0 | 20 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ***Renewables*** | | | | | | | | | | | | | | | |
| **14 Cumulative Renewables Capacity** | 437 | 473 | 433 | 434 | 437 | 348 | 347 | 619 | 637 | 645 | 639 | 653 | 667 | 677 | 666 |
| **15 Cumulative Production Capacity** | **15,132** | **15,217** | **15,191** | **15,179** | **15,268** | **15,816** | **16,378** | **16,648** | **16,666** | **16,674** | **16,618** | **17,280** | **17,269** | **17,246** | **17,377** |
| ***Demand Side Management (DSM)*** | | | | | | | | | | | | | | | |
| **16 Cumulative DSM Capacity** | **871** | **923** | **967** | **1,004** | **1,021** | **1,029** | **1,032** | **1,034** | **1,037** | **1,040** | **1,043** | **1,046** | **1,049** | **1,052** | **1,055** |
| **17 Cumulative Capacity w/ DSM** | **16,003** | **16,140** | **16,159** | **16,183** | **16,288** | **16,845** | **17,409** | **17,683** | **17,703** | **17,715** | **17,662** | **18,326** | **18,319** | **18,298** | **18,432** |
| ***Reserves w/ DSM*** | | | | | | | | | | | | | | | |
| 18 Generating Reserves | 2,872 | 2,862 | 2,732 | 2,593 | 2,372 | 2,698 | 3,054 | 3,088 | 2,942 | 2,945 | 2,728 | 3,228 | 3,027 | 2,832 | 2,803 |
| **19 % Reserve Margin** | **21.9%** | **21.6%** | **20.3%** | **19.1%** | **17.0%** | **19.1%** | **21.3%** | **21.2%** | **19.9%** | **19.9%** | **18.3%** | **21.4%** | **19.8%** | **18.3%** | **17.9%** |

## Table 6-B Load, Capacity and Reserves Table – Winter

**Winter Projections of Load, Capacity, and Reserves for Duke Energy Progress 2015 Annual Plan**

| | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 | 21/22 | 22/23 | 23/24 | 24/25 | 25/26 | 26/27 | 27/28 | 28/29 | 29/30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Load Forecast*** | | | | | | | | | | | | | | |
| 1 Duke System Peak | 12,767 | 12,938 | 13,133 | 13,342 | 13,531 | 13,703 | 13,882 | 14,062 | 14,278 | 14,437 | 14,621 | 14,797 | 15,022 | 15,183 |
| 2 Firm Sale | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 0 | 0 | 0 | 0 | 0 |
| 3 Cumulative New EE Programs | (40) | (62) | (84) | (105) | (129) | (151) | (171) | (190) | (209) | (226) | (240) | (249) | (250) | (253) |
| **4 Adjusted Duke System Peak** | **12,877** | **13,027** | **13,200** | **13,386** | **13,553** | **13,702** | **13,861** | **14,022** | **14,220** | **14,211** | **14,381** | **14,548** | **14,772** | **14,930** |
| ***Existing and Designated Resources*** | | | | | | | | | | | | | | |
| 5 Generating Capacity | 13,895 | 13,899 | 13,917 | 13,935 | 14,289 | 13,772 | 13,772 | 13,772 | 13,772 | 13,772 | 13,772 | 13,772 | 13,540 | 13,540 |
| 6 Designated Additions / Uprates | 4 | 94 | 18 | 733 | 350 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 Retirements / Derates | 0 | (76) | 0 | (379) | (867) | 0 | 0 | 0 | 0 | 0 | 0 | (232) | 0 | 0 |
| **8 Cumulative Generating Capacity** | **13,899** | **13,917** | **13,935** | **14,289** | **13,772** | **13,772** | **13,772** | **13,772** | **13,772** | **13,772** | **13,772** | **13,540** | **13,540** | **13,540** |
| ***Purchase Contracts*** | | | | | | | | | | | | | | |
| **9 Cumulative Purchase Contracts** | **2,006** | **2,017** | **2,017** | **2,017** | **1,704** | **1,148** | **502** | **502** | **502** | **502** | **452** | **452** | **441** | **434** |
| Non-Compliance Renewable Purchas | 126 | 137 | 137 | 137 | 137 | 81 | 80 | 80 | 80 | 80 | 30 | 30 | 22 | 15 |
| Non-Renewables Purchases | 1,880 | 1,880 | 1,880 | 1,880 | 1,567 | 1,066 | 422 | 422 | 422 | 422 | 422 | 422 | 419 | 419 |
| ***Undesignated Future Resources*** | | | | | | | | | | | | | | |
| 10 Nuclear | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 Combined Cycle | 0 | 0 | 0 | 0 | 0 | 935 | 935 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 Combustion Turbine | 0 | 0 | 0 | 0 | 0 | 878 | 0 | 0 | 0 | 0 | 0 | 878 | 0 | 0 |
| 13 CHP | 0 | 0 | 0 | 20 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ***Renewables*** | | | | | | | | | | | | | | |
| 13 **Cumulative Renewables Capacity** | 222 | 257 | 216 | 216 | 218 | 129 | 129 | 178 | 174 | 177 | 176 | 179 | 178 | 183 |
| **14 Cumulative Production Capacity** | **16,127** | **16,191** | **16,168** | **16,542** | **15,714** | **16,901** | **17,191** | **17,240** | **17,236** | **17,239** | **17,188** | **17,837** | **17,826** | **17,823** |
| ***Demand Side Management (DSM)*** | | | | | | | | | | | | | | |
| **15 Cumulative DSM Capacity** | **531** | **552** | **569** | **583** | **595** | **606** | **610** | **613** | **617** | **621** | **624** | **628** | **631** | **634** |
| **16 Cumulative Capacity w/ DSM** | **16,658** | **16,743** | **16,737** | **17,125** | **16,310** | **17,508** | **17,800** | **17,853** | **17,853** | **17,860** | **17,813** | **18,464** | **18,456** | **18,457** |
| ***Reserves w/ DSM*** | | | | | | | | | | | | | | |
| 17 Generating Reserves | 3,781 | 3,716 | 3,537 | 3,739 | 2,757 | 3,806 | 3,940 | 3,831 | 3,633 | 3,648 | 3,432 | 3,916 | 3,684 | 3,527 |
| **18 % Reserve Margin** | **29.4%** | **28.5%** | **26.8%** | **27.9%** | **20.3%** | **27.8%** | **28.4%** | **27.3%** | **25.6%** | **25.7%** | **23.9%** | **26.9%** | **24.9%** | **23.6%** |

## DEP - Assumptions of Load, Capacity, and Reserves Table

The following notes are numbered to match the line numbers on the Summer Projections of Load, Capacity, and Reserves table. All values are MW except where shown as a Percent.

1. Planning is done for the peak demand for the Duke Energy Progress System.

2. Firm sale of 150 MW through 2024.

3. Cumulative energy efficiency and conservation programs (does not include demand response programs).

4. Peak load adjusted for firm sales and cumulative energy efficiency.

5. Existing generating capacity reflecting designated additions, planned uprates, retirements and derates as of January 1, 2015.

   Includes total unit capacity of jointly owned units.

6. Capacity Additions include:

   Planned nuclear uprates totaling 29 MW in the 2017-2018 timeframe.

   Planned combined cycle uprates totaling 135 MW in 2019.

   84 MW Sutton Blackstart combustion turbine addition in 2017.

   A short-term 350 MW PPA is included in 2017, and removed in the fall of 2017.

   This PPA is a placeholder to ensure compliance with the minimum planning reserve margin and will be re-evaluated in the coming months.

7. Planned Retirements include:

   Sutton CT Units 1, 2A and 2B in 2017 (61 MW).

   Darlington CT Units 1-11 by 2020 (553 MW).

   Blewett CT Units 1-4 and Weatherspoon CT units 1-4 in 2027 (180 MW).

   Robinson 2 in 2030 (741 MW).

8. Sum of lines 5 through 7.

**DEP - Assumptions of Load, Capacity, and Reserves Table (cont.)**

9. Cumulative Purchase Contracts have several components:

   Purchased capacity from PURPA Qualifying Facilities, Anson and Hamlet CT tolling, Butler Warner purchase, Southern CC purchase, and Broad River CT purchase.

   Additional line items are shown under the total line item to show the amounts of renewable and traditional resource purchases. Renewables in these line items are not used for NC REPS compliance.

10. New nuclear resources economically selected to meet load and minimum planning reserve margin Capacity must be on-line by June 1 to be included in available capacity for the summer peak of that year and by December 1 to be included in available capacity for the winter peak of that year.

    No new nuclear resources were selected in the Base Case in the 15 year study period.

11. New combined cycle resources economically selected to meet load and minimum planning reserve margin.

    Capacity must be on-line by June 1 to be included in available capacity for the summer peak of that year and by December 1 to be included in available capacity for the winter peak of that year.

    Addition of 895 MW of combined cycle capacity in 2021, 2022 and 2030.

12. New combustion turbine resources economically selected to meet load and minimum planning reserve margin.

    Capacity must be on-line by June 1 to be included in available capacity for the summer peak of that year and by December 1 to be included in available capacity for the winter peak of that year.

    Addition of 828 MW of combustion turbine capacity in 2021 and 2027.

13. New CHP resources. 20 MW in 2019 and 20 MW in 2021.

14. Cumulative solar, biomass, hydro and wind resources to meet NC REPS and SC DERP compliance.

    Also includes utility-owned solar.

**DEP - Assumptions of Load, Capacity, and Reserves Table (cont.)**

15. Sum of lines 8 through 14.

16. Cumulative Demand Side Management programs including load control and DSDR.

17. Sum of lines 15 and 16.

18. The difference between lines 17 and 4.

19. Reserve Margin = (Cumulative Capacity-System Peak Demand)/System Peak Demand

    Line 18 divided by Line 4.

    Minimum target planning reserve margin is 17%.

## Technologies Considered

Similar to the 2014 IRP, the Company considered a diverse range of technology choices utilizing a variety of different fuels in order to meet future generation needs in the 2015 IRP.

As in the 2014 IRP, the Company conducted an economic screening analysis of various technologies. Through the screening process the following technologies were considered as part of the more detailed quantitative analysis phase of the planning process in the 2015 IRP, with changes from the 2014 IRP highlighted and explained in further detail below.

- Base load – 723 MW Supercritical Pulverized Coal with CCS
- Base load – 525 MW IGCC with CCS
- Base load – 2 x 1,117 MW Nuclear units (AP1000)
- Base load – **895 MW** – 2x2x1 Advanced Combined Cycle (Inlet Chiller and Duct Fired)
- **Base load – 20 MW – CHP** (CT with HRSG)
- Peaking/Intermediate – **828 MW** 4-7FA CTs
- Renewable – 150 MW Wind - On-Shore
- Renewable – 5 MW Landfill Gas
- Renewable – 25 MW Solar Photovoltaic (PV)

**Combined Cycle base capacities and technologies:** Based on proprietary third party engineering studies, the 2x2x1 Advanced CC saw an increase in base load of 29 MWs. The older version base 2x1 CC and the 3x1 Advanced CC were not considered in the updated IRP. However, as the Company begins the process of evaluating particular technologies for future undesignated generation needs, these technologies, along with other new technologies, may be considered based on factors such as generation requirements, plot size, new environmental regulations, etc.

**Combustion Turbine base capacities and technologies:** Based on proprietary third party engineering studies, the F-Frame CT technology saw an increase in base load of 36 MWs. The LM6000 CTs were not considered in the updated IRP. However, as the Company begins the process of evaluating particular technologies for future undesignated generation needs, these technologies, along with other new technologies, may be considered based on factors such as generation requirements, plot size, new environmental regulations, etc.

**CHP:** As mentioned previously, two 20-MW Combined Heat & Power units are considered in the 2015 IRP and are included as resources for meeting future generation needs. Duke Energy is exploring and working with potential customers with good base thermal loads on a regulated CHP offer and, as CHP continues to be implemented, future IRP processes will incorporate additional CHP as appropriate.

In addition to the technologies listed above, Li-ion batteries with off-peak charging were considered in the screening process as an energy storage option. Energy Storage in the form or battery storage is becoming more feasible with the advances in battery technology and the reduction in battery cost; however, their uses have been concentrated on frequency regulation, solar smoothing, and/or energy shifting from localized renewable energy sources with a high incidence of intermittency (i.e. solar and wind applications).

Centralized generation will likely remain the backbone of the grid for Duke Energy in the long term; however, in addition to centralized generation it is possible that distributed generation will begin to share more and more grid responsibilities over time as technologies such as energy storage increase our grid's flexibility. At this point however, the screening analysis shows that costs are still prohibitive for large scale battery technologies to be considered in the IRP.

## Expansion Plan and Resource Mix

A tabular presentation of the 2015 Base Case resource plan represented in the above LCR table is shown below:

**Table 6-C DEP Base Case Resources– Summer (with $CO_2$)**

| Duke Energy Progress Resource Plan [1] Base Case - Summer | | | | | |
|---|---|---|---|---|---|
| **Year** | **Resource** | | | **MW** | |
| 2016 | - | | | - | |
| 2017 | Sutton Blackstart CTs | Nuclear Uprates | | 84 | 14 |
| 2018 | Nuclear Uprates | | | 15 | |
| 2019 | CC Uprates | CHP | | 135 | 20 |
| 2020 | Asheville CC | | | 663 | |
| 2021 | New CC | New CT | CHP | 895 | 828 | 20 |
| 2022 | New CC | | | 895 | |
| 2023 | - | | | - | |
| 2024 | - | | | - | |
| 2025 | - | | | - | |
| 2026 | - | | | - | |
| 2027 | New CT | | | 828 | |
| 2028 | - | | | - | |
| 2029 | - | | | - | |
| 2030 | New CC | | | 895 | |

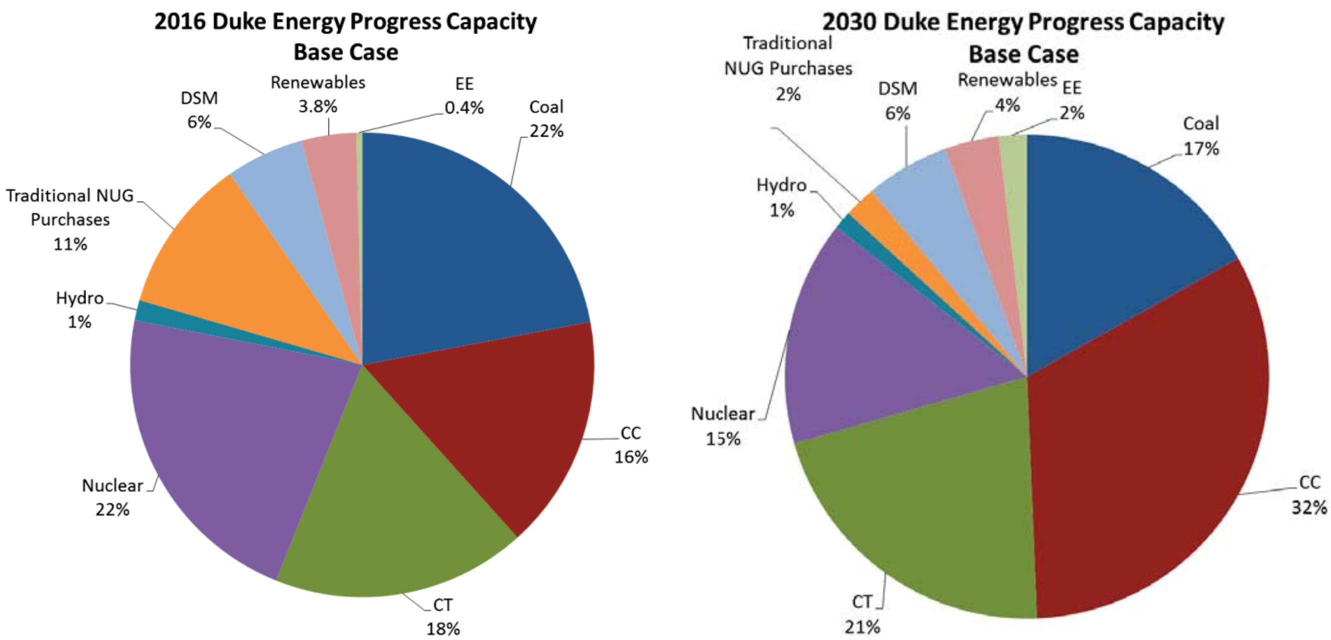
Notes: (1) Table includes both designated and undesignated capacity additions

**Table 6-D DEP Base Case Resources (with $CO_2$) Cumulative Summer Totals**

| DEP Base Case Resources Cumulative Summer Totals - 2016 - 2030 | |
|---|---|
| Nuclear | 29 |
| CC | 3483 |
| CT | 1740 |
| CHP | 40 |
| Total | 5292 |

The following charts illustrate both the current and forecasted capacity by fuel type for the DEP system, as projected in the Base Case. As demonstrated in Chart 6-A, the capacity mix for the DEP system changes with the passage of time. In 2030, the Base Case projects that DEP will have a smaller reliance on coal and a higher reliance on gas-fired resources, nuclear, renewable resources and EE as compared to the current state.

**Chart 6-A 2016 & 2030 Base Case Summer Capacity Mix**




As a sensitivity, the Company developed a No Carbon Price scenario (No Carbon Sensitivity). The expansion plan for this case is shown below in Table 6-E. Table 6-F summarizes the capacity additions for the No Carbon Sensitivity case by technology type.

**Table 6-E No Carbon Sensitivity – Summer**

Duke Energy Progress Resource Plan (1)
No Carbon Sensitivity - Summer

| Year | Resource | | | MW | | |
|---|---|---|---|---|---|---|
| 2016 | - | | | - | | |
| 2017 | Sutton Blackstart CTs | Nuclear Uprates | | 84 | 14 | |
| 2018 | Nuclear Uprates | | | 15 | | |
| 2019 | CC Uprates | CHP | | 135 | 20 | |
| 2020 | Asheville CC | | | 663 | | |
| 2021 | New CT | New CC | CHP | 828 | 895 | 20 |
| 2022 | New CT | | | 414 | | |
| 2023 | - | | | - | | |
| 2024 | New CT | | | 414 | | |
| 2025 | - | | | - | | |
| 2026 | - | | | - | | |
| 2027 | New CT | | | 414 | | |
| 2028 | New CT | | | 414 | | |
| 2029 | - | | | - | | |
| 2030 | New CT | | | 1242 | | |

Notes: (1) Table includes both designated and undesignated capacity additions

**Table 6-F No Carbon Sensitivity Cumulative Summer Totals**

DEP No Carbon Sensitivity Resources
Cumulative Summer Totals - 2016 - 2030

| | |
|---|---|
| Nuclear | 29 |
| CC | 1693 |
| CT | 3810 |
| CHP | 40 |
| Total | 5572 |

## 7. SHORT-TERM ACTION PLAN

The Company's Short-Term Action Plan, which identifies accomplishments in the past year and actions to be taken over the next five years, is summarized below:

### Continued Reliance on EE and DSM Resources

The Company is committed to continuing to grow the amount of EE and DSM resources utilized to meet customer growth. The following are the ways in which DEP will increase these resources:

- Continue to execute the Company's EE and DSM plan, which includes a diverse portfolio of EE and DSM programs spanning the residential, commercial, and industrial classes.

- Continue on-going work to develop and implement additional cost-effective EE and DSM products and services. Since the last biennial IRP, DEP has implemented the following new program offerings: Residential New Construction Program, Energy Efficient Lighting Program and Small Business Energy Saver Program.

- Continue to seek enhancements to the Company's EE/DSM portfolio by: (1) adding new or expanding existing programs to include additional measures, (2) program modifications to account for changing market conditions and new measurement and verification (M&V) results and (3) other EE research & development pilots.

- Over the 5 year period represented in the Short-Term Action Plan, DEP projects to add an incremental 115 MW of EE and 149 MW of DSM.

### Continued Focus on Renewable Energy Resources

- DEP is committed to full compliance with NC REPS in North Carolina and SC DERP in South Carolina. Due to pending expiries of Federal and State tax subsidies for solar development, the Company has experienced a substantial increase in solar QFs in the interconnection queue. With this significant level of interest in solar development, DEP continues to procure renewable purchase power resources, when economically viable, as part of its Compliance Plans. DEP is also pursuing the addition of new utility-owned solar on the DEP system.

- DEP continues to evaluate market options for renewable generation and procure capacity, as appropriate. PPAs have been signed with developers of solar PV and landfill gas resources. Additionally, REC purchase agreements have been executed for purchases of unbundled RECs from wind, solar PV, solar thermal and hydroelectric facilities.

- DEP continues to pursue CHP opportunities, as appropriate.

**Addition of Clean Natural Gas Resources**

- Begin construction on the Sutton Blackstart CTs in 2016 to be available for the summer peak of 2017. The Company's petition for a Certificate of Public Convenience and Necessity (CPCN) was approved by the NCUC with an order issued on August 3, 2015.

- Pursue the addition of a new combined cycle at the Asheville facility in the 2019 timeframe as part of the WCMP.

- Continue to evaluate older CTs on the DEP system. The Company is evaluating the condition and economic viability of the older CTs on the system. In doing so, DEP is preparing for the potential retirement of these units. This includes determining the type of resources needed to reliably replace these units to maintain a minimum planning reserve margin.

- Take actions to ensure capacity needs beginning in 2021 are met. In addition to seeking to meet the Company's EE and DSM goals and meeting the Company's NC REPS and SC DERP requirements, actions to secure additional capacity may include purchased power, short-term PPAs or Company-owned generation. The 2015 IRP projects that the best resources to meet this 2021 demand are combined cycle units.

- Placeholder for a short-term PPA of 350 MW is included in 2017 to meet 17% reserve margin. This will continue to be reviewed in future IRPs.

**Expiration of Wholesale Purchase Contracts** (CONFIDENTIAL)

In the 2016-2020 timeframe, DEP has [redacted] of wholesale purchase contracts that are scheduled to expire. At this time, DEP is not relying on contract extensions on these contracts. As such, these contract expirations are included in the IRP and Short-Term Action Plan. A summary of those expirations is shown in Table 7-A below. In addition to the expirations shown in this five year period, additional contracts expire during the 15 year IRP study period.

**Table 7-A Wholesale Purchase Contract Expirations (CONFIDENTIAL)**

[redacted]

**Continued Focus on System Reliability and Resource Adequacy for DEP System**

As previously stated, DEP has retained Astrape Consulting to conduct a reserve margin study to examine the resource adequacy of the DEP system. Based upon the recent extreme winter weather, the potential for continued extreme weather, and the large amount of expected solar resource additions, the Company felt that new examination of the reliability of the system and the adequacy of the resources was warranted.

Initial results of this updated study indicate that a 17% summer planning reserve margin is required to maintain the one day in 10 year loss of load expectation (LOLE). As such, DEP has utilized a 17% planning reserve margin in the 2015 IRP as opposed to the 14.5% reserve margin used in the 2014 IRP. However, preliminary findings also indicate that a summer-only reserve margin target may not be adequate for providing long term reliability given the increasing levels of summer-only resources. Additional study is needed to determine whether dual summer/winter planning reserve margin targets are required in the future. Once the final results are determined, any changes will be included in the 2016 IRP.

The 2015 IRP includes a placeholder for a short-term 350 MW purchased power agreement (PPA) in 2020 to satisfy the increase in the planning reserve margin to 17%. The need for this short-term PPA will be reevaluated after the reserve margin study is completed and there is greater certainty regarding reserve margin target(s), load and resource needs.

**<u>Continued Focus on Regulatory, Environmental Compliance & Wholesale Activities</u>**

- Retired older coal generation. As of December 2013, all of DEP's older, un-scrubbed coal units have been retired. DEP has retired 1,600 MW of older coal units in total since 2011.

- Retire Asheville coal units. The Company expects to retire the existing Asheville coal units no later than January 31, 2020 and replace with new combined cycle generation as part of the WCMP. The Asheville units have a combined capacity of 376 MW.

- Continue to prepare for the final rule of EPA's Clean Power Plan.

- Continue to investigate the future environmental control requirements and resulting operational impacts associated with existing and potential environmental regulations such as MATS, the Coal Combustion Residuals rule, the Cross State Air Pollution Rule (CSAPR), and the new Ozone National Ambient Air Quality Standard (NAAQS).

- Aggressively pursue compliance in North Carolina and South Carolina in addressing coal ash management and ash pond remediation. Ensure timely compliance plans and their associated costs are contemplated within the planning process and future integrated resource plans, as appropriate.

- Continue to pursue existing and potential opportunities for wholesale power sales agreements within the Duke Energy balancing authority area.

- Continue to monitor energy-related statutory and regulatory activities.

- Continue to examine the benefits of joint capacity planning and pursue appropriate regulatory actions.

A summarization of the capacity resources for the reference plan in the 2015 IRP is shown in Table 7-B below. Capacity retirements and additions are presented as incremental values in the year in which the change is projected to occur. The values shown for renewable resources, EE and DSM represent cumulative totals.

## Table 7-B DEP Short-Term Action Plan

| Duke Energy Progress Short-Term Action Plan | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Compliance Renewable Resources (Cumulative Nameplate MW) | | | Other Non-Compliance Renewables (Cumulative Nameplate MW) [4] | | |
| Year | Retirements | Additions | Wind [1] | Solar [1] | Biomass/Hydro[3] | Solar/Biomass/Hydro | EE | DSM [2] |
| 2016 | | | 0 | 459 | 171 | 397 | 67 | 871 |
| 2017 | 61 MW Sutton CTs (Units 1, 2A, 2B) | 84 MW Sutton Blackstart CTs<br>14 MW Nuc Uprate | 0 | 462 | 206 | 409 | 96 | 923 |
| 2018 | | 15 MW Nuc Uprate | 0 | 465 | 164 | 408 | 125 | 967 |
| 2019 | | 20 MW CHP<br>135 MW CC Uprate | 0 | 467 | 164 | 407 | 155 | 1004 |
| 2020 | 406 MW Darlington CT (Units 1-3, 5, 7-10)<br>376 MW Asheville Coal | 663 MW Asheville CC<br>350 MW CT PPA [5] | 0 | 468 | 167 | 407 | 183 | 1021 |

Notes:

(1) Capacity is shown in nameplate ratings. For planning purposes, wind presents a 13% contribution to peak and solar has a 44% contribution to peak.

(2) Includes impacts of grid modernization.

(3) Biomass includes swine and poultry contracts.

(4) Other renewables includes NUGs and utility-owned projects.

(4) This is a placeholder PPA for 2020, and removed in 2021.

## 8. OWNED GENERATION

### DUKE ENERGY PROGRESS OWNED GENERATION

Duke Energy Progress' generation portfolio includes a balanced mix of resources with different operating and fuel characteristics. This mix is designed to provide energy at the lowest reasonable cost to meet the Company's obligation to serve its customers. Duke Energy Progress-owned generation, as well as purchased power, is evaluated on a real-time basis in order to select and dispatch the lowest-cost resources to meet system load requirements. In 2014, Duke Energy Progress' nuclear and coal-fired generating units met the vast majority of customer needs by providing 46% and 26%, respectively, of Duke Energy Progress' energy from generation. Hydroelectric generation, Combustion Turbine generation, Combined Cycle generation, solar generation, long term PPAs, and economical purchases from the wholesale market supplied the remainder.

The tables below list the Duke Energy Progress' plants in service in North Carolina (NC) and South Carolina (SC) with plant statistics, and the system's total generating capability.

**Existing Generating Units and Ratings [1, 3]**
**All Generating Unit Ratings are as of December 31, 2014 unless otherwise noted.**

| Coal | | | | | | |
|---|---|---|---|---|---|---|
| | Unit | Winter (MW) | Summer (MW) | Location | Fuel Type | Resource Type |
| | | | | | | |
| Asheville | 1 | 192 | 191 | Arden, NC | Coal | Base |
| Asheville | 2 | 187 | 185 | Arden, NC | Coal | Base |
| Mayo [2] | 1 | 746 | 727 | Roxboro, NC | Coal | Base |
| Roxboro | 1 | 380 | 379 | Semora, NC | Coal | Base |
| Roxboro | 2 | 673 | 671 | Semora, NC | Coal | Base |
| Roxboro | 3 | 698 | 691 | Semora, NC | Coal | Base |
| Roxboro [2] | 4 | 711 | 698 | Semora, NC | Coal | Base |
| Total Coal | | 3,587 | 3,542 | | | |

| Combustion Turbines | | | | | | |
|---|---|---|---|---|---|---|
| | Unit | Winter (MW) | Summer (MW) | Location | Fuel Type | Resource Type |
| | | | | | | |
| Asheville | 3 | 185 | 164 | Arden, NC | Natural Gas/Oil | Peaking |
| Asheville | 4 | 185 | 160 | Arden, NC | Natural Gas/Oil | Peaking |
| Blewett | 1 | 17 | 13 | Lilesville, NC | Oil | Peaking |
| Blewett | 2 | 17 | 13 | Lilesville, NC | Oil | Peaking |
| Blewett | 3 | 17 | 13 | Lilesville, NC | Oil | Peaking |
| Blewett | 4 | 17 | 13 | Lilesville, NC | Oil | Peaking |
| Darlington | 1 | 63 | 52 | Hartsville, SC | Natural Gas/Oil | Peaking |
| Darlington | 2 | 64 | 48 | Hartsville, SC | Oil | Peaking |
| Darlington | 3 | 63 | 52 | Hartsville, SC | Natural Gas/Oil | Peaking |
| Darlington | 4 | 66 | 50 | Hartsville, SC | Oil | Peaking |
| Darlington | 5 | 66 | 52 | Hartsville, SC | Natural Gas/Oil | Peaking |
| Darlington | 6 | 62 | 45 | Hartsville, SC | Oil | Peaking |
| Darlington | 7 | 65 | 51 | Hartsville, SC | Natural Gas/Oil | Peaking |
| Darlington | 8 | 66 | 48 | Hartsville, SC | Oil | Peaking |
| Darlington | 9 | 65 | 52 | Hartsville, SC | Oil | Peaking |
| Darlington | 10 | 65 | 51 | Hartsville, SC | Oil | Peaking |
| Darlington | 11 | 67 | 52 | Hartsville, SC | Oil | Peaking |
| Darlington | 12 | 133 | 118 | Hartsville, SC | Natural Gas/Oil | Peaking |
| Darlington | 13 | 133 | 116 | Hartsville, SC | Natural Gas/Oil | Peaking |
| Smith [4] | 1 | 183 | 157 | Hamlet, NC | Natural Gas/Oil | Peaking |
| Smith [4] | 2 | 183 | 156 | Hamlet, NC | Natural Gas/Oil | Peaking |
| Smith [4] | 3 | 185 | 155 | Hamlet, NC | Natural Gas/Oil | Peaking |
| Smith [4] | 4 | 186 | 159 | Hamlet, NC | Natural Gas/Oil | Peaking |
| Smith [4] | 6 | 187 | 153 | Hamlet, NC | Natural Gas/Oil | Peaking |
| Sutton | 1 | 12 | 11 | Wilmington, NC | Oil/Natural Gas | Peaking |
| Sutton | 2A | 31 | 24 | Wilmington, NC | Oil/Natural Gas | Peaking |
| Sutton | 2B | 33 | 26 | Wilmington, NC | Oil/Natural Gas | Peaking |
| Wayne | 1/10 | 192 | 177 | Goldsboro, NC | Oil/Natural Gas | Peaking |
| Wayne | 2/11 | 192 | 174 | Goldsboro, NC | Oil/Natural Gas | Peaking |
| Wayne | 3/12 | 193 | 173 | Goldsboro, NC | Oil/Natural Gas | Peaking |
| Wayne | 4/13 | 185 | 170 | Goldsboro, NC | Oil/Natural Gas | Peaking |
| Wayne | 5/14 | 197 | 169 | Goldsboro, NC | Oil/Natural Gas | Peaking |
| Weatherspoon | 1 | 41 | 32 | Lumberton, NC | Natural Gas/Oil | Peaking |
| Weatherspoon | 2 | 41 | 32 | Lumberton, NC | Natural Gas/Oil | Peaking |
| Weatherspoon | 3 | 41 | 33 | Lumberton, NC | Natural Gas/Oil | Peaking |
| Weatherspoon | 4 | 41 | 31 | Lumberton, NC | Natural Gas/Oil | Peaking |
| Total NC | | 2,561 | 2,208 | | | |
| Total SC | | 978 | 787 | | | |
| Total CT | | 3,539 | 2,995 | | | |

| Combined Cycle | | | | | | |
|---|---|---|---|---|---|---|
| | Unit | Winter (MW) | Summer (MW) | Location | Fuel Type | Resource Type |
| | | | | | | |
| Lee | CT1A | 223 | 177 | Goldsboro, NC | Natural Gas/Oil | Base |
| Lee | CT1B | 222 | 176 | Goldsboro, NC | Natural Gas/Oil | Base |
| Lee | CT1C | 223 | 179 | Goldsboro, NC | Natural Gas/Oil | Base |
| Lee | ST1 | 379 | 378 | Goldsboro, NC | Natural Gas/Oil | Base |
| Smith [4] | CT7 | 189 | 160 | Hamlet, NC | Natural Gas/Oil | Base |
| Smith [4] | CT8 | 189 | 157 | Hamlet, NC | Natural Gas/Oil | Base |
| Smith [4] | ST4 | 175 | 165 | Hamlet, NC | Natural Gas/Oil | Base |
| Smith [4] | CT9 | 214 | 178 | Hamlet, NC | Natural Gas/Oil | Base |
| Smith [4] | CT10 | 214 | 178 | Hamlet, NC | Natural Gas/Oil | Base |
| Smith [4] | ST5 | 246 | 250 | Hamlet, NC | Natural Gas/Oil | Base |
| Sutton | CT1A | 225 | 179 | Wilmington, NC | Natural Gas/Oil | Base |
| Sutton | CT1B | 225 | 179 | Wilmington, NC | Natural Gas/Oil | Base |
| Sutton | ST1 | 267 | 264 | Wilmington, NC | Natural Gas/Oil | Base |
| Total CC | | 2,991 | 2,620 | | | |

| Hydro | | | | | | |
|---|---|---|---|---|---|---|
| | Unit | Winter (MW) | Summer (MW) | Location | Fuel Type | Resource Type |
| | | | | | | |
| Blewett | 1 | 4 | 4 | Lilesville, NC | Water | Intermediate |
| Blewett | 2 | 4 | 4 | Lilesville, NC | Water | Intermediate |
| Blewett | 3 | 4 | 4 | Lilesville, NC | Water | Intermediate |
| Blewett | 4 | 5 | 5 | Lilesville, NC | Water | Intermediate |
| Blewett | 5 | 5 | 5 | Lilesville, NC | Water | Intermediate |
| Blewett | 6 | 5 | 5 | Lilesville, NC | Water | Intermediate |
| Marshall | 1 | 2 | 2 | Marshall, NC | Water | Intermediate |
| Marshall | 2 | 2 | 2 | Marshall, NC | Water | Intermediate |
| Tillery | 1 | 21 | 21 | Mt. Gilead, NC | Water | Intermediate |
| Tillery | 2 | 18 | 18 | Mt. Gilead, NC | Water | Intermediate |
| Tillery | 3 | 21 | 21 | Mt. Gilead, NC | Water | Intermediate |
| Tillery | 4 | 24 | 24 | Mt. Gilead, NC | Water | Intermediate |
| Walters | 1 | 36 | 36 | Waterville, NC | Water | Intermediate |
| Walters | 2 | 40 | 40 | Waterville, NC | Water | Intermediate |
| Walters | 3 | 36 | 36 | Waterville, NC | Water | Intermediate |
| Total Hydro | | 227 | 227 | | | |

| Nuclear | | | | | | |
|---|---|---|---|---|---|---|
| | **Unit** | **Winter (MW)** | **Summer (MW)** | **Location** | **Fuel Type** | **Resource Type** |
| | | | | | | |
| Brunswick [2] | 1 | 975 | 938 | Southport, NC | Uranium | Base |
| Brunswick[2] | 2 | 953 | 932 | Southport, NC | Uranium | Base |
| Harris [2] | 1 | 973 | 928 | New Hill, NC | Uranium | Base |
| Robinson | 2 | 797 | 741 | Hartsville, SC | Uranium | Base |
| Total NC | | 2,901 | 2,798 | | | |
| Total SC | | 797 | 741 | | | |
| Total Nuclear | | 3,698 | 3,539 | | | |

| Total Generation Capability | | |
|---|---|---|
| | Winter Capacity (MW) | Summer Capacity (MW) |
| TOTAL DEP SYSTEM - N.C. | 12,267 | 11,395 |
| TOTAL DEP SYSTEM - S.C. | 1,775 | 1,528 |
| TOTAL DEP SYSTEM | 14,042 | 12,923 |

Note 1: Ratings reflect compliance with NERC reliability standards and are gross of co-ownership interest as of 12/31/14.
Note 2: DEP's purchase of NCEMPA's interest in these power plants was closed on July 31, 2015. DEP is now 100% owner of these previously jointly owned assets.
Note 3: Resource type based on NERC capacity factor classifications which may alternate over the forecast period.
Note 4: Richmond County Plant renamed to Sherwood H. Smith Jr. Energy Complex.

| **Planned Uprates** | | | |
|---|---|---|---|
| **Unit** | **Date** | **Winter MW** | **Summer MW** |
| | | | |
| Brunswick 2 [1] | June 2017 | 10 | 10 |
| Harris 1 [1] | June 2017 | 4 | 4 |
| Harris 1[1] | June 2019 | 15 | 15 |
| Lee CC CT1A [1] | May 2019 | 25.7 | 25.7 |
| Lee CC CT1B [1] | May 2019 | 25.7 | 25.7 |
| Lee CC CT1C [1] | May 2019 | 25.7 | 25.7 |
| Sutton CC CT1A [1] | May 2019 | 29.0 | 29.0 |
| Sutton CC CT1B [1] | May 2019 | 29.0 | 29.0 |

Note 1: Capacity not reflected in Existing Generating Units and Ratings section.

| Retirements | | | | |
|---|---|---|---|---|
| **Unit & Plant Name** | **Location** | **Capacity (MW) Winter / Summer** | **Fuel Type** | **Retirement Date** |
| Cape Fear 5 | Moncure, NC | 148 / 144 | Coal | 10/1/12 |
| Cape Fear 6 | Moncure, NC | 175 / 172 | Coal | 10/1/12 |
| Cape Fear 1A | Moncure, NC | 14 / 11 | Combustion Turbine | 3/31/13 |
| Cape Fear 1B | Moncure, NC | 14 / 12 | Combustion Turbine | 3/31/13 |
| Cape Fear 2A | Moncure, NC | 15 / 12 | Combustion Turbine | 3/31/13 |
| Cape Fear 2B | Moncure, NC | 14 / 11 | Combustion Turbine | 10/1/12 |
| Cape Fear 1 | Moncure, NC | 12 / 11 | Steam Turbine | 3/31/11 |
| Cape Fear 2 | Moncure, NC | 12 / 7 | Steam Turbine | 3/31/11 |
| Lee 1 | Goldsboro, NC | 80 / 74 | Coal | 9/15/12 |
| Lee 2 | Goldsboro, NC | 80 / 68 | Coal | 9/15/12 |
| Lee 3 | Goldsboro, NC | 252 / 240 | Coal | 9/15/12 |
| Lee 1 | Goldsboro, NC | 15 / 12 | Combustion Turbine | 10/1/12 |
| Lee 2 | Goldsboro, NC | 27 / 21 | Combustion Turbine | 10/1/12 |
| Lee 3 | Goldsboro, NC | 27 / 21 | Combustion Turbine | 10/1/12 |
| Lee 4 | Goldsboro, NC | 27 / 21 | Combustion Turbine | 10/1/12 |
| Morehead 1 | Morehead City, NC | 15 / 12 | Combustion Turbine | 10/1/12 |
| Robinson 1 | Hartsville, NC | 179 / 177 | Coal | 10/1/12 |
| Robinson 1 | Hartsville, NC | 15 / 11 | Combustion Turbine | 3/31/13 |
| Weatherspoon 1 | Lumberton, NC | 49 / 48 | Coal | 9/30/11 |
| Weatherspoon 2 | Lumberton, NC | 49 / 48 | Coal | 9/30/11 |
| Weatherspoon 3 | Lumberton, NC | 79 / 74 | Coal | 9/30/11 |
| Sutton 1 | Wilmington, NC | 98 / 97 | Coal | 11/27/13 |
| Sutton 2 | Wilmington, NC | 95 / 90 | Coal | 11/27/13 |
| Sutton 3 | Wilmington, NC | 389 / 366 | Coal | 11/4/13 |
| Total | | 1,880 MW / 1,760 MW | | |

**Planning Assumptions – Unit Retirements**[a]

| Unit & Plant Name | Location | Capacity (MW) | Fuel Type | Expected Retirement |
|---|---|---|---|---|
| Asheville 1 | Arden, N.C. | 191 | Coal | 1/2020 |
| Asheville 2 | Arden, N.C. | 185 | Coal | 1/2020 |
| Mayo 1 | Roxboro, N.C. | 727 | Coal | 6/2035 |
| Roxboro 1 | Semora, N.C. | 379 | Coal | 6/2032 |
| Roxboro 2 | Semora, N.C. | 665 | Coal | 6/2032 |
| Roxboro 3 | Semora, N.C. | 691 | Coal | 6/2035 |
| Roxboro 4 | Semora, N.C. | 698 | Coal | 6/2035 |
| Robinson 2 [b] | Hartsville, S.C. | 741 | Nuclear | 6/2030 |
| Darlington 1 | Hartsville, S.C. | 52 | Natural Gas/Oil | 6/2020 |
| Darlington 2 | Hartsville, S.C. | 48 | Oil | 6/2020 |
| Darlington 3 | Hartsville, S.C. | 52 | Natural Gas/Oil | 6/2020 |
| Darlington 4 | Hartsville, S.C. | 50 | Oil | 1/2014 |
| Darlington 5 | Hartsville, S.C. | 52 | Natural Gas/Oil | 6/2020 |
| Darlington 6 | Hartsville, S.C. | 45 | Oil | 1/2014 |
| Darlington 7 | Hartsville, S.C. | 51 | Natural Gas/Oil | 6/2020 |
| Darlington 8 | Hartsville, S.C. | 48 | Oil | 6/2020 |
| Darlington 9 | Hartsville, S.C. | 52 | Oil | 6/2020 |
| Darlington 10 | Hartsville, S.C. | 51 | Oil | 6/2020 |
| Darlington 11 | Hartsville, S.C. | 52 | Oil | 1/2014 |
| Sutton 1 | Wilmington, N.C. | 11 | Natural Gas/Oil | 6/2017 |
| Sutton 2A | Wilmington, N.C. | 24 | Natural Gas/Oil | 6/2017 |
| Sutton 2B | Wilmington, N.C. | 26 | Natural Gas/Oil | 6/2017 |
| Blewett 1 | Lilesville, N.C. | 13 | Oil | 6/2027 |
| Blewett 2 | Lilesville, N.C. | 13 | Oil | 6/2027 |
| Blewett 3 | Lilesville, N.C. | 13 | Oil | 6/2027 |
| Blewett 4 | Lilesville, N.C. | 13 | Oil | 6/2027 |
| Weatherspoon 1 | Lumberton, N.C. | 32 | Natural Gas/Oil | 6/2027 |
| Weatherspoon 2 | Lumberton, N.C. | 32 | Natural Gas/Oil | 6/2027 |
| Weatherspoon 3 | Lumberton, N.C. | 33 | Natural Gas/Oil | 6/2027 |
| Weatherspoon 4 | Lumberton, N.C. | 31 | Natural Gas/Oil | 6/2027 |
| Total | | 5071 | | |

Note a: Retirement assumptions are for planning purposes only; dates are based on useful life expectations of the unit
Note b: Nuclear retirements for planning purposes are based on the end of current operating license

| **Planned Operating License Renewal** | | | | |
|---|---|---|---|---|
| Unit & Plant Name | Location | Original Operating License Expiration | Date of Approval | Extended Operating License Expiration |
| Blewett #1-6 [1] | Lilesville, NC | 04/30/08 | *Pending* | 2058 [2] |
| Tillery #1-4 [1] | Mr. Gilead, NC | 04/30/08 | *Pending* | 2058 [2] |
| Robinson #2 | Hartsville, SC | 07/31/10 | 04/19/2004 | 07/31/2030 |
| Brunswick #2 | Southport , NC | 12/27/14 | 06/26/2006 | 12/27/2034 |
| Brunswick #1 | Southport, NC | 09/08/16 | 06/26/2006 | 09/08/2036 |
| Harris #1 | New Hill, NC | 10/24/26 | 12/12/2008 | 10/24/2046 |

Note 1: The license renewal application for the Blewett and Tillery Plants was filed with the FERC on 04/26/06; the Company is awaiting issuance of the new license from FERC. Pending receipt of a new license, these plants are currently operating under a renewable one-year license extension which has been in effect since May 2008. Although Progress Energy has requested a 50-year license, FERC may not grant this term.

Note 2: Estimated - New license expiration date will be determined by FERC license issuance date and term of granted license.

## 9. CONCLUSIONS

DEP continues to focus on the needs of customers by meeting the growing demand in the most economical and reliable manner possible. The Company continues to improve the IRP process by determining best practices and making changes to more accurately and realistically represent the DEP System in its planning practices. The 2015 IRP represents a 15 year projection of the Company's plan to balance future customer demand and supply resources to meet this demand plus a 17% minimum planning reserve margin. Over the 15-year planning horizon, DEP expects to require 5,292 MW of additional generating resources in addition to the incremental renewable resources, EE and DSM already in the resource plan.

The Company focuses on the needs of the short-term, while keeping a close watch on market trends and technology advancements to meet the demands of customers in the long-term. The Company's short-term and long-term plans are summarized below:

### Short-Term

Over the next 5 years, DEP's 2015 IRP focuses on the following:

- Begin construction on the Sutton Blackstart CTs in 2016 to be available for the summer peak of 2017.
- Pursue the addition of a new combined cycle at the Asheville facility in the 2019 timeframe as part of the WCMP.
- Take actions to ensure capacity needs beginning in 2021 are met.
- Complete the resource adequacy study currently underway with Astrape Consulting.
- Procure CHP resources as cost-effective and diverse generation sources, as appropriate.
- Continue to meet NC REPS and SC DERP compliance plans and invest in additional cost-effective renewable resources.
- Continue to invest in EE and DSM in the Carolinas region.

### Long-Term

Beyond the next 5 years, DEP's 2015 IRP focuses on the following:

- Continue to seek the most cost-effective, reliable resources to meet the growing customer demand in the service territory. Currently, those are new combined cycle units and combustion turbine units in the 15 year planning horizon.
- Procure CHP resources as cost-effective and diverse generation sources, as appropriate.

- Continue to meet NC REPS and SC DERP compliance plans by investing in additional renewable resources and EE on the DEP system.
- Continue to invest in DSM in the Carolinas region.

DEP's goal is to continue to diversify the DEP system by adding a variety of cost-effective, reliable, clean resources to meet customer demand. Over the next 15 years, the Company projects filling the increasing demand with investments in natural gas, renewables, and EE and DSM.

# 10. NON-UTILITY GENERATION AND WHOLESALE

The following information describes the tables included in this chapter.

***Wholesale Sales Contracts***

This table includes wholesale sales contracts that are included in the 2015 Load Forecast. This information is **CONFIDENTIAL**.

***Wholesale Purchase Contracts***

This table includes all wholesale purchase contracts that are included as resources in the 2015 IRP. This information is **CONFIDENTIAL**.

***Non-Utility Generation Contracts***

This table includes all Non-Utility Generation contracts that have been signed since the 2014 IRP. This list includes contracts signed since June 1, 2014, as this was the date utilized in the tables in Appendix H in the 2014 IRP. This list is up to date as of June 30, 2015. This information is **CONFIDENTIAL**, so the customer names have been redacted.

**Table 10-A Wholesale Sales Contracts CONFIDENTIAL**

[redacted]

**Table 10-B Firm Wholesale Purchased Power Contracts** CONFIDENTIAL

[redacted]

[redacted]

## Table 10-C Non-Utility Generation

| Facility Name | City/County | State | Primary Fuel Type | Capacity (AC KW) | Designation | Inclusion in Utility's Resources |
|---|---|---|---|---|---|---|
| | | | North Carolina Generators: | | | |
| Facility 1 | Wilmington | NC | Solar | 5.0 | Intermediate/Peaking | Yes |
| Facility 2 | Raleigh | NC | Solar | 4.9 | Intermediate/Peaking | Yes |
| Facility 3 | Leland | NC | Solar | 4.0 | Intermediate/Peaking | Yes |
| Facility 4 | Raleigh | NC | Solar | 3.1 | Intermediate/Peaking | Yes |
| Facility 5 | Jacksonville | NC | Solar | 2.5 | Intermediate/Peaking | Yes |
| Facility 6 | Cary | NC | Solar | 9.9 | Intermediate/Peaking | Yes |
| Facility 7 | Raleigh | NC | Solar | 4.3 | Intermediate/Peaking | Yes |
| Facility 8 | New Hill | NC | Solar | 6.2 | Intermediate/Peaking | Yes |
| Facility 9 | Selma | NC | Solar | 4.3 | Intermediate/Peaking | Yes |
| Facility 10 | Apex | NC | Solar | 6.0 | Intermediate/Peaking | Yes |
| Facility 11 | Raleigh | NC | Solar | 4.8 | Intermediate/Peaking | Yes |
| Facility 12 | Knightdale | NC | Solar | 6.4 | Intermediate/Peaking | Yes |
| Facility 13 | Cary | NC | Solar | 4.0 | Intermediate/Peaking | Yes |
| Facility 14 | Pittsboro | NC | Solar | 7.0 | Intermediate/Peaking | Yes |
| Facility 15 | Raleigh | NC | Solar | 5.3 | Intermediate/Peaking | Yes |
| Facility 16 | Cary | NC | Solar | 2.8 | Intermediate/Peaking | Yes |
| Facility 17 | Biltmore Lakes | NC | Solar | 5.5 | Intermediate/Peaking | Yes |
| Facility 18 | Asheville | NC | Solar | 4.8 | Intermediate/Peaking | Yes |
| Facility 19 | Raleigh | NC | Solar | 3.8 | Intermediate/Peaking | Yes |
| Facility 20 | Wilmington | NC | Solar | 4.2 | Intermediate/Peaking | Yes |
| Facility 21 | Cary | NC | Solar | 4.3 | Intermediate/Peaking | Yes |
| Facility 22 | Cary | NC | Solar | 5.6 | Intermediate/Peaking | Yes |
| Facility 23 | Clayton | NC | Solar | 5.3 | Intermediate/Peaking | Yes |
| Facility 24 | Pittsboro | NC | Solar | 2.9 | Intermediate/Peaking | Yes |
| Facility 25 | Raleigh | NC | Solar | 4.0 | Intermediate/Peaking | Yes |
| Facility 26 | Wilmington | NC | Solar | 4.5 | Intermediate/Peaking | Yes |
| Facility 27 | Pinehurst | NC | Solar | 2.9 | Intermediate/Peaking | Yes |
| Facility 28 | Weaverville | NC | Solar | 3.5 | Intermediate/Peaking | Yes |
| Facility 29 | Chapel Hill | NC | Solar | 5.1 | Intermediate/Peaking | Yes |
| Facility 30 | Asheville | NC | Solar | 4.2 | Intermediate/Peaking | Yes |
| Facility 31 | Leicester | NC | Solar | 4.9 | Intermediate/Peaking | Yes |
| Facility 32 | Asheville | NC | Solar | 5.1 | Intermediate/Peaking | Yes |
| Facility 33 | Pittsboro | NC | Solar | 2.4 | Intermediate/Peaking | Yes |
| Facility 34 | Apex | NC | Solar | 3.1 | Intermediate/Peaking | Yes |
| Facility 35 | New Hill | NC | Solar | 8.0 | Intermediate/Peaking | Yes |
| Facility 36 | Cary | NC | Solar | 4.8 | Intermediate/Peaking | Yes |
| Facility 37 | Raleigh | NC | Solar | 5.0 | Intermediate/Peaking | Yes |
| Facility 38 | Cary | NC | Solar | 4.1 | Intermediate/Peaking | Yes |
| Facility 39 | Fuquay Varina | NC | Solar | 4.6 | Intermediate/Peaking | Yes |
| Facility 40 | Apex | NC | Solar | 2.6 | Intermediate/Peaking | Yes |
| Facility 41 | Pittsboro | NC | Solar | 4.0 | Intermediate/Peaking | Yes |
| Facility 42 | Raleigh | NC | Solar | 2.3 | Intermediate/Peaking | Yes |
| Facility 43 | Wilmington | NC | Solar | 2.6 | Intermediate/Peaking | Yes |
| Facility 44 | New Bern | NC | Solar | 4.7 | Intermediate/Peaking | Yes |
| Facility 45 | Raleigh | NC | Solar | 6.1 | Intermediate/Peaking | Yes |
| Facility 46 | Pittsboro | NC | Solar | 3.0 | Intermediate/Peaking | Yes |
| Facility 47 | Holly Springs | NC | Solar | 9.2 | Intermediate/Peaking | Yes |
| Facility 48 | Chapel Hill | NC | Solar | 4.3 | Intermediate/Peaking | Yes |
| Facility 49 | Raleigh | NC | Solar | 3.2 | Intermediate/Peaking | Yes |
| Facility 50 | Raleigh | NC | Solar | 5.5 | Intermediate/Peaking | Yes |

## Table 10-C (cont'd)

| Facility Name | City/County | State | Primary Fuel Type | Capacity (AC KW) | Designation | Inclusion in Utility's Resources |
|---|---|---|---|---|---|---|
| Facility 51 | Cary | NC | Solar | 5.6 | Intermediate/Peaking | Yes |
| Facility 52 | Pittsboro | NC | Solar | 2.2 | Intermediate/Peaking | Yes |
| Facility 53 | Pittsboro | NC | Solar | 3.0 | Intermediate/Peaking | Yes |
| Facility 54 | Pittsboro | NC | Solar | 3.6 | Intermediate/Peaking | Yes |
| Facility 55 | Pittsboro | NC | Solar | 4.1 | Intermediate/Peaking | Yes |
| Facility 56 | Siler City | NC | Solar | 4.7 | Intermediate/Peaking | Yes |
| Facility 57 | Clayton | NC | Solar | 7.3 | Intermediate/Peaking | Yes |
| Facility 58 | Raleigh | NC | Solar | 3.2 | Intermediate/Peaking | Yes |
| Facility 59 | Fayetteville | NC | Solar | 3.5 | Intermediate/Peaking | Yes |
| Facility 60 | Pittsboro | NC | Solar | 3.1 | Intermediate/Peaking | Yes |
| Facility 61 | Pittsboro | NC | Solar | 3.9 | Intermediate/Peaking | Yes |
| Facility 62 | Pittsboro | NC | Solar | 4.5 | Intermediate/Peaking | Yes |
| Facility 63 | Holly Springs | NC | Solar | 4.8 | Intermediate/Peaking | Yes |
| Facility 64 | Raleigh | NC | Solar | 6.3 | Intermediate/Peaking | Yes |
| Facility 65 | Pittsboro | NC | Solar | 5.7 | Intermediate/Peaking | Yes |
| Facility 66 | Chapel Hill | NC | Solar | 3.4 | Intermediate/Peaking | Yes |
| Facility 67 | Pittsboro | NC | Solar | 4.9 | Intermediate/Peaking | Yes |
| Facility 68 | Pittsboro | NC | Solar | 3.1 | Intermediate/Peaking | Yes |
| Facility 69 | Pittsboro | NC | Solar | 3.2 | Intermediate/Peaking | Yes |
| Facility 70 | Pittsboro | NC | Solar | 7.6 | Intermediate/Peaking | Yes |
| Facility 71 | Pittsboro | NC | Solar | 3.0 | Intermediate/Peaking | Yes |
| Facility 72 | Asheville | NC | Solar | 4.8 | Intermediate/Peaking | Yes |
| Facility 73 | Wilmington | NC | Solar | 2.3 | Intermediate/Peaking | Yes |
| Facility 74 | Cary | NC | Solar | 4.0 | Intermediate/Peaking | Yes |
| Facility 75 | Raleigh | NC | Solar | 4.7 | Intermediate/Peaking | Yes |
| Facility 76 | Pittsboro | NC | Solar | 2.7 | Intermediate/Peaking | Yes |
| Facility 77 | Raeford | NC | Solar | 4.0 | Intermediate/Peaking | Yes |
| Facility 78 | Pittsboro | NC | Solar | 6.9 | Intermediate/Peaking | Yes |
| Facility 79 | Pittsboro | NC | Solar | 3.3 | Intermediate/Peaking | Yes |
| Facility 80 | Pittsboro | NC | Solar | 3.3 | Intermediate/Peaking | Yes |
| Facility 81 | Siler City | NC | Solar | 3.9 | Intermediate/Peaking | Yes |
| Facility 82 | Raleigh | NC | Solar | 3.8 | Intermediate/Peaking | Yes |
| Facility 83 | Chapel Hill | NC | Solar | 2.4 | Intermediate/Peaking | Yes |
| Facility 84 | Cary | NC | Solar | 5.2 | Intermediate/Peaking | Yes |
| Facility 85 | Pittsboro | NC | Solar | 5.0 | Intermediate/Peaking | Yes |
| Facility 86 | Pittsboro | NC | Solar | 4.8 | Intermediate/Peaking | Yes |
| Facility 87 | Chapel Hill | NC | Solar | 8.5 | Intermediate/Peaking | Yes |
| Facility 88 | Apex | NC | Solar | 6.9 | Intermediate/Peaking | Yes |
| Facility 89 | Raleigh | NC | Solar | 4.2 | Intermediate/Peaking | Yes |
| Facility 90 | Apex | NC | Solar | 3.4 | Intermediate/Peaking | Yes |
| Facility 91 | Asheville | NC | Solar | 3.6 | Intermediate/Peaking | Yes |
| Facility 92 | Swannanoa | NC | Solar | 4.2 | Intermediate/Peaking | Yes |
| Facility 93 | Raleigh | NC | Solar | 3.1 | Intermediate/Peaking | Yes |
| Facility 94 | Zebulon | NC | Solar | 3.0 | Intermediate/Peaking | Yes |
| Facility 95 | Black Mountain | NC | Solar | 6.0 | Intermediate/Peaking | Yes |
| Facility 96 | Pittsboro | NC | Solar | 4.8 | Intermediate/Peaking | Yes |
| Facility 97 | Fuquay Varina | NC | Solar | 4.1 | Intermediate/Peaking | Yes |
| Facility 98 | Siler City | NC | Solar | 9.8 | Intermediate/Peaking | Yes |
| Facility 99 | Pittsboro | NC | Solar | 3.4 | Intermediate/Peaking | Yes |
| Facility 100 | Fuquay Varina | NC | Solar | 5.6 | Intermediate/Peaking | Yes |

## Table 10-C (cont'd)

| Facility Name | City/County | State | Primary Fuel Type | Capacity (AC KW) | Designation | Inclusion in Utility's Resources |
|---|---|---|---|---|---|---|
| Facility 101 | Cary | NC | Solar | 3.8 | Intermediate/Peaking | Yes |
| Facility 102 | Raleigh | NC | Solar | 2.7 | Intermediate/Peaking | Yes |
| Facility 103 | Raleigh | NC | Solar | 2.4 | Intermediate/Peaking | Yes |
| Facility 104 | Raleigh | NC | Solar | 4.1 | Intermediate/Peaking | Yes |
| Facility 105 | Fuquay Varina | NC | Solar | 5.4 | Intermediate/Peaking | Yes |
| Facility 106 | Pittsboro | NC | Solar | 2.5 | Intermediate/Peaking | Yes |
| Facility 107 | Cary | NC | Solar | 3.8 | Intermediate/Peaking | Yes |
| Facility 108 | Willow Spring | NC | Solar | 5.5 | Intermediate/Peaking | Yes |
| Facility 109 | Pittsboro | NC | Solar | 3.3 | Intermediate/Peaking | Yes |
| Facility 110 | Wilmington | NC | Solar | 4.7 | Intermediate/Peaking | Yes |
| Facility 111 | Chapel Hill | NC | Solar | 4.8 | Intermediate/Peaking | Yes |
| Facility 112 | Cary | NC | Solar | 5.7 | Intermediate/Peaking | Yes |
| Facility 113 | Raleigh | NC | Solar | 2.5 | Intermediate/Peaking | Yes |
| Facility 114 | Chapel Hill | NC | Solar | 4.3 | Intermediate/Peaking | Yes |
| Facility 115 | Alexander | NC | Solar | 6.6 | Intermediate/Peaking | Yes |
| Facility 116 | Raleigh | NC | Solar | 5.7 | Intermediate/Peaking | Yes |
| Facility 117 | Chapel Hill | NC | Solar | 4.2 | Intermediate/Peaking | Yes |
| Facility 118 | Chapel Hill | NC | Solar | 5.0 | Intermediate/Peaking | Yes |
| Facility 119 | Holly Springs | NC | Solar | 5.9 | Intermediate/Peaking | Yes |
| Facility 120 | Carolina Beach | NC | Solar | 3.4 | Intermediate/Peaking | Yes |
| Facility 121 | Chapel Hill | NC | Solar | 9.5 | Intermediate/Peaking | Yes |
| Facility 122 | Raleigh | NC | Solar | 4.5 | Intermediate/Peaking | Yes |
| Facility 123 | Pittsboro | NC | Solar | 2.2 | Intermediate/Peaking | Yes |
| Facility 124 | Chapel Hill | NC | Solar | 5.8 | Intermediate/Peaking | Yes |
| Facility 125 | Raleigh | NC | Solar | 3.7 | Intermediate/Peaking | Yes |
| Facility 126 | Raleigh | NC | Solar | 2.0 | Intermediate/Peaking | Yes |
| Facility 127 | Knightdale | NC | Solar | 3.3 | Intermediate/Peaking | Yes |
| Facility 128 | Clayton | NC | Solar | 3.3 | Intermediate/Peaking | Yes |
| Facility 129 | Raleigh | NC | Solar | 3.5 | Intermediate/Peaking | Yes |
| Facility 130 | Robbins | NC | Solar | 3.1 | Intermediate/Peaking | Yes |
| Facility 131 | Raleigh | NC | Solar | 3.9 | Intermediate/Peaking | Yes |
| Facility 132 | Apex | NC | Solar | 3.9 | Intermediate/Peaking | Yes |
| Facility 133 | Wilmington | NC | Solar | 3.7 | Intermediate/Peaking | Yes |
| Facility 134 | Pittsboro | NC | Solar | 3.8 | Intermediate/Peaking | Yes |
| Facility 135 | Zebulon | NC | Solar | 8.1 | Intermediate/Peaking | Yes |
| Facility 136 | Leland | NC | Solar | 5.0 | Intermediate/Peaking | Yes |
| Facility 137 | Chapel Hill | NC | Solar | 6.0 | Intermediate/Peaking | Yes |
| Facility 138 | Chapel Hill | NC | Solar | 4.7 | Intermediate/Peaking | Yes |
| Facility 139 | Angier | NC | Solar | 3.4 | Intermediate/Peaking | Yes |
| Facility 140 | Pittsboro | NC | Solar | 3.7 | Intermediate/Peaking | Yes |
| Facility 141 | Raleigh | NC | Solar | 6.6 | Intermediate/Peaking | Yes |
| Facility 142 | Pittsboro | NC | Solar | 5.2 | Intermediate/Peaking | Yes |
| Facility 143 | Benson | NC | Solar | 6.0 | Intermediate/Peaking | Yes |
| Facility 144 | Pittsboro | NC | Solar | 2.7 | Intermediate/Peaking | Yes |
| Facility 145 | Raleigh | NC | Solar | 2.4 | Intermediate/Peaking | Yes |
| Facility 146 | Pittsboro | NC | Solar | 2.3 | Intermediate/Peaking | Yes |
| Facility 147 | Cary | NC | Solar | 6.7 | Intermediate/Peaking | Yes |
| Facility 148 | Chapel Hill | NC | Solar | 5.1 | Intermediate/Peaking | Yes |
| Facility 149 | Raleigh | NC | Solar | 6.4 | Intermediate/Peaking | Yes |
| Facility 150 | Pittsboro | NC | Solar | 2.1 | Intermediate/Peaking | Yes |

## Table 10-C (cont'd)

| Facility Name | City/County | State | Primary Fuel Type | Capacity (AC KW) | Designation | Inclusion in Utility's Resources |
|---|---|---|---|---|---|---|
| Facility 151 | Raleigh | NC | Solar | 4.3 | Intermediate/Peaking | Yes |
| Facility 152 | Pittsboro | NC | Solar | 4.7 | Intermediate/Peaking | Yes |
| Facility 153 | Wilmington | NC | Solar | 3.3 | Intermediate/Peaking | Yes |
| Facility 154 | Southern Pines | NC | Solar | 3.1 | Intermediate/Peaking | Yes |
| Facility 155 | Siler City | NC | Solar | 8.8 | Intermediate/Peaking | Yes |
| Facility 156 | Raleigh | NC | Solar | 4.5 | Intermediate/Peaking | Yes |
| Facility 157 | Wilmington | NC | Solar | 3.3 | Intermediate/Peaking | Yes |
| Facility 158 | Cary | NC | Solar | 3.7 | Intermediate/Peaking | Yes |
| Facility 159 | Wilmington | NC | Solar | 4.6 | Intermediate/Peaking | Yes |
| Facility 160 | Raleigh | NC | Solar | 3.7 | Intermediate/Peaking | Yes |
| Facility 161 | Pittsboro | NC | Solar | 6.6 | Intermediate/Peaking | Yes |
| Facility 162 | Morrisville | NC | Solar | 5.2 | Intermediate/Peaking | Yes |
| Facility 163 | Raleigh | NC | Solar | 3.6 | Intermediate/Peaking | Yes |
| Facility 164 | Raleigh | NC | Solar | 3.7 | Intermediate/Peaking | Yes |
| Facility 165 | Raleigh | NC | Solar | 6.3 | Intermediate/Peaking | Yes |
| Facility 166 | Goldsboro | NC | Solar | 4.6 | Intermediate/Peaking | Yes |
| Facility 167 | Biltmore Lake | NC | Solar | 3.4 | Intermediate/Peaking | Yes |
| Facility 168 | Lillington | NC | Solar | 3.1 | Intermediate/Peaking | Yes |
| Facility 169 | Raleigh | NC | Solar | 3.7 | Intermediate/Peaking | Yes |
| Facility 170 | Raleigh | NC | Solar | 4.2 | Intermediate/Peaking | Yes |
| Facility 171 | Apex | NC | Solar | 3.8 | Intermediate/Peaking | Yes |
| Facility 172 | Cary | NC | Solar | 4.7 | Intermediate/Peaking | Yes |
| Facility 173 | Cary | NC | Solar | 3.4 | Intermediate/Peaking | Yes |
| Facility 174 | Apex | NC | Solar | 2.9 | Intermediate/Peaking | Yes |
| Facility 175 | Raleigh | NC | Solar | 4.6 | Intermediate/Peaking | Yes |
| Facility 176 | Raleigh | NC | Solar | 9.3 | Intermediate/Peaking | Yes |
| Facility 177 | Raleigh | NC | Solar | 3.5 | Intermediate/Peaking | Yes |
| Facility 178 | Black Mountain | NC | Solar | 8.0 | Intermediate/Peaking | Yes |
| Facility 179 | Apex | NC | Solar | 6.6 | Intermediate/Peaking | Yes |
| Facility 180 | Raleigh | NC | Solar | 4.0 | Intermediate/Peaking | Yes |
| Facility 181 | Pittsboro | NC | Solar | 3.0 | Intermediate/Peaking | Yes |
| Facility 182 | Raleigh | NC | Solar | 4.2 | Intermediate/Peaking | Yes |
| Facility 183 | Spring Hope | NC | Solar | 7.8 | Intermediate/Peaking | Yes |
| Facility 184 | Raleigh | NC | Solar | 5.9 | Intermediate/Peaking | Yes |
| Facility 185 | Raleigh | NC | Solar | 5.4 | Intermediate/Peaking | Yes |
| Facility 186 | Zebulon | NC | Solar | 2.0 | Intermediate/Peaking | Yes |
| Facility 187 | Henderson | NC | Solar | 3.7 | Intermediate/Peaking | Yes |
| Facility 188 | New Bern | NC | Solar | 3.5 | Intermediate/Peaking | Yes |
| Facility 189 | Willow Spring | NC | Solar | 4.6 | Intermediate/Peaking | Yes |
| Facility 190 | Pittsboro | NC | Solar | 5.0 | Intermediate/Peaking | Yes |
| Facility 191 | Raleigh | NC | Solar | 2.0 | Intermediate/Peaking | Yes |
| Facility 192 | Weaverville | NC | Solar | 5.2 | Intermediate/Peaking | Yes |
| Facility 193 | Cary | NC | Solar | 5.2 | Intermediate/Peaking | Yes |
| Facility 194 | Fuquay Varina | NC | Solar | 2.1 | Intermediate/Peaking | Yes |
| Facility 195 | Raleigh | NC | Solar | 4.6 | Intermediate/Peaking | Yes |
| Facility 196 | Raleigh | NC | Solar | 4.0 | Intermediate/Peaking | Yes |
| Facility 197 | Asheville | NC | Solar | 7.7 | Intermediate/Peaking | Yes |
| Facility 198 | Durham | NC | Solar | 34.2 | Intermediate/Peaking | Yes |
| Facility 199 | Asheville | NC | Solar | 5.0 | Intermediate/Peaking | Yes |
| Facility 200 | Wilmington | NC | Solar | 1.0 | Intermediate/Peaking | Yes |

## Table 10-C (cont'd)

| Facility Name | City/County | State | Primary Fuel Type | Capacity (AC KW) | Designation | Inclusion in Utility's Resources |
|---|---|---|---|---|---|---|
| Facility 201 | Asheville | NC | Solar | 4.2 | Intermediate/Peaking | Yes |
| Facility 202 | Leasburg | NC | Solar | 4.0 | Intermediate/Peaking | Yes |
| Facility 203 | Fairview | NC | Solar | 8.0 | Intermediate/Peaking | Yes |
| Facility 204 | Asheville | NC | Solar | 14.6 | Intermediate/Peaking | Yes |
| Facility 205 | Willow Spring | NC | Solar | 2,000.0 | Intermediate/Peaking | Yes |
| Facility 206 | Raleigh | NC | Solar | 1.8 | Intermediate/Peaking | Yes |
| Facility 207 | Asheville | NC | Solar | 4.0 | Intermediate/Peaking | Yes |
| Facility 208 | Wake Forest | NC | Solar | 5.9 | Intermediate/Peaking | Yes |
| Facility 209 | Asheboro | NC | Solar | 2.0 | Intermediate/Peaking | Yes |
| Facility 210 | Apex | NC | Solar | 6.0 | Intermediate/Peaking | Yes |
| Facility 211 | Pittsboro | NC | Solar | 3.1 | Intermediate/Peaking | Yes |
| Facility 212 | Candler | NC | Solar | 5.2 | Intermediate/Peaking | Yes |
| Facility 213 | Pinehurst | NC | Solar | 8.0 | Intermediate/Peaking | Yes |
| Facility 214 | Asheville | NC | Solar | 7.6 | Intermediate/Peaking | Yes |
| Facility 215 | Raleigh | NC | Solar | 4.0 | Intermediate/Peaking | Yes |
| Facility 216 | Asheville | NC | Solar | 4.2 | Intermediate/Peaking | Yes |
| Facility 217 | Asheville | NC | Solar | 3.1 | Intermediate/Peaking | Yes |
| Facility 218 | Louisburg | NC | Solar | 2.5 | Intermediate/Peaking | Yes |
| Facility 219 | Asheville | NC | Solar | 2.1 | Intermediate/Peaking | Yes |
| Facility 220 | Raleigh | NC | Solar | 9.6 | Intermediate/Peaking | Yes |
| Facility 221 | Vass | NC | Solar | 6.2 | Intermediate/Peaking | Yes |
| Facility 222 | Pittsboro | NC | Solar | 6.1 | Intermediate/Peaking | Yes |
| Facility 223 | Fairview | NC | Solar | 7.7 | Intermediate/Peaking | Yes |
| Facility 224 | Cary | NC | Solar | 2.5 | Intermediate/Peaking | Yes |
| Facility 225 | Henderson | NC | Solar | 4,998.0 | Intermediate/Peaking | Yes |
| Facility 226 | Nashville | NC | Solar | 2,000.0 | Intermediate/Peaking | Yes |
| Facility 227 | Cary | NC | Solar | 15.0 | Intermediate/Peaking | Yes |
| Facility 228 | Clayton | NC | Solar | 407.0 | Intermediate/Peaking | Yes |
| Facility 229 | Hurdle Mills | NC | Solar | 20.0 | Intermediate/Peaking | Yes |
| Facility 230 | Angier | NC | Solar | 2.6 | Intermediate/Peaking | Yes |
| Facility 231 | Fletcher | NC | Solar | 3.2 | Intermediate/Peaking | Yes |
| Facility 232 | Waynesville | NC | Solar | 5.2 | Intermediate/Peaking | Yes |
| Facility 233 | Raleigh | NC | Solar | 2.6 | Intermediate/Peaking | Yes |
| Facility 234 | Asheboro | NC | Solar | 5.2 | Intermediate/Peaking | Yes |
| Facility 235 | Black Mountain | NC | Solar | 5.1 | Intermediate/Peaking | Yes |
| Facility 236 | Louisburg | NC | Solar | 4.7 | Intermediate/Peaking | Yes |
| Facility 237 | Asheville | NC | Solar | 6.0 | Intermediate/Peaking | Yes |
| Facility 238 | Cary | NC | Solar | 4.5 | Intermediate/Peaking | Yes |
| Facility 239 | Candler | NC | Solar | 7.6 | Intermediate/Peaking | Yes |
| Facility 240 | Weaverville | NC | Solar | 10.1 | Intermediate/Peaking | Yes |
| Facility 241 | Candler | NC | Solar | 0.9 | Intermediate/Peaking | Yes |
| Facility 242 | Fairview | NC | Solar | 5.0 | Intermediate/Peaking | Yes |
| Facility 243 | Asheville | NC | Solar | 5.2 | Intermediate/Peaking | Yes |
| Facility 244 | Southern Pines | NC | Solar | 3.8 | Intermediate/Peaking | Yes |
| Facility 245 | Leicester | NC | Solar | 5.9 | Intermediate/Peaking | Yes |
| Facility 246 | Fairview | NC | Solar | 4.0 | Intermediate/Peaking | Yes |
| Facility 247 | Asheville | NC | Solar | 7.7 | Intermediate/Peaking | Yes |
| Facility 248 | Ashville | NC | Solar | 3.8 | Intermediate/Peaking | Yes |
| Facility 249 | Cary | NC | Solar | 3.0 | Intermediate/Peaking | Yes |
| Facility 250 | Pittsboro | NC | Solar | 6.0 | Intermediate/Peaking | Yes |

## Table 10-C (cont'd)

| Facility Name | City/County | State | Primary Fuel Type | Capacity (AC KW) | Designation | Inclusion in Utility's Resources |
|---|---|---|---|---|---|---|
| Facility 251 | Weaverville | NC | Solar | 5.0 | Intermediate/Peaking | Yes |
| Facility 252 | Black Mountain | NC | Solar | 5.3 | Intermediate/Peaking | Yes |
| Facility 253 | Raeford | NC | Solar | 3.0 | Intermediate/Peaking | Yes |
| Facility 254 | Asheville | NC | Solar | 8.6 | Intermediate/Peaking | Yes |
| Facility 255 | Wilmington | NC | Solar | 5.0 | Intermediate/Peaking | Yes |
| Facility 256 | Durham | NC | Solar | 5.0 | Intermediate/Peaking | Yes |
| Facility 257 | Wilmington | NC | Solar | 2.9 | Intermediate/Peaking | Yes |
| Facility 258 | Angier | NC | Solar | 5.8 | Intermediate/Peaking | Yes |
| Facility 259 | Asheville | NC | Solar | 2.9 | Intermediate/Peaking | Yes |
| Facility 260 | Coats | NC | Solar | 2.5 | Intermediate/Peaking | Yes |
| Facility 261 | Montreat | NC | Solar | 2.5 | Intermediate/Peaking | Yes |
| Facility 262 | Pittsboro | NC | Solar | 1.6 | Intermediate/Peaking | Yes |
| Facility 263 | Rocky Point | NC | Solar | 3.0 | Intermediate/Peaking | Yes |
| Facility 264 | Pittsboro | NC | Solar | 2.0 | Intermediate/Peaking | Yes |
| Facility 265 | Chapel Hill | NC | Solar | 16.0 | Intermediate/Peaking | Yes |
| Facility 266 | Pittsboro | NC | Solar | 8.0 | Intermediate/Peaking | Yes |
| Facility 267 | Hampstead | NC | Solar | 3.0 | Intermediate/Peaking | Yes |
| Facility 268 | Raleigh | NC | Solar | 8.0 | Intermediate/Peaking | Yes |
| Facility 269 | Asheville | NC | Solar | 5.5 | Intermediate/Peaking | Yes |
| Facility 270 | Raleigh | NC | Solar | 3.0 | Intermediate/Peaking | Yes |
| Facility 271 | Asheville | NC | Solar | 3.0 | Intermediate/Peaking | Yes |
| Facility 272 | Clayton | NC | Solar | 2.6 | Intermediate/Peaking | Yes |
| Facility 273 | Apex | NC | Solar | 6.2 | Intermediate/Peaking | Yes |
| Facility 274 | Apex | NC | Solar | 6.0 | Intermediate/Peaking | Yes |
| Facility 275 | Apex | NC | Solar | 6.3 | Intermediate/Peaking | Yes |
| Facility 276 | Pittsboro | NC | Solar | 2.2 | Intermediate/Peaking | Yes |
| Facility 277 | Leland | NC | Solar | 3.4 | Intermediate/Peaking | Yes |
| Facility 278 | Weaverville | NC | Solar | 2.9 | Intermediate/Peaking | Yes |
| Facility 279 | Raleigh | NC | Solar | 7.8 | Intermediate/Peaking | Yes |
| Facility 280 | Asheville | NC | Solar | 6.0 | Intermediate/Peaking | Yes |
| Facility 281 | Apex | NC | Solar | 3.7 | Intermediate/Peaking | Yes |
| Facility 282 | Southern Pines | NC | Solar | 1.6 | Intermediate/Peaking | Yes |
| Facility 283 | Raleigh | NC | Solar | 3.1 | Intermediate/Peaking | Yes |
| Facility 284 | Asheville | NC | Solar | 1.9 | Intermediate/Peaking | Yes |
| Facility 285 | Candler | NC | Solar | 10.1 | Intermediate/Peaking | Yes |
| Facility 286 | Pittsboro | NC | Solar | 4.0 | Intermediate/Peaking | Yes |
| Facility 287 | Fairview | NC | Solar | 7.1 | Intermediate/Peaking | Yes |
| Facility 288 | Chapel Hill | NC | Solar | 4.0 | Intermediate/Peaking | Yes |
| Facility 289 | Fairview | NC | Solar | 2.8 | Intermediate/Peaking | Yes |
| Facility 290 | Raleigh | NC | Solar | 7.7 | Intermediate/Peaking | Yes |
| Facility 291 | Asheville | NC | Solar | 3.8 | Intermediate/Peaking | Yes |
| Facility 292 | Raleigh | NC | Solar | 4.0 | Intermediate/Peaking | Yes |
| Facility 293 | Wilmington | NC | Solar | 7.2 | Intermediate/Peaking | Yes |
| Facility 294 | Pittsboro | NC | Solar | 5.2 | Intermediate/Peaking | Yes |
| Facility 295 | Raleigh | NC | Solar | 5.0 | Intermediate/Peaking | Yes |
| Facility 296 | Swannanoa | NC | Solar | 1.5 | Intermediate/Peaking | Yes |
| Facility 297 | Barnardsville | NC | Solar | 4.4 | Intermediate/Peaking | Yes |
| Facility 298 | Wilmington | NC | Solar | 8.8 | Intermediate/Peaking | Yes |
| Facility 299 | Asheville | NC | Solar | 4.7 | Intermediate/Peaking | Yes |
| Facility 300 | Pittsboro | NC | Solar | 2.6 | Intermediate/Peaking | Yes |

## Table 10-C (cont'd)

| Facility Name | City/County | State | Primary Fuel Type | Capacity (AC KW) | Designation | Inclusion in Utility's Resources |
|---|---|---|---|---|---|---|
| Facility 301 | Apex | NC | Solar | 96.0 | Intermediate/Peaking | Yes |
| Facility 302 | Apex | NC | Solar | 15.0 | Intermediate/Peaking | Yes |
| Facility 303 | Asheville | NC | Solar | 4.3 | Intermediate/Peaking | Yes |
| Facility 304 | Wilmington | NC | Solar | 5.0 | Intermediate/Peaking | Yes |
| Facility 305 | Candler | NC | Solar | 3.0 | Intermediate/Peaking | Yes |
| Facility 306 | Asheville | NC | Solar | 4.0 | Intermediate/Peaking | Yes |
| Facility 307 | Garner | NC | Solar | 7.3 | Intermediate/Peaking | Yes |
| Facility 308 | Chapel Hill | NC | Solar | 7.0 | Intermediate/Peaking | Yes |
| Facility 309 | Raleigh | NC | Solar | 1.6 | Intermediate/Peaking | Yes |
| Facility 310 | Wilmington | NC | Solar | 4.3 | Intermediate/Peaking | Yes |
| Facility 311 | Asheville | NC | Solar | 4.1 | Intermediate/Peaking | Yes |
| Facility 312 | Asheville | NC | Solar | 3.8 | Intermediate/Peaking | Yes |
| Facility 313 | Fletcher | NC | Solar | 6.1 | Intermediate/Peaking | Yes |
| Facility 314 | Angier | NC | Solar | 2.6 | Intermediate/Peaking | Yes |
| Facility 315 | Lillington | NC | Solar | 2.9 | Intermediate/Peaking | Yes |
| Facility 316 | Asheville | NC | Solar | 3.8 | Intermediate/Peaking | Yes |
| Facility 317 | Asheville | NC | Solar | 6.5 | Intermediate/Peaking | Yes |
| Facility 318 | Asheville | NC | Solar | 2.3 | Intermediate/Peaking | Yes |
| Facility 319 | Asheville | NC | Solar | 3.7 | Intermediate/Peaking | Yes |
| Facility 320 | Morrisville | NC | Solar | 3.0 | Intermediate/Peaking | Yes |
| Facility 321 | Sanford | NC | Solar | 5.8 | Intermediate/Peaking | Yes |
| Facility 322 | Raleigh | NC | Solar | 4.0 | Intermediate/Peaking | Yes |
| Facility 323 | Wilmington | NC | Solar | 3.0 | Intermediate/Peaking | Yes |
| Facility 324 | Morrisville | NC | Solar | 1.3 | Intermediate/Peaking | Yes |
| Facility 325 | Fuquay-Varina | NC | Solar | 3.8 | Intermediate/Peaking | Yes |
| Facility 326 | Raleigh | NC | Solar | 2.9 | Intermediate/Peaking | Yes |
| Facility 327 | Kinston | NC | Solar | 3.0 | Intermediate/Peaking | Yes |
| Facility 328 | Asheville | NC | Solar | | Intermediate/Peaking | Yes |
| Facility 329 | Fairview | NC | Solar | 5.39 | Intermediate/Peaking | Yes |
| Facility 330 | Cary | NC | Solar | 7 | Intermediate/Peaking | Yes |
| Facility 331 | Fuquay Varnia | NC | Solar | 2.49 | Intermediate/Peaking | Yes |
| Facility 332 | Newport | NC | Solar | 7.6 | Intermediate/Peaking | Yes |
| Facility 333 | Fuquay Varina | NC | Solar | 0.82 | Intermediate/Peaking | Yes |
| Facility 334 | Fletcher | NC | Solar | 2.75 | Intermediate/Peaking | Yes |
| Facility 335 | Siler City | NC | Solar | 4.2 | Intermediate/Peaking | Yes |
| Facility 336 | Asheville | NC | Solar | 5 | Intermediate/Peaking | Yes |
| Facility 337 | Cary | NC | Solar | 1.84 | Intermediate/Peaking | Yes |
| Facility 338 | Candler | NC | Solar | 7.975 | Intermediate/Peaking | Yes |
| Facility 339 | Star | NC | Solar | 2.3 | Intermediate/Peaking | Yes |
| Facility 340 | Fayetville | NC | Solar | 5.71 | Intermediate/Peaking | Yes |
| Facility 341 | Fayetteville | NC | Solar | 5 | Intermediate/Peaking | Yes |
| Facility 342 | Asheville | NC | Solar | 3.9 | Intermediate/Peaking | Yes |
| Facility 343 | Asheville | NC | Solar | 3.3 | Intermediate/Peaking | Yes |
| Facility 344 | Asheville | NC | Solar | 3.2 | Intermediate/Peaking | Yes |
| Facility 345 | Asheboro | NC | Solar | 6.88 | Intermediate/Peaking | Yes |
| Facility 346 | Wilmington | NC | Solar | 1.63 | Intermediate/Peaking | Yes |
| Facility 347 | Asheville | NC | Solar | 7.1 | Intermediate/Peaking | Yes |
| Facility 348 | Vass | NC | Solar | 4.8 | Intermediate/Peaking | Yes |
| Facility 349 | Waynesville | NC | Solar | 3.62 | Intermediate/Peaking | Yes |
| Facility 350 | Asheville | NC | Solar | 7 | Intermediate/Peaking | Yes |

## Table 10-C (cont'd)

| Facility Name | City/County | State | Primary Fuel Type | Capacity (AC KW) | Designation | Inclusion in Utility's Resources |
|---|---|---|---|---|---|---|
| Facility 351 | Raleigh | NC | Solar | 3 | Intermediate/Peaking | Yes |
| Facility 352 | Alexander | NC | Solar | 2.91 | Intermediate/Peaking | Yes |
| Facility 353 | Pittsboro | NC | Solar | 6 | Intermediate/Peaking | Yes |
| Facility 354 | Raleigh | NC | Solar | 2.49 | Intermediate/Peaking | Yes |
| Facility 355 | Pittsboro | NC | Solar | 5 | Intermediate/Peaking | Yes |
| Facility 356 | Chapel Hill | NC | Solar | 4.158 | Intermediate/Peaking | Yes |
| Facility 357 | Asheville | NC | Solar | 3 | Intermediate/Peaking | Yes |
| Facility 358 | Asheville | NC | Solar | 3.12 | Intermediate/Peaking | Yes |
| Facility 359 | Angier | NC | Solar | 5 | Intermediate/Peaking | Yes |
| Facility 360 | Asheville | NC | Solar | 3 | Intermediate/Peaking | Yes |
| Facility 361 | Clayton | NC | Solar | 2000 | Intermediate/Peaking | Yes |
| Facility 362 | Raleigh | NC | Solar | 4 | Intermediate/Peaking | Yes |
| Facility 363 | Holly Springs | NC | Solar | 3.8 | Intermediate/Peaking | Yes |
| Facility 364 | Canton | NC | Solar | 2 | Intermediate/Peaking | Yes |
| Facility 365 | Godwin | NC | Solar | 5 | Intermediate/Peaking | Yes |
| Facility 366 | Raleigh | NC | Solar | 3.1 | Intermediate/Peaking | Yes |
| Facility 367 | Asheville | NC | Solar | 3.8 | Intermediate/Peaking | Yes |
| Facility 368 | Coats | NC | Solar | 3.84 | Intermediate/Peaking | Yes |
| Facility 369 | Pittsboro | NC | Solar | 8 | Intermediate/Peaking | Yes |
| Facility 370 | Raleigh | NC | Solar | 7.54 | Intermediate/Peaking | Yes |
| Facility 371 | Raleigh | NC | Solar | 8.64 | Intermediate/Peaking | Yes |
| Facility 372 | Climax | NC | Solar | 7.68 | Intermediate/Peaking | Yes |
| Facility 373 | Aberdeen | NC | Solar | 4.14 | Intermediate/Peaking | Yes |
| Facility 374 | Smyrna | NC | Wind | 10 | Intermediate/Peaking | Yes |
| Facility 375 | Castalia | NC | Solar | 3 | Intermediate/Peaking | Yes |
| Facility 376 | Weaverville | NC | Solar | 7.5 | Intermediate/Peaking | Yes |
| Facility 377 | Benson | NC | Solar | 3 | Intermediate/Peaking | Yes |
| Facility 378 | Broadway | NC | Solar | 8.55 | Intermediate/Peaking | Yes |
| Facility 379 | Raleigh | NC | Solar | 3.84 | Intermediate/Peaking | Yes |
| Facility 380 | Goldsboro | NC | Solar | 4.2 | Intermediate/Peaking | Yes |
| Facility 381 | Weaverville | NC | Solar | 6 | Intermediate/Peaking | Yes |
| Facility 382 | Pittsboro | NC | Solar | 1.632 | Intermediate/Peaking | Yes |
| Facility 383 | CAMERON | NC | Solar | 4.3 | Intermediate/Peaking | Yes |
| Facility 384 | Waynesville | NC | Solar | 5 | Intermediate/Peaking | Yes |
| Facility 385 | Asheville | NC | Solar | 4.92 | Intermediate/Peaking | Yes |
| Facility 386 | Hollister | NC | Solar | 2.58 | Intermediate/Peaking | Yes |
| Facility 387 | Weaverville | NC | Solar | 3.84 | Intermediate/Peaking | Yes |
| Facility 388 | Fletcher | NC | Solar | 424 | Intermediate/Peaking | Yes |
| **Facility Name** | **City/County** | **State** | **Primary Fuel Type** | **Capacity (AC KW)** | **Designation** | **Inclusion in Utility's Resources** |
| | | | South Carolina Generators: | | | |
| Facility 1 | Sumter | SC | Biogas | | Intermediate/Peaking | Yes |

## 11. CROSS-REFERENCE TABLE

| | Requirement | Location |
|---|---|---|
| **1** | Summary of significant amendments or revisions to most recently filed biennial report (including amendments to type and size of resources identified | Chapter 4 |
| **2** | Short-term action plan | Chapter 7 |
| **3** | REPS Compliance Plan | Attachment: NC REPS Compliance Plan |
| **4** | Most recent 10-year history and forecast of:<br>- customers by each customer class,<br>- energy sales (MWh) by each customer class,<br>- utilities summer and winter peak load | Chapter 5 |
| **5** | 15 year table (w/ and w/o projected supply or demand side resources) of:<br>-Peak loads for summer and winter seasons of each year<br>- annual energy forecasts<br>- Reserve margins<br>- Load duration curves<br>- Effects of DR and EE programs on forecasted annual energy and peak loads | Chapter 5 |
| **6** | Description of future supply-side resources including type of capacity / resource (MW rating, fuel source, base, intermediate, or peaking) | Chapter 6 |
| **7** | List of existing units in service with:<br>- type of fuel(s) used<br>- Type of unit (base, int, peak)<br>- Location of existing unit<br>- List of units to be retired with location and date<br>- List of units for which there are specific plans for life extension, refurbishment, or upgrading<br>- Other changes to existing generating units that are expected to impact gen capability by 10% or 10 MW | Chapter 8 |
| **8** | Planned Generation Additions with:<br>- Type of fuel used<br>- Type of unit (MW rating, base, int, peak)<br>- Location if determined<br>- Summaries of analyses supporting any new gen additions included in its 15-year forecast | Chapter 6 |
| **9** | List of all NUG facilities<br>- facility name<br>- location<br>- primary fuel type<br>- capacity (base, int, peak)<br>- which are included in its total supply of resources | Chapter 10 |
| **10** | Cumulative resource additions necessary to meet load obligation & reserve margins | Chapter 6 |

DUKE ENERGY PROGRESS

# The Duke Energy Progress

# NC Renewable Energy & Energy Efficiency Portfolio Standard (NC REPS) Compliance Plan

## September 1, 2015

**NC REPS Compliance Plan**
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**INTRODUCTION:**

Duke Energy Progress, LLC (DEP or the Company) submits its annual Renewable Energy and Energy Efficiency Portfolio Standard (NC REPS or REPS) Compliance Plan (Compliance Plan) in accordance with NC Gen. Stat. § 62-133.8 and North Carolina Utilities Commission (the Commission) Rule R8-67(b). This Compliance Plan, set forth in detail in Section II and Section III, provides the required information and outlines the Company's projected plans to comply with NC REPS for the period 2015 to 2017 (the Planning Period). Section IV addresses the cost implications of the Company's REPS Compliance Plan.

In 2007, the North Carolina General Assembly enacted Session Law 2007-397 (Senate Bill 3), codified in relevant part as NC Gen. Stat. § 62-133.8, in order to:

- Diversify the resources used to reliably meet the energy needs of consumers in the State;
- Provide greater energy security through the use of indigenous energy resources available within the State;
- Encourage private investment in renewable energy and energy efficiency; and
- Provide improved air quality and other benefits to energy consumers and citizens of the State.

As part of the broad policy initiatives listed above, Senate Bill 3 established the NC REPS, which requires the investor-owned utilities, electric membership corporations or co-operatives, and municipalities to procure or produce renewable energy, or achieve energy efficiency savings, in amounts equivalent to specified percentages of their respective retail megawatt-hour (MWh) sales from the prior calendar year.

Duke Energy Progress seeks to advance these State policies and comply with its REPS obligations through a diverse portfolio of cost-effective renewable energy and energy efficiency resources. Specifically, the key components of Duke Energy Progress' 2015 Compliance Plan include: (1) energy efficiency programs that will generate savings that can be counted towards the Company's REPS obligation; (2) purchases of renewable energy certificates (RECs); (3) operations of company-owned renewable facilities; and (4) research studies to enhance the Company's ability to comply with its REPS obligations in the future. The Company believes that these actions yield a diverse portfolio of qualifying resources and allow a flexible mechanism for compliance with the requirements of NC Gen. Stat. § 62-133.8.

In addition, the Company has undertaken, and will continue to undertake, specific regulatory and operational initiatives to support REPS compliance, including: (1) submission of regulatory applications to pursue reasonable and appropriate renewable energy and energy efficiency initiatives in support of the Company's REPS compliance needs; (2) solicitation, review, and analysis of proposals from renewable energy suppliers offering RECs and diligent pursuit of the most attractive opportunities, as appropriate;

and (3) development and implementation of administrative processes to manage the Company's REPS compliance operations, such as procuring and managing renewable resource contracts, accounting for RECs, safely interconnecting renewable energy suppliers, reporting renewable generation to the North Carolina Renewable Energy Tracking System (NC-RETS), and forecasting renewable resource availability and cost in the future.

The Company believes these actions collectively constitute a thorough and prudent plan for compliance with NC REPS and demonstrate the Company's commitment to pursue its renewable energy and energy efficiency strategies for the benefit of its customers.

## I. REPS COMPLIANCE OBLIGATION:

Duke Energy Progress calculates its NC REPS Compliance Obligations[5] for 2015, 2016, and 2017 based on interpretation of the statute (NC Gen. Stat. § 62-133.8), the Commission's rules implementing Senate Bill 3 (Rule R8-67), and subsequent Commission orders, as applied to the Company's actual or forecasted retail sales in the Planning Period, as well as the actual and forecasted retail sales of those wholesale customers for whom the Company is supplying REPS compliance services. The Company's wholesale customers for whom it supplies REPS compliance services are the Town of Sharpsburg, the Town of Stantonsburg, the Town of Lucama, the Town of Black Creek, Town of Winterville and the City of Waynesville (Waynesville compliance provided for 2015 only, as DEP's contract with Waynesville expires 12/31/2015) (collectively referred to as Wholesale or Wholesale Customers)[6]. Table 1 below shows the Company's retail and Wholesale customers' REPS Compliance Obligation.

[5] For the purposes of this Compliance Plan, Compliance Obligation is more specifically defined as the sum of Duke Energy Progress' native load obligations for both the Company's retail sales and for wholesale native load priority customers' retail sales for whom the Company is supplying REPS compliance. All references to the respective Set-Aside requirements, the General Requirements, and REPS Compliance Obligation of the Company include the aggregate obligations of both Duke Energy Progress and the Wholesale Customers. Also, for purposes of this Compliance Plan, all references to the compliance activities and plans of the Company shall encompass such activities and plans being undertaken by Duke Energy Progress on behalf of the Wholesale Customers.

[6] For purposes of this Compliance Plan, Retail Sales is defined as the sum of Duke Energy Progress' retail sales and the retail sales of the wholesale customers for whom the company is supplying REPS compliance.

**Table 1: Duke Energy Progress' NC REPS Compliance Obligation**

| Compliance Year | Previous Year DEP Retail Sales (MWhs) | Previous Year Wholesale Retail Sales (MWhs) | Total Retail sales for REPS Compliance (MWhs) | Solar Set-Aside (RECs) | Swine Set-Aside (RECs) | Poultry Set-Aside (RECs) | REPS Requirement (%) | Total REPS Compliance Obligation (RECs) |
|---|---|---|---|---|---|---|---|---|
| **2015** | 37,490,737 | 212,347 | 37,703,084 | 52,784 | 26,392 | 202,536 | 6% | 2,262,185 |
| **2016** | 37,084,787 | 120,748 | 37,205,535 | 52,088 | 26,044 | 255,925 | 6% | 2,232,332 |
| **2017** | 37,500,664 | 121,215 | 37,621,879 | 52,671 | 52,671 | 257,740 | 6% | 2,257,313 |

Note: Obligation is determined by prior-year MWh sales. Thus, retail sales figures for compliance years 2015 and 2016 are estimates.

As shown in Table 1, the Company's requirements in the Planning Period include the solar energy resource requirement (Solar Set-Aside), swine waste resource requirement (Swine Set-Aside), and poultry waste resource requirement (Poultry Set-Aside). In addition, the Company must also ensure that, in total, the RECs that it produces or procures, combined with energy efficiency savings, is an amount equivalent to 6% of its prior-year retail sales in compliance years 2015, 2016 and 2017. The Company refers to this as its Total Obligation. For clarification, the Company refers to its Total Obligation, net of the Solar, Swine, and Poultry Set-Aside requirements, as its General Requirement.

## II. REPS COMPLIANCE PLAN:

In accordance with Commission Rule R8-67b(1)(i), the Company describes its planned actions to comply with the Solar, Swine, and Poultry Set-Asides, as well as the General Requirement below. The discussion first addresses the Company's efforts to meet the Set-Aside requirements and then outlines the Company's efforts to meet its General Requirement in the Planning Period.

### A. SOLAR ENERGY RESOURCES:

Pursuant to NC Gen. Stat. § 62-133.8(d), the Company must produce or procure solar RECs equal to a minimum of 0.14% of the prior year's total electric energy in megawatt-hours (MWh) sold to retail customers in North Carolina in 2015, 2016 and 2017.

Based on the Company's actual retail sales in 2014, the Solar Set-Aside is 52,784 RECs in 2015. Based on forecasted retail sales, the Solar Set-Aside is projected to be approximately 52,088 RECs and 52,671 RECs in 2016 and 2017, respectively.

The Company's plan for meeting the Solar Set-Aside in the Planning Period is described in further detail below.

### 1. Company-Owned Solar Facilities

As the result of a solar RFP issued in February 2014, DEP announced plans to acquire and construct three solar facilities in North Carolina, totaling 128 MW of capacity: a 65MW facility in Duplin County; a 40MW facility in Wilson County and a 23MW facility in Bladen County. In addition, the Camp Lejeune Solar Facility will add approximately 13 MW of solar PV capacity to DEP's system and is the Company's first solar facility at a military base. All of these Company-owned projects are anticipated to be online by the end of 2015.

### 2. Solar PPAs and Solar REC Purchase Agreements

DEP has executed multiple solar REC purchase agreements with third parties. These agreements include contracts with multiple counterparties to procure solar RECs from both solar photovoltaic (PV) and solar water heating installations. Also as part of the 2014 solar RFP, DEP signed power purchase agreements with five new solar projects, totaling 150 MW of capacity. Additional details with respect to the REC purchase agreements are set forth in Exhibit A.

### 3. Residential Solar PV Program

The Company also maintains a residential solar PV program, which offers incentives to customers who install solar. In exchange, the Company receives RECs created by the systems for 5 years. By year-end 2015, the Company expects total program participation of approximately 4MW of solar PV from around 900 program participants.

### 4. Review of Company's Solar Set-Aside Plan

The Company has made and continues to make reasonable efforts to meet the Solar Set-Aside requirement in the Planning Period, and remains confident that it will be able to comply with this requirement. Therefore, the Company sees minimal risk in meeting the Solar Set-Aside and will continue to monitor the development and progress of solar initiatives and take appropriate actions as necessary.

## B. SWINE WASTE-TO-ENERGY RESOURCES

Pursuant to NC Gen. Stat. § 62-133.8(e), as amended by the NCUC *Final Order Modifying the Swine Waste Set-Aside Requirement and Providing Other Relief,* Docket No. E-100, Sub 113 (November 2014), for calendar years 2015 and 2016, at least 0.07%, and in 2017, at least 0.14% of prior-year total retail electric energy sold in aggregate by utilities in North Carolina must be supplied by energy derived from swine waste. The Company's Swine Set-Aside is estimated to be 26,392 RECs in 2015, 26,044 RECs in 2016, and 52,671 RECs in 2017.

Swine waste-to-energy compliance challenges have been numerous and varied. Three paths to the creation of swine waste-to-energy RECs have been identified, although each faces unique challenges.

1. **On-farm generation**

Projects consisting of digestion and generation on a single farm or tight cluster of farms often face gas production and feedstock agreement challenges, as well as interconnection difficulties. The Company understands that many farms in NC are contract growers and have only limited term agreements with the integrators. Accordingly, many contract growers are not in a position to provide a firm supply of waste sufficient to support project financing. The Company is exploring ways to overcome such risks.

2. **Centralized digestion**

This type of system would benefit farmers that cannot individually construct and operate an anaerobic digester manure handling system on their own due to the capital expense or just don't have the number of animals required to operate a digester successfully or cost effectively. Farms located close to each other could share the cost of the centrally located digester system. The centralized digester operated by an individual or private company would carry out the operation and maintenance of the digester and its mechanical systems. It would have the same advantages as on-farm digesters of odor reduction, pathogen and weed seed destruction, biogas production and a stable effluent ready to fertilize fields and crops.

The Company recognizes that NIMBY ("Not In My Back Yard") issues may scuttle some developers' plans for overcoming fuel supply and interconnection problems faced by more rural, on-farm projects.

3. **Injected/Directed biogas**

In theory, injected biogas reduces costs by using large, efficient centralized generation in the place of smaller, less-efficient reciprocating engines typical of other projects. However, practically, the Company has found such solutions in North Carolina to be economically challenged, in part due to additional gas clean-up requirements prior to injection and the general lack of physical proximity between clusters of farms and pipeline infrastructure.

The Company continues to explore directed biogas opportunities, including promising opportunities outside of North Carolina where the gas would be transported on interstate pipelines used for fuel in one of the Company's combined cycles.

In spite of Duke Energy Progress' active and diligent efforts to secure resources to comply with its Swine Waste Set-Aside requirements, the Company will not be able to procure sufficient volumes of RECs to meet its pro-rata share of the swine waste set-aside requirements in 2015. The Company remains actively engaged in seeking additional resources and continues to make every reasonable effort to comply with the swine waste set-aside requirements.

The Company's ability to comply in 2016 and 2017 remains highly uncertain and subject to multiple variables, particularly relating to counterparty achievement of projected delivery requirements and commercial operation milestones. Additional details with respect to the Company's compliance efforts and REC purchase agreements are set forth in Exhibit A and the Company's tri-annual progress reports, filed confidentially in Docket E-100 Sub113A.

Due to its expected non-compliance in 2015, the Company has submitted a motion to the Commission for approval of a request to relieve the Company from compliance with the swine-waste requirements until calendar year 2016 by delaying the compliance obligation for a one year period.

## C. POULTRY WASTE-TO-ENERGY RESOURCES

Pursuant to NC Gen. Stat. § 62-133.8(f), as amended by NCUC *Final Order Modifying the Poultry and Swine Waste Set-Aside Requirements and Providing Other Relief*, Docket No. E-100, Sub 113 (March 2014), for calendar year 2015, at least 700,000 MWhs, and for 2016 and 2017, at least 900,000 MWhs, of the prior year's total electric energy sold to retail electric customers in the State or an equivalent amount of energy shall be produced or procured each year from poultry waste, as defined per the Statute and additional clarifying Orders. As the Company's retail sales share of the State's total retail megawatt-hour sales is approximately 29%, the Company's Poultry Set-Aside is estimated to be 202,536 RECs in 2015, 255,925 RECs in 2016, and 257,740 in 2017.

In spite of Duke Energy Progress' active and diligent efforts to secure resources to comply with its Poultry Waste Set-Aside requirements, the Company will not be able to procure sufficient volumes of RECs to meet its pro-rata share of the poultry set-aside requirements in 2015. The Company remains actively engaged in seeking additional resources and continues to make every reasonable effort to comply with the poultry waste set-aside requirements.

Several near-term challenges remain to the Company's meeting the poultry set-aside targets in the future. To date, only a handful of poultry projects are operating and online in North Carolina. Ramping up to meet the increased compliance targets for 2015 - 2017 has been problematic because other suppliers have either delayed projects or lowered the volume of RECs to be produced. The Company is, nevertheless, encouraged by the growing use of thermal poultry RECs and the proposals that it has recently received from developers.

The Company's ability to comply in 2016 and 2017 remains uncertain and largely subject to counterparty performance. Additional details with respect to the Company's compliance efforts and REC purchase agreements are set forth in Exhibit A and the Company's tri-annual progress reports, filed confidentially in Docket E-100 Sub113A.

Due to its expected non-compliance in 2015, the Company has submitted a motion to the Commission for approval of a request to relieve the Company from compliance with the poultry-waste requirements until calendar year 2016 by delaying the compliance obligation for a one year period.

## D. GENERAL REQUIREMENT RESOURCES

Pursuant to NC Gen. Stat. § 62-133.8, Duke Energy Progress is required to comply with its Total Obligation in 2015, 2016, and 2017 by submitting for retirement a total volume of RECs equivalent to 6% of retail sales in North Carolina in the prior year: approximately 2,262,185 RECs in 2015, 2,232,332 RECs in 2016, and 2,257,313 RECs in 2017. This requirement, net of the Solar, Swine, and Poultry Set-Aside requirements, is estimated to be 1,980,473 RECs in 2015, 1,898,275 RECs in 2016, and 1,894,231 in 2017. The various resource options available to the Company to meet the General Requirement are discussed below, as well as the Company's plan to meet the General Requirement with these resources.

### 1. Energy Efficiency

During the Planning Period, the Company plans to meet 25% of the Total Obligation with Energy Efficiency (EE) savings, which is the maximum allowable amount under NC Gen. Stat. § 62-133.7(b)(2)c. The Company continues to develop and offer its customers new and innovative EE programs that will deliver savings and count towards its future NC REPS requirements. The Company has attached a list of those EE measures that it plans to use toward REPS compliance, including projected impacts, as Exhibit B.

### 2. Hydroelectric Power

Duke Energy Progress plans to use hydroelectric power from two sources to meet the General Requirement in the Planning Period: (1) Wholesale Customers' Southeastern Power Administration (SEPA) allocations; and (2) hydroelectric generation suppliers whose facilities have received Qualifying Facility (QF or QF Hydro) status. Wholesale Customers may also bank and utilize hydroelectric resources arising from their full allocations of SEPA. When supplying compliance for the Wholesale Customers, the Company will ensure that hydroelectric resources do not comprise more than 30% of each Wholesale Customers' respective compliance portfolio, pursuant to NC Gen. Stat. § 62-133.8(c)(2)c. In addition, RECs from QF Hydro facilities will be used towards the General Requirements of Duke Energy Progress' retail customers. Please see Exhibit A for more information.

### 3. Biomass Resources

Duke Energy Progress plans to meet a portion of the General Requirement through a variety of biomass resources, including landfill gas to energy, combined heat and power, and direct combustion of biomass fuels. The Company is purchasing RECs from multiple biomass facilities in the Carolinas, including landfill gas to energy facilities and biomass-fueled combined heat and power facilities, all of which qualify as renewable energy facilities. Please see Exhibit A for more information on each of these contracts.

Duke Energy Progress notes, however, that reliance on direct-combustion biomass remains limited in long-term planning horizons, in part due to continued uncertainties around the developable potential of such resources in the Carolinas and the projected availability of other forms of renewable resources to offset the need for biomass.

### 4. Wind

Duke Energy Progress plans to meet a portion of the General Requirement with RECs from wind facilities. While the Company expects to rely upon wind resources for REPS compliance, the extent and timing of that reliance will likely vary commensurately with changes to supporting policies and prevailing market prices. The Company recognizes that some land-based wind developers are presently pursuing projects of significant size in North Carolina. While successful projects have to navigate a litany of obstacles, these obstacles are not insurmountable. The Company also has observed that opportunities may exist to transmit land-based wind energy resources into the Carolinas from other regions, which could supplement the amount of wind that could be developed within the Carolinas.

### 5. Use of Solar Resources for General Requirement

Duke Energy Progress plans to meet a portion of the General Requirement with RECs from solar facilities. The Company views the downward trend in solar equipment and installation costs over the past several years as a positive development. Additionally, new solar facilities also benefit from generous supportive Federal and State policies that are expected to be in place beyond 2015. While uncertainty remains around possible alterations or extensions of policy support, as well as the pace of future cost declines, the Company fully expects solar resources to contribute to our compliance efforts beyond the solar set-aside minimum threshold for NC REPS during the Planning Period.

### 6. Review of Company's General Requirement Plan

The Company has contracted for or otherwise procured sufficient resources to meet its General Requirement in the Planning Period. Based on the known information available at the time of this filing, the Company is confident that it will meet this General Requirement during the Planning Period and submits that the actions and plans described herein represent a reasonable and prudent plan for meeting the General Requirement.

## E. SUMMARY OF RENEWABLE RESOURCES

The Company has evaluated, procured, and/or developed a variety of types of renewable and energy efficiency resources to meet its NC REPS requirements within the compliance Planning Period. As noted above, several risks and uncertainties exist across the various types of resources and the associated parameters of the NC REPS requirements. The Company continues to carefully monitor opportunities and unexpected developments across all facets of its compliance requirements. Duke Energy Progress submits that it has crafted a prudent, reasonable plan with a diversified balance of renewable resources that will allow the Company to comply with its NC REPS obligation over the Planning Period.

# III. COST IMPLICATIONS OF REPS COMPLIANCE PLAN

## A. CURRENT AND PROJECTED AVOIDED COST RATES

The current variable rate represents the avoided cost rate in Schedule CSP-29 (NC), Distribution Interconnection, approved in the Commission's *Order Establishing Standard Rates and Contract Terms for Qualifying Facilities*, issued in Docket No. E-100, Sub 127 (July 27, 2011). The current long-term rates represent the annualized avoided cost rates approved in the Commission's *Order on Motion to Suspend Avoided Cost Rates*, issued in Docket No. E-100, Sub 136 (December 21, 2012). The projected avoided cost rates represent the annualized avoided cost rates proposed by the Company in Docket No. E-100, Sub 140.

The projected avoided costs rates contained herein are subject to change, particularly as the underlying assumptions change and as the methodology for determining the avoided cost is addressed by the North Carolina Utilities Commission in pending Docket No. E-100, Sub 140. Primary assumptions that impact avoided cost rates are turbine costs, fuel price projections, and the expansion plans. Changes to these assumptions are addressed in greater detail in the current Integrated Resource Plan.

**Table 2: Current and Projected Avoided Cost Rates Table**

[BEGIN CONFIDENTIAL]

| CURRENT AVOIDED ENERGY AND CAPACITY COST (from E-100 Sub 136) | | | |
|---|---|---|---|
| | **On-Peak Energy[1] ($/MWh)** | **Off-Peak Energy[1] ($/MWh)** | [redacted] |
| **2016** | 47.44 | 38.53 | |
| **2017** | 47.05 | 40.20 | |
| **2018** | 54.14 | 42.60 | |

| PROJECTED AVOIDED ENERGY AND CAPACITY COST | | | |
|---|---|---|---|
| | **On-Peak Energy[5] ($/MWh)** | **Off-Peak Energy[5] ($/MWh)** | [redacted] |
| **2016** | 36.99 | 32.89 | |
| **2017** | 38.60 | 34.46 | |
| **2018** | 37.04 | 34.13 | |

Notes: (1) On-peak and off-peak energy rates based on Option B hours and information and assumptions available concurrent with the 2014 IRP and derived using methodology approved in Docket No. E-100, Sub 136
(2) Capacity Cost column provides the installed CT cost with AFUDC
(3) Turbine cost agreed upon in E-100 Sub 136 settlement
(4) Turbine cost proposed in E-100, Sub 140 divided by summer capacity rating
(5) On-peak and off-peak energy rates based on Option B hours and information and assumptions available concurrent with the methodology proposed in Docket No. E-100, Sub 140
(6) Does not incorporate additional considerations used in rate calculation and is subject to change

[END CONFIDENTIAL]

## B. PROJECTED TOTAL NORTH CAROLINA RETAIL AND WHOLESALE SALES AND YEAR-END NUMBER OF CUSTOMER ACCOUNTS BY CLASS

The tables below reflect the inclusion of the Wholesale Customers in the Compliance Plan.

**Table 3: Retail Sales for Retail and Wholesale Customers**

| | | 2014 Actual | 2015 Forecast | 2016 Forcast | 2017 Forecast |
|---|---|---|---|---|---|
| **Retail MWh Sales** | | 37,490,737 | 37,084,787 | 37,500,664 | 37,909,134 |
| **Whoesale MWh Sales** | | 212,347 | 120,748 | 121,215 | 121,684 |
| **Total MWh Sales** | | 37,703,084 | 37,205,535 | 37,621,879 | 38,030,818 |

Note: The MWh sales reported above are those applicable to REPS compliance years 2015 – 2017, and represent actual MWh sales for 2014, and projected MWh sales for 2015 and 2017.

**Table 4: Retail and Wholesale Year-end Number of Customer Accounts**

| | | 2014 (Actual) | 2015 (Projected) | 2016 (Projected) | 2017 (Projected) |
|---|---|---|---|---|---|
| **Residential Accts** | | 1,215,618 | 1,232,841 | 1,247,894 | 1,265,529 |
| **General Accts** | | 198,063 | 199,849 | 200,952 | 202,759 |
| **Industrial Accts** | | 2,123 | 2,109 | 2,099 | 2,090 |

Note: The number of accounts reported above are those applicable to the cost caps for compliance years 2015 – 2017, and represent the actual number of accounts for year-end 2014, and the projected number of accounts for year-end 2015 through 2017.

## C. PROJECTED ANNUAL COST CAP COMPARISON OF TOTAL AND INCREMENTAL COSTS, REPS RIDER AND FUEL COST IMPACT

Projected compliance costs for the Planning Period are presented in the cost tables below by calendar year. The cost cap data is based on the number of accounts as reported above.

**Table 5: Projected Annual Cost Caps and Fuel Related Cost Impact**

| | 2015 | 2016 | 2017 |
|---|---|---|---|
| **Total projected REPS compliance costs** | $175,742,700 | $238,968,551 | $ 251,665,511 |
| | | | |
| **Recovered through the Fuel Rider** | $150,405,592 | $206,151,650 | $ 214,179,630 |
| | | | |
| **Total incremental costs (REPS Rider)** | $ 25,337,108 | $ 32,816,901 | $ 37,485,881 |
| | | | |
| **Total including Regulatory Fee** | $ 25,370,140 | $ 32,859,684 | $ 37,534,751 |
| | | | |
| **Projected Annual Cost Caps (REPS Rider)** | $ 46,419,866 | $ 74,002,944 | $ 74,670,196 |

## EXHIBIT A

**Duke Energy Progress, LLC's 2014 REPS Compliance Plan**
**Duke Energy Progress' Renewable Resource Procurement from 3rd Parties**
**(signed contracts as of July 1, 2015)**

[BEGIN CONFIDENTIAL]

[redacted]

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[redacted]

[redacted]

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**[END CONFIDENTIAL]**

**EXHIBIT B**

**Duke Energy Progress, LLC's 2014 REPS Compliance Plan**
**Duke Energy Progress, LLC's EE Programs and Projected REPS Impacts**

| Forecast Annual Energy Efficiency Impacts for the REPS Compliance Planning Period 2015-2017 (MWhs) | | | |
|---|---|---|---|
| Residential Programs | 2015 | 2016 | 2017 |
| Appliance Recycling | 6,435 | 6,425 | 6,425 |
| K-12 | 1,704 | 1,701 | 1,701 |
| MultiFamily | 14,229 | 9,976 | 10,931 |
| MyHER | 100,290 | - | - |
| Neighborhood Energy Saver | 1,546 | 1,543 | 1,543 |
| Residential Home Energy Improvement | 3,322 | 2,138 | 2,138 |
| Residential Lighting | 50,546 | 56,166 | 55,896 |
| Residential New Construction | 8,076 | 9,963 | 11,355 |
| New Products* | | | |
| **Sub Total** | **186,149** | **87,912** | **89,989** |
| | | | |
| Non Residential Programs | 2015 | 2016 | 2017 |
| EEB | 70,188 | 75,098 | 79,255 |
| SBES | 50,138 | 38,504 | 30,803 |
| New Products* | | | |
| **Sub Total** | **120,326** | **113,602** | **110,059** |
| | | | |
| **Total** | **306,475** | **201,514** | **200,048** |