BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition for Determination of Cost Effective Generation Alternative to Meet Need Prior to 2018 for Duke Energy Florida, Inc.	)))))	DOCKET NO. ________________ Submitted for filing: May 27, 2014

DUKE ENERGY FLORIDA, INC.'S NOTICE OF FILING

Duke Energy Florida, Inc. ("DEF" or the "Company") hereby gives notice of filing the Direct Testimony of Kevin Delehanty with Exhibits KD-1 through KD-4 in support of DEF's Petition for Determination of Cost Effective Generation Alternative to Meet Need Prior to 2018 for Duke Energy Florida, Inc.

Respectfully submitted this 27th day of May, 2014.

/s/ James Michael Walls

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition for Determination of Cost Effective Generation Alternative to Meet Need Prior to 2018 for Duke Energy Florida, Inc.	DOCKET NO. __________ Submitted for filing: May 27, 2014

DIRECT TESTIMONY
OF KEVIN DELEHANTY

ON BEHALF OF
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IN RE: PETITION FOR DETERMINATION OF COST EFFECTIVE GENERATION ALTERNATIVE TO MEET NEED PRIOR TO 2018 FOR DUKE ENERGY FLORIDA, INC.

BY DUKE ENERGY FLORIDA

FPSC DOCKET NO. _________

DIRECT TESTIMONY OF KEVIN DELEHANTY

I. INTRODUCTION AND QUALIFICATIONS.

Q. Please state your name, employer, and business address.

A. My name is Kevin Delehanty and I am employed by Duke Energy Business Services LLC, the service company affiliate of Duke Energy Florida, Inc. ("DEF" or the "Company"). My business address is 550 South Tryon Street, Charlotte, North Carolina 28202.

Q. Please tell us your position with Duke Energy and describe your duties and responsibilities in that position.

A. I am the Director of Market Fundamentals. In this role, I am responsible for preparation of the Fundamental Forecast, which is the Duke Energy Corporation ("Duke Energy") long-term fossil fuels commodity price forecast for all the subsidiary electric utilities, including DEF. As a result, I am responsible for providing the long term commodity price component of the fuels forecast to DEF for its Integrated Resource Planning ("IRP") process.

Q. Please summarize your educational background and employment experience.

A. I received an Associate's degree in Industrial Electronics from Spartanburg Technical College in May, 1982. In May 1990, I received a Bachelor of Science degree in Electrical Engineering from the University of South Carolina – Columbia. I have also been a licensed Professional Engineer in the State of South Carolina since 1994.

I joined Duke Power Company in June, 1982 as an Engineering Associate in the Distribution Engineering Group. From 1982 – 1987, I was a Power Quality Engineer in the Electrical System Design Group. I joined the System Planning Group in 1990 where I was responsible for production cost modeling, project evaluation, and financial analysis. Over the next ten years I served in a variety of roles leading cross functional teams in planning and asset strategy. In 2000, I joined the Bulk Power Marketing Group as a Senior Structured Planning Engineer responsible for valuation and risk analysis of large structured power deals. In 2005, I joined the Corporate Strategy Group as Manager of Commodity Price Fundamentals responsible for supervision of the commodity price forecasting process using external consultants for modeling and data. Following the merger with Cinergy in 2006, I was named Director of Market Fundamentals and Competitive Analytics responsible for the development of the long term fuel price outlooks used in all long term planning studies.

II. PURPOSE AND SUMMARY OF TESTIMONY.

Q. What is the purpose of your testimony in this proceeding?

A. I am testifying on behalf of DEF in support of its Petition for Determination of Cost Effective Alternative to Meet Need Prior to 2018 for Duke Energy Florida, Inc. for the Suwannee Simple Cycle project and the Hines Chillers Power Uprate project. I will describe the process for developing the Fundamental Forecast and explain why the Fundamental Forecast is a reasonable long-term fuels price forecast for the Company to use in its IRP process.

Q. Are you sponsoring any exhibits to your testimony?

A. Yes. I am sponsoring the following exhibits to my testimony:

- Exhibit No. ___ (KD-1), a chart of the Company's base, high, and low natural gas price forecast;
- Exhibit No. ____ (KD-2), a chart of the Company's base natural gas price forecast and other industry natural gas price forecasts;
- Exhibit No. ___ (KD-3), United States Energy Information Administration ("EIA") Map of major North American shale basins; and
- Exhibit No. ___ (KD-4), United States Potential Gas Committee chart of Total Potential Resources.

The Company generated exhibits identified above were prepared under my direction and control, and each is true and accurate. The other exhibits were prepared by government agencies charged with collecting, collating, and publishing information of the type included in the identified exhibits, they are reliable industry resources for this information, and this information is typically used by the Company as resource material in the preparation of the Fundamental Forecast.

Q. Please summarize your testimony.

A. The Fundamental Forecast is Duke Energy's long-term fuels forecast. It is a fundamentals-based forecast reflecting Duke Energy's long-term outlook for resource planning purposes and other long-term investment decisions. The Fundamental Forecast is based on an extensive review and a rigorous analysis of available and relevant information that affects fuel commodity prices. It reflects industry expertise and Duke Energy's expertise and professional judgment of future fuel costs. It is further in line with other contemporary, industry fuels forecasts. The Fundamental Forecast, therefore, reasonably represents future fuel commodity prices.

Natural gas is the fuel planned for the Suwannee Simple Cycle project and the fuel currently serving the Hines combined cycle power plant units where the Hines Chillers Power Uprate project will be installed. It is a readily available fuel source, given current and projected levels of long-term supply of natural gas. The increase in the available gas supply and production from conventional and, in particular, unconventional tight gas and shale rock formations in the United States due to improvements in drilling and well stimulation technologies is expected to continue to favorably impact fuel prices. Natural gas is available in sufficiently abundant supply that natural gas is a relatively economic fuel choice for power generation well into the future.

III. DEF'S FUELS PRICE FORECAST.

Q. Does DEF have a fuels forecast?

A. Yes. DEF has both a short-term fuels forecast and a long-term forecast. The short-term fuels forecast is based on observed market prices and is used mainly for operational purposes. The long-term forecast is a fundamentals-based forecast and it reflects Duke Energy's long-term outlook for resource planning purposes and other long-term investment decisions for Duke Energy and all of its electric utilities, including DEF. All of the long-term fundamental commodity prices are developed within the context of a comprehensive, internally consistent modeling process. The short term fuel forecast is based on available futures market prices, spot market prices, and short-term contract prices for the fuels used by the electric utilities. The short term natural gas fuels price forecast, for example, is based on the New York Mercantile Exchange ("NYMEX") futures contract prices for United States natural gas. The NYMEX natural gas futures market is an electric utility industry standard index of future market prices for United States natural gas. The Company transitions from its reliance on the short term fuels forecast to the Duke Energy Fundamental Forecast, or long term fuels forecast, for the long term investment decisions, such as building and operating new power plants, in its IRP process.

Q. Why does Duke Energy prepare a Fundamental Forecast?

A. The Fundamental Forecast is an integral part of Duke Energy's long term planning processes, in particular, its resource planning. Relevant short- and long-term fuel commodity prices and their differentials over time are important economic factors in determining the types and timing of new generation additions to DEF's system. Fuel commodity prices are also relevant to the determination of the most efficient method of operating existing and proposed generation plants on DEF's system in compliance with system operational and environmental requirements. Duke Energy utilizes published market prices for the portion of the forecast curve where the relevant fuels are actively traded, as well as other market intelligence like competitive bids received in the fuel procurement process, and then relies on market fundamentals to fill out the balance of the forecast. Futures market prices are illiquid after the first few years and often do not reflect the impacts of proposed environmental rulemaking, retirements of existing generation, or changes in technology. A Fundamental Forecast is a forward-looking evaluation of the marginal cost of supply at the expected level of demand. Iterative modeling simulations are performed using detailed supply and demand curves for each commodity until the energy markets come into balance, producing an internally consistent set of future market prices. The modeling process utilizes a combination of historical industry data coupled with assumptions which help define the future market environment. The fundamental forecasting process provides a detailed narrative of where the future energy supplies and corresponding demand will come from and it will help identify the key variables.

Although some of these input assumptions may prove to be incorrect in the future, the process itself still yields important information as to their cause and effect. The real strength of the fundamental forecasting process lies in the fact that it is a methodical, analytical process, repeated at regular intervals, and it is continuously refined. The Fundamental Forecasting process, which allows Duke Energy to evaluate the impact of the changing energy landscape on future commodity fuel prices, is essential to DEF's IRP process.

Q. How does Duke Energy prepare its Fundamental Forecast?

A. Duke Energy starts its Fundamental Forecast with the assistance of an expert energy consultancy in the field of fuels forecasting in the industry. Duke Energy's current industry consultant is Energy Ventures Analysis, Inc. ("EVA"). EVA was selected from five industry energy consultant responses to a request for proposal ("RFP") in July 2012. EVA was selected based on, among other factors, its experience, modeling processes and tools, market and regulatory expertise. EVA was selected by an internal team of experts from different Duke Energy departments, including Fuel Procurement, Load & Fundamental Forecasting; Strategic Engineering and Environmental Policy; and Integrated Resource Planning. EVA is an industry expert in fuel price forecast modeling and analysis.

Duke Energy relies on EVA to employ its industry leading modeling processes and databases to develop a long-term energy commodity price forecast that EVA provides Duke Energy. Duke Energy subject matter experts review the EVA assumptions and data inputs in the long-term energy commodity price forecast for consistency with Duke Energy's own internal planning assumptions and data inputs. Duke Energy works in a collaborative manner with EVA to discuss the input assumptions, model results, and corresponding conclusions in the EVA reference case. Following this review, Duke develops a list of input assumption changes to be considered for the next iteration of the Duke reference case and then works with EVA to facilitate the changes within the constraints of the modeling process. This process continues until both Duke Energy and EVA are satisfied that the data inputs and assumptions in the long-term commodity price forecast are credible and that the results of modeling the assumptions in the forecast are valid. Further, validation of the modeling assumptions and results is obtained from reviews by various internal planning groups until Duke Energy is comfortable with the credibility of the long-term energy commodity price forecast.

Duke Energy has employed this process since 2005 and has worked with leading energy consultants like Wood Mackenzie, CERA, ICF, Global Energy/Ventyx, and EVA. The Fundamental Forecast is released each spring with an updated forecast typically in the fall of the year, if required by material changes in the underlying assumptions in the Fundamental Forecast. The preparation of the Fundamental Forecast, however, is a continual process in the sense that Duke Energy routinely monitors and updates, when necessary, the assumptions underlying the Fundamental Forecast based on changes in the market and evolving conditions in the national and regional economies where the electric utilities are located, political and regulatory conditions, environmental conditions and other factors that have or may have an impact on the Fundamental Forecast.

Q. What types of changes are made by Duke Energy to the EVA Fundamental Forecast assumptions?

A. Duke Energy typically makes changes only to assumptions regarding data inputs in technical areas where Duke Energy possesses specialized expertise or to assumptions regarding future policy directives where Duke Energy believes it has more complete or relevant information. For example, in the 2013 Fundamental Forecast, Duke Energy adjusted state level electric sales growth rates and raised the penetration level assumptions of certain renewable resources in select states where Duke Energy electric utilities operate. Duke Energy also modified coal plant retirement assumptions for existing coal plants, capital and operation and maintenance ("O&M") cost assumptions for new generation resources with which Duke Energy has construction and operation experience, and assumed remedies for future 316(b) water regulations, all based on its internal information and expertise. These assumptions changes are typically few in number; the overwhelming majority of the assumptions in the Fundamental Forecast were developed by EVA and retained by Duke Energy.

Q. Are there any other adjustments by Duke Energy to the EVA forecast in the Fundamental Forecast?

A. Yes. The EVA forecast did not include a national climate or carbon policy assumption in the EVA Fall 2012 base forecast, which was the starting point for the development of the 2013 Duke Energy outlook, i.e. the Fundamental Forecast. EVA did follow up with a carbon scenario case of their own as part of their Fall 2013 Outlook. Duke Energy has included a price on carbon within its base fundamentals outlook since 2006 as a way of capturing the potential impact of uncertain future policy for regulating CO_2 emissions, and although current legislative efforts to enact a policy that places a national price on carbon remain highly uncertain, it is still a possibility. In the absence of legislation the United State Environmental Protection Agency ("EPA") is moving ahead with regulating CO_2 emissions from existing fossil fuel-fired power plants, and we expect a proposal from the EPA in June 2014. Therefore, Duke Energy believes it is prudent to model a price on carbon as a way of capturing the risk of potential, but uncertain future legislation and pending EPA regulation of $CO_{2,}$ and the impact of carbon policy at the national level within the context of its fundamental fuel price outlook. The carbon price Duke Energy currently uses in its fundamentals forecast is a direct input to the process and has been set at a level we believe to be a reasonable trajectory to represent the risk of federal climate change legislation or regulation given the current uncertainty surrounding such policy. The carbon price trajectory used is also in our view reflective of the pricing that policy makers might consider acceptable if or when they act.

Because of the high degree of uncertainty surrounding the outcome of climate change policy, however, DEF, in its IRP process, runs scenarios off the Duke Energy fundamental forecast carbon price trajectory that include a no carbon cost forecast to produce a more robust analysis.

Q. How is the Fundamental Forecast used in the IRP process?

A. After the Fundamental Forecast is reviewed and validated as a credible long-term commodity price forecast, it is provided to Duke Energy's fuels procurement group where it is combined with other market data to develop the final fuel price inputs to the resource planning models. For the natural gas commodity component, the fuels procurement group utilizes futures market quotes from the NYMEX to price the first three years, followed by a two year transition period of blended prices to the long term fundamentals for the balance of the forecast. After establishing the commodity price curve, the procurement group develops plant specific fuel price inputs by factoring in existing contracts, as well as fixed and variable transportation costs. Exhibit No. ___ (KD-1) to my direct testimony is a chart of the fundamental natural gas forecast. Forecast scenarios based on the Fundamental Forecast are also developed. These include low and high natural gas forecast scenarios around the base natural gas price forecast in the Fundamental Forecast. See Exhibit No. ___ (KD-1).

Q. How were the low and high natural gas forecast scenarios developed in the Fundamental Forecast?

A. The low and high natural gas forecasts in the Fundamental Forecast are developed by comparing the Duke Energy base natural gas price forecast in the Fundamental Forecast to contemporary, well-recognized industry natural gas price forecasts and applying statistically relevant standard deviations to the data. This methodology produces the shaded areas around the Duke Energy Fundamental

Natural Gas Forecast shown in Exhibit No. __ (KD-1) and results in the calculation of the low and high natural gas price forecasts around the Fundamental Natural Gas Forecast. Based on these calculations, the low natural gas forecast is 18 percent lower and the high natural gas forecast is 14 percent higher than the Duke Energy Fundamental Natural Gas Forecast, as shown in Exhibit No. ___ (KD-1). Duke Energy's methodology reasonably anchors its low and high natural gas price scenarios to contemporary industry natural gas price forecasts and ensures that the range of potential natural gas prices in the Duke Energy Fundamental Natural Gas Forecast is not out of line with industry forecasts.

Q. In your opinion, is the Fundamental Forecast a reasonable view of future fuel commodity prices?

A. Yes. The Fundamental Forecast is based on an extensive review and a rigorous analysis of available and relevant information that affects fuel commodity prices. Duke Energy relies on industry expertise and its own expertise to develop this information in the Fundamental Forecast and it incorporates the best available data regarding these assumptions into the Forecast. The Fundamental Forecast reflects industry expertise and Duke Energy's best professional judgment of future costs at the time the Fundamental Forecast is prepared.

Duke Energy also vets this Forecast against other forecasts available in the industry, and Duke Energy-specific information regarding supply and demand, marginal costs, plant operational characteristics, and observable data regarding commodity prices. As shown in Exhibit No. ___ (KD-2), and as I explained above with respect to the development of the low and high natural gas price scenarios, the Company's natural gas forecast is in line with other contemporary natural gas forecasts (both public and proprietary) prepared by leading industry consultants. As a result, the Fundamental Forecast reasonably represents future fuel commodity prices.

Q. Do you have an opinion regarding the use of natural gas as a fuel source for the Suwannee Simple Cycle power plant?

A. Yes. Natural gas is and will be a competitively-priced fuel source for the Suwannee Simple Cycle Power Plant. It is also the existing fuel for the Hines combined cycle power plant units where the Hines Chillers Power Uprate Project will be installed. Natural gas is an attractive economic fuel source for the generation of electricity for DEF's customers compared to the total cost of generation for other types of generation technologies. Natural gas is also an attractive fuel source because, compared to oil and coal, it is a cleaner burning fuel and does not have the same level of environmental costs and related impacts associated with generation plants using those alternative fuels. This results in a favorable impact on the relative capital cost of constructing generating facilities capable of complying with current and ever increasing environmental regulations. As a result, natural gas is the economic fuel of choice for electric generation for customers at this time.

Q. Why does the Company consider natural gas to be an economic long-term fuel source for electrical energy production?

A. In the last decade, advances in natural gas production technology have provided natural gas producers access to unconventional gas supplies that previously were not economic production resources. These unconventional gas supplies are in tight gas sandstone structures and shale rock formations deep below the ground where natural gas in an abundant quantity is trapped within the rock. Improvements in drilling and well stimulation technologies now provide an economic method to drill and hydraulically fracture the rock and capture the large quantities of natural gas trapped in these impermeable rock formations. This advanced drilling technology is colloquially referred to as "fracking," because the shale rock formations that trap the natural gas are fractured by high pressure water injected into the rock formations during the well completion process. Vast shale rock formations or "shale plays" extend across the United States and Canada. Exhibit No. ___ (KD-3) to my direct testimony is a map of the North American shale plays. This map from the EIA shows the current and prospective shale plays in addition to the natural gas basins. As the map makes clear, there are abundant shale plays in North America, providing a long-term source of supply of natural gas for natural gas users in the United States.

The ultimate size of the United States natural gas resource base has been estimated at 2,384 trillion cubic feet, as shown in Exhibit No. ___ (KD-4), according to the latest report from the United States Potential Gas Committee 2013 Report from the United States Potential Gas Committee at the Colorado

School of Mines. This estimate represents a 25% increase from their previous report in 2011 and at the current rate of United States consumption of approximately twenty five trillion cubic feet per year, the United States has ample domestic reserves.

As a result of the new drilling and completion technologies there has been a tremendous increase in United States unconventional gas production over the last five years. In the last five years the marketed production of United States natural gas has increased by 21% according to the EIA. But an even more impressive statistic is the percentage of natural gas production from shale resources which has increased from about 11% of the national total in 2008 to over 35% by the end of 2012.

Shale resources are increasingly displacing conventional sources of gas in the Gulf of Mexico and elsewhere, and that has further implications on the reliability of supply. By moving on shore, producers are reducing the time it takes to bring new wells on line and those wells are less prone to disruption from hurricanes. The United States gas market is still subject to market volatility, in part due to the nature of the business where supply and demand must balance in real time and storage is finite and limited to certain regions by geology. However, short term price volatility arising from operational imbalances are not a significant threat to the value proposition of a natural gas combined cycle unit, the way long term fuel availability and price uncertainty is. The dramatic increase in the size of the gas resource base coupled with the speed at which it can be put in production has significantly improved the long term availability of natural gas and immensely improved the value proposition of natural gas as a fuel source for electric generation.

The United States power market will also benefit greatly from the distributed nature of the shale reserves being located much closer to major demand centers like the Northeast. The development of the Marcellus and Utica shale basins has freed up pipeline capacity across the Southeastern United States, which has lowered basis differentials, i.e., the variation in price based on constraints at the gas hub delivery location, and will also benefit future gas consumers in Florida in reduced transportation costs. This increase in the available gas supply and production of natural gas is expected to continue to favorably impact fuel prices with natural gas price projections being relatively economic to other fuels for energy production well into the future.

Q. If low-cost natural gas is abundant will that increase the generation of energy from natural gas in the United States?

A. Yes. Natural gas is the predominant fuel source for new electric power generation in the United States, and natural gas-fired generation has displaced a significant portion of the existing coal-fired generation fleet, because of the relatively low cost of natural gas and the increasing cost of coal-fired generation due to the compliance with increasing environmental regulations. There is also projected to be a sizable increase in industrial demand for gas as well as a significant increase in both pipeline and LNG exports due to the increased size of the resource base and the economic cost of production. This increase in demand is factored into our

Fundamental Forecast and, even with the projected increase in demand for natural gas, natural gas is still available in sufficiently abundant supply to render natural gas a relatively economic fuel choice for power generation over the long term.

Q. Does this conclude your testimony?

A. Yes.

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Duke Energy Florida
Exhibit No. _____ (KD-3)
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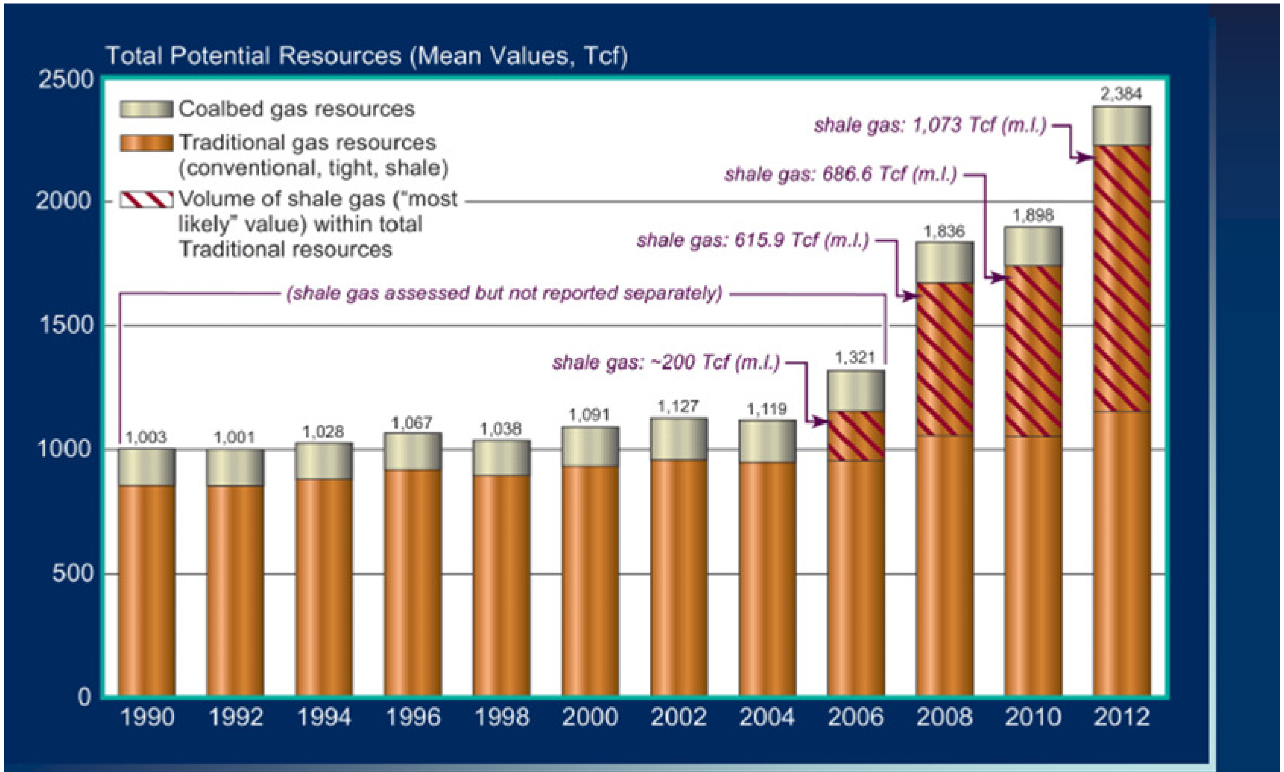
Source: U.S. Energy Information Administration based on data from various published studies. Canada and Mexico plays from ARI.
Updated: May 9, 2011



Data source: Potential Gas Committee (2013)