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BEFORE THE TENNESSEE REGULATORY AUTHORITY
NASHVILLE, TENNESSEE

IN RE:

IN THE MATTER OF THE PETITION	)	
OF PLAINS AND EASTERN CLEAN	)	
LINE LLC FOR A CERTIFICATE OF	)	
CONVENIENCE AND NECESSITY	)	Docket No. 14-00036
APPROVING A PLAN TO	)	
CONSTRUCT A TRANSMISSION LINE	)	
AND TO OPERATE AS AN ELECTRIC	)	
TRANSMISSION PUBLIC UTILITY	)	

TESTIMONY OF DAVID BERRY
EXECUTIVE VICE PRESIDENT – STRATEGY AND FINANCE
CLEAN LINE ENERGY PARTNERS LLC

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Exhibits

I. INTRODUCTION

Q. Please state your name and business address.

A. My name is David Berry. My business address is 1001 McKinney Street, Suite 700, Houston, Texas 77002.

Q. By whom are you employed and in what capacity?

A. I am employed by Clean Line Energy Partners LLC ("Clean Line") as Executive Vice President – Strategy and Finance. Clean Line is the ultimate parent company of Plains and Eastern Clean Line LLC ("Plains and Eastern"), the Applicant in this proceeding.

Q. Please describe your educational and professional background.

A. I received a Bachelor of Arts degree from Rice University with a major in economics and a second major in history. Prior to joining Clean Line in 2010, I was employed by Horizon Wind Energy (now EDP Renewables North America) as Finance Director. In that role, I was responsible for financing transactions, investment analysis, and acquisitions. I led over $2 billion of project finance transactions, including a non-recourse debt financing that was named 2006 North American Renewables Deal of the Year by *Project Finance*, and several structured equity transactions for projects in development, construction, and operations. At Horizon, I also built and maintained models for Horizon's wind generation projects and also evaluated investments in other generation technologies.

Q. What are your duties and responsibilities as Executive Vice President – Strategy and Finance of Clean Line?

A. I oversee and am responsible for the transaction structuring and market analysis for Clean Line and its subsidiaries. I am also responsible for developing the transmission capacity products offered to customers and assessing the demand for renewable energy. Finally, I am responsible for raising the capital necessary to fund the development and construction of Clean Line's projects, including the Plains & Eastern Clean Line.

Q. What is the purpose of your direct testimony?

A. I am testifying in support of Plains and Eastern's request to operate as a public utility in the State of Tennessee, including exercising all the rights and privileges of a public utility under Tennessee law. My testimony also supports Plains and Eastern's request that the Tennessee Regulatory Authority (the "Authority") approve Plains and Eastern's interstate transmission project pursuant to Tennessee Code Annotated § 65-4-208.

Q. How is your testimony organized?

A. My testimony has three additional sections.

Section II describes the need for the Plains & Eastern Clean Line high voltage direct current ("HVDC") transmission line ("Plains & Eastern Project" or the "Project.") The Project allows Tennessee and neighboring states to access low-cost wind energy from the Oklahoma Panhandle region. The Project also creates a number of important benefits for Tennessee and surrounding states, including reduced and less volatile electric rates, reduced pollution, improved air and water quality, economic development, and job creation.

Section III addresses Plains and Eastern's capabilities to finance construction and operation of the Project and to operate as a utility in Tennessee. Plains and Eastern is backed by National Grid, one of the world's largest and most experienced utilities, and other investors that are experienced in the energy industry and capable of supporting the financing of the Plains & Eastern Project. Plains and Eastern will finance the Project using the project financing approach, which is commonly used for electric generation plants, natural gas pipelines, electric transmission lines and other infrastructure.

Section IV discusses Plains and Eastern's requests to the Authority for regulatory permissions and waivers based on the nature of our business model and service. These requests are appropriate since Plains and Eastern will not serve retail electric customers in Tennessee and will already be subject to extensive federal regulation of its interstate transmission service and rates.

II. PROJECT NEED AND BENEFITS

(a) Need for the Project

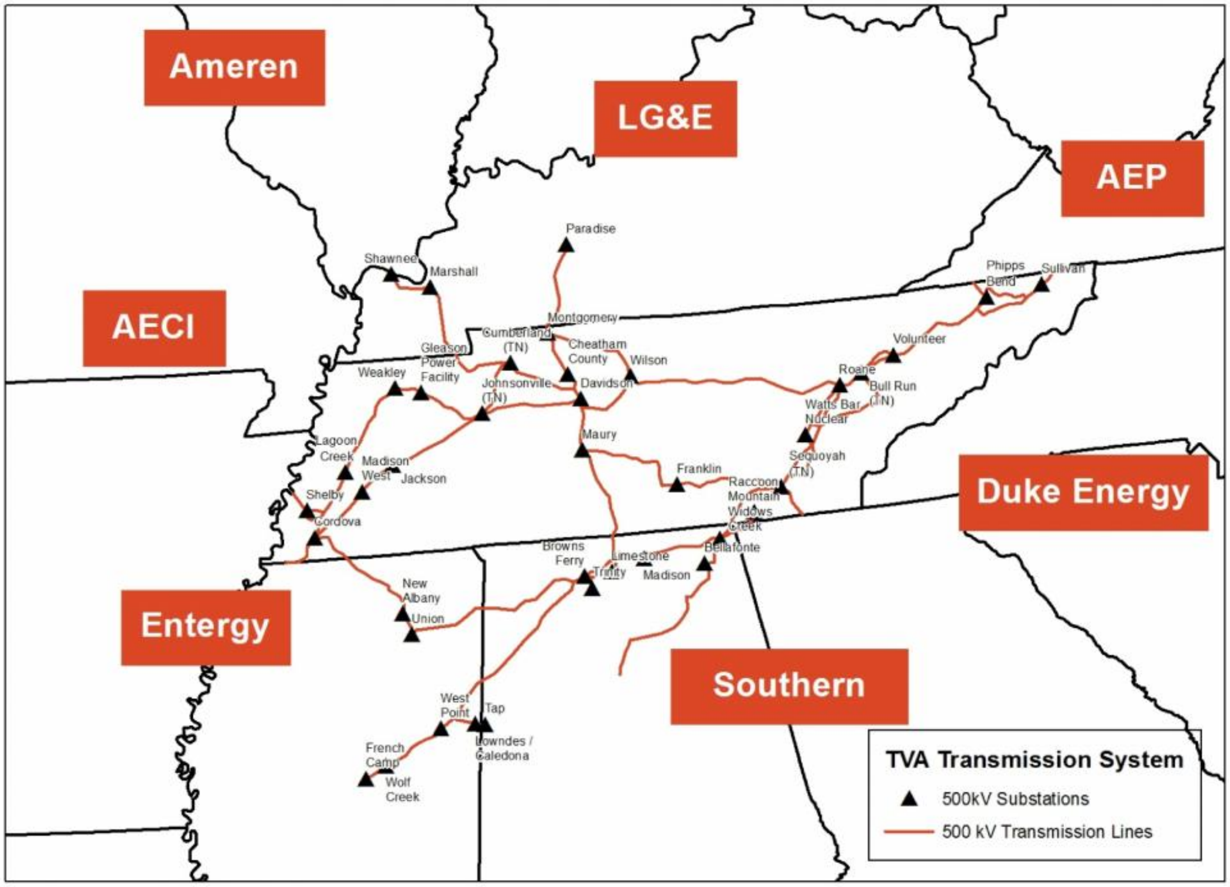
Q. What is the purpose of the Plains & Eastern Project?

A. The Project is an approximately 700-mile, +/-600 kilovolt ("kV") HVDC transmission line and associated facilities that will connect abundant wind resources in the Oklahoma Panhandle region to load centers in Tennessee, the Mid-South and the Southeast with a demand for low-cost, clean energy. The Plains & Eastern Project will deliver up to 3,500 megawatts ("MW") of low-cost wind power from Oklahoma to the TVA system at the Shelby Substation, where it will be available for purchase by TVA or other utilities in the South. In addition, Plains and Eastern is studying a potential intermediate delivery point in Arkansas, which would deliver up to 500 MW of power to the Entergy 500 kV transmission system operated by the Midcontinent Independent System Operator, Inc. ("MISO"). Wind power sourced from the Oklahoma Panhandle is some of the cheapest renewable energy in the country, and as I will explain in my testimony, is a valuable option for TVA and other utilities as they build a diverse and affordable portfolio of electric generation.

The Project will be funded through long-term contracts for transmission capacity with specific transmission customers, either wind generators that want to move the power to market or utilities that want to purchase low-cost wind power from the Oklahoma Panhandle. Because of this funding model, the Project will impose costs only on users of the line, not users of the grid in general.

Q. Is TVA the only potential customer for the low-cost renewable energy delivered by the Project?

A. No, not at all. At the delivery point in Tennessee, any utility with a connection to TVA's transmission system is a natural customer for the energy delivered by the Plains & Eastern Project. These utilities include Southern Company (including its Mississippi Power, Alabama Power and Georgia Power operating companies), Duke Energy Carolinas, LLC, Associated Electric Cooperative Inc. ("AECI"), Entergy Corporation, and several others, as shown in the below map of the TVA 500kV transmission system.



All of these utilities can purchase energy delivered to TVA's system by buying transmission service from TVA and moving the power to their home service territory. This additional transmission service revenue to TVA can reduce costs for other TVA customers, and therefore creates an additional benefit for Tennessee, which I will describe in more detail later in my testimony.

As mentioned above, the Project may include an intermediate converter station in Arkansas, from which any participant in the MISO power pool can buy renewable energy delivered by the Project. The intermediate converter station would allow even more buyers access to the low-cost wind power delivered by the Project.

Q. Have TVA and other Southern utilities previously purchased low-cost wind power?

A. Yes. Since 2009, TVA and other Southern utilities connected to the TVA system have added over 3,600 MW of wind power to their electric generation portfolios through power purchase agreements with wind farms located in the central United States. These agreements are listed below[1]:

Wind Power Purchase Agreements (PPA) by Southern Utilities

Utility Purchaser	Power (MW)	Wind Project Name	Location (State)
TVA	300	Cayuga Ridge	Iowa
TVA	198	Pioneer Prairie	Iowa
TVA	101	Lost Lakes	Kansas
TVA	165	Cimmaron	Kansas
TVA	150	White Oak	Illinois
TVA	201	Caney River	Illinois
TVA	200	Bishop Hill	Illinois
TVA	200	California Ridge	Oklahoma
Subtotal	*1515*		
Arkansas Electric Cooperative Corporation	150	Origin Wind	Oklahoma
Arkansas Electric Cooperative Corporation	51	Flat Ridge 2	Kansas
Arkansas Electric Cooperative Corporation	149	Lost Creek	Missouri
Associated Electric Cooperative, Inc.	310	Flat Ridge 2	Kansas
Associated Electric Cooperative, Inc.	150	Osage County	Oklahoma
Alabama Power	202	Buffalo Dunes	Kansas
Alabama Power	202	Chisolm View	Kansas
Georgia Power	151	Blue Canyon II	Oklahoma
Georgia Power	99	Blue Canyon VI	Oklahoma
Southwestern Electric Power	78	Flat Ridge 2	Kansas
Southwestern Electric Power	201	Canadian Hills	Oklahoma
Southwestern Electric Power	80	High Majestic Wind II	Oklahoma
Southwestern Electric Power	199	Mammoth Plains	Oklahoma
Southwestern Electric Power	249	Palo Duro	Texas
Subtotal	*2121*		
Total	**3636**		

[1] AWEA. US Wind Industry Annual Market Report 2010, 2011, 2012. AWEA, US Wind Industry Annual Market Report 2013 (Q3). TVA Wind Power Purchases. http://www.tva.com/power/wind_purchases.htm (last accessed on April 3, 2014).

No regulatory rule or law required these wind power purchases. Rather, utilities have already bought wind power in large quantities because low-cost, clean energy makes economic sense for their ratepayers.

Q. Why have Southern utilities preferred to buy wind from the central United States instead of their own service territories?

A. The decision comes down to cost and the resulting impact on electric rates charged to utility customers. Due to much higher wind speeds and more plentiful sites, wind energy can be produced at lower cost in the central United States. According to the 2012 Wind Technologies Market Report prepared by Lawrence Berkeley National Laboratory (the "2012 Wind Report"), power purchase agreement ("PPA") prices for wind farms in the "Interior" region, including the Oklahoma Panhandle region, averaged 3.2 cents per kWh in 2011-2012. The equivalent range for wind projects located in the Southeastern United States is 6.0-8.0 cents per kWh.[2]

Q. Do you anticipate that there will be continued demand from utilities in the South for low-cost wind energy delivered to the region?

A. Yes, for several reasons.

1. Declining Cost of Wind Power

In the future, utilities should be able to buy wind power from the Oklahoma Panhandle region at an even lower price than today. Wind turbine costs are falling dramatically. According to the 2012 Wind Report, wind turbine prices have declined by

[2]Available at http://www1.eere.energy.gov/wind/pdfs/2012_wind_technologies_market_report.pdf (last accessed on April 3, 2014). p. 50. Due to the relatively small number of PPAs with Southeastern wind farms, the dataset is much smaller than the Interior region. For example, no PPAs with Southeastern wind farms were reported in 2012.

30-40% from their peak in 2009 until the end of 2012.[3] At the same time, the level of energy output is improving due to more advanced turbine technology. Bigger blades, taller towers, and better controls have boosted energy output by nearly 30% over the last several years. This technological improvement shows no signs of stopping. I have worked in the wind industry since 2005, and I have been able to observe the continued improvement in the energy output and costs of modern wind turbines. Compared to just a few years ago, today's wind turbines produce more energy in the same sites and now are able to produce at lower cost per unit of production, usually measured in dollars per MWh or cents per kWh. As I will discuss later in my testimony, the price of wind power in the Oklahoma Panhandle today has declined to about 2.5 cents per kWh. The lower the price of wind energy, the higher the potential savings for electric ratepayers, and the more likely it is that demand for wind power in the South will continue to grow.

2. Policy Support for Wind Power

Policy support for renewable energy and for reducing pollution from electric power generation will also drive additional demand for wind power. Of the 50 states, 29 — including North Carolina and Virginia — have adopted a renewable electricity standard mandating that utilities procure a specific percentage of their power from wind, solar and other renewable energy technologies.[4] The North Carolina statute requires utilities to source 12.5% of their electricity sales from renewable energy or energy efficiency beginning in 2020.[5] In addition, in November 2013, Duke Energy Carolinas filed with

[3] 2012 Wind Report, p. 33.

[4] Database for State Incentives for Renewables and Efficiency ("DSIRE"). Available at http://www.dsireusa.org/ (last accessed April 3, 2014).

[5] North Carolina Senate Bill 3, Session Law 2007-397 (2003)

the North Carolina Utilities Commission a Green Source Rider that allows large industrial customers to elect to purchase renewable energy to meet their needs.[6] In Virginia, state legislation set a target for utilities to obtain 15% of their electricity from renewables by 2025.[7]

Tennessee does not have a statutory renewable energy target, but TVA's Board of Directors has set a goal of obtaining 50% of its electricity from carbon-free sources by 2020.[8] The Project can help meet the North Carolina and Virginia renewable energy goals and the goal of the TVA Board in a low-cost, reliable manner.

3. Increased Environmental Regulation of Coal Power

Another factor behind the demand for renewable energy is environmental regulation of coal, with many resulting retirements of aging coal generators. In 2011, TVA announced an agreement with the Environmental Protection Agency ("EPA") to retire 18 coal plants from service by 2018.[9] TVA announced an additional eight retirements in 2013.[10] In total, TVA has retired or plans to retire 44% of its coal units,

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[6] North Carolina Utilities Commission Docket NO. E-7, Sub 1043. Available at http://www.duke-energy.com/pdfs/2013111501-addendum.pdf (last accessed on April 3, 2014).

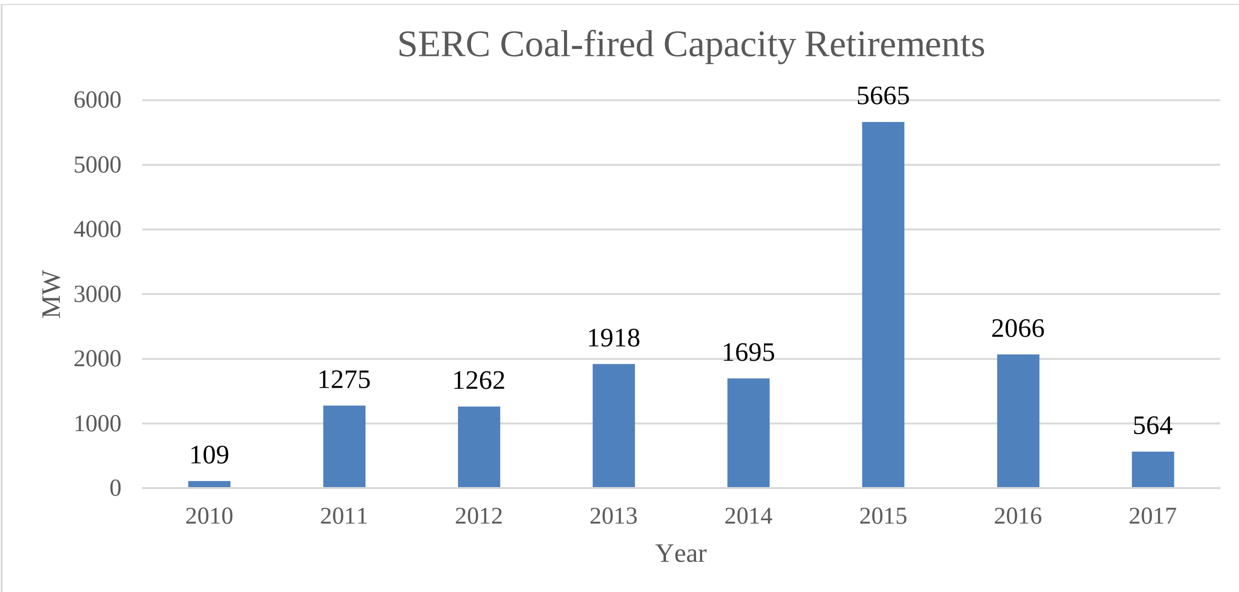
[7] Virginia Code § 56-585.2, as amended by H.B. 1022.

[8] Tennessee Valley Authority, Budget Proposal and Management Agenda For the Fiscal Year Ending September 30, 2013 (Submitted to Congress February 2012), p. iii. Available at http://www.tva.com/abouttva/pdf/budget_proposal_2013.pdf (last accessed on April 3, 2014).

[9] See *North Carolina v. Tennessee Valley Authority*, Civil Action No. 3-11-cv-0017, Consent Decree, United States District Court, Eastern District of Tennessee at Knoxville, June 30, 2011. Available at http://www.ncdoj.gov/getdoc/bdf66401-8137-4be2-bd20-57e89b570c1a/TVA-signed-consent-decree.aspx (last accessed on April 3, 2014). See also U.S. Environmental Protection Agency, EPA Region 4, *In the Matter of: Tennessee Valley Authority*, Consent Agreement and Final Order, Docket No. CAA-04-2010-1528(b). Available at http://www2.epa.gov/sites/production/files/documents/proposedtva-cafo.pdf (last accessed on April 3, 2014).

[10] Tennessee Valley Authority, Minutes of Meeting of the Board of Directors, November 14, 2013. Available at: http://www.tva.com/abouttva/board/pdf/11-14-2013_minutes.pdf (last accessed on April 3, 2014).

and additional units are subject to ongoing litigation and review. TVA is by no means unique in terms of the impact of regulation on its generation fleet. Other utilities in the Southeast are also retiring a substantial portion of their coal generation units. The graph below indicates that over 14,000 MW of coal power generators are slated to be retired by 2013 in the Southeastern Electric Reliability Corporation ("SERC") footprint.[11]



It is likely that additional retirements will be announced. Several regulatory developments are driving this shift in overall generation portfolios. The EPA's Mercury Air Toxic Rule is driving a wave of new pollution equipment to be installed with a deadline of 2016 or 2017.[12] If utilities do not meet required emissions levels at an affected coal plant, the plant must be retired. In addition, the United States Supreme Court is reviewing EPA's petition to reinstate the Cross-state Air Pollution Rule

[11] M.J. Bradley & Associates LLC, "Review of Coal Plant Retirements." April 12, 2013. Available at http://www.mjbradley.com/sites/default/files/Coal_Plant_Retirement_Review_Apr2013_0.pdf (last accessed on April 3, 2014).

[12] National Emission Standards for Hazardous Air Pollutants from Coal- and Oil-fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial- Institutional Steam Generating Units, 40 CFR Parts 60 and 63. *Federal Register*, Vol. 78, No. 79, April 24, 2013.

("CSAPR") that cuts down on sulfuric and other particulate emissions from coal, which can drive more retirements.[13] Even if EPA's petition is denied, the agency's intent to increase particulate regulation is clear, with the likely result that the cost of coal generation will continue to increase. In 2013, the EPA proposed carbon dioxide limits on new power plants that effectively require carbon capture on new coal-fired power plants.[14] Further, EPA is currently developing carbon dioxide limits on existing coal-fired power plants to be proposed during the course of 2014.[15] As coal retirements continue, it is critical that utilities in the region have adequate access to the lowest cost clean energy, like the low-cost wind energy to be delivered by the Project, in order to keep their rates low.

4. <u>Increasing reliance on natural gas</u>

Natural gas will undoubtedly fill some of the void left by retiring coal plants. However, renewables and natural gas can work in tandem to provide the right balance of low cost and low risk to utility customers. Though current gas prices are low by historical standards, they always have the potential for volatility, especially as well closures continue and liquefied natural gas exports begin to ramp up. Therefore, it is important to maintain fuel diversity by adding renewable generation—which has no fuel price risk—along with new natural gas-fired generation. Long-term, fixed price purchases of wind energy provide a hedge against natural gas price fluctuations, and

[13] *Environmental Protection Agency v. EME Homer City Generation*, U.S. Supreme Court, Docket Nos. 12-1182 and 12-1183.

[14] Standards of Performance for Greenhouse Gas Emissions From New Stationary Sources: Electric Utility Generating Units, 40 CFR Parts 60, 70, 71, and 98. *Federal Register*, Vol. 79, No. 5, January 8, 2014.

[15] Presidential Memorandum- Power Sector Carbon Pollution Standards, June 25, 2013. Available at http://www.whitehouse.gov/the-press-office/2013/06/25/presidential-memorandum-power-sector-carbon-pollution-standards (last accessed on April 3, 2014).

therefore reduce the risks of rate spikes to customers. Wind power offers utilities a low-cost insurance plan against future natural gas price changes and should therefore remain an attractive option to be a part of electric generation portfolios.

In summary, multiple factors indicate that there will be a substantial demand for wind energy in the South beyond the 3,600 MW already purchased. The Plains & Eastern Project is positioned to meet that demand by delivering clean and affordable electricity from the lowest cost wind resources to TVA and other regional utilities as they cope with growing environmental regulation and increasing reliance on natural gas.

Q. Please describe TVA's involvement with the Project to date.

A. As discussed in the testimony of Dr. Wayne Galli, TVA has been studying the Project's interconnection with the TVA system for over four years and has completed the Project's System Impact Study. In addition, TVA has signed two Memoranda of Understanding with Plains and Eastern to provide for technical studies of the Project and is participating in the environmental review of the Project under a National Environmental Policy Act process that is being led by the Department of Energy ("DOE"). TVA is generally supportive of transmission expansion to increase flexibility for its future procurement—which the Project increases. However, as a matter of policy, TVA does not endorse non-TVA projects, and therefore has not specifically endorsed the Plains & Eastern Project. Attached as **Exhibit DB-1** is a letter from TVA's Executive Vice President Robin Manning describing TVA's general support for transmission expansion and TVA's involvement with the Project to date.

Q. Is TVA considering adding more renewable energy to their portfolio?

A. Yes. TVA has made clear that they consider renewable energy to be an important part of their mix going forward. In its 2011 Integrated Resource Plan ("IRP"), TVA states that "[r]enewable generation above existing wind contracts plays a key role in future resource portfolios."[16] The IRP further states that:

> the combination of TVA's renewed vision, the growth in customer demand for renewable energy, the increasing regulatory stringency related to coal burning sources of generation and the anticipation of future federal and state mandates is prompting TVA to move towards generation that reduces or eliminates emissions altogether. Renewable energy is a generation resource that meets many of these challenges. Renewables aid in the reduction of air emissions from electric generation activities and use readily available "fuel" sources that are easily replenished."[17]

The 2011 IRP recommended that TVA increase its renewable energy capacity to 2,500 MW by 2020.[18]

Q. Have any of TVA's customers indicated an interest in TVA's energy mix becoming cleaner and including more renewable energy?

A. Yes. In connection with the 2011 IRP, TVA polled its stakeholders about which goals were most important to them. Reliability and affordability, not surprisingly, ranked very high (over 90% of responses). Reduction of air pollution (70%) and increase in renewable energy (42%) followed as key goals to meet future energy needs.[19] The Plains & Eastern Project is consistent with all of these goals.

Several of TVA's local power companies, including large municipal power providers, have supported increasing the amount of renewable energy in TVA's portfolio.

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[16]Available at http://www.tva.com/environment/reports/irp/archive/pdf/Final_IRP_complete.pdf ("''2011 TVA IRP") (last accessed on April 3, 2014), p 151.

[17]Ibid, Appendix D, p. D198.

[18]Ibid, p. 153-154.

[19]Ibid, p. 51.

As an example, the Board of Commissioners of Memphis Light Gas & Water passed a resolution supporting the importation of low-cost wind energy to the Memphis area through HVDC transmission, which is attached as **Exhibit DB-2**. In its 2012 Energy and Sustainability Plan, the City of Knoxville stated the priority to "[g]row the proportion of clean, renewable energy powering the Tennessee Valley's electricity grid."[20] The Cities of Nashville and Chattanooga have also endorsed increasing the percentage of renewable energy in their portfolio.[21] TVA runs a Green Power Switch program that allows individual users to purchase wind, solar and other renewable energy. Over 120 of TVA's local power companies participate in this program.[22]

Q. Will TVA update its integrated resource plan?

A. Yes, TVA recently announced that it will update its IRP in 2014 and 2015. The most recent IRP was completed in 2011, and a new IRP was not originally set to begin for several more years. However, the rapid speed of change in the electric sector appears to have prompted TVA to update the IRP sooner than planned. Lower natural gas prices have made natural gas generation a relatively more attractive option, while various EPA rules have placed additional pressure on coal. At the same time, falling costs make wind power cheaper than ever. It is my understanding that, as part of the IRP process, TVA

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[20] City of Knoxville's Energy & Sustainability Work Plan (first release June 30, 2011; updated March 30, 2012), p. 5. Available at: http://www.cityofknoxville.org/sustainability/WorkPlan_03-30-12.pdf (last accessed on April 3, 2014).

[21] See *Together Making Nashville Green, Report to the Honorable Karl Dean, Mayor, From the Green Ribbon Committee on Environmental Sustainability* (June 2009), p. 46. Available at: http://www.nashville.gov/Portals/0/SiteContent/Sustainability/GRC_Report_090701.pdf (last accessed on April 3, 2014); *The Chattanooga Climate Action Plan, Recommendations to Mayor Ron Littlefield, From the Chattanooga Green Committee* (adopted February 24, 2009), p. 28. Available at: http://www.chcrpa.org/Divisions_and_Functions/Design_Studio/Projects/Climate_Action_Plan/Final_CAP_adopted.pdf (last accessed April 3, 2014).

[22] See http://www.tva.com/greenpowerswitch/distributors.htm (last accessed on April 3, 2014).

will review its renewable options. TVA is just beginning the update of the IRP, but I am optimistic that the current IRP update will result in an even greater awareness of and need for incorporating low-cost renewable wind energy into TVA's power supply portfolio. Clean Line is pursuing the Plains & Eastern Project because we believe that renewable options, and especially low-cost wind energy from the central United States, will compete on their merits in study processes like the IRP.

Q. How has the transmission service worked for prior power purchase agreements that already deliver wind power to the South?

A. To date, power purchase agreements have made use of the existing transmission system and lines that were originally built for other purposes, not to transfer wind energy. However, the existing grid has a finite level of spare transmission capacity and can support very few additional agreements of this nature.

Q. Is new transmission needed so that TVA and other regional utilities can continue to buy substantial volumes of low-cost wind power from the central United States?

A. Yes. The necessary transmission paths are almost completely saturated, and the cost of moving power through the existing grid is increasingly high due to congestion. Based on many discussions with wind generators active in the Oklahoma Panhandle region and utilities in the South, including TVA, it is clear that new infrastructure is required for additional wind power purchase agreements for the South to be possible. New wind generation additions cannot continue without new transmission infrastructure to support them, and new transmission will be needed to enable large amounts of additional wind purchases.

The U.S. Department of Energy has identified the Oklahoma Panhandle as a Conditional Constraint Area of the transmission grid for wind energy. This means that DOE concluded that new wind generation cannot continue to be added to the region without new transmission expansion.[23] The Southwest Power Pool ("SPP"), the entity that operates the grid in the Oklahoma Panhandle region, recently added several new transmission lines to facilitate wind energy. However, these new additions were sized to accommodate only the wind energy additions needed to service demand in SPP—not to export low-cost wind energy to regions to the East. In addition, the Entergy and AECI transmission systems that sit between TVA and SPP have not been upgraded to accommodate new West-East transfers. Nor are there plans for any upgrades in SPP, Entergy or AECI to facilitate large-scale transfers of renewable energy from the wind-rich Oklahoma Panhandle region to Tennessee. Consequently, the Plains & Eastern Project is necessary to make it possible to move additional, low-cost wind energy to the TVA system.

Q. Does TVA agree that further transmission expansion is necessary in order to enable TVA to continue to have the option purchase low-cost wind energy?

A. Yes. In the 2011 IRP, TVA noted that "[t]ransmission expansion also requires long lead times and is a vital component in meeting forecasted demand. It is particularly necessary to acquire renewable energy, which tends to be located outside TVA's service territory and is intermittent in nature."[24] In our conversations with TVA, they have also expressed a strong preference for wind energy to be delivered directly to their system, rather than

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[23] U.S. Department of Energy. National Electric Transmission Congestion Study. December 2009. Available at http://emp.lbl.gov/sites/all/files/DOE-natl-elec-study-2009.pdf (last accessed on April 3, 2014).

[24] 2011 TVA IRP, p. 27

purchased remotely and then moved through multiple other utilities' system. The Plains & Eastern Project allows this direct delivery to occur.

Q. Why is moving wind power through a dedicated HVDC line preferable to using the existing alternating current ("AC") transmission system?

A. The existing AC system was not designed to move wind power and is reaching its full capacity. To use the existing grid to reach TVA, generators in the SPP must obtain multiple transmission service requests through multiple utilities' service territories. Not only is this a more complex arrangement than the direct delivery to TVA provided by the Project, the arrangement creates three major risks for the generator or purchasing utility. First, each segment of service (or "wheel") is subject to rate increases over time and cannot be purchased at a long-term, fixed rate. Second, transmission through an AC system is at risk of congestion, meaning too much generation tries to use too little transmission. Congestion increases the cost of moving power through the AC system. Third, generators may also be subject to curtailment, meaning they cannot actually operate reliably due to constraints on the AC system. All of these factors can increase the cost of wind procurement. Further, they limit the ability to rely on the existing AC system to meet the need for transmission capacity to deliver new sources of renewable energy to the Mid-South and Southeast.

A dedicated HVDC line like the Project does not carry the same risk of cost increases over time, congestion or curtailment. As a dedicated HVDC line, the Plains & Eastern Project can provide a single, fixed cost transmission service to reach the TVA system. The Project simplifies the process of moving wind power and therefore creates a more attractive product for TVA and other customers. As Dr. Wayne Galli describes, over long distances HVDC is a lower cost way to move power than a comparable AC solution. HVDC experiences lower electrical losses and uses less right-of-way. Not only is HVDC the right technical solution, it creates direct access for utilities in the South without managing multiple, complex transmission service requests through other utilities' territories.

Q. Have wind generators in the Oklahoma Panhandle region indicated that the Project is needed?

A. Yes. In June 2013, Clean Line issued a Request for Information ("RFI") to gather information about wind projects that are currently under development in the Oklahoma Panhandle region. The results indicate that there is robust wind development near the Project's western endpoint near Guymon, Oklahoma. Respondents to the RFI have rights to 16,510 MW of potential capacity in the region, which amounts to more than four times the delivery capacity of the Plains & Eastern Project. Seventeen project developers reported 29 projects under development and four projects that are already operational. Respondents submitted project information on 11,450 MW under development within 40 miles of the proposed converter site in Oklahoma. Of this amount, 6,850 MW were located within 20 miles. Many of the projects submitted have hit significant development milestones, such as full site control and the collection of multiple years of wind data from monitoring towers.

As the strong response to the RFI demonstrates, wind generators active in the Oklahoma Panhandle region are extremely supportive of the Project. Simply put, most of their projects cannot proceed unless new transmission is built. The number of projects under development vastly outstrips both the demand of Oklahoma utilities for wind power and the capability of the existing grid to allow new wind generators to interconnect. The Project will greatly increase the number of wind projects that can be built in the Panhandle region.

Q. Did the RFI responses reveal any information concerning the quality of wind resources in the Oklahoma Panhandle region?

A. Yes. RFI respondents also confirmed the very high quality wind resources in the Oklahoma Panhandle region, which supports attractive pricing for wind energy. The RFI respondents reported an average capacity factor of 51%, while the average capacity factor of the lowest priced 4,000 MW of submissions was 53%. A capacity factor is the ratio of actual generation to the total possible generation assuming ideal wind speeds. Capacity factors in excess of 50% are a result of improving turbine technology and the abundance of high wind speed sites in the Oklahoma Panhandle region.

Exhibit DB-3, a wind map of the United States, illustrates the wind speed advantage of the Oklahoma Panhandle region compared to the Southern United States. The average 80-meter (80 meters is a typical hub height of modern wind turbines) wind speed of the projects submitted in the RFI was 8.8 meters per second ("m/s"). States in the Southeast, such as Tennessee, do not typically have average wind speeds above 7.0 m/s, and only very few sites in the Southeast have average wind speeds that are above 6.5 m/s. At these speeds, utility-scale wind projects are rarely economical. The kinetic power potential of wind varies with the cube of the wind velocity. In other words, the power potential varies proportionally to the wind velocity raised to the third power. Consequently, an 8.5 m/s average wind speed site will have, other things being equal, 1.79 times the power potential of a 7 m/s site. This is a key factor in the low cost of Oklahoma wind power.

Q. At this time is it necessary that Clean Line identify which wind generators will connect to the Project?

A. No, it is not. The RFI results make clear that there are more than enough planned wind farms in the Oklahoma Panhandle region that can supply wind energy at an attractive price. Which of the many wind farms in the Panhandle ultimately connect to the Project is not in any way essential to establishing the need for the Plains & Eastern Project. That need rests on the plentiful wind resource, the demand of utilities for clean, low-cost power, and the excellent economics offered by the Project.

(b) <u>Cost Savings from the Project</u>

Q. Did the RFI provide you with any information on the price at which power can be provided by wind generators in the Oklahoma Panhandle?

A. Yes. The most competitive 4,000 MW of wind generation bid an average price of 2.4 cents per kWh, or $24/MWh. This is a flat price without escalation for 25 years. Based on the cost of the Plains & Eastern Project, I estimate that the Project's transmission charge is 2.0 cents per kWh, including all electric losses. Therefore, my estimate of the all-in delivered cost of wind energy is about 4.4 cents per kWh.

Q. How does this compare to the cost of procuring or producing energy from other sources?

A. Delivered wind energy is by far the cheapest form of clean or carbon-free energy. It is cheaper than nuclear, local wind power, solar or biomass. In addition, wind power delivered by the Project is cost-competitive with new natural gas-fired generation, depending on the view of future natural gas prices adopted. Wind has advantages over natural gas generation because it does not have fuel price volatility or exposure to risks of carbon dioxide regulation. In what follows, I discuss in detail these comparisons between the Project's delivered cost of energy and alternatives.

Q. Based on the Project's delivered cost of energy, do you have an estimate of the savings to electric ratepayers?

A. Yes. In connection with my testimony, I have prepared a financial analysis to estimate the benefits to electric customers from the Project. I did this by comparing the cost of delivering low-cost wind energy from the Project to alternative ways to generate the same amount of energy.

I began with the assumption that electric utilities in the South will need to add new energy resources to their mix, either from natural gas or renewables. This is a reasonable assumption due to future load growth and the retirements of coal plants. Due to the difficulty in permitting and the high capital costs, I did not consider new coal generation as an alternative. I did consider nuclear, local wind power, and solar alternatives.

My analysis is a levelized cost comparison of these different technologies. This kind of cost comparison is the analysis TVA and other utilities perform when creating their IRP's and deciding which resource to pursue. In my calculations, I assume all costs from the construction of new generation, including a return on equity, are passed through to ratepayers. This is an appropriate modeling assumption because almost all of the customers in Tennessee and the Southeast pay cost-based electric rates to integrated utilities. However, it is worth reiterating that no utility is obligated to buy power delivered by the Project. The power must be economical to be purchased.

In order to develop the costs of the Project and various alternatives to generate the same amount of energy from other sources, I used data from our generator Request for Information, our latest estimate of the Project cost, government data and other third party forecasts. The assumptions are further detailed in **Exhibit DB-4**. I also conducted a number of sensitivities on the assumptions to determine the robustness of my conclusions.

Q. Please explain what you mean by levelized cost of energy analysis.

A. Levelized cost of energy or "LCOE" analysis is a financial technique used in the electric power industry to rigorously compare different ways of sourcing electricity. Levelized cost analysis takes into account all costs of generating electricity, including capital costs, operating costs, taxes, the cost of debt, the return on equity, any available subsidies, and necessary transmission additions. The analysis produces a levelized cost per unit of energy that is a proxy for a power purchase agreement that a utility would sign. The price of the power purchase agreement, as estimated by the LCOE model, is sufficient for the owner of generation and transmission facilities to recover all the costs associated with the facilities and earn a market rate of return.

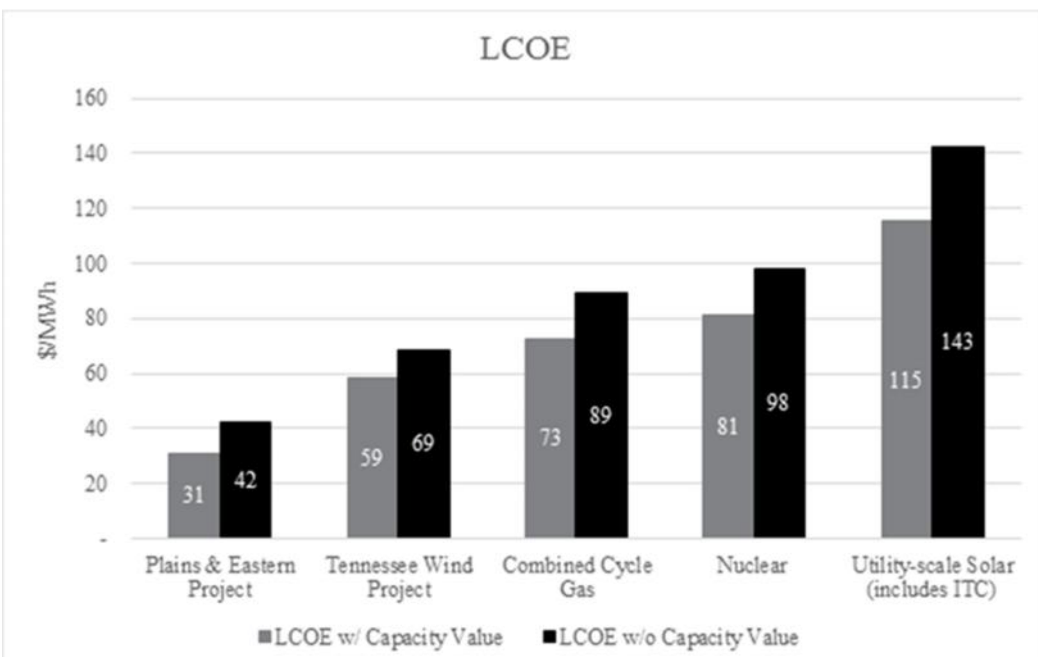
Levelized cost techniques permit the comparison of different alternatives with different cost structures using a single analytical method. Some alternatives may have higher initial capital costs, while other alternatives may have higher operating or fuel costs over the life of the projects. A levelized cost analysis uses discounting and financial modeling to summarize all the costs of a given alternative in a single figure, which facilitates comparison. In addition, it is possible to run sensitivities on different input variables to test the robustness of a levelized cost analysis.

Q. Does your levelized cost of energy analysis take account of the fact that wind generation does not produce all the time?

A. Yes. My analysis includes the different capacity values attributed to wind, nuclear, gas and solar resources. These different values reflect the expected contributions of the different generation technologies during times of peak demand. Further, my analysis includes an adjustment to the value of energy in each hour. Together these two adjustments appropriately adjust for the variability and time-of-day profile of wind energy.

Q. What are the conclusions of your analysis?

A. My analysis indicates that wind energy delivered by the Project is the lowest-cost way to provide energy to the region. The base case results are shown in the graph below:



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Two different levelized cost calculations are shown above. The black bars reflect just the cost of generating energy. They do not account for the differing capacity value of generation technologies, that is, their ability to run reliably to meet peak demand, which will be a significant component of their value to the bulk electric system. The gray bars, on the other hand show the results for each kind of generator incorporating an appropriate capacity value.[25] Even when capacity value is included in the model, the wind energy delivered over Project remains the lowest cost option even considering this effect.

Q. Do the results above stay true when you make different input assumption in the LCOE model?

A. Yes. To further test the robustness of these results, I considered 324 different scenarios of the LCOE model including the capacity value. I ran different cases around the following variables: (1) the presence of the federal production tax credit; (2) higher and lower gas prices based on U.S. Energy Information Administration ("EIA") forecasts; (3) the future cost of carbon dioxide emissions (if any); (4) the capacity factor of Oklahoma Panhandle region wind; (5) the capacity value (or resource adequacy contribution of) Oklahoma Panhandle region wind; and (6) the capacity factor of Tennessee wind. I varied these inputs both individually and in combination so as to run a model scenario with each possible combination of the inputs listed in **Exhibit DB-5**. I found that the cost of energy delivered by the Project is less expensive than the energy delivered by Tennessee wind farms, utility-scale solar, and nuclear plants in all cases.

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[25] For wind generation, capacity value was estimated by looking at output during TVA peak load hours. For gas and nuclear, the capacity value was assumed to be equal to one minus the forced outage rate based on national data. The dollar amount used for capacity was the annual cost, as estimated by the Energy Information Administration, of operating a simple cycle combustion turbine, which is the cheapest form of peaking generation. See Exhibit DB-4 for more details.

Additionally, energy delivered by the project is cheaper than energy from combined-cycle gas plants in 85% of the scenarios run. Based on these results, I conclude that low-cost wind energy from the Project can be a valuable addition to the generation portfolio of utilities over a range of future outcomes.

Q. Is there an additional transmission cost that should be considered to reach other customers from TVA's system?

A. Yes. Other utilities would need to buy point-to-point transmission service on TVA's system to their interface with TVA. This charge would equate to about 0.6 cents per kWh. However, unless new upgrades are required to allow this transmission service, this represents only a wealth transfer from other utilities to TVA, not a true additional cost. In fact, additional transmission service revenue represents a benefit to TVA. By realizing more revenue from its transmission system, TVA needs to recover fewer costs related to this system from its local power company customers.

Q. What is your estimate of the transmission service revenue that could be realized by TVA?

A. Based on TVA's current transmission rates, if utilities other than TVA buy 1,750 MW of service, or half of the capacity, it will bring about $48 million of additional revenue to TVA each year. This is an additional source of funds to TVA that can be used to reduce the rates charged to other TVA customers, including the many municipalities, electric cooperatives and other load serving entities TVA serves within the State of Tennessee.

Q. If your claims about lower costs do not materialize, is anyone compelled to buy capacity or delivered energy?

A. No. The Plains & Eastern Project is based on free market principles, and generators or load serving entities will only buy capacity if they find it economically feasible to do so. If the energy delivered by the Project is not competitive with other alternatives, TVA and other utilities will not buy it.

Essentially, Plains and Eastern is asking the Authority for the right to construct and operate a transmission line that will allow wind energy developers to compete to offer low-cost clean energy to TVA and other utilities. As my analysis in this section illustrates, there is a strong likelihood that wind energy can be delivered over the Project that will be at a low enough cost to save ratepayers money. Nevertheless, the free market nature of the Project ensures that cost overruns of the Project or an inaccuracy in our forecasts will not burden utility customers. If the Project becomes too expensive compared to alternatives, it will not be built.

Creating competitive options for TVA and other utilities assures that they can buy power at the lowest cost in the necessary timeframes. Historically, TVA's ability to produce clean electricity at low costs has been a major driver of economic development in the Tennessee Valley region. The same is true of many other utilities in the South. The Project can help assure that the region retains this advantage by providing access to the lowest cost renewable energy from the Oklahoma Panhandle.

(c) <u>Other Project Benefits</u>

Q. What are the environmental benefits of the Plains & Eastern Project?

A. The Project supports cleaner air and water for Tennessee and the region. Generating electricity from wind resources is environmentally friendly because the process does not emit carbon dioxide or other by-products such as nitrogen oxide, sulfur dioxide, mercury, particulates, coal ash or scrubber sludge, as in the case of coal-fueled generation, or radioactive waste, as in the case of nuclear generation. Another environmental benefit of wind energy is found in water savings. Wind farms do not require the large amounts of water that are needed for producing electricity from coal or nuclear power plants.

By stimulating new wind energy development, the Plains & Eastern Project will reduce carbon, sulfur, particulate and organic compounds emissions, and waste by-products and will also reduce water usage, as compared to the production of comparable amounts of electricity from fossil-fueled sources. The Plains & Eastern Project will deliver up to 3,500 MW of carbon-free electric power into Tennessee and will deliver approximately 18 million MWh of clean electric energy per year into the TVA system and surrounding markets.

Q. How is it possible to quantify the environmental benefits of the Project?

A. In the electric power industry, it is widely accepted practice to estimate the environmental benefits of a new generation or transmission project using a technique called production cost modeling. A production cost model is essentially a replica of the U.S. electric grid and all the generators connected to the grid. The model allows the user to simulate the functioning of the grid and generators under different short and long term scenarios. I have used production cost modeling throughout my career both to evaluate generation investments and to measure the cost and environmental impacts of Clean Line's transmission projects.

A production cost model solves, on an hourly or sub-hourly basis, for the least-cost way to meet electric demand over a longer period of time. In each hour for the period studied, (calendar year 2018), the production cost model solves for which generators are dispatched in order to meet electric load in the least cost manner, subject to the reliability constraints of the electric transmission system. This replicates the way TVA and other utilities actually dispatch their generation fleets in order to minimize costs and maintain reliability.

In the context of the Project, a production cost model allows us to estimate what changes in the electric generation mix result from building the Project and delivering 3,500 MW of wind power to the grid. As a result of this injection, coal, gas and other fossil plants would run less often, burn less fuel, emit less air pollution and consume less water. The production cost model provides a detailed estimate of how much less fossil generators run because of the Project. Using a database of emission levels for each plant, it is then possible to estimate the reduced pollution that is attributable to the Project.

Q. What is your estimate of the reduced air emissions and water usage from the Project?

A. In order to quantify the Project's environmental benefits, Plains and Eastern engaged DNV GL, a leading energy consulting firm experienced in production cost modeling. DNV GL used PROMOD, a production cost model used by TVA, many other utilities and several regional transmission organizations to perform this engagement. I have also used PROMOD on several prior occasions to look at the impacts of a new project on the operations of the grid.

Based on DNV GL's work, the estimated annual environmental benefits are summarized below:

Effluent	Annual Reduction
NOX (tons)	8,210
SOX (tons)	15,496
CO2 (tons)	12,196,813
HG (lbs)	248.6
Water (million gallons)	4,377

Q. How do these reductions in air pollutants and water usage benefit the public?

A. Reduced nitrogen oxide, sulfur dioxide and mercury particulate emissions all result in improved air quality, leading to better health and reduced morbidity and mortality for Tennesseans and other residents of the region. In addition, lower particulate levels can facilitate compliance with EPA air quality regulations such as maximum limits (in parts per million) for a pollutant. Lower emissions also reduce the result of litigation between states or across state boundaries. Environmental lawsuits against TVA by downwind states have resulted in large settlements, the costs of which are passed through to electric customers. The abatement of carbon dioxide emissions reduces the overall concentration of greenhouse gas emissions in the atmosphere and positions the region to respond to the increasing regulation of carbon dioxide by the EPA. Finally, reduced water usage conserves scarce water resources. Fossil fuel generation units in the Mid-South and Southeast utilize large volumes of water for steam production and cooling. These generators usually source their water from rivers or other large water bodies located near the facilities. An increase of generation from wind, which does not consume high volumes of water for either steam generation or cooling, will reduce the impact of power generation on freshwater ecology.

Q. Will the Project have a positive impact on economic development in Tennessee and elsewhere in the area the Project traverses?

A. Yes. Plains and Eastern expects to invest about $300 million in Tennessee to build the transmission line and the converter station that will connect into TVA's Shelby Substation. In recognition of this local economic development, Shelby County's Economic Development and Growth Engine approved Plains and Eastern's application for an eleven year Payment in Lieu of Taxes ("PILOT") incentive. As part of this incentive, Plains and Eastern will implement a diversity plan for local hiring and procurement.

To the maximum extent possible, Plains and Eastern intends to use qualified local vendors to construct the transmission line and to provide services like surveying, right of way clearing, grading, civil construction and others. Even with the PILOT in place, Plains and Eastern will still be a major property tax payer in Shelby and Tipton County, and will pay tens of millions of dollars to help to fund schools and other local government services. The Project will create hundreds of construction jobs in Tennessee and, taken as a whole, the Project will create thousands of construction and manufacturing jobs across the country. The Project will also create employment opportunities in the manufacturing sector for transmission structures, conductors, and wind turbines and their components. The Plains & Eastern Project will enable roughly 2,000 new wind turbines to be installed in the Oklahoma Panhandle region. Each wind turbine will require roughly 8,000 components, creating supply chain benefits throughout the United States.

Finally, having a substantial and affordable source of clean power delivered to Tennessee will benefit economic development throughout the region. Historically, TVA's low and stable rates have supported manufacturing and other energy-intensive industries who locate in TVA's footprint, and the same is true of many other utilities. The Plains & Eastern Project can help the region stay at the forefront of low-cost clean energy.

Q. Can you summarize why the Plains & Eastern Project is needed?

A. Yes. Southern utilities have entered into over 3,600 MW of wind power purchase agreements, but their continued ability to buy low-cost wind power demands an expansion of the transmission system. Utilities cannot buy more wind power in substantial quantities, and wind generators cannot build their projects, if new transmission capacity is not built. The Project meets this need by developing a new transmission line that can directly deliver 3,500 MW of wind power into the TVA system and be available for delivery to utilities in Tennessee and neighboring states. Low-cost wind power can be a cost-effective part of the regional electric portfolio, save customers money, improve the environment, and create jobs.

III. FINANCIAL CAPABILITIES AND FINANCING PLAN

Q. Please describe the current ownership of Plains and Eastern.

A. Plains and Eastern is a wholly owned subsidiary of Plains and Eastern Clean Line Holdings LLC, a Delaware limited liability company, which is a wholly owned subsidiary of Clean Line Energy Partners LLC ("Clean Line"), also a Delaware limited liability company. The majority owners of Clean Line are GridAmerica Holdings, Inc. ("GridAmerica") and Clean Line Investor Corp., a subsidiary of ZAM Ventures, L.P.

("ZAM Ventures"). GridAmerica is a subsidiary of National Grid USA, which is a subsidiary of National Grid plc. National Grid plc and its affiliates are one of the largest investor-owned utilities in the world. ZAM Ventures is the principal investment vehicle for ZBI Ventures, L.L.C. ("ZBI Ventures"). ZBI Ventures, which focuses on long-term investments in the energy sector, is a subsidiary of Ziff Brothers Investments, L.L.C. Clean Line's other investors are Michael Zilkha, an individual, and Clean Line Investment LLC, a company owned by Clean Line employees and service providers.

Q. What is the business of ZAM Ventures and its affiliates?

A. As I stated earlier, ZAM Ventures is one of the principal investment vehicles for ZBI Ventures. ZBI Ventures focuses on long-term investments in the energy sector. Many of ZBI Ventures' investments are in the oil and gas industry around the world. ZBI Ventures has invested in several private conventional and unconventional oil and gas investments in the United States, Canada and elsewhere in the world. ZBI Ventures has also invested in an oilfield services company doing business in various parts of the United States. In addition, ZBI Ventures has made several investments in alternative energy companies.

Q. What is the business of National Grid USA and its affiliates?

A. In the United States, National Grid USA's regulated subsidiaries deliver electricity to approximately 3.4 million customers in New York, Massachusetts and Rhode Island. National Grid USA's regulated operating subsidiaries include New England Power Company, Massachusetts Electric Company, Nantucket Electric, Narragansett Electric Company, Niagara Mohawk Power Corporation, KeySpan Gas East Corporation, Boston Gas Company, Colonial Gas Company, and The Brooklyn Union Gas Company.

Through these subsidiaries, National Grid owns and operates over 8,600 miles of high voltage transmission spanning upstate New York, Massachusetts, New Hampshire, Rhode Island and Vermont, including nearly 100 miles of underground cable and 522 substations. National Grid USA is also the largest distributor of natural gas in the northeastern United States, serving approximately 3.5 million customers in New England and upstate New York. Other operating subsidiaries are involved in LNG storage. National Grid USA also invests and participates in the development of natural gas pipelines and other energy related projects.

National Grid USA is a wholly owned U.S. subsidiary of National Grid plc, a major multinational company whose principal activities are owning and operating regulated networks for the transmission and distribution of electricity and natural gas. National Grid plc is based in the United Kingdom and is one of the largest investor-owned energy companies in the world with $75 billion in assets and over $22 billion in annual revenues. In the United Kingdom, a subsidiary of National Grid plc, National Grid Electricity Transmission plc, owns and operates the high voltage electric transmission system in England and Wales, comprising approximately 4,500 miles of overhead transmission lines among other assets, and operates the high voltage electricity transmission system in Scotland. National Grid Electricity Transmission plc is also the operator and part owner of a 2,000 MW HVDC link to France, a 1,000 MW HVDC link to the Netherlands, and a planned HVDC facility to link Scotland with England and Wales. Another subsidiary of National Grid plc, National Grid Gas plc, owns and operates the gas transportation system, comprising approximately 4,700 miles of high pressure pipe, and a majority of the gas distribution system, in Great Britain, serving over 11 million homes and businesses.

Q. Do ZAM Ventures or National Grid USA have operations in the Midwest, including in the Oklahoma Panhandle region or in the Mid-South and Southeast where the Plains & Eastern Project will deliver power?

A. No, they do not. As a result, Plains and Eastern has no potential affiliate concerns or potential conflicts of interest in pursuing the Project.

Q. Are there benefits to Clean Line and Plains and Eastern from having National Grid USA as an investor in Clean Line?

A. Yes. First, National Grid USA's equity investment provides additional equity capital that can be used in the development stages of our projects until permanent financings are put in place through the financing plan and process that I describe later in my testimony. Second, National Grid USA and its subsidiaries are major participants in the electricity and natural gas transmission and distribution sectors in the United States, and National Grid USA is a financially strong company with substantial assets and revenues. National Grid USA's participation as an equity investor in Clean Line provides additional credibility in the capital markets for Clean Line's projects, financing plans, and financial capabilities. Third, National Grid USA and its affiliates are experienced in constructing and operating electric transmission facilities, particularly HVDC facilities. Clean Line and its subsidiaries, including Plains and Eastern, can draw on this expertise when necessary in connection with the planning, construction, and operation of their electric transmission projects.

Q. Does Clean Line or its subsidiaries have any debt?

A. No, neither Clean Line nor its subsidiaries have any outstanding debt obligations.

Q. Please describe how Plains and Eastern will fund the development and construction of the Project.

A. Through a holding company, Plains and Eastern Clean Line Holdings LLC, Clean Line owns 100% of the membership interests in Plains and Eastern, the Applicant in the Proceeding.[26] The financial statements of the Applicant and Plains and Eastern Clean Line Holdings LLC are shown in **Confidential Exhibit DB-6**. However, the historical operating results of these entities are not relevant because the Project is currently under development, and therefore not yet generating revenue. During the development stage of the Project, while Plains and Eastern seeks the regulatory approvals to construct the Project and to sell its transmission capacity, Clean Line will contribute equity to Plains and Eastern. Clean Line is able to fund Plains and Eastern's development stage expenditures because of investments made by National Grid USA, ZAM Ventures and Clean Line's other investors. Once the Project reaches the point of beginning construction, it will be financed at the project level against the strength of its future revenues. Plains and Eastern can raise the debt and equity financing to construct the Project from new parties, or Clean Line's existing investors may make additional investments in the construction of the Project.

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[26] Plains and Eastern is a limited liability company organized under the laws of the State of Arkansas. Plains and Eastern is a wholly owned subsidiary of Plains and Eastern Clean Line Holdings LLC, a Delaware limited liability. Plains and Eastern Clean Line Holdings LLC is 100% owned by Clean Line, which is also a Delaware limited liability company. The principal office of Clean Line and its subsidiaries, including Plains and Eastern, is located in Houston, Texas. Clean Line owns other subsidiaries that are developing other transmission line projects in other parts of the country.

Q. What is the nature of the equity investment in Clean Line to date?

A. The equity investors are providing capital to enable Clean Line to develop and permit its transmission line projects, including the Plains & Eastern Project, which is to be constructed and owned by Plains and Eastern. We estimate that of the total cost of a transmission project, such as the Plains & Eastern Project, approximately 1% to 2% is spent in development activities (obtaining siting authority, interconnection studies, routing, permitting, and public outreach), approximately 10% is spent in pre-construction activities (ordering the DC converters and acquiring the bulk of the right-of-way), and the remaining approximately 88% is spent in construction and commissioning activities. The funding provided by the equity investors will enable Clean Line and its subsidiaries to bring the Project, and the other transmission line projects being developed by other subsidiaries of Clean Line, to a point of development at which long-term transmission service agreements can be signed with transmission customers and, on the basis of these agreements, project-specific financing arrangements can be entered into with lenders and with equity investors and/or other partners. The additional capital obtained through these financing arrangements will allow Plains and Eastern to construct the Project. The current equity investors may participate in the project financings by making debt or additional equity investments along with new lenders, investors and/or partners.

Q. Please describe more specifically Clean Line's financing plan for construction of the Project.

A. When the Project has completed the majority of its permitting and licensing process, Plains and Eastern will enter into long-term contracts with customers for transmission capacity on the Project. Plains and Eastern then intends to issue project-specific debt secured by the revenue stream from the transmission capacity to raise the capital necessary to complete the remaining development activities, construct the Project, and place it into operation. Additional equity capital may also be raised to help finance construction of the Project, or Clean Line's existing investors may make additional equity investments in the Project.

Q. How does project finance differ from the general corporate finance approach that many utilities use to finance new transmission lines and other additions to their plants and equipment?

A. The key distinction between general corporate finance and project finance is which revenues and assets investors rely upon to recover (and secure, in the case of secured debt) their investment and to earn their required return. When utilities issue corporate debt or equity to fund new construction, the issued securities typically are secured by, and the buyers typically rely on, all the assets and revenues of the issuer and not just the assets and revenues of the new project that is being financed. In the case of utility debt securities, the securities are typically secured by a mortgage on all the assets of the utility. Project finance, on the other hand, relies principally (and in some cases exclusively) on the assets and revenues of a particular project as the source of security.

Q. Is project finance a successful model for financing the development and construction of projects such as the Plains & Eastern Project?

A. Yes. Personally, I have been involved in the project finance model to support the construction of over $3 billion of wind farms, including over 180 miles of transmission lines to connect them to the grid. Other members of the Clean Line management team have similar experience. Many successful transmission projects have followed the same model in which initial equity investors fund development and the project is later refinanced at the project level to fund construction. Utilities and developers have applied this model to traditionally rate-based transmission lines, like the Path 15 project in California and the Trans Bay Cable project crossing the San Francisco Bay. This model is also common for merchant transmission lines, like the Plains & Eastern Project. Other merchant transmission projects that have pursued or are pursuing this financing model include the Neptune underwater HVDC project between New Jersey and Long Island and the Zephyr line from Wyoming to Nevada, which is currently under development by American Transmission Company and Duke Energy. Many of the Competitive Renewable Energy Zone ("CREZ") transmission lines in Texas followed the project-specific finance model as well.

Q. Are you confident that the project finance markets will support the construction of the Plains & Eastern Project?

A. Yes. Large amounts of liquidity exist in the capital markets for transmission projects that have reached an advanced stage of development. The capital markets have a substantial history of supporting transmission projects, including merchant transmission projects, through debt and equity financings. **Exhibit DB-7** provides a list of precedent transactions in both the equity and debt markets. As I noted in my previous answer, a number of transmission line projects have entered into project finance arrangements to fund their construction. For example, in 2003, the Path 15 project, an 83-mile stretch of 500 kV lines in Southern California, closed $209 million in debt financing spread across the bank and bond markets. In 2005, the Neptune Project, a ±500 kV HVDC underwater transmission project, raised $600 million in a private placement at a competitive spread to

LIBOR. In early 2008, Trans Bay Cable LLC successfully closed an approximately $500 million transaction in the project finance market to fund a 53 mile underwater HVDC project. In September 2008, the Trans-Allegheny Interstate Line project closed a $550 million senior secured loan, and in January 2010, that project closed an additional $800 million of financing, comprised of $350 million in floating bank debt and $450 million in fixed coupon bonds. Additionally, significant institutional investors, such as the California Public Employees Retirement System (known as CalPERS), John Hancock Financial Services, and TIAA-CREF, have also made major equity investments in transmission lines, as have the private equity firms ArcLight Capital Partners, Energy Investors Fund, Energy Capital Partners, and Starwood Energy. All of these examples confirm that debt and equity financing is in plentiful supply for projects like the Plains & Eastern Project. Texas' recent experience with the CREZ lines provides further confirmation of the viability of project finance applied to transmission lines.

Q. What is the CREZ transmission program?

A. The CREZ transmission build-out program was established by the Texas legislature in 2005 to advance the construction of new wind farms in Texas. The CREZ projects are primarily designed to transport electricity generated by renewable energy resources to larger load centers in Texas, while simultaneously providing the infrastructure necessary to meet the long-term needs of the areas with the greatest growth potential. Transmission projects have been assigned to developers, both incumbent utilities and new entrants, through an application process. In March of 2009, the Texas Public Utility Commission ("PUC") issued an order approving projects comprising 2,300 miles of new 345 kV transmission lines pursuant to the CREZ legislation. At this time, all of the CREZ lines have been successfully completed.

Q. Did the Texas PUC approve any CREZ projects to be constructed by independent transmission companies?

A. Yes. The Texas PUC awarded CREZ projects to eight transmission service providers: Oncor, Lower Colorado River Authority, South Texas Electric Cooperative, Sharyland Utilities, Electric Transmission Texas, Lone Star Transmission, Wind Energy Transmission Texas, and Cross Texas Transmission. Of these entities, Electric Transmission Texas, Lone Star, Wind Energy Transmission Texas, and Cross Texas were new, independent entities established to pursue the CREZ projects. Like Plains and Eastern, these new entities had strong investor backing and had plans to use project financing to raise capital to construct their designated transmission lines.

Q. Were the CREZ transmission providers able to raise sufficient capital to proceed with their projects?

A. Yes. With several project finance loans oversubscribed – meaning more lenders wanted to participate than was possible based on the size of the loan or debt offerings – the CREZ projects enjoyed strong success in raising capital. The following examples all used project finance: In June of 2011, Sharyland raised over $730 million for its designated project in the bank and private debt markets; Sharyland's parent company Hunt Consolidated, Inc., announced plans for two Real Estate Investment Trusts totaling $2.1 billion that will invest in Sharyland's CREZ lines as well as other natural gas and electric transmission assets. In July 2011, Cross Texas Transmission and Wind Energy

Transmission Texas separately raised a combined $700 million in bank debt. In November 2011, Lone Star raised $386.6 million in bank loans for its CREZ line.

Q. Were the CREZ loans and other financing committed for the CREZ projects prior to the transmission service providers receiving key permits for their projects, including Texas PUC approval?

A. No. The CREZ transmission service providers provided information about their parent companies and plans to finance the lines as part of the selection process. However, the transactions I described in my previous answer did not occur until the respective project sponsors had received one or more Certificates of Convenience and Necessity from the Texas PUC.

Q. Is it typical for energy projects using project finance to obtain full financing prior to obtaining the necessary permits and other regulatory approvals?

A. No. Project lenders always, in my experience, mandate that receipt of the necessary permits and approvals are a condition precedent to funding a project loan. Project-based equity investors also typically have the same requirement. While I am aware of certain transactions in which debt and equity investors have made commitments conditioned on obtaining remaining permits and approvals, this model is not viable for projects such as the Plains & Eastern Project. First, banks and other lending institutions will not make conditional commitments until they have a very high degree of certainty that the project will actually be approved by the applicable regulatory agencies. Their economic interest is harmed by the opportunity cost of tying up financial resources that are never deployed, as the same capital could earn a return in another investment. Second, the time horizon of the Plains & Eastern Project is such that construction will not begin for at least two years, depending on the time frame in which this application is approved and other key regulatory permits are received. Conditional commitments to project finance are made where there is a much shorter period of time anticipated between the commitment being made and the anticipated date of the event that will trigger the release of the funds. Third, lenders typically charge a commitment fee on future loan commitments, which can be quite costly to the project. In summary, I think it is highly unlikely that debt providers would make such a long-term commitment before key approvals are in place.

Q. How does the project financing approach that Clean Line plans to employ compare to the financing methods used for other kinds of energy projects?

A. Developers of new independent power generation projects have long relied on project finance to fund their construction. For example, the U.S. wind power industry has raised tens of billions of dollars of project-level debt and equity over the last five years. Horizon Wind Energy (now EDP Renewables), which is one of the leading developers of wind generation facilities in the U.S., successfully used this approach to develop, finance, construct, and place into operation a number of significant wind generation projects throughout the U.S. In addition to electric generation, natural gas pipelines have commonly used project finance to fund the construction of new pipeline projects.

Q. At what point will Clean Line obtain financing for the construction of the Plains & Eastern Project?

A. Our current plan is to obtain construction financing once we have obtained the major regulatory approvals necessary to proceed with the Project and we have sold a majority of the capacity on the Project. Plains and Eastern has already obtained a certificate from the Oklahoma Corporation Commission and negotiated rate authority from the Federal

Energy Regulatory Commission ("FERC"). Plains and Eastern still needs to obtain the approval of the Authority and complete the federal environmental review of the Project. In addition, we will need to enter into contracts for a portion of the transmission capacity on the Plains & Eastern Project prior to obtaining full financial commitments for the Project. The exact percentage of capacity that needs to be under contract prior to obtaining full financing commitments will depend on the price, counterparty creditworthiness, and term in years of the signed transmission contracts.

Q. Please describe the nature of these transmission capacity contracts and why they are necessary to support the Project's financing.

A. Plains and Eastern will offer long-term, firm transmission capacity contracts to its customers. These contracts will provide for a reservation charge, which will require the transmission customer to pay regardless of what percentage of the time the customer uses the reserved capacity. This pricing arrangement is typical for transmission lines, including those operated by regional transmission organizations and their transmission owner members. It is also similar to the contractual arrangements for natural gas pipelines. Plains and Eastern will impose credit requirements on its transmission customers. The credit requirements will require that each transmission customer have investment grade or higher credit ratings, or post additional security in the form of cash, a letter of credit, or a parent guarantee from an entity with investment grade credit ratings. These credit requirements will provide revenue certainty, which will allow lenders to be comfortable that Plains and Eastern can repay its debt.

Q. How will lenders size the debt they lend to Plains and Eastern?

A. Lenders typically look at project finance borrowing capability based on debt service coverage ratios, where the numerator is contracted cash flow available to service debt, and the denominator is principal and interest owed. In my experience, typical coverage ratios for project finance are 1.25 to 1.50 times. These coverage ratios allow projects like the Plains & Eastern Project to raise substantial amounts of debt financing to fund construction costs, while maintaining a margin of safety on debt repayment in the event of unforeseen operational or commercial problems.

Q. If Plains and Eastern is able to obtain the regulatory approvals and the transmission contracts as you describe, do you foresee any difficulty in obtaining the necessary financing to build the Project?

A. No. Several precedent transactions have demonstrated that project finance for transmission lines is a viable model. Further, Clean Line has developed a database of lenders and equity investors who have either made past investments in transmission projects or have expressed an interest in investing in one of Clean Line's projects once it has secured the key permits and contracts. My colleagues and I have worked with many of these lenders and equity investors on prior transactions.

Q. Do the equity investors in Clean Line have the commitment and experience to support this plan?

A. In my opinion, yes. National Grid USA is an extremely experienced investor in electric infrastructure projects and has substantial capabilities to support Plains and Eastern's financing efforts. National Grid USA has the financial capability to make additional investments in Clean Line and Plains and Eastern should it elect to do so. In addition, both ZAM Ventures and the Zilkha family have deep experience in the energy field, including in electric power and renewable energy. ZAM Ventures and its affiliates and the Zilkha family have previously made significant initial growth investments in companies in the energy industry, including companies developing renewable resources projects, and are deeply experienced with our development and financing model.

Q. Does Clean Line have the management expertise to successfully execute its development and financing model?

A. Yes. Along with other members of our management team, including Mr. Skelly, our CEO, and Ms. Desai, our Executive Vice President – Commercial and Operations, I was previously employed by Horizon Wind Energy, where we worked to bring a number of wind energy projects into operation using project financings. Additionally, other members of our management team, including Mr. Hurtado, our Executive Vice President, and Mr. Shilstone, our Director of Development, have experience in developing independent power generation projects. Mr. Kottler, our general counsel, was formerly a corporate attorney at a large law firm where he was involved in a number of significant financial transactions encompassing many sectors of the renewable energy industry. More complete descriptions of the development experience of the primary members of Clean Line/Plains and Eastern's management team are provided in **Exhibit MS-2**. **Exhibit DB-8** is a table highlighting our financial experience.

Q. What conditions will project lenders place on Clean Line before they advance the money to build the Project?

A. Lenders will carefully scrutinize construction contracts and will only advance money once the appropriate conditions exist. Those conditions include (a) having all necessary permits, (b) having procured sufficient financing commitments to complete construction, and (c) having a high degree of certainty on budget and timeline. While this diligence creates an additional administrative burden for the transmission developer, it ensures that projects proceed prudently. Construction lenders will not release funds to begin construction unless Plains and Eastern demonstrates that it has commitments for sufficient financing to construct the entire Project. Lenders will not take the risk that additional necessary financing cannot be obtained, resulting in an incomplete project with limited collateral value. Therefore, Plains and Eastern will not begin to install physical facilities until it has obtained adequate funding.

Q. Please summarize why Plains and Eastern can finance the Project successfully.

A. Project finance is a time-tested and proven way to finance the construction of transmission lines. A significant number of precedent transactions have set a framework for the terms, pricing, legal documentation, and interested parties. Clean Line has identified and developed relationships with a large number of potential financing parties. Finally, our staff has the experience and demonstrated capability to execute large project financing transactions, and our equity investors have the commitment and the experience to support our financing plan.

IV. <u>REGULATORY MATTERS</u>

Q. Is Plains and Eastern requesting that the Authority regulate its rates for interstate transmission service?

A. No. By limiting its activities to the transmission of electricity for sale in the wholesale market, Plains and Eastern will not have any retail customers, and Plains and Eastern's only utility service provided will be interstate transmission service regulated by the

FERC. Under the Federal Power Act, FERC will have jurisdiction over Plains and Eastern's transmission rates. On September 7, 2012, FERC granted Plains and Eastern's application for authorization to sell transmission services at negotiated rates and for related relief. In this Order, which is attached as **Exhibit DB-9**, FERC approved Plains and Eastern's request to sell transmission service to specific users of the line. The Order requires that Plains and Eastern follow an open and transparent process for awarding the Project's capacity in which any eligible customer can participate. The Order further requires Plains and Eastern to file an open access transmission tariff with FERC at a later date and submit itself to continuing oversight. Because Plains and Eastern will sell transmission service in accordance with this FERC Order and will be subject to FERC's jurisdiction on an ongoing basis, it is not necessary for the Authority to regulate Plains and Eastern's transmission service rates.

Q. Plains and Eastern has asked that the Authority, to the extent necessary, waive the applicability of Rule 1220-04-01-.11 to Plains and Eastern so long as Plains and Eastern maintains its books and records in accordance with FERC's Uniform System of Accounts at 18 C.F.R. Part 101. Please explain the basis for this request.

A. As a multi-state provider of interstate transmission service that will be subject to the jurisdiction of FERC, Plains and Eastern will maintain its books and records of account in accordance with FERC's Uniform System of Accounts Prescribed for Public Utilities and Licensees subject to the Provisions of the Federal Power Act, 18 C.F.R. Part 101. Maintenance of Plains and Eastern's books and records of account in accordance with FERC's Uniform System of Accounts should provide appropriate, useful and sufficient accounting and financial information for the Authority's regulatory purposes.

Q. Does this conclude your prepared direct testimony?

A. Yes, it does.

I swear that the foregoing testimony is true and correct to the best of my knowledge, information and belief.

David Berry
Executive Vice President – Strategy and Finance
Clean Line Energy Partners LLC

STATE OF TEXAS :

COUNTY OF HARRIS :

Sworn and subscribed before me this 3 day of April, 2014.

Notary Public
My Commission Expires: 7-22-2015

JUDY BLANKENSHIP
Notary Public, State of Texas
My Commission Expires
July 22, 2015

EXHIBIT DB-1: Letter from Robin E. Manning, Executive Vice President & Chief External Relations Officer, Tennessee Valley Authority

Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

Robin E. Manning, PE
Executive Vice President &
Chief External Relations Officer

December 10, 2013

Honorable James M. Allison, Chairman
Tennessee Regulatory Authority
460 James Robertson Parkway
Nashville, Tennessee 37243

Dear Chairman Allison:

TENNESSEE VALLEY AUTHORITY AND HIGH VOLTAGE DIRECT CURRENT TRANSMISSION

TVA's vision is to be one of the nation's leading providers of reliable, low-cost and cleaner energy by 2020. We have announced significant retirement of coal resources to reduce emissions, and have set aggressive efficiency and demand response targets. TVA is among the first in the Southeast to contract for wind energy from the Great Plains states and the Midwest wind corridor.

TVA also has a strong legacy of deployment of high voltage transmission to accommodate efficient and economic transfer of energy within its service territory and with neighboring systems. In general, TVA supports transmission expansion projects that enhance resource flexibility and reliability and provide economic benefits, but refrains from endorsing any specific non-TVA projects to avoid giving unfair advantage among potentially competing proposals.

Consistent with its applicable procedures, TVA has conducted certain studies regarding the Clean Line Energy inter-regional high voltage direct current (HVDC) transmission project, including the interconnection of the project to TVA's Shelby substation. TVA is also a federal cooperating agency in the NEPA environmental review of the project being led by the Department of Energy.

I hope this information is helpful to the Tennessee Regulatory Authority's process and its consideration of the Plains & Eastern Clean Line project.

Sincerely,

Rob Manning

cc: Mr. Herbert Hilliard, Vice Chairman,
Mr. Robin Bennett, Director,
Mr. Kenneth Hill, Director,
Mr. David Jones, Director,
Mr. Earl Taylor, Executive Director, and
Ms. Sharla Dillon, Docket & Records Manager
Tennessee Regulatory Authority
460 James Robertson Parkway
Nashville, Tennessee 37243

EXHIBIT DB-2: Board of Memphis Light, Gas, and Water Commissioners' Resolution

EXCERPT
from
Minutes of Meeting
of
Board of Light, Gas and Water Commissioners
City of Memphis
held
October 20, 2011

WHEREAS, the Tennessee Valley Authority (TVA) aims to be a national leader in providing low-cost, clean energy and creating an attractive environment to attract industries and jobs to the regions it serves; and

WHEREAS, public policy and regulation seek to transition to electric power generation sources which reduce harmful emissions; and

WHEREAS, the Great Plains is one of the most prolific regions in the United States for the development for wind generation, thus providing renewable, competitively-priced energy; and

WHEREAS, the delivery of wind generated renewable energy from this region can be delivered to the TVA transmission system in West Tennessee, utilizing high voltage direct current transmission technology, thus providing much needed construction and permanent jobs as well as other economic development benefits; and

WHEREAS, MLGW has customers within its service territory that have documented, reliable and measurable sustainability processes and procedures that would benefit from the use of clean, affordable renewable energy generated from wind; and

WHEREAS, MLGW desires to offer its customers an option for clean, affordable renewable energy generated from wind; and

WHEREAS, Memphis and the Western Tennessee region is an air, rail, highway and river distribution hub and has the opportunity to be a distribution hub for renewable energy generated from wind; and

NOW, THEREFORE, BE IT RESOLVED, that the Board of Light, Gas and Water Commissioners as a show of support does hereby pass this memorializing resolution as a commitment to fully support the development and implementation of wind energy transported by HVDC transmission projects from independent companies to western Tennessee, and be it further

RESOLVED, that this Board will cooperatively work with TVA, or any of its partners and affiliates to assist in bringing additional wind generated power on HVDC transmission lines to western Tennessee and thus able to serve MLGW, and be it finally

RESOLVED, that a copy of this resolution shall be forwarded to TVA and our County, State and Federal elected representatives encouraging those leaders to support such efforts.

I hereby certify that the foregoing is a true copy of a resolution adopted by the Board of Light, Gas and Water Commissioners at a regular - special meeting held on 20 day of October, 2011, at which a quorum was present.

Acting Secretary - Treasurer

EXHIBIT DB-3: Map of U.S. Wind Speeds

United States - Annual Average Wind Speed at 80 m

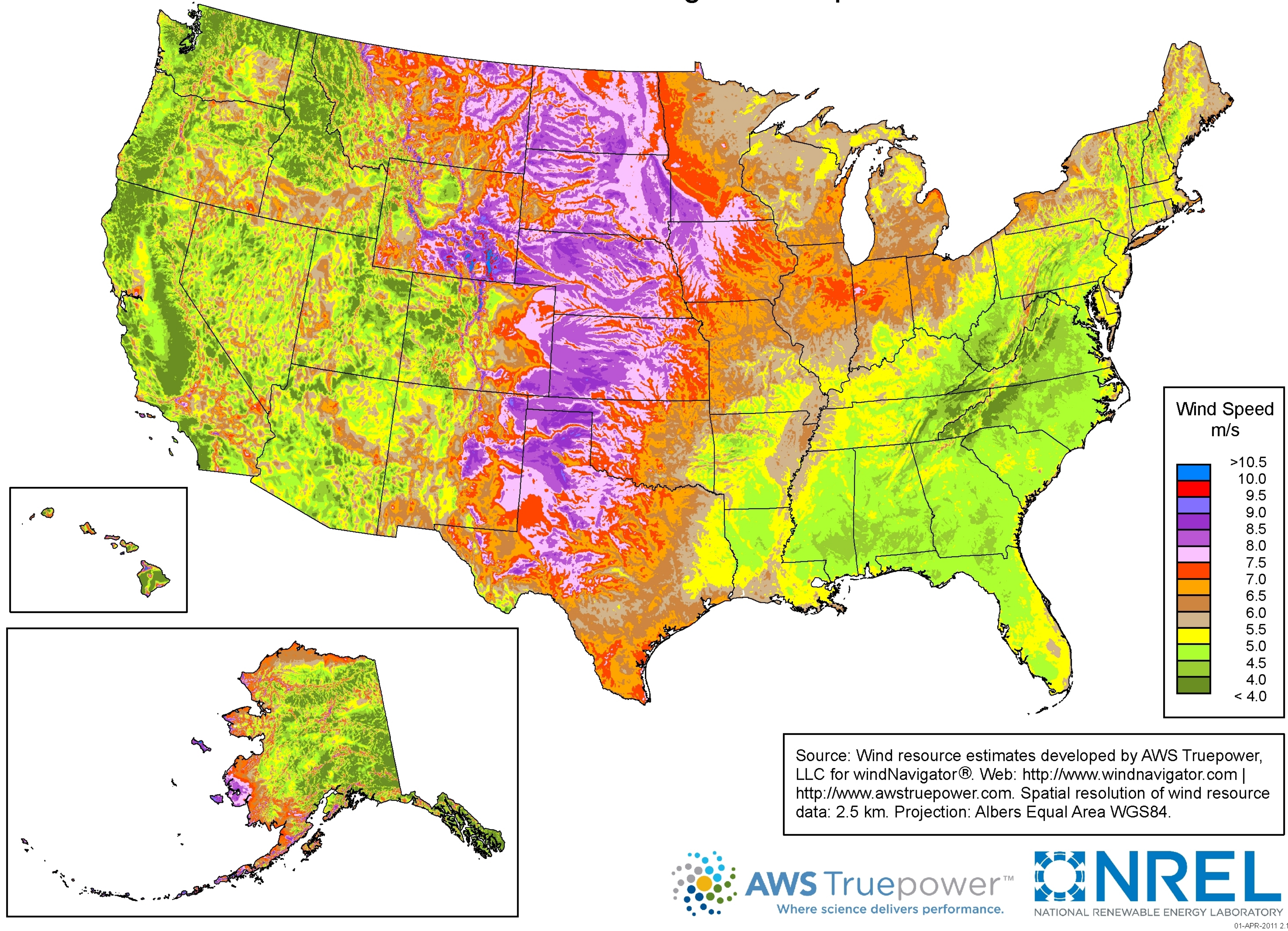

EXHIBIT DB-4: Assumptions for Levelized Cost Analysis

General inputs and assumptions

- Shared Inputs
  - Annual Inflation – 2.5%
  - Corporate tax rate – 35%
  - Debt – 50%
  - Cost of debt – 5.5%
  - Equity – 50%
  - Cost of equity – 12%
  - Capacity value – 95,659 $/MW-yr (Projected annual revenue requirement for combustion turbines in $/MW-yr, EIA AEO2013 forecast)
  - Regional cost adjustments for non-wind generation
    - OK in SPP South (SPSO) (EIA AEO2013)
    - TN in SERC Central (SRCE) (EIA AEO2013)
  - Property tax rate
    - OK – 6.14% (Average of counties in the Oklahoma Panhandle: http://www.tax.ok.gov/advform/2012StatBook.pdf)
    - TN – 3.196% (Average of all counties: https://www.comptroller.tn.gov/pa/LR.asp?W=13)
  - Assessment on commercial property
    - OK – 13% (Average of counties in the Oklahoma Panhandle: http://www.tax.ok.gov/advform/2012StatBook.pdf)
    - TN – 40% (https://www.comptroller.tn.gov/pa/paavt.asp)
- Input Sensitivities (reference case)
  - PTC value – 23 $/MWh (IRS Section 45)
  - Carbon dioxide price – 15 $/ton in 2020 to 60 $/ton in 2040 (Synapse Report)
  - Natural gas price – 5.68 $/Mcf in 2018 to 13.82 $/Mcf in 2040 (EIA AEO2014)
  - OK wind capacity factor – 53%
  - TN wind capacity factor – 30% (High estimate from http://www.windpoweringamerica.gov/wind_resource_maps.asp?stateab=tn)
  - OK wind capacity credit – 34.2% (P75 of yearly average capacity factors of top 20 peak load hours at TVA from 1998-2012, after losses)
  - TN wind capacity credit – 19.3% (Capacity credit of OK wind scaled by capacity factor ratio between OK and TN)

Assumptions on alternatives

- Plains & Eastern line
  - Electric losses – 5%
- Oklahoma wind
  - Utilization rate – see OK wind capacity factor above
  - Capital cost – 1.75 $mm/MW (includes regional cost adjustments according to LBL Wind Report)
  - O&M – 7.5 $/MWh (LBL Wind Report) with 1% escalation

- Tax depreciation – 5-years MACRS
- Useful life – 25 years
- Property depreciation – straight line over lifetime to 20% residual value (12 years for nacelle, at 47% of capital costs: http://www.tax.ok.gov/advform/2014BusinessPersonalProperty-Final.pdf. Pg. 152)
- Property tax exemption for wind generators – first 5 years (OK Statute 68-2902-C-7: http://www.tax.ok.gov/advform/Laws%202010.pdf)

- Tennessee wind
  - Utilization rate – see TN wind capacity factor above
  - Capital cost – 2.2 $mm/MW (includes regional cost adjustments according to LBL Wind Report)
  - O&M – 7.5 $/MWh (LBL Wind Report) with 1% escalation
  - Tax depreciation – 5-years MACRS
  - Useful life – 25 years
  - Property depreciation – straight line over lifetime to 20% residual value
  - Property assessment – 33% (Tennessee House Bill 62: http://www.capitol.tn.gov/Bills/108/Bill/HB0062.pdf)
  - TOD adjustment – 106% (Tennessee EWITS data compared with OK wind, calculated from simulated hourly LMPs at P&E Shelby drop-off point and wind profile provided by DNV GL)
- Combined Cycle Gas
  - Utilization rate – 87% (EIA AEO2013)
  - Capital cost – 1.006 $mm/MW (EIA AEO2013)
  - Fixed O&M – 15.1 $/kW (EIA AEO2013)
  - Variable O&M – 3.21 $/MWh (EIA AEO2013)
  - Heat rate – 6,333 Btu/kWh (EIA AEO2013)
  - Carbon intensity – 0.053 tons/mmBtu
  - Tax depreciation – 15-years MACRS
  - Useful life – 30 years
  - Property depreciation – straight line over lifetime to 20% residual value
  - Capacity credit – 76% [0-100 MW], 87% [100-200 MW], 91% [200-300 MW], 93% [300-400 MW] (1-EFOR, or Equivalent Forced Outage Rate: Generating Availability Data System)
  - TOD adjustment – 112% (Assumed constant generation compared with OK wind, calculated from simulated hourly LMPs at P&E Shelby drop-off point and wind profile provided by DNV GL)
- Nuclear
  - Utilization rate – 90% (EIA AEO2013)
  - Capital cost – 5.429 $mm/MW (EIA AEO2013)
  - Fixed O&M – 91.65 $/kW (EIA AEO2013)
  - Variable O&M – 2.1 $/MWh (EIA AEO2013)

  - Average fuel cost (including waste management) – 7.5 $/MWh (NEI: http://www.nei.org/Knowledge-Center/Nuclear-Statistics/Costs-Fuel,-Operation,-Waste-Disposal-Life-Cycle)
  - Tax depreciation – 15-years MACRS
  - Useful life – 40 years
  - Property depreciation – straight line over lifetime to 20% residual value
  - Capacity credit – 98% [<800 MW] (1-EFOR, or Equivalent Forced Outage Rate: Generating Availability Data System)
  - TOD adjustment – 112% (Assumed constant generation compared with OK wind, calculated from simulated hourly LMPs at P&E Shelby drop-off point and wind profile provided by DNV GL)
- Utility-scale Solar
  - Utilization rate – 19.4% (PV generation obtained using NREL PV-Watts for Memphis, TN http://rredc.nrel.gov/solar/calculators/pvwatts/version1/)
  - Capital cost – 3.805 $mm/MW (EIA AEO2013)
  - Fixed O&M – 21.37 $/kW (EIA AEO2013)
  - Variable O&M – 0 $/MWh (EIA AEO2013)
  - Investment tax credit – 30% of capital costs
  - Tax depreciation – 5-years MACRS
  - Useful life – 25 years
  - Property depreciation – straight line over lifetime to 20% residual value
  - Property assessment – 12.5% (Tennessee House Bill 62: http://www.capitol.tn.gov/Bills/108/Bill/HB0062.pdf)
  - Capacity credit – 40% (Assumed 2-axis tracking and 10% penetration levels in TN, NREL: http://www.nrel.gov/docs/fy06osti/40068.pdf)
  - TOD adjustment – 125% (PV generation obtained using NREL PV-Watts for Memphis, TN http://rredc.nrel.gov/solar/calculators/pvwatts/version1/ and is compared with OK wind, calculated from simulated hourly LMPs at P&E Shelby drop-off point and wind profile provided by DNV GL)

References

EIA AEO2013 – *Annual Energy Outlook 2013: Electricity Market Module.* (EIA) http://www.eia.gov/forecasts/aeo/assumptions/pdf/electricity.pdf

EIA AEO2013 forecast – *Levelized Cost of New Generation Resources in the Annual Energy Outlook 2013*. (EIA) http://www.eia.gov/forecasts/aeo/pdf/electricity_generation.pdf.

EIA AEO2014 – *Annual Energy Outlook 2014 Early Release.* (EIA) http://www.eia.gov/forecasts/aeo/er/pdf/0383er(2014).pdf

LBL Wind Report – *Wind Technologies Market Report 2012.* (LBL) http://emp.lbl.gov/sites/all/files/lbnl-6356e.pdf

Synapse Report – *2013 Carbon Dioxide Price Forecast.* (Synapse) http://www.synapse-energy.com/Downloads/SynapseReport.2013-11.0.2013-Carbon-Forecast.13-098.pdf

EXHIBIT DB-5: Sensitivities for Levelized Cost Analysis

Input sensitivities and assumptions

- Input Sensitivities
    - PTC: [0, 23] $/MWh
    - Carbon dioxide price: [none, base, high]
        - None – no carbon costs in the future
        - Base – 15 $/ton in 2020 to 60 $/ton in 2040 and continued growth
        - High – 25 $/ton in 2020 to 90 $/ton in 2040 and continued growth
    - Natural gas price: [80, 100, 120]% of EIA AEO2014 projections
    - OK wind capacity factor: [50, 53, 56]%
    - TN wind capacity factor: [25, 30, 35]%
    - OK capacity credit: [16.7, 34.2]%

Variable Inputs (a)	Low	Med	High
PTC Value ($/MWh)	0		23
Carbon Dioxide Price (Scenario)	None	Base	High
Natural Gas Price (% of EIA forecast)	80	100	120
OK Wind Capacity Factor (%)	50	53	56
TN Wind Capacity Factor (%)	25	30	35

Variable Inputs (b)	Low	Med	High
PTC Value ($/MWh)	0		23
Carbon Dioxide Price (Scenario)	None	Base	High
Natural Gas Price (% of EIA forecast)	80	100	120
OK Wind Capacity Factor (%)	50	53	56
TN Wind Capacity Factor (%)	25	30	35

$2*2*3^4$=324 scenarios considered

The tables on the following pages show the levelized cost of the different generation methods including capacity value for each scenario. The numbers on the 2nd through 6th columns represent the low (0), med (1), and high (2) case as described above (except for the PTC column where 1 represents the high case). Values are in $/MWh. Scenarios (a) represent the low OK wind capacity credit case and (b) represent the reference case of 34.2%.

Oklahoma wind and Plains & Eastern Project levelized costs are lowest in 81% of all cases when using low OK wind capacity credit. It is lower than Coal, Nuclear, Solar and Tennessee wind in every scenario, and is cheaper than Gas in 81% of all scenarios. With the reference capacity credit, OK wind and Plains & Eastern Project levelized costs are cheaper than Gas in 89% of all scenarios, and 100% of scenarios when compared with the other generation methods.

Scenario (a)	PTC Value	Carbon Dioxide	Natural Gas	OK Wind CF	TN Wind CF	Plains & Eastern Project	Tennessee Project	Combined Cycle Gas	Nuclear	Utility-scale Solar
1	0	0	0	0	0	69.00	105.99	46.32	80.92	115.26
2	0	0	0	0	1	69.00	89.32	46.32	80.92	115.26
3	0	0	0	0	2	69.00	77.42	46.32	80.92	115.26
4	0	0	0	1	0	65.80	106.28	46.08	80.92	115.26
5	0	0	0	1	1	65.80	89.62	46.08	80.92	115.26
6	0	0	0	1	2	65.80	77.71	46.08	80.92	115.26
7	0	0	0	2	0	62.95	106.55	46.08	80.92	115.26
8	0	0	0	2	1	62.95	89.88	46.08	80.92	115.26
9	0	0	0	2	2	62.95	77.97	46.08	80.92	115.26
10	0	0	1	0	0	69.00	105.99	56.35	80.92	115.26
11	0	0	1	0	1	69.00	89.32	56.35	80.92	115.26
12	0	0	1	0	2	69.00	77.42	56.35	80.92	115.26
13	0	0	1	1	0	65.80	106.28	56.11	80.92	115.26
14	0	0	1	1	1	65.80	89.62	56.11	80.92	115.26
15	0	0	1	1	2	65.80	77.71	56.11	80.92	115.26
16	0	0	1	2	0	62.95	106.55	56.11	80.92	115.26
17	0	0	1	2	1	62.95	89.88	56.11	80.92	115.26
18	0	0	1	2	2	62.95	77.97	56.11	80.92	115.26
19	0	0	2	0	0	69.00	105.99	66.38	80.92	115.26
20	0	0	2	0	1	69.00	89.32	66.38	80.92	115.26
21	0	0	2	0	2	69.00	77.42	66.38	80.92	115.26
22	0	0	2	1	0	65.80	106.28	66.14	80.92	115.26
23	0	0	2	1	1	65.80	89.62	66.14	80.92	115.26
24	0	0	2	1	2	65.80	77.71	66.14	80.92	115.26
25	0	0	2	2	0	62.95	106.55	66.14	80.92	115.26
26	0	0	2	2	1	62.95	89.88	66.14	80.92	115.26
27	0	0	2	2	2	62.95	77.97	66.14	80.92	115.26
28	0	1	0	0	0	69.00	105.99	62.93	80.92	115.26
29	0	1	0	0	1	69.00	89.32	62.93	80.92	115.26
30	0	1	0	0	2	69.00	77.42	62.93	80.92	115.26
31	0	1	0	1	0	65.80	106.28	62.69	80.92	115.26
32	0	1	0	1	1	65.80	89.62	62.69	80.92	115.26
33	0	1	0	1	2	65.80	77.71	62.69	80.92	115.26
34	0	1	0	2	0	62.95	106.55	62.69	80.92	115.26
35	0	1	0	2	1	62.95	89.88	62.69	80.92	115.26
36	0	1	0	2	2	62.95	77.97	62.69	80.92	115.26
37	0	1	1	0	0	69.00	105.99	72.95	80.92	115.26
38	0	1	1	0	1	69.00	89.32	72.95	80.92	115.26
39	0	1	1	0	2	69.00	77.42	72.95	80.92	115.26
40	0	1	1	1	0	65.80	106.28	72.71	80.92	115.26
41	0	1	1	1	1	65.80	89.62	72.71	80.92	115.26
42	0	1	1	1	2	65.80	77.71	72.71	80.92	115.26
43	0	1	1	2	0	62.95	106.55	72.71	80.92	115.26
Scenario (a)	**PTC Value**	**Carbon Dioxide**	**Natural Gas**	**OK Wind CF**	**TN Wind CF**	**Plains & Eastern Project**	**Tennessee Project**	**Combined Cycle Gas**	**Nuclear**	**Utility-scale Solar**

Scenario (a)	PTC Value	Carbon Dioxide	Natural Gas	OK Wind CF	TN Wind CF	Plains & Eastern Project	Tennessee Project	Combined Cycle Gas	Nuclear	Utility-scale Solar
44	0	1	1	2	1	62.95	89.88	72.71	80.92	115.26
45	0	1	1	2	2	62.95	77.97	72.71	80.92	115.26
46	0	1	2	0	0	69.00	105.99	82.98	80.92	115.26
47	0	1	2	0	1	69.00	89.32	82.98	80.92	115.26
48	0	1	2	0	2	69.00	77.42	82.98	80.92	115.26
49	0	1	2	1	0	65.80	106.28	82.74	80.92	115.26
50	0	1	2	1	1	65.80	89.62	82.74	80.92	115.26
51	0	1	2	1	2	65.80	77.71	82.74	80.92	115.26
52	0	1	2	2	0	62.95	106.55	82.74	80.92	115.26
53	0	1	2	2	1	62.95	89.88	82.74	80.92	115.26
54	0	1	2	2	2	62.95	77.97	82.74	80.92	115.26
55	0	2	0	0	0	69.00	105.99	71.73	80.92	115.26
56	0	2	0	0	1	69.00	89.32	71.73	80.92	115.26
57	0	2	0	0	2	69.00	77.42	71.73	80.92	115.26
58	0	2	0	1	0	65.80	106.28	71.49	80.92	115.26
59	0	2	0	1	1	65.80	89.62	71.49	80.92	115.26
60	0	2	0	1	2	65.80	77.71	71.49	80.92	115.26
61	0	2	0	2	0	62.95	106.55	71.49	80.92	115.26
62	0	2	0	2	1	62.95	89.88	71.49	80.92	115.26
63	0	2	0	2	2	62.95	77.97	71.49	80.92	115.26
64	0	2	1	0	0	69.00	105.99	81.76	80.92	115.26
65	0	2	1	0	1	69.00	89.32	81.76	80.92	115.26
66	0	2	1	0	2	69.00	77.42	81.76	80.92	115.26
67	0	2	1	1	0	65.80	106.28	81.52	80.92	115.26
68	0	2	1	1	1	65.80	89.62	81.52	80.92	115.26
69	0	2	1	1	2	65.80	77.71	81.52	80.92	115.26
70	0	2	1	2	0	62.95	106.55	81.52	80.92	115.26
71	0	2	1	2	1	62.95	89.88	81.52	80.92	115.26
72	0	2	1	2	2	62.95	77.97	81.52	80.92	115.26
73	0	2	2	0	0	69.00	105.99	91.78	80.92	115.26
74	0	2	2	0	1	69.00	89.32	91.78	80.92	115.26
75	0	2	2	0	2	69.00	77.42	91.78	80.92	115.26
76	0	2	2	1	0	65.80	106.28	91.54	80.92	115.26
77	0	2	2	1	1	65.80	89.62	91.54	80.92	115.26
78	0	2	2	1	2	65.80	77.71	91.54	80.92	115.26
79	0	2	2	2	0	62.95	106.55	91.54	80.92	115.26
80	0	2	2	2	1	62.95	89.88	91.54	80.92	115.26
81	0	2	2	2	2	62.95	77.97	91.54	80.92	115.26
82	1	0	0	0	0	40.06	80.12	46.32	80.92	115.26
83	1	0	0	0	1	40.06	63.46	46.32	80.92	115.26
84	1	0	0	0	2	40.06	51.55	46.32	80.92	115.26
85	1	0	0	1	0	36.86	80.42	46.08	80.92	115.26
86	1	0	0	1	1	36.86	63.75	46.08	80.92	115.26
Scenario (a)	**PTC Value**	**Carbon Dioxide**	**Natural Gas**	**OK Wind CF**	**TN Wind CF**	**Plains & Eastern Project**	**Tennessee Project**	**Combined Cycle Gas**	**Nuclear**	**Utility-scale Solar**

Scenario (a)	PTC Value	Carbon Dioxide	Natural Gas	OK Wind CF	TN Wind CF	Plains & Eastern Project	Tennessee Project	Combined Cycle Gas	Nuclear	Utility-scale Solar
87	1	0	0	1	2	36.86	51.84	46.08	80.92	115.26
88	1	0	0	2	0	34.01	80.68	46.08	80.92	115.26
89	1	0	0	2	1	34.01	64.01	46.08	80.92	115.26
90	1	0	0	2	2	34.01	52.11	46.08	80.92	115.26
91	1	0	1	0	0	40.06	80.12	56.35	80.92	115.26
92	1	0	1	0	1	40.06	63.46	56.35	80.92	115.26
93	1	0	1	0	2	40.06	51.55	56.35	80.92	115.26
94	1	0	1	1	0	36.86	80.42	56.11	80.92	115.26
95	1	0	1	1	1	36.86	63.75	56.11	80.92	115.26
96	1	0	1	1	2	36.86	51.84	56.11	80.92	115.26
97	1	0	1	2	0	34.01	80.68	56.11	80.92	115.26
98	1	0	1	2	1	34.01	64.01	56.11	80.92	115.26
99	1	0	1	2	2	34.01	52.11	56.11	80.92	115.26
100	1	0	2	0	0	40.06	80.12	66.38	80.92	115.26
101	1	0	2	0	1	40.06	63.46	66.38	80.92	115.26
102	1	0	2	0	2	40.06	51.55	66.38	80.92	115.26
103	1	0	2	1	0	36.86	80.42	66.14	80.92	115.26
104	1	0	2	1	1	36.86	63.75	66.14	80.92	115.26
105	1	0	2	1	2	36.86	51.84	66.14	80.92	115.26
106	1	0	2	2	0	34.01	80.68	66.14	80.92	115.26
107	1	0	2	2	1	34.01	64.01	66.14	80.92	115.26
108	1	0	2	2	2	34.01	52.11	66.14	80.92	115.26
109	1	1	0	0	0	40.06	80.12	62.93	80.92	115.26
110	1	1	0	0	1	40.06	63.46	62.93	80.92	115.26
111	1	1	0	0	2	40.06	51.55	62.93	80.92	115.26
112	1	1	0	1	0	36.86	80.42	62.69	80.92	115.26
113	1	1	0	1	1	36.86	63.75	62.69	80.92	115.26
114	1	1	0	1	2	36.86	51.84	62.69	80.92	115.26
115	1	1	0	2	0	34.01	80.68	62.69	80.92	115.26
116	1	1	0	2	1	34.01	64.01	62.69	80.92	115.26
117	1	1	0	2	2	34.01	52.11	62.69	80.92	115.26
118	1	1	1	0	0	40.06	80.12	72.95	80.92	115.26
119	1	1	1	0	1	40.06	63.46	72.95	80.92	115.26
120	1	1	1	0	2	40.06	51.55	72.95	80.92	115.26
121	1	1	1	1	0	36.86	80.42	72.71	80.92	115.26
122	1	1	1	1	1	36.86	63.75	72.71	80.92	115.26
123	1	1	1	1	2	36.86	51.84	72.71	80.92	115.26
124	1	1	1	2	0	34.01	80.68	72.71	80.92	115.26
125	1	1	1	2	1	34.01	64.01	72.71	80.92	115.26
126	1	1	1	2	2	34.01	52.11	72.71	80.92	115.26
127	1	1	2	0	0	40.06	80.12	82.98	80.92	115.26
128	1	1	2	0	1	40.06	63.46	82.98	80.92	115.26
129	1	1	2	0	2	40.06	51.55	82.98	80.92	115.26
Scenario (a)	**PTC Value**	**Carbon Dioxide**	**Natural Gas**	**OK Wind CF**	**TN Wind CF**	**Plains & Eastern Project**	**Tennessee Project**	**Combined Cycle Gas**	**Nuclear**	**Utility-scale Solar**

Scenario (a)	PTC Value	Carbon Dioxide	Natural Gas	OK Wind CF	TN Wind CF	Plains & Eastern Project	Tennessee Project	Combined Cycle Gas	Nuclear	Utility-scale Solar
130	1	1	2	1	0	36.86	80.42	82.74	80.92	115.26
131	1	1	2	1	1	36.86	63.75	82.74	80.92	115.26
132	1	1	2	1	2	36.86	51.84	82.74	80.92	115.26
133	1	1	2	2	0	34.01	80.68	82.74	80.92	115.26
134	1	1	2	2	1	34.01	64.01	82.74	80.92	115.26
135	1	1	2	2	2	34.01	52.11	82.74	80.92	115.26
136	1	2	0	0	0	40.06	80.12	71.73	80.92	115.26
137	1	2	0	0	1	40.06	63.46	71.73	80.92	115.26
138	1	2	0	0	2	40.06	51.55	71.73	80.92	115.26
139	1	2	0	1	0	36.86	80.42	71.49	80.92	115.26
140	1	2	0	1	1	36.86	63.75	71.49	80.92	115.26
141	1	2	0	1	2	36.86	51.84	71.49	80.92	115.26
142	1	2	0	2	0	34.01	80.68	71.49	80.92	115.26
143	1	2	0	2	1	34.01	64.01	71.49	80.92	115.26
144	1	2	0	2	2	34.01	52.11	71.49	80.92	115.26
145	1	2	1	0	0	40.06	80.12	81.76	80.92	115.26
146	1	2	1	0	1	40.06	63.46	81.76	80.92	115.26
147	1	2	1	0	2	40.06	51.55	81.76	80.92	115.26
148	1	2	1	1	0	36.86	80.42	81.52	80.92	115.26
149	1	2	1	1	1	36.86	63.75	81.52	80.92	115.26
150	1	2	1	1	2	36.86	51.84	81.52	80.92	115.26
151	1	2	1	2	0	34.01	80.68	81.52	80.92	115.26
152	1	2	1	2	1	34.01	64.01	81.52	80.92	115.26
153	1	2	1	2	2	34.01	52.11	81.52	80.92	115.26
154	1	2	2	0	0	40.06	80.12	91.78	80.92	115.26
155	1	2	2	0	1	40.06	63.46	91.78	80.92	115.26
156	1	2	2	0	2	40.06	51.55	91.78	80.92	115.26
157	1	2	2	1	0	36.86	80.42	91.54	80.92	115.26
158	1	2	2	1	1	36.86	63.75	91.54	80.92	115.26
159	1	2	2	1	2	36.86	51.84	91.54	80.92	115.26
160	1	2	2	2	0	34.01	80.68	91.54	80.92	115.26
161	1	2	2	2	1	34.01	64.01	91.54	80.92	115.26
162	1	2	2	2	2	34.01	52.11	91.54	80.92	115.26
Scenario (a)	**PTC Value**	**Carbon Dioxide**	**Natural Gas**	**OK Wind CF**	**TN Wind CF**	**Plains & Eastern Project**	**Tennessee Project**	**Combined Cycle Gas**	**Nuclear**	**Utility-scale Solar**

Scenario (b)	PTC Value	Carbon Dioxide	Natural Gas	OK Wind CF	TN Wind CF	Plains & Eastern Project	Tennessee Project	Combined Cycle Gas	Nuclear	Utility-scale Solar
1	0	0	0	0	0	62.91	100.55	46.32	80.92	115.26
2	0	0	0	0	1	62.91	83.88	46.32	80.92	115.26
3	0	0	0	0	2	62.91	71.98	46.32	80.92	115.26
4	0	0	0	1	0	60.06	101.15	46.08	80.92	115.26
5	0	0	0	1	1	60.06	84.49	46.08	80.92	115.26
6	0	0	0	1	2	60.06	72.58	46.08	80.92	115.26
7	0	0	0	2	0	57.52	101.69	46.08	80.92	115.26
8	0	0	0	2	1	57.52	85.03	46.08	80.92	115.26
9	0	0	0	2	2	57.52	73.12	46.08	80.92	115.26
10	0	0	1	0	0	62.91	100.55	56.35	80.92	115.26
11	0	0	1	0	1	62.91	83.88	56.35	80.92	115.26
12	0	0	1	0	2	62.91	71.98	56.35	80.92	115.26
13	0	0	1	1	0	60.06	101.15	56.11	80.92	115.26
14	0	0	1	1	1	60.06	84.49	56.11	80.92	115.26
15	0	0	1	1	2	60.06	72.58	56.11	80.92	115.26
16	0	0	1	2	0	57.52	101.69	56.11	80.92	115.26
17	0	0	1	2	1	57.52	85.03	56.11	80.92	115.26
18	0	0	1	2	2	57.52	73.12	56.11	80.92	115.26
19	0	0	2	0	0	62.91	100.55	66.38	80.92	115.26
20	0	0	2	0	1	62.91	83.88	66.38	80.92	115.26
21	0	0	2	0	2	62.91	71.98	66.38	80.92	115.26
22	0	0	2	1	0	60.06	101.15	66.14	80.92	115.26
23	0	0	2	1	1	60.06	84.49	66.14	80.92	115.26
24	0	0	2	1	2	60.06	72.58	66.14	80.92	115.26
25	0	0	2	2	0	57.52	101.69	66.14	80.92	115.26
26	0	0	2	2	1	57.52	85.03	66.14	80.92	115.26
27	0	0	2	2	2	57.52	73.12	66.14	80.92	115.26
28	0	1	0	0	0	62.91	100.55	62.93	80.92	115.26
29	0	1	0	0	1	62.91	83.88	62.93	80.92	115.26
30	0	1	0	0	2	62.91	71.98	62.93	80.92	115.26
31	0	1	0	1	0	60.06	101.15	62.69	80.92	115.26
32	0	1	0	1	1	60.06	84.49	62.69	80.92	115.26
33	0	1	0	1	2	60.06	72.58	62.69	80.92	115.26
34	0	1	0	2	0	57.52	101.69	62.69	80.92	115.26
35	0	1	0	2	1	57.52	85.03	62.69	80.92	115.26
36	0	1	0	2	2	57.52	73.12	62.69	80.92	115.26
37	0	1	1	0	0	62.91	100.55	72.95	80.92	115.26
38	0	1	1	0	1	62.91	83.88	72.95	80.92	115.26
39	0	1	1	0	2	62.91	71.98	72.95	80.92	115.26
40	0	1	1	1	0	60.06	101.15	72.71	80.92	115.26
41	0	1	1	1	1	60.06	84.49	72.71	80.92	115.26
42	0	1	1	1	2	60.06	72.58	72.71	80.92	115.26
43	0	1	1	2	0	57.52	101.69	72.71	80.92	115.26
Scenario (b)	PTC Value	Carbon Dioxide	Natural Gas	OK Wind CF	TN Wind CF	Plains & Eastern Project	Tennessee Project	Combined Cycle Gas	Nuclear	Utility-scale Solar

Scenario (b)	PTC Value	Carbon Dioxide	Natural Gas	OK Wind CF	TN Wind CF	Plains & Eastern Project	Tennessee Project	Combined Cycle Gas	Nuclear	Utility-scale Solar
44	0	1	1	2	1	57.52	85.03	72.71	80.92	115.26
45	0	1	1	2	2	57.52	73.12	72.71	80.92	115.26
46	0	1	2	0	0	62.91	100.55	82.98	80.92	115.26
47	0	1	2	0	1	62.91	83.88	82.98	80.92	115.26
48	0	1	2	0	2	62.91	71.98	82.98	80.92	115.26
49	0	1	2	1	0	60.06	101.15	82.74	80.92	115.26
50	0	1	2	1	1	60.06	84.49	82.74	80.92	115.26
51	0	1	2	1	2	60.06	72.58	82.74	80.92	115.26
52	0	1	2	2	0	57.52	101.69	82.74	80.92	115.26
53	0	1	2	2	1	57.52	85.03	82.74	80.92	115.26
54	0	1	2	2	2	57.52	73.12	82.74	80.92	115.26
55	0	2	0	0	0	62.91	100.55	71.73	80.92	115.26
56	0	2	0	0	1	62.91	83.88	71.73	80.92	115.26
57	0	2	0	0	2	62.91	71.98	71.73	80.92	115.26
58	0	2	0	1	0	60.06	101.15	71.49	80.92	115.26
59	0	2	0	1	1	60.06	84.49	71.49	80.92	115.26
60	0	2	0	1	2	60.06	72.58	71.49	80.92	115.26
61	0	2	0	2	0	57.52	101.69	71.49	80.92	115.26
62	0	2	0	2	1	57.52	85.03	71.49	80.92	115.26
63	0	2	0	2	2	57.52	73.12	71.49	80.92	115.26
64	0	2	1	0	0	62.91	100.55	81.76	80.92	115.26
65	0	2	1	0	1	62.91	83.88	81.76	80.92	115.26
66	0	2	1	0	2	62.91	71.98	81.76	80.92	115.26
67	0	2	1	1	0	60.06	101.15	81.52	80.92	115.26
68	0	2	1	1	1	60.06	84.49	81.52	80.92	115.26
69	0	2	1	1	2	60.06	72.58	81.52	80.92	115.26
70	0	2	1	2	0	57.52	101.69	81.52	80.92	115.26
71	0	2	1	2	1	57.52	85.03	81.52	80.92	115.26
72	0	2	1	2	2	57.52	73.12	81.52	80.92	115.26
73	0	2	2	0	0	62.91	100.55	91.78	80.92	115.26
74	0	2	2	0	1	62.91	83.88	91.78	80.92	115.26
75	0	2	2	0	2	62.91	71.98	91.78	80.92	115.26
76	0	2	2	1	0	60.06	101.15	91.54	80.92	115.26
77	0	2	2	1	1	60.06	84.49	91.54	80.92	115.26
78	0	2	2	1	2	60.06	72.58	91.54	80.92	115.26
79	0	2	2	2	0	57.52	101.69	91.54	80.92	115.26
80	0	2	2	2	1	57.52	85.03	91.54	80.92	115.26
81	0	2	2	2	2	57.52	73.12	91.54	80.92	115.26
82	1	0	0	0	0	33.98	74.69	46.32	80.92	115.26
83	1	0	0	0	1	33.98	58.02	46.32	80.92	115.26
84	1	0	0	0	2	33.98	46.11	46.32	80.92	115.26
85	1	0	0	1	0	31.12	75.29	46.08	80.92	115.26
86	1	0	0	1	1	31.12	58.62	46.08	80.92	115.26
Scenario (b)	**PTC Value**	**Carbon Dioxide**	**Natural Gas**	**OK Wind CF**	**TN Wind CF**	**Plains & Eastern Project**	**Tennessee Project**	**Combined Cycle Gas**	**Nuclear**	**Utility-scale Solar**

Scenario (b)	PTC Value	Carbon Dioxide	Natural Gas	OK Wind CF	TN Wind CF	Plains & Eastern Project	Tennessee Project	Combined Cycle Gas	Nuclear	Utility-scale Solar
87	1	0	0	1	2	31.12	46.72	46.08	80.92	115.26
88	1	0	0	2	0	28.58	75.83	46.08	80.92	115.26
89	1	0	0	2	1	28.58	59.16	46.08	80.92	115.26
90	1	0	0	2	2	28.58	47.25	46.08	80.92	115.26
91	1	0	1	0	0	33.98	74.69	56.35	80.92	115.26
92	1	0	1	0	1	33.98	58.02	56.35	80.92	115.26
93	1	0	1	0	2	33.98	46.11	56.35	80.92	115.26
94	1	0	1	1	0	31.12	75.29	56.11	80.92	115.26
95	1	0	1	1	1	31.12	58.62	56.11	80.92	115.26
96	1	0	1	1	2	31.12	46.72	56.11	80.92	115.26
97	1	0	1	2	0	28.58	75.83	56.11	80.92	115.26
98	1	0	1	2	1	28.58	59.16	56.11	80.92	115.26
99	1	0	1	2	2	28.58	47.25	56.11	80.92	115.26
100	1	0	2	0	0	33.98	74.69	66.38	80.92	115.26
101	1	0	2	0	1	33.98	58.02	66.38	80.92	115.26
102	1	0	2	0	2	33.98	46.11	66.38	80.92	115.26
103	1	0	2	1	0	31.12	75.29	66.14	80.92	115.26
104	1	0	2	1	1	31.12	58.62	66.14	80.92	115.26
105	1	0	2	1	2	31.12	46.72	66.14	80.92	115.26
106	1	0	2	2	0	28.58	75.83	66.14	80.92	115.26
107	1	0	2	2	1	28.58	59.16	66.14	80.92	115.26
108	1	0	2	2	2	28.58	47.25	66.14	80.92	115.26
109	1	1	0	0	0	33.98	74.69	62.93	80.92	115.26
110	1	1	0	0	1	33.98	58.02	62.93	80.92	115.26
111	1	1	0	0	2	33.98	46.11	62.93	80.92	115.26
112	1	1	0	1	0	31.12	75.29	62.69	80.92	115.26
113	1	1	0	1	1	31.12	58.62	62.69	80.92	115.26
114	1	1	0	1	2	31.12	46.72	62.69	80.92	115.26
115	1	1	0	2	0	28.58	75.83	62.69	80.92	115.26
116	1	1	0	2	1	28.58	59.16	62.69	80.92	115.26
117	1	1	0	2	2	28.58	47.25	62.69	80.92	115.26
118	1	1	1	0	0	33.98	74.69	72.95	80.92	115.26
119	1	1	1	0	1	33.98	58.02	72.95	80.92	115.26
120	1	1	1	0	2	33.98	46.11	72.95	80.92	115.26
121	1	1	1	1	0	31.12	75.29	72.71	80.92	115.26
122	1	1	1	1	1	31.12	58.62	72.71	80.92	115.26
123	1	1	1	1	2	31.12	46.72	72.71	80.92	115.26
124	1	1	1	2	0	28.58	75.83	72.71	80.92	115.26
125	1	1	1	2	1	28.58	59.16	72.71	80.92	115.26
126	1	1	1	2	2	28.58	47.25	72.71	80.92	115.26
127	1	1	2	0	0	33.98	74.69	82.98	80.92	115.26
128	1	1	2	0	1	33.98	58.02	82.98	80.92	115.26
129	1	1	2	0	2	33.98	46.11	82.98	80.92	115.26
Scenario (b)	**PTC Value**	**Carbon Dioxide**	**Natural Gas**	**OK Wind CF**	**TN Wind CF**	**Plains & Eastern Project**	**Tennessee Project**	**Combined Cycle Gas**	**Nuclear**	**Utility-scale Solar**

Scenario (b)	PTC Value	Carbon Dioxide	Natural Gas	OK Wind CF	TN Wind CF	Plains & Eastern Project	Tennessee Project	Combined Cycle Gas	Nuclear	Utility-scale Solar
130	1	1	2	1	0	31.12	75.29	82.74	80.92	115.26
131	1	1	2	1	1	31.12	58.62	82.74	80.92	115.26
132	1	1	2	1	2	31.12	46.72	82.74	80.92	115.26
133	1	1	2	2	0	28.58	75.83	82.74	80.92	115.26
134	1	1	2	2	1	28.58	59.16	82.74	80.92	115.26
135	1	1	2	2	2	28.58	47.25	82.74	80.92	115.26
136	1	2	0	0	0	33.98	74.69	71.73	80.92	115.26
137	1	2	0	0	1	33.98	58.02	71.73	80.92	115.26
138	1	2	0	0	2	33.98	46.11	71.73	80.92	115.26
139	1	2	0	1	0	31.12	75.29	71.49	80.92	115.26
140	1	2	0	1	1	31.12	58.62	71.49	80.92	115.26
141	1	2	0	1	2	31.12	46.72	71.49	80.92	115.26
142	1	2	0	2	0	28.58	75.83	71.49	80.92	115.26
143	1	2	0	2	1	28.58	59.16	71.49	80.92	115.26
144	1	2	0	2	2	28.58	47.25	71.49	80.92	115.26
145	1	2	1	0	0	33.98	74.69	81.76	80.92	115.26
146	1	2	1	0	1	33.98	58.02	81.76	80.92	115.26
147	1	2	1	0	2	33.98	46.11	81.76	80.92	115.26
148	1	2	1	1	0	31.12	75.29	81.52	80.92	115.26
149	1	2	1	1	1	31.12	58.62	81.52	80.92	115.26
150	1	2	1	1	2	31.12	46.72	81.52	80.92	115.26
151	1	2	1	2	0	28.58	75.83	81.52	80.92	115.26
152	1	2	1	2	1	28.58	59.16	81.52	80.92	115.26
153	1	2	1	2	2	28.58	47.25	81.52	80.92	115.26
154	1	2	2	0	0	33.98	74.69	91.78	80.92	115.26
155	1	2	2	0	1	33.98	58.02	91.78	80.92	115.26
156	1	2	2	0	2	33.98	46.11	91.78	80.92	115.26
157	1	2	2	1	0	31.12	75.29	91.54	80.92	115.26
158	1	2	2	1	1	31.12	58.62	91.54	80.92	115.26
159	1	2	2	1	2	31.12	46.72	91.54	80.92	115.26
160	1	2	2	2	0	28.58	75.83	91.54	80.92	115.26
161	1	2	2	2	1	28.58	59.16	91.54	80.92	115.26
162	1	2	2	2	2	28.58	47.25	91.54	80.92	115.26
Scenario (b)	**PTC Value**	**Carbon Dioxide**	**Natural Gas**	**OK Wind CF**	**TN Wind CF**	**Plains & Eastern Project**	**Tennessee Project**	**Combined Cycle Gas**	**Nuclear**	**Utility-scale Solar**

EXHIBIT DB-6: Confidential Financial Statements (to be submitted under seal following entry of Protective Order)

EXHIBIT DB-7: Precedent Transmission Financings

Exhibit DB 07

Precedent Capital Markets Transactions for U.S. Transmission Projects

Date	Project	Revenue Model	Type of Investment	Lead Investor/Arranger	Amount (approximate)	
Sep-03	PATH 15	Rate Recovery	Equity	ArcLight, Energy Investors Fund	$	38,300,000
Sep-03	PATH 15	Rate Recovery	Debt	Citigroup and Macquarie Securities	$	181,700,000
Jul-05	Neptune	Capacity Sales	Equity	Energy Investors Funds and Starwood Capital Group	$	97,000,000
Jul-05	Neptune	Capacity Sales	Debt	Societe General	$	600,000,000
Feb-06	Cross-Sound Cable	Capacity Sales	Equity	Babcock & Brown Infrastructure	$	25,700,000
Feb-06	Cross-Sound Cable	Capacity Sales	Debt	Commonwealth Bank of Australia	$	193,100,000
Oct-07	Trans-Bay Cable	Rate Recovery	Debt	Bayerische Landesbank	$	465,000,000
Oct-07	Trans-Bay Cable	Rate Recovery	Equity	Steel River Infrastructure Partners	$	50,000,000
Aug-08	Trans-Allegheny Interstate Line Company	Rate Recovery	Debt	BNP Paribas and Citigroup	$	550,000,000
Aug-09	Linden Variable Frequency Transformer	Capacity Sales	Equity	GE Financial Services		Undisclosed
Nov-10	Electric Infrastructure Alliance of America REIT (various assets)	Rate Recovery	Equity	Hunt, TIAA-CREF, Marubeni, John Hancock	$	2,100,000,000
Jun-11	Sharyland CREZ	Rate Recovery	Debt	Royal Bank of Canada (RBC), Royal Bank of Scotland (RBS), and Societe Generale	$	730,000,000
Jul-11	Cross-Texas Transmission CREZ	Rate Recovery	Debt	Mitsubishi UFJ, BNP Paribas, Dexia, Citigroup	$	430,000,000

Exhibit DB 07

Precedent Capital Markets Transactions for U.S. Transmission Projects

Date	Project	Revenue Model	Type of Investment	Lead Investor/Arranger	Amount (approximate)	
Aug-11	Wind Energy Transmission Texas CREZ	Rate Recovery	Debt	Mitsubishi UFJ, Deutsche Bank	$	500,000,000
Nov-11	Lone Star CREZ	Rate Recovery	Debt	Mitsubishi UFJ, Mizuho, Credit Agricole, RBC	$	386,600,000
Dec-11	Neptune	Capacity Sales	Equity	California Public Employees Retirement System (Calpers)		Undisclosed
May-11	Hudson Transmission	Capacity Sales	Equity	EIF, Starwood	$	178,000,000
May-11	Hudson Transmission	Capacity Sales	Debt	Societe General	$	691,000,000
Mar-13	PATH 15	Rate Recovery	Equity	Duke-ATC	$	56,000,000
				Total	**$**	**7,272,400,000**

Transactions not originally on Rock Island Exhibit 10.7 are shaded in gray.

EXHIBIT DB-8: Clean Line Energy Partners’ Management Team Financial Experience

Exhibit DB 08
Clean Line Energy Partners Managment Team Financing Experience

I. PROJECT FINANCE

Team Members	Project(s)	Amount (USD mm)	Type	Year
Skelly, Desai, Berry	Lost Lakes Wind Farm	90	Institutional Equity	2009
Skelly, Desai, Berry	Rattlesnake Road Wind Farm Pioneer Prairie Wind Farm Meridian Way Wind Farm	520	Institutional Equity (portfolio)	2008
Skelly, Desai, Berry	Blue Canyon II Wind Farm Maple Ridge I Wind Farm Madison Wind Farm Lone Star I Wind Farm Twin Groves I Wind Farm	722	Institutional Equity (portfolio)	2007
Skelly, Desai, Berry	Twin Groves II Wind Farm Lone Star II Wind Farm Prairie Star Wind Farm Elkhorn Wind Farm	700	Institutional Equity (portfolio)	2007
Skelly, Desai, Berry	Blue Canyon II Wind Farm Maple Ridge I Wind Farm	263	Debt	2005
Skelly, Desai	Blue Canyon I Wind Farm	80	Institutional Equity	2003
Skelly	Tierras Morenas Wind Farm	20	Debt	1998
Skelly	Tierras Morenas Wind Farm	10	Institutional Equity	1998
	TOTAL	**2,405**		

II. OTHER

Team Members	Transaction	Amount (USD mm)	Type	Year
Kottler	Sale of gas processing assets for undisclosed company	35	Sale	2009
Kottler	Sale of refinery assets for undisclosed company	204	Sale	2009
Skelly, Desai, Berry	EDP Renewables	2200	IPO	2008
Skelly, Desai, Berry	Horizon Wind Energy	2700	Sale	2007
Hurtado	Globeleq's Latin American portfolio	540	Sale	2007

Exhibit DB 08
Clean Line Energy Partners Managment Team Financing Experience

II. OTHER

Team Members	Transaction	Amount (USD mm)	Type	Year
Kottler	Loews Corporation acquisition of Dominion Energy's E&P properties in Alabama, Michigan and Texas	4000	Acquisition	2007
Kottler	Represented Wachovia as lead agent in senior secured credit facility for Exterran Holdings	1600	Senior Secured Credit Facility	2007
Kottler	BreitBurn Energy acquisition of Michigan, Indiana and Kentucky natural gas, oil and midstream assets	1474	Acquisition	2007
Kottler	BreitBurn Energy acquisition of oil, properties and pipeline assets in Florida	100	Acquisition	2007
Hurtado	El Paso's Central American portfolio	150	Acquisition	2006
Skelly, Desai	Zilkha Renewable Energy	Confidential	Sale	2005
Skelly	Mill Run Wind Farm & Somerset Wind Farm	27	Sale	2003
Hurtado	Multiple power asset transactions for Duke Energy North America (some deals are itemized below)	1000	Varied	2001
Hurtado	Acquisition of New Albany facility in Mississippi	150	Acquisition	2001
Hurtado	Sale of McClain facility in Oklahoma	450	Sale	2001
Hurtado	Dissolution of VMC Partnership in Indiana and Ohio	100	2 sales, 1 acquisition	2001
Hurtado	Sale of Kauffman greenfield development in Texas	5	Sale	2001
Skelly	Top of Iowa Wind Farm	90	Sale	2001
Desai	Active Power		Equity Purchase	1999
Desai	Mariner Energy	179	Equity Purchase	1996

TOTAL **14,060**

EXHIBIT DB-9: FERC Order on Negotiated Rate Approval

140 FERC 61,187
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Jon Wellinghoff, Chairman;
Philip D. Moeller, John R. Norris,
Cheryl A. LaFleur, and Tony T. Clark.

Plains and Eastern Clean Line LLC
Plains and Eastern Clean Line Oklahoma LLC

Docket No. ER12-2150-000

ORDER CONDITIONALLY AUTHORIZING PROPOSAL AND GRANTING WAIVERS

(Issued September 7, 2012)

1. On June 29, 2012, Plains and Eastern Clean Line LLC and Plains and Eastern Clean Line Oklahoma LLC (Applicants) filed a request for authorization to charge negotiated rates for transmission rights on a proposed high voltage direct current (HVDC) merchant transmission project (Project) and for waivers of certain Commission regulations.[1] In this order, the Commission conditionally authorizes Applicants to charge negotiated rates for transmission rights on the Project and grants Applicants' request for waivers.

I. Background

A. Applicants

2. Applicants are two wholly owned subsidiaries of Plains and Eastern Clean Line Holdings LLC (Plains and Eastern Holdings), a limited liability company organized under the laws of the state of Delaware. Plains and Eastern Holdings is a wholly owned

[1] Commission precedent distinguishes merchant transmission projects from traditional public utilities in that the developers of merchant projects assume all of the market risk of a project and have no captive customers from which to recover the cost of the project. *See, e.g.*, *Hudson Transmission Partners, LLC*, 135 FERC ¶ 61,104 (2011) (*Hudson Transmission*); *Champlain Hudson Power Express, Inc.*, 132 FERC ¶ 61,006 (2010) (*Champlain Hudson*); *Chinook Power Transmission, LLC*, 126 FERC ¶ 61,134 (2009) (*Chinook*).

subsidiary of Clean Line Energy Partners LLC (Clean Line), which is also a limited liability company organized under the laws of Delaware. Zam Ventures, L.P., a subsidiary of Ziff Brothers Investments, L.L.C., is the majority owner of Clean Line and the principal investment vehicle for ZBI Ventures, L.L.C., which Applicants describe as focused on long-term investments in the energy sector.

B. Description of Project

3. The Project is a 750-mile, 600 kV HVDC transmission line and associated facilities capable of delivering up to 3,500 MW from western Oklahoma, southwestern Kansas, and the Texas Panhandle to the Tennessee Valley Authority's (TVA) 500 kV system near Memphis, Tennessee.[2] Applicants expect the Project to deliver approximately 15 million MWh of energy per year from western Oklahoma to its eastern end in Tennessee. According to Applicants, the Project will capitalize on the rich and energetic wind resources in areas that are capable of producing wind-generated electricity efficiently and at low cost.[3] Applicants assert that the Project is an efficient and cost-effective way to satisfy the increasing demand for renewable energy and wind-generated electricity specifically in Arkansas, Tennessee, and states farther east.[4]

4. Applicants state that, while the specific route of the Project has yet to be determined, they continue to conduct field reviews and stakeholder outreach to determine the optimal route for the line.[5] Applicants state that they have conducted more than 1,500 meetings related to development of the Project, which has provided guidance in identifying one corridor approximately five to eight miles wide in which to consider siting the Project.[6] In addition, Applicants assert that they have obtained a certificate of public convenience and necessity to operate as a transmission public utility in the state of Oklahoma, they are continuing to seek public utility status and analyze permitting options in the state of Arkansas, and they will file an application in 2013 with TVA requesting a certificate of convenience and necessity to develop, own, and operate transmission lines in the state of Tennessee. Furthermore, Applicants provide that, pursuant to section 1222 of the Energy Policy Act of 2005, the Department of Energy, in consultation with the

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[2] Application at 6.

[3] *Id.* at 8.

[4] *Id.* at 9 and n.9.

[5] *Id.* at 7.

[6] *Id.* at 7-8.

Southwestern Power Administration, has indicated its willingness to enter into a development agreement and begin a federal environmental review of the Project under the National Environmental Policy Act to expedite the permitting process.[7] Upon completion of the Project, Applicants state that they will turn over operation of the Project to the Southwest Power Pool, Inc. (SPP) or another qualified entity that performs functions similar to a Regional Transmission Organization (RTO) or Independent System Operator (ISO) and/or offers non-discriminatory service pursuant to the *pro forma* Open Access Transmission Tariff (OATT) requirements.[8]

C. Application

5. Applicants request authority to sell transmission rights on the Project at negotiated rates and approval of their proposal to allocate up to 75 percent of the planned Project's capacity to anchor customers. Applicants commit to holding an open season for the remaining 25 percent of the Project's capacity, as well as for any additional transmission capacity not secured by anchor customers.[9] Applicants also commit to: (1) offer the same rates, terms, and conditions that are offered to anchor customers to all open season participants; (2) ensure transparency in the open season process; and (3) report the results of the open season to the Commission. They also commit to filing an OATT administered by the qualified entity to which they hand over operational control of the Project or a rate schedule in the entity's OATT.

6. Applicants state that obstacles to financing merchant transmission projects can be reduced to the extent that a transmission developer can negotiate financially secure pre-subscription agreements with creditworthy anchor customers. Applicants explain that they face a particularly difficult task in developing the Project because it requires coordinating construction of its transmission facility with the construction of new, renewable energy resources.[10]

7. Applicants contend that they meet the four-factor analysis as outlined in *Chinook* for approval of negotiated rate authority.[11]

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[7] *Id.* at 12-13.

[8] *Id.* at 1.

[9] *Id.* at 24.

[10] *Id.* at 22.

[11] *Chinook*, 126 FERC ¶ 61,134 at PP 37-53.

II. Notice, Intervention, and Responsive Pleadings

8. Notice of Applicants' filing was published in the *Federal Register*, 77 Fed. Reg. 40,875 (2012), with interventions and protests due on or before July 20, 2012. Exelon Corporation and Arkansas Electric Energy Consumers, Inc. filed timely motions to intervene. Arkansas Public Service Commission (Arkansas Commission) filed a motion to intervene out-of-time.

III. Discussion

A. Procedural Matters

9. Pursuant to Rule 214 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214 (2012), the timely, unopposed motions to intervene serve to make the entities that filed them parties to this proceeding. Pursuant to Rule 214(d) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214(d) (2012), the Commission will grant the Arkansas Commission's late-filed motion to intervene given its interest in the proceeding, the early stage of the proceeding, and the absence of undue prejudice or delay.

B. Negotiated Rate Authority

10. In addressing requests for negotiated rate authority from merchant transmission providers, the Commission has demonstrated a commitment to fostering the development of such projects where reasonable and meaningful protections are in place to preserve open access principles and to ensure that the resulting rates for transmission service are just and reasonable.[12] The Commission's analysis for evaluating negotiated rate applications focuses on four areas of concern: (1) the justness and reasonableness of rates; (2) the potential for undue discrimination; (3) the potential for undue preference, including affiliate preference; and (4) regional reliability and operational efficiency

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[12] *See, e.g., TransEnergie U.S., Ltd.*, 91 FERC ¶ 61,230, at 61,838-39 (2000) (accepting a request to charge negotiated rates on a merchant transmission project, subject to conditions addressing, among other things, the merchant's open season proposal); *Mountain States Transmission Intertie, LLC*, 127 FERC ¶ 61,270, at PP 57, 59 (2009) (denying a request to charge negotiated rates on a merchant transmission project because, among other things, sufficient protections did not exist to ensure that rates for service would be just and reasonable); *Hudson Transmission*, 135 FERC ¶ 61,104 at ordering para. (A) (authorizing Hudson Transmission to charge negotiated rates for transmission service).

requirements.[13] The Commission requires that applicants satisfy all four areas in order to charge negotiated rates. This approach simultaneously acknowledges the consumer protection mandates of the Federal Power Act and the Commission's open access requirements as well as the financing realities faced by merchant transmission developers. Moreover, this approach allows the Commission to use a consistent framework to evaluate requests for negotiated rate authority from a wide range of merchant projects that may differ substantially from one project to the next.

1. Four-factor Analysis

a. Just and Reasonable Rates

11. To approve negotiated rates for a transmission project, the Commission must find that the rates are just and reasonable.[14] To do so, the Commission must determine that the merchant transmission owner has assumed the full market risk for the cost of constructing its proposed transmission project. Additionally, the Commission must determine whether the project is being built within the footprint of the merchant transmission owner's (or an affiliate's) traditionally regulated transmission system; if so, the Commission must determine that there are no captive customers who would be required to pay the costs of the project. The Commission also considers whether the merchant transmission owner or an affiliate already owns transmission facilities in the particular region where the project is to be located, what alternatives customers have, whether the merchant transmission owner is capable of erecting any barriers to entry among competitors, and whether the merchant transmission owner would have any incentive to withhold capacity.

i. Applicants' Proposal

12. Applicants affirm that they will assume the full market risk of the Project and that they will have no captive customers. Applicants state that they are a new market entrant and they are not building within the footprint of their own or an affiliate's traditionally regulated transmission system. Applicants also contend that they will turn over operational control of the Project to SPP or another qualified entity upon completion of the project. Applicants assert that this will prevent them from exercising market power or erecting barriers to entry in the region where the Project will operate.[15]

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[13] *Chinook*, 126 FERC ¶ 61,134 at P 37.

[14] *See Champlain Hudson*, 132 FERC ¶ 61,006 at P 17.

[15] Application at 1, 29-30.

13. Applicants provide several additional assurances as to why the rates charged will be just and reasonable. Applicants observe that incumbent transmission owners have an obligation to expand their transmission capacity, upon request, at cost-based rates. Applicants argue that this requirement limits the negotiated rates that they can offer. Additionally, Applicants assert that their rates will be limited by customers' ability to purchase transmission service over SPP's grid, including existing capacity and planned SPP transmission projects designed to serve wind generators in the Great Plains.[16]

ii. Commission Determination

14. The Commission concludes that Applicants' request for authority to charge negotiated rates for service on the Project's capacity satisfies the first factor of the four-factor test, and is just and reasonable. Applicants meet the definition of a merchant transmission owner because they assume all market risk associated with the Project and have no captive customers. Applicants have agreed to bear all the risk that the Project will succeed or fail based on whether a market exists for their services. Applicants also have no ability to pass on any costs to captive ratepayers.

15. No entity on either end of the Project is required to purchase transmission service from Applicants, and presumably, customers will do so only if it is cost-effective. As Applicants point out, they will be unable to charge rates in excess of the cost of expansion on neighboring utilities. Pursuant to their OATTs, public utilities have an obligation to expand their transmission capacity upon request, at cost-based rates.[17] Therefore, the cost of expansion provides downward pressure on the negotiated rates that Applicants will charge. Additionally, because neither Applicants nor their affiliates own any transmission facilities within the footprint of the Project, Applicants have no ability to erect barriers to entry or exercise market power in the relevant markets. Accordingly, these factors lead us to conclude that the requested negotiated rate authority is just and reasonable for service on the Project.

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[16] *Id.* at 31-32.

[17] *Preventing Undue Discrimination and Preference in Transmission Service*, Order No. 890, FERC Stats. & Regs. ¶ 31,241, *order on reh'g*, Order No. 890-A, FERC Stats. & Regs. ¶ 31,261 (2007), *order on reh'g*, Order No. 890-B, 123 FERC ¶ 61,299 (2008), *order on reh'g*, Order No. 890-C, 126 FERC ¶ 61,228 (2009), *order on reh'g*, Order No. 890-D, 129 FERC ¶ 61,126 (2009).

b. Undue Discrimination

16. The Commission primarily looks at two factors to ensure that applicants cannot exercise undue discrimination when approving negotiated rate authority: (1) the terms and conditions of a merchant developer's open season; and (2) its OATT commitments (or in the RTO/ISO) context, its commitment to turn operational control over to the RTO or ISO.[18] The Commission requires merchant transmission owners to file reports on the open season results shortly after the close of the open season. Such reports provide transparency to the allocation of initial transmission rights, as well as the basis for an entity to file a complaint if it believes it was treated in an unduly discriminatory manner.[19]

i. Applicants' Proposal

17. Applicants assert that there is good reason to grant their request for authority to pre-subscribe up to 75 percent of the maximum planned capacity, with their commitment to offer at least 25 percent of the Project's total capacity in the open season. Applicants argue that wind generators, whose energy the Project will likely transmit, present numerous risks that transmission project developers and investors must overcome. For example, Applicants state that wind energy projects are typically constructed with shorter lead times than other generators and are less willing to commit to large transmission projects well in advance of generator construction. Applicants argue that pre-subscription of capacity with creditworthy anchor customers can reduce financing obstacles because lenders demand to see a secure source of revenue as a predicate to project financing.[20]

18. Applicants state that they will solicit known potential power developers and load-serving entities, but will provide information for and consider negotiating with any *bona fide* candidates that express interest. Applicants also state that the selection of entities with whom they enter negotiations will be based on selection criteria consistent with Commission requirements for negotiated rate authority.[21] Additionally, Applicants

[18] *Chinook*, 126 FERC ¶ 61,134 at P 40.

[19] *See Montana Alberta Tie, Ltd.*, 116 FERC ¶ 61,071, at P 37 (2006) (*MATL*) (asserting that the Commission's concern in evaluating the open season process is to provide transparency in the bidding process and to enable unsuccessful bidders to determine if they were treated in a fair manner).

[20] Application at 21-22.

[21] *Id.* at 23-24.

commit to holding an open season for all capacity not pre-subscribed by anchor shippers or initially pre-subscribed but that later becomes available.

19. In the initial open season, Applicants commit to offering the same terms and conditions given to anchor customers to any open season participant willing to purchase transmission capacity under the same terms.[22] Applicants also state that, to ensure transparency, the specific rules of the open season, detailed bidding guidelines, evaluation criteria, estimated rates, and proposed form agreements will be posted on its internet website and forwarded to interested parties. Applicants also commit that they will also provide public notice of the open season in appropriate trade publications. Additionally, Applicants state that the results of the open season auction will be posted on an internet website.[23]

20. Applicants assert that the Project cannot be readily modified, depending on the extent of the market interest. Applicants contend that any reduction in the size would require Applicants to increase the anticipated cost of subscribing to capacity on the Project, making it more difficult to secure customers and financial support for the Project. If the solicitation process reveals market interest in excess of its planned transmission capacity, Applicants state this would support the development of a second phase of the Project, but note that the receipt and delivery points would likely differ from those currently contemplated for the Project. Regardless, Applicants argue that they would be unable to re-size the Project without prohibitive delays and additional costs. Applicants assert that they have submitted interconnection requests to TVA for the designed capacity of the Project and would have to restart the interconnection process if Project capacity increases. According to Applicants, increasing the capacity would also require new engineering costs, modifications to the Project's converter stations, and new studies for the Project. Applicants state that they are not opposed to undertaking a second phase of the Project in the future but contend that it is not financially or practically feasible to materially increase the size of this Project.[24]

21. As previously discussed, Applicants state that the Project will connect new renewable energy resources within the planning region of SPP to the TVA network. Thus, Applicants state that upon completion, they intend to turn over operational control of the Project to either SPP or another qualified entity such as an RTO or ISO and

[22] *Id.* at 33.

[23] *Id.* at 33.

[24] *Id.* at 25-26.

recover their costs through a schedule in that entity's OATT that is specific to the Project.[25]

ii. Commission Determination

22. The Commission looks specifically at the merchant transmission owner's open season and OATT commitments in determining whether negotiated rate authority could lead to undue discrimination on a particular merchant transmission project. As the Commission explained in *Chinook*, we evaluate on a case-by-case basis proposals to allocate all or a portion of initial capacity outside of an open season.[26]

23. The Commission accepts Applicants' proposal to pre-subscribe up to 75 percent of transmission capacity to anchor customers. As Applicants point out, they must secure long-term commitments from creditworthy anchor customers to support financing the Project. We have approved similar requests to allocate capacity to anchor customers in the past in light of the difficulties in financing merchant transmission projects.[27] We note that Applicants state that they will provide information for and consider negotiating with any *bona fide* candidate that expresses interest, and the selection of entities with whom they enter negotiations will be based on selection criteria that are consistent with Commission requirements for negotiated rate authority. Additionally, Applicants have committed to offer at least 25 percent of the Project's capacity in the open season. Therefore, given the specifics of the Project and the facts and commitments presented in the application, we find Applicants' proposal to seek up to 75 percent presubscription from anchor customers to be reasonable.

24. Consistent with Commission precedent, we condition acceptance of Applicants' request on Applicants making an informational filing with the Commission for any anchor customer transaction describing the terms of the agreement and the relevant facts

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[25] *Id.* at 30-31, 36.

[26] *Chinook*, 126 FERC ¶ 61,134 at P 42.

[27] *See, e.g., Chinook*, 126 FERC ¶ 61,134 at PP 60-63 (approving Chinook's presubscription of up to 50 percent of the project capacity to anchor customers); *Champlain Hudson*, 132 FERC ¶ 61,006 at P 47 (approving Champlain Hudson's proposal to seek up to 75 percent presubscription from anchor customers); *Southern Cross Transmission LLC*, 137 FERC ¶ 61,207, at P 28 (2011) (approving Southern Cross's presubscription of up to 75 percent of the project capacity to anchor customers); *Rock Island Clean Line LLC*, 139 FERC 61,142, at P 28 (2012) (approving Rock Island's presubscription of up to 75 percent of the project capacity to anchor customers).

and circumstances leading to the agreements no later than 30 days after the end of the open season.[28]

25. We also approve Applicants' request to sell the remaining 25 percent of the Project's capacity using an open season auction, subject to the submission of informational reports.[29] As stated in *Chinook* and *Hudson Transmission*, open seasons must be fair, transparent, and non-discriminatory, and we will continue to require open season reports to be filed with the Commission shortly after the close of the open season.[30] The reports must include, at the very least, the terms of the open season (including notice of the open season and the method for evaluating bids), the identity of the parties that purchased capacity, and the amount, term, and price of the capacity. This open season reporting requirement and the process by which parties are afforded an opportunity to file complaints will continue to be the primary tools by which the Commission ensures that merchant transmission developers do not unduly discriminate.[31] The open season informational report should be filed within 30 days after the end of the open season.

26. Once the Project has commenced operation, Applicants must file: (1) books and records for the Project that comply with the Uniform System of Accounts found in Part 101 of the Commission's regulations,[32] and will be subject to examination as required in Part 41 of the regulations;[33] and (2) Applicants' books and records audited by an independent auditor.[34] These commitments will assist the Commission in carrying out its oversight role. Consistent with their commitment, upon the Project's completion, Applicants must also make the Project subject to the OATT of either SPP or another

[28] *Champlain Hudson*, 132 FERC ¶ 61,006 at P 44; *Hudson Transmission*, 135 FERC ¶ 61,104 at P 29.

[29] Application at 15-16.

[30] *Chinook*, 126 FERC ¶ 61,134 at P 41; *Hudson Transmission*, 135 FERC ¶ 61,104 at P 30.

[31] *Id.*; *Champlain Hudson*, 132 FERC ¶ 61,006 at P 45.

[32] 18 C.F.R. Part 101 (2012).

[33] 18 C.F.R. Part 41 (2012).

[34] *Chinook*, 126 FERC ¶ 61,134 at P 62; *Champlain Hudson*, 132 FERC ¶ 61,006 at P 48; *Tres Amigas LLC*, 130 FERC ¶ 61,207, at P 90 (2010).

qualified entity, such as an RTO or ISO, by filing an OATT administered by that entity or a rate schedule in that entities' OATT.

27. Applicants assert that they will be unable to resize the Project if the open season solicitation process reveals excessive market interest because resizing would result in prohibitive delays and additional costs. This issue may be moot, as it is uncertain at this time whether the Project will be over-subscribed. However, if Applicants' open season results in oversubscription, we require that Applicants, in their open season report, explain in greater detail their reasons for not expanding the Project and for allocating capacity among open season participants.

c. Undue Preference and Affiliate Concerns

28. In the context of merchant transmission, our concerns regarding the potential for affiliate abuse arise when the merchant transmission owner is affiliated with either the anchor customer, participants in the open season, and/or customers that subsequently take service on the merchant transmission line.

i. Applicants' Proposal

29. Applicants pledge that no affiliate will be an anchor customer for capacity on the Project.[35] Applicants state that, if an affiliate should subsequently take service on the transmission line, operational control of the Applicants facilities by an RTO or ISO will ensure that no undue preference results. Applicants also commit to filing their open season report with the Commission, which will provide the terms of the open season, including notice of the open season and the method for evaluating bids; the identity of the parties that purchased the capacity; and the amount, term, and price of that capacity. Finally, Applicants will file electric quarterly reports of their transactions and comply with the Commission's Standards of Conduct to the extent required of similar transmission providers subject to the jurisdiction of the Commission.[36]

ii. Commission Determination

30. In light of the commitments made in the application, we find that Applicants adequately address any affiliate concerns present at this early stage of the Project. Furthermore, we note that Applicants commit to complying with the Standards of Conduct and to file electric quarterly reports of their transactions as required of

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[35] Application at 31.

[36] *Id.* at 35.

transmission providers.[37] Moreover, as discussed above, the commitments made by Applicants regarding the open season process and reporting requirements will ensure that all transactions are transparent.

d. Regional Reliability and Operational Efficiency

31. Merchant transmission projects, like cost-based transmission projects, are subject to mandatory reliability requirements.[38] Merchant transmission developers are required to comport with all applicable requirements of the North American Electric Reliability Corporation (NERC) and any regional reliability council in with they are located.

i. Applicants' Proposal

32. Applicants commit to turning over operational control of the Project to SPP or another qualified entity upon completion of the project. Applicants will also participate in the reliability planning processes of the entity to which they turn over operational control of the Project. Additionally, Applicants commit to complying with all applicable reliability rules, including applicable NERC requirements and procedures.[39]

ii. Commission Determination

33. Applicants commit to turning over operational control of the Project to SPP or another qualified entity upon completion of the project. Applicants also commit that the Project will comply with applicable NERC and the applicable RTO/ISO reliability requirements. Accordingly, we find that Applicants have met the regional reliability and operational efficiency requirement, subject to Applicants' participation in the necessary regional planning processes.

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[37] 18 C.F.R. § 35.10(b) (2012); *see also* Order No. 890, FERC Stats. & Regs. ¶ 31,241 at P 817, *order on reh'g*, Order No. 890-A, FERC Stats. & Regs. ¶ 31,261 at P 394.

[38] *See, e.g.*, *Rules Concerning Certification of the Electric Reliability Organization; and Procedures for the Establishment, Approval, and Enforcement of Electric Reliability Standards*, Order No. 672, FERC Stats. & Regs. ¶ 31,204, *order on reh'g*, Order No. 672-A, FERC Stats. & Regs. ¶ 31,212 (2006).

[39] Application at 36.

2. Waiver Requests

a. Applicants' Proposal

34. Applicants request waiver of: (1) section 35.15(a) of the Commission's regulations (abbreviated cost-of-service filings); (2) the full reporting requirements in Subparts B and C of Part 35 of the Commission's regulations, except for sections 35.12(a) (filing of initial rate schedules), 35.13(b) (general information to be filed with rate schedules), 35.15 (notices of cancellation or termination), and 35.16 (notices of succession); (3) the requirement to file FERC Form No. 1, Annual Report of Major Electric Utilities, Licensees and Others; and (4) Part 141 relating to forms and reports, with the exception of sections 141.14 and 141.15.[40]

35. Applicants contend that their proposal to charge negotiated rates nullifies the regulations requiring the filing of cost-based data.[41] Applicants additionally assert that granting the requested waivers is appropriate because they will not sell at cost-based rates and they do not have captive customers. Applicants commit to keeping separate books and records for the Project, in accordance with generally accepted accounting principles, and further commit to making such books and records available to the Commission for inspection.

b. Commission Determination

36. Because Applicants are proposing to charge negotiated rates, the regulations requiring the filing of cost-based data are not applicable. For good cause shown and consistent with our findings for other merchant transmission proposals, we will grant waiver of section 35.13(a) of the Commission's regulations and the filing requirements of Subparts B and C of Part 35 of the Commission's regulations, except for sections 35.12(a), 35.13(b), 35.15, and 35.16.[42]

37. The Commission will also grant Applicants' request for waiver of Part 141 (with the exception of sections 141.14 and 141.15), including the Form No. 1 filing

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[40] *Id.* at 37 (citing *Hudson Transmission*, 135 FERC ¶ 61,104 at PP 42-43).

[41] *Id.*

[42] *Hudson Transmission*, 135 FERC ¶ 61,104 at P 42; *Tres Amigas LLC*, 130 FERC ¶ 61, 207, at P 103 (2010); *Wyoming Colorado Intertie, LLC*, 127 FERC ¶ 61,125, at P 62 (2009) (*Wyoming*); *Linden VFT, LLC*, 119 FERC ¶ 61,066, at P 42 (2007) (*Linden*).

requirement. The Commission has previously granted waiver of the Form No. 1 filing requirement to merchant transmission owners.[43]

The Commission orders:

(A) Applicants are hereby granted authority to sell transmission rights on their proposed merchant transmission project at negotiated rates, subject to conditions, as discussed in the body of this order.

(B) Applicants are hereby directed to file with the Commission a report describing the terms of the anchor customer agreements and the results of any open season within 30 days after the end of the open season, as discussed in the body of this order.

(C) Applicants are hereby directed to file, upon completion of the Project, an OATT administered by the qualified entity to which they hand over operational control or a rate schedule in the entity's OATT, as discussed in the body of this order.

(D) Applicants' requests for waiver of the provisions of Subparts B and C of Part 35 of the Commission's regulations, with the exception of sections 35.12(a), 35.13(b), 35.15, and 35.16 and Part 141 (including the Form No. 1 filing requirement), of the Commission's regulations, with the exception of sections 141.14 and 141.15, is hereby granted, as discussed in the body of this order.

By the Commission.

(S E A L)

Nathaniel J. Davis, Sr.,
Deputy Secretary.

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[43] *Wyoming*, 127 FERC ¶ 61,125 at P 65; *Linden*, 119 FERC ¶ 61,066 at P 44; *MATL*, 116 FERC ¶ 61,071 at P 66.