STATE OF ILLINOIS
ILLINOIS COMMERCE COMMISSION

Grain Belt Express Clean Line LLC Application for an Order granting Grain Belt Express Clean Line LLC a Certificate of Public Convenience and Necessity pursuant to Section 8-406.1 of the Public Utilities Act to Construct, Operate and Maintain A High Voltage Electric Service Transmission Line and To Conduct a Transmission Public Utility Business in Connection Therewith and Authorizing Grain Belt Express Clean Line Pursuant to Sections 8-503 and 8-406.1(i) of the Public Utilities Act to Construct the High Voltage Electric Transmission Line	)))))))))))))))	Docket No. 15-0277

Rebuttal Testimony of

Michael Proctor

On behalf of

Landowners Alliance of Central Illinois, NFP and other Intervenors

July 24, 2015

Table of Contents

REBUTTAL TESTIMONY OF MICHAEL PROCTOR

Q: Can you please provide your name and address?

A: My name is Michael Proctor. My address is 2172 Butterfield Court, Maryland Heights MO. 63043.

Q: Are you the same Michael Proctor who filed direct testimony in this case?

A: Yes, I am.

Q: What is the subject matter of your testimony?

A: My testimony will be rebuttal of Infinity Wind Power witness Matt Langley, Wind on the Wires witness Michael Goggin and Staff witness Richard Zuraski.

Q: What materials and information did you review in connection with your testimony?

A: I reviewed the filed direct testimonies and exhibits of these witnesses. In addition, I reviewed these witnesses' responses to data requests that were available prior to the time for filing this testimony.[1]

Q: How is your Rebuttal Testimony Organized?

A: Instead of rebutting each witness, I have determined specific issues that I had with each witnesses' testimony and have organized my rebuttal testimony around four issues: 1) Development of Effectively Competitive Markets; 2) Least-Cost Alternatives; 3) Promoting the Public Convenience and Necessity; 4) Delivery of Renewable Energy. I am also sponsoring LACI Exhibits 5.1, 5.2, 5.3, and 5.4.

[1] I will note that, in a response to data requests received just prior my completing this testimony, Mr. Zuraski provided spreadsheets with what appear to contain certain analyses pertaining to the proposed Project. Unfortunately, there was not time for me to review and comment on this new information as part of this testimony.

SUMMARY OF REBUTTAL

Q: What are your conclusions of the rebuttal testimonies of Mr. Zuraski, Mr. Langley and Mr. Goggin regarding development of effectively competitive markets?

A: In relation to developing effective competitive markets, witnesses Langley, Groggin and Zuraski all focus on wholesale electricity markets that are driven by short-run costs. Effective competition is driven by long-run costs because it primarily involves the entry into and exit from the market by potential competitors. Long-run costs are calculated by including capacity and fixed costs in the comparison of various alternatives. Those alternatives with higher levelized cost will be "marginal" firms that are unlikely to have a long-term impact on the effectives of competition.

Q: What are your conclusions of the rebuttal testimonies of Mr. Zuraski, Mr. Langley and Mr. Goggin regarding least cost?

A: Neither Mr. Zuraski nor Mr. Langley provided an independent review of the assumptions, inputs and analysis required to determine least cost. Their testimonies rely on the correctness of Grain Belt's witnesses Mr. Berry. In other words, their testimonies are of no evidentiary value on this subject. Mr. Goggin had no testimony directly related to least cost.

Q: What are your conclusions of the rebuttal testimonies of Mr. Zuraski, Mr. Langley and Mr. Goggin regarding promoting the public convenience and necessity?

A: In their testimonies, public convenience and necessity comes down to whether or not a proposal either meets a need from the Illinois RPS (renewable energy or renewable energy credits) or meets a need for low-cost capacity and energy (resource adequacy). Both Illinois wind and the Grain Belt Express (GBX) project meet both needs, and combined cycle generation can meet the need for low-cost capacity and energy. Therefore, in my view as an economist and based on my experience in the regulated public utility industry, the question of promoting public convenience and necessity can only be answered by which alternatives do the best at meeting these needs; i.e., which of the alternatives is the lowest cost. As stated above, these witnesses appear not to have conducted their own independent analysis or assessment of the fundamental factors that go into such an analysis; and thus really had nothing to say about which alternative has the lowest cost.

Q: What are your conclusions of the rebuttal testimonies of Mr. Langley and Mr. Goggin regarding the delivery of energy from wind?

A: Both witnesses restrict their concept of delivery of energy from wind to either physical delivery or delivery via firm transmission service. This is a too restrictive view of delivery of energy from wind in terms of either meeting Illinois's RPS or Illinois's need for capacity and energy.

I. DEVELOPMENT OF EFFECTIVELY COMPETITIVE MARKETS

Q: Where in Mr. Zuraski's, Mr. Langley's and Mr. Goggin's testimonies do they discuss development of effectively competitive markets?

A: Development of effectively competitive markets is discussed in their respective direct testimonies by: Mr. Zuraski at lines 134 – 182; Mr. Langley at page 5; lines

14-15; and Mr. Goggin at lines 650-670.

Q: What are their understandings of development of effectively competitive markets?

A: Mr. Zuraski seems to characterize development of effectively competitive markets in term of creating “downward pressure on price in wholesale electricity markets.” Mr. Langley seems to believe that erasing or avoiding seams between transmission providers will create “a truly competitive market.” Mr. Goggin also focuses on the ability for transmission to increase competition in wholesale power markets, with the added benefit of reducing the potential for market power in “constrained sections of the grid.” What all three have in common is their focus on competition in wholesale electricity markets.

Q: Should the Illinois Commerce Commission primarily be concerned with promoting competition in the wholesale power markets?

A: If there is evidence of the lack of effective competition in the wholesale power markets, then that would be a primary concern. However, the evidence of wholesale market prices in PJM being too low to support existing base-load generation (as indicated in lines 93-101 of Mr. Zuraski’s direct testimony), is a strong indication that there is not currently a lack of effective competition, or a need to add competition solely to provide even more downward pressure on PJM wholesale prices, and therefore promoting competition in wholesale power markets is not the primary issue.

Q: Where should the Illinois Commerce Commission primarily focus its attention regarding the development of effectively competitive markets?

A: While the impact of alternatives on wholesale market prices is part of the overall picture, the Illinois Commerce Commission needs to consider the ultimate cost to retail customers. Wholesale energy market prices are only a portion of these costs that do not include the cost of capacity and annual fixed expenses. These fixed-cost components have a much more significant impact on the development of effectively competitive markets than wholesale market prices.

Q: What is the real reason for calculating the impact of the various alternatives on the wholesale energy market?

A: The real reason is not to show a lowering of wholesale market prices as a "proof" of effective competition – both wind alternatives do this. Instead, the real reason is to calculate the revenue recovery by the wind alternatives in order to provide an estimate for the potential costs for RECs. In the case of the sale of a REC, the entity purchasing the renewable energy sells that energy into the wholesale market and the lowest price (reservation price) that entity will take for the REC is the difference between what was paid for the energy (i.e., its levelized cost) and what was received from the wholesale market. The aggregation of these reservation prices determines the regional supply curve for RECs.

Q: What is the impact of capacity costs and annual fixed expenses on effectively competitive markets for power?

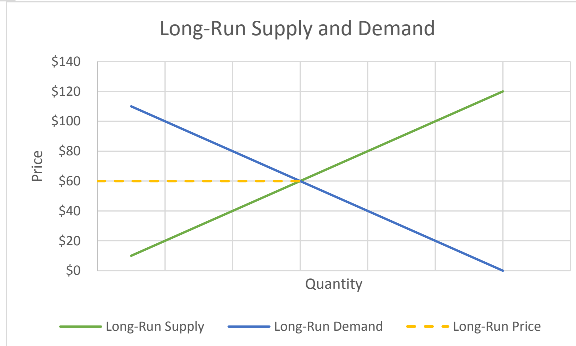
A: In the short-run, marginal costs are determined by costs that vary directly with short-run output, and wholesale market prices for electricity are primarily determined by these short-run costs. However, economics treats competition in terms of what are called "long-run" costs – where all inputs to the production process (including capacity and fixed costs) are treated as variable costs, and firms enter and leave the industry based on long-run market prices driven by the lowest long-run costs of the competing firms. Moreover, a firm may have the most efficient means of short-run production (e.g., Kansas wind), but may also have long-run costs that result in it not being able to compete in the long-run.

Q: What analysis that has been presented by others in direct testimony has taken into account long-run costs?

A: The only analysis that has taken into account long-run costs is what has been called levelized-cost analysis of the various alternatives.

Q: How do levelized costs provide a measure of effective competition?

A. Promoting *effective* competition means allowing alternatives that are likely to cover ***all of the competitors' costs*** and ***be in the market place for the long-term***. In this context, Mr. Zuraski's characterization of Grain Belt as a "merchant" transmission company that must compete with alternatives (lines 105-133) is critical. If the GBX project is not the lowest-cost alternative to meet capacity and energy needs in Illinois, then it is likely to have to drive down its price for transmission service, and that may have a significant impact on its ability to attract capital and survive in the market for low-cost energy. In essence, GBX may be what economists call a "marginal" firm.



The chart on the right represents the long-run market-clearing price of $60 in the industry. The chart on the left represents the long-run average cost of a marginal firm; i.e., a firm whose lowest long-run average cost of $70 is above the long-run market-clearing price of $60. While a marginal firm may continue to operate in the short-run (assuming it covers its out-of-pocket costs), it will not survive in the long-run as it is not earning enough to attract needed capital. . In summary, ***effective competition*** should be measured in terms of competition that will be sustained over the long-run rather than just in the short-run.

Q: Doesn't levelized cost analysis primarily address the issue of least cost?

A: While levelized cost analysis does address the issue of least cost, as indicated above, the effectiveness of competitive markets is driven by long-run costs. Short-run wholesale market prices are a poor indicator of the impact of various alternatives on the effectiveness of competition. Moreover, all alternatives that provide lower short-run costs than the current market price will lower wholesale market prices, but that does not mean that they provide effective competition, on a sustained basis.

Q: What is the lowest price that GBX can charge for transmission service and effectively enter and compete in the market for low-cost energy at its

proposed location?

A: Generally, economics measures long-run cost by pricing capacity at what is called a "normal" return, which on a fixed-life asset includes both a return of the investment and a "normal" rate of return on the investment over the life of the asset. The "normal" rate of return on an investment is measured in terms of the opportunity cost from returns on investments of equal risk. As a return less than the "normal" return will result in investors moving their capital to other, similar risk investments, "normal" return translates to the rate of return needed to attract capital to an investment alternative.

Specifically, if the 12% rate of return represents the return needed by Clean Line in order to attract the capital to finance the equity portion of the GBX project, then the lowest price it can charge is represented in the levelized cost analysis which gives Clean Line a 12% return on its investment. A comparison of the levelized cost of the GBX project to the levelized cost of alternatives is the proper measure of its relative ability to promote effective competition.

Q: What is the lowest price that GBX can charge to remain in business after the DC line has been built and paid for from investor capital from debt and equity?

A: In general, this translates to how much revenue needs to be collected to avoid going bankrupt. On a project totally financed by debt, this would require a revenue stream that would cover a return of the investment (debt principal) and interest payments over the life of the project, as the return of debt capital and interest expenses are unavoidable. When equity capital is involved, it is possible in the short-run that the return on equity capital can go to zero and even then the return of equity capital can fall below total recovery, which will result in a negative return on investment. But this pricing cannot be maintained in the long-run.

Moreover, the question of how low can the price go in order to stay in business in the short-run is not the proper question to relate to promoting effective competition. While GBX may be able to stay in business earning below the rate of return it needs to attract capital, in the long-run this is not "effective" competition. This is because such a price does not collect a "normal" return of and on investment, and therefore cannot be maintained over the long-run.

II. LEAST-COST ALTERNATIVE

Q: Where in Mr. Zuraski's, Mr. Langley's and Mr. Goggin's testimonies do they discuss the least-cost alternative?

A: The least-cost alternative is discussed in their respective direct testimonies by: Mr. Zuraski at lines 197 – 202; Mr. Langley at page 8; lines 17-20; and Mr. Goggin does not appear to directly opine on least cost.

Q: What are their testimonies on the least-cost alternative?

A: Mr. Zuraski and Mr. Langley testify Kansas wind delivered by GBX's proposed DC transmission line is the least-cost alternative for meeting capacity and energy needs. Mr. Langley also testifies that the Kansas wind delivered by GBX's DC transmission line is the least cost for meeting Illinois RPS, and Mr. Zuraski seems to indicate this as well.

Q: What did you find missing in the testimonies of both witnesses?

A: Neither witness claims to have performed an independent study of the assumptions, inputs and analysis of costs of the various alternatives considered by GBX. Nor did either of the witnesses perform an independent study of the cost of wind from other locations in MISO or PJM. Without an independent verification of the levelized costs of the various alternatives, the endorsement of Kansas wind by way of GBX's DC transmission as being least cost is at best saying, "if GBX's estimates of levelized costs are correct, then Kansas wind via GBX is least cost," which is akin to giving meaningless support to the GBX's proposal being least cost.

Q: Regarding the issue of least cost, what weight should the Illinois Commerce Commission give to the direct testimonies of Mr. Zuraski, and Mr. Langley?

A. None.

Q: What about their claims of higher efficiency from Kansas wind compared to Illinois wind?

A. While the statement that Kansas wind has a higher capacity factor than Illinois wind is true, none of these witnesses has testified as to how much higher. More importantly, while higher efficiency impacts costs, it is only one of many factors that impact cost, and in the case of the GBX project, the incremental cost of the DC transmission line is one of the additional contributors to costs that is not included when only discussing efficiency of Kansas wind. Moreover, these are examples of the level of details that must be included in an independent evaluation to determine least cost.

Q: Did Mr. Zuraski, Mr. Langley or Mr. Goggin run sensitivities to determine

the robustness of the finding of least cost?

A. No, they did not. Neither did I run sensitivities because of the compressed time frame for providing direct testimony.

III. PROMOTING THE PUBLIC CONVENIENCE AND NECESSITY

Q: Did Mr. Zuraski, Mr. Langley or Mr. Goggin discuss promoting the public convenience and necessity?

A. Yes, they did. Promoting the public convenience and necessity was discussed at lines 64-133 of Mr. Zuraski's testimony, at page 3, line 12- p.5, line 20 and continuing on at page 6, line 17 – page 8, line 14 of Mr. Langley's testimony, and much of Mr. Goggin's testimony discusses various aspects related to the topic of need.

Q: What does Mr. Zuraski set out as the basis for promoting the public convenience and necessity?

A. The following come directly from Mr. Zuraski's direct testimony.

- Access to additional and larger markets for Kansas wind; (line 66)
- Kansas wind costs are expected to be below wholesale market prices; (line 78)
- GBX will be able to find subscribers and attract additional capital; (line 81)
- Providing Illinois and other states access to lower cost electricity, leading to lower retail prices; (line 84)
- Lower the cost of complying with state-imposed RPS; (lines 87-88)
- May help states like Illinois to lower the cost of complying with new federal regulations pertaining to carbon dioxide (CO_2) emissions; (lines 89-90)

Q: Do Mr. Langley or Mr. Goggin have anything to add to Mr. Zuraski's list for promoting the public convenience and necessity?

A. Not really. Their testimony may provide more background, particularly in comparing DC to AC transmission. I will discuss this in a subsequent section of my rebuttal testimony.

Q: Do you agree with Mr. Zuraski's list for promoting the public convenience and necessity?

A. I do agree with his list in the general context that Mr. Zuraski sets out two basic needs: 1) Illinois' need for low-cost capacity and energy; and 2) Illinois' need for renewable energy to meet its mandated RPS. These are the two basic issues addressed in the last three bullets on the Zuraski list. The first three bullets appear to be addressing the economic feasibility of the GBX project, and I disagree with Mr. Zuraski's conclusions that the GBX project is economically feasible.

Q: Why do you disagree with Mr. Zuraski's conclusions regarding economic feasibility of the GBX project?

A. In order for the GBX project to be economically feasible, it must be the lowest-cost alternative for either meeting Illinois' need for low-cost capacity and energy or for meeting Illinois' RPS. My direct testimony shows that combined cycle generation is a lower cost alternative for meeting Illinois's need for low-cost capacity and energy, and Illinois wind is a lower cost alternative for meeting Illinois' RPS.

1. MEETING ILLINOIS' NEED FOR CAPACITY AND ENERGY

(RESOURCE ADEQUACY)

Q: Are there scenarios in which combined cycle generation would not be the least-cost alternative for meeting Illinois' need for capacity and energy?

A. Yes there are. If the CO2 price increase by only $0.30/MWh on a levelized cost basis or if the capacity adder based on the cost of a combustion turbine is too high by the same amount, combined cycle generation would no longer be the least-cost option for meeting Illinois' need for capacity and energy. If combined cycle generation is not the lowest cost alternative for meeting Illinois' need for capacity and energy, then the wind-on-wind analysis from my direct testimony would indicate that Illinois wind would be the lowest cost option for meeting Illinois energy needs; i.e., Illinois wind at $67.63/MWh and Kansas wind via GBX at $71.80/MWh (LACI Exhibit 5.1 at Table 1).

Q: If Illinois wind is the lowest-cost alternative for meeting Illinois energy needs, what is the lowest-cost alternative for meeting Illinois capacity needs?

A. From the perspective of overall least cost, as that relates to the two wind alternatives, it doesn't matter. This is because the combined cycle alternative is presumably eliminated because of higher cost; and other alternatives competing to provide capacity will not be providing energy as they cannot compete with the wind alternatives for energy. Thus, the choice of lowest-cost capacity is independent of the choice for energy, and therefore the capacity costs will be the same irrespective of which energy alternative is chosen.

Q: If the GBX project is not the least-cost, do you agree with Mr. Zuraski's

conclusion that GBX can lower its price to compete with lower cost alternatives and Clean Line will still be able to raise needed financing?

A. No, I do not agree. As I stated earlier in my rebuttal testimony, assuming that a 12% rate of return on equity is needed to raise the funding for the GBX project, then any decrease in price for transmission resulting from competition from Illinois wind or MISO wind will result in underfunding.

Q: Is a feasible alternative for competition that Kansas wind would take a lower rate of return on investment?

A. With all of the testimony from Mr. Goggin and Mr. Zuraski on the increased demand for renewable energy coming from new federal regulations on CO2, I do not understand why Kansas wind developers would take a lower rate of return.

Q: Regarding the increase in demand for renewable energy to meet new federal regulations on CO2, would this somehow increase the price of renewable energy and make the GBX project economically feasible even if it is higher cost than Illinois wind?

A: Not in and of itself. An additional study would be needed to determine whether or not renewable energy is an increasing cost industry within the Illinois and surrounding region. An increasing cost industry is one in which, as the quantity supplied to the market increases, because of increasing demand, the supply price (the minimum price suppliers are willing to take) increases. Traditionally, increasing cost industries are characterized as having increasing long-run costs as supply is added. With the development of new technologies in converting wind to electrical energy and economies of scale in wind turbine size, it is likely for the foreseeable future that renewable energy is in a decreasing cost industry.

Whether renewable energy is an increasing, decreasing or constant cost industry is a question that was not addressed in any of the testimonies of Mr. Zuraski, Mr. Langley or Mr. Goggin. Moreover, their testimonies only focused on the potential increase in demand from new federal CO2 regulations.

2. MEETING ILLINOIS' NEED FOR RENEWABLE ENERGY

Q: Do you agree with Mr. Langley and Mr. Goggin that Kansas Wind via GBX is the only alternative for meeting Illinois's need for low-cost renewable energy?

A. No, I do not. Neither Mr. Langley nor Mr. Goggin have taken into account other wind alternatives located within MISO or PJM. This is of particular importance in-so-far as both of these witnesses base their claim on the inability of the AC transmission system to deliver energy from wind to Illinois. I ran a wind-on-wind comparison with MISO wind at a 48% capacity factor and found that MISO wind is $15.44/MWh cheaper than the Kansas wind via GBX, and $11.71/MWh cheaper than the Kansas wind via GBX without the 20% adder for the DC transmission costs. The results of these runs are shown on LACI Exhibit 5.1, where the only change I made from my original analysis found on LACI Exhibit 3.2 was to change the capacity factor from the Illinois level of 40% to a MISO level of 48%.

Q: What is the basis for assuming a 48% capacity factor for MISO wind?

A: The 48% capacity factor is a conservative estimate based on a comparison of wind maps in Iowa to wind maps in Kansas and Illinois, where wind speeds were measured at 80 meters, rather than 100 meters being used more in today's wind farm applications. These three maps are shown in LACI Exhibit 5.2. I assumed that the Kansas wind slated for the GBX project will be located in the best wind regions in southwest Kansas, having wind speeds of 8.75 m/s, and the Iowa wind would be located in the best wind regions in northwestern Iowa, having wind speeds of 8.25 m/s. Illinois wind at a 40% capacity factor is at wind speed of 7.25 m/s, compared to Kansas wind at 52% capacity factor at wind speeds of 8.75 m/s. This translates to an 8% difference in capacity factor per a 1 m/s difference in wind speeds. Using linear interpolation results in an estimate of a 48% capacity factor for Iowa wind.

Q: What is the significance of MISO wind being over $15/MWh cheaper than Kansas Wind via DC transmission?

A: The $15/MWh difference does not include any estimate for transmission congestion costs and losses. So the question becomes whether or not levelized transmission costs and losses in MISO will exceed $15.44/MWh. In the Missouri Grain Belt case (Case No. EA-2014-0207), I performed an analysis on the price of Financial Transmission Rights and found for the 2013 MISO FTR market that at a lower 45% capacity factor over 99.7% of sales of FTRs were under $12.71/MWh and over 97.5% of sales of FTRs were under $5.06/MWh (see Table 1 in LACI Exhibit 5.3). In that same case, Mr. Berry came back in Surrebuttal and, using estimates of differences in LMPs between Minnesota and Iowa wind locations to Ameren Missouri's load, estimated $9.27/MWh from Iowa and $9.62/MWh from Minnesota as the average annual congestion costs from his sample. Mr. Berry's calculations also showed a range from $0.99/MWh to $2.12/MWh in marginal losses (see Table 2 in LACI Exhibit 5.3). If either of Mr. Berry's estimates are close to what it would cost in transmission congestion and losses for MISO wind to Illinois locations in MISO, then the range for transmission congestion costs plus marginal losses is from $10.26/MWh to $11.74/MWh, both of which are well under the $15.44/MWh difference in MISO versus Kansas wind via GBX. The lower end of the range of Mr. Berry's estimates is below the $11.71/MWh difference without the 20% adder for DC transmission costs, and at the upper end of this range close to but just three cents over the $11.71/MWh difference without the 20% adder for DC transmission costs. These comparisons bring into question the validity of any claim that Kansas wind via GBX is the only option for meeting Illinois need for low-cost energy and capacity.

Q: Do transmission congestion costs and marginal losses ensure the delivery of wind in MISO to Illinois?

A: No, they do not ensure the physical delivery of power to Illinois. However, as is discussed in the next section of my rebuttal testimony, there are several other concepts of delivery beyond physical delivery.

IV. DELIVERY OF RENEWABLE ENERGY FROM WIND

Q: Where in Mr. Langley's and Mr. Goggin's testimonies do they discuss the delivery of energy from wind?

A: Mr. Langley addresses delivery of energy from wind most directly in lines 11-13 on page 7 of his testimony, but indirectly discusses delivery when discussing exporting energy from wind at lines 12-14 on page 4. Mr. Goggin addresses delivery of energy from wind most directly in lines 676-701 of his testimony. It is clear from these statements that Mr. Langley and Mr. Goggin are discussing either the actual physical delivery of energy from point A to point B in the case of DC transmission, or could also be discussing firm, point-to-point (PTP) transmission service from point A to point B in the case of AC transmission.

Q: Are these the only two concepts of delivery of energy in the context of transmission?

A: No. In fact the more dominant concept of delivery means the ability to integrate the energy from a generation source into the wholesale market without violation of power-grid reliability standards; i.e., market-delivery. In addition there is delivery from a utility's designated resource (DR) to its load.

Q: How is market-delivery different from physical-delivery or PTP-delivery of energy from wind?

A: Market-delivery is run for what are called Generation Interconnection (GI) requests and tests the capacity of the resource as added generation to the market with a decrease in the highest-cost generation from the wholesale market to determine whether or not there are any reliability violations, such as thermal overloads or voltage reductions. If there are violations, then these need to be corrected with some form of transmission upgrades in order for the GI request to be granted by the transmission provider. In the case of energy from wind, these tests are run for hours when the energy from the wind is expected to be the highest, but are also run during summer and winter peak hours.

PTP-delivery tests the capacity of the transmission service request as a transfer of energy from the source to the destination. In order to compensate for the added generation at the source, the test must add an additional load at the destination. As with market-delivery, PTP-delivery is concerned with any violation of reliability standards, but differs in that other generation is not decreased, instead load is added at the destination.

DC-delivery typically does not involve any tests at the source, as generation is directly connected to the AC-DC convertor by isolated transmission lines. However, it involves adding generation at the destination, at the point where the DC line interconnects with the AC grid; and much like the market-delivery GI test, it involves testing for reliability violations as that generation is added in place of higher-cost generation to serve load.

Q: Why do you say market-delivery is a more dominant concept of delivery than either PTP-delivery or DC-delivery?

A: First, PTP-delivery has become a much less-used form of delivery in RTOs having wholesale energy markets. PTP-delivery was required in pre-RTO market environments in order to complete bilateral transactions of power. With RTO wholesale markets being a more efficient means of buying and selling power, requests for PTP-delivery have decreased with their primary use for exporting capacity and energy located in one transmission provider’s control area to loads located in another control area. In addition, market hubs have been established in RTOs to provide a means to financially transact sales and purchases and are used by power marketers to either hedge wholesale market purchases or sales, or in some cases for price speculation (i.e., buy/sell forward at a low/high price and sell/buy in real-time at a higher/lower price).

DC-delivery is a relatively new concept in the industry in terms of implementation. In essence DC-delivery moves the physical location of the market delivery test to a different location.

Q: How is DR-delivery different from the other types of delivery?

A: DR (designated resource)-delivery involves a request from a utility or alternative generation provider for firm network transmission service from the generation source to its load destinations. This test will increase the generation from the source and decrease generation from higher-cost DRs of the requestor, or from higher-cost market resources. When the requestor's higher cost DRs are decreased, the DR-delivery test differs from the PTP-delivery test in that the loads are spread across the requestor's service area rather than located at a specific point, and output from other generation is decreased. In the latter case where output from market generation is decreased, this test is similar to the market-delivery test used for GI requests.

Q: Why are these differences in delivery important to the issues raised by Mr. Langley in his direct testimony?

A: Mr. Langley represents Infinity Wind Power, a developer of wind energy. Delivery of wind is important to the development of wind power in that the form of delivery has an impact on transmission costs that will be incurred for the delivery of energy from wind. Moreover, the GI tests for AC transmission will be added to the costs to the wind developer, while the GI tests for DC transmission will be added to the cost of the DC transmission developer. Thus, the development of DC transmission outlets for wind developers represents a shift in costs away from the wind developer and onto the DC transmission developer. However, some of wind developers located some distance away from an AC to DC converter station may incur added transmission costs for moving the energy from their wind farms to a converter station.

Q: Are there other shifts possible?

A: Yes, there are possible shifts in wholesale revenues received by the energy from wind depending on the location of the GI. From the direct testimony of Mr. Zuraski ((lines 148-155), it appears that low wholesale prices are a concern in PGM, where some base-load, nuclear power plants may have to be retired due to lack of sufficient revenues from the wholesale energy and capacity markets. Locating the GI for Kansas wind in the PGM region, via GBX, may result in lowering wholesale prices even further. In comparison, if the GIs for this same generation are located in Kansas, there will also be decreases in wholesale power costs. Thus, a comprehensive economic comparison of AC to DC alternatives for Kansas Wind should have added the impact on wholesale prices within both regions.

Q: Why would locating Kansas wind in Kansas even be an alternative to consider for Illinois?

A: Illinois Renewable Portfolio Standards (RPS) requires the wind energy to be located within state or within neighboring states for the purchase of RECs by the IPA, and it appears Mr. Zuraski assumes that Kansas wind delivered through DC transmission meets this condition.[2] However, if energy from wind meeting these locational requirements cannot meet the rate impact cap for RECs, then RECs from outside these locations can be considered. In this case, RECs from Kansas wind farms with GIs in Kansas could be considered as a reasonable alternative. In addition, Illinois electricity providers (load serving entities in both MISO and PJM) could consider purchasing energy from wind located in Kansas and decreasing overall costs by selling the energy from that wind into the Southwest Power Pool wholesale energy market. The difference between buying RECs and buying energy for resale is a matter of who takes the risk of the wholesale market prices.

Q: Do RECs or purchases for resale of energy from wind with GIs in SPP qualify as resources for meeting Resource Adequacy (capacity and energy needs) in either MISO or PJM?

A: My understanding is that in order to qualify as resource that meets the Resource Adequacy requirement of MISO or PJM, the resource must either be physically located within the RTO or have firm transmission service into the RTO.

Q: Would capacity and energy for resource adequacy from the GBX project qualify within the MISO region of Illinois?

A: As is the case with Kansas wind located in Kansas, with the GBX project's outlet being in PJM, it would require firm transmission service from PJM into MISO, which would add

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[2] It should be pointed out that Mr. Zuraski only addresses "promoting the public convenience and necessity" in terms of complying with state-imposed RPS by saying the "purchase of electricity and/or renewable energy credits from new wind farms located in western Kansas **could** lower the cost of complying with state-imposed renewable portfolio standards" (lines 84-88). This appears to leave open the question of whether or not the GBX project would qualify.

to the cost. With energy from Illinois wind already being lower cost than energy from the GBX project, and even if it were a somewhat higher cost, the added costs for firm PTP transmission would very likely make Kansas wind via GBX not an economically viable option in the MISO region of Illinois.

In this regard it is important to note that Mr. Zuraski's testimony primarily focuses on meeting Resource Adequacy needs, and has less to say about meeting Illinois's RPS with respect to alternatives located outside the PJM or MISO RTOs. Thus, similar to the testimonies of Mr. Langley and Mr. Goggin, Mr. Zuraski's focus is either on DC-delivery, Illinois wind resources located within these two RTOs, or the possibility of PTP-delivery via firm transmission service to the MISO region in Illinois from the GBX project.

Q: Would wind from MISO located outside of Illinois qualify to meet the Illinois RPS?

A: Since Iowa is an adjoining state, wind energy from Iowa would qualify to meet the Illinois RPS related to RECs and certainly would qualify as a renewable resource or a capacity and energy resource for the MISO portion of Illinois.

Q: Would DR-delivery of this wind into Illinois be required for Iowa wind to qualify for providing RECs to Illinois or as an energy resource for the MISO portion of Illinois?

A: No, it would not for either. This is the reason for estimating the transmission congestion costs and marginal losses between Iowa wind and the MISO region of Illinois. An Illinois purchaser in MISO or PJM could enter into a purchase power arrangement with the Iowa wind facility in which either it purchases the RECs or it purchases the energy. If the energy is purchased in the MISO region of Illinois, the transmission congestion costs represent the difference in what is paid for energy at the Illinois location compared to what the wind receives in revenues from the sale of energy at its Iowa location. The Illinois purchaser would need to determine which option is likely to have the lowest cost over the long run. The Iowa wind would count for Resource Adequacy (a capacity and energy resource) within the MISO region as it is located within that same region.

Q: Did Mr. Goggin testify on the AC transmission system in MISO?

A: Yes he did, at lines 159–166. Mr. Goggin discussed MISO's Multi-Valued Projects (MVPs). He incorrectly testified that these projects "were designed to enable delivery of sufficient wind generation to meet the total demand of MISO state RPSs, if all built."

Q: What is the correct characterization of MISO's MVPs?

A: To properly understand MVPs in MISO, one must first understand what they represent. They are AC transmission upgrades that have been approved by the MISO Board and that are related to a prior study at MISO described as their Regional Generation Outlet Study (RGOS). Had Mr. Goggin been describing RGOS, his description would have been correct. The MVPs approved by the MISO Board for construction came from the RGOS study of three alternative forms of backbone transmission for the delivery of renewable energy from the best wind sites in the northwestern MISO region to MISO and PJM states not as blessed with as strong wind sites. However, the currently approved MVPs were based on additional, "connecting" high voltage projects in MISO that were needed by all three alternative designs (345 kV; 750 kV; and DC; see graphs for each design from RGOS report in LACI Exhibit 5.4) that make up the backbone for the delivery of renewable energy from the best wind sites. Moreover, the approved MVP projects will not provide delivery of the needed renewable energy from the best wind sites without the further construction of backbone facilities.

Q: Why has MISO not gone ahead with approval of the backbone facilities needed to deliver renewable energy from the best wind sites in MISO?

A: While I have no inside information on MISO's decision making process, I do know that significant effort has gone into meeting the filing requirements of the Federal Energy Regulatory Commission's (FERC's) Order 1000. Under Order 1000, MISO must determine its needs for transmission and then put these needs out for competitive bids. Putting together a totally new process for evaluating transmission projects is a major undertaking, and the results for backbone facilities could be totally different from the cost estimates for the backbone transmission facilities that were made in the RGOS.

Q: Would the implementation of the GBX project have an impact on MISO's determination of needs for the extra-high voltage backbone facilities?

A: Yes, it could impact MISO's determination of need in-so-far as the amount of wind energy needed to deliver into the MISO region of Illinois. With the GBX project delivering energy into PJM, this would most likely occur if RECs were purchased to meet the RPS for the MISO region of Illinois from renewable energy.

Q: Does this complete your rebuttal testimony?

A: Yes, it does.