BEFORE THE
PUBLIC SERVICE COMMISSION OF WISCONSIN

Investigation on the Commission's Own Motion of American Transmission Company's Access Initiative to Strengthen Electric Transmission System Ties to Areas beyond ATC's System Footprint — 137-EI-100

**ANALYSIS AND COMMENTS**
**OF AMERICAN TRANSMISSION COMPANY**

## I. INTRODUCTION.

Economic development is a crucial public-policy issue for Wisconsin.[1] A robust energy, transportation, and communications infrastructure is a key prerequisite to developing Wisconsin's economy. Just as Wisconsin's manufacturing and agricultural economy flourished because the state invested in an extensive road network decades ago to move products to market, so today we need to improve and modernize our electric, transportation, and telecommunications infrastructure to succeed in the national and global economy. Building an infrastructure that is both adequate and flexible enough to meet emerging future needs is one of the key elements of an economic development plan.[2]

Effective energy policy is the "cornerstone of economic growth and job creation in Wisconsin." Energy-policy decisions should balance the urgent need for additional infrastructure investment with the need for competitive electric rates, while increasing energy efficiency and renewables efforts.[3]

The high-voltage transmission network is a key element of the energy infrastructure. Competitive wholesale power markets are the prevailing regional and national energy-policy goal. Today more than half of the electricity generated in the United States is traded in regional wholesale markets before being delivered to retail customers.[4] As a national transmission-policy group has noted:

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[1] Recruiting and retaining employers, increasing the level of business activity, creating jobs, and adding to the tax base of the state are all essential elements of a sound economic development policy. While Wisconsin has many outstanding advantages in these areas compared to other states, it also faces serious challenges. *See generally Grow Wisconsin* (9/10/03) at http://www.wisgov.state.wi.us/docview.asp?docid=707&locid=%2019.

[2] *Grow Wisconsin*, p. 5.

[3] *Grow Wisconsin*, p. 12, 15.

[4] *Interstate Strategies for Transmission Planning and Expansion: A Report from the National Governors Association's Task Force on Electricity Infrastructure*, p. 9. This report can be found at http://preview.nga.org/Files/pdf/INTERSTATESTRATEGIESPLANNING.pdf.

> Competitive generation markets will not work with an inadequate transmission infrastructure. Vibrant markets depend on the ability of many sellers to reach many buyers. Buyers must have choices for competition to flourish. Where the grid is characterized by congestion, choices narrow rapidly and prices rise.[5]

In their recent protocol regarding the transmission system, the Midwestern governors emphasized the close relationship between a robust transmission grid and a strong economy:

> A reliable and low-cost electric transmission system is the backbone of a strong economy. A robust electric transmission system is necessary for the delivery of electricity from a variety of electric generation sources to customers.[6]

The governors also recognized the challenges that the Midwest faces in this area. They noted that curtailment of transactions as a result of transmission congestion was increasing and was costly for customers. At the same time transmission investment in the Midwest has flattened:

> Transmission investment has not kept pace with increased generation capacity in the Midwest and has remained essentially flat since 2000 . . . As a result, the Midwestern transmission grid has become more congested. FERC estimated that transmission constraints cost customers over $1 billion during the summers of 2000 and 2001. Curtailment of scheduled transmission transactions in the Midwest has more than tripled from 2000 to 2004.[7]

As a daily review of the Midwest Independent Electric System Operator's (MISO) map of locational marginal prices (LMPs) demonstrates,[8] the Wisconsin transmission system is the most constrained and congested grid within the MISO region. The Wisconsin-Upper Michigan Systems (WUMS)/Northern WUMS regions have been designated as the only Narrow Constrained Areas (NCAs) within MISO.[9] While this system historically was planned and constructed as an integrated system, the focus was on serving the WUMS load, with only limited links to the regional market. Wisconsin currently has only five 345 kV links. It has not completed a major extra-high voltage (EHV) interstate transmission line since 1974, despite substantial increases in electric demand and in the volume of energy transactions.

The result is that Wisconsin's existing transmission system is almost completely used for existing generation and power purchases. There is little or no capacity to support additional economic purchases or to interconnect additional large generation facilities. Improvements also

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[5] *Effective Solutions for Getting Needed Transmission Built at Reasonable Cost* (Transmission Access Policy Study Group (TAPS), 6/04), p. 5.

[6] *Protocol Among the Midwestern Governors Regarding the Permitting and Siting of Interstate Electric Transmission Lines in the Midwestern United States and Manitoba, Canada* (7/16/05), p. 1.

[7] *Ibid.* In an LMP market like that created by the MISO Energy Market Tariff the consequences of congestion change but are still negative for customers. There are fewer TLRs, but constraints cause congestion charges and increases in the delivered price of electricity.

[8] This map can be found at http://www.midwestmarket.org/page/LMP%20Contour%20Map%20&%20Data. More detailed information about the high and volatile LMP prices within WUMS can be found in Appendix 4.

[9] *Midwest Independent System Operator*, 108 FERC par. 61, 163 (8/6/04), p. 77, 85.

are needed to continue to serve growing demand reliably throughout ATC's service territory. No significant increase in import capability can be realized without construction of new interconnections to neighboring states.[10] The Commission noted in the most recent Strategic Energy Assessment (SEA) that every Wisconsin load-serving entity and business customer had indicated the following:

> The transmission system in Wisconsin is under stress, oftentimes constrained, and potentially underbuilt for both supply adequacy and reliability reasons.[11]

## II. ATC REQUESTS POLICY DIRECTION FROM THE COMMISSION IN THIS PROCEEDING.

As a Wisconsin public utility ATC has a legal duty to "furnish reasonably adequate service and facilities."[12] ATC also is the "transmission company" whose formation was authorized by the legislature, and whose purpose is prescribed in the statutes. This purpose is to build and maintain an adequate, reliable transmission system that meets the needs of load-serving entities and that supports effective competition in wholesale energy markets.[13]

The legal basis of this proceeding is the broad policy-making authority of the Commission.[14] The Commission has authority to initiate policy proceedings and to take appropriate action to insure that adequate transmission service is provided.[15]

ATC estimates that it would take approximately 28 months to fully develop and file all the engineering, economic, and environmental elements of an application for a certificate of public convenience and necessity (CPCN) for a major 345 kV project. It would take another 14 months for the Commission to act upon the CPCN application, assuming a 2-month period for determining completeness and the full 360 days permitted by the statute, for a total of 42 months.[16]

Given how expensive and time-consuming it is to develop a CPCN application for a major 345 kV project, ATC seeks to keep such pre-certification expenses as low as practicable. One

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[10] Direct Testimony of Harry L. Terhune on behalf of ATC, PSCW Docket No. 05-CE-113, p. 5.

[11] *Wisconsin's Strategic Energy Assessment - Energy 2010, Final Report* (PSCW, 9/04), p. 133. *See also Report to the Governor on Electric Reliability* (PSCW 9/30/97), p. 57 ("The high-voltage bulk power transmission system in the Midwest was essentially designed and built in a period extending into the 1970s and has not experienced any significant additions or upgrades since that time"); *SEA Final Report* (PSCW, 12/00), p. 71 (the state's transmission system has "scarce transfer capability," and is "handicapped by constraints and congestion"); and *SEA Final Report* (PSCW, 12/02, p. 30, 68-69) ("constraints on the movement of power" from the south and west reduce supply options for some providers).

[12] Sec. 196.03(1), Wis. Stats.

[13] Sec. 196.485(1)(ge), Wis. Stats.

[14] The legislature has authorized the Commission to "do all things necessary and convenient to its jurisdiction." Sec. 196.02(1), Wis. Stats. The Wisconsin supreme court has consistently upheld this broad discretionary authority. See *Calumet Service Co. v. City of Chilton*, 148 Wis. 334, 135 N.W. 131, 143 (1912); *Clean Wisconsin, Inc. v. Pub. Serv. Comm'n*, 2005 WI 93, ¶ 6, ___ Wis. 2d ___, ___ N.W.2d _____.

[15] Sec. 196.28, Wis. Stats.

[16] For a detailed description of these timelines, see Appendix 3.

effective way to reduce the rate impacts of pre-certification expenses is to limit development of such an application to one project. It would be prohibitively expensive and time-consuming for ATC to develop two separate projects (each with two separate routes as required by law),[17] knowing in advance that the Commission could approve only one of those projects and only one of those routes.

It is important that the project which ATC selects for design and development be fully consistent with the Commission's policy views on how to strengthen Wisconsin's EHV transmission system. For this reason it is appropriate for the Commission and its Staff to provide policy guidance to ATC in this proceeding regarding the need for an improved EHV transmission system and the attributes of an EHV project that it considers most important.

Another relevant time period is the length of time between a Commission CPCN decision and, if the project is approved, the in-service date of the project. In addition to the 42 months described above, ATC estimates that it would take at least another 42 months to survey, acquire the land, and construct a major 345 kV project, for a total of 84 months or 7 years.

This means that, if ATC were to begin pre-certification activities for a 345 kV access project in 2006, it would be 2013 at the earliest that the project would be operational. This very long lead time is another reason why it makes sense to review all the available data now in this proceeding, and to narrow the universe of choices by providing as much policy guidance as is feasible at this time. There will never be a time when all the information is available. Every year of additional study adds another year to the operation date of the project. Given the compelling need to improve Wisconsin's interconnectedness to the regional grid, further delay is a risky proposition.

## III. THIS IS NOT A PROJECT-APPROVAL PROCEEDING, BUT POLICY GUIDANCE FROM THE COMMISSION ON TRANSMISSION-EXPANSION PRIORITIES IS APPROPRIATE AND NECESSARY.

Any direction provided by the Commission in this proceeding will not have a precedential or preclusive effect on a subsequent CPCN proceeding for a proposed 345 kV project. ATC will have to demonstrate that its proposed project meets the various CPCN standards, and the Commission will have to determine, based exclusively on the record of that proceeding, whether the proposed project is consistent with the public interest, considering all the CPCN factors.

This does not mean, however, that it is inappropriate for the Commission to provide ATC with policy guidance at this time. A major 345 kV access project is a complex undertaking, involving many engineering, economic, and environmental factors. A variety of quantitative and qualitative methods are available to assess the benefits and costs of such a project. ATC has been analyzing these factors intensively for nearly two years. In this filing it is placing before the Commission all of its relevant study results.

[17] The CPCN requirement is for two alternative *routes* for the same project, not two completely different projects. See Wis. Stat. § 196.025(2m)(c).

The Commission commenced this proceeding to determine an appropriate level of access into the ATC region. In its March 25, 2005 filing ATC provided initial information about this subject, and suggested a level of simultaneous summer-peak transfer capability of 5,000 MW. In subsequent Access Initiative meetings and conferences with PSCW Staff, it became apparent that determining a level of transfer capability and calculating the impact of various projects upon that transfer capability was only one of many ways to measure how Wisconsin can achieve a more robust transmission system. Several different studies of transfer-capacity levels are presented in this filing, but so are many other measures of transmission adequacy.

A major 345 kV project is an asset that will function for all 8760 hours of the year, and for at least 60 years.[18] ATC has therefore sought to put before the Commission all the quantitative and qualitative information it could gather to measure the lifetime costs and benefits of such a major investment. Following comments from the parties and the PSCW staff analysis, this matter will be ripe for policy guidance from the Commission.

## IV. ATC'S ACCESS INITIATIVE HAS PROGRESSED TO THE POINT WHERE COMMISSION DIRECTION IS NEEDED.

Following its formation in 2001 ATC made a commitment to a public transmission planning process. Each year it prepares its 10-Year Assessment and conducts meetings in each of its regional zones to gather information about regional and statewide needs. In 2004 it began its Access Initiative. This initiative has consisted of regular meetings with stakeholders and an iterative process of technical studies and analyses of access options in response to input from stakeholders. Participants in the Access Initiative have included all the Wisconsin load-serving entities (investor-owned utilities, municipal utilities, and rural electric cooperatives), IPPs, customer and environmental groups, and PSCW Staff. All of the materials regarding the Access Initiative have been posted on the ATC website for review and comment.[19]

One of the reasons for the Access Initiative was to conduct an open, public process that would avoid some of the controversy that has attended the Arrowhead-Weston project. In 1998 Wisconsin repealed the Advance Plan, because there was a general consensus that it had become a cumbersome process outpaced by rapid regional and national changes in the electric industry. Following the reliability crisis in the summer of 1997, during which the effects of nuclear outages were aggravated by the state's lack of import capability, there was a compelling need to begin to take action to modernize the state's transmission system. The utilities formed the Wisconsin Reliability Assessment Organization (WRAO) and issued the WIRES report describing various 345 kV projects. A CPCN application was filed for one of these projects, the Arrowhead-Weston line. Some groups felt that this process was not as broadly participatory or extensive as it could have been.

In launching its Access Initiative and conducting it over a nearly two-year period, ATC has sought to put its technical expertise and experience at the disposal of stakeholders in order to

[18] Currently, the book life for a major 345kV line is 40 years. The actual life is at a minimum 60 years. The ROW in many cases has an even longer useful life for utility purposes, because aging structures can often be replaced with new structures on the same ROW.

[19] See http://www.atcllc.com/IT2c.shtml.

present as much information as practicable about access options. But, at a certain point, there are limits to what ATC and other stakeholders can do because in the end the Commission makes the regulatory decisions about transmission expansion in Wisconsin.

The Commission has shown great leadership by initiating this policy proceeding on its own initiative. ATC believes that the Access Initiative is at the point where specific policy input from the Commission is timely and necessary. Every major transmission project will generate a certain level of controversy. But the Commission can mitigate some of the regulatory uncertainty surrounding transmission expansion by providing specific policy guidance to ATC and other stakeholders in this proceeding.

## V. ATC HAS INCLUDED IN THIS FILING COMPREHENSIVE QUANTITATIVE AND QUALITATIVE, SHORT-TERM AND LONG-TERM STUDY RESULTS ABOUT THE PROPOSED EHV PROJECTS.

Evaluating the manifold economic savings and costs, risks and benefits of a major, interstate 345 kV transmission line is a major undertaking. Such a facility has at least a 60-year useful life. It will not go into service until at least 2013. Predicting what the electric industry in the upper Midwest will look like in the period 2013-2073 is fraught with uncertainty. In its Access Initiative and in this filing, ATC has made use of many different tools to predict these future circumstances. Among the most valuable of the resources available to ATC has been the experience and expertise of the numerous stakeholders that have participated in the Access Initiative. The input and guidance of these stakeholders have heavily influenced the elements of this filing.

The first set of measurement tools that ATC has employed, and the results of those measurements, are set forth in the *2005 ATC Access Study Initiative*. The principal study results of this Report are:

- Project capital costs and estimated energy savings of each project as of 2013, based on PROMOD modeling results (PROMOD models generation production costs under transmission-constraint conditions)
- Five sensitivity analyses that vary key components of the 2013 analysis, also derived from PROMOD
- Estimated increases in import capability resulting from each of the projects
- System performance analyses (losses and double-circuit tower-outage contingencies)
- Key reliability measures (Loss of Load Expectation (LOLE) and Expected Unserved Energy (EUE))
- Projected reserve-margin savings
- Savings due to deferral of other transmission projects
- Corridor-sharing and new-ROW data for each project

Some qualifications are in order regarding the PROMOD results. PROMOD is a powerful tool for modeling generation production costs by utilizing power-flow algorithms that indicate optimal security-constrained economic dispatch. Its usefulness as a predictor of energy savings

from various future expansion scenarios is much less certain. The accuracy of PROMOD's results is entirely dependent upon creating a comprehensive representation of the entire upper Midwestern grid (including generation and load) for a time eight years in the future. When one considers that five years ago, a change as fundamental as the development of the MISO energy market was not even foreseen, one begins to appreciate that, while undoubtedly very useful, PROMOD should not be relied upon exclusively to make regulatory-policy decisions.

No matter how powerful the tool, one cannot accurately predict at this time which generation facilities will be sited where, whether and when existing generation facilities might be retired, the relative prices of fuels, what the load will be, what the economic strategy and bidding behavior of generators will be, and what the structure of regulation will be at FERC and in the Midwestern states. As the Wisconsin supreme court stated with respect to the EGEAS system-optimization model in the Power the Future case, computer-modeling "is a primary tool but it is by no means the only tool," and deciding which resource options should be selected "requires the exercise of judgment and consideration of a wide variety of qualitative factors."[20]

These particular PROMOD runs also employ very conservative estimates that tend to understate the benefits of access projects. For example, the input data for energy prices are based upon generator production costs, whereas actual supply bids under the MISO EMT are market-based not cost-based. No generator retirements are assumed to occur anywhere in the system after 2005 – hardly a likely occurrence. Coal plants within the ATC system have capacity factors as high as 96% in the model – a very optimistic scenario. Also, wind facilities are assigned only a 33% capacity factor, when the latest data from some wind facilities in Iowa is that they are operating at higher capacity factors.[21] Finally, it is important to note that these PROMOD results are for a single year (2013). This is one of 40-60 years that an access facility will be in use. While the economic results for the first year of operation will presumably have some persistence, after time they will change as different industry and regulatory scenarios play out across the upper Midwest.[22]

Another factor to note regarding these projects is that ATC has conservatively assumed throughout all of its analyses that its customers will pay 100% of the construction costs of these projects. However, all of the proposed projects have direct positive impacts on neighboring systems.[23] MISO is currently conducting its Regional Expansion Cost-Benefit (RECB) initiative, and is expected to file in September, 2005 for FERC approval of a mechanism for cost-sharing of projects that have "reliability" benefits on other systems. MISO and FERC also will have to develop cost-allocation methods for backbone or highway projects that have both "reliability" and "economic" benefits, as most major interstate projects do. The Midwestern governors, in their recent protocol, agreed to increase coordination within the Organization of MISO States (OMS) for purposes of transmission planning and expansion.[24] Such regional

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[20] *Clean Wisconsin, Inc., supra,* at ¶ 148.

[21] 2005 ATC Access Study Initiative Report, ("ASI Report"), p. 5, 13.

[22] For a more detailed discussion of the uncertainty factor and the limits of computer modeling, see Assessment of Other Factors: Benefit-Cost Analysis of Transmission Expansion Plans, ("Other Factors Report"), p. 7-8.

[23] *Ibid.*, p. 19-21.

[24] See note 6, *supra.*

coordination will lay the groundwork for cost-sharing on mutually beneficial projects. For all these reasons it is reasonable to infer that, by the time these projects are in service, they may be eligible for some level of regional cost-sharing.[25]

The second set of results that ATC is presenting measures the projects according to various criteria, and then ranks them using a point system. These results are set forth in the *Assessment of Other Factors* Report prepared for ATC by Christensen Associates Energy Consulting. This Report provides a quantitative assessment of each of the projects with respect to the following factors:

- Mitigation of fuel cost and generation capability risks
- Reduced outage costs to retail consumers
- Improved voltage performance
- Benefits to neighboring transmission systems
- Increased thermal transfer capacity
- Miles of new right-of-way (ROW)
- Access to renewable resources
- Local economic benefits as a result of infrastructure investment
- Increased access to the 345 kV system
- Geographic diversity of the 345 kV system
- Improved LMP comparability within the ATC system

In preparing these two Reports, ATC carefully reviewed the area-specific environmental data that it has available to it. Each of these projects will have environmental impacts, and impacts upon the communities and landowners affected by the project. In analyzing this important criterion of environmental and social impacts, ATC concluded, however, that these effects were route-specific. In other words, the actual likely impacts cannot be usefully evaluated until a route and an alternative route are selected. While broad corridor information is available and is presented in this filing, it does not provide a basis to evaluate impact until the specific route within that broad corridor is known. For example, while a broad corridor may contain prime agricultural land or sensitive environmental areas, there also may be an existing transmission, highway, or rail route through that corridor that will avoid these areas. ATC has concluded that specific environmental evaluation of the EHV projects is appropriately left to the route-specific CPCN process and to the PSCW environmental review and DNR permitting process that will accompany this process.

Finally, ATC has prepared Appendices to its filing that cover the following pertinent subjects:

- Differences between WUMS and MISO LMPs and the dollar impacts of those differences
- Impact of adequate supply-delivery capacity on volatility of prices in electricity and other commodity markets
- Status of the MISO RECB process regarding cost-sharing of projects

[25] For a description of the RECB process and the current cost-sharing proposals, see Appendix 1.

- Transmission-planning status in contiguous states
- Estimated schedule from start of pre-certification activities to in-service date

In an effort to assist the Commission and its Staff, as well as the parties to this proceeding, ATC has prepared a Decision Matrix that displays in a single location all of the various study results:

# DECISION MATRIX - PSCW Docket No. 137-EI-100

## Economic Factors

| Scenario/ Category | Measure (2005$) | Economic Component | Access Alternatives | | | | |
|---|---|---|---|---|---|---|---|
| | | | Paddock - Rockdale | Salem - North Madison | Lower Voltage | Byron - North Madison | Prairie Island - Columbia |
| Capital Costs | $Millions | Estimated Cost of Package | 69.1 | 352.3 | 33.0 | 186.1 | 639.7 |
| | $Millions/year | Annual Capital Carrying Cost | 5.5 | 27.9 | 2.6 | 14.8 | 50.7 |
| PROMOD Analysis - Base Models[1] | $Millions/year | Market Savings - Draw 1 | 9.4 | 9.8 | 8.8 | 10.8 | 8.7 |
| | | Market Savings - Draw 2 | 8.7 | 8.8 | 7.9 | 10.3 | 9.1 |
| | | Market Savings - Draw 3 | 8.9 | 8.8 | 8.6 | 10.5 | 9.1 |
| | | Average Market Savings | 9.0 | 9.2 | 8.5 | 10.6 | 9.0 |
| | | Standard Deviation | 0.4 | 0.6 | 0.5 | 0.2 | 0.2 |
| | | **Annual Net Savings** | **3.5** | **-18.8** | **5.8** | **-4.2** | **-41.8** |
| Annual Capital Carrying Charge | 7.93% | | | | | | |

## Sensitivities

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sensitivity #1: High Gas Prices | $Millions/year | Market Savings | 10.9 | 10.1 | 10.0 | 12.2 | 10.6 |
| | | **Annual Net Savings** | 5.4 | -17.8 | 7.4 | -2.6 | -40.1 |
| Sensitivity #2: CT Bid Up $50 | | Market Savings | 10.6 | 12.2 | 9.9 | 13.2 | 10.4 |
| | | **Annual Net Savings** | 5.1 | -15.7 | 7.3 | -1.6 | -40.3 |
| Sensitivity #3: Three WI Nukes Out | | Market Savings | 26.4 | 29.0 | 22.5 | 30.8 | 29.1 |
| | | **Annual Net Savings** | 20.9 | 1.0 | 19.9 | 16.1 | -21.7 |
| Sensitivity #4: Elm Road 3 | | Market Savings | 5.1 | 5.8 | 4.8 | 6.3 | 10.6 |
| | | **Annual Net Savings** | -0.4 | -22.1 | 2.1 | -8.4 | -40.1 |
| Sensitivity #5: Bid 150% of Production Cost (for generators within ATC) | $Millions/year | Market Savings | 16.1 | 16.2 | 14.8 | 17.9 | 13.4 |
| | | **Annual Net Savings** | 10.6 | -11.7 | 12.2 | 3.1 | -37.4 |
| | $Millions | Average LMP Penalty | 3.41 | 3.35 | 3.43 | 3.15 | 3.37 |

**List of HV Projects Included in Package:**

| | |
|---|---|
| **Paddock - Rockdale** | Potosi - Hillman 138 kV; Cassville - Nelson Dewey 161 kV; Hazelton - Dundee 161 kV |
| **Salem - North Madison** | Salem - Maquoketa 161 kV; Davenport - East Calamus 161 kV; Hazelton - Dundee 161 kV |
| **Lower Voltage** | Potosi - Hillman 138 kV; PAD 2nd Xfmr + PAD-TLR Double Circuit; Hazelton - Dundee 161 kV |
| **Byron - North Madison** | Potosi - Hillman 138 kV; Hazelton - Dundee 161 kV |
| **Prairie Island - Columbia** | PAD 2nd Xfmr + PAD-TLR Double Circuit; Potosi - Hillman 138 kV; Cassville - Nelson Dewey 161 kV |

**Notes:**

1. The estimated PROMOD Market Savings are based on generator production costs for 2013 and were converted to 2005 dollars using a 3% inflation factor. Using bid costs, which are not available yet, instead of production costs, may show higher savings.

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*(continued)*

## Other Factors

| Scenario/Category | Measure | Access Alternatives | | | | | |
|---|---|---|---|---|---|---|---|
| | | Base Case | Paddock - Rockdale | Salem - North Madison | Lower Voltage | Byron - North Madison | Prairie Island - Columbia |
| **System Performance** | | | | | | | |
| First Contingency Total Transfer Capability | MW | 1913 | 2789 | 3342 | 3166 | 3094 | 3118 |
| VSAT Transfer Capability Results | Transfer Level (MW) | 2465 | 3715 | 3862 | 2493 | 3834 | 3056 |
| Type of VSAT Limit | Due to Voltage Collapse | LV | VC | VC | LV | VC | LV |
| Highest PROMOD Import Level | MW | 3339 | 3871 | 3609 | 3740 | 3907 | 3916 |
| Maximum Imports (PROMOD) | MW | 4424 | 4996 | 4960 | 4747 | 5101 | 5189 |
| ATC System Losses | MW | 425 | 412 | 409 | 427 | 406 | 427 |
| **LMP Comparability** | | | | | | | |
| Average Std Deviation of LMPs | $ (2005 $) | 1.667 | 1.518 | 1.494 | 1.528 | 1.485 | 1.567 |
| **Reliability** | | | | | | | |
| LOLE | probability, days/year | 0.03423 | 0.00319 | 0.00055 | 0.00099 | 0.00124 | 0.00116 |
| Total EUE | MW Hr/yr | 31974 | 24330 | 6726 | 28026 | 6956 | 28391 |
| **Project Mileage** | | | | | | | |
| 345 kV Miles | miles | 0.0 | 34.8 | 149.0 | 0.0 | 97.0 | 275.5 |
| 161 kV and Lower Voltage Miles | miles | 0.0 | 24.5 | 188.6 | 52.6 | 62.0 | 125.7 |
| Total miles | miles | 0.0 | 59.3 | 337.6 | 52.6 | 159.0 | 401.2 |
| **Reduced Operating Risk** | | | *Ranking of 1 to 10 (best)* | | | | |
| Fuel Diversity | | | 9.6 | 8.2 | 9.7 | 9.3 | 10.0 |
| Technology Diversity | | | 8.6 | 10.0 | 8.3 | 8.8 | 0.0 |
| **Reliability Benefits** | | | | | | | |
| EUE Ranking | | | 3.0 | 10.0 | 1.6 | 9.9 | 1.4 |
| Improved System Performance | | | 8.9 | 9.8 | 0.2 | 10.0 | 4.2 |
| **Power System Externalities** | | | | | | | |
| Benefits Realized by Neighboring Systems | | | 8.0 | 8.0 | 2.0 | 8.0 | 10.0 |
| Enhanced Value to Other Projects | | | 0.0 | 10.0 | 0.0 | 0.0 | 0.0 |
| Transfer Capability | | | 6.1 | 10.0 | 8.8 | 8.3 | 8.4 |
| **Environmental Benefits and Costs** | | | | | | | |
| Societal Impacts | | | 9.5 | 9.6 | 10.0 | 6.5 | 0.0 |
| Deliverability of Renewable Resources | | | 4.9 | 7.1 | 4.5 | 5.2 | 5.8 |
| **Economic Development** | | | | | | | |
| Local & State Economic Development | | | 5.0 | 7.5 | 4.3 | 6.7 | 10.0 |
| Backbone Infrastructure | | | 1.3 | 5.4 | 0.0 | 3.5 | 10.0 |
| Geographic Diversity | | | 0.0 | 10.0 | 0.0 | 3.3 | 10.0 |
| **Fairness and Equity Aspects** | | | | | | | |
| LMP Comparability | | | 6.9 | 9.6 | 8.3 | 10.0 | 3.9 |
| **ATC Cost Responsibility per MISO RECB** | | | | | | | |
| MISO-only area | % of total cost | | 69% | 46% | 41% | 63% | 42% |
| Combined MISO and PJM area | % of total cost | | 47% | 33% | 32% | 38% | 34% |

## VI. ATC'S ANALYSIS OF THE INDIVIDUAL PROJECTS.

In this section ATC presents and analyzes the study results for each of the five projects. Two critical qualifications apply to this analysis. First, while ATC uses the PROMOD results for purposes of this analysis, these results do not present objective, empirical data that can be exclusively relied upon as a guide to policy-making. The PROMOD results are elaborate predictions that are subject to great uncertainty, for a variety of independent reasons.[26] Secondly, this analysis is not an exhaustive description of all the outcomes for each project. It is an account that focuses on the salient positive and negative features of each project.[27]

### A. Lower-Voltage Project.

This project is not a backbone addition to the Wisconsin 345 kV system but a rebuild of a 161 kV line in eastern Iowa (from Lore to Nelson Dewey). It is presented in this filing not as an alternative to the four EHV projects, but as a solution to a chronic constraint affecting the ATC system.

Because it is a rebuild of a lower-voltage line, this project (with its associated projects) has the lowest total capital cost of all the projects ($33M). It yields less per year in energy savings than the other projects ($8.5M). However, because of its low estimated carrying cost ($2.6M) it shows a positive annual benefit/cost savings of $5.8M. A positive net savings is maintained over all the five sensitivities.[28]

The LV project performs in the same range as the EHV projects with respect to First Contingency Total Transfer Capability (FCTTC), increasing FCTTC by 1,253 MW over the base case. It does not perform as well as the EHV projects with respect to voltage security, as measured by VSAT Transfer Capability. Also, when supporting projects are added, it reaches 4,374 MW of import capability, less than any other project except Paddock-Rockdale.[29]

In terms of outage risk, the LV project does not perform well compared to some of the other projects. It yields expected unserved energy (EUE) of 28,026 MWh/year, much higher than the results of the two lines that terminate in North Madison.[30]

While this project, like the other projects, scores well on an index of savings from fuel diversity, it scores the lowest of the projects on an index of generator-outage risk (technological diversity).[31]

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[26] See *Other Factors Report, supra* p. 7-8.

[27] The Decision Matrix contains most of the study results for this analysis. Footnotes 28-53 also provide specific references to the pertinent Tables and Figures in the *ASI* and *Other Factors Reports*.

[28] *ASI Report, supra*, Tables 5, 6.

[29] *ASI Report, supra*, Figure 2; Table 15.

[30] *ASI Report, supra*, Table 13.

[31] *Other Factors Report, supra*, Tables 2, 3.

Regarding external impacts, this project scores well because it is an upgrade and requires no new ROW. It shows positive advantages in increasing access to renewables, mainly because it improves the deliverability of Wisconsin-based wind energy better than the other alternatives.[32]

Predictably, the LV project provides fewer benefits to neighboring transmission systems than the EHV projects. By definition, this project also does little to produce direct economic-development benefits for Wisconsin, or improved access to and geographic diversity of the 345 kV system.[33]

### B. Byron-North Madison.

The Byron-North Madison project (B-NM) is the least costly of the freestanding 345 kV projects with a total package cost of $186M. It also shows the highest annual energy savings ($10.6M) of all the projects but, because of its annual capital cost, yields a net negative cost-benefit for 2013 of $4.2M.[34] Significantly, according to PROMOD, it produces more production-cost savings under each of the sensitivities (except compared to Prairie-Island with Elm Road III in service) than all of the other projects.

Also importantly, when the supporting projects are built, B-NM yields the highest total transfer capability of all the projects (5,359 MW). B-NM adds more transfer capability due to improved voltage performance than any of the other projects. As does the Salem-North Madison project, B-NM also mitigates customer outage risk (EUE relative to the base case) better than any of the other projects. Finally, B-NM is projected to reduce LMP variability within the ATC system more than any other project.[35]

Except for Prairie-Island-Columbia, B-NM requires more new ROW than any of the other projects (56 miles). Also, because of its proximity to the existing Paddock-Rockdale line, B-NM does not rank high on the geographic-diversity scale.[36]

### C. Paddock-Rockdale.

The Paddock-Rockdale project (P-R) adds another circuit to the existing Paddock-Rockdale line. This project is entirely within the ATC system, i.e. it does not create a new interstate interconnection to the regional grid. In effect, it is the continuation further into Wisconsin of the recently constructed Wempletown-Paddock double circuit.

Paddock-Rockdale is the shortest (34.8 miles) and the cheapest ($69M) of the EHV project packages. Certain consequences flow from these facts. Because of its lower annual carrying cost, it is predicted to produce a net energy savings of $3.5M/year. It requires only 8 miles of

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[32] *Other Factors Report, supra*, Table 15.

[33] *Other Factors Report, supra*, Tables 9, 16, 17, 18.

[34] *ASI Report, supra*, Tables 5, 15.

[35] *ASI Report, supra*, Figure 2; Table 13; Figure 3; *Other Factors Report, supra*, Tables 8, 19.

[36] *Other Factors Report, supra*, Tables 11, 18.

new ROW. On the other hand, it creates less additional import capability than the other EHV projects, and, even when supporting projects are added, less total transfer capability.[37]

This project also provides less of a potential reduction in internal generation (LOLE), and hence less of a potential reserve-margin reduction than the other EHV projects. P-R also does not reduce Expected Unserved Energy nearly as much as B-NM and Salem-NM are projected to do.[38]

Because this project will share common structures with the existing P-R 345 kV line, loss of a structure due to a storm or accident will result in a double contingency i.e. both of the 345kV lines would be out of service simultaneously and unexpectedly. If this double contingency occurs, power-flow simulations indicate that voltage instability and/or cascading outages could occur if imports into the ATC footprint were high.[39] Double-circuiting this 345kV line thus presents serious reliability concerns. These risks would have to be avoided through construction of other facilities, special protection schemes, import limits, or load-shedding.

The P-R project does not contribute to increasing the geographic diversity of Wisconsin's transmission system. ATC's studies show that in certain situations it exacerbates the system's lack of geographic diversity. P-R scores the lowest of all the projects in improving the geographic diversity of ATC's system.[40]

### D. Salem-North Madison.

The Salem-North Madison (S-NM) project runs through the southwest area of the state that currently has no 345 kV line. It also provides a 345 kV connection to an adjoining state (Iowa) to which Wisconsin does not have a 345 kV connection. For this reason, S-NM scores highest among the projects with respect to several key factors: geographic diversity benefits, overall access to renewables, potential reserve-margin benefits (reduction in LOLE), and decreased customer-outage risks (reduced EUE). It has the fewest miles of required new ROW of all the projects (6), which is surprising given its length (149 miles).[41]

It is, however, the second most costly project package to construct at $352M, and for that reason shows a net cost-benefit for 2013 of negative $18.8M.[42]

Alone among the projects S-NM defers other scheduled reliability projects, for a present value of $3.6M. S-NM also does very well with respect to all of the import capability measures (increased imports over the base case for 2013; total transfer capability when other projects are built; increased transfer capacity due to improved voltage performance, and increased thermal

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[37] *ASI Report, supra*, Tables 3, 5, Figure 13; Table 15; *Other Factors Report, supra*, Tables 10, 11.

[38] *ASI Report, supra*, Tables 10, 11, 13; Figure 3; *Other Factors Report, supra*, Tables 5, 6, 7.

[39] *ASI Report, supra*, p. 23-24.

[40] *Other Factors Report, supra*, Table 18.

[41] *ASI Report, supra*, Table 10; *Other Factors Report, supra*, Tables 7, 11, 15.

[42] *ASI Report, supra*, Tables 5, 15.

transfer capability). S-NM and B-NM also produce more LMP comparability than the other projects.[43]

### E. Prairie Island-Columbia.

The Prairie-Island-Columbia project (PI-C) is by far the longest among the projects at 275 miles and the most costly ($640M). Consequently, since all the EHV projects show similar energy savings, PI-C has the poorest cost-benefit results at negative $41.8M. Related to its length are the findings that it requires the most miles of new ROW (159) and that it provides the best access for loads to the 345 kV system.[44]

Due to its location PI-C provides the most benefits to neighboring systems of all the projects.[45] While it scores well in terms of potential reserve margin benefits (reduced LOLE), it does not do as well as the other EHV projects in reducing the risk of unserved energy (EUE).[46] Nor does it match up with the other projects in reducing LMP variability within the ATC system.[47]

The results are mixed as to the measures that calculate transfer-capacity improvements. It does well in increasing imports over the base case, as well as (with supporting projects) achieving a high overall level of TTC and increased thermal transfer capability. But it ranks last among the projects in increasing transfer capacity by improving voltage performance.[48]

### F. ATC's Preliminary Findings Regarding the Individual Projects.

ATC selected the Low-Voltage package as the best available set of low-voltage fixes that mitigates some of the chronic limits on its system. ATC is committed to continuing to address the chronic LV limiters to its system, whether these impediments are within or outside the ATC system. It intends to address current chronic limitations either by the LV package or by selecting other projects that will address these problems.

While, according to PROMOD, the LV project produces some obvious projected benefits (such as energy savings in relation to estimated capital costs for 2013), it also has some serious weaknesses in terms of improving Wisconsin's EHV system. The transfer-capacity measures are important because they are indicators of the connectivity of the ATC system to the regional grid, i.e. of decreased congestion and increased access to diverse generation resources. One of the weaknesses of an LV-only approach is that it "runs out of gas" in increasing transfer capability into the ATC system and in improving ATC system reliability. ATC's studies show that this option is not an effective first step in reaching 5,000 MW in import capability because, even if other supporting projects are built, the state does not achieve this level of transfer capacity. Also as expected, this project would not increase import capability by materially improving voltage on

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[43] *ASI Report, supra*, Table 5, 14; Figure 2; *Other Factors Report, supra*, Tables 8, 10, 19.

[44] *ASI Report, supra*, Table 5; *ASI Report, supra*, p. 32; *Other Factors Report, supra*, Tables 11, 17.

[45] *Other Factors Report, supra*, Table 9.

[46] *ASI Report, supra*, Table 10, Table 13, Figure 3.

[47] *Other Factors Report, supra*, Table 19.

[48] *ASI Report, supra*, Table 5; Figure 2; *Other Factors Report, supra*, Tables 8, 10.

the ATC system. Finally, a preliminary ATC study of system reliability in the Southwestern Wisconsin area for year 2019 indicates that additional projects will be required to maintain system voltage even if the LV project is constructed. The number of voltage violations in this analysis points to a possible systemic weakness that may require a substantial system reinforcement, such as an EHV project.[49]

Because it is an LV fix in Iowa, this option also does nothing to improve the backbone 345 kV infrastructure within Wisconsin. It does not produce geographic diversity, does not improve access to the EHV grid, and does not produce substantial economic-development benefits within the state. Compared to the EHV projects, it has little impact in reducing the risk of customer outages, as measured by the EUE index.[50] For all these reasons ATC does not regard the LV option as the appropriate solution for current Wisconsin's EHV infrastructure deficit.

The Prairie Island-Columbia project also does not measure up well when all of the various costs and benefits are considered. Its principal disadvantage is its very high cost in relationship to all the other projects ($640M). While it scores well in some of the analyses (e.g. reduced LOLE), it does not do as well as the other, less costly projects in other key areas. These other areas include customer-outage risk (EUE), voltage performance, and miles of new ROW. One can also reasonably infer that, as the longest project in length (275 miles), it will have the greatest cumulative environmental and land-use impacts of all the EHV projects.[51] For all these reasons, ATC's current balancing of factors does not place this project on a continued-development track, unless substantial cost-sharing proposals by neighboring transmission owners materialize in the near future.

This leaves three 345 kV options for further development – Byron-North Madison, Salem-North Madison, and Paddock-Rockdale. Paddock-Rockdale takes advantage of the recently constructed Wempletown-Paddock double circuit, and extends it into eastern Dane County. As the shortest project in length, almost entirely along existing ROW, it has certain cost and impact advantages. But its disadvantages are equally obvious. Because double-circuiting creates the risk of an unexpected, simultaneous outage of two 345 kV lines, this option presents major reliability problems. These problems would have to be resolved by other measures, the risks and costs of which have not been calculated. Nor does this project do anything to improve the lack of geographic diversity of Wisconsin's 345 kV system. Also, P-R's performance in reducing the risk of customer outages is much less favorable than the two projects terminating in North Madison. Like the LV option, it does not measure up in terms of improving total transfer capacity for the state. It does not create a new pathway that expands the state's interface with the regional grid, and thus does not significantly expand optionality and flexibility.[52]

The two remaining projects — Byron-North Madison and Salem-North Madison — are both more costly than Paddock-Rockdale. Yet both of these projects do what the Paddock-Rockdale project does not do – provide substantially improved transfer capacity, reduced customer-outage

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[49] *ASI Report, supra*, Figure 2; p. 23-24, 30; *Other Factors Report, supra*, Table 8.

[50] *Other Factors Report, supra*, Tables 16, 17, 18; *ASI Report, supra*, Table 13.

[51] *ASI Report, supra*, Tables 13, 15; *Other Factors Report, supra*, Table 11; p. 27.

[52] *ASI Report, supra*, Table 13; p. 23-24; Figure 2; *Other Factors Report, supra*, Tables 6, 10, 17, 18.

risks, and improved system reliability and geographic diversity. Salem-North Madison is more costly than Byron-North Madison, but it also has some compensating advantages — fewer miles of new ROW, creating a strong 345 kV link in a direction (SW to NE) where there is no link, eliminating the need for other reliability projects in the area, and performing best of all the projects on some key measures (decreased outage risk (EUE), potential reserve-margin benefits (LOLE), improved deliverability of renewables, and greater LMP comparability within the ATC system).[53]

## VII. THE AVAILABLE DATA SHOWS THAT A NEW EHV PROJECT WILL PRODUCE MANY POSITIVE RESULTS AND WILL PROVIDE A HEDGE AGAINST CONGESTION COSTS AND INCREASED OPTIONALITY TO WISCONSIN LOAD-SERVING ENTITIES.

### A. Common Positives in the ATC Study Results.

One of the most consistent results of the *Access Study Initiative* and the *Assessment of Other Factors* is that *all* of the 345 kV projects produce economic and reliability benefits of many different types. The study results show that, for many of the factors analyzed, all of these projects yield substantial benefits for Wisconsin customers and load-serving entities. While there are differences in degree of benefit among the projects, depending on the factor, the overall results for these projects generally display a range of positive benefits. Nor are these benefits minimal in character. Whether the factor is an "economic" factor or a "reliability" factor or, as most of the factors are, a combination of both, the results generally show substantial improvements for all the EHV projects.

Thus the *Access Study Initiative* report shows that all of the 345 kV projects yield the following results:

- increased import capability over the base case and, if supporting projects are built, greatly enhanced import capability
- decreased ATC system losses
- potential reduction in internal generation and hence reserve-margin savings
- reduced expected unserved energy and hence fewer customer outages
- production-cost (energy) savings in the base case and in all of the sensitivities[54]

The *Assessment of Other Factors* Report demonstrates that all of these projects produce the following advantages:

- improved fuel diversity and hence reduced risks regarding energy costs
- increased technology diversity and hence reduced generator-outage risks
- improved import capability due to better voltage performance
- increased thermal transfer capability
- benefits to neighboring transmission systems

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[53] *Other Factors Report*, *supra*, Tables 11, 15, 19; *ASI Report*, *supra*, Tables 10, 13.

[54] *ASI Report*, *supra*, Tables 5, 6, 8, 9, 10, 11, 13; Figures 2, 3; see also *Other Factors Report*, *supra*, Table 7.

- increased access to Wisconsin and non-Wisconsin renewable resources
- local and statewide economic-development benefits[55]
- increased access to the 345 kV system (more transmission backbone infrastructure)
- improved LMP comparability within the ATC system[56]

Given the consistency of these outcomes, it is reasonable to conclude that Wisconsin needs an additional 345 kV project, and that the overall benefits of such a project outweigh its costs. It also is reasonable to conclude that, in order for Wisconsin to capture these benefits, it is appropriate for ATC to file an application for Commission authorization to build a new 345 kV project.

### B. Another Common Positive: Improved Connectability of New Wisconsin Generation and Load.

The major focus of this proceeding is an inquiry into strengthening transmission ties to areas beyond the ATC footprint. All the EHV projects under consideration in this proceeding accomplish this goal. By adding basic "highway" infrastructure within the ATC system, they also will produce another major benefit: improved ability for new generation and load to connect to the ATC system.

Currently, in most locations on the ATC system, it is not possible to site a major new generation facility without substantial, costly transmission upgrades. Also, in many locations on the ATC system, it is not possible to connect a major new load to the electrical system without substantial, costly upgrades.[57] Strengthening the backbone of the ATC 345kV system will help alleviate both of these problems.

Electrical demand in Wisconsin continues to grow. Two of Wisconsin's major utilities (Alliant Energy and Wisconsin Public Service Corporation) set new records this month for peak demand.[58] To serve this growing demand electric providers have been planning to add new generation within the time frame that it will take to place a new EHV project in service (2013). For example, Alliant Energy has publicly announced that it is planning the addition of 250 MW of coal generation in Wisconsin in 2012, and has asked MISO to examine the prospect of adding this generation either at the Nelson Dewey Generating Station near Cassville or the Columbia

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[55] The positive economic-development impacts of adding to the capital stock of the state through transmission investment are real but hard to measure. Such an investment will increase the Gross State Product (GSP) and positively affect employment, wages, and household income, although it is difficult to measure these benefits precisely. *See Other Factors Report*, p. 33-36. A new EHV line will definitely increase the tax revenues of the municipalities it traverses, in the form of a direct immediate payment equal to 5% of the cost of the project, and an annual utility-aid payment based on the book value of the facility. *See* Wis. Stat. §§ 16.969(2)(a) and (b).

[56] *Other Factors Report*, *supra*, Tables 2, 3, 8, 9, 10, 15, 16, 17, 19.

[57] See *supra*, note 10, Direct Testimony of Harry L. Terhune. New retail load generally will connect to the transmission system through a local distribution system. *See* Sec. 196.485(3m)2.b.

[58] WPS Press Release, "Sultry Weather Coaxes Customers to Record Electric Use Again!" (August 3, 2005), available at http://www.wpsr.com; Alliant Press Release, "Alliant Energy – WP&L Sets New Peak Electric Demand Record," (August 9, 2005), available at http://www.alliantenergy.com.

Energy Center near Portage.[59] The PSCW table of "Wisconsin Generation Construction" also lists WPS, Dairyland Power Cooperative, and Mid-American Power Company (at Stoneman) as considering coal plants during this same time frame.[60]

These generation facilities will be inland from the Great Lakes, and many of them propose to use the Mississippi or the Wisconsin Rivers for cooling purposes. ATC does not determine, nor can it predict, where generators will seek to locate their facilities. It has a duty to serve such generators in accordance with its non-discriminatory business practices. The point is that the EHV projects under review in this proceeding will improve the ability of the ATC system to interconnect new utility-scale generators.

Improving and geographically diversifying Wisconsin EHV infrastructure also will help retain and recruit new industrial loads for the state. Having such basic infrastructure in place is an attractive asset for industry (e.g. a major manufacturing facility) considering expanding or locating in Wisconsin. Wisconsin's sparsity of EHV infrastructure is an impediment to economic development, especially in areas of the state without a 345 kV line. For example, an automobile manufacturer considering locating in Wisconsin will be more likely to do so if it will not have to wait several years before adequate transmission infrastructure is in place. Increasing Wisconsin's ability to interconnect major new load is another substantial benefit of these EHV projects. [61]

Such a project will not only facilitate interconnectability for new generation and new load. It also will improve transfer capacity from that generator and to the provider serving that load. Hence, the generator will be better able to sell its output, both within and outside of the ATC system, and the load-serving entity will be better able to purchase electricity within and outside of the ATC system.

### C. The Value of Transmission as a Price Hedge against Electric Price Volatility.

There are several reasons why electricity is characterized by high levels of price volatility. First, it cannot be stored, and so inventory supplies cannot be used to hedge risks. Second, since power systems must continuously meet constantly varying demand, price volatility can occur in every hour of every day. Third, electricity as a network industry is subject to strong externalities, i.e. supply and demand events at one location of the network can have a profound impact on costs and prices at other locations of the network.[62]

The Commission has recognized that increasing transmission connections can decrease electric prices as well as improve reliability. In the summer of 1997 outages at nuclear plants in Wisconsin and Illinois and a lack of import capability caused an extended electrical emergency

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[59] Alliant Press Releases, "Alliant Energy Unveils 2006 – 2013 Generation Plan," (August 2, 2005); "Wisconsin Power and Light Company Files Dual MISO Requests," (June 15, 2005), available at http://www.alliantenergy.com.

[60] *Wisconsin Generation Construction*, PSCW, revised 8/9/05.

[61] *See, generally, Other Factors Report*, p. 36-37; Table 17 ("Wisconsin is limited by the sparse availability of its high-voltage facilities," especially in the southern, southwestern, and west-central areas of the state; increased access to the EHV system will reduce costs for and provide benefits to new generators and load).

[62] Appendix 5, p. 1-2.

in Wisconsin. Retail service was interrupted for industrial customers, urgent appeals were made by utilities for reduced electrical usage, and spot-market prices at one point skyrocketed to $7,000/MWh. In its *Report to the Legislature* following this emergency, the Commission noted the following:

> Throughout most of the history of the electric utility industry, increasing interconnections have increased reliability and decreased electricity prices.[63]

Wisconsin is now subject to the MISO Energy Market Tariff (EMT), a wholesale energy market operated according to locational marginal pricing (LMP) principles. Under the MISO EMT the delivered spot price of electricity at a location is the highest accepted offer price for energy plus any transmission-congestion and loss charges. The ATC system (WUMS and northern WUMS) has been designated as the only Narrow Constrained Area (NCA) in MISO. According to FERC this designation means that there are "well-defined structural barriers to competitive performance" in the ATC system and that the ATC system is "potentially more subject to the exercise of market-power abuse."[64]

In addition to external factors (such as changes in the price of primary fuels) price volatility in an LMP market located within an NCA can occur for two reasons: congested flowgates within or near the system and bidding behavior of market participants. By relieving transmission constraints and opening up access to additional energy sources, a new 345 kV line into Wisconsin can substantially reduce both of these risks.

That this is an appropriate policy imperative for Wisconsin appears from the early returns in the MISO LMP market. Since June 1, 2005, when energy bids were no longer required to be cost-based, the WUMS LMP has been consistently volatile and consistently higher than the MISO LMP.[65] The following chart and map for a typical day (June 8, 2005) demonstrates this fact:

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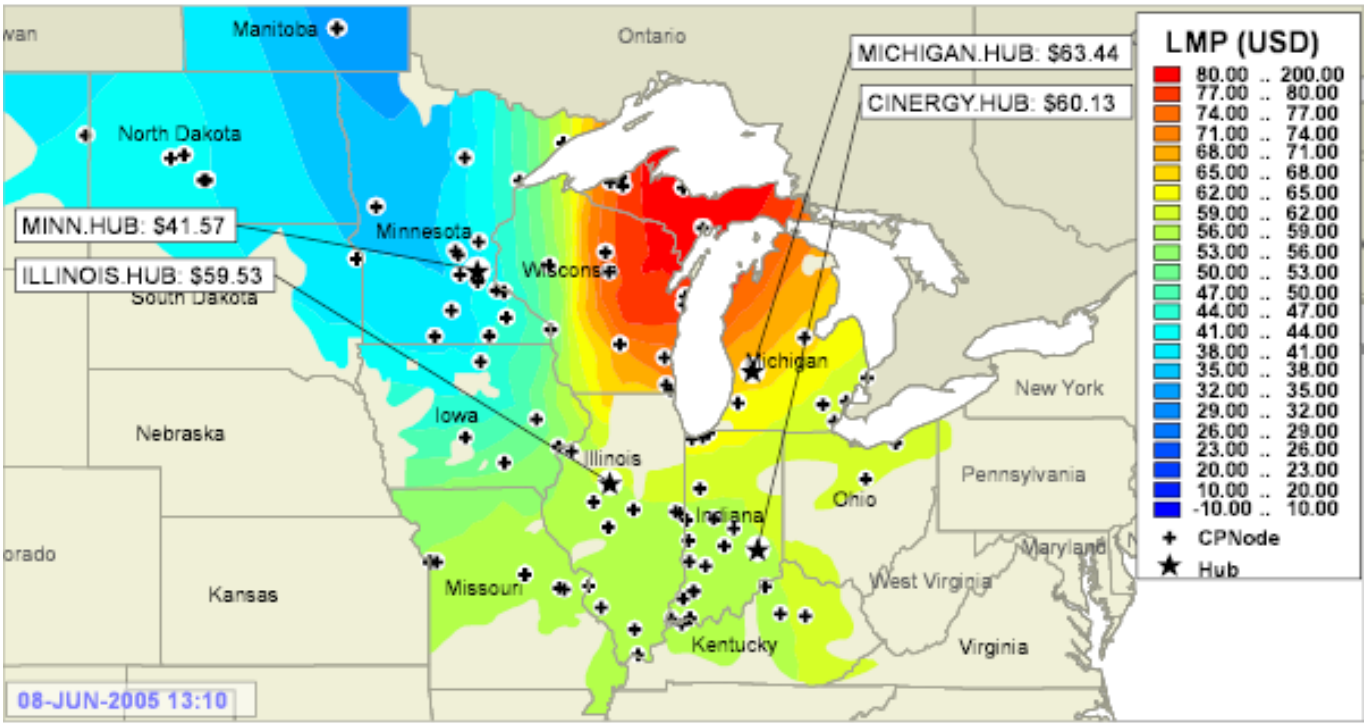
[63] *Report to the Wisconsin Legislature on the Regional Electric Transmission System*, PSCW (9/1/98), p. vi.

[64] *Midwest Independent System Operator*, 108 FERC par. 61, 163 (8/6/04), p. 77, 85.

[65] Appendix 4, p. 1.

| June 8 2005 Real-time Market Results | | | |
|---|---|---|---|
| ($ per mWh) | | | |
| | **On Peak** | **Off Peak** | **Round The Clock** |
| WUMS | $97.21 | $49.93 | $69.63 |
| MISO | $73.91 | $39.62 | $53.91 |



On another day (June 30, 2005), the dollar impact of the WUMS-MISO LMP differential using an average daily load shape was about $2.9M.[66] This is a measure of unhedged risk, and obviously many load-serving entities have secured Financial Transmission Rights (FTRs) to hedge this risk. However, on a going-forward basis, whether all Wisconsin LSEs will have full FTR coverage is uncertain. FTRs are allocated annually on an auction basis, and there are uncertainties regarding the outcome of these auctions. Also, the special protection that Wisconsin LSEs secured as a result of being embedded within an NCA is limited and temporary. It applies only to existing network resources outside the ATC system, and it expires in 2010, before any of the candidate projects can be put into service. Under these circumstances, an additional 345 kV project possesses high *insurance value* for Wisconsin customers. If such a project were built, Wisconsin customers would gain a substantial additional protection or *hedge* against the risk of higher, volatile electric prices.

The experience in the Delmarva Peninsula in the PJM LMP market shows how transmission-constrained areas can experience major price run-ups, and how increased transfer capability can begin to help relieve this situation. Because of its geographic configuration and other factors, the Delmarva Peninsula was subject to extensive transmission congestion when the PJM market began in 2001. This translated into very high LMPs within the service territory of Delmarva Power & Light Company. For example, on July 26, 2001, the 50+ highest-priced locations in the entire PJM market were within Delmarva Power & Light's service territory. Efforts were then made to expand transfer capability into the Delmarva Peninsula, in order to access lower-cost sources of power. By 2003 the expanded transfer capability was having a major impact on reducing the difference between LMP prices in the Delmarva Peninsula and PJM West.[67]

### C. The Importance of Optionality for Wisconsin's Load-Serving Entities.

Optionality refers to increased choices for Wisconsin's retail service providers. There are approximately 115 load-serving entities in Wisconsin – investor-owned utilities, municipal utilities, and rural electric cooperatives. This is a high number of distribution utilities for a state of Wisconsin's size. If one of the 345 kV projects is built, transmission capability will expand. These service providers then will be able to consider additional supply options with less risk of congestion costs as reflected in higher LMPs.

Construction of one of the access projects will accomplish the goal of achieving a more competitive wholesale generation market for Wisconsin service providers. Many sellers and many buyers is one of the classic conditions for effective competition. Increasing the number of sellers by strengthening Wisconsin's ties to the regional grid will help fulfill this condition. Stronger transmission connections will mean more trading by Wisconsin's load-serving entities, and lower costs for retail customers.

Increased optionality due to a more robust ATC transmission system also improves the *flexibility* of Wisconsin wholesale buyers. They will have more leeway in making their power-supply

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[66] Appendix 4, p. 2.

[67] Appendix 5, p. 5-6; Figures 2, 3, 4. See generally *Transmission Congestion on the Delmarva Peninsula*, 105 FERC par. 63,004 (2003).

decisions (e.g. whether to buy power or build generation) because of an expanded universe of choices. They also will be better able to adjust to unpredictable and changing market conditions. The best available opportunities for power purchases will vary over time by fuel source, by technology type, and by geographical location. An ATC system that is better interconnected with the region will put service providers in a better position to respond to these changing circumstances. For example, in the recent past inexpensive capacity and energy resources were available for import into Wisconsin to the north and the west in the MAPP region, including Canada. Then the situation changed for a variety of reasons. Currently, a substantial amount of excess capacity is available in Illinois at very reasonable prices. However, Wisconsin lacks sufficient long-term import capability to take advantage of these resources. A robust grid that is better integrated with adjoining states would allow Wisconsin to identify its optimal field of choice, and to change that focus as market conditions change. Wisconsin currently lacks this flexibility.

### D. Downside Risk of Taking Action Versus Upside Benefits.

The benefits of adding an EHV line are both economic (in the form of energy savings, reduced reserves, lower and less volatile LMPs, decreased line losses, increased import capability, and increased resource diversity) and reliability-related, as indicated by the LOLE and EUE results and improved thermal and voltage performance. Such a line will improve the ability of ATC to interconnect new generation and new load to its system. An ATC system that is better integrated with the regional grid also will begin to remedy Wisconsin's relative electrical isolation and will create the key qualitative advantages of insurance value and optionality.

What are the downside risks of moving forward with a CPCN application for one of these projects? In other words, even if these benefits do not materialize (a virtually impossible scenario), what would be lost? In 2003 (the last year for which complete numbers are available), Wisconsin's total end-use expenditures for electricity were about $4.493B. The estimated cost of the Salem-North Madison project package, a representative 345 kV line, is $352M. In terms of bill impacts, for a residential ratepayer with a monthly average usage of 750 kWh, the annual capital cost of this project would translate into a rate increase of about 50 cents a month.

The probable upside benefits of moving forward with an access project far outweigh in value the downside risks. There is a disproportionality here between benefits and risks. The situation is *skewed* in favor of taking action now to realize the upside benefits and to avoid the serious risks and losses of inaction.

## VIII. CONCLUSION.

ATC respectfully requests that the Commission and its Staff determine the following:

1) that an EHV project that strengthens the ties of the Wisconsin transmission system to the regional grid is a timely and appropriate subject for development of a CPCN application, and

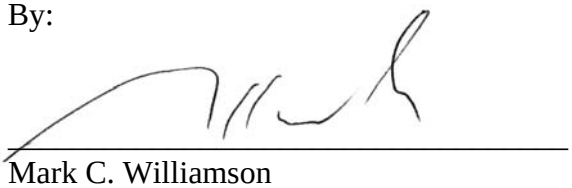
2) that it is acceptable for ATC to further evaluate the Paddock-Rockdale, Byron-

North Madison, and Salem-North Madison options and to select one of these projects for filing of a CPCN application, subject to the requirement that ATC demonstrates in the CPCN proceeding that the selected project is consistent with the public interest, considering all of the factors in the CPCN statute.

ATC also asks for confirmation that its Access Initiative procedure and analysis have been generally appropriate, and for direction regarding any subsequent activities that ATC should undertake as part of the development of its CPCN application. Finally, ATC requests whatever policy guidance the Commission and its Staff deem appropriate regarding the specific attributes or locations of an EHV project.

Dated August 15, 2005.

AMERICAN TRANSMISSION COMPANY LLC
By:



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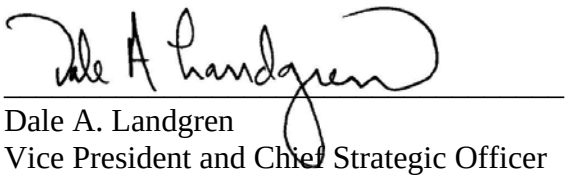

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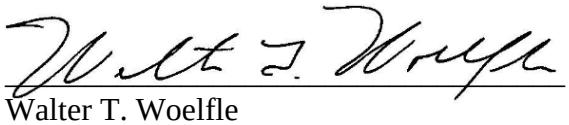
AMERICAN TRANSMISSION COMPANY LLC
By:



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