



**Executive Summary**  
**Long Range Resource Plan**  
**Conclusions & Recommendations**

**Prepared for:**

**Midwest Energy, Inc.**

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## EXECUTIVE SUMMARY

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### BACKGROUND

Pace Global Energy Services (“Pace Global”) was retained by Midwest Energy (“MWE”) to develop a detailed Long-Range Resource Plan (LRRP) for the procurement of electric generating capacity and associated energy purchases. The primary objective of the LRRP was to determine the appropriate replacement strategy for existing capacity contracts as they begin to expire between now and 2010. Pace Global’s detailed analysis has culminated in recommendations related to the appropriate supply portfolio, an evaluation of system supply reliability, the cost implications of adding wind to the supply mix, and the role transmission service will play in securing the recommended supply portfolio.

## INTRODUCTION

A utility's supply portfolio is the foundation of any utility's ability to serve its customers reliably and cost effectively. As such, the long-term supply strategy must be considered carefully and in the context of the utility's explicit business objectives. For MWE, the stated business objectives are:

1. Providing Rate Stability for Members
2. Preserving Supply Reliability
3. Maintaining Rate Levels Competitive w/ Neighboring Utilities
4. Executing a Supply Strategy that is Prudent
5. Preserving Corporate Solvency & Strong Financial Condition

To ensure these business objectives are met over the long-term horizon<sup>1</sup> Pace Global considered the full range of market outcomes and quantified the impact of risk prior to making its supply portfolio recommendations. The conclusions and recommendations contained herein recognize and account for the significant risk that is inherent in energy markets in general and in particular in the Southwest Power Pool (SPP). Pace Global has utilized its *Risk Integrated Resource Planning* analytical approach in solving similar resource planning and supply portfolio decisions for other utilities and energy intensive companies throughout the world and is recognized as a leader in integrating risk considerations into strategic decision making. The principal difference between RIRP and more standard Integrated Resource Planning is that RIRP explicitly considers a wide range of load and market outcomes on the portfolio to ensure that the selected portfolio will meet the stated business objectives under a wide range of possible outcomes.

## RISK PROFILE OF MWE

The *Risk Profile* of MWE is defined by the quantity of power that is anticipated to be needed over time and the range of prices that MWE will have to pay for that power over the same period. The combination of quantity and price defines the system cost and underlies the rates that will be passed on to the members. Both the volume and price of power required in the future are not known but can be defined/bounded by statistical techniques, which allows the probability of various outcomes to be considered when making long-term strategic supply decisions. For MWE, as with most utilities, the risk of higher costs grows with time as the volume uncertainty grows (due to demand growth and contract expirations) and pricing (due to market volatility and contract expiration) is more uncertain over time.

The goal of the analysis is to both reduce the expected cost of the supply portfolio and reduce the variation of costs through supply portfolio combinations that reduce MWE's exposure to the open (spot) market. Pace Global considered a wide range of coal, gas and peaking contract options to discern an appropriate (i.e. "optimal") supply mix that

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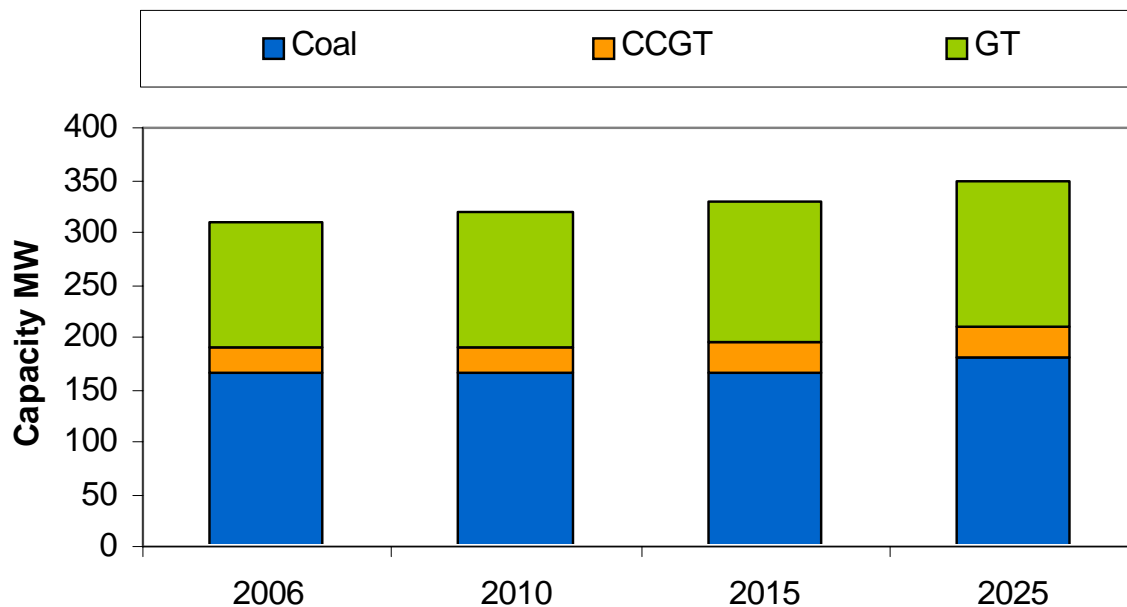
<sup>1</sup> The long-term horizon for this study is through 2025.

achieves the stated business objectives. It is important to note that there is an inherent trade-off required to balance the objectives of rate stability and competitive rates.

## SUPPLY PORTFOLIO RECOMMENDATIONS

On the basis of our risk integrated analysis, the recommended supply mix for MWE contains approximately 165 MW of coal fired base load generation, 25 MW of combined cycle gas turbine intermediate generation and approximately 135 MW of peaking gas turbine capacity (based on 2010). This general portfolio mix is anticipated to remain generally stable throughout the study period as peak load resource requirements increase slightly (mean growth rate of 0.5% annually). The portfolio mix over the planning horizon is presented in Exhibit 1.

**Exhibit 1: Recommended Supply Portfolio Through 2025**



Source: Pace Global.

While the optimum portfolio can only be determined with actual binding supply offers, Pace Global has concluded that the recommended portfolio supply mix strikes an appropriate balance between the objectives of cost competitiveness and rate stability. Coal based generation is anticipated to be a significantly more stable priced energy source than natural gas and including a base load portion of coal generation in the supply portfolio is likely to remain desirable. Our analysis also indicates that adding an incremental 10 – 20 MW of coal based capacity to the recommended portfolio provides the potential of lowering system cost while maintaining an appropriate balance across the other business objectives.

It is important to note that the recommended supply portfolio as recommended above is generally consistent with the existing supply mix that is currently under contract with

MWE, suggesting that past resource decisions were made prudently and in alignment with the business objectives.

### **Reliability Considerations**

Pace Global's analysis also evaluated the future supply reliability for MWE given the importance of this business objective for Midwest's members and the management team. Supply reliability was evaluated on the basis of the supply-demand balance of the SPP market, SPP's reliability requirements for load serving entities and the historic reliability performance in the region overall and specific to MWE's service territory.

The current reserve margin<sup>2</sup> in the SPP is in excess of 30%. With projected load growth and limited capacity additions, the SPP reserve margin is not anticipated to approach an equilibrium condition (~16%) until about 2012. The SPP reliability criterion requires a minimum reserve margin of 13.6% be carried by each load serving entity. Pace Global's analysis of SPP planning studies and discussions with MWE personnel indicates that the historic reliability of the SPP system has been robust and has not negatively impacted MWE's members. The SPP studies do not reference any location specific reliability concerns that would require increased reserve margins to bolster reliability. Pace Global's conclusion is that the historic standard of reliability is likely to be maintained for the foreseeable future. By adopting the SPP criterion, MWE would be both prudent in its supply planning obligations and would meet the reliability expectations of its members.

### **Stress Testing the Recommended Portfolio**

Pace Global stress tested the recommended supply portfolio to ensure that the recommendation remains sound under a variety of market conditions. The conclusions in the event of supplier default and stringent environmental compliance are summarized below:

#### *Supplier Default Scenario*

In light of the recent past in the energy markets where major suppliers have defaulted on their contractual commitments<sup>3</sup>, it is prudent to consider MWE's risk exposure in the event of such an occurrence. Pace Global considered the range of potential cost impacts to MWE if the base load supply was concentrated with a single supplier versus that of a portfolio which is diversified across multiple suppliers. The conclusions from this analysis suggest that by targeting a diversified portfolio of three or more suppliers MWE is able, in large part, to mitigate the risk of supplier default. The same logic applies to diversifying the supply risk across multiple generating units as a long-term unplanned outage, especially at a base load coal unit, can introduce similar supply portfolio risk.

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<sup>2</sup> Reserve Margin defined as a percentage =  $(\text{Capacity in MW} / \text{Peak Demand MW} - 1) * 100$

<sup>3</sup> Contract default can also be thought of as an unanticipated and prolonged unit outage that places MWE in the market to make up the shortfall.

### *Stringent Environmental Compliance Cost Scenario*

By including a large percentage of coal generation in the recommended portfolio there is an inherent risk of increased environmental compliance costs in the future. Therefore, Pace Global considered a stringent environmental compliance requirement for coal plants involving the simultaneous reduction of mercury and carbon emissions<sup>4</sup>. Any new environmental regulations are unlikely to require implementation prior to 2015. While the cost impact of such new regulations once in place would increase mean expected costs by approximately 6%, it would not alter the selection of our underlying portfolio recommendations.

### **Impact of Wind Generation on Supply Costs**

Wind generation developers are proposing large wind farms in various locations throughout Kansas and there have been initial discussions regarding the establishment of renewable portfolio standards in the future. Therefore, it is important to consider the potential cost impact of wind generation on the members of MWE. Wind supply contracts are typically take-or-pay commercial contracts which provide intermittent and highly variable energy sources and displace other scheduled energy from the supply portfolio. Pace Global concludes that wind must be priced at or below \$27 per MWh for there to be no net impact to the cost of its supply portfolio.

The results of the wind impact analysis will help MWE in negotiating acceptable pricing terms with wind suppliers and in establishing its position with regards to renewable portfolio legislation.

### **Transmission Risk and Future Implications**

It is important to draw a distinction between system reliability and transmission availability. Historically, MWE's supply has been extremely reliable and transmission availability and the associated cost have been reasonable. While supply is expected to continue to be reliable for the foreseeable future, there is recent evidence that the regional transmission availability is deteriorating and could impact MWE's ability to secure its supply portfolio in a timely and cost effective manner. Several recent requests from MWE for firm transmission for relatively modest amounts of capacity (~25 MW) have been denied by SPP or would only be approved on the condition that MWE pay significant upgrade or unit re-dispatch costs. Given these recent developments, transmission availability will become a critical element of supply portfolio development as commercial offers are considered and supply contract commitments are agreed to. The lead times associated with the SPP transmission service requests are problematic as it can take 8-12 months for a definitive response, lengthening the supply contract negotiations.

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<sup>4</sup> Our base case results and recommendations assume the anticipated regulatory regime for all criteria pollutants and environmental compliance scenario includes incremental costs in addition to what is currently visible on the regulatory horizon.