

# Table of Contents

<b>Executive Summary</b> .....	2	<b>Chapter 4 Analysis of Non-Transmission Measures to Ensure Dane County Electric System Reliability</b> .....	32
<b>Introduction</b> .....	3	Demand-Side Management .....	32
Future Reliability of the Dane County Electricity System .....	3	Energy Efficiency In Dane County .....	33
Scope and Timing of Transmission Improvements .....	3	The Potential of Energy Efficiency to Defer Growth .....	34
Other Considerations Affecting Future Transmission Projects	4	Conclusions: Energy Efficiency .....	36
Alternatives to Transmission Lines .....	5	Load Management In Dane County .....	36
Supply-side Alternatives .....	5	Conclusions: Load Management .....	37
Demand-side Alternatives .....	5	<b>Chapter 5 Distributed Generation Resources</b> .....	39
Integrated Set of Alternatives .....	6	Existing Distributed Resources in Dane County .....	42
<b>Chapter 1 Need for Improvements to the Dane County Electric System</b> .....	7	Distributed Generation Technical Potential in Dane County .....	42
Obligation to Serve Retail Customers .....	7	Wind .....	43
New Transmission Capacity Drivers .....	7	Solar Photovoltaic .....	43
Dane County Population Growth and Future Land Use .....	8	Natural Gas or Oil Fired Distributed Generation Options .....	44
Conclusion: Dane County Population Growth .....	8	Multiple Stakeholders .....	44
Utility Demand Forecasts .....	8	Conclusions .....	45
Conclusion: Peak Demand Growth .....	10	<b>Chapter 6 Central Generation</b> .....	45
Energy Requirements .....	10	<b>Chapter 7 Integrated Alternatives</b> .....	46
<b>Chapter 2 Transmission System Performance</b> .....	13	Conclusions .....	47
Transmission Planning and Analysis .....	13	<b>Chapter 8 Transmission Access</b> .....	48
El Study Overview .....	13	<b>Chapter 9 Energy Planning Recommendations</b> .....	49
Generation/Power Import Scenarios .....	14	<b>Appendix A Introduction to Transmission Facilities</b> .....	50
Demand Sensitivity Analysis .....	18	Transmission Facilities Design .....	50
Other Factors Affecting Need for Transmission Improvements .....	19	Types of Transmission Facilities .....	50
Conclusions .....	20	<b>Appendix B Distributed Generation in Dane County</b> .....	53
<b>Chapter 3 Potential Transmission Measures to Ensure Dane County Electric System Reliability</b> .....	21	<b>Appendix C Future Growth in Dane County</b> .....	59
The Initial Transmission Alternatives .....	21	<b>Appendix D Glossary</b> .....	60
Current Transmission Alternatives .....	23		
Other Considerations Affecting the Preferred Transmission Measure .....	27		
Common Mode Failures .....	30		
Conclusions .....	31		