

ACEG Presents Transmission Time

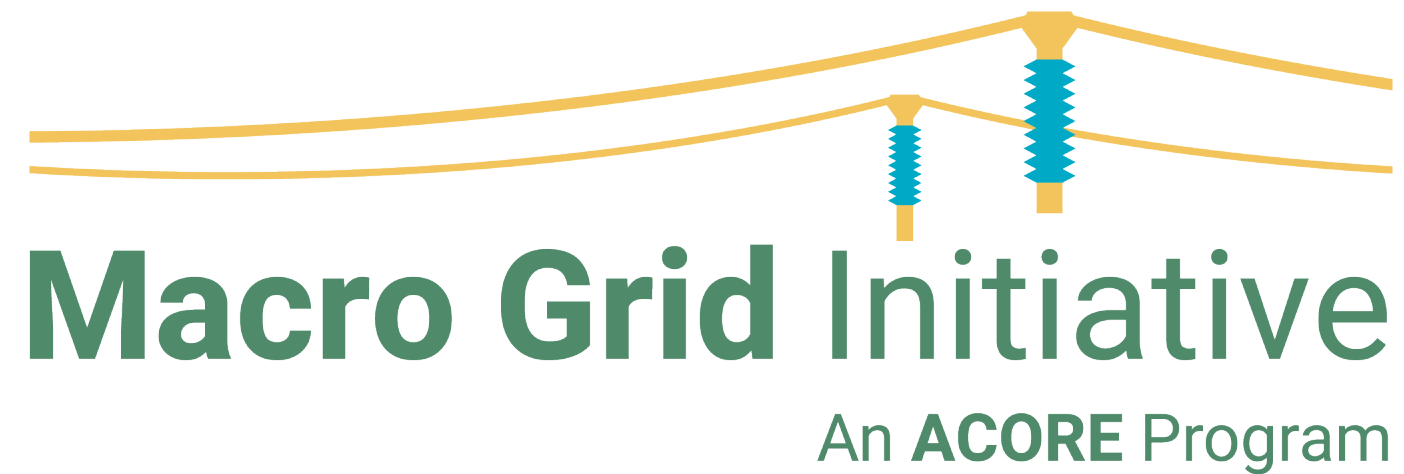
WHAT'S NEXT FOR TRANSMISSION?

SUCCESS STORIES AND LESSONS LEARNED

September 10, 2020

INTRODUCTION TO AMERICANS FOR A CLEAN ENERGY GRID

ABOUT ACEG



Americans for a Clean Energy Grid (ACEG) is the only non-profit broad-based public interest advocacy coalition focused on the need to expand, integrate, and modernize the North American high-voltage grid.

National organization uniting diverse interests – environmentalists, utilities, renewable industry, transmission and technology companies.

New Macro-Grid Initiative backed by Breakthrough Energy



COALITION MEMBERS





Rob Gramlich

Executive Director
Americans for a Clean Energy Grid (ACEG)



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VP System Planning and Chief
Compliance Officer
Midwest Independent System Operator,
Inc. (MISO)



Americans for a
Clean Energy Grid

Multi-Value Projects (MVPs) are major regional projects designed to reduce system congestion and meet renewable standards as known in 2011

Meet one or more goals:



Reliably and economically enable regional public policy needs



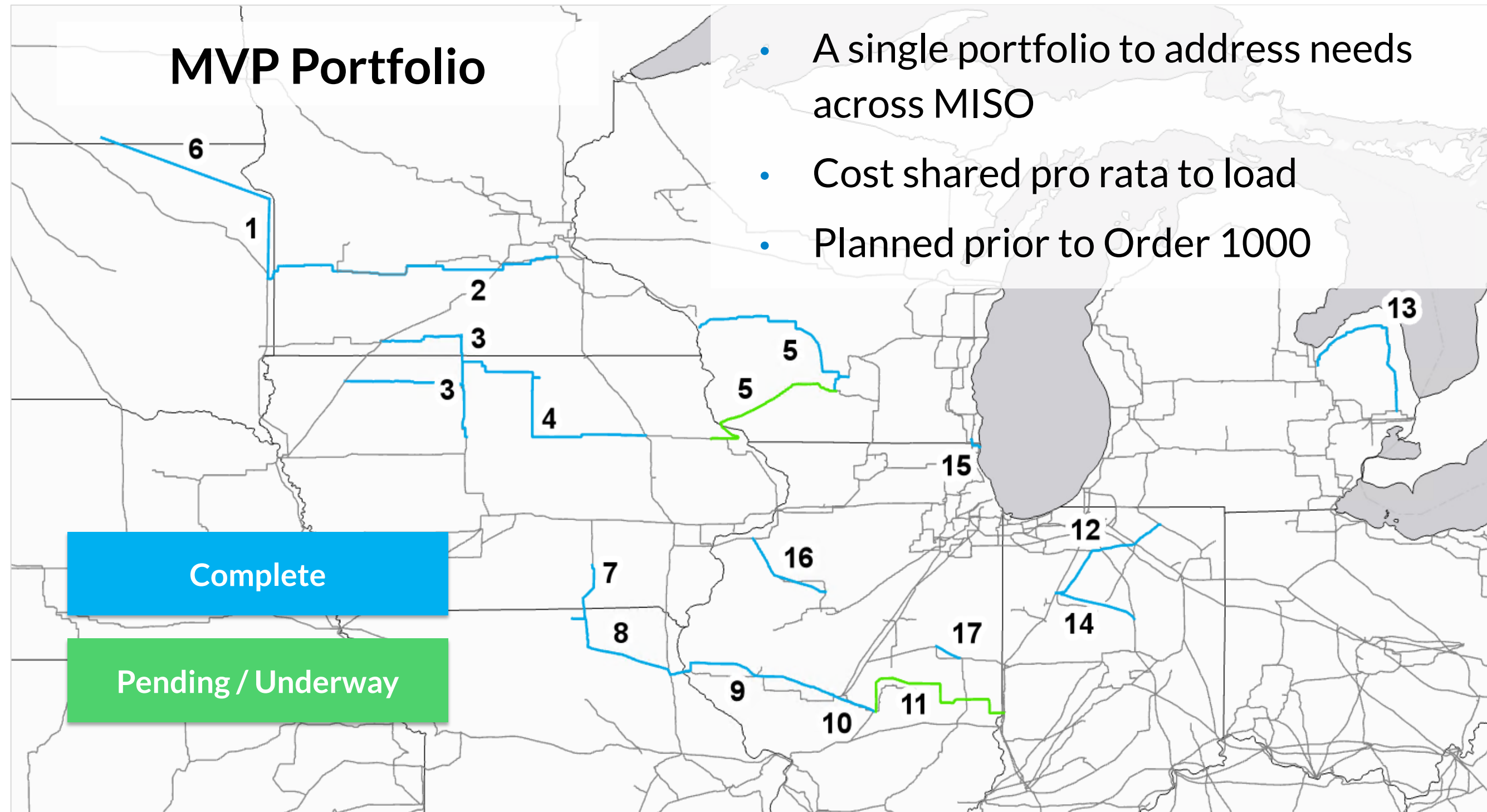
Provide multiple types of regional economic value



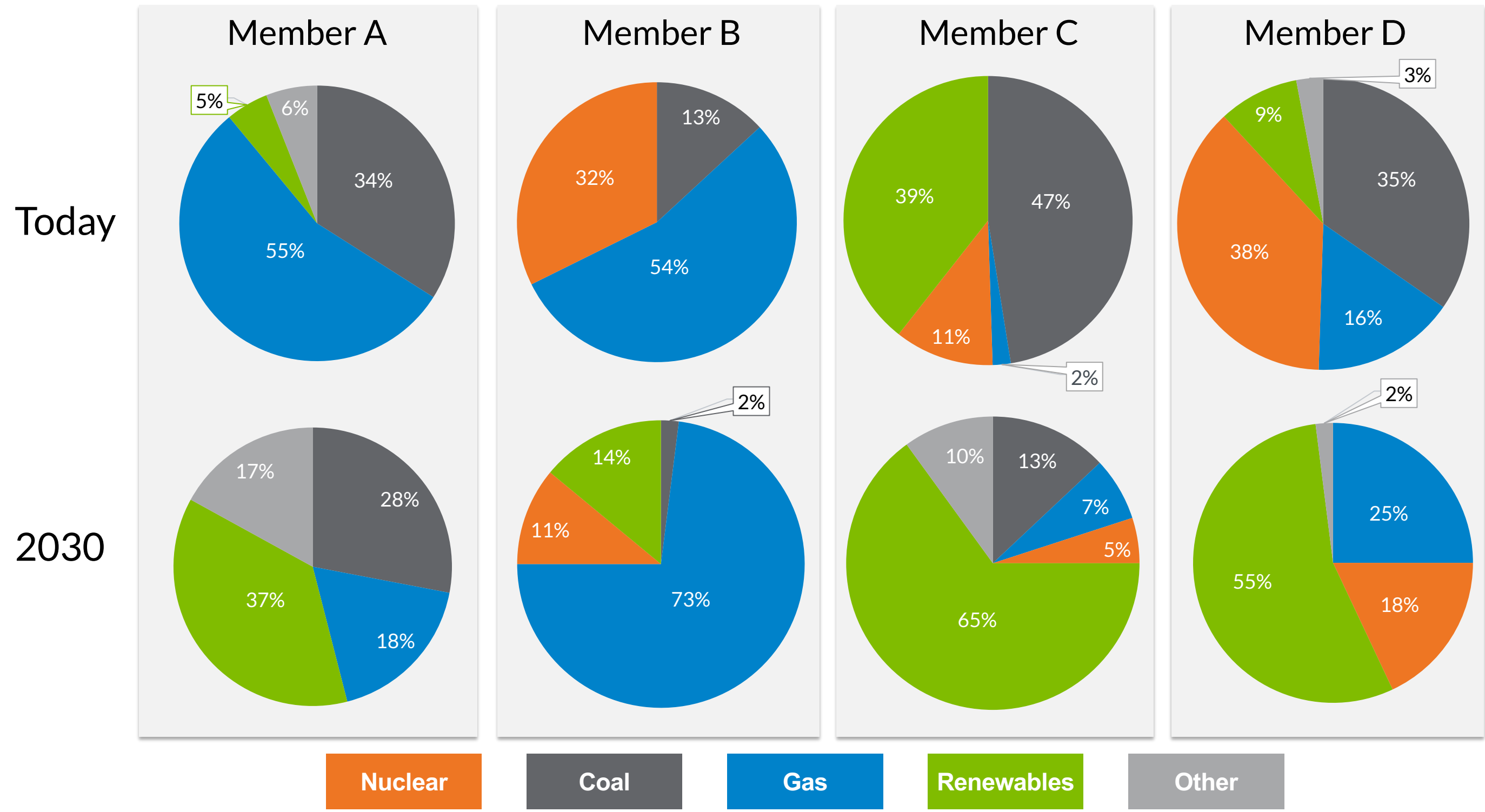
Provide a combination of regional reliability and economic value

- Cost of \$6.6 billion
- \$7.3 to \$39 billion in net benefits over the next 20-40 years
- Total benefit-to-cost ratio of 1.8 to 3.1
- 15 of 17 projects are in service

The Multi-Value Project portfolio had some unique attributes that will be challenging to recreate in the present day

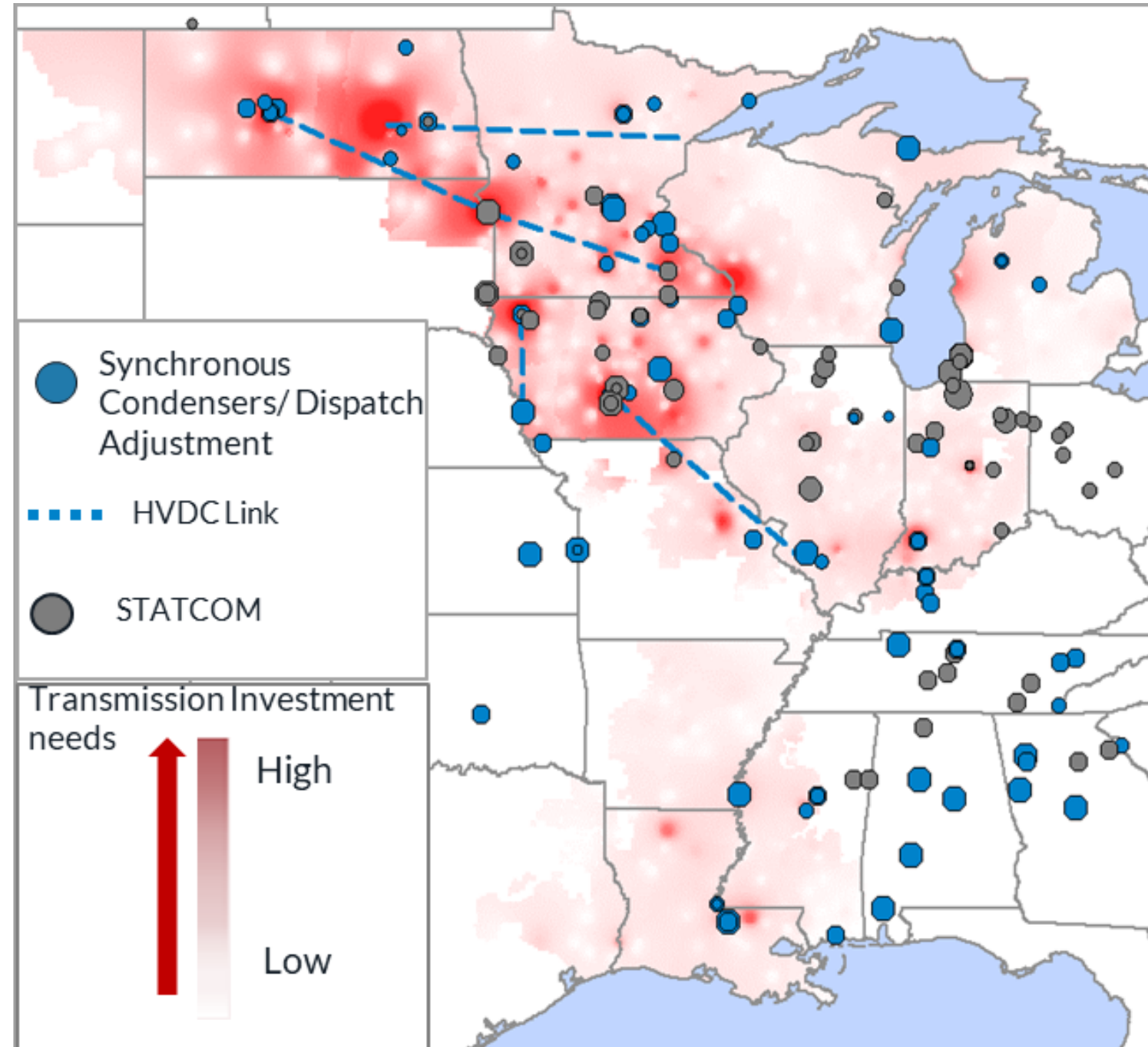


MISO member plans project a significant portfolio shift; differences across portfolios present additional challenges and opportunities



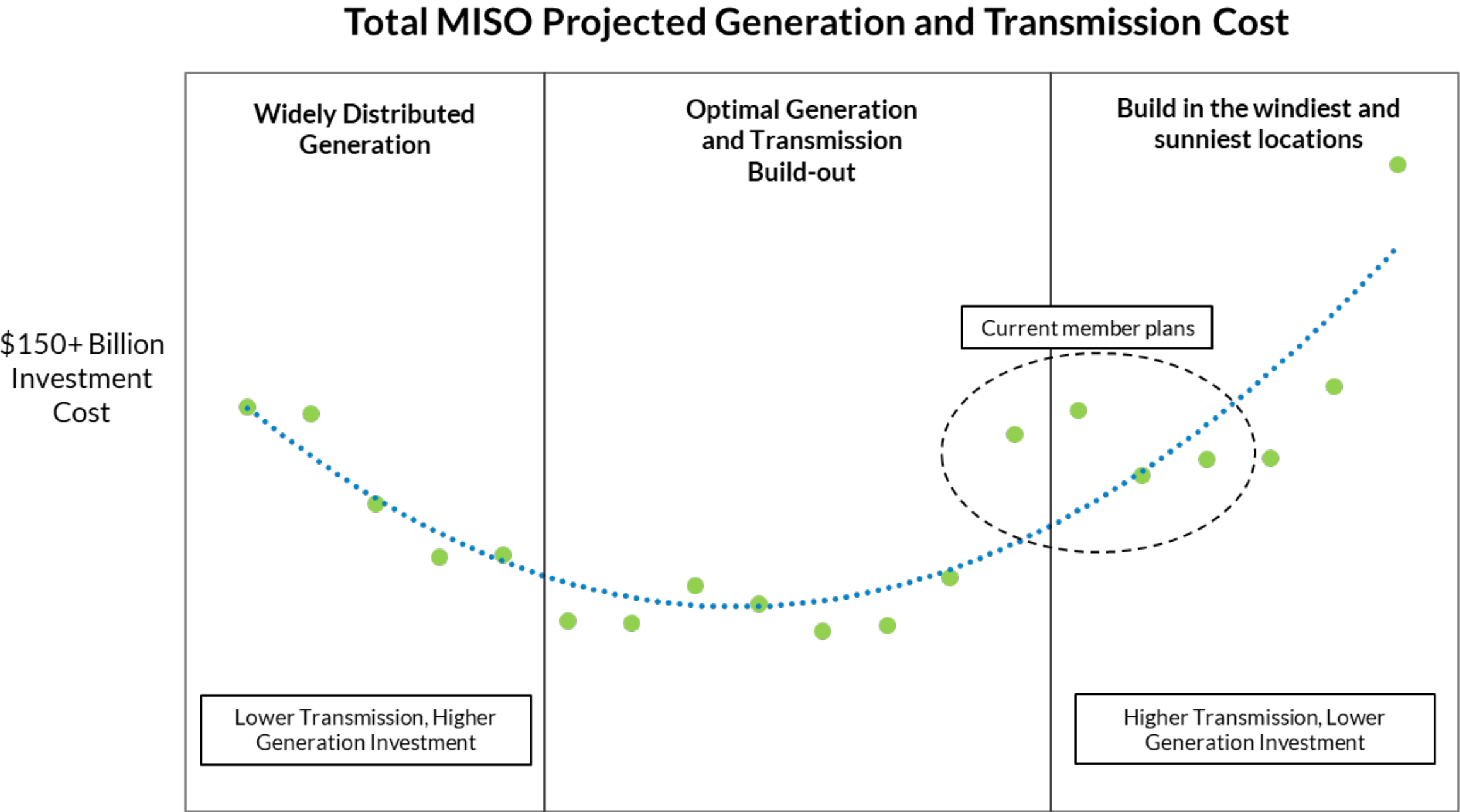
These figures show utilities' total energy generated by fuel type, in megawatt-hours. Current figures compiled by S&P Global Market Intelligence. 2030 projections compiled from IRPs, investor reports, and other sources.

Work to-date indicates expected portfolio changes will cause significant grid and stability issues requiring increased transmission investment

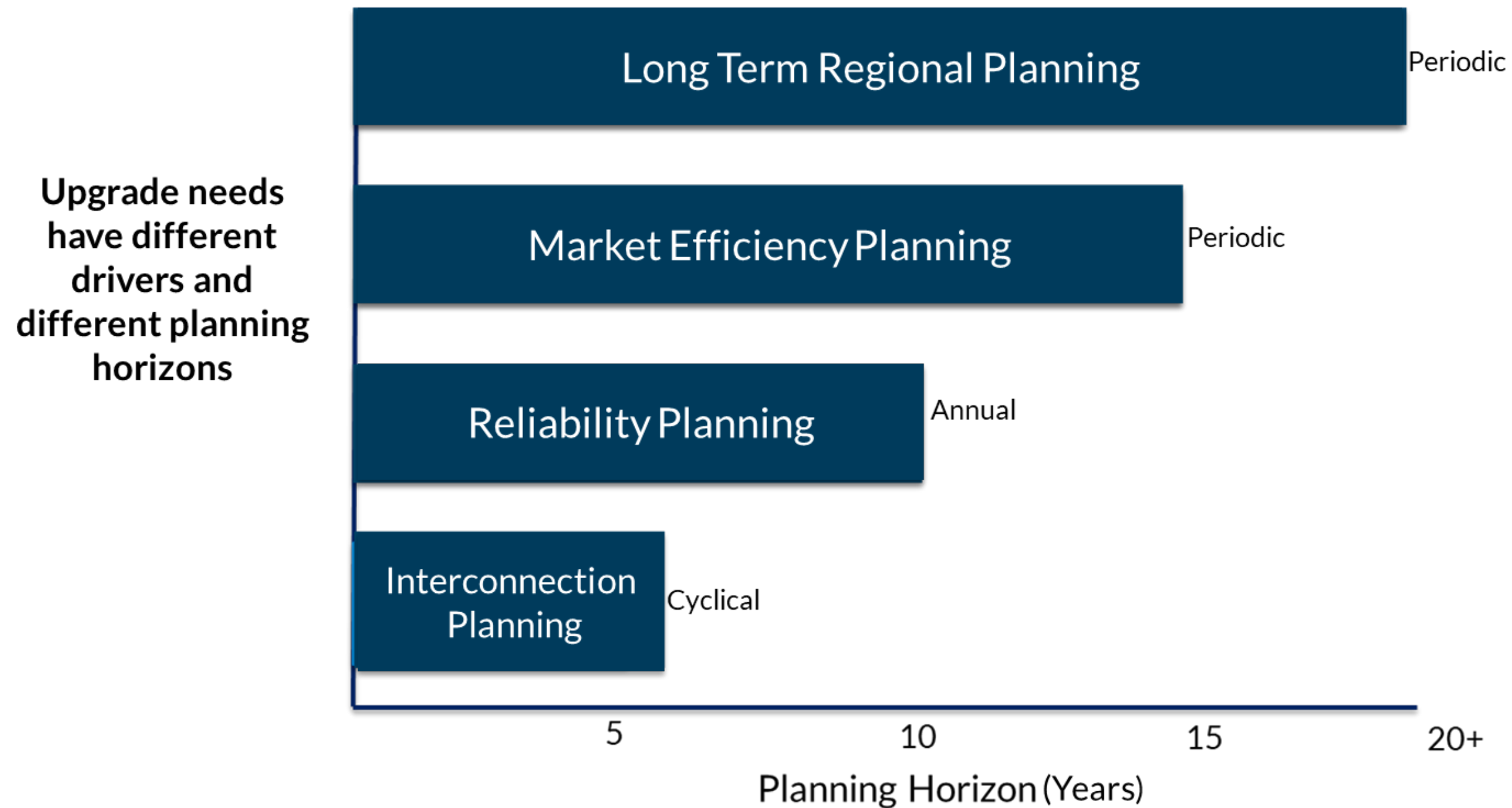


- Issues are driven by reduction in conventional generation and the increase in inverter based (i.e. wind/solar/battery) generation
- Regional energy transfer increases in magnitude and becomes more variable leading to a need for increased extra high-voltage line thermal capabilities
- Increase in renewable penetration causes different dispatch patterns of conventional generators, leading to several dynamic issues
- Power delivery from weaker areas may need transmission technologies equipped with dynamic-support capabilities

Transmission needs, overall transmission costs and generation costs can change based on where renewables are sourced, but planned generation costs will far outweigh transmission costs in any case



Transmission planning provides a comprehensive approach that covers short and long term needs to address generation additions, ongoing reliability, market efficiency and policy trends



There are conditions precedent for longer-term transmission plans to be approved and successfully developed



Policy Consensus

Consensus that transmission is required to address the subregional and collective needs of the footprint

Robust Business Case

Analysis of subregional issues and solutions compatible with regional reliability and market operations needs

Cost Allocation & Recovery

Costs assigned roughly commensurate with benefits to each area

THANK YOU FOR LISTENING!

Questions?