

Refresh of MTEP-10 Carbon Analysis

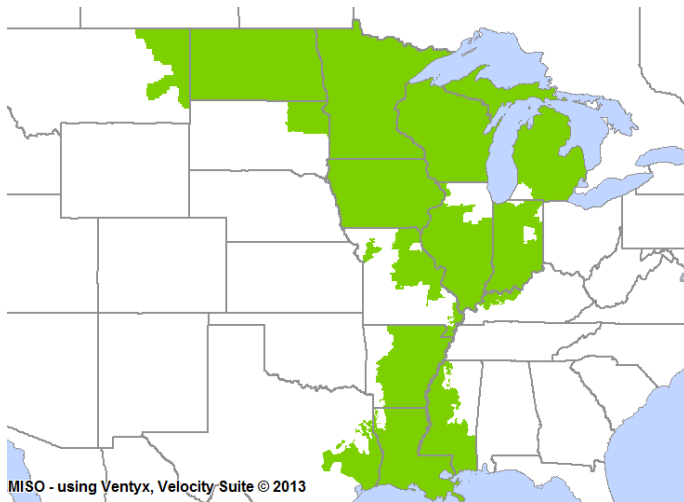
PAC Meeting
February 19, 2014

Executive Summary

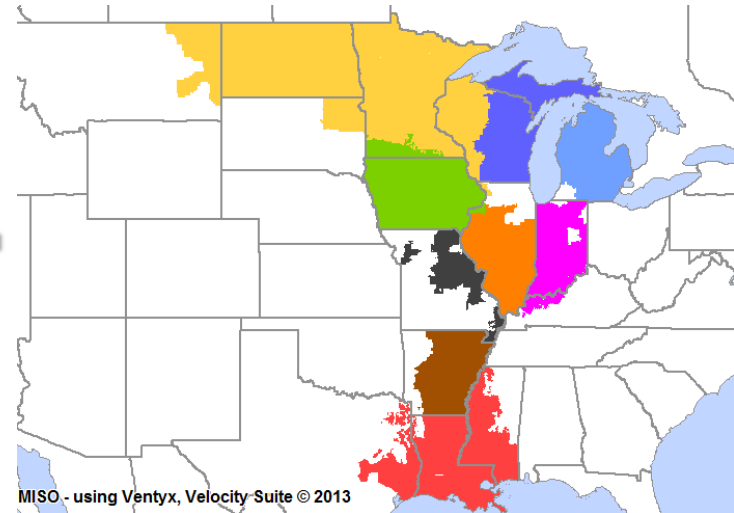
- Study findings indicate that regional carbon management costs \$3B-\$5B less annually (\$30B-\$50B net present value over 20 years) than sub-regional solutions.
- MISO's Value Proposition illustrates efficiencies achieved through regional constructs; a MISO-wide carbon strategy would leverage existing processes and offer additional value to consumers.
- Cost-effective solutions for a geographically and operationally diverse footprint will require flexibility in developing strategies to meet carbon regulation.

Study results indicate that regional carbon management could save \$3B-\$5B annually

MISO modeled emissions reduction on a regional (MISO) vs. zonal (MISO Local Resource Zone) level and found that a regional approach to carbon management could save \$3B-\$5B annually, or \$30B-\$50B over 20 years (net present value).



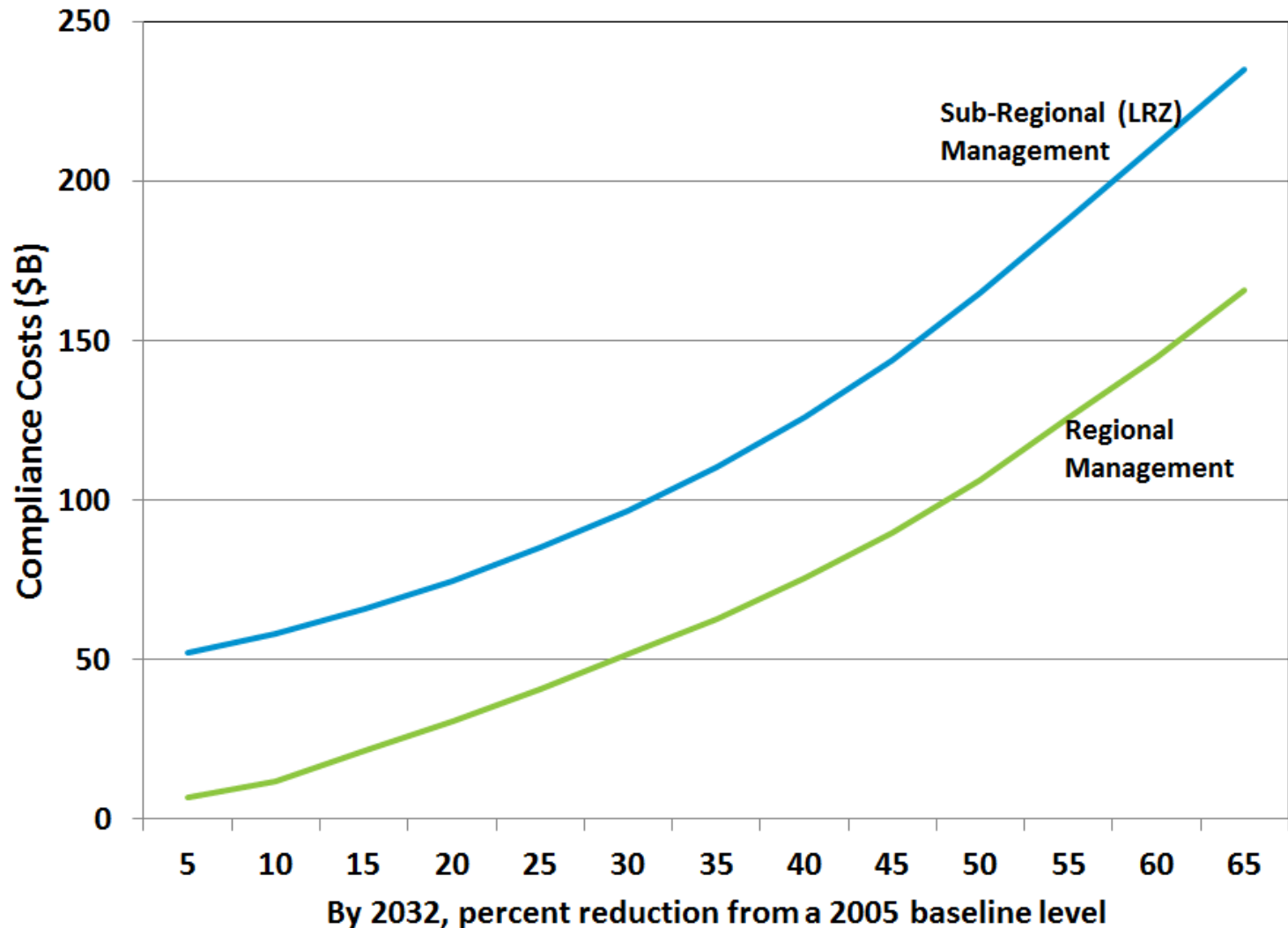
VS.



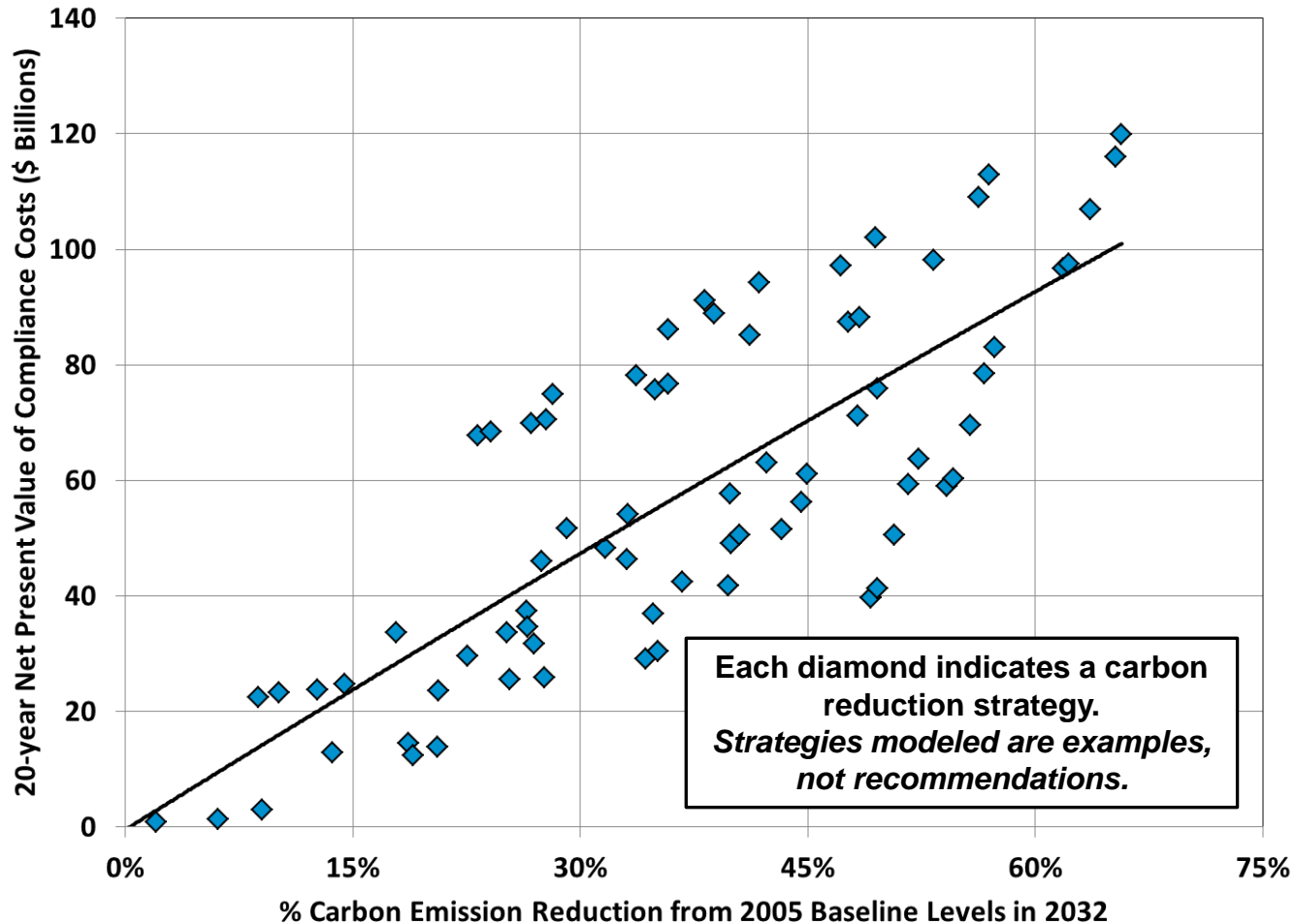
20-year NPV compliance cost to achieve a 40% reduction from a 2005 emissions baseline is \$50B - \$70 for regional implementation and \$80B-\$120B if implemented at a zonal level.



Regional vs. sub-regional management strategies for various levels of emissions reduction



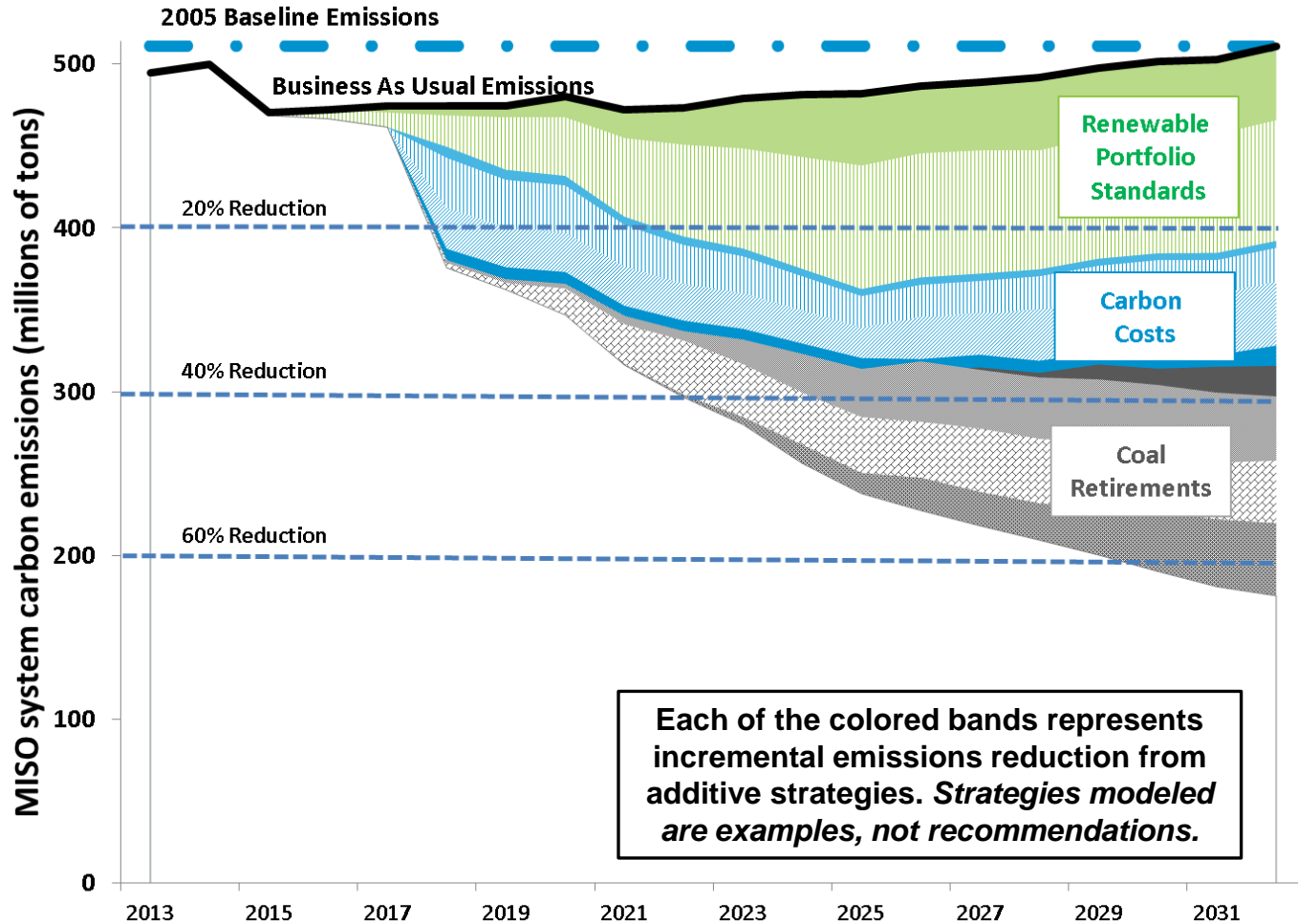
Flexibility in compliance will be essential for cost-effective carbon reduction



Preliminary results show that, for given policy and economic conditions, certain combinations of carbon reduction strategies are more cost effective than others. Strategies modeled do not represent an exhaustive range of compliance options.



One carbon management strategy alone may not be able to achieve emission reduction targets



A flexible, regional approach to carbon management reduces costs to consumers

- Preliminary evaluation indicates that carbon management at a regional level:
 - costs less (\$3B-\$5B annually) than sub-regional solutions
 - leverages the existing regional model of generation dispatch, transmission planning and market operations
- Collaboration among MISO, its stakeholders, state and federal agencies, and regulators is needed
 - to investigate and develop a market strategy for cost-effective carbon reduction
 - to continue to deliver energy at the lowest cost

