The Mesaba Energy Project:

Energy, Innovation and Economic Development for Minnesota

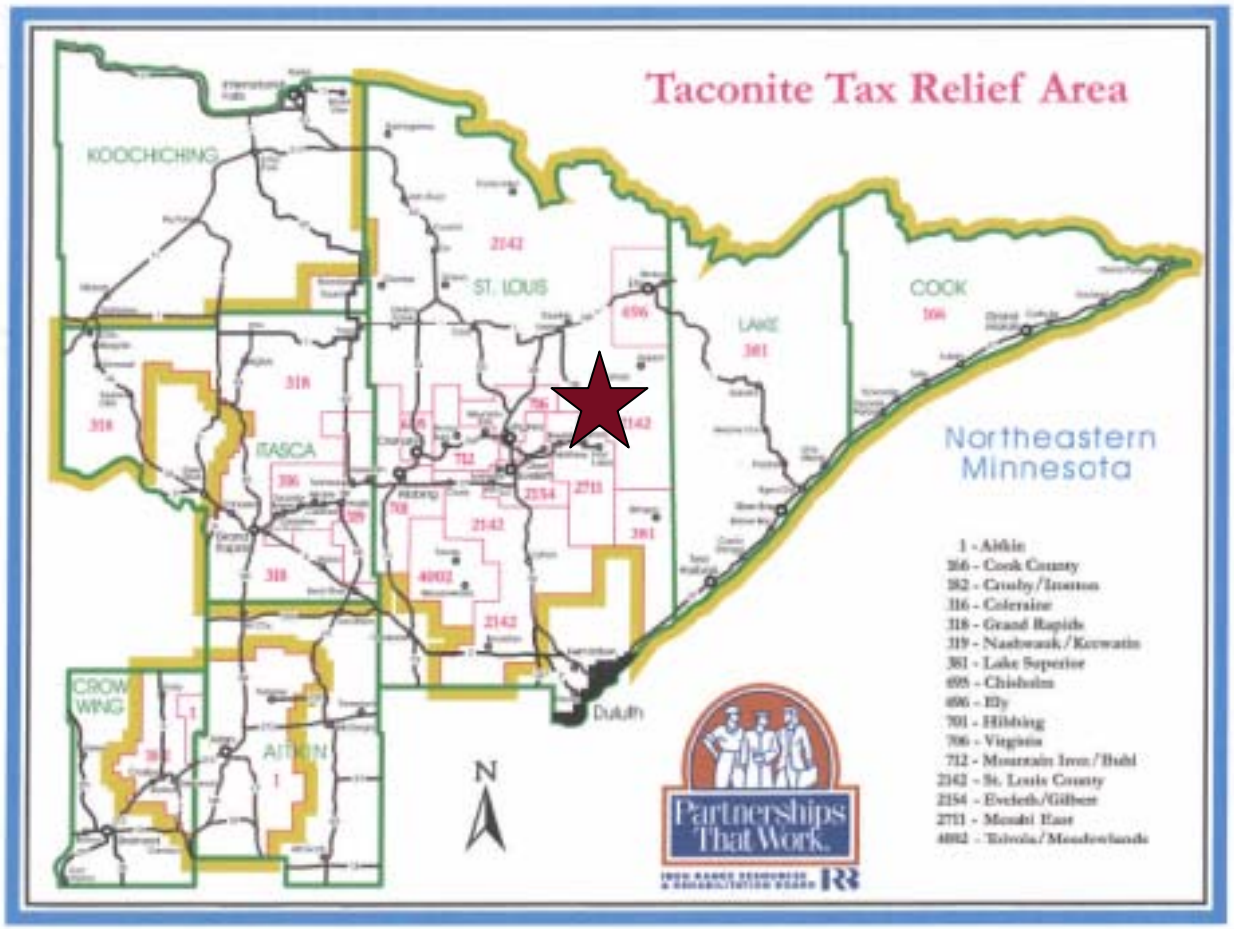
Excelsior Energy Inc.
July 29, 2004

Roundtable on Deployment of Advanced Clean Coal

Project Description

- Integrated gasification combined cycle (IGCC) plant with initial capacity of 531 MW (net) to be in service in 2010
- Project located on the former LTV Mining Site on the Iron Range in Northeastern Minnesota, offering significant existing site infrastructure and capability to host 2000MW
- License of ConocoPhillips E-Gas technology
- Groundbreaking benefits under Minnesota enabling legislation for Project installations on up to three sites
- Significant expansion opportunities
- Transmission capacity addition to serve the Twin Cities market

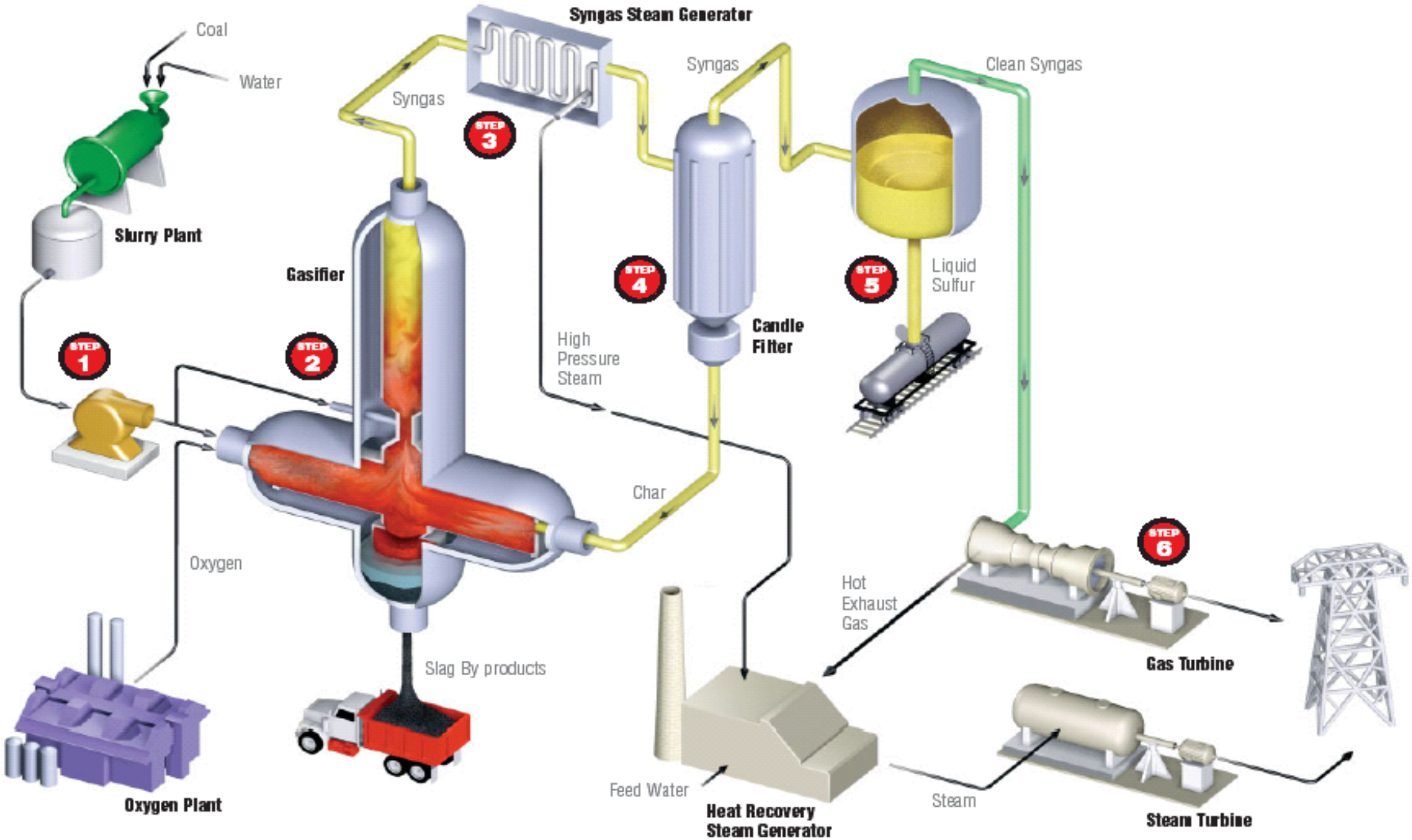
Mesaba Project Location



Project Location and Site Benefits

- LTV Mining Site in Northeastern Minnesota provides many strategic benefits to the Project
  - Multiple fuel transportation options, with a dedicated Lake Superior port, multiple rail lines and back-haul opportunities
  - Existing site infrastructure and ample water supply
  - Strong community support
  - Minimized environmental impacts from use of an existing "brownfield" site
  - Central location to meet demand growth in the region
  - Skilled, available industrial construction and operation workforce
- Two additional sites will receive the same statutory benefits of the primary site, facilitating extensive expansion

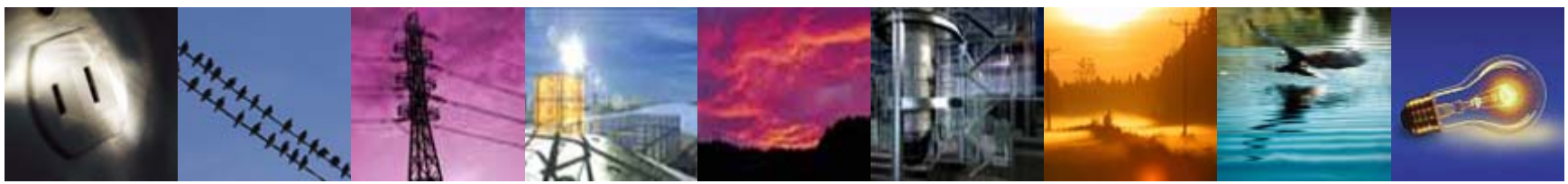
A Look Inside the Process



ConocoPhillips

Minnesota Enabling legislation – Policy Rationale

Meet need for power and provide energy security in Minnesota while furthering State and National policy goals



Minnesota Enabling legislation – Policy Rationale

- Energy Security for Minnesota
  - Need for power
    - No new base-load generation or transmission resources built in past decades
    - Significant load growth in the region – reserve margins dwindling and transmission tapped out
    - Minnesota is a traditional, vertically-integrated regulated market
    - Forecasted need for 3000 – 5000 MW of new capacity in coming decade
    - Expansion-ready site and configuration offers energy security

Minnesota Enabling legislation
Policy Rationale

- Energy Security for Minnesota (cont.)
  - Secure price and supply
    - Coal provides stable pricing
    - Reduce pressure on natural gas price and supply
    - Diversify consumers' energy portfolio between natural gas used for home heating and coal used for electricity
    - Hedge against cost of compliance with tightening emission limits

Minnesota Enabling Legislation
State Policy Goals

- Economic Development
  - Provide jobs and investment needed to reverse decline in Northeastern Minnesota
    - 10,000 taconite mining jobs lost in last decade
    - Long-term, stable new industry is needed
    - IGCC anchor facilities on large industrial sites has potential to attract new industries that can tap IGCC's polygeneration capabilities
  - Use of suitable, brownfield industrial sites and infrastructure
  - Available, skilled industrial workforce

Minnesota Enabling Legislation
State Policy Goals

- Environmental Stewardship
  - Continue Minnesota's environmental leadership tradition and provide immediate local environmental benefits
  - Ensure rapid market penetration of IGCC nationally to dramatically reduce criteria pollutant levels in Minnesota
    - 90% of mercury in Minnesota's lakes and waterways is from out-of-state sources
    - Other pollutants' sources are also regional and national

Minnesota Enabling Legislation
National Policy Goals

- Allow continued prominent role for abundant domestic coal in meeting Nation's energy needs
- Reduce reliance on imports
- Minimize new dependencies on offshore natural gas suppliers
- Improve balance of trade
- Ensure critical knowledge base of technology that can produce liquid fuels and hydrogen for transportation to meet essential national supply needs
- Stepping-stone to FutureGen and Hydrogen Vision and policy tool to address future carbon constraints

Key Terms of State Enabling Legislation

- Entitled to power purchase agreement with Xcel Energy, subject to public interest finding by MPUC that by statute will take a broad range of Project benefits into account
- Entitled to provide an additional 2% of Xcel's energy needs if likely to be a least cost resource
- MPUC must ensure that Project is considered as a supply option for all future utility needs in the State
- Exempted from certificate of need for all initial and future generation and transmission
- Eligible for up to $10 million in funding from renewable development account
- Job Opportunity Building Zone designation, which provides a 12-year holiday on State taxes

Financing Considerations

- Competitive independent power companies have traditionally met changing power market needs with innovative technologies and financing structures that address barriers to market penetration
- Project Financing
  - Long-term PPA eliminates merchant risk and provides a firm foundation for financing
  - IGCC technology adds a layer of complexity
- Pending Federal Energy Bill
  - Authorizes DOE to enter into a loan guarantee
  - Separate from CCPI provisions
  - “Belts and suspenders” ensure rapid market penetration of the IGCC technology

Critical Features of Federal Credit Support Program

- Goals are to provide certainty of financing and provide financial incentives to project sponsors and customers to encourage earliest possible market penetration of IGCC
- Critical Features:
  - Clear benefits with early certainty
  - Clear structuring guidance and flexibility
  - Level playing field (or better) for IPPs
  - Targeted to IGCC projects only

Critical Features of Federal Credit Support Program

- Provide early certainty to stakeholders that benefit will be available to a given project
  - Example: Project-targeted loan guarantee, or program where ten projects can get early "dibs" on a pot of benefits on a use-it-or-lose-it milestone schedule
  - Benefit: Early certainty drives rapid market penetration
    - Development capital will form around projects that can incorporate federal benefits into early project financial feasibility model
    - State regulators can approve power purchase arrangements that provide certain pricing at an earlier stage of development, streamlining project schedule

Critical Features of Federal Credit Support Program

- Provide clear structuring guidance and flexibility
  - Example: Rosenberg loan guarantee proposal, with flexibility for the means by which the State PUC provides certainty (PPA or regulatory compact)
  - Example: DOE Policy concept, with $X of scored credit support for each project
  - Benefit: Benefit of Federal support is optimized on a project-by-project basis by project sponsors and financial advisers

Critical Features of Federal Credit Support Program

- Ensure level playing field (or better) for independent power industry participants
  - Example: Rosenberg approach, adapted so that State can participate with either utility-owned or IPP-owned facility
  - Benefits:
    - Competitive, independent power developers have been innovators in power sector in the past
    - Earlier market penetration, given that utilities cite compelling reasons why they must be "late adopters"
    - Furthers competition in electric sector (still a Federal energy goal)
  - Asides:
    - Criteria that limit the benefits to utility players are unsportsmanlike
    - This is America – competition is good

Critical Features of Federal Credit Support Program

- Targeted to IGCC projects only
  - Pulverized coal units will have market share without Federal support
  - IGCC furthers policy goals that conventional technologies do not
  - IGCC is at the beginning of a long road of "continuous improvement" and conventional coal is near the limits of the technology's flexibility to meet tighter emission requirements
  - IGCC is a saleable political proposition and should not have to drag other benefits for the coal industry on its coat tails

R oadmap
CURC/EPRI/DOE Roadmap Goals Progress

A dvanced Gasifier
Full Slurry Quench, Cyclone & Lessons Learned

I ntegrated Air Separation Unit & Gas Turbine
Reduces Cost and Station Use

S equestration Adaptable Plant

E nvironmental Performance
Lower SOx, NOx and Particulate Emissions

T hermal Efficiency
Heat Rate Improved 500 Points from Average of Wabash and Polk

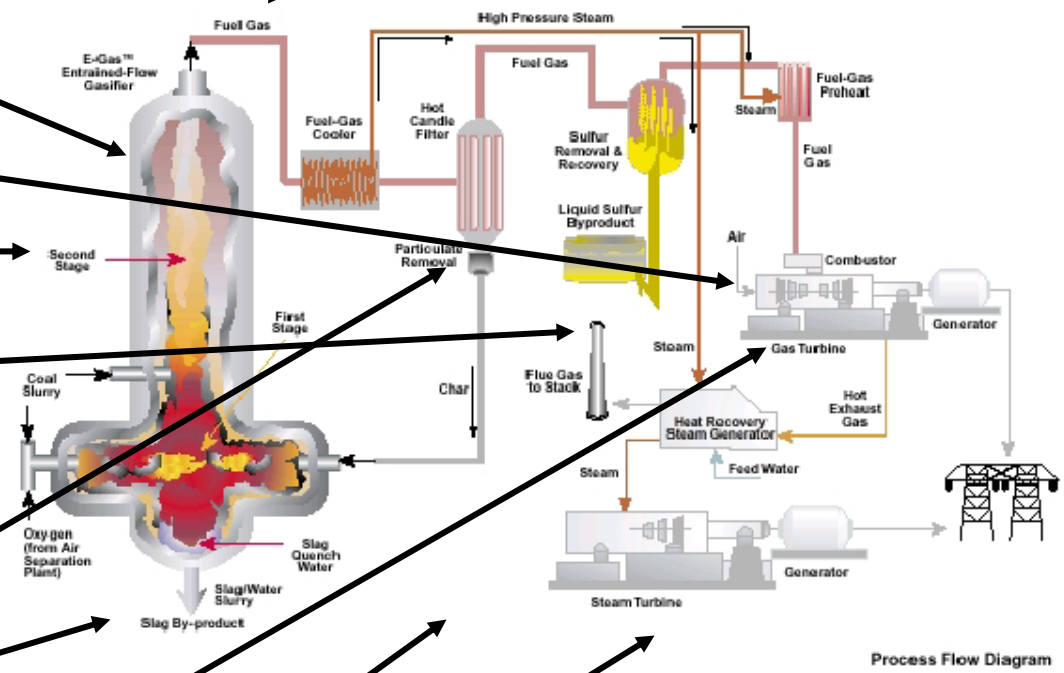
H g
90% + Mercury Removal

E conomies of Scale
Larger Plant at 30% Lower $/kW

B est Commercially Available Gas Combustion Turbine Commercial Evaluation

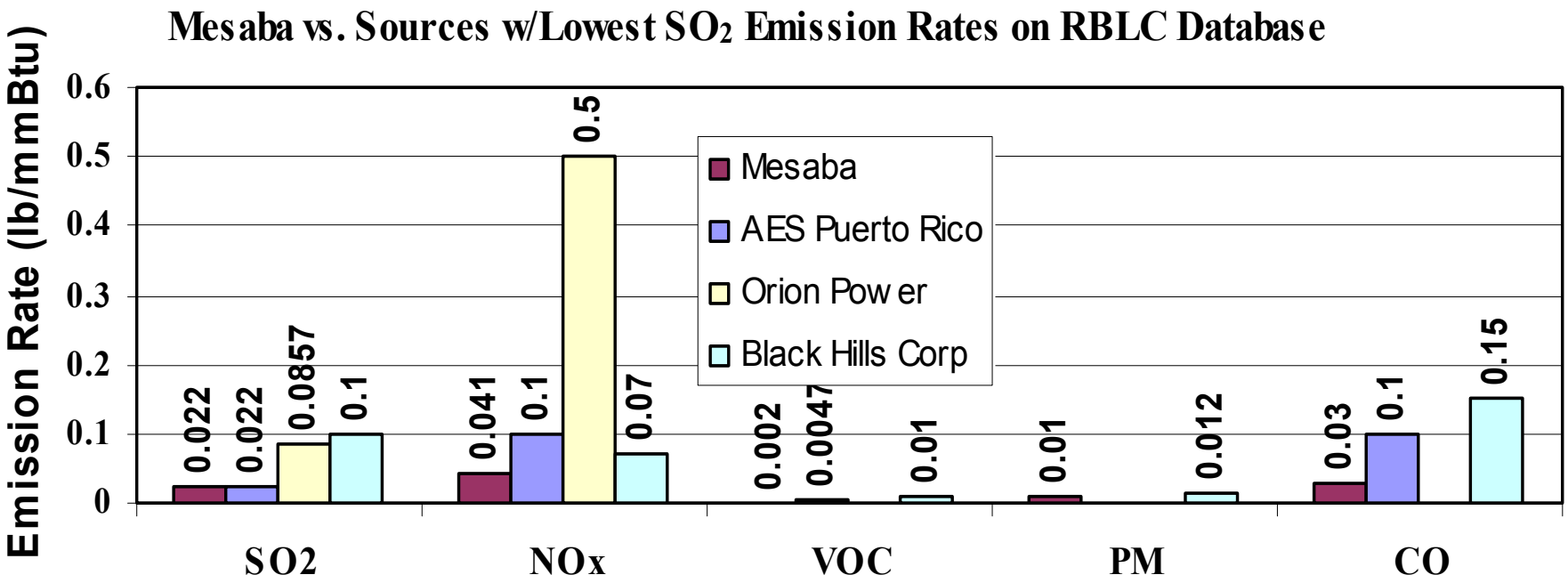
A vailability
Multiple train plant will have > 90% availability

R eplicable Model
Standard Configuration for Multiple Sites

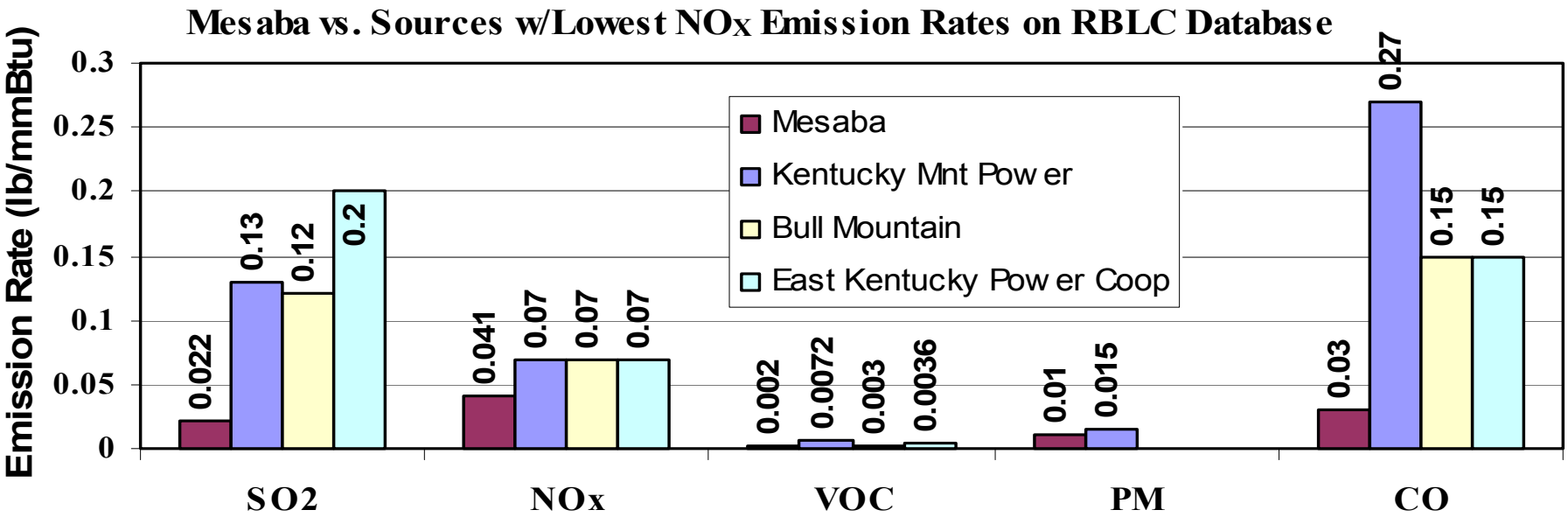


Raise The Bar

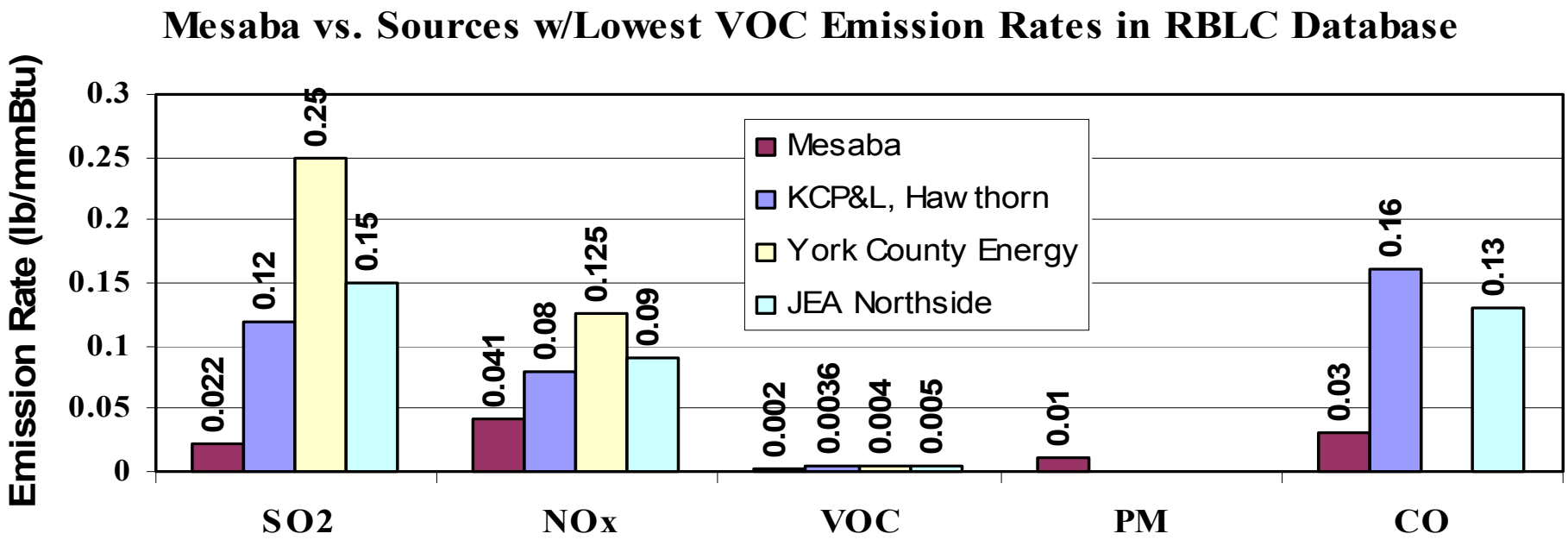
Mesaba v. Best Coal (SO_2)



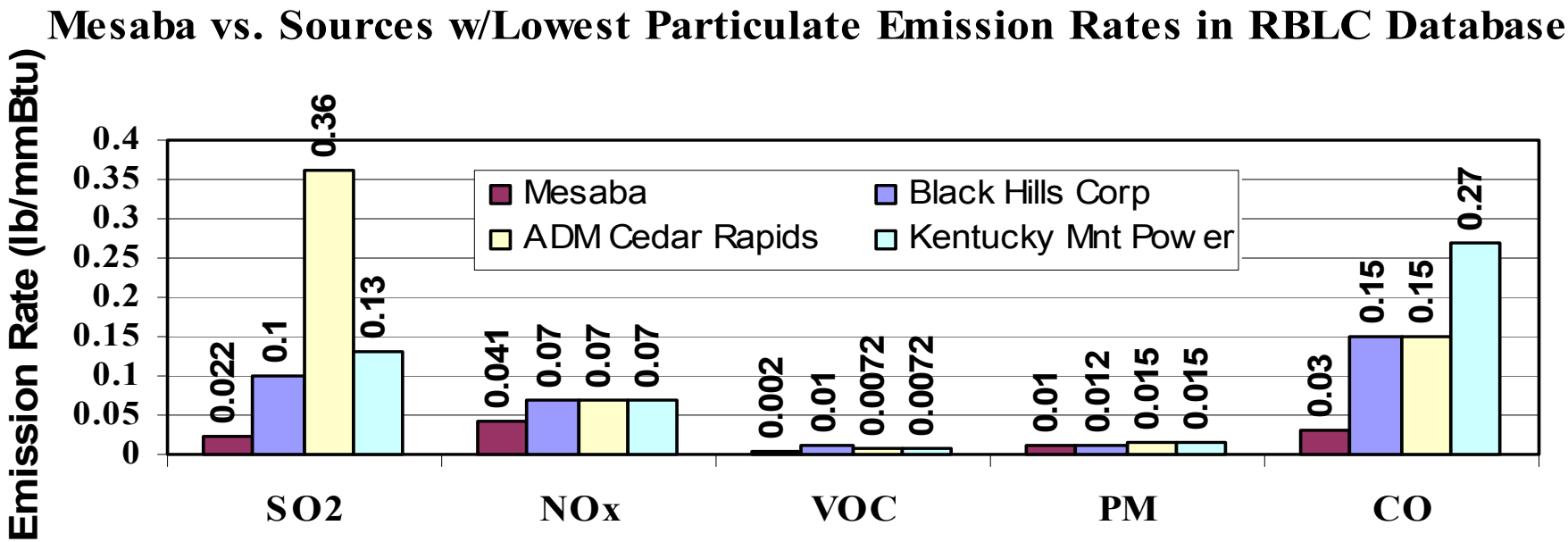
Mesaba v. Best Coal (NO_X)



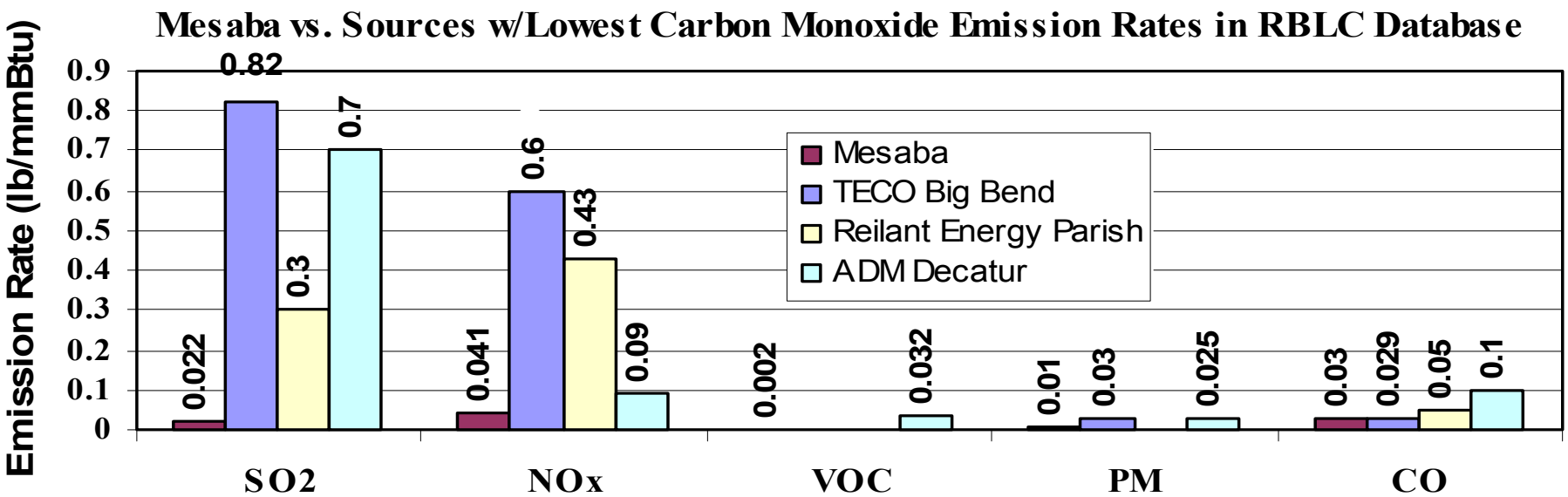
Mesaba v. Best Coal (VOC)



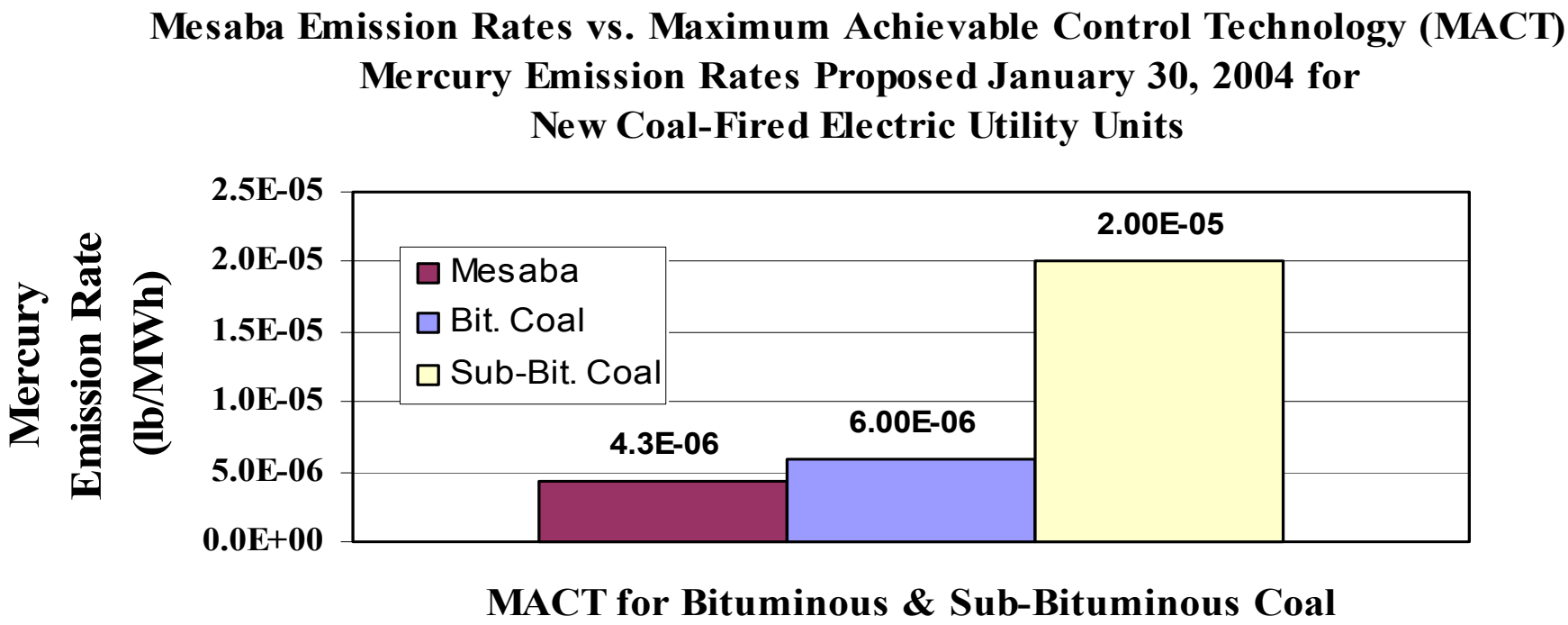
Mesaba v. Best Coal (PM)



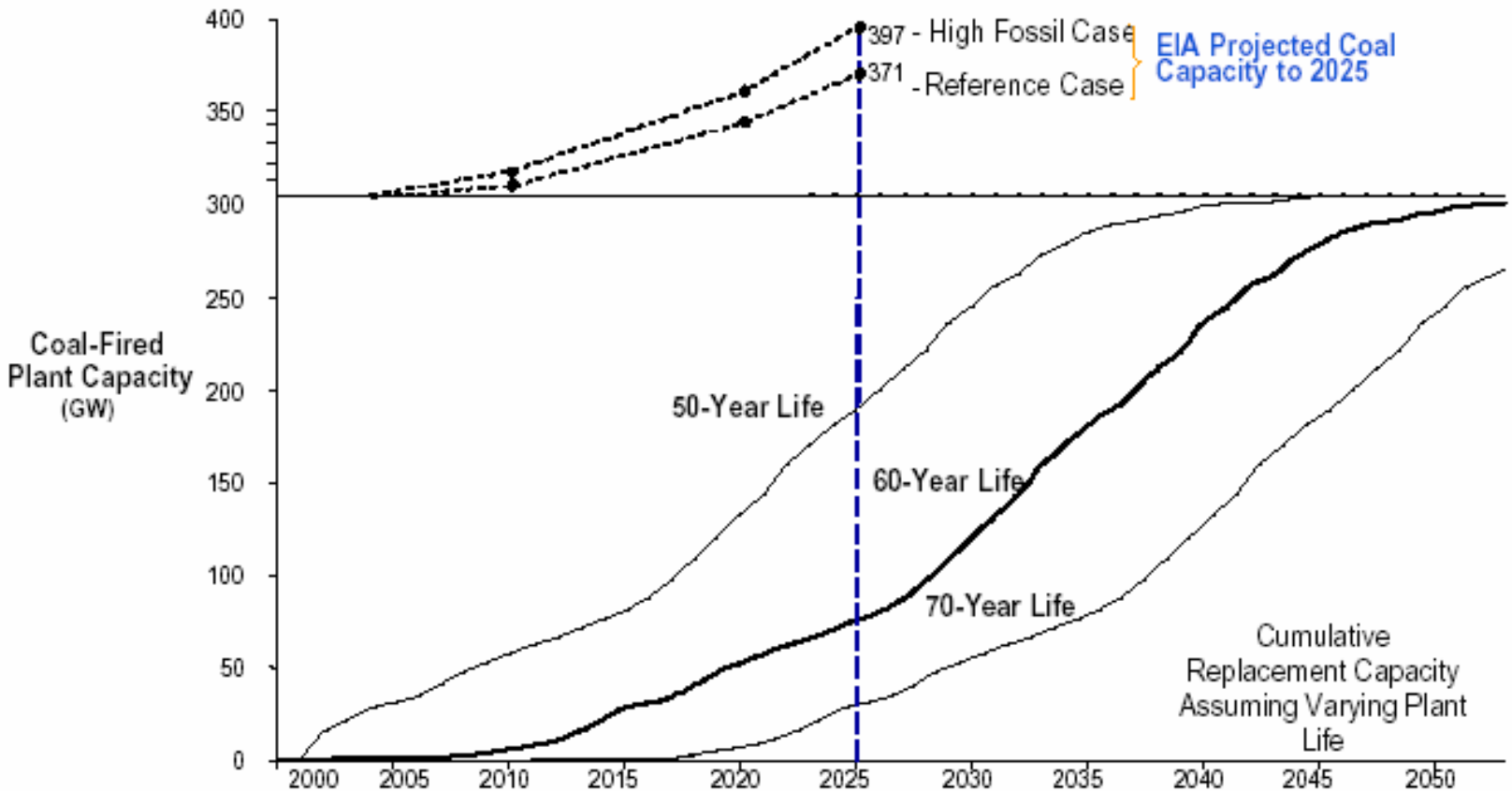
Mesaba v. Best Coal (CO)



Mesaba v. Mercury MACT



Market For New Coal Power Plant Technology



Department of Energy, the Electric Power Research Institute, and the Coal Utilization Research Council

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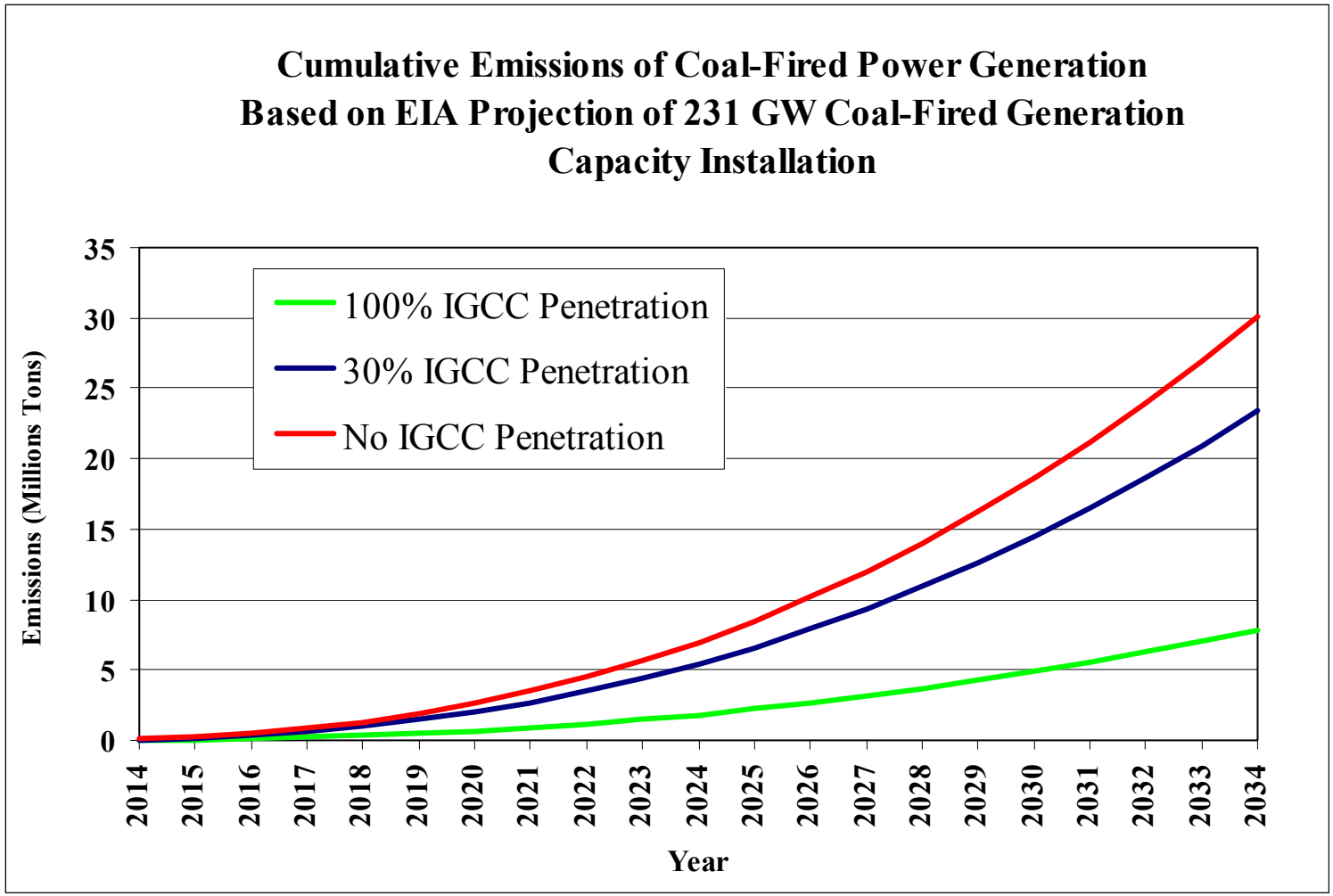
Avoided Emissions With IGCC



Excelsior Energy Inc. - Principals

- **Julie Jorgensen, Co-President and CEO,** has been active in the competitive power industry for over fifteen years, including serving as President and Chief Executive Officer of CogenAmerica, a publicly traded independent power producer that developed and operated cogeneration facilities that served electric and industrial steam customers in the United States. Prior to CogenAmerica, Julie served as Vice-President and General Counsel of NRG Energy Inc. in its start-up phase, where she played an active role in the development of project-financed, highly structured power generation projects worldwide. She began her career as an attorney in the Financial Transactions group of the Los Angeles office of Morrison & Foerster, a leading international law firm. Julie has served in advisory capacity roles for the U.S. Government in assisting foreign governments with their energy development programs. She has a degree in International Finance from Iowa State University and is a graduate of the University of Minnesota Law School.
- **Tom Micheletti, Co-President and CEO,** has over twenty-five years of experience in the power industry including senior executive positions with key responsibility for government, regulatory and legal affairs, and non-regulated businesses with Northern States Power, Southern California Edison, and Minnesota Power. Tom played a role in developing the world's first IGCC project at Coolwater, and helped conceive and enact into law the Federal Clean Coal Technology Program. He has extensive experience in siting and licensing large energy and industrial facilities. Tom has also served as the CEO or board member of various enterprises, including coal mining, utility equipment manufacturing, paper, and water companies. He conceived and was responsible for construction of Minnesota's most technologically advanced waste paper recycling plant located in Duluth. Tom is a graduate of Harvard University and the University of Minnesota Law School. He has been chairman of the board of the U.S. Hockey Hall of Fame since 1991, and has been active in a broad range of community and civic activities.

Excelsior Energy Inc. – Mesaba Development Team

- **Bill Ruzynski, Vice President Development,** has been active in the power industry for more than fifteen years in both greenfield and acquisition transactions. He has led development teams on many successful independent power investments. Bill has extensive solid fuel experience, and has had overall project development responsibility for commercial contracts, fuel supply, partnership arrangements, and the technical due diligence, construction, and start-up of power plants. He has worked on DOE Clean Coal Projects in the project manager role during both development and operational phases. Bill has a degree in Mechanical Engineering from North Dakota State University and a MBA from the University of Minnesota.

- **Renee Sass, Vice President and CFO,** has more than fifteen years' domestic and international energy industry experience in the development, negotiation, and closing of financial and strategic transactions and asset management. She has structured and closed multi-billion dollar financings, and has had executive responsibility for strategic planning and finance in the power industry. Renee has a B.A. in Communication Arts/Marketing and an MBA in Finance.

- **Mike Wadley, Vice President Operations and Technology,** has nearly 30 years of power plant operational experience. Mike served in several senior executive roles. Most recently, serving as Senior Vice President for operational support programs for the Nuclear Management Company which operates eights nuclear reactors located at six sites in four upper Midwest states. Prior to Nuclear Management Company, Mike held various key leadership positions with Northern States Power Company, serving as Prairie Island Nuclear Plant Manager, Vice President, and President of Northern States Power's Nuclear Generation Business Unit. Mike holds a B.S. in physics from Winona State University.

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Excelsior Energy Inc.
Mesaba Development Team

- **Robert Evans, Vice President Environmental Affairs,** has 24 years of experience in environmental and regulatory activities, 21 years of which have been directly associated with electric generation. Most recently, Bob headed up environmental affairs for a global independent power company with more than 30,000MW of generating capacity. Bob has directed the work of professional environmental staff, consultants, and legal counsel on matters relating to environmental due diligence, permitting, regulatory negotiations, compliance strategies, contractual conditions, and remedial actions. Bob holds a Master of Arts degree in chemistry from Drake University in Des Moines, Iowa and a Bachelor of Arts degree in Biology from Luther College in Decorah, Iowa.

- **Steve Sherner, Transmission Consultant,** has served in many senior executive roles in the power industry and was most recently the president of the Minnesota Power unit responsible for unregulated power development and marketing. Steve has more than three decades of experience in power generation, transmission, systems planning and operation and business development, and was integrally involved in the formation of the MAPP and MAIN reliability organization and the merger of MAPP and MISO.

- **Bruce Browers, Engineering Consultant,** has more than thirty years of hands-on and leadership experience in developing, designing, constructing, operating and maintaining coal-fired power plants. Bruce has a B.S. in Mechanical Engineering and an M.B.A. from the University of Minnesota – Duluth.

Mesaba Consortium and Advisory Team

- ConocoPhillips: Technology Licensor/Development and Support
- Bechtel: Conceptual Engineering
- Credit Suisse First Boston: Financial Advisor
- Latham & Watkins: Project Legal Counsel
- Iron Range Resources: Development Funding