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Presented by Jeff Herholdt, WV Development Office, at the Coal Utilization Technologies Workshop on September 22, 2004 at the National Research Center for Coal & Energy, Morgantown, WV. This meeting was part of the Energy Roadmap Workshop Series commissioned by West Virginia Governor Bob Wise.



FutureGen

Jeff Herholdt
Manager, Energy Efficiency Program
West Virginia Development Office

Energy Roadmap Workshop • Morgantown, WV
September 22, 2004



FutureGen Purposes:

- ∞ To validate the engineering, economics and environmental viability of a zero emission fossil based energy system
- ∞ To establish the technical and economic feasibility of producing electricity and hydrogen from coal
- ∞ To be the world's first integrated sequestration and hydrogen production research power plant



FutureGen Technology:

- ∞ Coal Gasification Integrated With Combined Cycle Electric Generation
- ∞ 275 MW Electric Power Plant
- ∞ 10-Year, \$1 Billion Demonstration



FutureGen Technology:

- ∞ Living Prototype With Future Technology Innovation Incorporated
- ∞ Liquification and Sequestration (injection) of CO₂
 - One Million Tons a Year
 - Permanently Trapped
 - Deep Unminable Coal Seams
 - Depleted Oil and Gas Reservoirs
 - Saline Aquifer



FutureGen Carbon Sequestration Studies:

- ∞ West Virginia Geological and Economic Survey
- ∞ Olin Site - Marshall County

Olin Site Location



Potential Geologic Targets for CO₂ Sequestration

- Solution Cavities
- Gas Storage Reservoirs
- Organic-Rich Shales
- Oil and Gas Reservoirs
- Deep Saline Reservoirs
- Coal Beds

Geologic System	Primary Mineral Resource
Pennsylvanian	Coals, Coal Bed Methane
Mississippian	Oil and Gas Reservoirs
Devonian	Oil and Gas Reservoirs
Silurian	Salt (solution mining) and Gas Reservoirs



FutureGen Consortium:

- ∞ Members will own and produce one-third of U.S. coal and one-fifth of U.S. coal fired electricity
- ∞ Responsible for 25% of project costs -- \$250 million, or \$25 million per company
- ∞ Cost recovery will be a siting issue. Revenue to come from electric, hydrogen and CO₂ sales



FutureGen Consortium:

- ∞ Consortium to be administered by Battelle Labs, Columbus, Ohio
- ∞ The Consortium will use fair and open competition to select the host site
- ∞ Membership open to foreign electric and coal companies



FutureGen Consortium:

∞ Current anticipated membership

- American Electric Power
- CONSOL Energy Inc.
- Kennecott Energy
- The North American Coal Company
- Pacific Corporation
- Peabody Energy
- Foundation Energy
- Southern Company
- TXU



FutureGen Siting Needs:

- ∞ Sequestration Opportunities
- ∞ Coal Transportation Network
- ∞ Electrical Grid
- ∞ Two-Million Gallons of Water a Day



FutureGen Siting Needs:

- ∞ One Million Tons of Coal per Year
- ∞ One Hundred Acre Site
- ∞ Trained Workforce



FutureGen Siting Needs:

- ∞ Opportunities to Sell Electricity, Hydrogen & CO₂
- ∞ Multiple States Consortium Requirement Anticipated



FutureGen Activities:

- ∞ WV-PATH 2 - West Virginia Picturing Access to Hydrogen - 2003
- ∞ Energy Roadmap Workshop (Hydrogen) - November 2003
- ∞ Hydrogen Markets Study - Marshall University
- ∞ Carbon Sequestration Studies - West Virginia Geological and Economic Survey