



Edwardsport IGCC Project Update

Workshop on Gasification Technologies

Indianapolis, Indiana

June 13, 2007

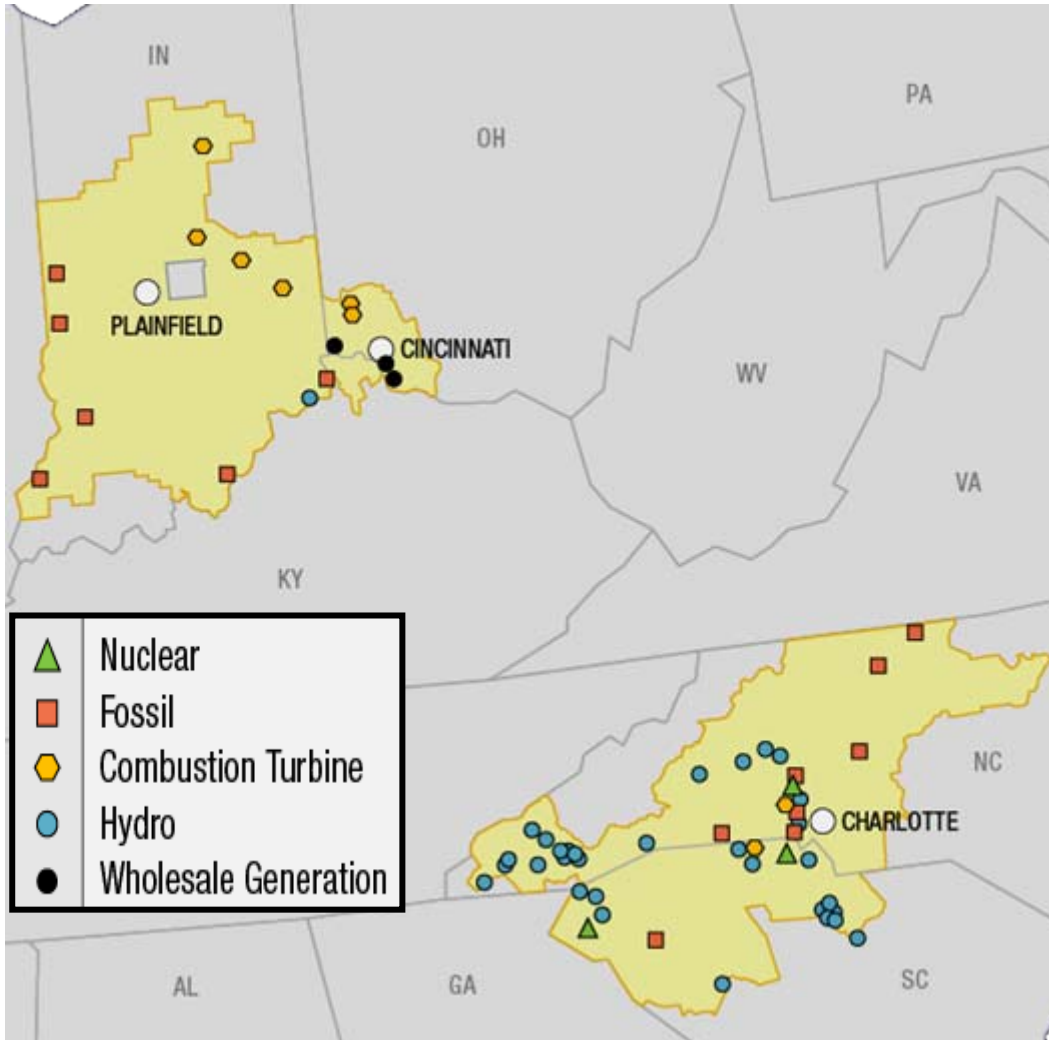
Jim Stanley, President, Duke Energy Indiana

Facts about Duke Energy

- Fortune 500
- Assets over \$68 billion
- Top 5 for U.S. generating capacity
- Over 4,000 MW in Brazil, Argentina, Peru, Ecuador, El Salvador and Guatemala
- 150+ years of service
- Traded on NYSE as DUK
- Stock dividends for 80+ years



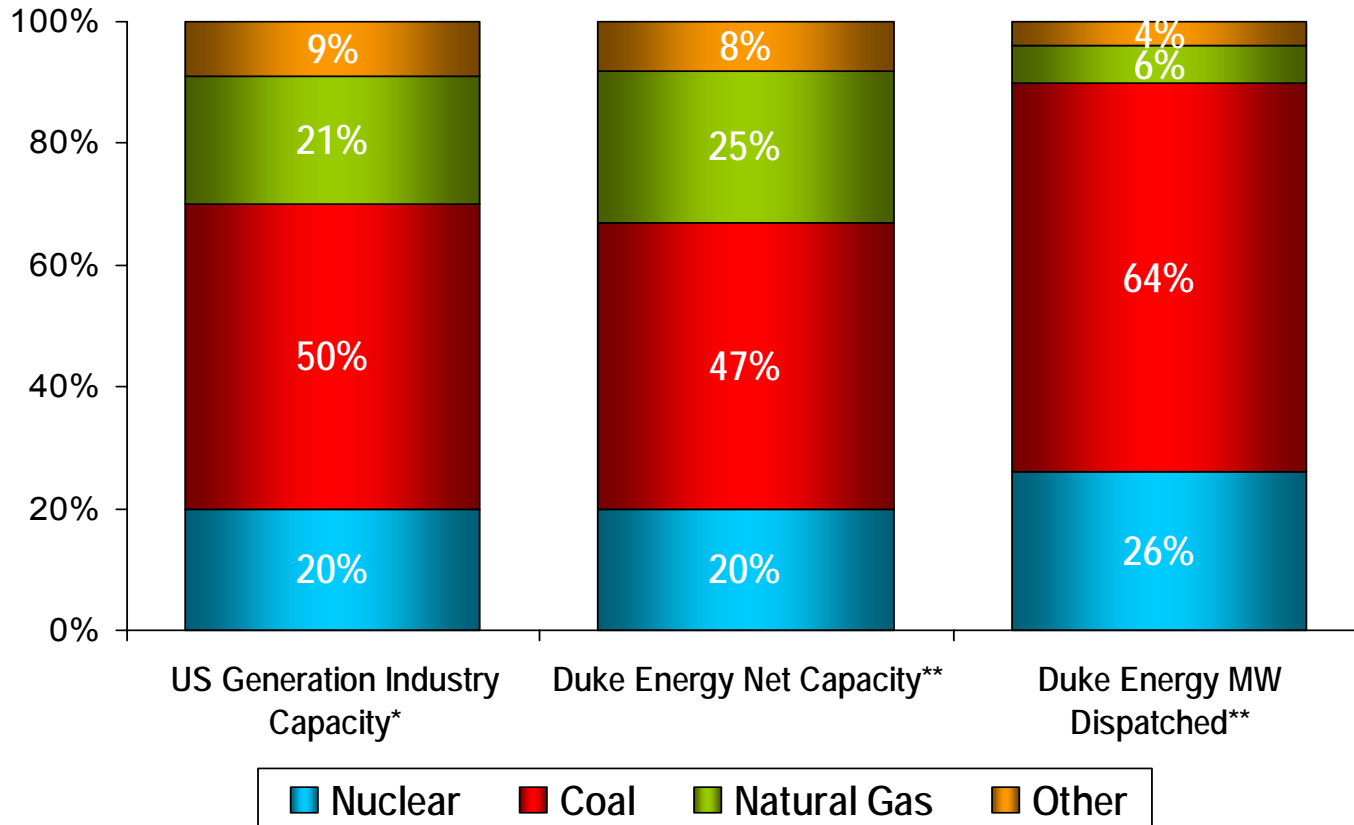
US Franchised Electric & Gas



- 5 states: Indiana, Kentucky, Ohio, North Carolina and South Carolina
- 47,000 square miles of service area
- ~28,000 MW
- 3.8 million retail electric customers
- 500,000 retail gas customers

Comparison of Generation Fuel Mix

Duke Energy's diverse fuel mix mirrors the overall industry mix



*Source: EIA

**Includes DENA Midwest assets, does not include DiscOps assets

Renewables in Indiana

- Duke Energy Indiana entered into a 100 MW wind power agreement from Indiana's first commercial scale wind farm in Benton County, Indiana
- Offer green energy to all customers through a voluntary "GO GREEN POWER" program
- Completed 3 solar demonstrations at Duke customer service centers in Bloomington, Noblesville and Kokomo
- Working with Purdue University on wind and biomass (switchgrass co-firing) research
- Continue to expand our solar school programs in Indiana through the DSM program
 - 10 schools currently involved

Considerations for Choosing Baseload Plant Technology

- Need for new baseload capacity to serve Duke Energy Indiana service territory by 2012-2014 to maintain a 15% - 17% reserve margin
 - Duke Energy Indiana has overall capacity need of at least 850 MWs to 1000 MWs in that timeframe, and baseload need of 300 MWs to 600 MWs in that timeframe
 - Vectren, our potential joint owner, has a need for approx. 125 MWs
- Ability to use abundant and relatively low-cost local midwest coal resources in a more environmentally benign manner
- Commitment to continue to provide reliable, fairly priced electricity for customers
- Need to plan for and comply with increasingly stringent environmental emission limits

4 Major Advantages of IGCC

- Potential to control emissions in a cost effective manner as environmental regulations become increasingly stringent
 - Recent “CAIR/CAMR” rules require reductions in sulfur dioxide, nitrogen oxide and mercury emissions
- Duke Energy Indiana has prior experience with coal gasification technologies – others may not have this advantage
 - 1995: Wabash River Coal Gasification/Repowering Project
- Potential for future capture of CO₂ at a lower cost than conventional PC because CO₂ can be separated from the fuel prior to combustion – far less volume to “clean”
- Potential to tap into future poly-generation capabilities – including production of fertilizer and transportation fuels

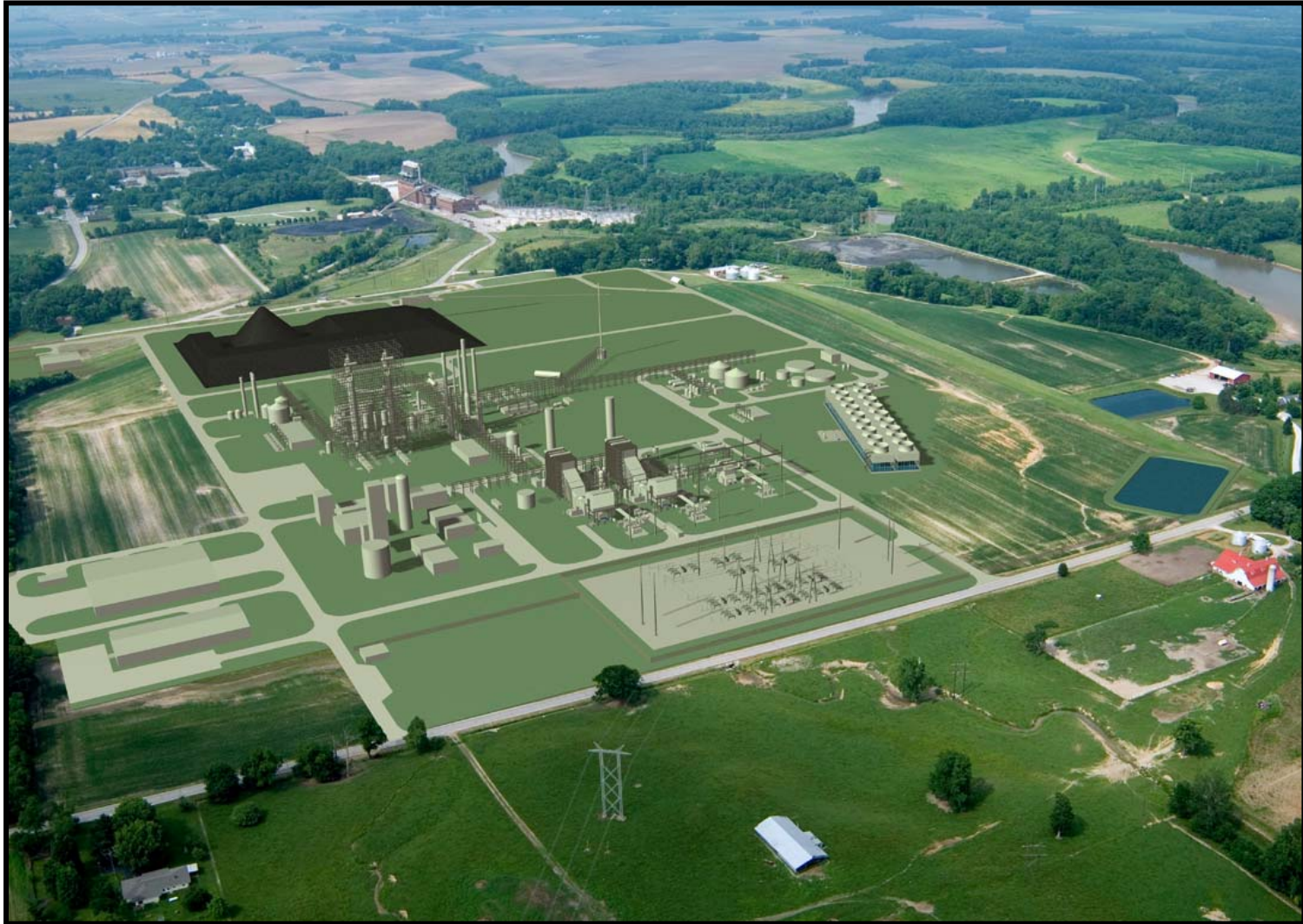
Edwardsport IGCC Project Description

- 630-MW integrated gasification combined cycle facility
- To be constructed at existing Edwardsport site in Southwest Indiana
 - Existing 160-MW Edwardsport coal plant (circa 1940s) to be retired
- Superior environmental performance
- Carbon capture ready
 - Adequate space for future carbon capture equipment
 - Initial assessments indicate sequestration possible in the area

Edwardsport IGCC Project

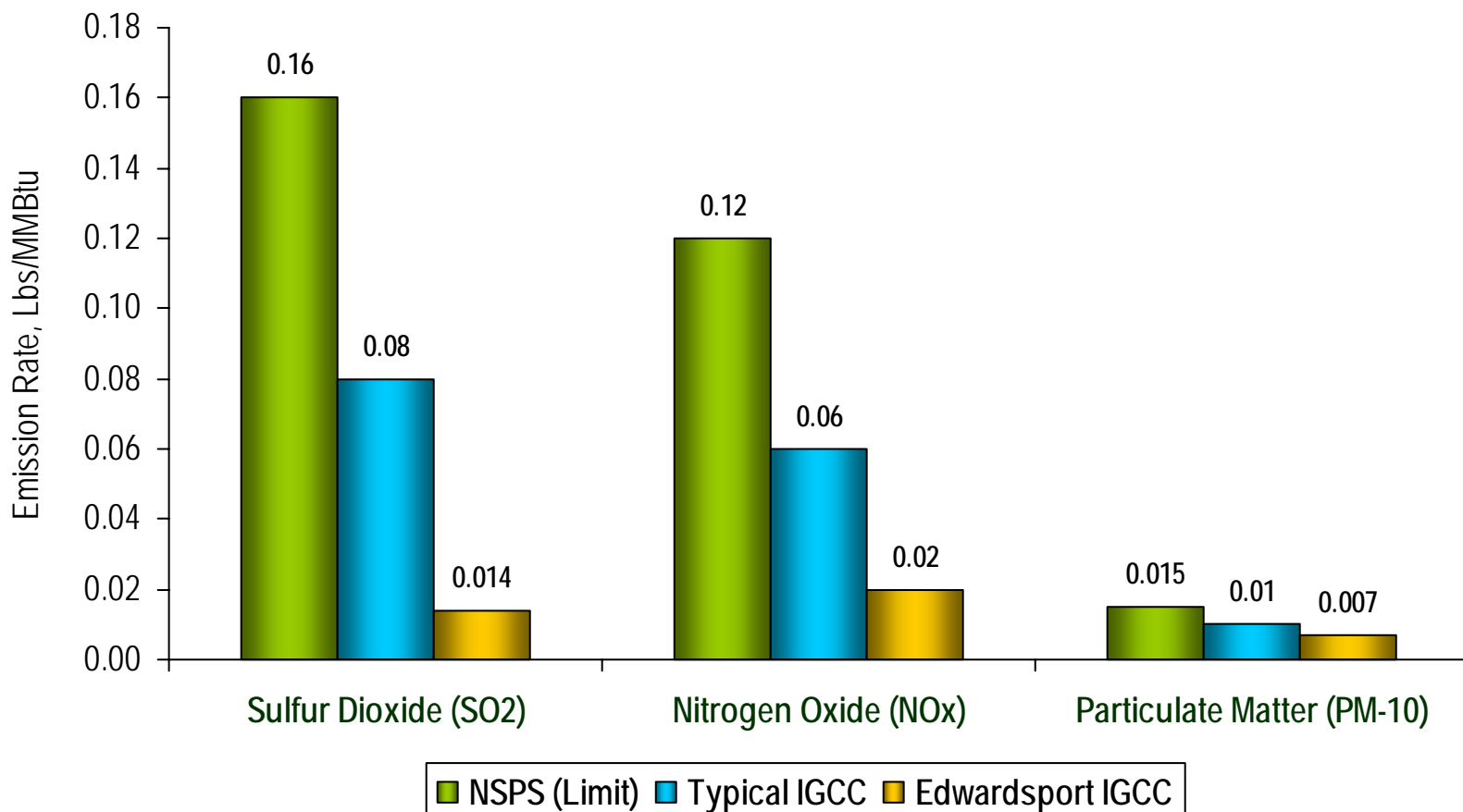
- Basic design
 - 2x2x2x1 - 630MW IGCC "Unit"
 - 2 gasifiers, 2 combustion turbines, 2 HRSGs, 1 steam T/G
 - Natural gas start-up and back-up fuel
 - Physical solvent acid gas removal system
 - GE new product introduction programs
 - Radiant syngas cooler
 - 7FB combustion turbine
 - Reference plant
 - Distributed control system (Mark VI e)

Duke Energy's Proposed Edwardsport IGCC Plant, Knox County, Indiana



General Environmental Performance Comparison

New Source Performance Standards (NSPS) vs. IGCC



For Discussion Purposes Only – Approximate conversion of NSPS lb/MWh (gross) to lb/MMBtu for SO2 and NOx. Rates for Edwardsport IGCC reflect preliminary expected performance with SCR in service. Emission permit limits may be greater than that shown for operating margin.

Status of Air Permitting

- Air permit filed with Indiana Department of Environmental Management in August 2006
 - Final permit expected to be issued late in 4th Quarter 2007
- There are net reductions of SO₂ and NO_x from the site, therefore no PSD evaluation or BACT analysis is required for these pollutants
- Malcolm Pirnie, Inc. and Duke EH&S developed the application based on worst case coal data and no SCR for NO_x control
- SCR is not required, but Duke Energy Indiana plans to install SCRs

Carbon Capture and Sequestration

- Potential for geologic sequestration of carbon was included as one of the siting criteria for the project
- Preliminary feasibility study completed by the Indiana Geological Survey in conjunction with the Midwest Geological Sequestration Consortium concluded “there exists a good possibility of significant amounts of sequestration potential within an area below and immediately surrounding the site”
- Additional work needs to be done to assess the technical capability of potential injection formations and cost associated with sequestration
- Space has been left in design to accommodate addition of carbon capture and sequestration equipment in the future

Duke Energy and Climate Change

- Set voluntary goal to reduce 10 million tons of CO₂ equivalents by 2015
- Participating in capture and sequestration R&D
- Member of 3 Department of Energy Regional Carbon Sequestration Partnerships
 - Midwest Regional Carbon Sequestration Partnership
 - Phase II project at East Bend Station
 - Midwest Geological Sequestration Consortium
 - Southeast Regional Carbon Partnership
- Leader in Federal Climate Change Policy debate

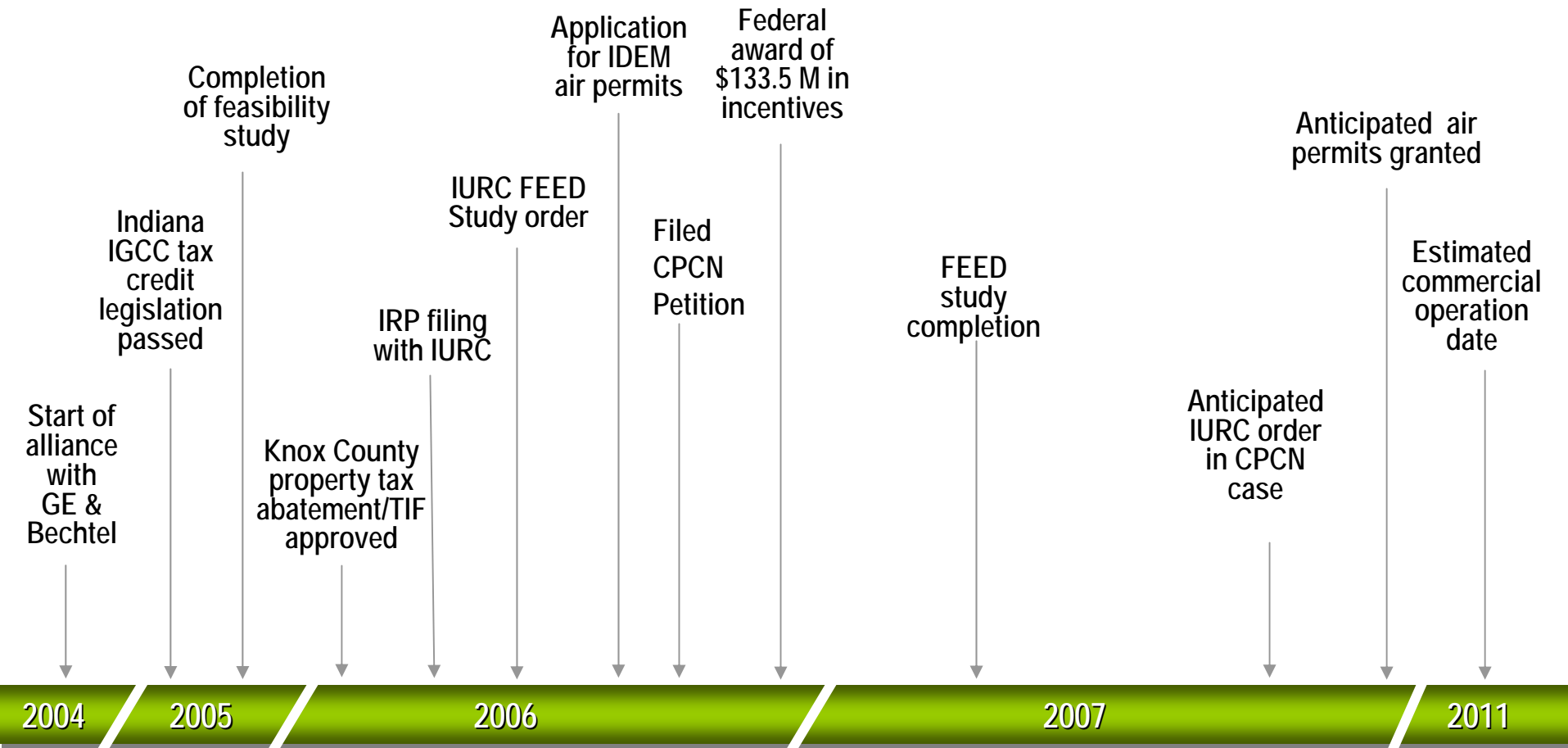
Project Cost Estimate

- Despite commodity and labor cost inflationary pressures, current project estimated cost is within approx 5% of estimated range filed with IURC in October 2006
- Project cost estimate is still within industry estimates (e.g., EPRI based estimated range)
- Current project cost estimate:
 - Approximately \$2 B as spent dollars (before tax incentives)
 - Tax incentives of over \$460 M

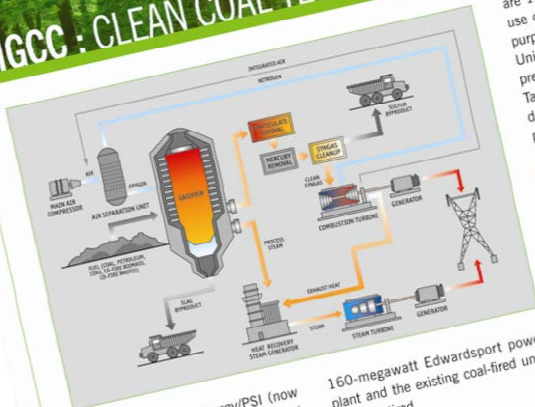
Financial Incentives Key to Deployment

- Industry analysts estimate IGCC may have a 15-20% higher capital cost than a PC plant
- State and local incentives
 - IN SB 29 provides for timely recovery of IGCC construction & operating costs
 - IN SB 378 - investment tax credit of 10% of project cost for the first \$500 M and 5% of the remaining cost
 - Property tax abatement and tax incremental finance district are also available at the local county level
- Federal investment tax credits
 - Maximum amount of \$133.5 M awarded

Edwardsport IGCC Project Timeline



EDWARDSPORT IGCC : CLEAN COAL TECHNOLOGY



are 17 sites worldwide, four of which are coal/petroleum coke for the sole purpose of generating electricity. In the United States, Duke Energy Indiana and predecessor company, PSI Energy, and Tampa Electric have been involved in demonstrating the technology over the past 10 years.

BENEFITS FOR INDIANA

Potential benefits include:

- Advanced clean coal technology plant with lower air emissions, less use of water, less solids generated, and generally higher efficiency than a conventional pulverized coal plant with currently required pollution control equipment.
- Ability to use Indiana and Midwest coal.
- The plant will employ an estimated 77-97 people. The majority of the positions would be high-skill/high-paying with an estimated annual payroll of \$7 to \$9 million. Total estimated jobs include Duke Energy Indiana and non-Duke Energy Indiana personnel at the plant site.
- Construction jobs would average an estimated 800-900 during the three-year construction period. During peak construction, the number would increase to approximately 2,000.
- Increased tax base for local and state economies.
- Potential for carbon dioxide capture and sequestration in the future.

In October 2004, Cinergy/PSI (now Duke Energy Indiana), GE Energy and Bechtel Power Corporation signed a letter of intent to study the feasibility of constructing a commercial, integrated gasification combined cycle (IGCC) electric power plant. This is one of the first plants to be announced under the GE and Bechtel IGCC alliance. In light of the volatile price of oil and limited supplies of natural gas available, coal is one of the most practical alternatives for addressing Duke Energy Indiana's additional base load power needs. Vectren Energy Delivery, an energy company with electric operations in southwest Indiana, is also exploring joint ownership in the project to help fill its future power needs. This facility would be a step toward meeting the state's growing power demand using an abundant resource to provide energy with less environmental impact.

160-megawatt Edwardsport power plant and the existing coal-fired units will be retired.

HOW IT WORKS

IGCC uses a coal gasification system to convert coal into a synthesis gas (syngas) and produce steam. The hot syngas is processed to remove sulfur compounds, mercury and particulate matter before it is used to fuel a combustion turbine generator, which produces electricity. The heat in the exhaust gases from the combustion turbine is recovered to generate additional steam. This steam, along with that from the syngas process, drives a steam turbine generator to produce additional electricity. Coal gasification has seen worldwide use in chemical plant applications since the early 1900s. Through U.S. Department of Energy clean coal programs, it was developed for IGCC applications on a larger scale in the 1980s and demonstrated in a commercial setting in the mid-1990s. Currently, there

If the project is constructed, it will be located at the Duke Energy Indiana



Q&A : CLEAN COAL TECHNOLOGY

1. WHY ARE DUKE ENERGY INDIANA AND VECTREN CONSIDERING BUILDING AN IGCC PLANT?

As Indiana's economy grows, so too does the need for energy. Duke Energy Indiana and Vectren customers have been setting records for electric usage. It is estimated that Duke Energy Indiana will need approximately 300-600 megawatts of new base load capacity in the 2012-2014 timeframe. "Base load" is the power provided by Duke Energy Indiana to its customers continuously 365 days per year (without peaks and valleys). Vectren has reported a need to increase its generation capacity in the coming years as well. The IGCC plant will provide about 630 megawatts in the majority of the plant and Vectren potentially owning a share of the plant.

If the project is constructed, it will be located at the Duke Energy Indiana 160-megawatt Edwardsport power plant and the existing coal and oil-fired units will be retired.

2. WHAT IS COAL GASIFICATION?

The coal gasification process converts coal into a synthesis gas (syngas) and produces steam. The hot syngas is processed to remove sulfur compounds, mercury and particulate matter before it is used to fuel a combustion turbine generator. The heat in the exhaust gases from the combustion turbine is recovered along with that from the syngas process, then drives a steam turbine generator to produce electricity.

3. IS THE TECHNOLOGY PROVEN?

Coal gasification has seen worldwide use in chemical plant applications since the

early 1900s. Through U.S. Department of Energy clean coal programs, it was developed for applications on a wider scale in the 1980s and demonstrated in a commercial setting in the mid-1990s. Currently, there are 17 sites worldwide, four of which use coal/petroleum coke for the sole purpose of generating electricity. One of those sites is a West Terre, Ind., plant that Duke Energy Indiana takes synthetic gas from for one of the units at its Wabash River Station. This plant was a Department of Energy demonstration project.

4. WHAT IS THE IMPACT ON AIR QUALITY?

A new plant would convert coal to a cleaner burning gas. A rough, preliminary comparison: The current 160-megawatt plant at Edwardsport emits approximately 13,000 tons of sulfur dioxide, mercury, nitrogen oxide and particulate emissions annually. It operates about 30 percent of the time. Preliminary data indicates a 630-megawatt IGCC plant operating 100 percent of the time will emit about 2,200 tons of those same pollutants annually. The carbon dioxide emissions rate is lower than the existing plant, although overall carbon dioxide emissions are higher because of the plant's size and operating time.

5. WHY SHOULD THE PROJECT RECEIVE LOCAL TAX INCENTIVES? WHAT IS THE LOCAL BENEFIT?

The plant will not be built without incentives that might make the IGCC technology a viable economic choice for Indiana customers. The benefits to the local/regional economy include:

- The plant will use 1.5 million tons of coal per year valued at about \$40 million annually, a boost for local and state economies.

8. HOW MUCH WATER WILL THIS PLANT USE ON A PER DAY BASIS AND WHERE WILL YOU GET THE WATER?

The proposed IGCC plant will use an average of 11 million gallons of water per day as compared to the current plant that uses 188 million gallons per day. While it's not yet been decided whether to rely on the river or wells, it will most likely be wells.

6. WILL DUKE ENERGY INDIANA HAVE PARTNERS IN THE PROJECT?

Vectren is exploring joint ownership with Duke Energy Indiana in this project.

7. WHAT APPROVALS ARE NEEDED FOR THE PROJECT?

State and federal permits will be required before the project can be built. These include air, water and solid waste permits, and clearances for such things as endangered species, and historic and archeological sites. We have applied to the Indiana Utility Regulatory Commission for "certificates of need" to build

- A total investment of approximately \$2 billion.
- Increases in state and local taxes paid.
- Estimated property taxes to be paid in years 1-10 are approximately \$36.4 million.*
- Estimated property taxes in years 11-30 total \$85.2 million.*

* Estimated property taxes reflect 2004 pay 2005 tax rates and current property tax laws in effect as of 12/31/05.

