



October 4, 2006

***VIA ELECTRONIC FILING
AND OVERNIGHT DELIVERY***

Oregon Public Utility Commission
550 Capitol Street NE, Ste 215
Salem, OR 97301-2551

Attention: Vikie Bailey-Goggins, Administrator
Regulatory and Technical Support

Re: **PacifiCorp Compliance Filing – Commitment O32**
Docket No. UM 1209

Enclosed for filing please find an original and five (5) copies of PacifiCorp's IGCC Study Results provided in compliance with Commitment O32, pursuant to the Oregon Public Utility Commission Order No. 06-121 granting approval of the acquisition of PacifiCorp by MidAmerican Energy Holdings Company, issued March 14, 2006 in the referenced proceeding.

The Commission approved the acquisition of PacifiCorp by MEHC subject to a Consolidated List of Commitments specified in a settlement agreement supported by all parties to the proceeding. Included in this Consolidated List is MEHC's and PacifiCorp's commitment regarding the filing of the enclosed study results.

Specifically, Commitment O32 provides in relevant part:

MEHC and PacifiCorp commit to study the economics and viability of an IGCC option and will present the results of this study as a resource alternative to inform the resource selection and RFP process under consideration in Docket 05-035-47. PacifiCorp will also file the results of this study and the draft RFP with the OPUC for review and public comments.

In addition, parties to Docket No. UM 1208 have been provided a copy of the RFP. Other interested parties may access a copy of PacifiCorp's RFP on its website at the following link: <http://www.pacificorp.com/Article/Article62879.html>

It is respectfully requested that all formal correspondence and Staff requests regarding this filing be addressed to the following:

Compliance Filing
Docket No. UM 1209
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By e-mail (preferred):

datarequest@pacificorp.com

By regular mail:

Data Request Response Center
PacifiCorp
825 NE Multnomah, Suite 2000
Portland, OR 97232

Informal inquiries may be directed to Laura Beane, Regulatory Manager at 503.813.5542.

Very truly yours,

A handwritten signature in cursive script that reads "Andrea L. Kelly" with the initials "ALB" written below the name.

Andrea L. Kelly
Vice President, Regulation

Enclosure

cc: Service List UM 1209 (w/ enclosure)

CERTIFICATE OF SERVICE

I hereby certify that on this 4th day of October, 2006, I caused to be served, via Email(if address available) or U.S. mail, a true and correct copy of PacifiCorp's Compliance Filing -(Commitment O32) in Docket UM 1209.

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Peggy Ryan
Supervisor Regulatory Administration

THE ECONOMICS AND VIABILITY OF INTEGRATED GASIFICATION COMBINED CYCLE (IGCC) IN THE PACIFICORP SYSTEM

MidAmerican Energy Holdings Company (“MEHC”), as part of their acquisition of PacifiCorp, committed to consider the utilization of advanced coal-fuel technology such as super-critical or integrated gasification combined cycle (“IGCC”) technology when adding coal-fueled generation. MEHC and PacifiCorp committed to study the economics and viability of IGCC resources. The summary results of this study effort were presented at two technical conferences. The first conference was held on April 3, 2006 and was entitled “Request for Proposal Technical Conference: Utah Docket 05-035-47” (“April 3 Presentation”) and the second conference entitled “Request for Proposal Technical Conference: Oregon Meeting (Following Utah Docket 05-035-47” was held on April 10, 2006 (“April 10 Presentation”).

Over the past two years, PacifiCorp has performed IGCC studies to evaluate gasification technologies at its Hunter and Jim Bridger sites with a variety of coals. The purpose of these studies was to determine the site specific impacts, such as altitude and coal quality, on the performance and cost of various IGCC technologies. The primary and most recent study is the WorleyParsons study, which was completed in July 2006, entitled “PacifiCorp IGCC Feasibility Evaluation Shell and E-Gas Technologies - Hunter and Jim Bridger Stations.” Due to the confidential content of this report it has not been provided; however, the report will be made available to interested third parties who qualify under confidentiality arrangements.

The results of the 2006 WorleyParsons study were used to develop estimates of the total cost of energy for each of the IGCC technologies at the various locations and coal types. The cost of energy estimates for these IGCC options were then compared to the cost of energy for advanced pulverized-coal fired options using supercritical boiler-turbine technology at the same sites and coals. Specifically the 2006 WorleyParsons study was to determine the performance of ConocoPhillips’ “E-Gas” and Shell’s gasifier technologies at both the Hunter and Jim Bridger Plant locations. In addition, the 2006 WorleyParsons study expanded on an earlier study which did not include Shell’s gasifier technology and it included an evaluation at the Jim Bridger plant with its higher elevation and the use of lower rank coals. The 2006 WorleyParsons study also included a determination of the impact of General Electric’s then recent announcement on its improved output of its 7FB gas turbine. The General Electric 7FB gas turbine was assumed to be the building block for the IGCC reference plant used in the study.

Inasmuch as the results of an earlier study had indicated that ConocoPhillips’ “E-Gas” technology was marginally better than General Electric’s gasifier technology, it was decided to limit the comparison in the 2006 WorleyParsons study between the ConocoPhillips’ “E-Gas” gasifier technology with Shell’s gasifier technology in order to limit the overall costs of the study. However, it should not be inferred from this process

that General Electric as a potential technology supplier has been excluded; for future development work involving individual feasibility studies with the technology suppliers, General Electric would be asked to participate.

For the 2006 WorleyParsons study, bituminous Utah coal, Southwestern Wyoming, and Powder River Basin coals were evaluated at the Hunter located IGCC plant using the two different gasifier technologies. The performance impacts of Powder River Basin and south western Wyoming coal were evaluated on the two different gasifier technologies for the Jim Bridger site.

The major design basis guidelines used in the WorleyParsons study were as follows:

- The plant would be based on a “Reference IGCC Plant” consisting of a “2x1” configuration consisting of two General Electric 7FB gas turbines and one steam turbine. A spare gasifier would be installed to achieve 90% capacity factor on coal. Natural gas would be available for startup and backup.
- The plant would utilize wet cooling with a mechanical draft cooling tower.
- The plant would be equipped with selective catalytic reduction to more closely match the emissions of a natural gas-fired combined cycle plant.
- The plant would be designed and constructed to be “carbon capture ready” so that CO₂ capture equipment could be installed in the future. The gasifier and supporting equipment would be sized to match the fuel requirements of the gas turbines without CO₂ capture.

In determining the cost of energy for the various IGCC options it was assumed that all of the gasification equipment would be depreciated using a ten-year Modified Accelerated Cost Recovery System approach. The revenue requirements for the plant were based on an assumed 40 year life using the company’s weighted average cost of capital and site specific ad valorem taxes. In determining the total capital cost, a number of other owner’s costs were added; these include switchyard costs, sales taxes, escalation during construction, water, project management costs, and allowance for funds during construction. These costs and processes were applied to the evaluation of supercritical pulverized coal resources as well.

The estimated overall cost of energy for each of the IGCC options includes operating and maintenance costs. In addition to the capital costs from the 2006 WorleyParsons study, operating and maintenance costs were also provided, which were modified. Overall, the adjustments made by PacifiCorp reduced the estimated O&M costs for an IGCC plant at an existing brownfield PacifiCorp site compared to the 2006 WorleyParsons study estimates by approximately 15%.

Using the process outlined above, the capital and operating and maintenance cost estimates from the 2006 Worley-Parsons (WP) study, combined with the company’s fuel

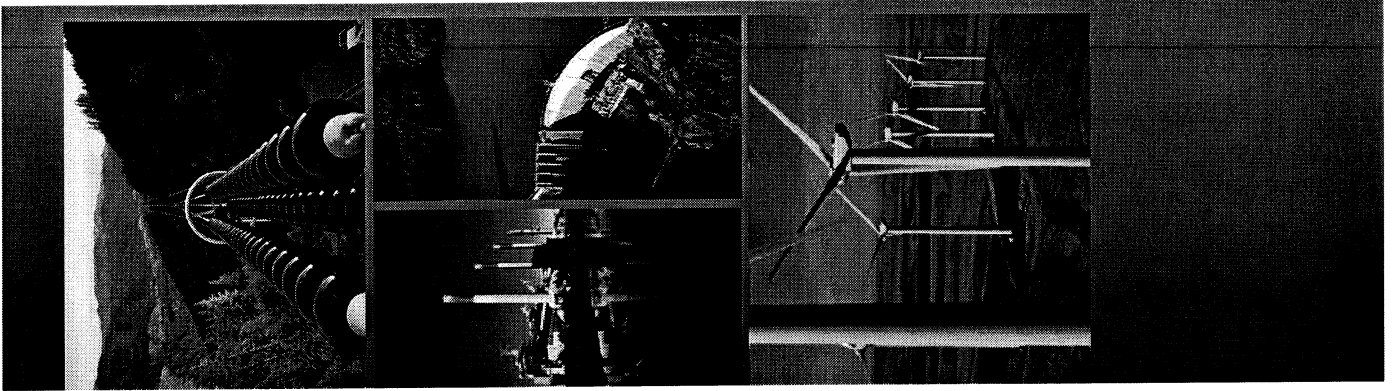
cost estimates, were used to develop the cost of energy for each of the IGCC technology/location/coal scenarios. The levelized costs of electricity for these IGCC options are shown on Slide 13 of the April 3 Presentation and the April 10 Presentation.

From the array of IGCC technology and coal options, the scenario at each location that was determined to have the lowest cost of energy was selected for comparison to supercritical pulverized coal technology options. For the Jim Bridger site this was determined to be the ConocoPhillips' "E-Gas" technology utilizing southwestern Wyoming coal. At the Hunter site, this was determined to be ConocoPhillips' "E-Gas" technology utilizing bituminous Utah coal. These lowest cost IGCC options were compared to pulverized coal supercritical boiler-turbine technology units at the same sites using the same fuels. This comparison is shown on Slide 14 of the April 3 Presentation and the April 10 Presentation.

In addition to cost information that PacifiCorp was to provide, there was a commitment to provide an overall timeline for an IGCC project. As part of the April 3 Presentation and the April 10 Presentation an IGCC Development Schedule was presented (Slide 16). A number of assumptions were made in development of this strawman schedule. The primary assumption is that the permitting work would be started upon completion of the feasibility studies and a technology supplier had been selected. It is assumed that permitting would likely be one of the critical path activities and that a notice to proceed would not be issued until the final permit, and any other major permits, had been issued. Permitting duration would be impacted by site factors and the degree the project receives federal funding. The other primary assumption in preparing the development schedule is that a resource solicitation process would not be required. The overall duration of the detailed engineering, procurement, construction, and commissioning cycle was assumed to be 48 months.

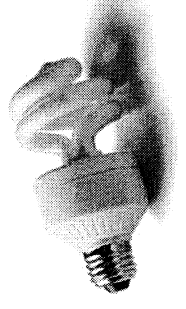
Copies of the presentations referenced in this document are provided as Attachments A and B to this summary report and can also be accessed electronically at the following link: <http://www.pacificorp.com/Article/Article62879.html>

ATTACHMENT A



Request for Proposal Technical Conference: Utah Docket 05-035-47

April 3, 2006



Agenda

- WorleyParsons Expanded IGCC Study
- Factors Driving IGCC Development
- Baseline Assumptions, Emissions, & “CO₂ Capture Ready”
- Preliminary Site Specific IGCC Cost of Energy estimates
- Strawman IGCC Development Schedule
- Summary
- Scheduling

WorleyParsons (WP) Expanded (2006) Study

- WorleyParsons Expanded IGCC Study – started Oct 2005

- Objective: Update and perform additional cost & performance (capacity, efficiency, availability, emissions) estimates. Revised scope of work has some similar and some changed components to previous WP IGCC Study:
 - Update some components of earlier Hunter IGCC Study to reflect current construction & other costs (elev: 5,644’) [Utah, SW Wyoming, & PRB coals]
 - Added analysis of IGCC at Jim Bridger (elev: 6,670’) with SW WY & PRB coal
 - Expanded scope to include review of Shell gasification technology
 - As in 2005 study:
 - Conoco-Philips “E-Gas”
 - Selective Catalytic Reduction (SCR) & wet cooling assumed
 - Impact of carbon capture provisions on plant design and cost
 - As in 2005 study, GE 7FB gas turbines utilized in reference plant, performance on syngas updated as determined by GE
 - Study results being adjusted to include Owner’s costs & contracting assumptions not included in the consultant analysis.

Factors driving IGCC development

- There are slightly lower emissions of criteria pollutants (SO₂, NO_x, PM₁₀, Hg) compared to conventional (i.e. sub- & super-critical pulverized) coal-fired technologies. The level of reductions will depend on the level of environmental controls installed.
- The removal cost per ton of CO₂ is lower with IGCC than with other fossil-fuel (gas & coal) generation resources with similar levels of removal. However, subsequent to CO₂ capture, there are still multiple issues and uncertainties regarding CO₂ sequestration. These issues include the limited operational and commercial experience with sequestration as well as the uncertainties and potential risks associated with permanent geologic CO₂ storage.
- Up to 90+% of the carbon in syngas can be captured at IGCC plants with commercially available technology. The level of removal impacts cost.
- GE, Conoco-Phillips, and Shell have partnered with major Engineer Procurement and Construction (EPC) firms. These technology suppliers/consortia are establishing warranties and performance guarantees as well as O&M services to mitigate some development and performance risk.

Factors driving IGCC development

- Reduced Solid Wastes - IGCC plants produce about 25-60% less solid waste than conventional coal-fired plants of similar size depending on coal type and type of emissions control system.
- Reduced Water Consumption – Water-cooled IGCC plants use ~40% less water than similarly sized water-cooled conventional coal-fired plants.
- IGCC plants are slightly more efficient (5-7%) than supercritical coal-fired plants. Efficiency improvement results in lower CO₂.
- Potential for Incentive Tax Credit (ITC) benefits for early IGCC projects through 2005 Energy Policy Act and other potential benefits which may reduce costs of energy for early market projects.
- Perceived to have fewer obstructions in permitting process.

Challenges to IGCC Development (Recap)

- **Cost**
- **Technology & Performance Risk**
- **Carbon Capture Capability & Sequestration**
- **Development & Procurement Process**

Baseline IGCC Assumptions

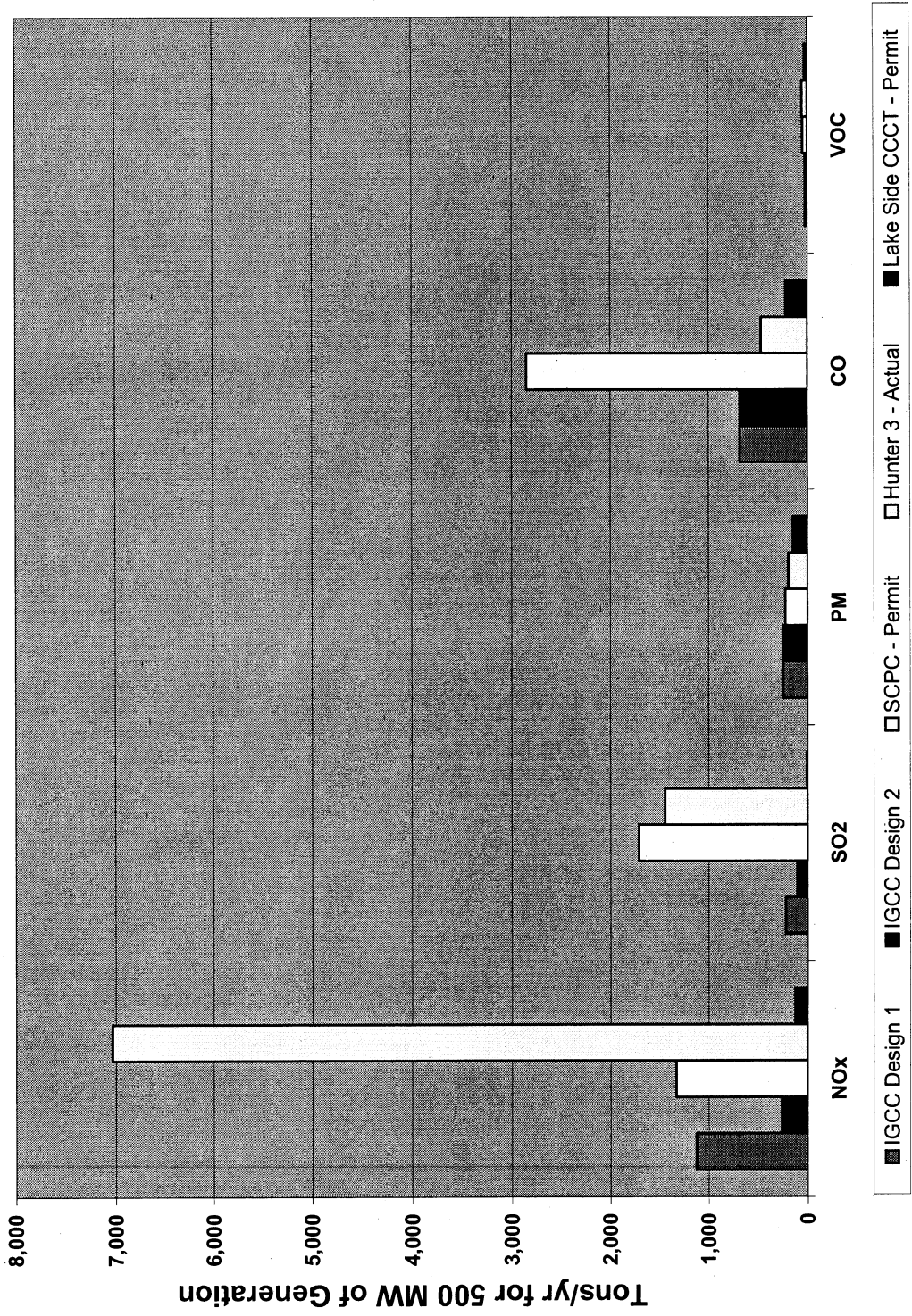
- EPRI “Coal Fleet” User Design Basis Specification (UDBS) used as Reference Case:
 - Spare gasifier assumed to achieve 90% capacity factor (except for Shell)
 - UDBS Design 2 Standard:
 - Selective Catalytic Reduction (reduced NOx emissions)
 - Deeper sulfur removal
- Standard Provisions for “Carbon Capture Ready” (additional carbon capture capability evaluated as changes)
- Financial Assumptions
 - 10 Yr Modified Accelerated Cost Recovery System (MACRS) depreciation for Gasification Equipment, and 20 Yr MACRS for Power Island
 - Company Weighted Average Cost of Capital
 - Typical Financial Assumptions (economic life, ad-valorem taxes, etc)
- Impact of ITC evaluated as a potential outcome

Emission Comparison (lb/MMBtu)

	IGCC CoalFleet UDBS Design 1	IGCC CoalFleet UDBS Design 2	IGCC Steelhead Energy Center (IL)	IGCC Excelsior Mesaba Energy Project (MN)	IGCC Energy NW Pacific Mountain Energy Center (WA)	Pulv Coal IPP3 Permit	Gas-Fired CCCT Lake Side - Permit
NOx	0.064	0.015	0.059	0.059	0.012	0.070	0.009
SO₂	0.0128	0.0064	0.0330	0.0220	0.0060	0.0900	0.0006
PM	0.0145	0.0145	0.0092	0.0100	0.0100	0.0120	0.0100
CO	0.039	0.039	0.039	0.030	0.050	0.150	0.015
VOC	0.0013	0.0013	0.0031	0.0020	0.0030	0.0027	0.0021

- Recently proposed IGCC projects currently going through permitting process more closely match UDBS Design Standard 1 (i.e. no SCR)
- NOx emissions from IGCC UDBS Design 1 are essentially the same as the recently permitted NOx emissions levels for pulverized coal plants.
- Future IGCC plants may require SCR.

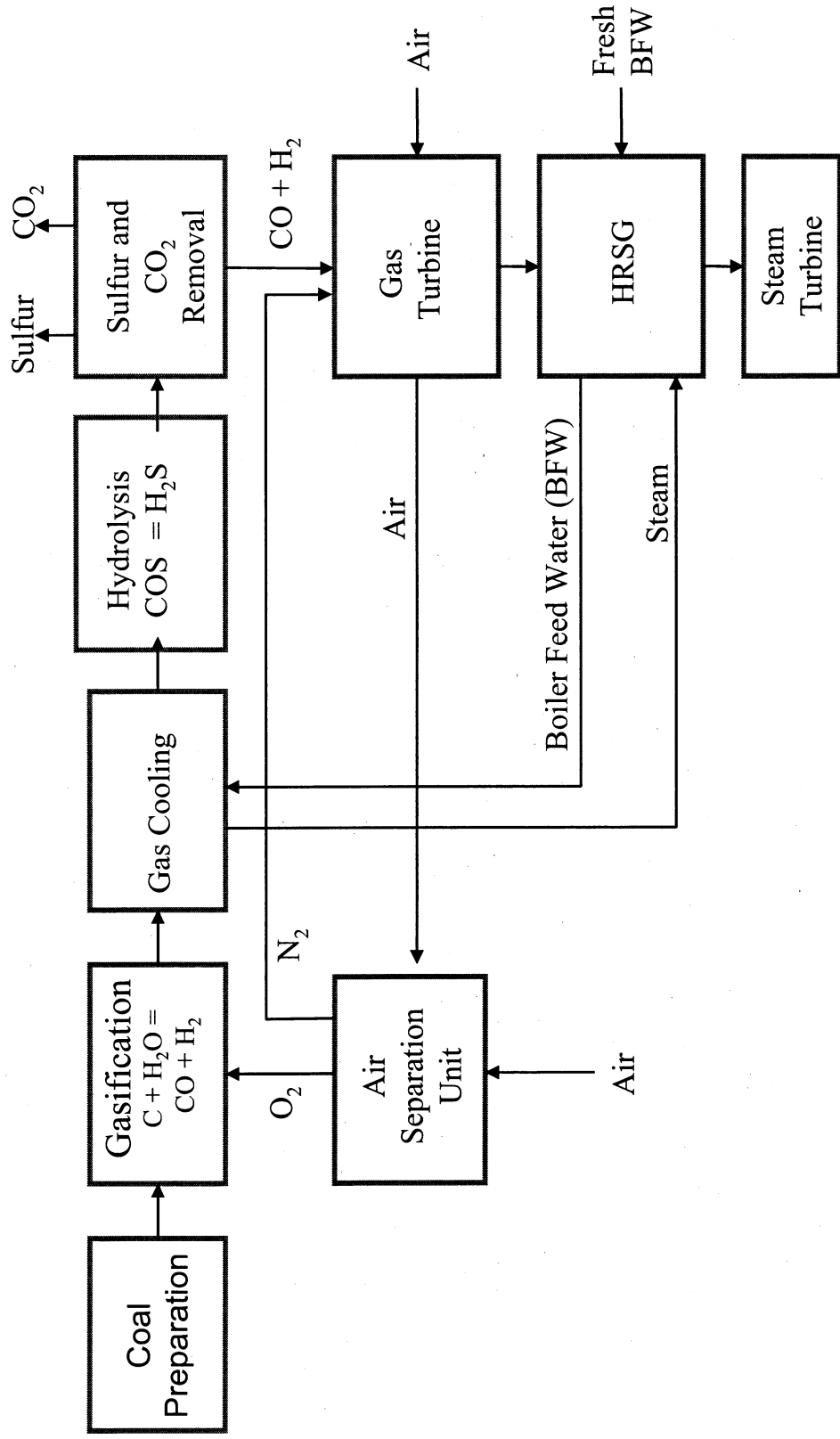
Comparative Emissions Chart (Tons/Year)



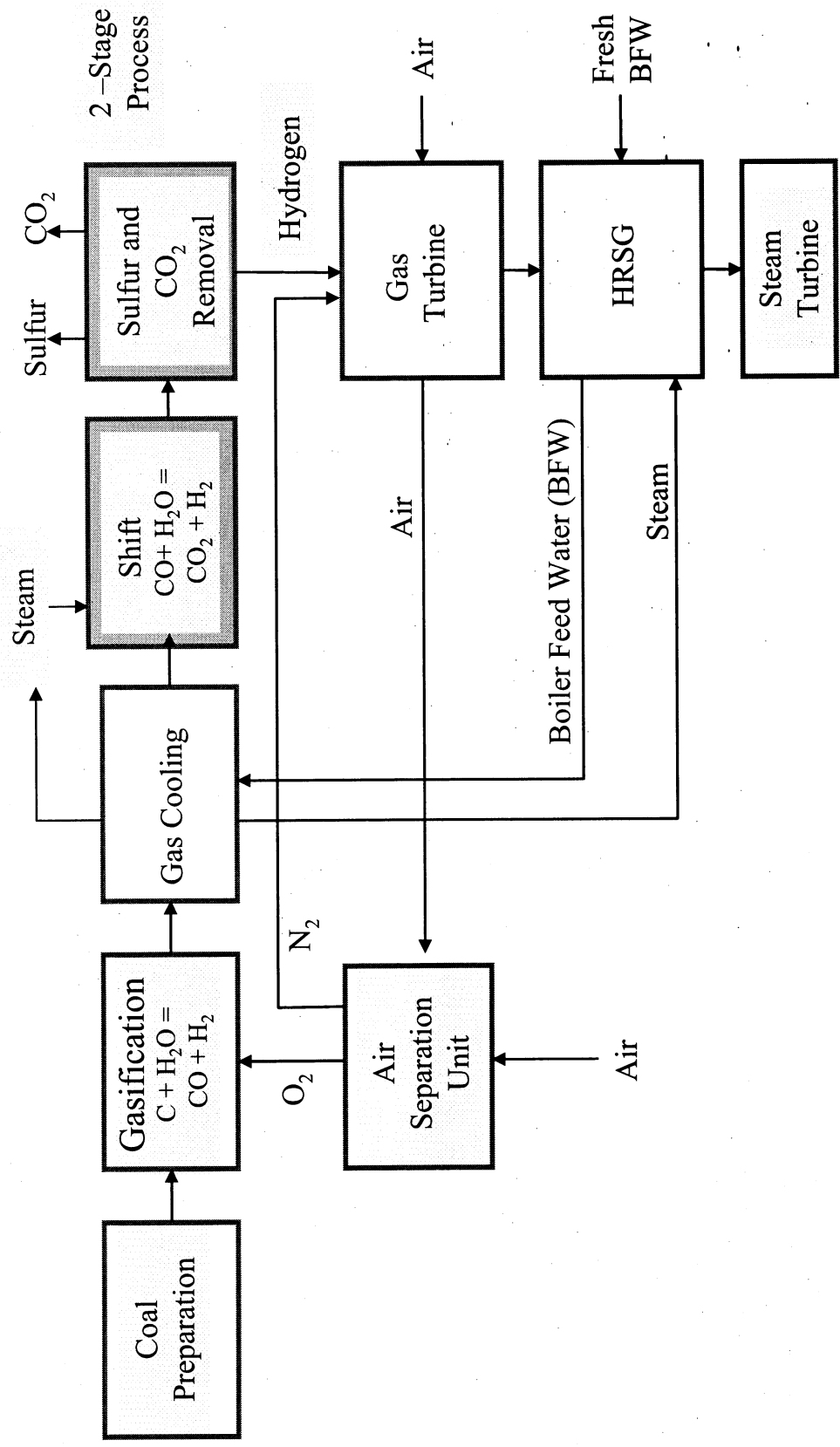
What is “Carbon Capture Ready”?

- Standard Design Provisions -
 - Design includes space for additional equipment, Balance of Plant, and site access to install carbon capture equipment at a later date.
 - When conversion occurs significant cost and efficiency penalties result.
 - **No significant added cost in initial design.**
- Moderate Design Provisions –
 - Design includes **oversizing** major operating components such as coal and solids handling, gasification process, & Air Separation Unit to mitigate cost and efficiency penalty by being able to fully fire turbines after CO₂ capture.
 - **Depending on gasifier technology, costs for Moderate Design Provisions will be from 5-10% of initial capital.**
- Extensive Design Provisions –
 - Includes **total design for conversion** including water-gas shift reactors and oversized components but excluding the CO₂ compressors.

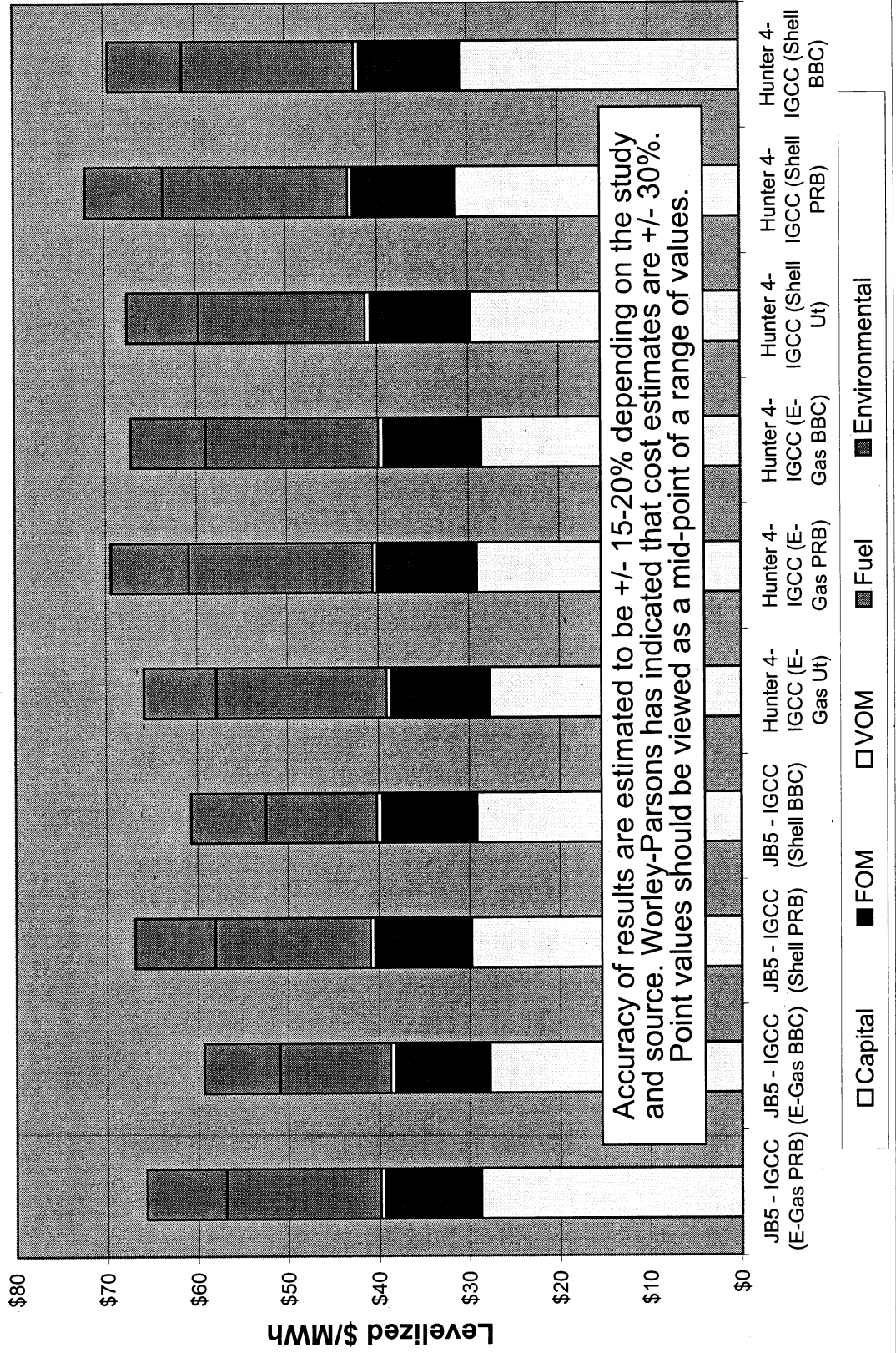
IGCC without CO₂ Capture



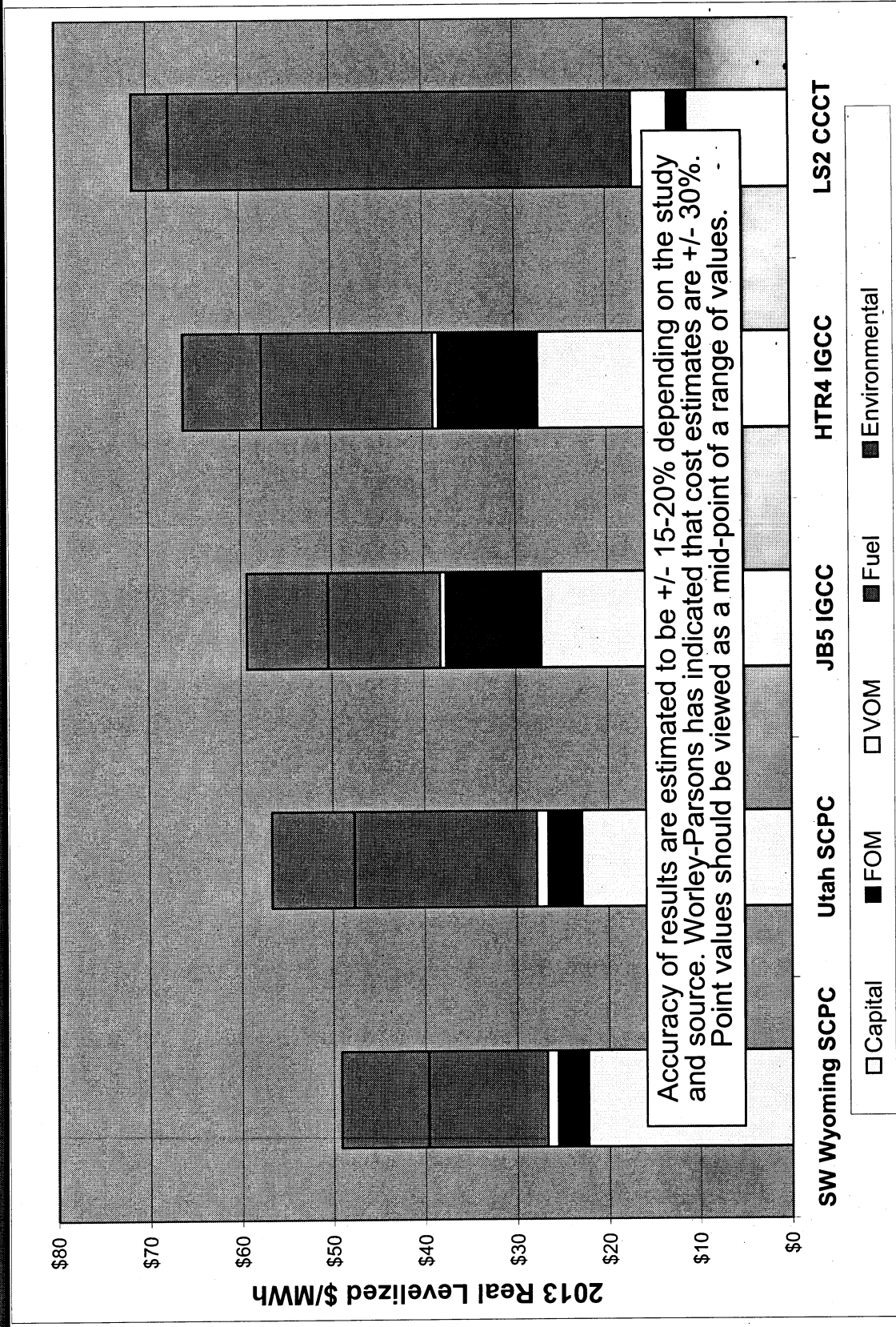
IGCC with CO₂ Capture



Estimated Site Specific IGCC Costs of Energy based on Worley Parsons Expanded Study (Excludes Transmission) - Preliminary



Estimated Coal-based Resource Costs of Energy (Excludes Transmission) - Preliminary

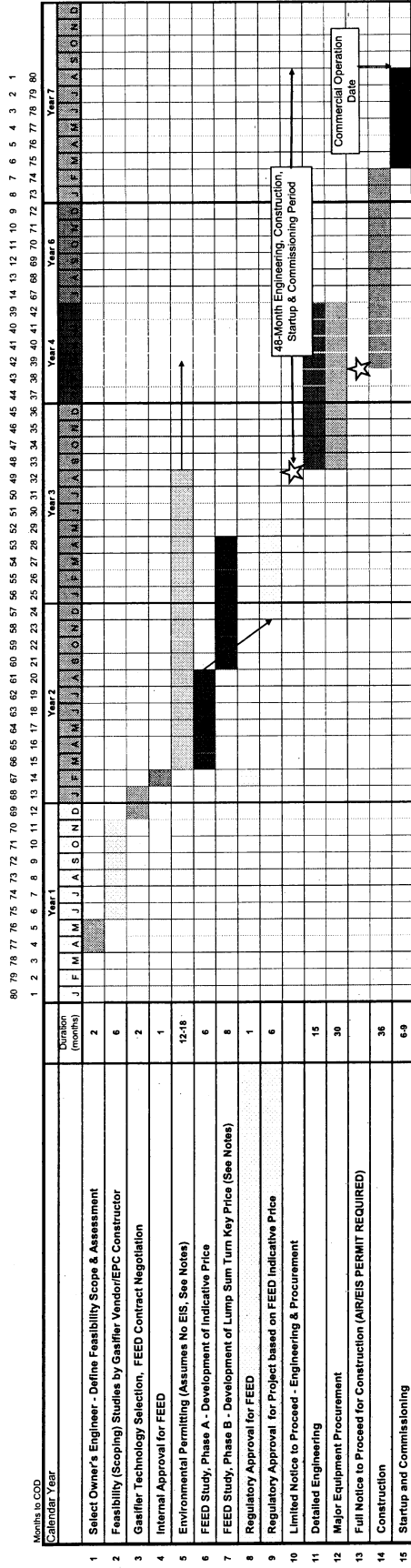


WP Expanded Study Summary Conclusions to date

- Based on preliminary evaluation, the results indicate that there is a substantial spread (15-25%) between supercritical, coal-fired options and IGCC depending on location, gasifier technology, coal type, assuming target availability levels are achieved.
- Accuracy of current results are estimated to be +/- 15-20% depending on the study and source. Worley-Parsons has indicated that cost estimates are +/- 30%. Point values should be viewed as a mid-point of a range of values.
- Estimated COE premium of IGCC over SCPC (when considering the overall accuracy of the estimates) is:
 - 15% to 20+% for a Utah-based resource depending on location & coal
 - 20% to 25+% for a SW Wyoming-based resources
- IGCC resources located in SW Wyoming are expected to be lower cost than Utah-based resources
- Gasifier technology has an impact on COE
- Under current gas price assumptions, IGCC appears to be a lower cost resource than gas-fired combined cycle assuming target availability factors are achieved.

Strawman IGCC Development Schedule

IGCC PROJECT SCHEDULE, Self - Build



Notes & Assumptions:

Waiver with Pre-Approval

IF FEED study is NOT split, total FEED duration can be reduced by 2 months

FEED A Indicative Price would be used to start Regulatory Pre-Approval Process; Final confirmation upon completion of FEED B with development of firm Lump Sum Turn Key Price

EIS Requirement could increase start of construction by additional 6 - 12 months

This schedule is based on timelines provided by gasifier/technology suppliers and CoalFleet UDBS Specification

Summary

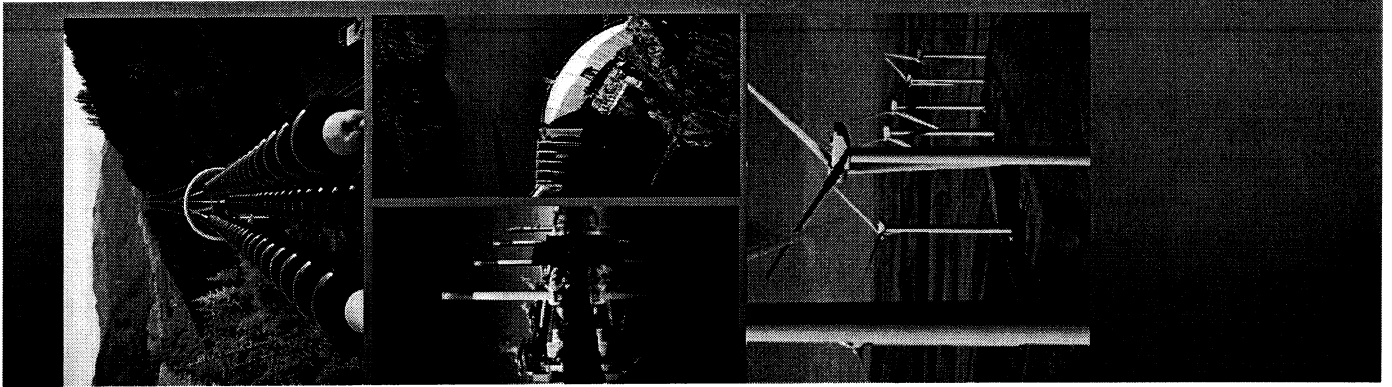
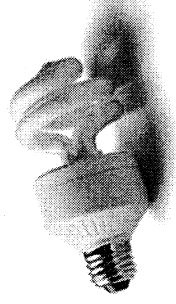
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ATTACHMENT B



Request for Proposal Technical Conference: Oregon Meeting (Following Utah Docket 05-035-47)

April 10, 2006



Agenda

- WorleyParsons Expanded IGCC Study
- Factors Driving IGCC Development
- Baseline Assumptions, Emissions, & “CO₂ Capture Ready”
- Preliminary Site Specific IGCC Cost of Energy estimates
- Strawman IGCC Development Schedule
- Summary
- Scheduling

WorleyParsons (WP) Expanded (2006) Study

- WorleyParsons Expanded IGCC Study – started Oct 2005
- Objective: Update and perform additional cost & performance (capacity, efficiency, availability, emissions) estimates. Revised scope of work has some similar and some changed components to previous WP IGCC Study:
 - Update some components of earlier Hunter IGCC Study to reflect current construction & other costs (elev: 5,644’) [Utah, SW Wyoming, & PRB coals]
 - Added analysis of IGCC at Jim Bridger (elev: 6,670’) with SW WY & PRB coal
 - Expanded scope to include review of Shell gasification technology
 - As in 2005 study:
 - Conoco-Philips “E-Gas”
 - Selective Catalytic Reduction (SCR) & wet cooling assumed
 - Impact of carbon capture provisions on plant design and cost
 - As in 2005 study, GE 7FB gas turbines utilized in reference plant, performance on syngas updated as determined by GE
 - Study results being adjusted to include Owner’s costs & contracting assumptions not included in the consultant analysis.

Factors driving IGCC development

- There are slightly lower emissions of criteria pollutants (SO₂, NO_x, PM₁₀, Hg) compared to conventional (i.e. sub- & super-critical pulverized) coal-fired technologies. The level of reductions will depend on the level of environmental controls installed.
- The removal cost per ton of CO₂ is lower with IGCC than with other fossil-fuel (gas & coal) generation resources with similar levels of removal. However, subsequent to CO₂ capture, there are still multiple issues and uncertainties regarding CO₂ sequestration. These issues include the limited operational and commercial experience with sequestration as well as the uncertainties and potential risks associated with permanent geologic CO₂ storage.
- Up to 90+% of the carbon in syngas can be captured at IGCC plants with commercially available technology. The level of removal impacts cost.
- GE, Conoco-Phillips, and Shell have partnered with major Engineer Procurement and Construction (EPC) firms. These technology suppliers/consortia are establishing warranties and performance guarantees as well as O&M services to mitigate some development and performance risk.

Factors driving IGCC development

- Reduced Solid Wastes - IGCC plants produce about 25-60% less solid waste than conventional coal-fired plants of similar size depending on coal type and type of emissions control system.
- Reduced Water Consumption – Water-cooled IGCC plants use ~40% less water than similarly sized water-cooled conventional coal-fired plants.
- IGCC plants are slightly more efficient (5-7%) than supercritical coal-fired plants. Efficiency improvement results in lower CO₂.
- Potential for Incentive Tax Credit (ITC) benefits for early IGCC projects through 2005 Energy Policy Act and other potential benefits which may reduce costs of energy for early market projects.
- Perceived to have fewer obstructions in permitting process.

Challenges to IGCC Development (Recap)

- Cost
- Technology & Performance Risk
- Carbon Capture Capability & Sequestration
- Development & Procurement Process

Baseline IGCC Assumptions

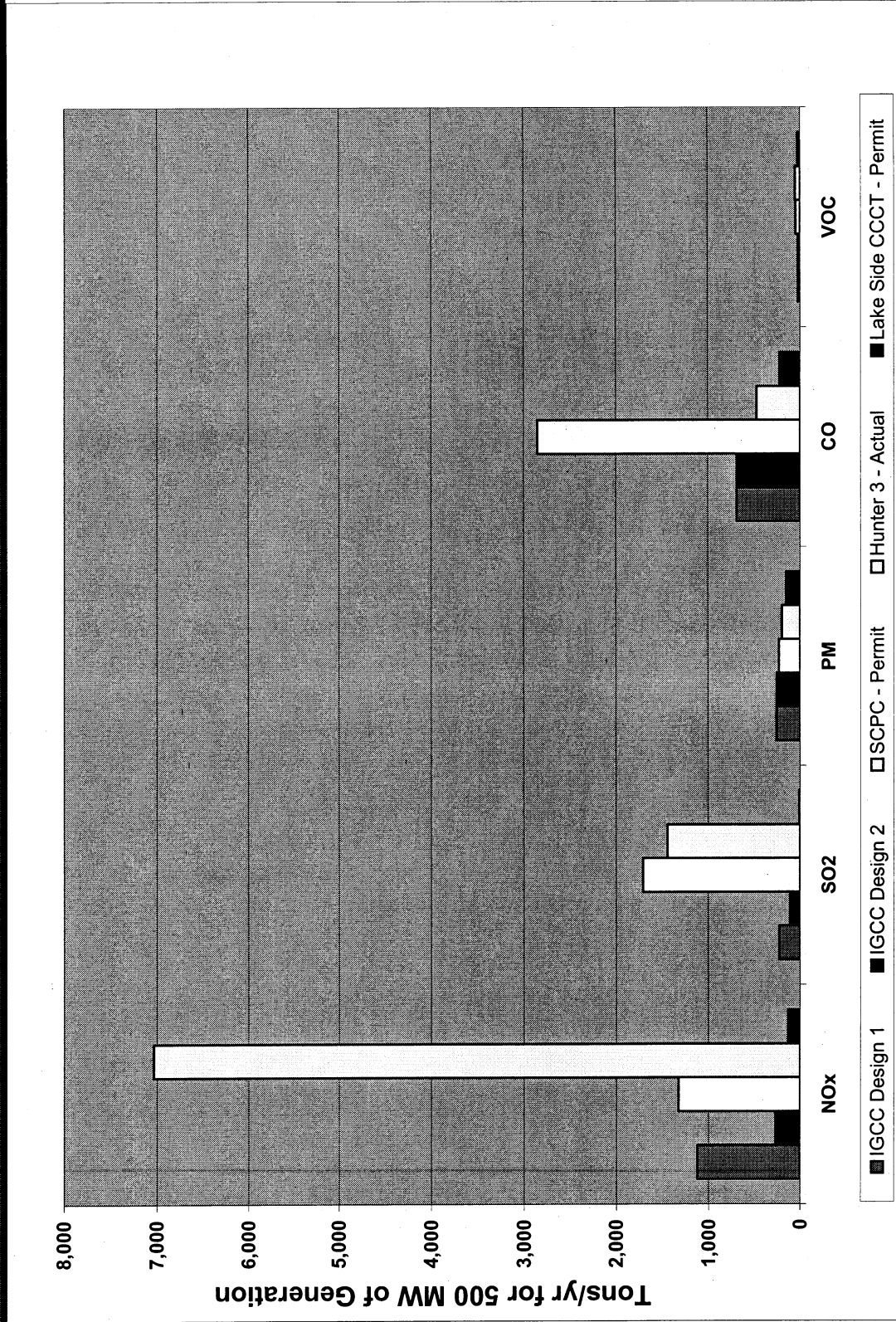
- EPRI “Coal Fleet” User Design Basis Specification (UDBS) used as Reference Case:
 - Spare gasifier assumed to achieve 90% capacity factor (except for Shell)
 - UDBS Design 2 Standard:
 - Selective Catalytic Reduction (reduced NOx emissions)
 - Deeper sulfur removal
- Standard Provisions for “Carbon Capture Ready” (additional carbon capture capability evaluated as changes)
- Financial Assumptions
 - 10 Yr Modified Accelerated Cost Recovery System (MACRS) depreciation for Gasification Equipment, and 20 Yr MACRS for Power Island
 - Company Weighted Average Cost of Capital
 - Typical Financial Assumptions (economic life, ad-valorem taxes, etc)
- Impact of ITC evaluated as a potential outcome

Emission Comparison (lb/MMBtu)

	IGCC CoalFleet UDBS Design 1	IGCC CoalFleet UDBS Design 2	IGCC Steelhead Energy Center (IL)	IGCC Excelsior Mesaba Energy Project (MN)	IGCC Energy NW Pacific Mountain Energy Center (WA)	Pulv Coal IPP3 Permit	Gas-Fired CCCT Lake Side - Permit
NOx	0.064	0.015	0.059	0.059	0.012	0.070	0.009
SO₂	0.0128	0.0064	0.0330	0.0220	0.0060	0.0900	0.0006
PM	0.0145	0.0145	0.0092	0.0100	0.0100	0.0120	0.0100
CO	0.039	0.039	0.039	0.030	0.050	0.150	0.015
VOC	0.0013	0.0013	0.0031	0.0020	0.0030	0.0027	0.0021

- Recently proposed IGCC projects currently going through permitting process more closely match UDDBS Design Standard 1 (i.e. no SCR)
- NOx emissions from IGCC UDDBS Design 1 are essentially the same as the recently permitted NOx emissions levels for pulverized coal plants.
- Future IGCC plants may require SCR.

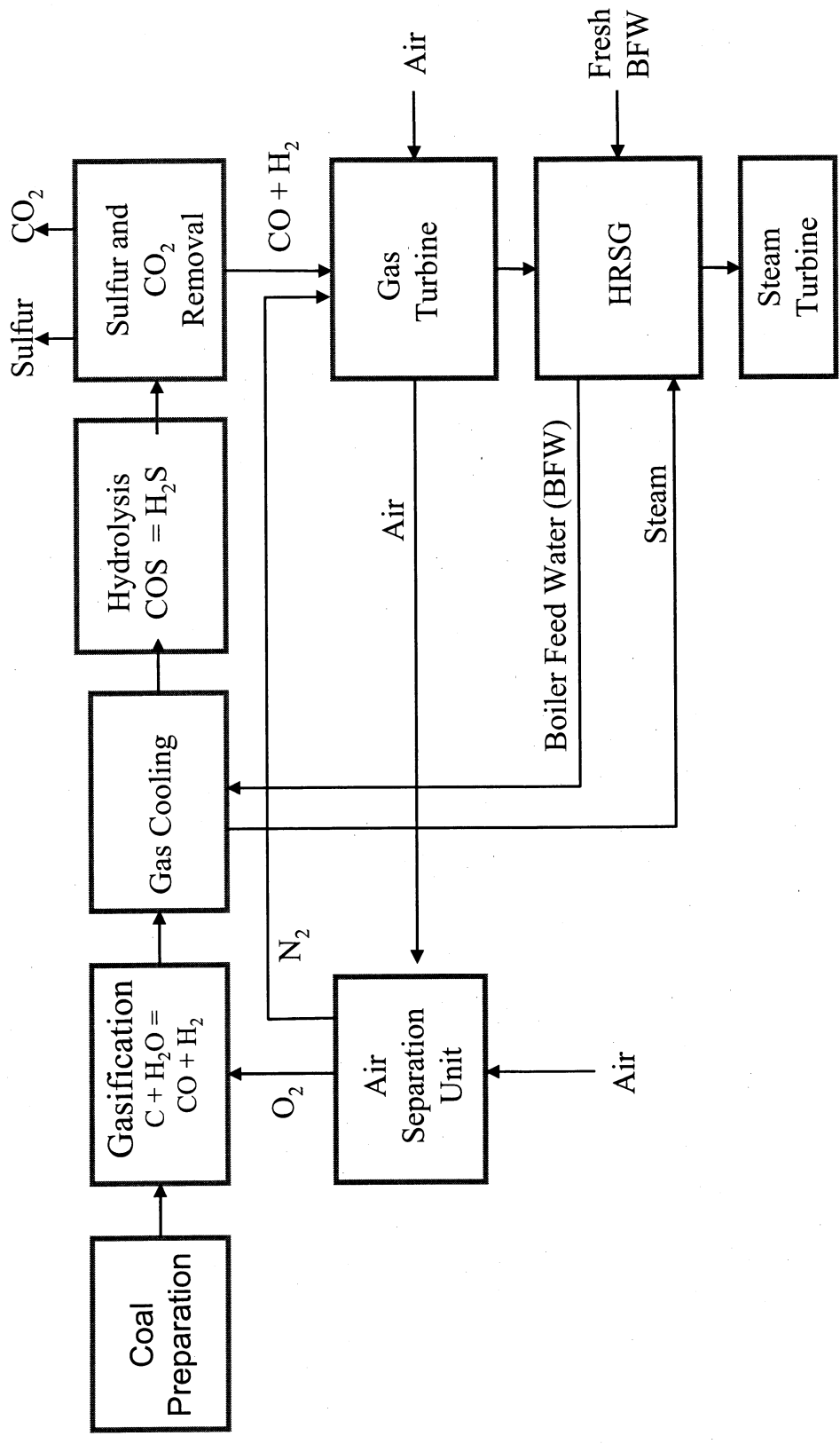
Comparative Emissions Chart (Tons/Year)



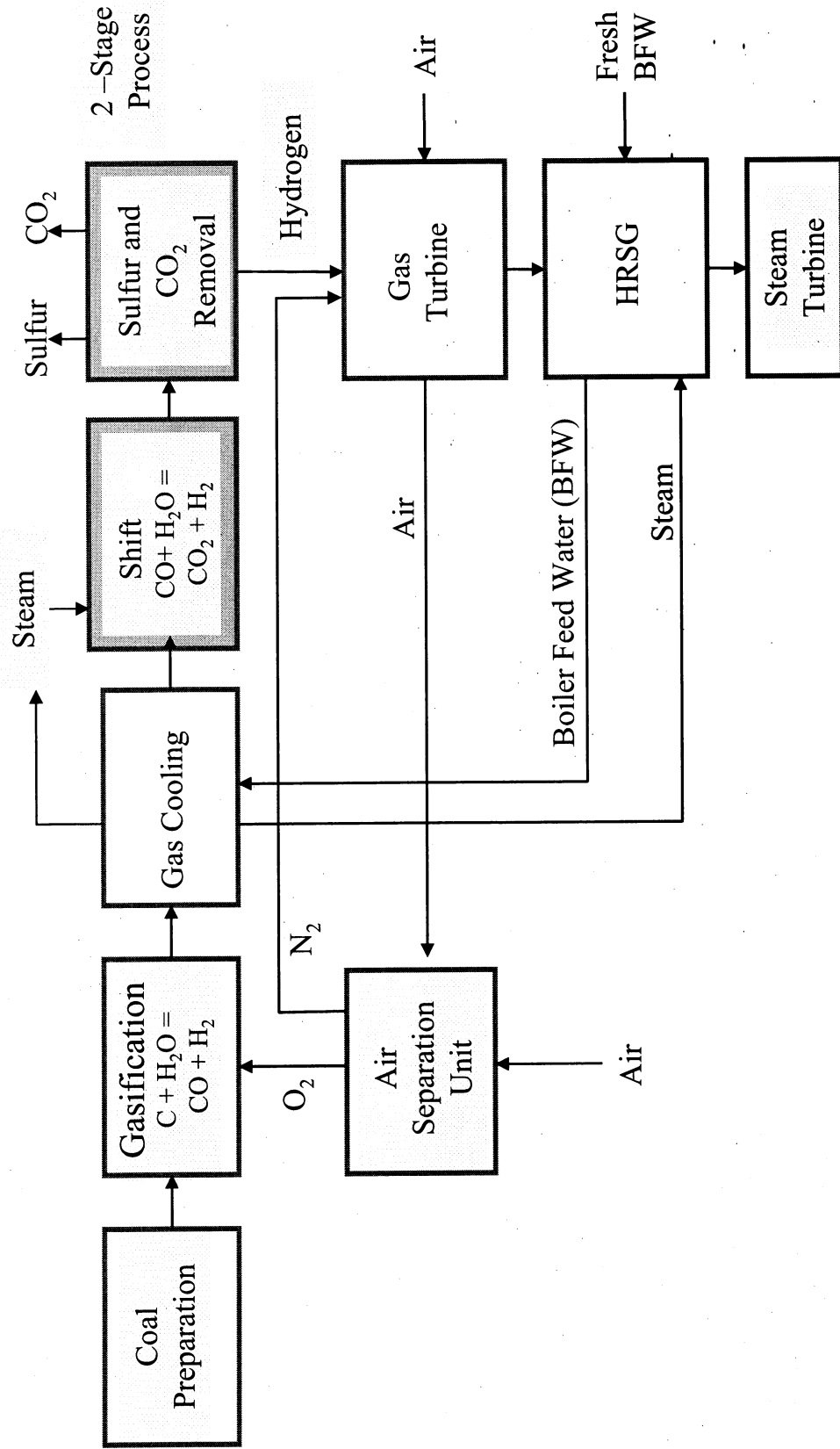
What is “Carbon Capture Ready”?

- Standard Design Provisions -
 - Design includes **space** for additional equipment, Balance of Plant, and site access to install carbon capture equipment at a later date.
 - When conversion occurs significant cost and efficiency penalties result.
 - **No significant added cost in initial design.**
- Moderate Design Provisions –
 - Design includes **oversizing** major operating components such as coal and solids handling, gasification process, & Air Separation Unit to mitigate cost and efficiency penalty by being able to fully fire turbines after CO₂ capture.
 - **Depending on gasifier technology, costs for Moderate Design Provisions will be from 5-10% of initial capital.**
- Extensive Design Provisions –
 - Includes **total design for conversion** including water-gas shift reactors and oversized components but excluding the CO₂ compressors.

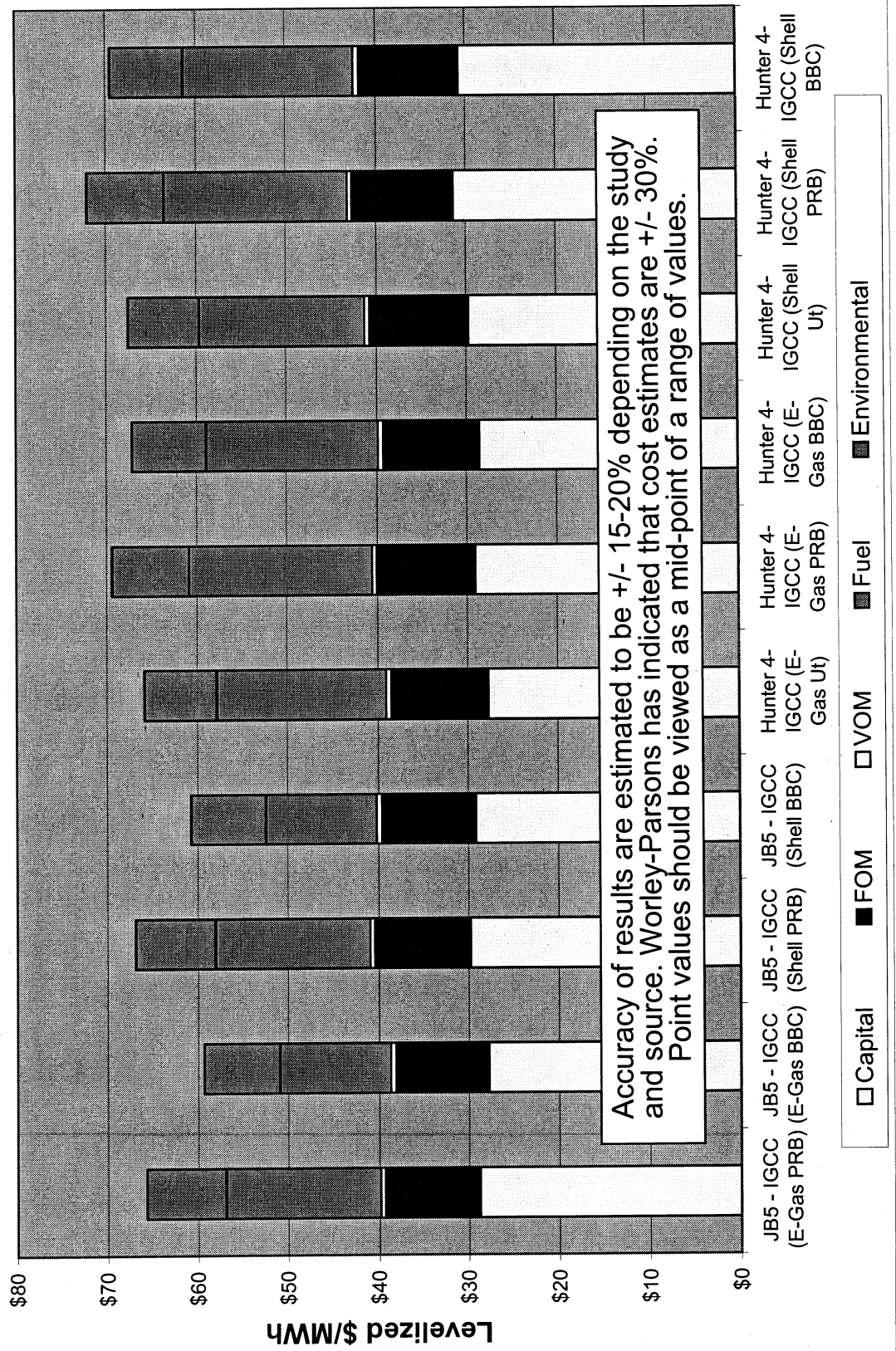
IGCC without CO₂ Capture



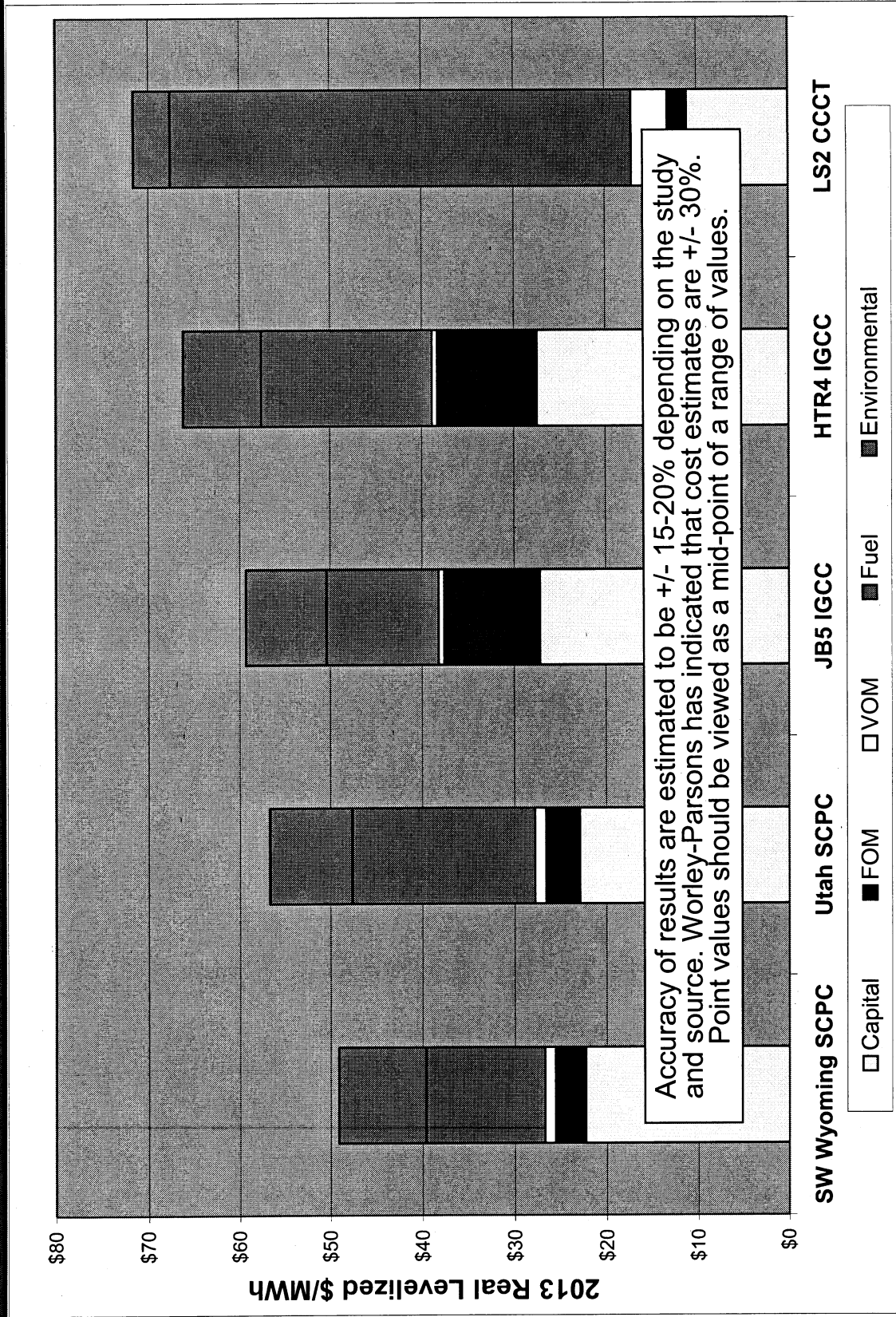
IGCC with CO2 Capture



Estimated Site Specific IGCC Costs of Energy based on Worley Parsons Expanded Study (Excludes Transmission) - Preliminary



Estimated Coal-based Resource Costs of Energy (Excludes Transmission) - Preliminary

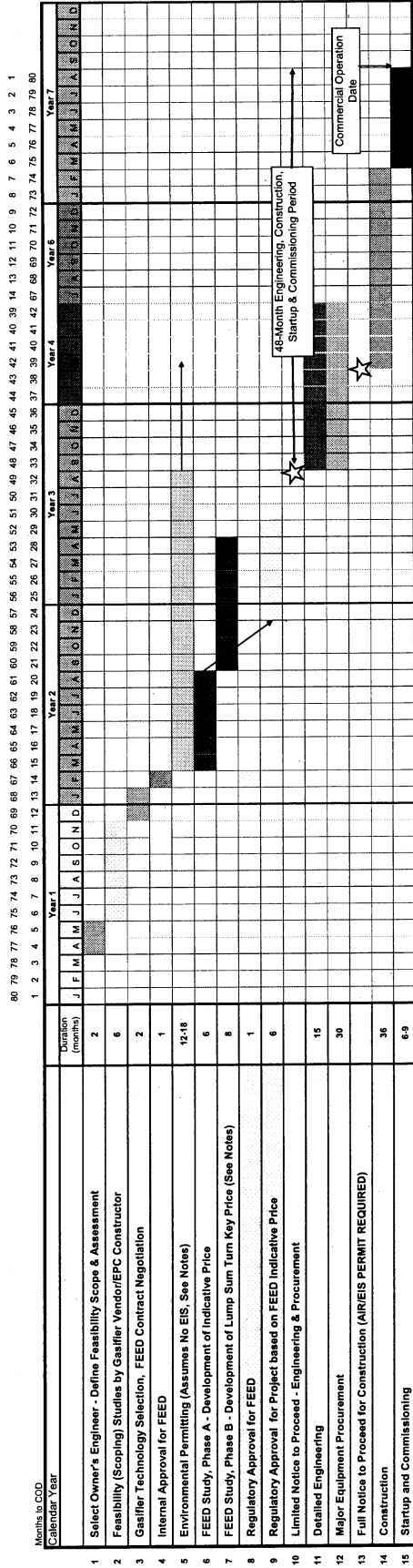


WP Expanded Study Summary Conclusions to date

- Based on preliminary evaluation, the results indicate that there is a substantial spread (15-25%) between supercritical, coal-fired options and IGCC depending on location, gasifier technology, coal type, assuming target availability levels are achieved.
- Accuracy of current results are estimated to be +/- 15-20% depending on the study and source. Worley-Parsons has indicated that cost estimates are +/- 30%. Point values should be viewed as a mid-point of a range of values.
- Estimated COE premium of IGCC over SCPC (when considering the overall accuracy of the estimates) is:
 - 15% to 20+% for a Utah-based resource depending on location & coal
 - 20% to 25+% for a SW Wyoming-based resources
- IGCC resources located in SW Wyoming are expected to be lower cost than Utah-based resources
- Gasifier technology has an impact on COE
- Under current gas price assumptions, IGCC appears to be a lower cost resource than gas-fired combined cycle assuming target availability factors are achieved.

Strawman IGCC Development Schedule

IGCC PROJECT SCHEDULE, Self - Build



Notes & Assumptions:

Waiver with Pre-Approval

If FEED study is NOT split, total FEED duration can be reduced by 2 months

FEED A Indicative Price would be used to start Regulatory Pre-Approval Process; Final confirmation upon completion of FEED B with development of firm Lump Sum Turn Key Price

EIS Requirement could increase start of construction by additional 6 - 12 months

This schedule is based on timelines provided by gasifier/technology suppliers and CoalFleet UDDBS Specification

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