FutureGen

And the importance of project management

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Outline

- FutureGen technologies
- Project Management history
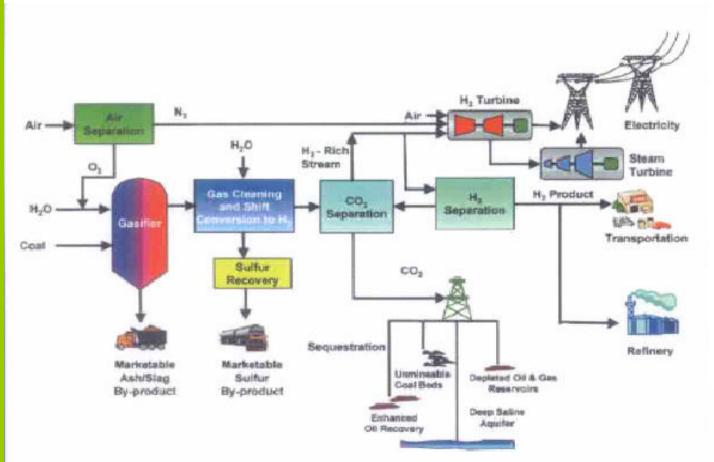- Project Management today: Microsoft Project^{TM}

FutureGen

- Growing need for clean affordable energy
- Vast domestic coal reserves
- Need to environmentally produce H_2
  - Present chemical processes
  - Future of a Hydrogen Economy

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FutureGen - Layout

FutureGen - IGCC

- Integrated Gasification Combined Cycle
  - Increase efficiency
  - Easier downstream cleanup
  - Feedstock flexibility
  - Ash/Slag will be marketed as roadbed material
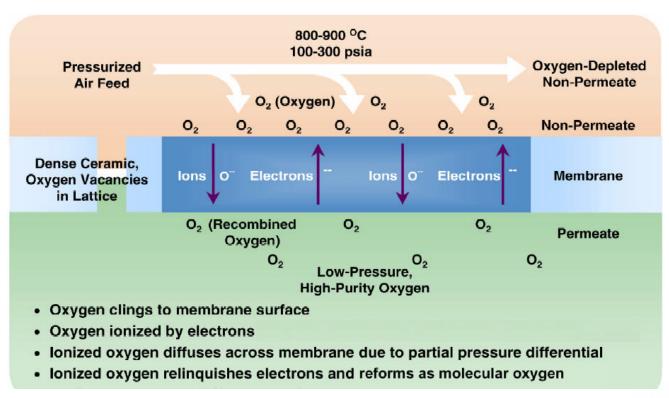 - <u>Concern:</u> need for Oxygen instead of Air.

FutureGen – Air Separation

- Cryogenic Air Separation
  - As high as 20% of plants energy needed
- Ionic Transport Membranes (ITM)
  - 7% reduction in overall plant installed capital cost
  - 37% improvement in the power requirement of the oxygen plant
  - 2.2% improvement in the overall power plant efficiency

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FutureGen – Air Separation

- Oxygen clings to membrane surface
- Oxygen ionized by electrons
- Ionized oxygen diffuses across membrane due to partial pressure differential
- Ionized oxygen relinquishes electrons and reforms as molecular oxygen
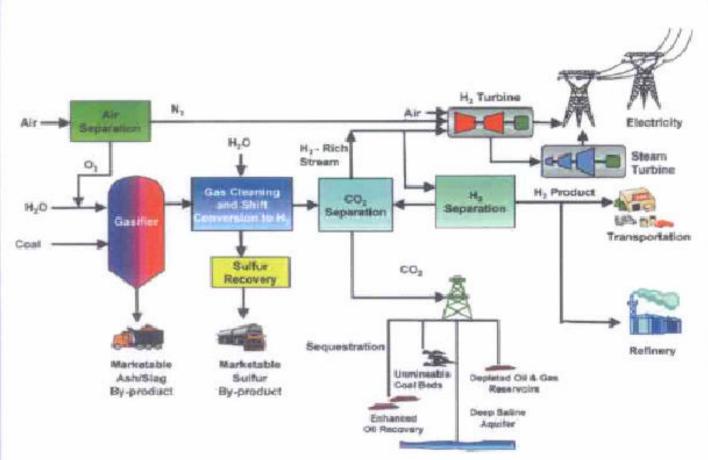
FutureGen – Air Separation

FutureGen – Carbon Management

- Separation
  - Chemical Sorbents – energy intensive
- Storage
  - Unmineable coal seams
  - Depleted Oil Wells → Enhanced Oil Recovery
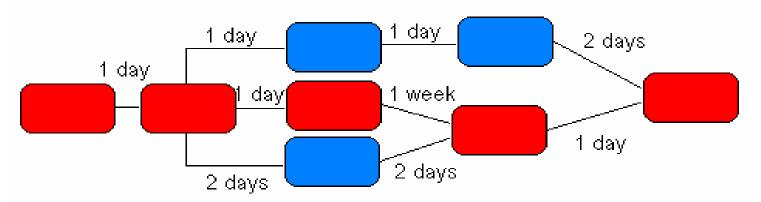 - Deep Saline Aquifers
  - Biomass such as large forests

FutureGen - Hydrogen

- Hydrogen Turbines
  - Development/Testing of Hydrogen Turbines
- Market Hydrogen to Refineries
- Market Hydrogen directly to public

Project Management – History
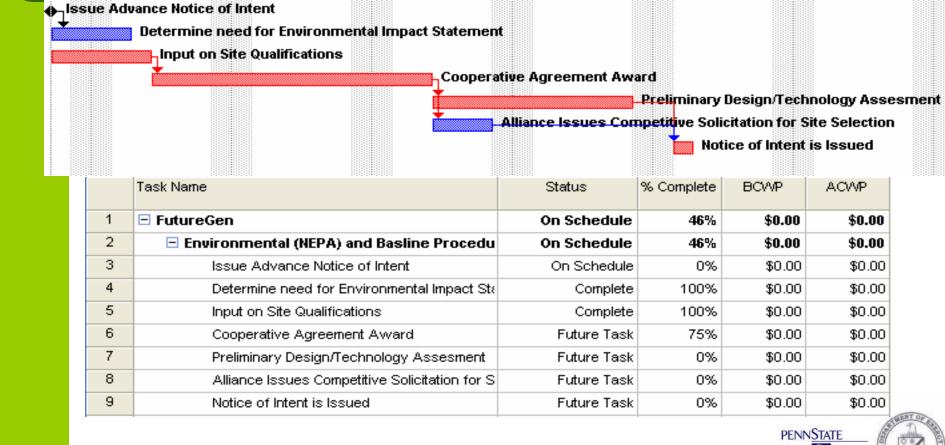
- Henry Gantt in 1917

- Polaris Missile System in 1950s
  - Project Evaluation Review Technique (PERT)
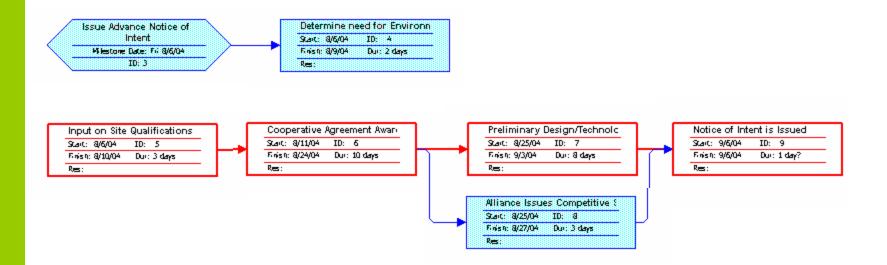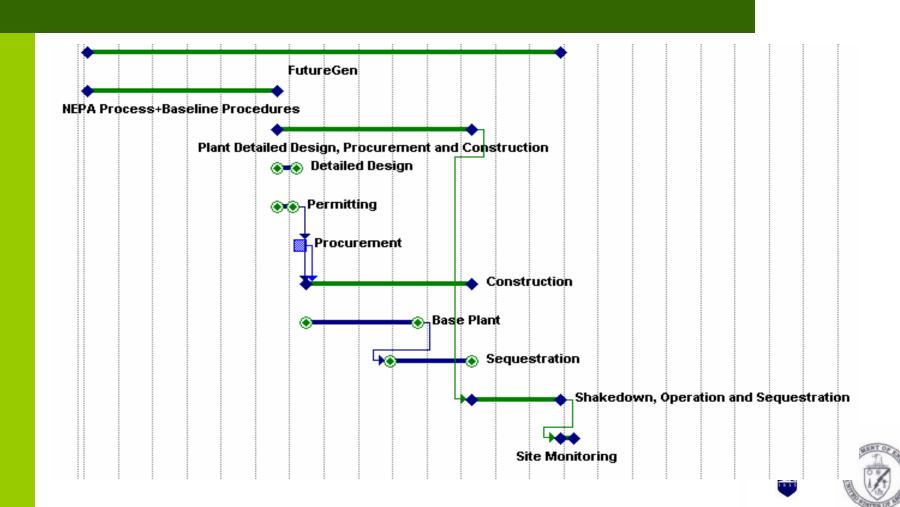   - Optimistic, Pessimistic, Expected Durations

Project Management: MS Project™

- Tasks and Durations are entered
- Progress updated and tracked
- Reallocation of resources
- Visually intuitive reports

Project Management: MS Project™

	Task Name	Status	% Complete	BCWP	ACWP
1	☐ **FutureGen**	**On Schedule**	**46%**	**$0.00**	**$0.00**
2	☐ **Environmental (NEPA) and Basline Procedu**	**On Schedule**	**46%**	**$0.00**	**$0.00**
3	Issue Advance Notice of Intent	On Schedule	0%	$0.00	$0.00
4	Determine need for Environmental Impact Sta	Complete	100%	$0.00	$0.00
5	Input on Site Qualifications	Complete	100%	$0.00	$0.00
6	Cooperative Agreement Award	Future Task	75%	$0.00	$0.00
7	Preliminary Design/Technology Assesment	Future Task	0%	$0.00	$0.00
8	Alliance Issues Competitive Solicitation for S	Future Task	0%	$0.00	$0.00
9	Notice of Intent is Issued	Future Task	0%	$0.00	$0.00

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Project Management: MS Project™

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Project Management: MS Project™

- Microsoft Server
  - NETL and DOE HQ communication
  - Remotely update progress
  - Document exchange

Conclusion

- Need and impact of FutureGen
- Size and complexity
- Project Management

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Thank you

- Jarad Daniels
- Joe Giove
- Victor Der
- Faith Cline

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Questions?

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