

Retrofit Post-Combustion CO₂ Capture: Straw Proposal to Facilitate Discussion

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Key Assumptions

- Program goal is full-scale commercial demonstration of a few technologies rather than wide-spread commercial deployment.
- Focus on technologies that can be broadly applied
- Several technologies are potentially ready for full scale-up:
 - Amine (at least four distinct variations)
 - Chilled ammonia
 - Aqueous ammonia
- Five demonstrations are necessary to cover all promising technologies
- Independent "fatal flaw"/proof of concept analysis should precede funding.
- All commercial projects would sequester captured CO₂ (through EOR or injection into suitable geologic formations).

Straw Proposal

Action	Cost	Incentive \$\$ (NPV)	Schedule
5 Interim scale (~40 MW) demonstrations	~\$750 million	N/A	Planning/engineering – Nine months Construction – One and one-half years Operation/evaluation – One year?
5 full-scale (~600MW demonstrations)	~\$8.0 billion	~\$3.6 – 6.6 billion (range assumes \$10 ton CO2 2012 - \$20 ton CO2 2012, w/7% annual increase)	Planning/engineering – One year Construction – Two and one-half years Operation/evaluation – Two years.

Program is conducted cooperatively with China and Australia

Time Line

- Program authorized and funded 1/10
- Interim project proposals complete 6/10
- Awards for interim projects 9/10?
- **Interim projects “on-line” 3/11**
- Full-scale project proposals complete 3/13
- Awards for full-scale projects 6/13
- **Full scale projects “on-line” 12/16?**

If technologies are ready for full scale up without interim scale demonstrations, full scale projects could be on-line by 12/13?

Some Questions for Discussion

- Are any other broadly applicable technologies ready for scale up to commercial application? Oxy-combustion?
- Is the interim scale-up step necessary?
- If there is an obvious limit to technology “train” size that would require multiple trains for a “full-scale” commercial demonstration, is a single train sufficient to support commercial deployment
- Are five successful commercial demonstrations sufficient to support wide-spread deployment? Are five projects too many?
- Could current technologies “get ready” for full scale-up through actions other than interim-scale demonstration projects?
- Are the proposed times lines realistic?
- Is generator cost-sharing practical given technology risk, etc?
- What advantages could result from a cooperative program with China and Australia?
- What would be needed to establish a domestic incentives program that could take quick and efficient action?