

Lessons Learned from Major Demonstrations/Integrated Projects



Solutions for Today | Options for Tomorrow

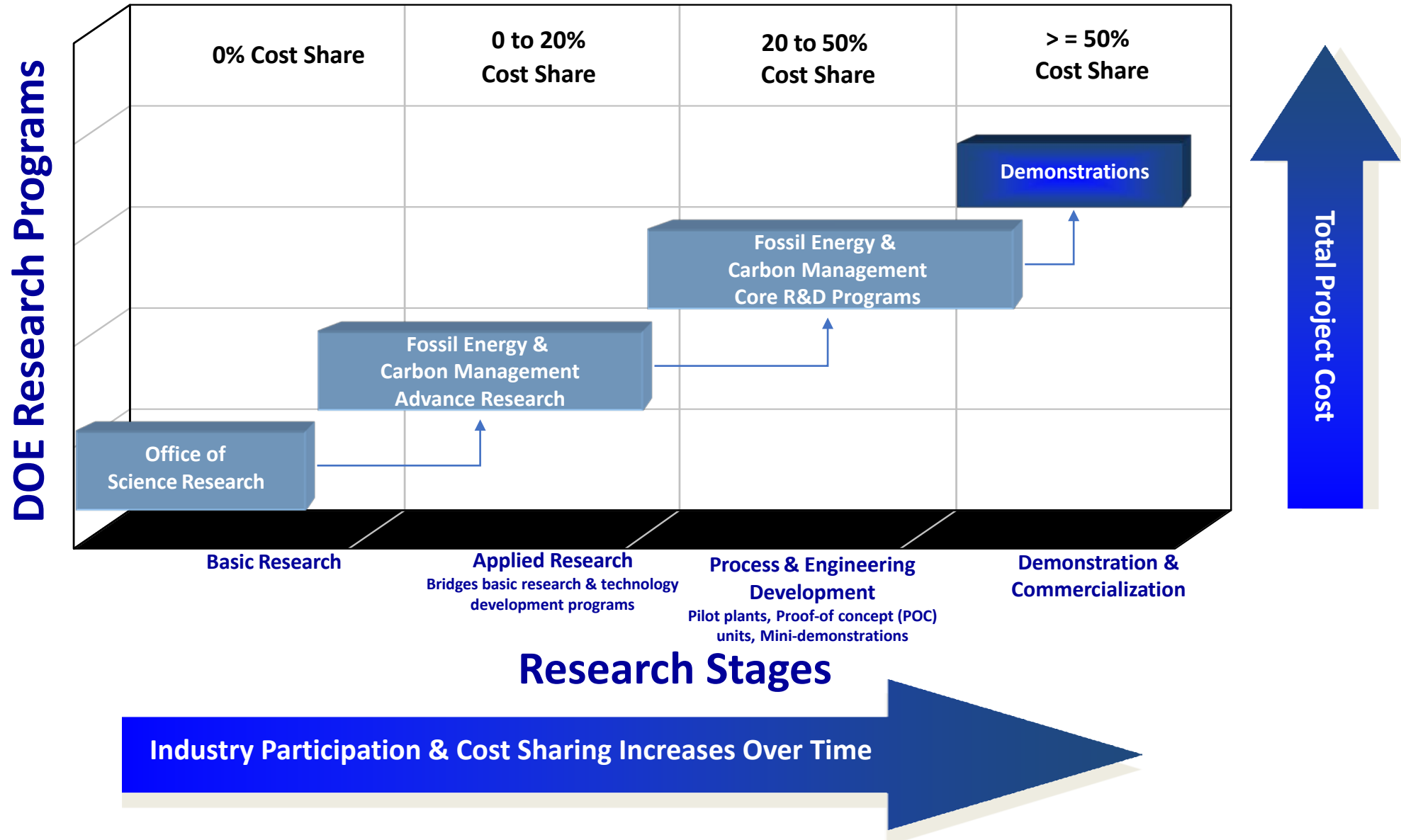
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Cost Share Ensures Commercial Relevance



Major Air Pollution Control Demonstration Projects



Advanced SO₂ Scrubbers (or Flue Gas Desulfurization)

Pure Air (Bailly), CT-121 (Yates) & S-H-U (Milliken/Cayuga)

NO_x Emissions Control Technologies

Selective Catalytic Reduction, Selective Non-Catalytic Reduction, Low-NO_x Burners & Fuel Reburning

Hazardous Air Pollutants (HAPs)

HAPs testing on 10 projects of differing configurations; led to R&D focus on mercury emissions

CO₂ Emissions Capture Technologies

Archer Daniels Midland, Air Products & Petra Nova

Some Lessons Learned

General

- Read the entire Funding Opportunity Announcement including the evaluation criteria, proposal preparation instructions, and the model cooperative agreement.
- Read the enabling appropriations legislation, to better understand the objectives, and to be able to recognize at least some of the areas where DOE has no wiggle room.

Technical

- Technology performance often degrades with scale-up.
- Baseline technologies often improve over time and are not necessarily stagnant.
- DOE generally favors technology-advancing projects, but the technology must also be ready-to-scale (i.e., technical merit and technical maturity/readiness evaluation criteria).

Business Management

- **Project finance, schedule, cost \approx Technical considerations**
- **Project success often boils down to managing risk, so perform a thorough risk analysis, hazard & operability analysis, etc.**
- **Non-Federal cost sharing is typically evaluated along with a variety of other business, finance, and project management items (including project controls).**
 - **Extent of cost share, and firmness or legitimacy of that cost share.**
 - **50% industry cost share is acceptable; we have selected proposals that offered only 50% industry cost share.**
 - **Higher industry cost share levels can be viewed more favorably. To wit, DOE's cost share for the Petra Nova demonstration was \approx 20% \neq 50%.**

Some Lessons Learned (continued)

Project Schedule

- **Schedule >>> Cost**
- **Build ample time into your project schedule.**
- **DOE approvals are not necessarily slow, even though DOE exercises a high degree of due diligence.**

Negotiating with DOE

- **Keep the lines of communication open with DOE.**
- **For specialized negotiation topics (e.g., intellectual property provisions), make certain subject-matter experts are present at relevant discussions.**
- **If you want certain information to be protected, it must be marked as such.**

Some Lessons Learned (continued)

Private Sector Financing

- Financial modeling should indicate a viable project, before financial engineering techniques are deployed.
- Financial closing prior to construction is a watershed event for projects that are dependent upon project financing.

National Environmental Policy Act (NEPA)

- NEPA compliance is not permitting. Learn and understand the differences.
- Environmental Impact Statements can require more engineering information than is initially available.

Some Lessons Learned (continued)



Project Implementation (Design, Construction, Operations, Reporting)

- Recognize the trade-offs between a single large component (lower cost) & several smaller ones with spares/back-ups (higher operational reliability).
- Be careful when overlapping design & construction activities.

Community Engagement

- Engage the local community (-ies) proactively and respectfully.
- Educate all segments of the community (-ies), especially on sequestration.
- Engage the local community (-ies) with some frequency and be prepared to repeat or revisit various topics (especially on carbon storage) for people who were unable to attend prior meetings.

FOR MORE INFORMATION

Office of Fossil Energy and Carbon Management
www.energy.gov/fecm

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