Update on CSLF Projects Interaction and Review Team (PIRT)

USA Co-Chairs:

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8 December 2021 – CSLF Technical Committee Meeting

PIRT Objectives

- Revitalize and increase momentum for PIRT
- Facilitate the next set of projects by providing resources and connections with previous/current projects
- Leverage learnings from R&D and Commercial projects
- Align projects with CSLF knowledge sharing platform
- Act as a resource and facilitator for newly joined projects

PIRT Submission Form

- Project Description and Relevance:
  - How is your project adding to the global body of CCUS knowledge? What do you anticipate learning from this project?
  - How is this project leading toward commercialization of CCUS?
- Project Description (Technical)
  - What stage is this project at? [prefer FEED or later]
  - What TRL is this project demonstrating?

PIRT Submission Form

- Novel Aspects of Project
  - What, if any, new or novel project aspects are you anticipating in the policy, legal, or regulatory arenas?
  - What, if any, new or novel project financing mechanisms or business models are you engaging?
  - What technological contribution is this project making?

- Introduced Criteria Categories
  - Stage of Completion
  - Region
  - Scale
  - Technology
  - Technology Readiness Level (TRL)
  - Commercial Contribution
  - Unique Characteristics
- Align CSLF recognized projects to CSLF Technology Roadmap

Carbon Sequestration Leadership Forum

www.cslforum.org

Form revision date: April 2021

CSLF PROJECT SUBMISSION FORM

PROJECT TITLE:

PROJECT LOCATION:
Please provide the city (or nearest town), the state/province/region, and the country.

PROJECT GOAL:
Please provide a simple and to-the-point explanation in one or two sentences that can be easily understood by someone with no prior knowledge of the project.

PROJECT OBJECTIVES AND ANTICIPATED OUTCOMES:
Please provide a breakdown of the Project Goal into the constituent steps comprising the whole project. Use bullet points to separate the steps and indicate key anticipated outcomes of the project.

PROJECT DESCRIPTION AND RELEVANCE (non-technical):
Please provide a concise synopsis of the project (who, what, why, where and how) with an easily understandable description of relevance of the project and the associated science, technology and areas of industrial application. Target audience: policy makers, press, non-scientific community

In particular, please include information about the following:

- How is your project adding to the global body of CCUS knowledge? What do you anticipate learning from this project?
- How is this project leading toward commercialization of CCUS?

PROJECT DESCRIPTION (technical):
Please provide a more detailed technical description of the project with all significant information. Target audience: engineers and scientists. In particular, please include information about the following:

- What stage is this project at? [If this is a fully integrated demonstration projects, has a FEED study been completed?]
- What Technology Readiness Level (TRL) level is this project demonstrating? Please provide a description and explanation of how the project meets this TRL. [Information about TRLs can be found at https://www.bnl.gov/techtransfer/TMFP/definitions.php]

NOVEL ASPECTS OF PROJECT
Please provide information about the following:

- What, if any, new or novel project aspects are you anticipating in the policy, legal, or regulatory arenas?
- What, if any, new or novel project financing mechanisms or business models are you engaging?
- What technological contribution is this project making?

PROJECT TIMELINE:
Please provide the project start date, any milestone events (listed chronologically), and the end date. Use most realistic timeline available. Use official (contract signing, etc.) start date. End date should reflect contractual timeline if possible. Use bullet points.

INFORMATION AVAILABILITY:
How will you share results of your project with the broader CCUS community? Please provide a description of the types of information that will be made available from the project and the outcomes that would be achieved by the project. (Note: It is anticipated that an update on the project will be requested annually by the CSLF. Information provided by the project will be made available at the CSLF website.)

PROJECT CONTACTS:
Please provide name and contact information (including telephone and e-mail) for the project manager or coordinator. If relevant, please also provide name and contact information (including telephone and e-mail) for the person who will handle any requests for site visits.

Please also provide an answer to the following question:
What restrictions, issues, or costs will be assumed by any visitors to the project site?

OTHER PROJECT PARTICIPANTS:
Please provide a listing of all entities who are participating in this project. If available, please also include a management structure diagram or otherwise indicate the role of each participating entity.

PROJECT WEBSITES:
Please provide the web address of the main project website, if one exists. If available, please also provide the web addresses of other project-related websites such as workshops, project presentations, etc.

PROJECT NOMINATORS:
Delegates from at least two CSLF Member countries must inform the CSLF Secretariat (cslfsecretariat@hq.doe.gov) that they support the nomination of the project for CSLF recognition.

CSLF Project Elements Checklist

(Please check all of the following areas that your project will address.)

GENERAL

Project Scale	
Feasibility	
Pilot	
Demonstration	
Commercial	

CAPTURE TECHNOLOGIES

Capture Type	
Pre-combustion capture	
Post-combustion capture	
Oxyfuel combustion	
Industrial applications	
Technology	
Advance the capture technology	
Advance plant design for capture efficiency (e.g., boiler, turbine design)	
Improved fuel handling and air separation processes technology	
Improved combustion and flue gas science	
Advance purification and compression technology	
Polygeneration optimization	

TRANSPORT

General	
Tanker Transport	
Pipeline Transport	
Ship transport	
Specifications for impurities from various processes	
Regulations, standards and safety protocols, including response and remediation	

STORAGE AND MONITORING

Storage Complex Type	
Saline formations	
Unconventional reservoirs (e.g., basalt, shale)	
Unmineable coal formations	
EOR and/or EGR	
Depleted oil and gas fields	
Storage complex characterization	
CO_2-water-rock (or coal) interactions	
Impact of the quality of CO_2 on storage	
Improved modeling of complex	
Effects of CO_2 rock/water interactions and induced changes in temperature, pressure and stress on permeability, injectivity, migration, trapping and capacity.	
Pressure management (e.g. production of formation water)	
Monitoring the storage complex including risk assessment	
Development of new or improved CO_2 monitoring technologies	
Improve baseline monitoring and distinguish between natural and anthropogenic CO_2	
Development of risk minimization/mitigation methods and strategies, including leakage	
Improve well integrity, well abandonment practices, and/or remediation of existing wells	

CARBON UTILIZATION TECHNOLOGIES (MUST PROVIDE A VALID LCA INDICATING ACTUAL NET REDUCTION COMPARED TO A BASELINE)

Utilization Type	
Thermochemical	
Electrochemical	
Mineralization	
Biological	
Technology	
Advance catalysis	
Advance electrochemistry	
Process intensification	
Mineralization-building materials	
Mineralization-novel designs	
Mineralization-increased CO2 uptake	
Biological-Algae-open system	
Biological-Algae-closed system	

CARBON DIOXIDE REMOVAL TECHNOLOGIES (MUST PROVIDE A VALID LCA INDICATING ACTUAL NET REDUCTION)

CDR Type	
Direct air capture (DAC)	
Bioenergy with CCS	
Mineralization (Surficial and Ex Situ)	
Technology	
DAC-solid sorbent	
DAC-solvent	
DAC-Novel or hybrid	
BECCS-power	
BECCS-fuels and chemicals	
Mineralization-mine tailings and wastes	
Mineralization-minerals	
Mineralization-Improved kinetics	
Mineralization-processing	
Mineralization-products	

Opportunities to Recognize Projects:

- Commercial Projects
- Government Projects
- Public/Private or Consortium Projects
- European Fifth List for Projects of Common Interest (PCI)
- UK Cluster Competition

- Nomination form available at… https://www.cslforum.org/cslf/Projects/Nominate-A-Project

Sharing Success Stories

- Brief History of CSLF Recognized Projects
  - 65 Projects recognized from 2004-2018
  - 23 Complete (35%)
  - 30 Active or Near Completion (46%)
  - 12 Discontinued or Ended without Completion (18%)

- CSLF has opportunity with data from Recognized Projects to show success over time
- Suggest changes to website to have maps showing project locations with symbols sharing data outlined above
- Keep updated

Next Steps

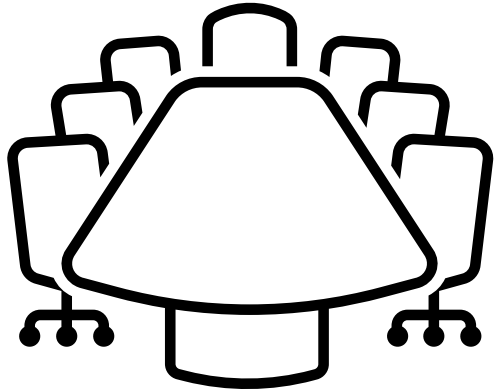
(carried forward from last meeting)

- Revised On-boarding/Application process
- Revised timing to hold PIRT section within in-person meetings
- Established new project review form and review criteria

- Review existing list of projects – recommendations for projects to approach
- CSLF identify and propose projects
- Establish an Exit Interview strategy – to interview and gain insights into learnings, pit falls, successes, even if projects do not go to completion, collect learnings as we go
- Revisit website and include maps showing project locations of project successes
- Consider additional ways to share knowledge through CSLF Recognized Projects
- Consider changes to PIRT responsibilities with Richard's departure

PIRT Project Review

- The next PIRT project nomination/review cycle will take place at next in-person meeting
- Plan for Spring 2022
- Will need nominations in time to consider at next CSLF Meeting



Discussion and Questions