The Need for an Adequate Commence Construction Window

for 45Q Federal Tax Credits for Carbon Capture Utilization and Storage

CLEAN AIR TASK FORCE

SUMMARY

- Developing a carbon capture utilization and storage (CCUS) project can take as long as five years and require investments of close to $50 million before construction can begin.
- To take advantage of the current 45Q tax credit, construction on a CCUS project must commence before January 1, 2024.
- Despite the fact that 45Q was signed into law on February 9, 2018 as part of the Bipartisan Budget Act of 2018, the U.S. Treasury has still not issued implementing regulations[1] needed so that developers will know the rules for qualifying for the credit.
- 45Q was intended to spur CCUS projects by making them more economically attractive, but for projects waiting on the Treasury regulations before beginning their initial engineering design, the chances of meeting the current commence construction deadline are extremely low and uncertain.
- So, the real "window" for CCUS project development is rapidly closing, if it hasn't already closed for some potential projects.
- If the commence construction window for 45Q tax credit eligibility is not extended right now, then many projects currently under consideration today are not likely to be pursued.

Large-Scale CO_2 Reductions Are at Stake

Some types of CCUS projects are more likely to meet the current commence construction deadline than others. CCUS projects on smaller, higher-purity industrial CO_2 sources such as ethanol or gas processing with plans to store CO_2 via enhanced oil recovery (EOR) may have a greater chance of making the commence construction deadline for two reasons. First, the up-front engineering required for carbon capture projects in these sectors is less complex and time-consuming. Second, EOR operators already have Class II permits for CO_2 injection and do not need more than a few months to get a required monitoring, reporting, and verification (MRV) plan approved by the U.S. Environmental Protection Agency (EPA) in order to claim the 45Q credit.

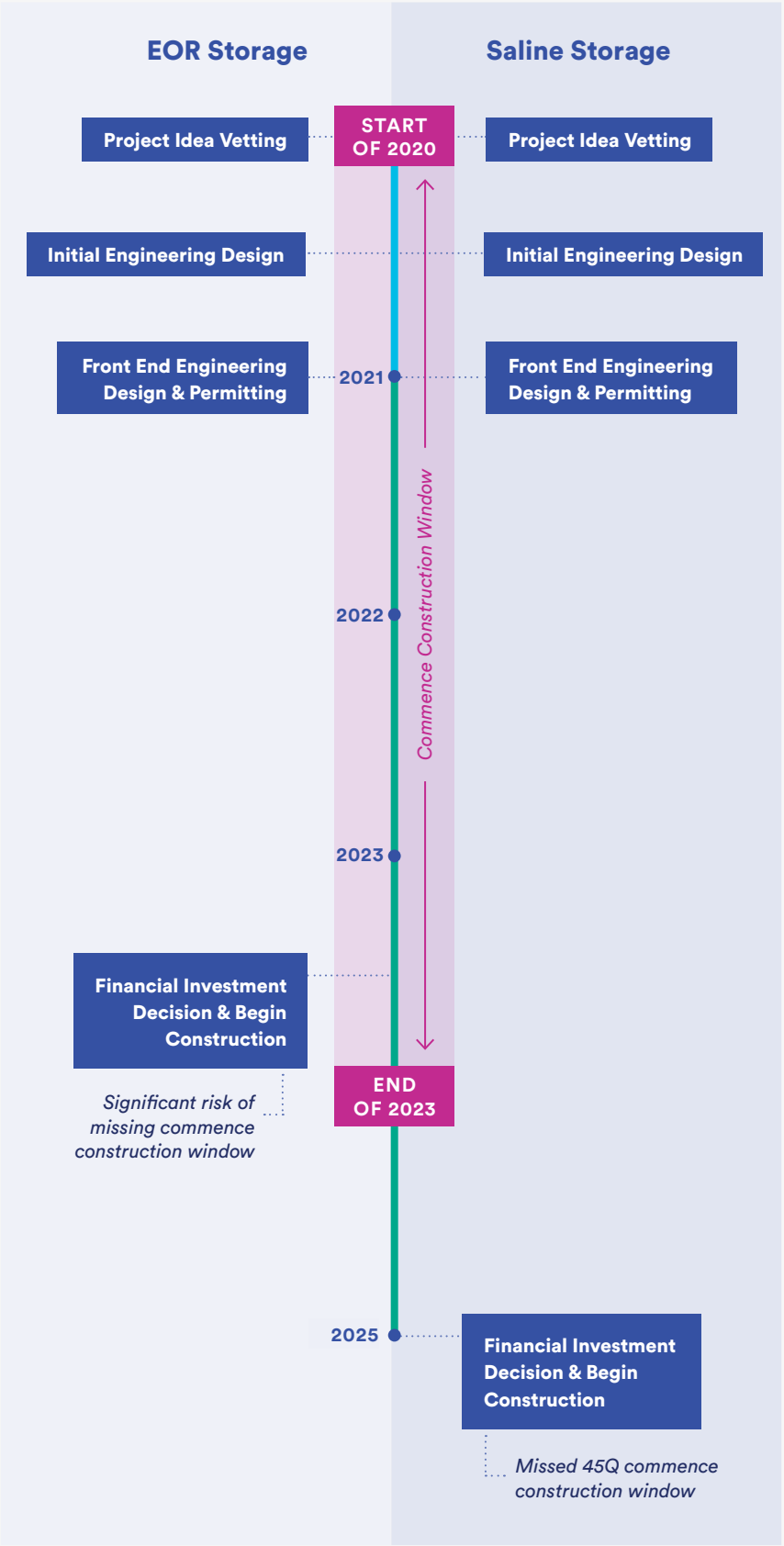
Also, CCUS projects that plan to store CO_2 in saline reservoirs, but which have a head start on initial engineering design studies are also more likely to begin construction in time to meet eligibility.

However, unless Congress acts to extend the timeframe to commence construction now, CCUS projects in the most carbon intensive sectors such as power generation, petroleum refining, and steel and cement production, especially those involving saline storage, are unlikely to be pursued by project developers at all, leaving millions of tons of CO_2 emissions unabated. As Figure 1 (page 2) shows, developers of these projects with the greatest carbon reduction potential confront the most challenging and time-consuming engineering and permitting requirements, and they urgently need lawmakers to provide more time to accommodate longer project development durations, if far greater emissions reductions are to be achieved as a result of the 45Q tax credit.

A 2018 modeling study led by CATF estimated that the 45Q tax credits could help reduce 49 million metric tons of CO_2 emissions from CCUS projects in the U.S. power sector by 2030. However, in the real world, realizing significant levels of CO_2 emissions reductions through wide deployment of CCUS would require ensuring that the CCUS project developers have clarity on tax-credit eligibility as well as sufficient time to meet those criteria.

[1] As of publication of this fact sheet on November 14th, 2019

FIGURE 1: ESTIMATED AVERAGE CCUS PROJECT DEVELOPMENT TIMELINE



Select the CO_2 source to be controlled

Select preliminary capture technology

Identify likely storage site (saline or EOR) with >20 years of injection capacity

Develop screening level financial model

Ensure ~$1 million is available for initial engineering design or pre-Front End Engineering Design (FEED) and ~$10 million for FEED study to understand:

- Capital and Operational Expenses estimate
- Utilities and labor requirements
- Permits needed and time required

Kick off FEED study, if project idea still works

At 6 months,

- start permit applications including for geologic CO_2 storage, costing ~$20 million
- or, for MRV process for storage via EOR

Hire a development manager, legal service provider, and owner's engineer

Begin commercial negotiations with Engineering, Procurement & Construction firms, partners, investors, and suppliers

Design CO_2 pipeline, begin permitting & buying rights of way

Begin acquiring CO_2 storage/pore space rights

Begin raising ~$1 billion for project

Sign hundreds of contracts worth close to $20 million and close on financing including storage facility pore space rights

Developing a CCUS Project Takes Time

In 2018, U.S. Congress signed into law a tax incentive under §45Q for CCUS. To be eligible to receive the tax credits, CCUS projects have to commence construction prior to January 1, 2024. Nearly two years out of the original six-year commence construction window have already passed without an implementation rule proposed by the U.S. Treasury.

CCUS projects are complex and capital-intensive. They require long lead times for development, in some cases as long as five years and are subject to uncertainties and schedule delays.

Before construction can be allowed to begin, investors will require all the needed permitting to be completed. This includes securing air permits, CO_2 pipeline rights-of-way and permits and CO_2 storage rights, and having the storage site fully licensed as a Class VI facility (for storage in saline reservoirs) or having an approved monitoring, reporting and verification (MRV) plan (for storage via EOR). Each of these steps could take approximately two years. Although they could be done in parallel, each of these steps, depending on the jurisdiction, could extend the overall timeline by another two to three years. For example, Archer Daniels Midland's Class VI permit for CO_2 storage in a saline reservoir in Illinois took close to six years to finalize.

Figure 1 (page 2) provides an estimated timeline and sequence of activities that a developer of a CCUS project, such as a power plant storing CO_2 in a saline reservoir, must undertake prior to commencing construction. Some projects that have already initiated their detailed engineering studies may be able to meet the deadline, but for the majority of developers that are still in the vetting or pre-engineering study stage, the commence construction window will not leave sufficient time to qualify for the tax credits.

The entire CCUS project can cost up to a billion dollars depending on the size of the project and the kind of facility the CO_2 source is. It is important to note that projects that cost less do not necessarily require less time since the permitting timelines are not dependent on volume of CO_2 to be captured.

Since 45Q improves project economics and prospects for finance, developers are faced with increasing uncertainty on whether to continue to expend development capital as guidance from the U.S. Treasury continues to be delayed and the commence construction deadline draws closer. The commence construction deadline is already close enough to leave very little schedule contingency for unexpected delays. To illustrate the need for CCUS developers to debate spending, consider that in the Petra Nova project the developer had spent over $20 million to secure permits and to negotiate and sign approximately 200 contracts before construction could begin.

It is now approximately two years since the 45Q tax credits were signed into law, and the Clean Air Task Force (CATF) is tracking close to twenty projects in various stages of development. Only a handful of those are likely to make the current start of construction deadline as those developers have invested more than two years already and are past the initial design phase. For the rest of the projects to qualify for tax credits, the commence construction window must be extended to accommodate the time required for development and schedule contingencies.