I-WEST

Intermountain West Energy Sustainability & Transitions

WORKSHOP SUMMARY

The Role of Carbon Storage and Geologic Utilization
in Meeting Regional Carbon-neutrality Goals

Virtual workshop held December 14, 2021

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SUBMITTED TO

U. S. Department of Energy
Office of Fossil Energy and Carbon Management

January 14, 2022

LA-UR 22-21283

Summary of Workshop on Carbon Storage and Geologic Utilization

This workshop was the second technology-focused workshop for the I-WEST initiative (see section 1.1 for more information on I-WEST), targeting the role of CO_2 utilization and storage in achieving carbon neutrality in the Intermountain West. Our workshop on CO_2 capture at point sources was held prior to this workshop, and another workshop on direct-air capture of CO_2 will be held in the near future.

Technologies to capture carbon dioxide, coupled with carbon capture, utilization, and storage (CCUS), are important components in a strategy to achieve carbon neutrality. Additionally, CCUS can play a significant role economically as communities transition to carbon-neutral energy systems. The workshop solicited perspectives from a subset of stakeholders on issues related to CO_2 storage and utilization in the Intermountain West region. The primary goal of the workshop was to identify and quantify various CO_2 storage and utilization technologies that will evolve over the next 5, 10, and 15 years. The specific objectives of the workshop were to:

- define and describe how captured CO_2 can be managed via geologic storage or subsurface utilization methods in support of regional carbon management strategies;
- develop a consensus on the likely growth of subsurface utilization and storage in the region over the next 15 years, based on currently available and anticipated advances in technologies;
- identify technological and non-technological considerations that could facilitate a full realization of this economic opportunity (e.g., as related to R&D, infrastructure, policy landscape, societal readiness);
- facilitate networking across CO_2 storage and geologic utilization projects, identify opportunities for collaboration, and discuss pathways to build new CO_2-based economies;
- share experiences, lessons learned, and best practices amongst project leaders that have or are planning to conduct CO_2 storage/utilization operations within the I-WEST region.

The input received at the workshop was extensive and valuable, and will feed directly into the I-WEST technology roadmap. The four-hour workshop, which was held virtually due to COVID restrictions, was by invitation only. The I-WEST team identified stakeholders involved in existing or emerging carbon capture projects who would be able to provide insights for formulating the I-WEST roadmap relative to the questions above. The workshop included 16 stakeholders from 10 different organizations active in CCUS the region (section 1.2).

The format of the workshop centered on two moderated roundtable discussions (details of questions and discussion points that were used to facilitate discussions are given in Appendix A). The first focused on technology-related factors which included topics pertaining to storage site selection, characterization, well design and planning, pore space rights, monitoring strategies, post-injection site care (PISC), and site closure. The other focused on policy and economic topics, including permitting and financial responsibility, CCUS project financing considerations, community and workforce considerations, future technology needs, and CO_2 transportation. A workshop agenda is presented in section 1.3. The moderators for each session focused discussion around a set of themes for each roundtable (section 1.4). Questions of interest in each theme were circulated to the participants prior to the workshop. Prior to the roundtables, a summary of the highlights from the previously held CO_2 capture workshop was presented (section 1.5). During roundtables, the moderators provided a short introduction to each session and then facilitated dialog; which included Q&A from attendees and content provided in the chat.

Key takeaways from the workshop are summarized in Section 1.6.

1.0 Details on the Workshop

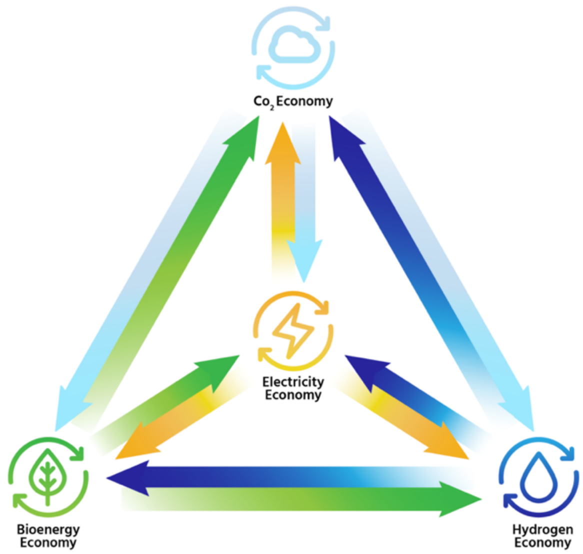
1.1 Overview of the I-WEST Initiative

The Intermountain West Energy Sustainability & Transitions (I-WEST) project is focused on delivering a technology roadmap to transition six states in the U.S. Intermountain West to a carbon neutral energy system. I-WEST encompasses Arizona, Colorado, Montana, New Mexico, Utah, and Wyoming. The project is taking a place-based approach, which prioritizes the unique attributes of the region so that the resulting technology roadmap reflects pathways that are regionally relevant and can be put on an accelerated timeline to deployment.

As part of its Phase-1 assessment, the I-WEST team is holding technology-focused workshops to better understand technology readiness, infrastructure, policy, and societal readiness related to each of the technology pathways under consideration. These include the capture and use of carbon dioxide, the production and use of carbon neutral hydrogen, and the production and use of bioenergy and bioproducts.

The workshops target leaders of current and emerging projects in the region and present opportunities for participants to connect their capabilities with regional stakeholders and technology providers invested in building pathways to carbon neutrality in the region. In order to facilitate vibrant and candid discussions, the workshops are held under the Chatham House Rule, and outcomes are summarized to include input that is not attributed to any one participant.

Results from the technology-focused workshops will inform the final I-WEST report.



The interdependencies between hydrogen, carbon, and bioenergy economies demand a keen understanding of how they interact relative to workforce, common resource and infrastructure needs, and deployment timelines.

1.2 Workshop Attendees (Stakeholders only; attendees from I-WEST team not shown)

First Name	Last Name	Company Name	Job Title
Gina	Fernandez	AECOM	Director of Engineering
Peter	Montalvo	AECOM USA	Senior Project Manager
Mike	Matson	Carbon America	VP, Projects
Lindsay	Leveen	Greenexplored	CTO
Dengen	Zhou	Chevron	CCUS advisor
Kristopher	Roberson	Denbury Resources	Director of CCUS Operations
Eric	Olsen	Deseret Power	VP, COO
Jeff	Peterson	Deseret Power	Corporate Counsel
PHIL	Solomon	Deseret Power	Vice President
Virgilio	Barrera	LafargeHolcim	Director, Government Affairs
Matt	Eales	Lucid Energy Group	VP of EHS&R
Ian	Andrews	SCS	Consultant
Rich	Walje	SCS Energy	Utah Lead
Adam	Schiche	Tallgrass Energy	Associate General Counsel
Kyle	Quackenbush	Tallgrass Energy	VP Origination
Jeff	Schaefer	Tallgrass MLP Operations, LLC	Senior Director

1.3 Workshop Agenda

Time (MT)	Topic	Presenter / Moderator
9:00 am	Welcome Remarks	Derek Vikara – NETL
9:05 am	Welcome Remarks from LANL	Melissa Fox – LANL
9:10 am	DOE HQ Perspective on I-WEST Project	John Litynski - DOE FECM
9:15 am	Workshop Overview	Derek Vikara – NETL
9:25 am	Take-aways from CO_2 Capture Workshop	James Gattiker and Raj Singh – LANL
9:35 am	Project overviews from participants	Moderator: Derek Vikara – NETL Presenters: Project PI's
10:00 am	Technical Roundtable Discussion	Moderators: Tim Grant – NETL Lee Spangler – Montana State University Presenters: Project PI's
11:30 am	Break (5 min)	
11:35 am	Policy and Economic Roundtable Discussion	Moderators: David Morgan – NETL Kipp Coddington – Univ. of Wyoming Presenters: Project PI's
12:50 pm	Closing Remarks	Moderator: Derek Vikara – NETL Presenters: Tim Grant – NETL Lee Spangler – Montana State University David Morgan – NETL Kipp Coddington – Univ. of Wyoming

1.4 Workshop Discussion Topics

Technical Roundtable Discussion Topics:
Moderators: Timothy Grant (NETL) and Lee Spangler (Montana State University)

- Site selection
- Site characterization
- Well design and planning
- Pore space rights
- Monitoring, post-injection site care (PISC), and site closure

Policy and Economic Roundtable Topics:
Moderators: David Morgan (NETL) and Kipp Coddington (University of Wyoming)

- Permitting and Financial responsibility
  - CCUS project financing
  - 45Q
- Subsidies
- Community and workforce considerations
- Future technology or policy needs
- CO_2 transportation

An extensive list of discussion prompts and questions were compiled and utilized by moderators to facilitate discussion. For completeness, those questions are provided in length in Appendix A – Workshop Questions and Discussion Points.

1.5 Summary of Key Takeaways from the CO_2 Capture Workshop (held 11/20/2021)

Participant projects and facilities as part of the point source capture (PSC) workshop included a broad range of point sources, from fossil electricity generation, cement, hydrogen production and ammonia, mining, NG treatment/processing, and other industrial capture. In general, the discussion focused less on the technology needs and options, indicating a sense by the project managers that deploying the capture technology itself is not the dominant concern. Considerable productive discussion was captured in this workshop, covering a range of issues including: CO_2 storage/disposal, transportation, and land rights issues with regard to injection wells; permitting and regulation; ramping up manufacturing, both in terms of physical construction and craft and technical workforce availability; environmental considerations, including water requirements for cooling; long-term government support in capture credits and emissions penalties; and issues of public trust. Critical take-aways identified by the moderators of the PSE workshop were:

- The current on-going project at various stages of deployment are anticipated to capture 12 million tons of CO_2 per year. Other facilities also mentioned interest in implementing carbon capture (CC) and have ongoing assessment. The largest CC effort in the region is anticipated to be operational within a two-year time frame and hinges upon EPA timeline for sequestration well permit approval.
- Carbon capture technology readiness did not come up as an issue. It was noted that medium-term goals of emissions reduction will require massive industrial deployment, on the order of project completions on a weekly basis. Concerns were expressed on both raw materials availability and specialist PSC technology materials availability, and similarly in the availability of craft and technical workforce for deployment and operation. Concerns also relate to the availability of technical staff that can implement CO_2 storage permitting due diligence at sufficient scale and pace. The need for EPA workforce development for timely class-6 well permitting and approval for injection was echoed unanimously.
- The downstream disposal of captured CO_2 was a dominant concern, with the consensus that in the project planning horizon the sole option is pipelines leading to storage sites. Substantial concern was brought up on the uncertainty of CO_2 storage site performance. One consideration was the need to make carbon disposal an industry of its own, rather than the current practice of development of this aspect for each project. In this area, the largest concerns are land ownership and land rights laws, pore space rights, proximity to sink, and CO_2 and pressure plume movement.
- In this region, water for cooling is a potentially significant issue. Other cooling mechanisms (e.g. air cooling) are available, but impact the economic viability of projects and would require additional power availability. In addition, impaired water disposal including zero-liquid discharge water storage needs will need to be considered.
- In public trust, it is perceived that there is a broad sentiment that PSC deployment is, to paraphrase, life-extension of poor (dirty, non-green, etc.) energy pathways, rather than a responsible component of the net-zero energy transition and energy future. It was emphasized that public outreach and education is needed in order to make initiating PSC projects attractive.
- In financing a project, it was broadly recognized that stable 45Q-like mechanisms for capture credit are critical to even get started. Emissions penalties that may also encourage projects was also discussed.

1.6 Summary of Key Takeaways from the CO_2 Storage and Geologic Utilization Workshop

The workshop project participant consistency was made up of a diverse mix CCUS project practitioners in terms of the type of storage or utilization being targeted (saline storage or CO_2 enhanced oil recovery [CO_2 EOR]), the experience in deploying CCUS (interest and initial exploration of integrating CCUS though vast experience in deployment), and in the type of business models that comprise the CO_2 source. These source types encompass coal power and a variety of industrial point sources that either are currently capturing CO_2 or being evaluated for capture retrofit in the near future. This diversity in projects afforded workshop discussion to cover technical and non-technical considerations for CCUS operations that span both U.S. Environmental Protection Agency (EPA) Underground Injection Control (UIC) Class II and Class VI rules.

A vast collection of information was generated from the workshop discussion which will be critical in helping inform the I-WEST roadmap development as it relates to carbon capture and storage. In general, contributions from the panel of participants associated with projects that have or are making significant headway as it relates towards evaluating or deploying CCUS in the field focused heavily on the experiences and best practices gained that could be shared and considered moving forward. For project practitioners prospecting CCUS, discussions explored their reasoning that CCUS provides an enticing option for integrating as part of their business case(s) and their potential capture, transport, and storage strategy. As a result, a bevy of key takeaways were generated that span technical and non-technical CCUS aspects.

- Carbon dioxide capture technologies coupled with utilization and/or storage is deemed an important component of the portfolio of strategies to achieve carbon neutrality. In addition, CCUS is considered to be an important economic opportunity as well; one that can support the region's energy transition by offering low-carbon versions of existing and future commodities (both power and industrially-derived).
- Screening for potentially viable storage sites was noted as facilitated through the availability of existing data. Existing data pertaining to well logs, seismic surveys, and even injection/production data from operations analogous to CO_2 injection (including oil and gas production or salt water disposal operations) afford opportunities to appraise, at a high level, the viability for candidate sites and/or regions for CO_2 storage efficacy; dictated largely by storage capacity (capacity needed to store the intended injection volume), containment (including suitable caprock layers to prevent vertical migration of CO_2), injectivity (to ensure intended injection rates can be conducted safely), and salinity criteria (to ensure formations do not contain underground sources of drinking water) - variables change depending on location. Proximity of storage sites to sources is also noted as key screening criteria.
- Existing well (and core) data affords substantial opportunity for mapping subsurface storage / EOR targets and caprock layer extent and inferring geologic properties. However, existing wells also present potential leakage risks should they penetrate storage and/or caprock formations for potential storage systems. These wells would require appropriate identification and corrective action prior to injection to minimize their leakage risk. Conversely, in many 'greenfield' storage regions, existing wells, presumably from oil and gas operations, may not penetrate to deeper saline formation CO_2 storage targets. As a result, a data gap can exist for these deeper resources and will therefore require additional characterization investment to properly appraise.

- Understanding site performance (regarding CO_2 movement and pressure evolution) is an essential step in the project development process. Site characterization efforts are crucial for gaining insight on how the candidate site may perform when CO_2 injection (for long-term storage or CO_2 EOR) is applied. Site performance will dictate monitoring strategies, surface and pore space access considerations, risk mitigation approaches, and infrastructure requirements. Similarly, site performance is critical to the permitting process for demonstrating safe operations. Long-term storage and CO_2 EOR operations both rely on the development of building geomodels that represent the candidate site(s) (acquired from characterization data) and performing forward simulations to assess potential site performance to planned injection operations. Field tests are also being used to infer site performance. In CO_2 EOR applications, strong water flood performance indicated by favorable oil production is a likely indicator that CO_2 flooding could be beneficial. In new, 'greenfield' saline storage applications, well tests like transient pressure tests and injectivity response tests conducted in stratigraphic test wells can be used. Additionally, well understood reservoirs reduces the uncertainty related to development and operational costs of injecting and storing CO_2.
- CO_2 plumes and the pressure front must be modeled and planned for accordingly to minimize potential interference between injector wells and inform well spacing. Excess pressure can restrict injection rates causing operational inefficiencies or more concerning lead to mechanical failure of the overlying caprock and migration of fluids towards underground sources of drinking water (USDW). Project practitioners are considering the use of multiple injection wells with strategic spacing choices in attempt to minimize pressure buildup. Pressure management or brine extraction must be modeled and considered at the onset of project. A viable solution is to inject in the same vicinity in two discrete storage formations, one for CO_2 and one for the water withdrawn for pressure relief.
- Ambiguity surrounds pore space rights, with some I-WEST states yet to determined who owns pore space and a lack of clarity on Federal lands. In Wyoming and New Mexico, pore space is acquired through and associated with surface rights. The requisite aerial extent of pore space rights for a CCUS project, is also unclear. In nearby North Dakota, this is determined by the footprint of the modeled plume at surface, but states like Montana and Wyoming have yet to outline a formal requirement. Further definition of pore space rights throughout the I-WEST corridor will be necessary to expedite the implementation of large scale CCUS.
- There is limited examples for templates that work well for monitoring CO_2 storage operations effectively that covers all site conditions; particularly related to CO_2 plume and pressure evolution. The constituency of practitioners from saline storage projects on the panel largely were working through effective, yet economic, monitoring approaches for their candidate sites. UIC regulations specify minimum monitoring and testing requirements for several specific functions, including injection pressures, rates, and volumes, analysis of the CO_2 stream, and well mechanical integrity. However, regulations are much vaguer for other functions, like tracking the extent of the CO_2 plume and pressure increase in the subsurface. Those strategies are to be proposed by operators and approved by regulatory authorities prior to issuance of permits. Given that modest issuance of actual Class VI permits in the U.S. has occurred (and even a smaller number of projects have conducted CO_2 injections under those permits to confirm the viability of proposed monitoring), case study examples are limited.
- Projects face large potential financial burdens associated with the financial responsibility requirements under UIC Class VI. Qualifying financial instrument(s) must be sufficient to cover

the cost of corrective action, injection well plugging, post injection site care (PISC) and site closure, and emergency and remedial response. There are several potential financial instruments available (Trust Funds, Surety Bonds, Letters of Credit, Insurance, Self-Insurance [i.e., Financial Test and Corporate Guarantee], Escrow Accounts, and any other instrument(s) satisfactory to the regulatory authority. Certain project practitioners are avoiding some of the upfront financial responsibility by permitting their initial test wells as Class I (built to Class VI specification) as opposed to Class VI; then will convert wells to Class VI when they are ready to inject and incur additional financial burden at that time. The group mentioned that an opportunity exists for large insurers to potential be able to provide affordable insurance options to cover financial responsibility requirements – this may require some upfront collaboration and education to facilitate traction. Additionally, the group discussed the need to help regulators focus more so on probabilistic risk analysis a project by project basis. Quantifying risk (and uncertainty) this way can enable a more rationale take on associated liability. CO_2 EOR projects operating under UIC Class II (with no financial responsibility requirement) are largely driven by potential project based on economics (cash flow, offtake agreements) as key decision drivers.

- The importance of public outreach and education related to CCUS has been found critical to the technology's implementation. Experience from field projects has demonstrated that the possibility exists for local communities to feel subjected to higher risks when CCUS is conducted within their general vicinity when education and community engagement is not undertaken. The workshop discussion has concluded that individual in communities surrounding on-going or planned projects are interested in more information on "new" technologies like CCUS. In this regard, greater levels of community outreach are often needed for long-term storage (i.e., saline) projects compared to CO_2 EOR, as local community are typically already familiar with oil and natural gas practices likely having already occurred. Its been noted that CCUS when applied to existing industries enables their sustainment; a notion that correlates to the continuance of existing job opportunities. Projects supported by federal subsidies are working to make progress associated with their project development accessible and transparent to the public in order to enable expanded "learning" for helping facilitate and expedite the development of future CCUS projects.

- Several near and longer-term technology and/or policy needs were identified by the participants to further promote CCUS, with noteworthy examples including: 1) policies in place for clearly defining song-term liability following site closure and PISC; 2) 45Q applicability over longer timeframes; 3) policies for use of federal lands for CO_2 storage; 4) state by state determination of clarity for pore space rights; 5) seismic survey cost reductions to improve the economics for characterization and monitoring; 6) improving opportunities for landowners (assurance against any liability, compensation for pore space leasing, etc.); and 7) establishment of "early wins" consisting of small, but successful projects to build trust and reduce the risk in CCUS.

- CCUS-related incentives, particularly the 45Q tax credit, are at the core for supporting the business case for many of the panelist projects. However, the need for additional subsidy or credit over-and-above the existing 45Q is likely needed to make future CCUS projects more economically viable. There is group interest in the potential expansion of the 45Q (eligibility duration, direct pay, increased credit value, etc.) as part of the Build Back Better Act; change that may alter the duration of capture for certain projects or the consideration to pursue CCUS at all.

Appendix A – Workshop Questions and Discussion Points

The following questions were used to facilitate discussion with the representatives from organizations that intend to implement CO_2 saline storage projects within the I-WEST Region. The topics were adapted for discussion around CO_2-EOR as well.

1. **Site Selection**
   - What were the primary factors that led to you choosing a CO_2 storage site?
     - Ability to assemble/lease sufficient acreage to store and contain intended mass of CO_2 to be stored.
     - Securing pore space – surface owner only or surface and mineral owner?
   - What process did you use to find the site where you intend to store CO_2?
     - Level of geologic analysis need to select a site for detailed characterization
   - What public sources of data did you use (e.g., NatCarb, USGS)? How much did you rely on private or proprietary sources of data? How readily available was this private or proprietary data?
   - If you plan on characterization, how many candidate sites would you characterize before you selected the site you intend to use for CO_2 storage?
   - Are there any externalities that would cause you to not choose certain acreage to include in the overall site acreage unit (ex. Densely populated area, public acceptance, other natural resources)?
2. **Site Characterization**
   - For the storage site you selected, can you describe the site characterization you performed (e.g., seismic surveys, electromagnetic surveys, stratigraphic test wells, geochemical surveys, well logs / cores)? If you conducted seismic surveying, what methodology did you employ and why? Was any additional characterization conducted prior to starting CO_2 EOR?
   - Did you drill stratigraphic test wells and how many? Will any of these test wells be converted to injection wells or monitoring wells?
   - Based on the site characterization, can you briefly describe the geology of the proposed storage formation or formations (e.g., depth to top of formation, thickness of formation, porosity of formation, permeability of formation, thickness of cap rock and characteristics of the cap rock, lithology of storage formation and caprock, trap type, salinity)?
   - What do you consider the most important information to obtain from site characterization? How critical was determining minimum miscibility pressure for CO_2 EOR fields?

3. **Well Design and Planning**

    - Describe the injection well design (i.e., casing, cement, perforations, vertical vs horizontal)? In EOR cases, comment on the production well design choices and patterns.
    - If possible, describe the number of injection wells and approximate spacing of the wells. Discuss how much CO_2 will be injected in each well annually and the duration of injection.
    - Did you develop a geologic model and perform reservoir simulation modeling to assist you in the design? Can you describe the modeling approach utilized for insight to potential storage site performance and efficacy?
    - How extensive would the CO_2 plume and pressure propagation extend (i.e., Area of Review) based on planned injection volumes and durations?
    - How did modeling efforts inform other aspects of the proposed project operations (like monitoring placement, pore space ownership aspects, potential brine production well placement, etc.)?

4. **Pore Space Rights**

    - Have you obtained pore space rights?
    - What process did you use to obtain pore space rights?
    - Did you need to get agreement from all the owners of the pore space?
    - Did state laws allow you to get agreement from less than all the pore space owners (e.g., unitize or amalgamate pore space)?

5. **Monitoring, Post-Injection Site Care (PISC), and Site Closure**

    - Can you describe your testing and monitoring plan for the CO_2 storage site? What incremental monitoring aspects are you performing as part of your MRV plan?
    - Does your plan include monitoring wells? If so, how many wells? Will the wells monitor the formation where CO_2 is to be injected (storage formation) or formations above the storage formation (or both).
    - Do you intend to use geophysical technologies (such as 3D or 2D seismic imaging, seismicity monitoring, or microseismic) in the monitoring program?
    - Can you describe the frequency that each monitoring technology will be deployed (e.g., one a year, once every five years)? What percentage of overall project cost do you predict monitoring to constitute?
    - Describe the level of iterations that occurred in discussions with UIC regulators in the pursuit of finalizing your site monitoring approach.

- What is your Post Injection Site Care (PISC) plan? What types of monitoring will be done and how long do you intend to do this monitoring (both for Class VI and II operators)?
- What happens after site closure? Site closure is defined for this document as the point when a finding of non-endangerment is made by the governing regulatory authority and PISC can be stopped, site restored, and the Class VI permit released. Who has responsibility and/or activities for managing the site after closure (the operator, the state)?

6. **Permitting and Financial Responsibility**

- Describe the approach you are using to obtain a Class VI injection well permit or permits – or Class II for EOR. How did you define your CO2 plume area and the area of concern (AOC)?
- Can you describe your approach to developing an Emergency and Remedial Response Plan? How did you develop your Corrective Action Plan?
- Please discuss how you developed your Area of Review and Correction Action Plan.
    - What resources or surveys did you use to identify existing wells or abandoned (and hopefully plugged) wells?
    - If you used a well database, was it a publicly or privately maintained dataset?
- Please discuss how you developed your Emergency and Remedial Response Plan.
    - What release pathways did you consider?
    - What tools were used for risk assessment? Were any NETL - NRAP tools used? If so, which ones? Were tools outside NRAP used? If so, which ones? Are these publicly available?
- For CO_2 EOR operators, discuss the process for obtaining MRV plans.
- Describe how you intend to address the financial responsibility requirements of the Class VI injection well permit. Financial responsibility involves demonstrating to the governing regulatory authority that corrective action, emergency and remedial response, injection well plugging and PISC can be paid for when these costs become due or if they come due in the case of emergency and remedial response.
    - What financial instrument do you intend to use (e.g., self-insurance, trust fund, escrow account, insurance, letter of credit, surety bond)?

7. **CCUS Project Financing**

- What aspects (policy, tax credit, government subsidy, aspiration to generate low-carbon commodities, etc.) enabled the project to come together from a business case and coalition-development perspective as it relates to integrating capture, transport, and storage components? For instance, what made CCS intriguing vs. business as usual (i.e., unabated CO_2 emissions)?

- Do you intend to pursue 45Q tax credits? Is there any intent on stopping the capture and storage operations at your facility when/if 45Q eligibility expires?
- What are the financial constraints limiting large scale carbon capture and storage in the region?
- What are your concerns or your investors' concerns (if any) for 45Q recapture and/or CO_2 leakage?
- Do you have suggestions on potential pathways to address financial constraints?
- What project operational lifespan (e.g., 10 yrs. of operation, 12 for 45Q eligibility, 30 yrs. plus) is needed for financial viability?

8. Community Considerations / Workforce

- What socio-economic aspects, that may or may not impact nearby communities, were important from your perspective?
- Are surrounding communities in favor or opposed to the project? Do they understand the near and long-term benefits of CCS?
- Do concerns exist about job loss or gains, direct or indirect environmental impacts, direct or indirect impact on property values/aesthetics?
- What steps will the project take regarding public outreach and education if any?
- Are there concerns you have related to a shortage in qualified personnel / firms that can design and manage storage operations? Do the same concerns apply for qualified regulators that can issue and monitor permits?

9. Future Technology or Policy Needs

- What is your take on technological barriers and/or policy/incentives needs that may limit CCS deployment in the I-WEST region?
- What advancements from technology and/or policy perspectives would entice CCS deployment moving forward?
- What were your biggest lessons learned throughout the project process and what would you do differently next time?
- What would be the most important piece of advice you could provide someone just beginning the Class VI process?

10. CO_2 Transportation

- Can you describe the proposed CO_2 transportation approach for the project?
- Are new pipelines being used and/or are existing pipelines being leveraged?

- If new pipelines are being used, can you comment on citing, development, regulatory oversight, design, and cost aspects? Any consideration for CO_2 transport by other means: truck or rail?