Carbon Capture and Storage

EPA United States Environmental Protection Agency

U.S. DEPARTMENT OF ENERGY

Welcome & Agenda Review

Outcomes

- One in a series of stakeholder conversations on ways to achieve equitable outcomes in CCS decision-making that protect health and environment.
- Educate stakeholders on EPA's regulatory role and DOE's role in CCS.
- Gather timely individual input on concerns, challenges, and potential solutions that fall within the purview of EPA and DOE.

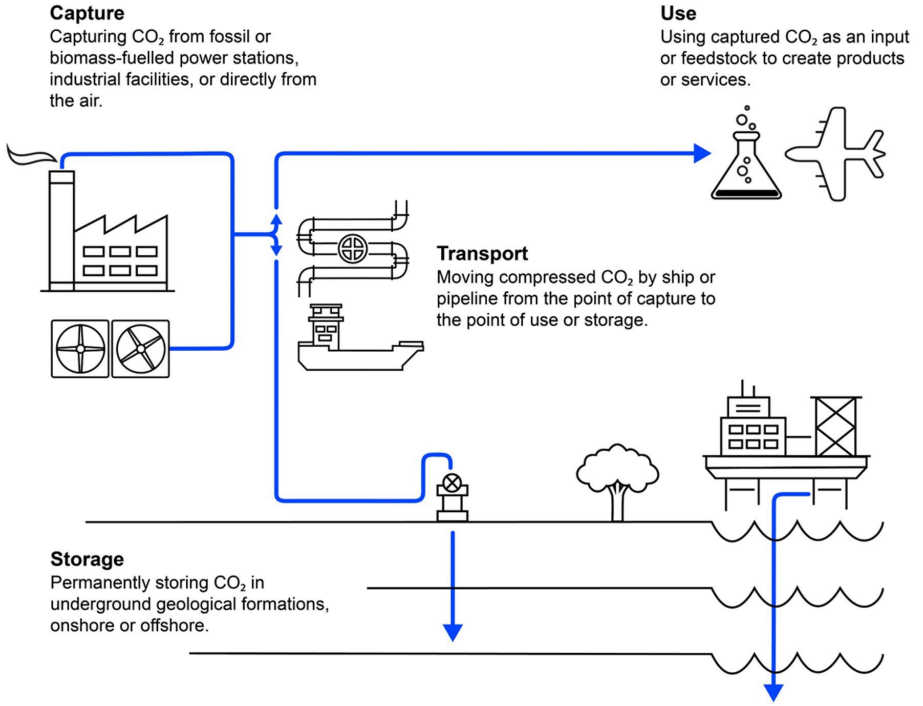
Agenda

- Welcome
- Overview of CCS projects
- DOE's Energy Justice Framework
- Overview of EPA's Class VI Underground Injection Control program
- Community Concerns
- Next Steps

Overview of CCS projects

Carbon Management overview

- Carbon Management is critical for reliable power in some regions, for industry decarbonization, and counterbalancing truly hard to decarbonize emissions
- Potential benefits and risks differ at each stage
- Various federal and state laws apply to each of these activities
- Identifying, managing, mitigating and avoiding environmental risks is very project- and site-specific



DOE Bipartisan Infrastructure Law Funding for Carbon Management

>$12B over five years

- Power and industrial carbon capture projects
- New direct air capture hubs and innovation prizes
- CO_2 transport, storage, and conversion studies, grants, and loan guarantees
- H_2 production using fossil energy with carbon capture and storage

Expected development

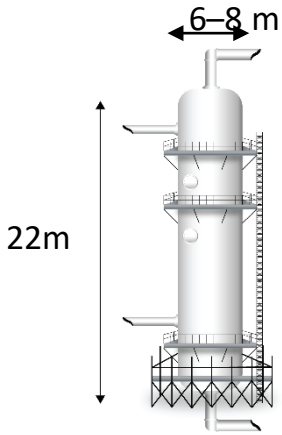
- At least 6 carbon capture projects (12 operational today at commercial scale) and several new small-scale pilots
- At least 4 direct air capture hubs and several new small-scale pilots
- 100+ new dedicated CO_2 storage wells
- Studies and financing for several new CO_2 pipelines and transportation networks (~10,000 miles moving 10Ms tons CO_2/yr)
- Several new CO_2 conversion small-scale pilots

https://www.energy.gov/fecm/office-fossil-energy-and-carbon-management

Point-Source Capture and Direct Air Capture are Different Tools

Different designs and various technologies lead to different impacts, energy, land, and water requirements

Power Plant
MEA Scrubber



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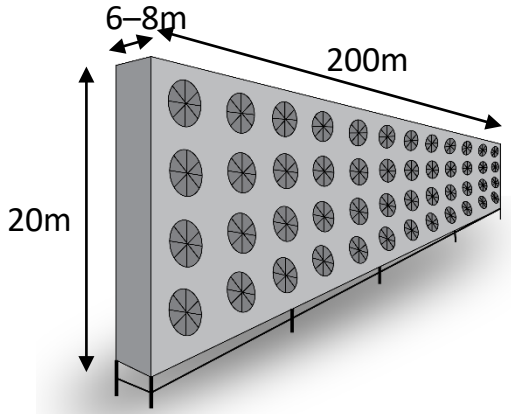
DAC Contactor



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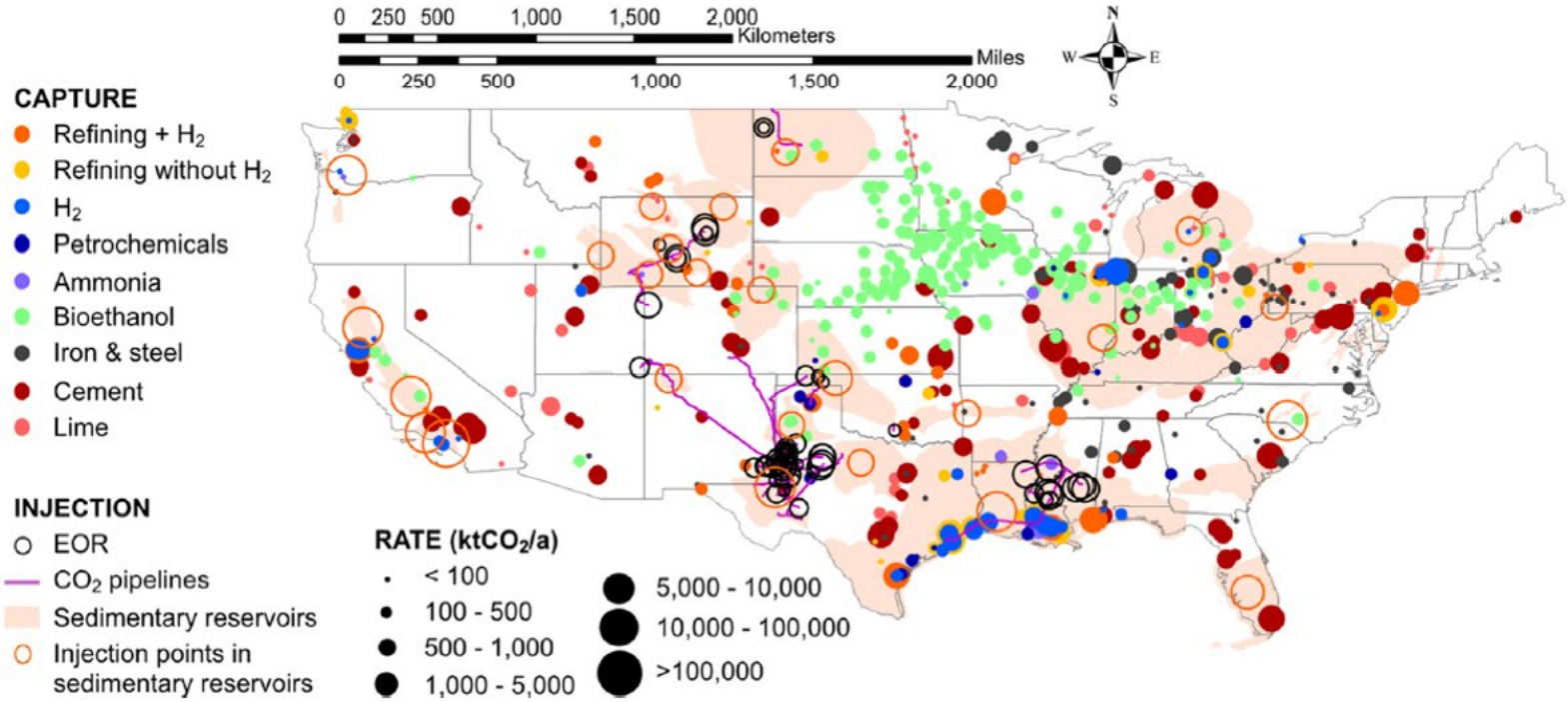
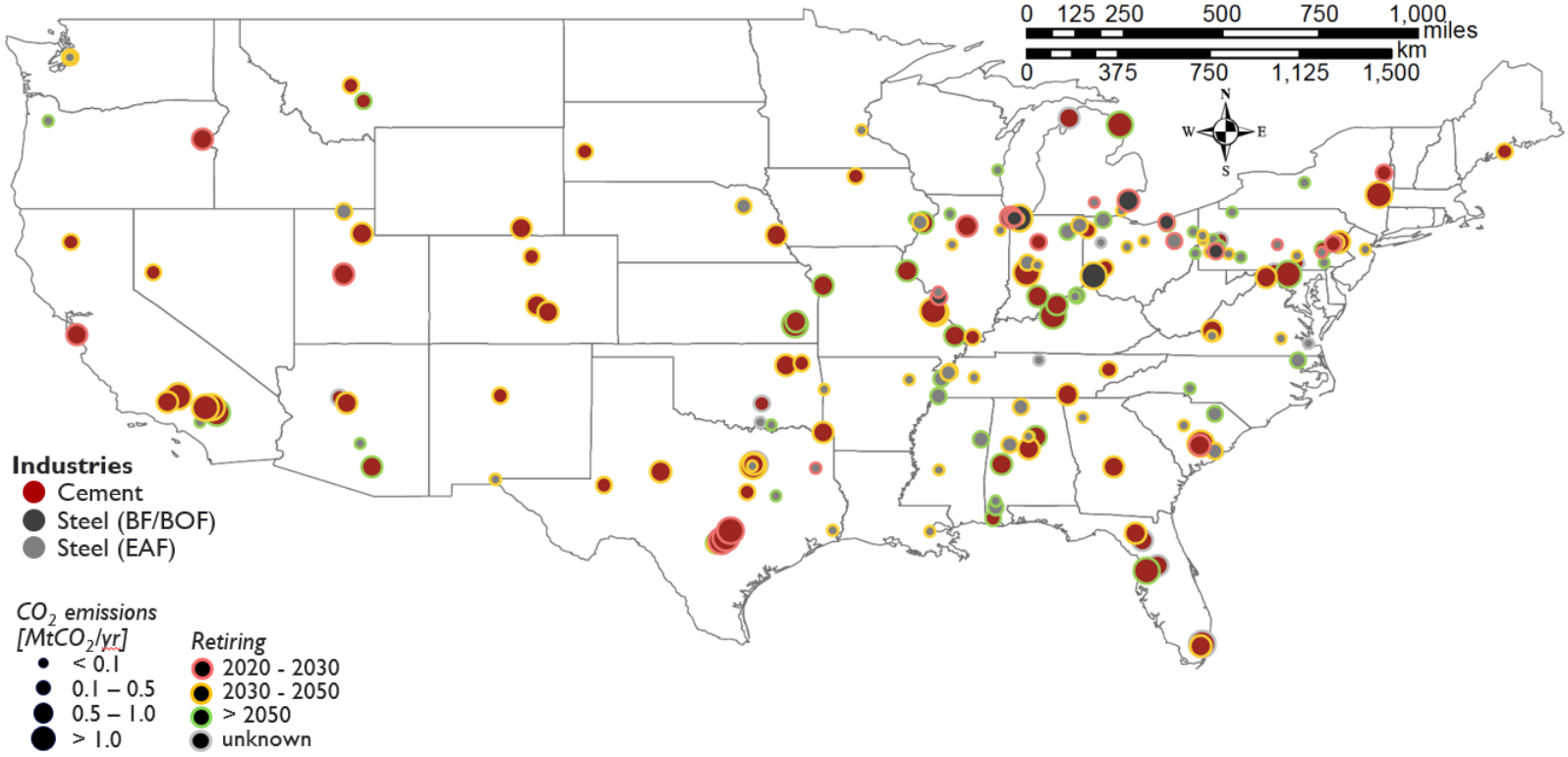
Industrial Sectors – Hard to Decarbonize



CCS has the potential to significantly reduce some industrial sectors, which are hard to decarbonize today

Cement and Steel Facilities Across US - ~ 135 $MtCO_2/yr$



CCS is Not New or Novel – First Patent Filed in 1930!

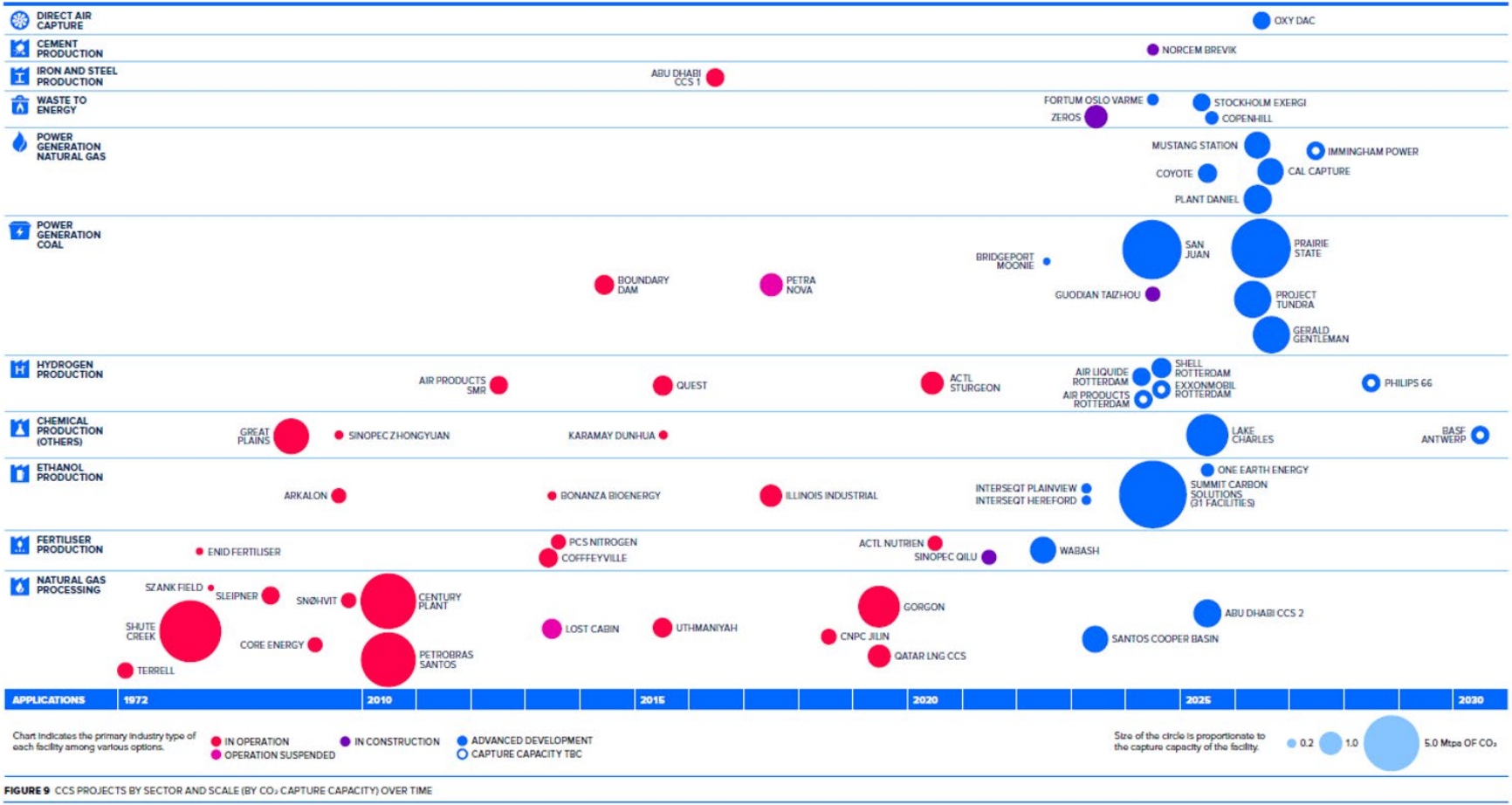
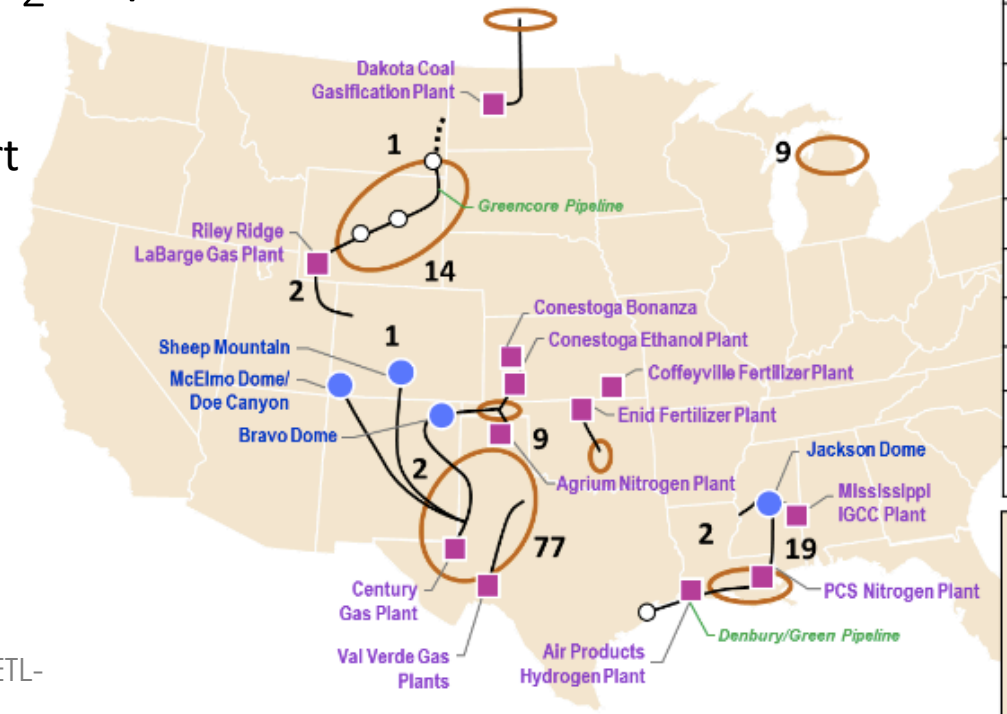


FIGURE 9 CCS PROJECTS BY SECTOR AND SCALE (BY CO_2 CAPTURE CAPACITY) OVER TIME

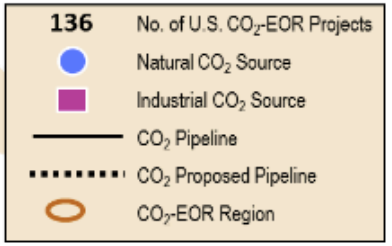
Reference: Global CCS Institute

Existing CO_2 Pipeline Infrastructure

- CO2 pipeline transport began in 1970s
- U.S. transports ~ 70 $MtCO_2/yr$



Oil Production (2014)	
CO_2-EOR Projects	136
Oil Production (MBbl/d)	300
CO_2 Supplies (2014)	
Number of Sources	17
• *Natural*	*5*
• *Industrial*	*12*
CO_2 Supply (Bcf/d)	3.5
• *Natural*	*2.8*
• *Industrial*	*0.7*



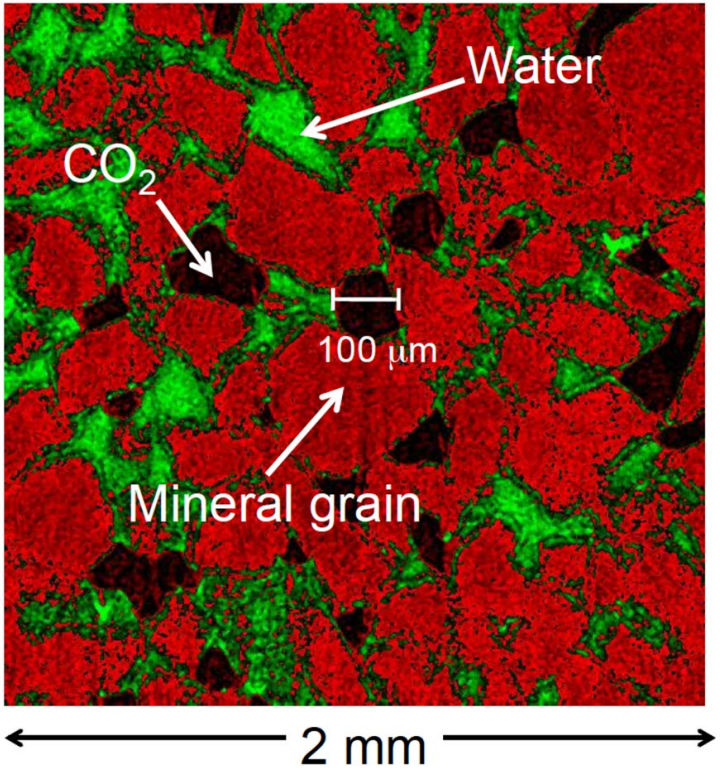
Source: Advanced Resources International, Inc., based on Oil and Gas Journal, 2014 and industry sources

Ref: Kuuskraa et al., DOE-NETL-2011/1504, 2011

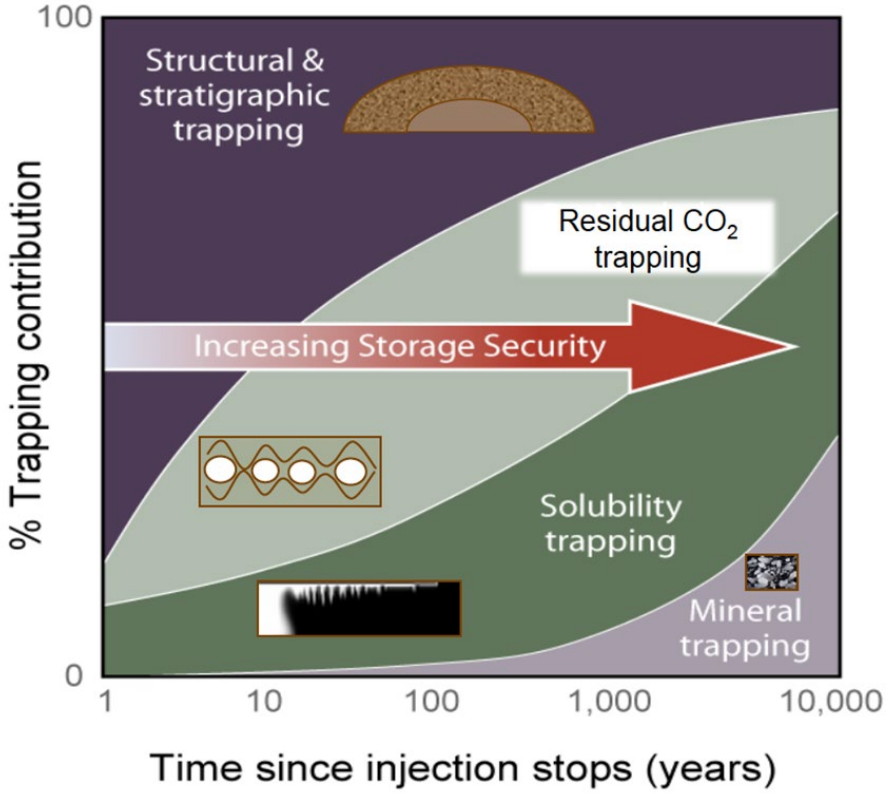
Ref: Wallace et al., DOE/NETL-2014/1681, 2015

What Does CO_2 Look Like In a Rock?

- 2-dimensional image of a sandstone (common reservoir rock) with water and CO_2 in the pore space
- Wells are often drilled > 1 mile underground.
- Sandstones are sedimentary rocks where the pore structure is formed from the space between the mineral grains
- Oil and gas are produced in these pores, and are the same that ultimately store CO_2
- Courtesy of the Advanced Light Source at LBNL! Strand of hair is roughly 70 microns



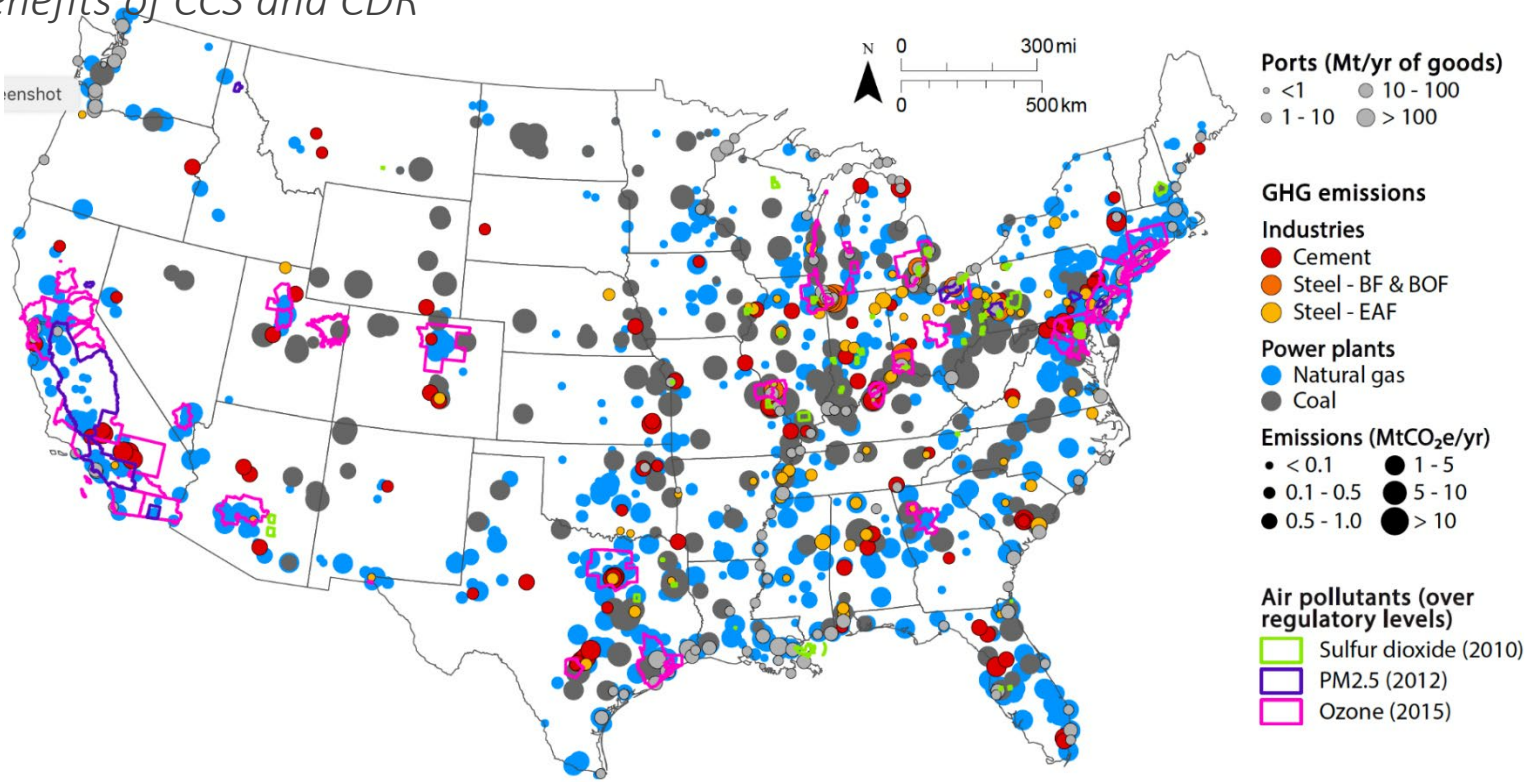
Secondary Trapping Mechanisms Increase Security Over Time



Reference: Kelemen, Benson, et al., Frontiers, 2021

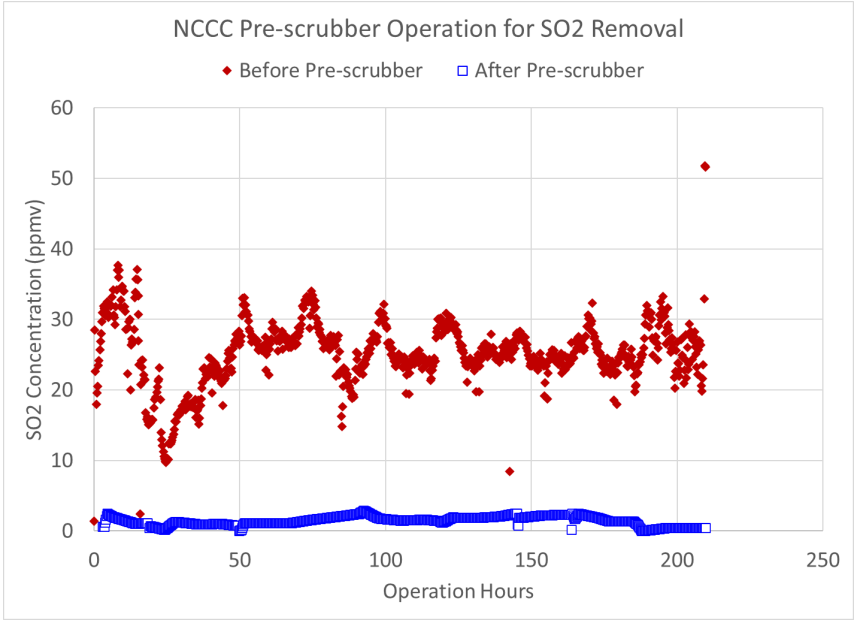
Co-Location of Air Pollution and Carbon Management

Potential Benefits of CCS and CDR



Co-Pollutant Reduction – National Carbon Capture Center

- SO_2 in flue gas
  - 15-50 ppm of SO_2 remained in flue gas after power plant flue gas desulfurization unit.
  - SO_2 can form salts with amine-based solvent technologies and results in loss of active amine to capture CO_2.
  - Deep SO_2 removal from flue gas down to 1ppmv level is desirable.
- NCCC Operation
  - NCCC installed two SO_2 polishers (Pre-scrubber) to remove remaining SO_2 from flue gas to below 1 ppmv.
  - All technology developers typically receive this treated flue gas for testing and demonstration.

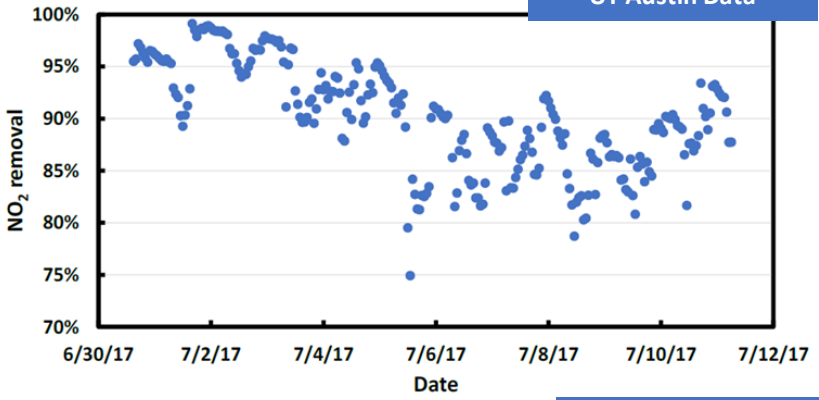


NCCC Data

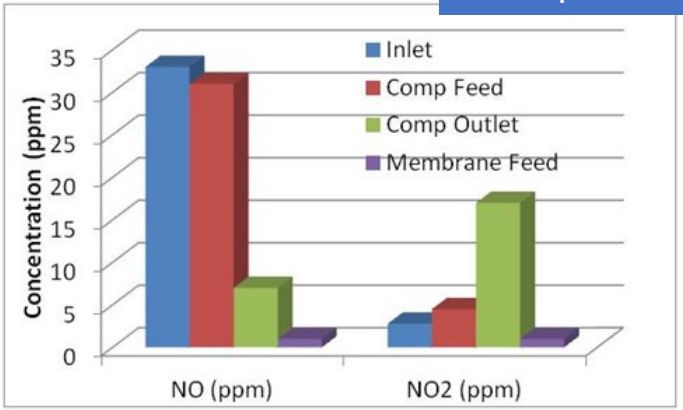
NO and NO_2 Reduction

- NO_2 in coal- & natural gas- derived flue gas
  - Trace amount of NOx (NO & NO_2) are present in coal and NG derived flue gas at a concentration up to 50 ppmv after Selective Catalytic Reduction (SCR)
  - 5-10% of NOx is in the form of NO_2 which poses negative impact to amine-based solvent due to degradation reaction.
- NCCC Operation
  - UT Austin developed a process to add chemicals in the Pre-scrubber to removal NO_2 simultaneously with SO_2 and demonstrated 85-95% NO_2 removal efficiency
  - Air Liquide's flue gas pretreatment process in their cold membrane technology converts most of the NO to NO_2 which is subsequently removed. >90% NOx removal was achieved. As shown in the figure, most of the NO/NO_2 were removed before membrane feed (purple bar).

UT Austin Data



Air Liquide Data



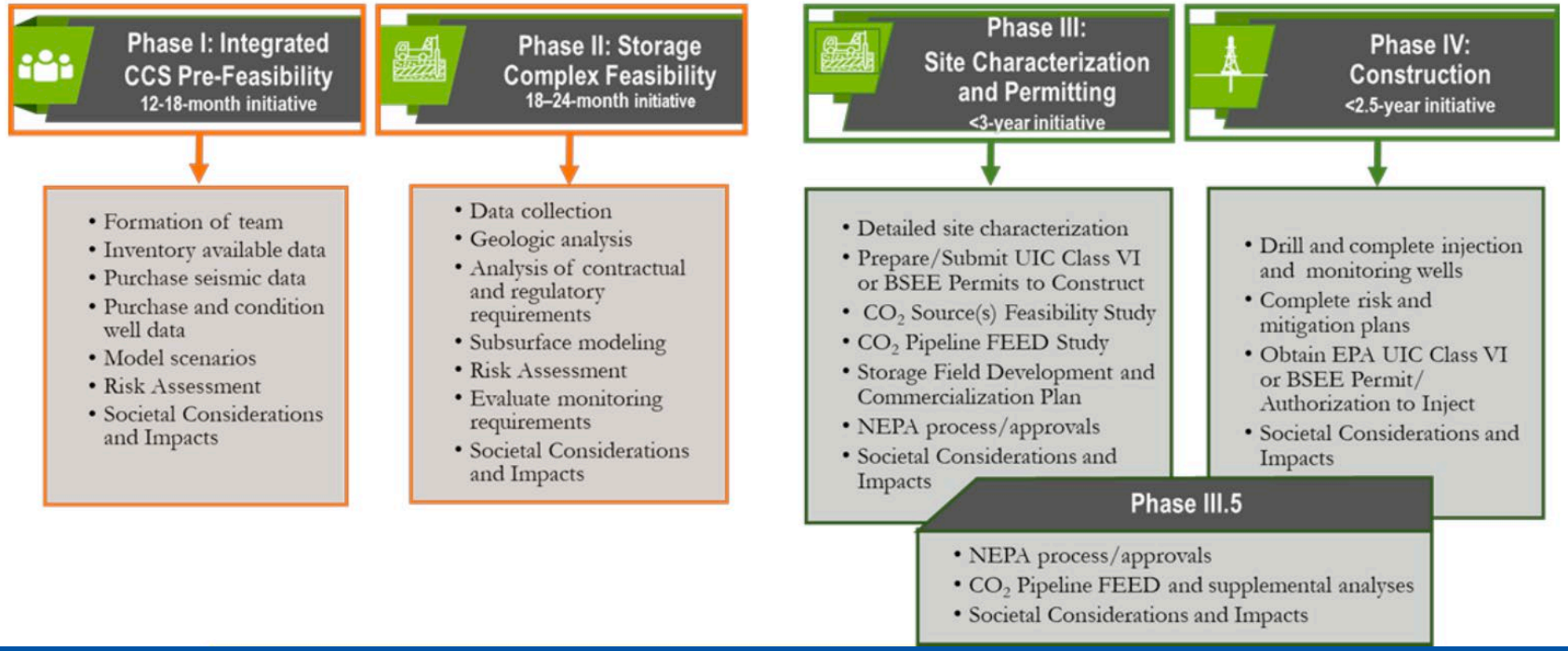
How DOE/FECM considers siting and project impacts

In this section, we're going to tell you about…

- how DOE technical consideration of siting and project impacts is done
  - *See: https://netl.doe.gov/carbon-management/carbon-storage/strategic-program-support/best-practices-manuals*

- Some new requirements we are implementing to further address environmental justice and community engagement
  - *See: https://www.energy.gov/fecm/justice-engagement-planning-societal-considerations-impacts-fecm-projects*

DOE CCS projects are funded in a phased structure



These are the initial steps a project goes through

structure of the BPM is that the steps taken in development of commercial CCS projects, and the process by which the maturity (readiness for commercial injection) of a project is

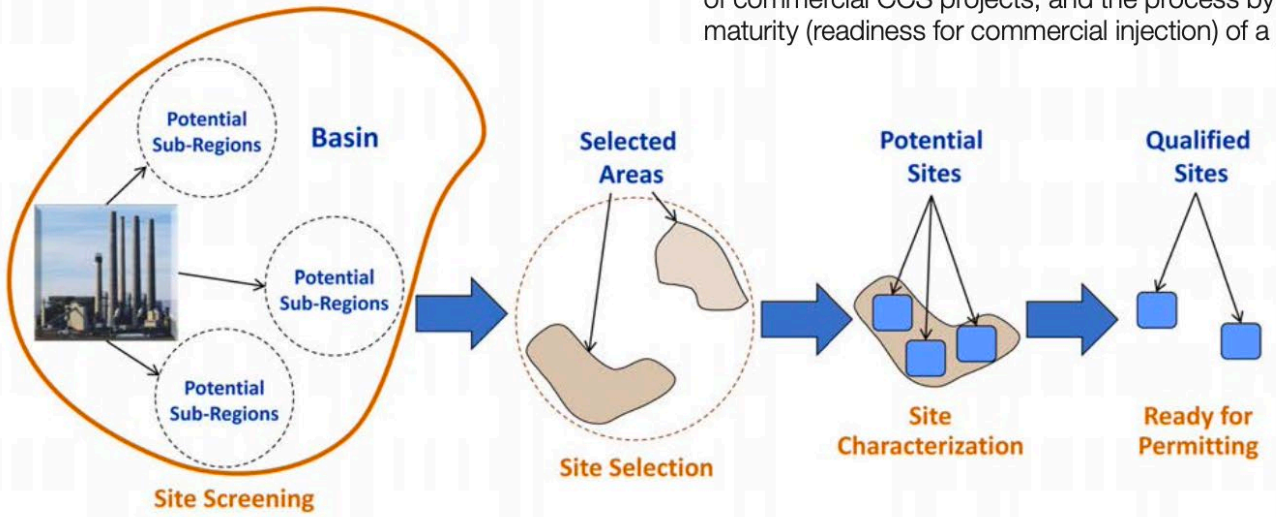


Figure 1.2: Illustration of the Relationship Between Scale of Investigation and Major Steps in Process of Finding and Developing Qualified Sites

Potential consequences examined in our technical project requirements

1. Worker safety
2. Groundwater quality degradation
3. Resource damage
4. Ecosystem degradation
5. Public safety
6. Structural damage
7. Release to atmosphere
    - *New frameworks include explicit assessment of harms and benefits, including explicit assessment of disadvantaged communities*

Example 1 of a major concern: Health and safety impacts from leakage

Health impacts are well understood…

- Atmospheric CO_2 ~418 ppm
- Humans tolerate up to 1% (10,000 ppm) with no adverse effects
- Significant effect on respiratory rate and physical discomfort at 3-5%
- Death imminent at >30% for several minutes

Federal occupational safety and health regulations set standards:

0.5% for 8-hour exposure, 40-hour work week

3% for short term, 15-minute exposure

4% for maximum instantaneous exposure

Example 2 of a major concern: Potential groundwater impacts

- CO_2 migration into shallow aquifers
  - Mild acidification, e.g., pH of 4 to 5
  - Potential mobilization of hazardous constituents, e.g., As, Pb
- Displacement and migration of saline brines into shallow aquifers
- Migration of gases co-injected with CO_2
  - E.g., H_2S, SO_2, NO_2

Potential for impacts depends on many site-specific factors:

Seal properties, boundary conditions, size of injection, number and conditions of abandoned wells, initial hydraulic heads, and pressure buildup

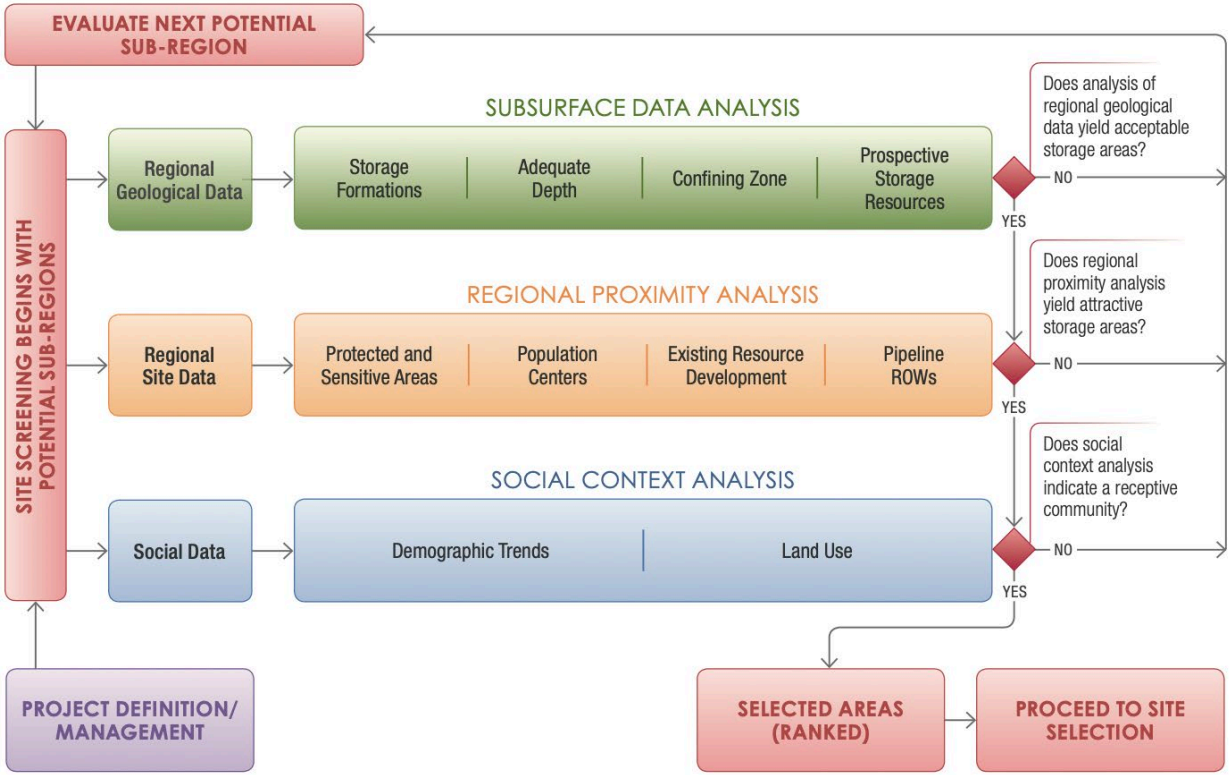


Figure 3.1: Process Flowchart for Site Screening

CarbonSAFE Project ECO2S, Mississippi

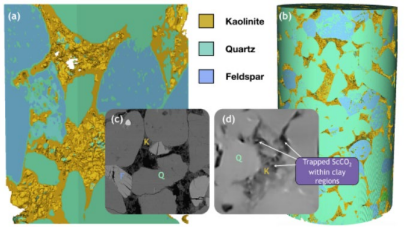
DOE requires data and analysis of leakage and groundwater risks for projects we fund

This information is used by DOE in project decision-making and can also be used by regulators

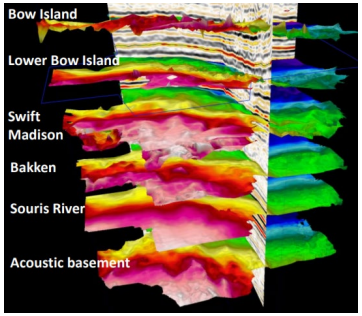
Site Selection and Characterization – Technical overview

Key Activities:

- Reservoir properties & geometry
- Seal integrity
- Overburden/underburden characterization
- Faulting & seismicity
- Legacy wells
- Drilling & testing



Core Analysis; Geochemical Alteration Impact on Trapping and Flow (NETL-RIC)

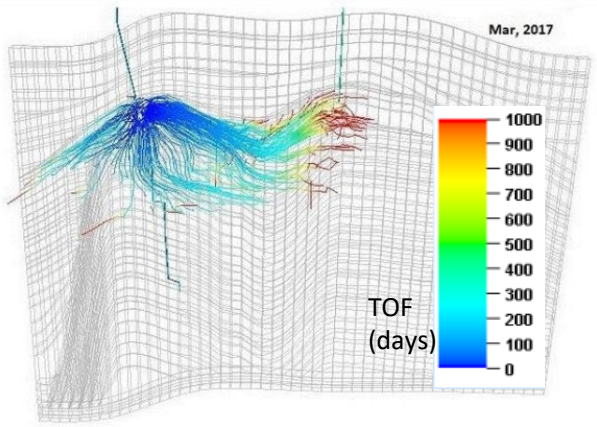


RCSP; 3D Seismic Structural Surfaces

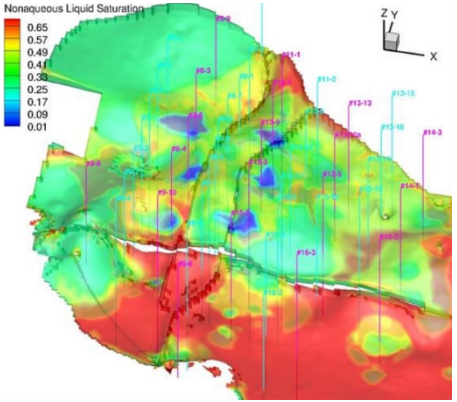
Modeling and Simulation: Prediction of the CO_2 Plume Migration

- Development and validation of models to predict plume and pressure front movement and the geochemical and geomechanical impacts
  - Model Upscaling
  - Thermal, hydraulic, mechanical, chemical, biological numeric models
  - Multiscale, Multiphase Flow
  - Reduced Order Models

- Machine learning methods to predict plume movement (e.g., SMART initiative)



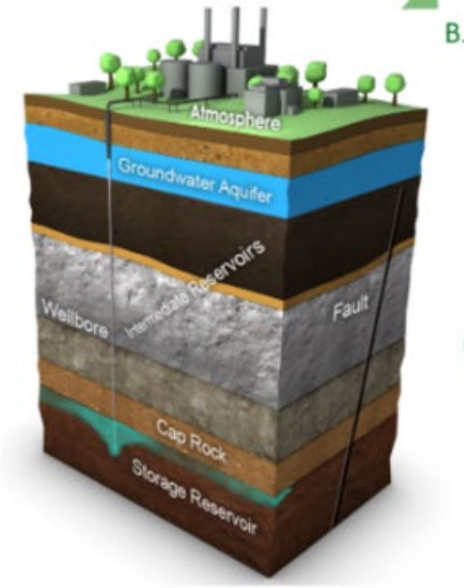
Simulating Streamline time of flight from injector; MRCSP



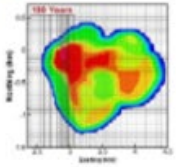
Coupling of geophysics, modeling, and tracers; Southwest Regional Partnership

A risk assessment is required for project funding

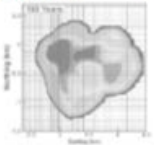
A. Divide system into discrete components



B. Develop detailed component models that are validated against lab/field data

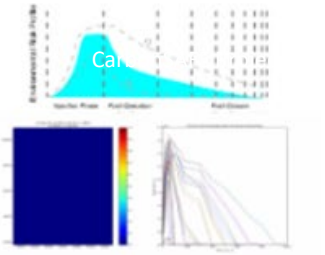


C. Develop reduced-order models (ROMs) that rapidly reproduce component model predictions



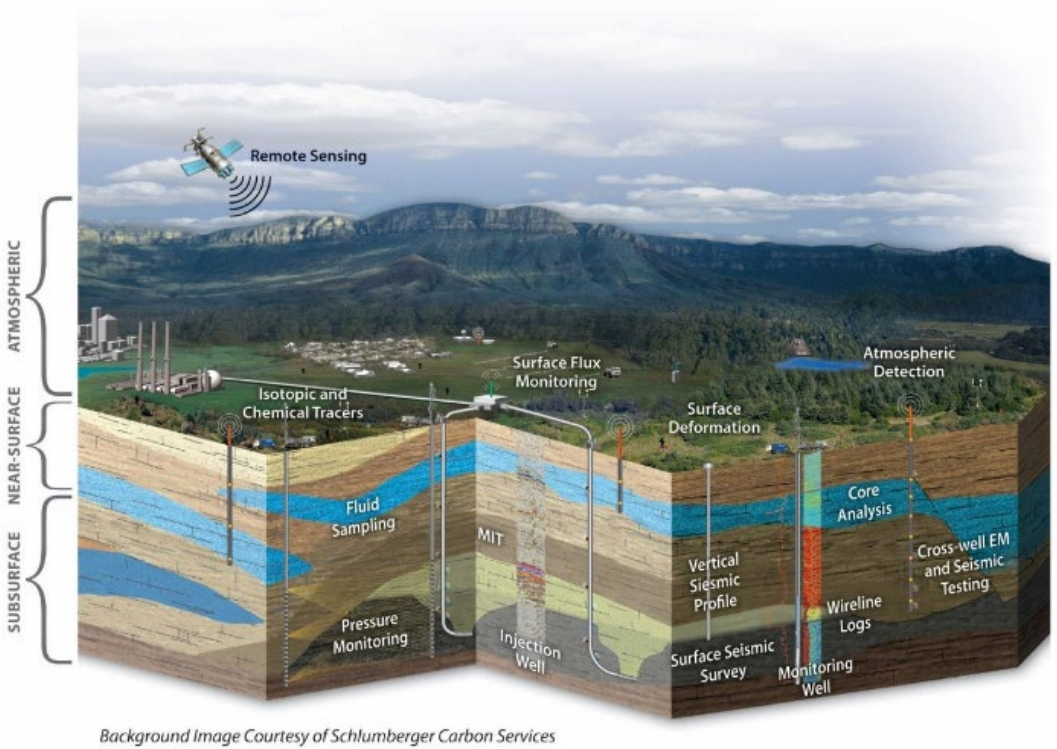
D. Link ROMs via integrated assessment models (IAMs) to predict system performance

Integrated Risk Assessment



E. Exercise whole system model to explore risk performance

Monitoring, Verification and Accounting



Background Image Courtesy of Schlumberger Carbon Services

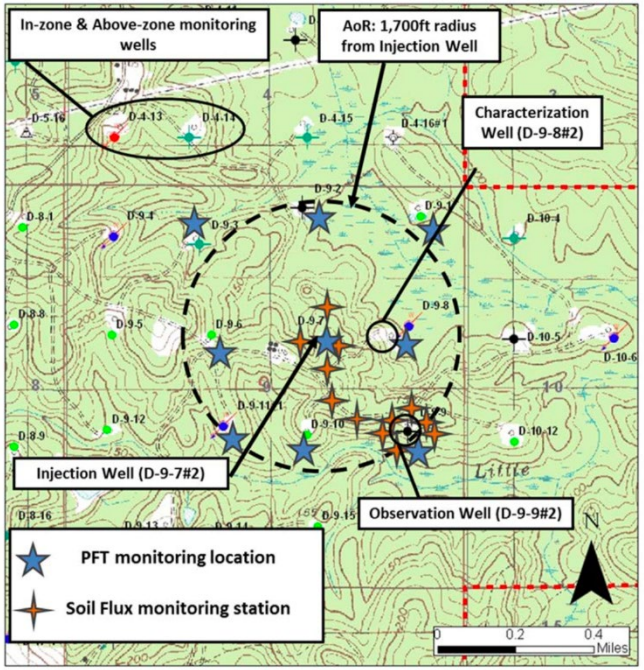
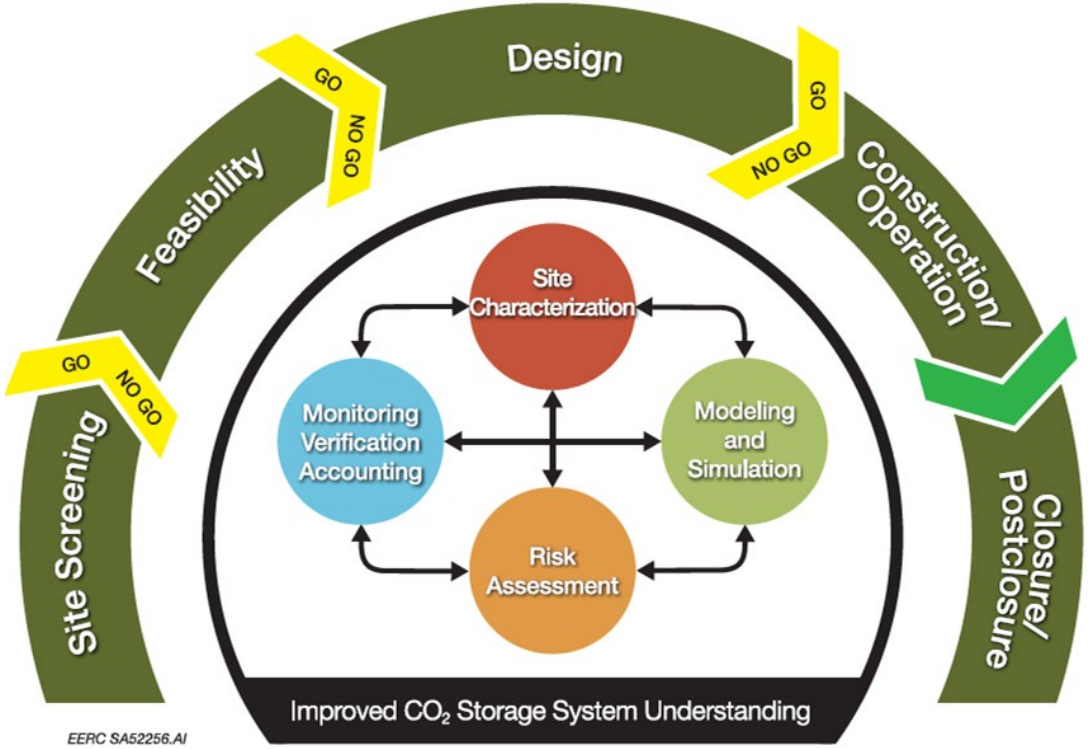


Figure 3-1: Area of Review for the SECARB Citronelle Project Site. Figure shows the location of the injection well, observation wells, and all monitoring locations.

DOE funded storage projects have technical go/no-go stages



For example, after site screening, primary factors that may lead to go/no-go decisions include:

- The site can be permitted under all relevant Federal, state, and local regulations
- Requirements can be met for project sites that are proximal to, or contain, protected and sensitive areas such as cultural resources, wetlands, etc.
- Mechanisms for obtaining access from surface and subsurface owners for storage, surface facilities, and pipelines can be established
- Risk assessment (including a wide variety of factors such as financial, public acceptance, political, technical, various types of liability, uncertainties, etc.), management, and mitigation options are acceptable to the project development team
- Ability to conduct expected or required monitoring is assured
- Costs including all of the above elements are within project budget

DOE Energy Justice Framework

Justice40 and CCS

Shalanda Baker
Director Office of Economic Impact and Diversity
August 11, 2022

U.S. DEPARTMENT OF ENERGY

OFFICE OF ECONOMIC IMPACT AND DIVERSITY

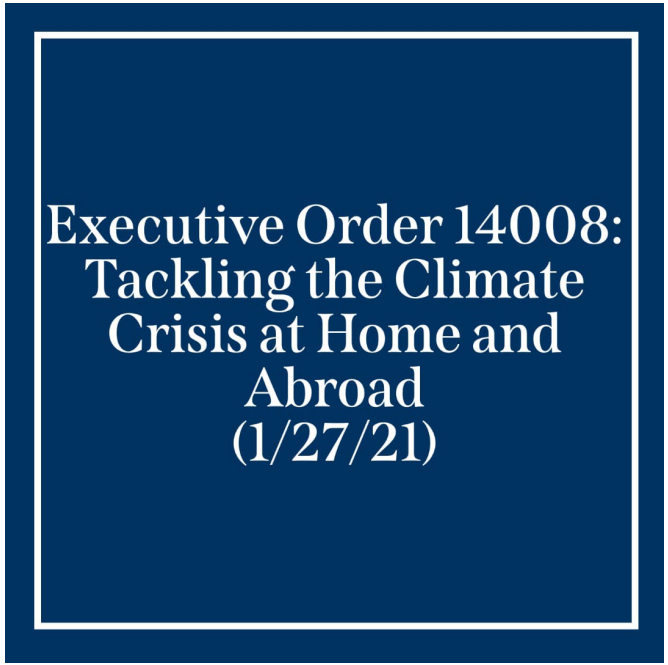
WHEJAC recommendations – May 2021

"To maximize investment benefits delivered to EJ communities, federal agencies must provide clear EJ criteria and guidance for grant applicants and centralized oversight. ….

Federal agencies must also make EJ and stakeholder engagement a requirement to receive program grants and other financial support.

All Agencies … should score projects based on their ability to meet these and other EJ criteria."

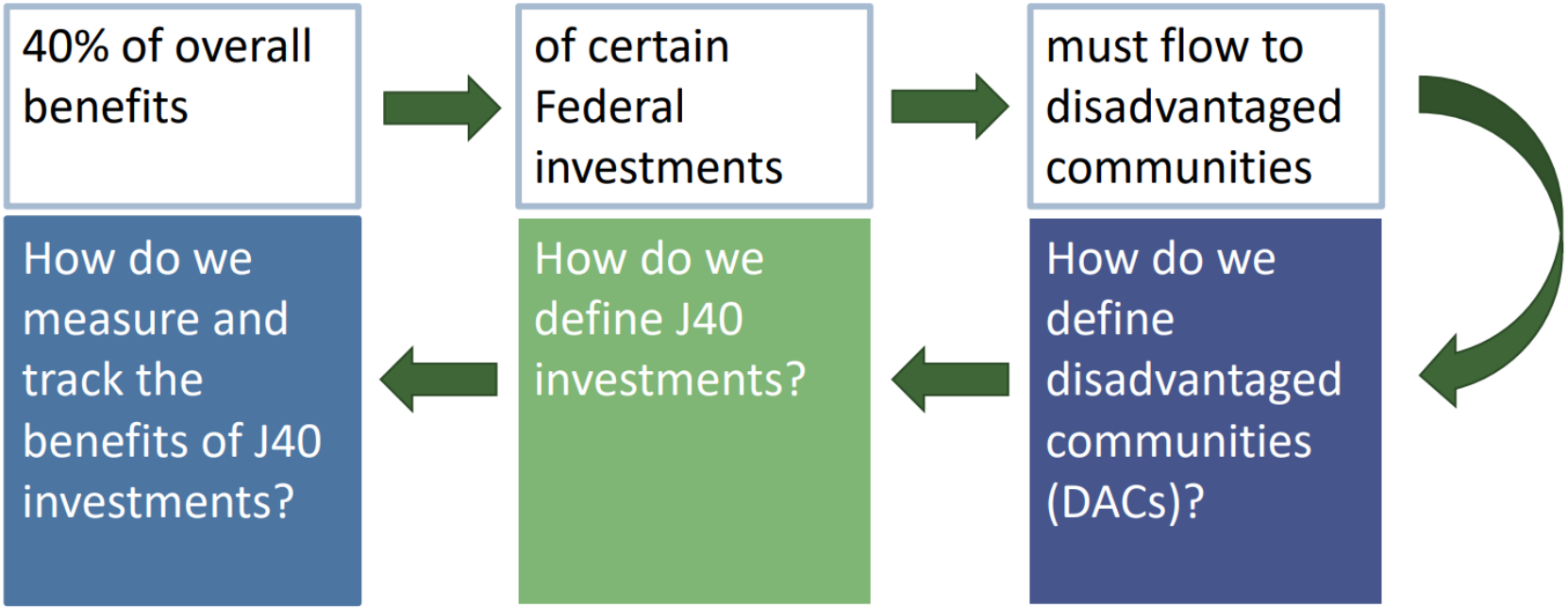
What is Justice40? E.O. 14008, s. 223



"How certain Federal investments might be made **toward a goal that 40 percent of the overall benefits** flow to disadvantaged communities."

Source: https://www.federalregister.gov/documents/2021/02/01/2021-02177/tackling-the-climate-crisis-at-home-and-abroad

Justice40 Initiative



DOE Working Disadvantaged Community Definition

Cumulative Burden. Census tract must have at least 30% low-income households and rank in the 80th percentile of cumulative sum of 36 indicators, where each input is equally weighted. Rankings are state-relative.

ENERGY BURDEN (5)

Transportation Burden
Energy Burden
Non-grid connected home heating fuel
Power outages
Duration of outages

FOSSIL DEPENDENCE (2)

IWG coal jobs ratio
IWG fossil energy jobs ratio

VULNERABLE POPULATIONS (19)

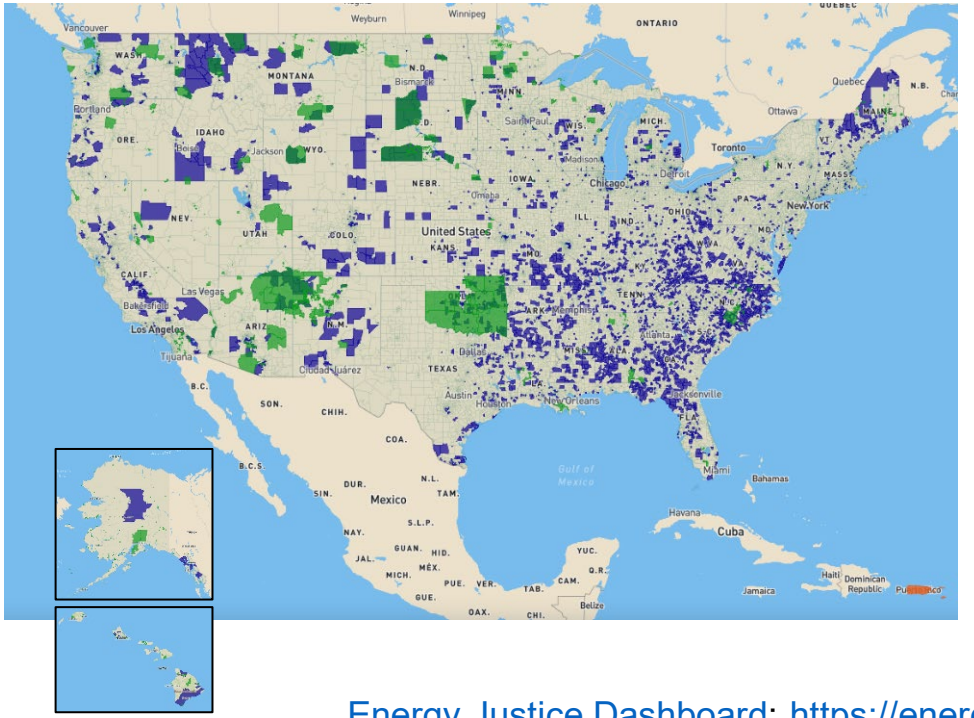
Housing burden
Food desert
Job access (-)
Park access (-)
Commutes > 30 mins*
No vehicle*
Unemployed
Low Income*
No GED*
Linguistic Isolation*
Renters*
No internet
Uninsured
Disability
Incomplete plumbing
Single parents
Mobile homes
Unhoused
Age over 65*

ENVIRONMENTAL/ CLIMATE HAZARDS (10)

Lead paint
Diesel particulates
Cancer
Traffic volume
Water discharge
NPL sites
RMP facilities
TSD facilities
FEMA climate risk
PM 2.5

* Denotes that these variables are not inherently negative, but increase the vulnerability of the population to climate, environmental, and energy hazards

Distribution of DACs



Qualifying census tracts: 13,581 (18.6%)

Additional native lands:

703 native populations in 858 locations

US territories: Virgin Islands, Northern Marianas, Guam, American Samoa, Puerto

Energy Justice Dashboard: https://energyjustice.egs.anl.gov/

Criteria for J40 “Covered” Program

Federal Investments

✓Federal **grants and procurements** (including discretionary budget authority, direct/mandatory, and formula funding)

✓**Financing** (including credit, loans, and guarantees)

✓Programmatic Federal **staffing** costs (e.g. federal pay for staff that provide technical assistance)

✓**Direct** financial benefits (including provision of goods and services); and

✓Additional federal investments under covered programs as **determined by OMB.**

A Federal Government program that makes **investments** in one or more of the following seven areas:

✓Climate change
✓Clean energy and energy efficiency
✓Clean transportation
✓Affordable and sustainable housing
✓Training and workforce development
✓Remediation and reduction of legacy pollution
✓Critical clean water and waste infrastructure

J40 (July 2022) Across Gov

Justice40 Initiative | The White House

Agency	Abb.	J40 Covered Programs
Department of Energy (DOE)	**DOE**	**145**
Department of Agriculture	USDA	65
Health and Human Services	HHS	13
Homeland Security	DHS	4
Department of Housing and Urban Development	HUD	24
Department of Interior	DOI	65
Department of Veteran's Affairs	VA	1
Environmental Protection Agency	EPA	73

DOE leading in J40 Programs with a commitment to delivering benefits in:

- ✓Climate change
- ✓Clean energy and energy efficiency
- ✓Clean transportation
- ✓Affordable and sustainable housing
- ✓Training and workforce development
- ✓Remediation and reduction of legacy pollution
- ✓Critical clean water and waste infrastructure

Justice40-Covered-Programs-List_v1.1_07-15-2022.pdf (whitehouse.gov)
expect this list to evolve over time as new Federal programs are created or existing programs sunset

Defining Benefits: Justice40 Policy Priorities

1. **Decrease** energy burden in disadvantaged communities (DACs).
2. **Decrease** environmental exposure and burdens for DACs
3. **Increase** parity in clean energy technology (e.g., solar, storage) access and adoption in DACs.
4. **Increase** access to low-cost capital in DACs.
5. **Increase** clean energy enterprise creation and contracting (MBE/DBE) in DACs.
6. **Increase** clean energy jobs, job pipeline, and job training for individuals from DACs.
7. **Increase** energy resiliency in DACs.
8. **Increase** energy democracy in DACs.

Measuring and Tracking Benefits

Under J40, DOE Program Offices will establish metrics, measure, and report on the applicable benefits (or potential harms) that their respective programs can have in a community related to these priorities.

POLICY PRIORITY	EXAMPLE BENEFIT	EXAMPLE METRIC
Decrease energy burden	Reduction in energy costs due to technology adoption	Annual energy expenditures in DACs before and after program intervention
Decrease environmental exposure and burdens	Reduction in local pollutant emissions	Measurement of local pollutant in DACs before and after program intervention
Increase clean energy access	Increase access to clean energy serving DACs	Percentage of local electricity generation mix from clean energy that serves DACs

Feedback DOE has Received - Impact

General

- Additional research is needed to understand potential impacts
- Impacts must be assessed for the entire lifecycle & specifically for disadvantaged communities
- Need remediation of prior and ongoing harms
- Permitting system at state level is insufficient for protection
- Consider risk to infrastructure due to extreme weather or age

Potential Negative Impacts Raised by Respondents

- Health and safety concerns related to CO_2 & other process materials
- Fossil fuel entrenchment
- Land, water, energy use impacts
- Risk to taxpayer/high cost

Potential Benefits Raised by Respondents

- Job creation & economic benefits, especially for fossil energy communities
- Decentralized economic opportunities
- Reduction in air pollution
- Remediation of pollution
- Utilization of waste streams

Feedback DOE has Received - Impact

Suggestions to DOE to maximize benefits and minimize negative impacts

- Require detailed evaluation of cumulative benefits and negative impacts in funding applications
- Provide clear guidance and tools related to equity and justice
- Establish monitoring, permitting, and remediation requirements
- Support research into potential impacts
- Prioritize renewables & deep decarbonization
- Consider whole system in GHG accounting, including loss of storage from wetland loss
- Account for full costs, including impacts on health and environment and tax credits.
- Account for cumulative harm before allowing a project
- Disallow projects based on local considerations, i.e., zoning, resilience, compliance, conflict of interest, company past performance, history of racist policies

Feedback DOE has Received - Engagement

General

- Prioritize engagement with fenceline/frontline communities, disadvantaged communities, tribes/ANCs and labor throughout all stages of the project
- EJ communities consistently ask for early engagement in project decisions
- Provide remuneration for engagement
- Trusted intermediaries/partners are critical
- Both DOE and project performers should engage

Suggestions to DOE to support effective engagement

- Require detailed engagement plans in funding applications
- Allow engagement activities as an eligible use of funds
- Create community engagement advisory committees/project oversight boards

Necessary components of community engagement

- Impact on decision-making
- Early and frequent
- Transparent, inclusive, and accessible
- Understand the community
- Project impacts match community priorities

EJ Explainer

THE TRANSFORMATIVE POTENTIAL OF THE JUSTICE40 INITIATIVE

The Justice40 Initiative provides an opportunity for communities with environmental justice concerns to reap long-overdue development benefits; participate in the decision-making processes that directly impact them; and participate in the clean energy economy through workforce development programs and contracting opportunities. The agency is committed to working closely with DOE stakeholders to realize the transformative potential of Justice40.

To ensure an **equitable** transition to clean energy, and to avoid further harm to communities with environmental justice concerns, DOE is laser-focused on ensuring that every project that receives funding through a DOE Justice40 Covered Program adheres to the principles of **environmental justice**.

“Justice will serve as our North Star”

I am honored to lead this Department through a historic re-investment in our country’s energy infrastructure. Justice will serve as our North Star as we fight climate change and bring economic prosperity to our great Nation. I hope you will join us in our efforts to ensure that the benefits of BIL, DOE climate and clean energy programs, and other Federal efforts build a better future for *all* Americans.

Sincerely,

Jennifer M. Granholm

J40 Covered Programs Public Webinar

- Wednesday, August 17, 2022
  2:00–3:30pm (EST)
- Agenda
  - **Welcome**
    - Secretary Granholm Remarks
    - Director Baker Remarks
  - **J40 Overview**
    - Deputy Director Reames
  - **J40 & BIL**
    - S3 Rep Remarks
  - **Highlight J40 Programs**
    - Weatherization Assistance Project
    - Clean Cities
    - National Communities Solar Project
    - Geothermal Communities
    - Office of Science RENEW
  - **Moderated Q & A**

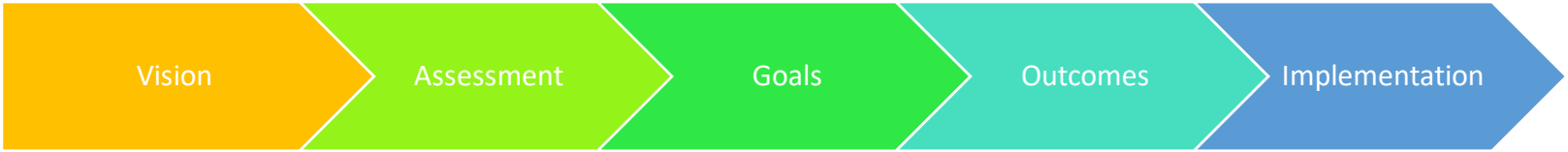
USE QR CODE TO REGISTER:

Summary of new requirements

Included in: DE-FOA-0002610: Carbon Storage Assurance Facility Enterprise (CarbonSAFE) Phase II - Storage Complex Feasibility and DE-FOA-0002614: Carbon Management

- **Societal Considerations and Impacts Plans**
  - Requirements for applicants and awardees
- **Merit review criteria**
  - Outlines how these plans will be scored in the selection process
- **Guidance documents**
  - Provides guidance and resources to applicants on these topics

Moving towards implementation



Vision: We affirm we care about justice / engagement / DEIA

Assessment: We mapped or assessed underserved communities / stakeholders / DEIA

Goals: From our assessment, we know X is lacking, so we want to improve in X

Outcomes: We know we have succeeded when Y (specific target) is reached

Implementation: To achieve Y, [specific actor] has to do Z [in specific timeframe]

Many of our teams risk getting stuck here because the analysis / mapping tasks fit with their existing toolkits and expertise

Our guidance and FOA structure helps build capacity to work on these parts

Required Justice40, Community and Stakeholder Engagement, and DEIA Plans

Justice 40:

- Requires reporting on quantifiable metrics of where benefits and negative impacts flow, including **assessment of disadvantaged communities and cumulative burden**
- Requires **a plan for addressing impacts and delivering benefits**

Community and Stakeholder Engagement:

- Requires **concrete methods and timeline for engagement** activities, as well as statements on how the applicants will address principles of consent-based siting and community benefit agreements

DEIA:

- Requires **targeted DEIA outcomes and implementation strategies**, including milestones and schedule, and resources that will be provided to meet the milestones

When do these requirements intervene in projects?

At Application

- Meet requirements
- Score well at merit review – **These plans are scored** according to criteria like quality (thoroughness, measurable outcomes), integration into the project (not being siloed), and ability to influence the direction of the project

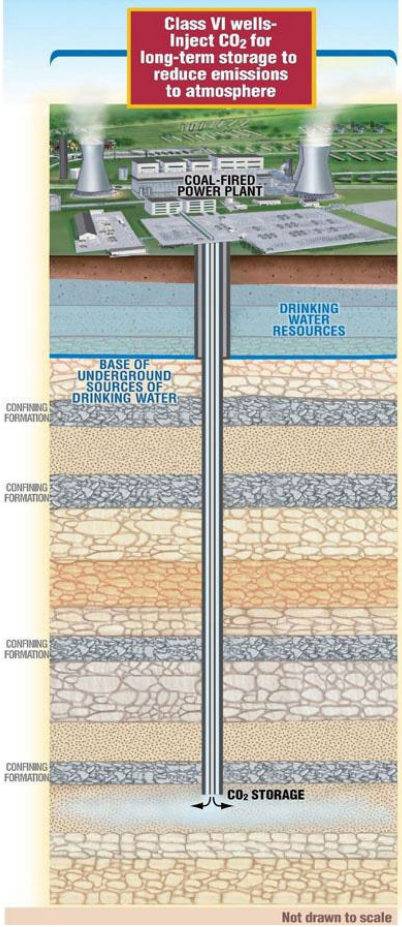
During award

- Refine plan within 90 days of award with DOE collaboration
- Conduct plan work
- One SMART milestone a year in Project Management Plan (plus individual Plan milestones)
- Public presentation on SCI work (SCI Peer Review)

At project conclusion

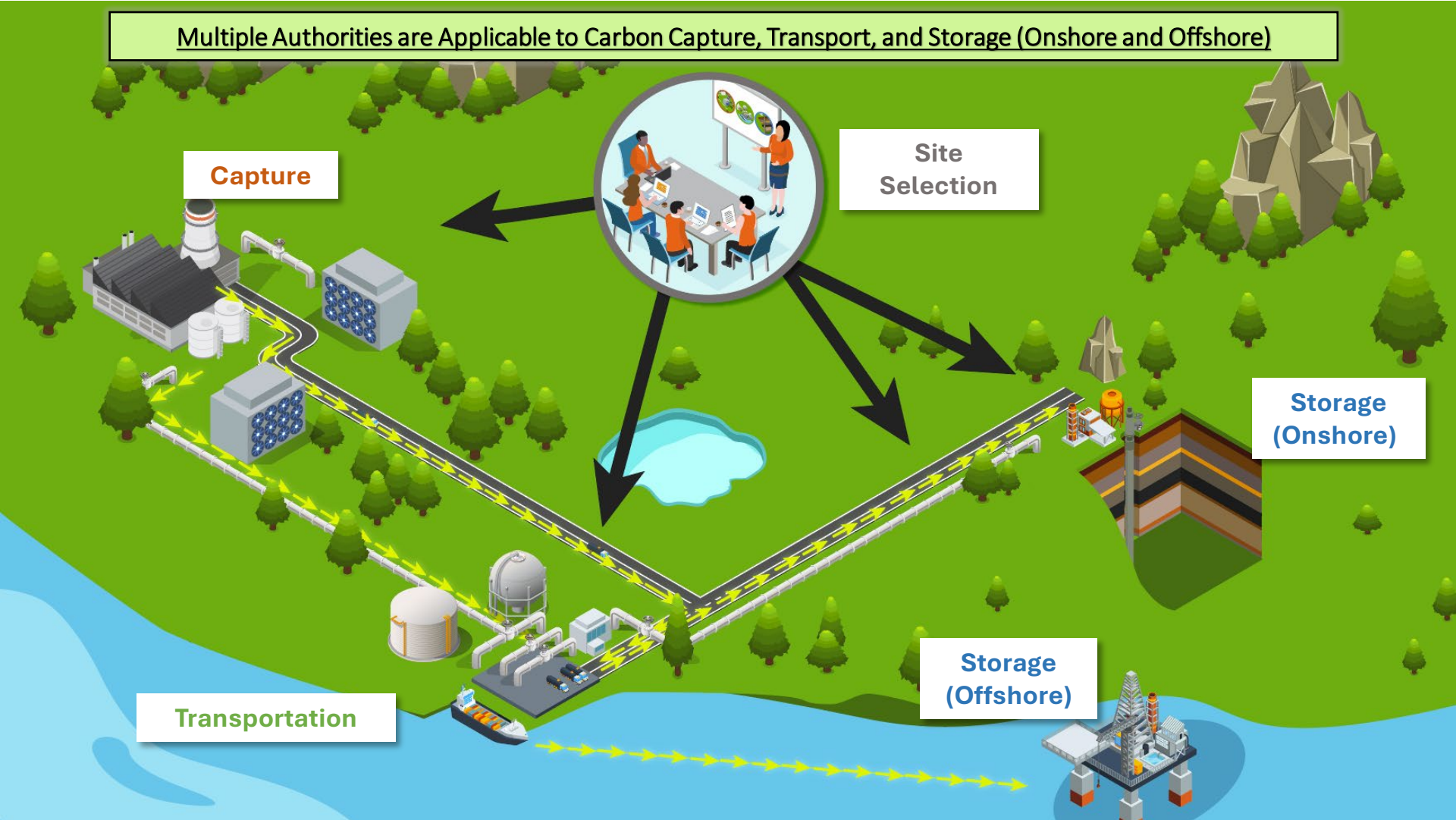
Final public report to include Plan, accomplishments and reporting

Overview of EPA's Class VI UIC Program

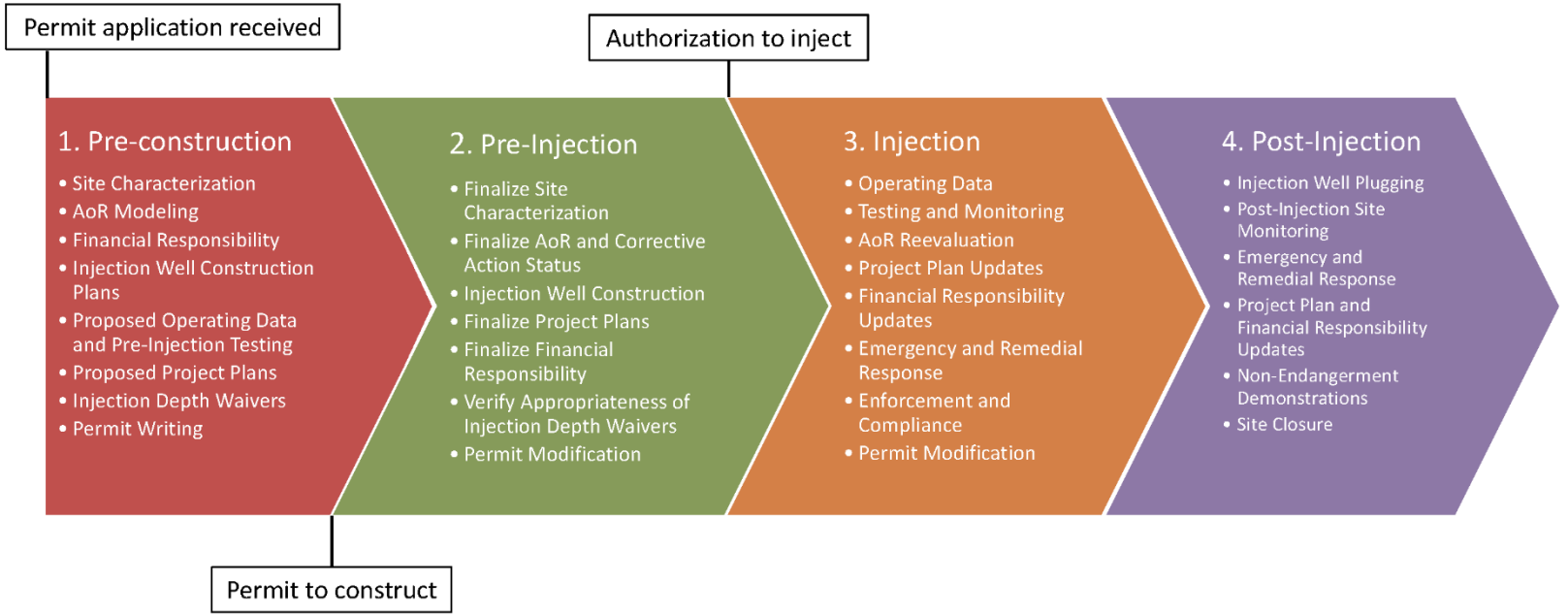


UIC Class VI Permitting Process

Multiple Authorities are Applicable to Carbon Capture, Transport, and Storage (Onshore and Offshore)



Class VI Permitting Timeline



UIC Class VI Primacy Process

Primacy Process Overview

- Meetings, discussions and coordination with State
- Identify the elements of the UIC Program that need to be developed or revised
- Develop draft rules, public participation and application by State
- Submit draft materials to EPA for review and comment
- Review of documents and clarification of outstanding questions or issues (collaborative)
- Finalize and submit revised documents by State

Primacy Process Overview

- Region conducts final review of state submission
- Regional Administrator signs MOA and transmits the package to EPA Headquarters recommending approval
- Comprehensive/detailed review of Program Revision application by EPA
- Documentation of final determination of completeness and application evaluation by EPA

Primacy Process Overview

- Joint publication of a Notice of Receipt of Program Revision/Notice of Completeness and Proposed Rule (in the *Federal Register* and local newspapers) by EPA with a 45-day comment period
- Docket creation for receipt of public comments by EPA
- Development of Responses to Comments by EPA
- Publication of Final Rule in *Federal Register* by EPA
- Posting (by EPA) of the Final Program Revision Application (i.e., all documents submitted) and Response to Comments/Responsiveness Summary to the docket
- Codification at 40 CFR 147 by EPA

Class VI Permitting and Primacy Landscape

Class VI Permit Applications under Review at EPA

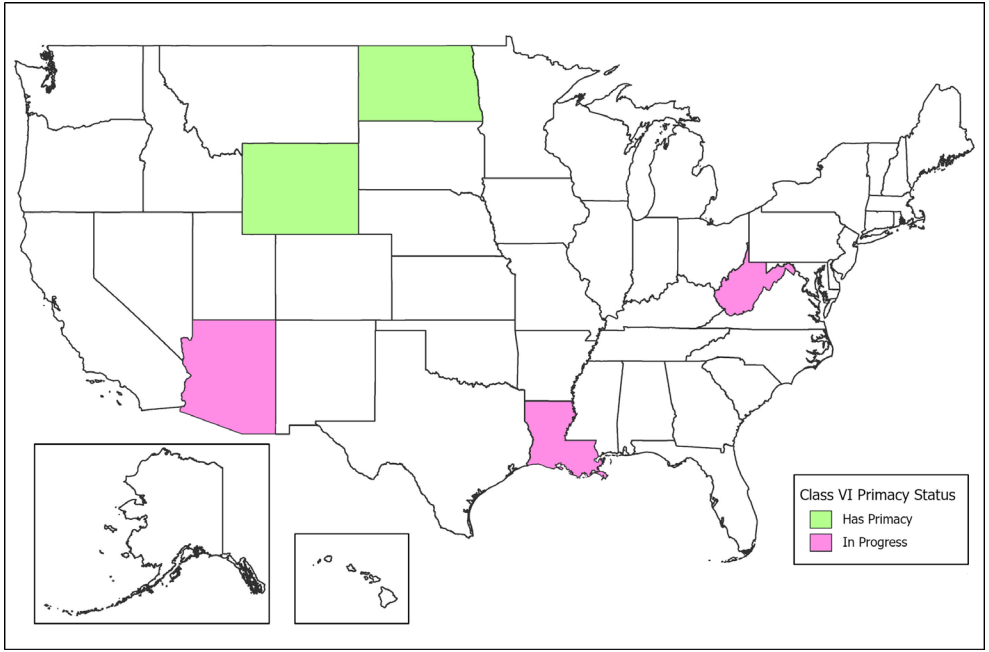
- Table shows administratively complete permit applications.*
- For additional information: https://www.epa.gov/uic/class-vi-wells-permitted-epa.

*Note: Each well will have a separate permit.

Region	State	Applicant	Number of Wells
5	Illinois	Archer Daniels Midland	1
		Marquis Carbon Injection, LLC	1
	Indiana	Wabash Carbon Services, LLC	2
	Ohio	Lorain Carbon Zero Solutions, LLC	1
6	Louisiana	Oxy Low Carbon Ventures, LLC	2
		Gulf Coast Sequestration	4
		Hackberry Carbon Sequestration, LLC	1
		CapturePoint Solutions, LLC	6
	Texas	Oxy Low Carbon Ventures, LLC	1
9	California	Carbon TerraVault 1, LLC	2
		Carbon TerraVault 1, LLC	4
		San Joaquin Renewables LLC	1
Total			26

Class VI Primacy Landscape

- Two states have Class VI Primacy (ND and WY)
- Four states are in the process of applying for Class VI State Primacy (AZ, LA, WV, TX)
- EPA expects to receive two to three Class VI primacy applications within the next year



EPA UIC Class VI Program Priority Activities

- Continue to review permit and primacy applications submitted to EPA
- Develop and implement ways to improve Environmental Justice considerations in EPA reviews of permit applications
- Develop and implement ways to improve Environmental Justice considerations in EPA reviews of state primacy applications
- Continue to develop and issue robust EPA guidance, tools, and training for states and applicants
- Implement the Bipartisan Infrastructure Law (BIL) UIC Primacy Grant currently under development

Community Concerns

Community Concerns – What We Heard From You

- Whole Lifecycle of Projects: How will land, air and water health and safety concerns be addressed by EPA and DOE?
- Siting: How do EPA/DOE consider location of the projects in the review of applications? What evaluation of an area is conducted?
- J40 & Federal Mandates: How do federal level mandates such as Justice40, the Executive Orders, and other federal tools for environmental justice apply to CCS?

Stakeholder Conversation

- Are these the top three areas of concern?
- What else should we consider?

Next Steps

- Presentation and Meeting Summary will be made available
- Information will be provided on additional engagement opportunities

EPA United States Environmental Protection Agency

U.S. DEPARTMENT OF ENERGY