



U.S. DEPARTMENT OF
ENERGY

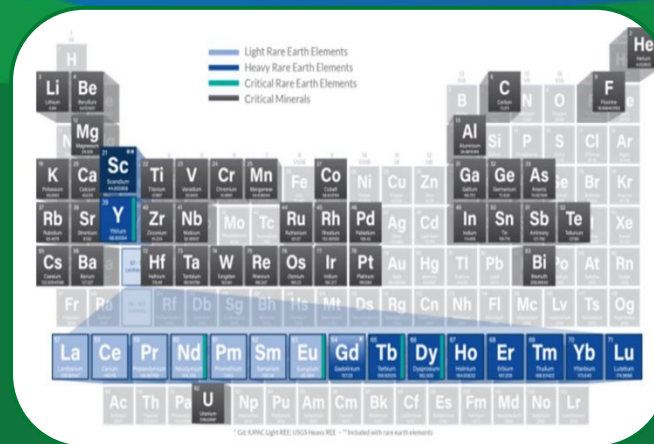
Fossil Energy and
Carbon Management

Carbon Management: Applicant Education Workshop

Dr. Jennifer Wilcox

PRINCIPAL DEPUTY ASSISTANT SECRETARY
FOSSIL ENERGY AND CARBON MANAGEMENT

April 7, 2022



Fossil Energy and Carbon Management (FECM)

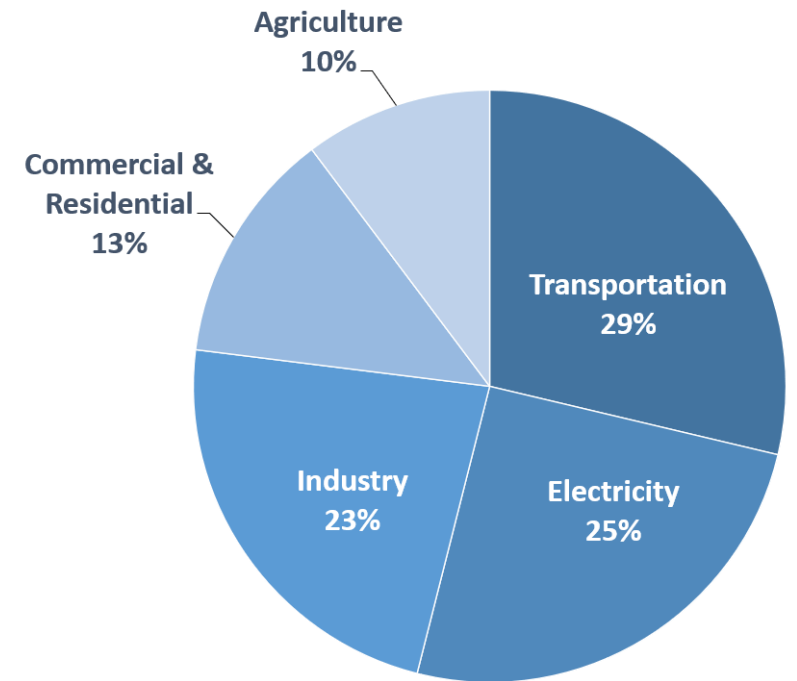
Office of Fossil Energy and Carbon Management

DOE-FE is now DOE-FECM

New name for our office reflects our new vision

- President Biden's goals:
 - 50% emissions reduction by 2030
 - CO₂ emissions-free power sector by 2035
 - Net zero emissions economy by no later than 2050

Total U.S. Greenhouse Gas Emissions
by Economic Sector in 2019



U.S. Environmental Protection Agency (2021). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2019



FECM Mission: Deep Decarbonization and Environmental Justice

Minimize environmental and climate impacts of fossil fuels from extraction to use

Priority Technology Areas

1. Point source carbon capture
2. Carbon dioxide (CO₂) removal
3. CO₂ conversion into products
4. Reliable CO₂ storage
5. Hydrogen production

6. Critical mineral production from industrial and mining waste
7. Methane mitigation

Office of Carbon Management
(FECM-20)

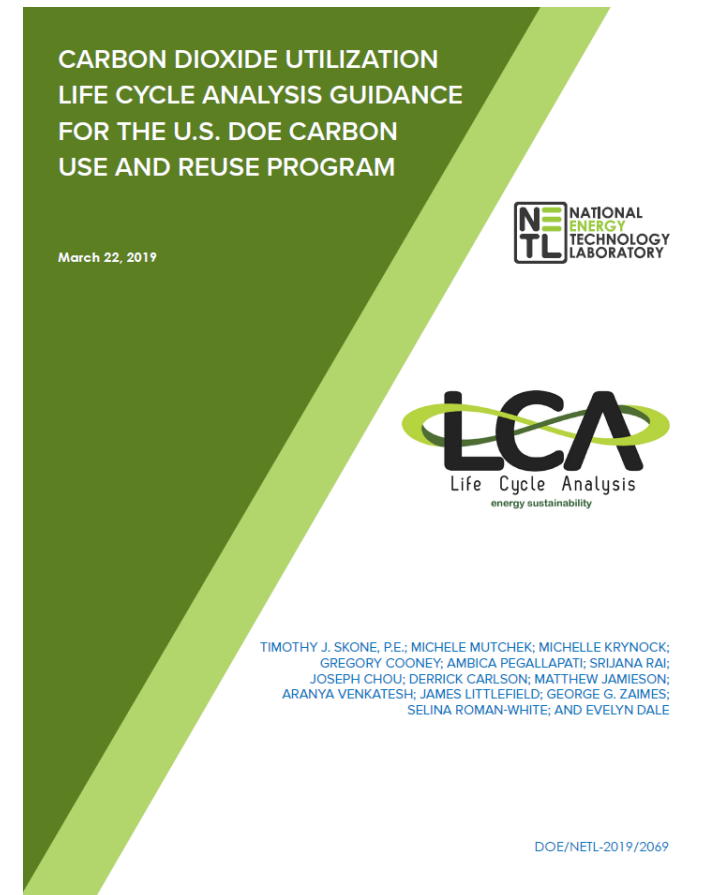
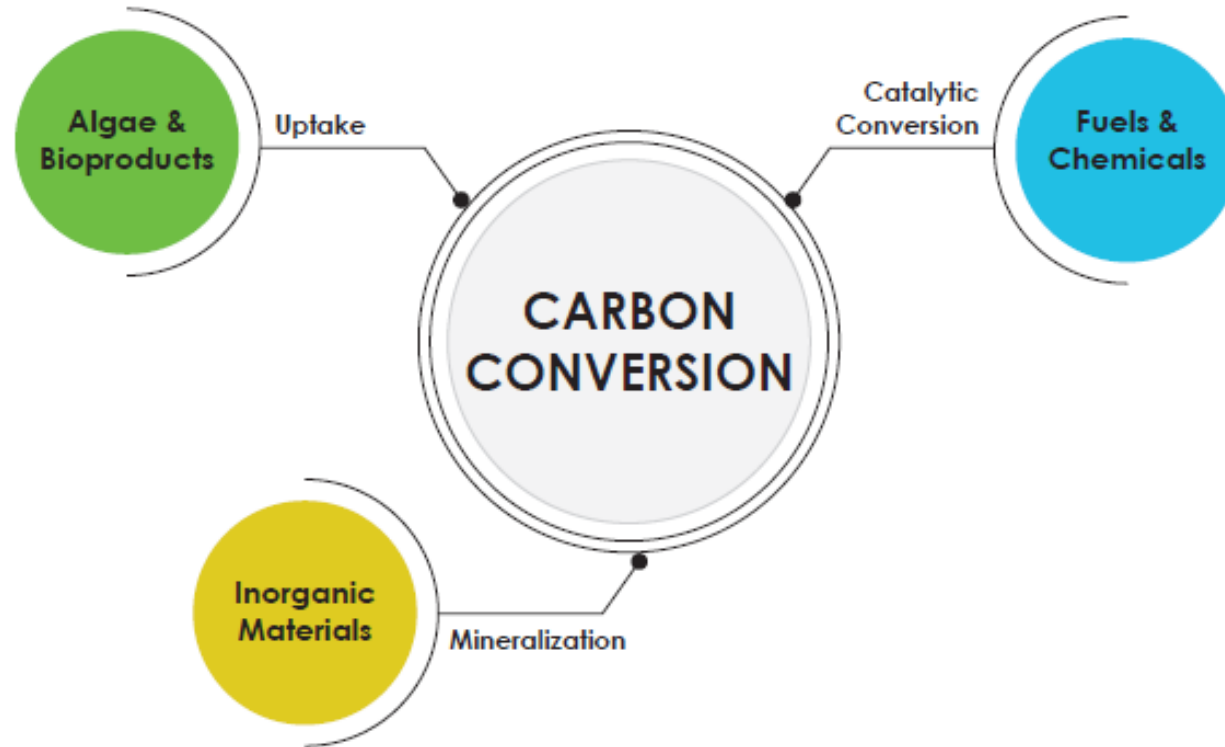
Office of Resource Sustainability
(FECM-30)

Supporting Legacy Communities (Justice)

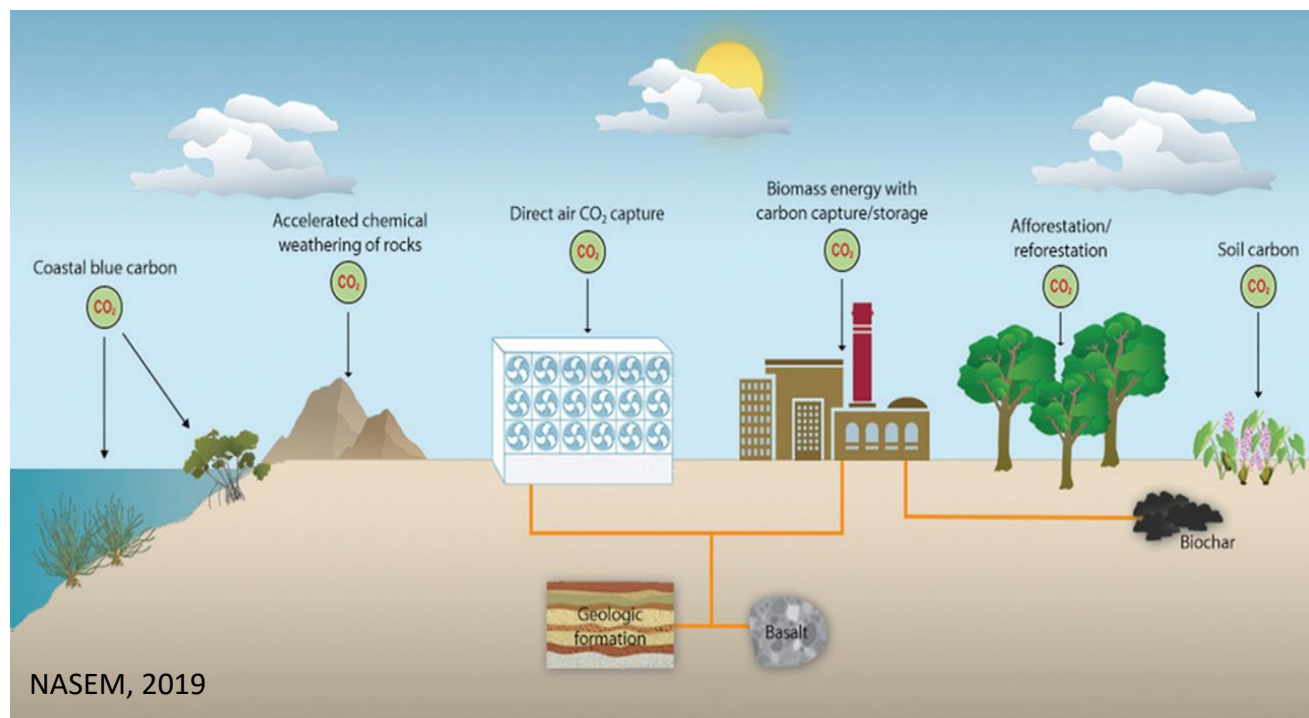
- Good-paying jobs
- Job growth acceleration
- Healthy economic transitions
- Improve community conditions

Address hardest-to-decarbonize applications in the electricity and industrial sectors

Advancing Carbon Management Approaches Toward Deep Decarbonization: Carbon Dioxide Conversion



Advancing Carbon Management Approaches Toward Deep Decarbonization: Carbon Dioxide Removal (CDR)



CDR Areas of Interest in FECM

- Direct Air Capture (DAC)
- Biomass with Carbon Removal and Storage
- Direct Ocean Capture (DOC)
- Accelerated Weathering and Mineralization
- Rigorous LCA and TEA (net-removed costs)
- Low-carbon energy, land, and water resources required
- Leveraging transport and storage infrastructure
- Justice and work force considerations



Carbon
Negative

*Durable and scalable carbon dioxide removal
under \$100/net metric ton within a decade*

Bipartisan Infrastructure Law

FECM - **\$6.5 billion** in new carbon management funding over 5 years through the Infrastructure Investment and Jobs Act (Bipartisan Infrastructure Law).

Carbon Dioxide Removal - Direct Air Capture

Regional Direct Air Capture Hubs: \$3.5 billion
DAC Technology Prize Competition: \$115 million

Carbon Dioxide Utilization and Storage

Carbon Storage Validation and Testing: \$2.5 billion
Carbon Utilization Program: \$310 million

Front-End Engineering Design Studies

Carbon Capture Technology Program: \$100 million

Critical Minerals and Materials

Rare Earth Element Demonstration: \$140 million
Rare Earth Mineral Security: \$127 million

Office of Clean Energy Demonstrations (OCED)

OCED established December 2021

Principal Deputy Director, Kelly Cummins

- Builds on existing DOE investments in clean energy research and development
- Increases DOE's partnership with industry leaders

OCED Projects Areas:

- Clean hydrogen
- Carbon capture
- Grid-scale energy storage
- Small modular reactors and more

FECM-OCED Project Coordination

Hydrogen Hubs

- \$8 billion (for at least four projects, including at least one using fossil fuels with carbon management)

Carbon Capture Demonstrations and Large Pilots

- \$3.5 billion

Carbon Dioxide Transportation Infrastructure Finance and Innovation Program Account

- Loan Programs Office: \$2.1 billion

- **FECM is in its best position ever can help meet the climate challenge. This is an opportunity for DOE and other Federal Agencies to work as a team to lead the energy transition.**

Please join us at the following in-person meetings in the coming weeks:

- April 13th – Columbus, Ohio
- April 19th – New Orleans
- April 26th – Salt Lake City





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Fossil Energy and
Carbon Management

Questions?



Legend:

- Light Rare Earth Elements
- Heavy Rare Earth Elements
- Critical Rare Earth Elements
- Critical Minerals

H																	He	
Li	Be											B	C	N	O	F	Ne	
Mg											Al	Si	P	S	Cl	Ar		
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	
Fr	Ra	Ac	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Nh	Fl	Mc	Lv	Ts	Og	
		La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu		
		Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr		

* Ga, K, Mn, Li, REE, U, O, H, He, REE. ** Included with rare earth elements.

