Carbon Management Legislation and Opportunities

Resource Development Council

Presented by John Boyle, Commissioner-designee
Alaska Department of Natural Resources
March 16, 2023

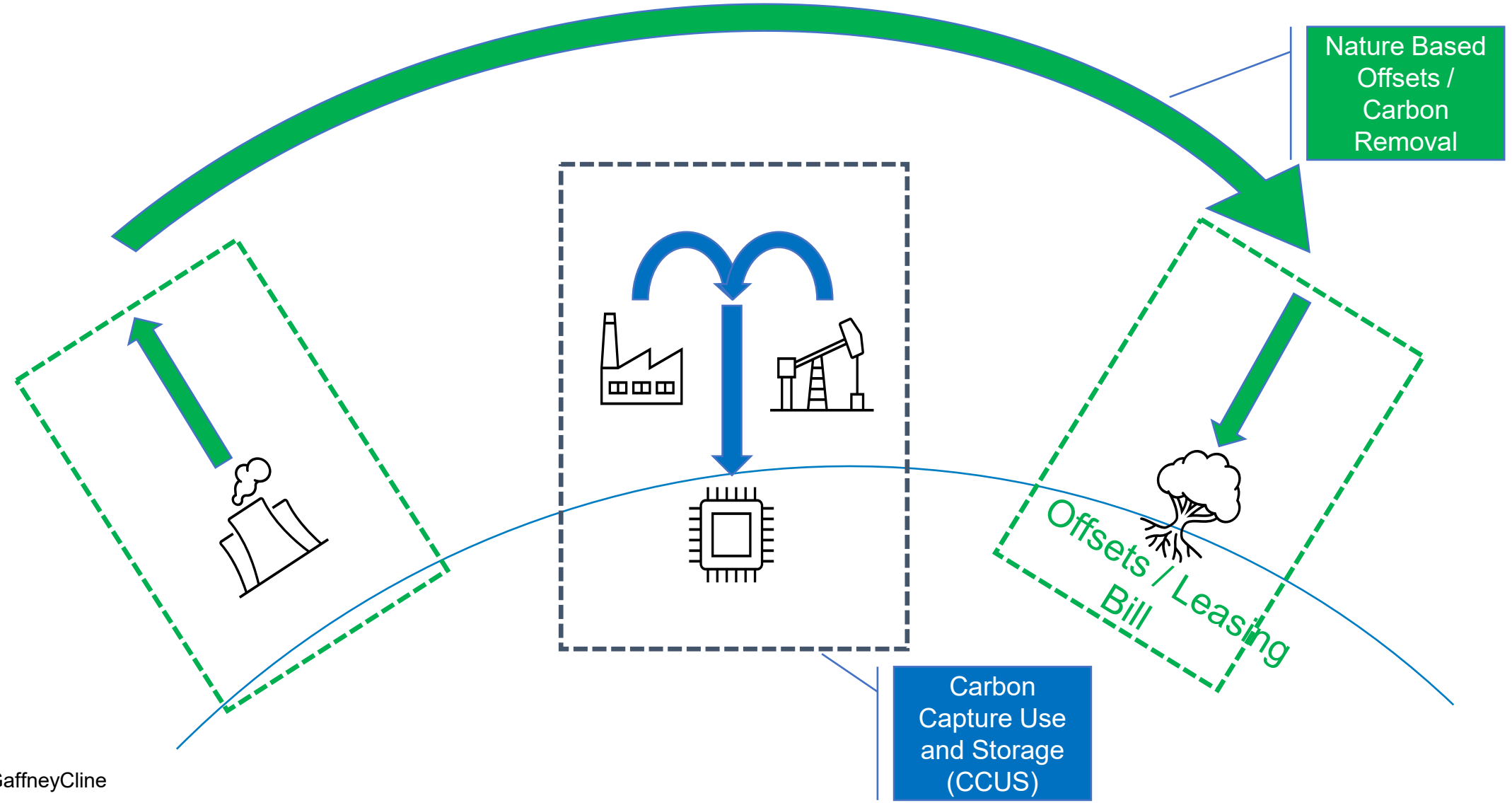



Outline

- **What is Carbon Management?**
- **What Carbon Management isn’t**
- **Carbon Offsets**
- **Carbon Capture, Utilization, and Storage**
- **Why is Carbon Management good for Alaska?**

What is Carbon Management?

Carbon Management - simplified



Source: GaffneyCline

Carbon Management – not so simple!

Source: GaffneyCline

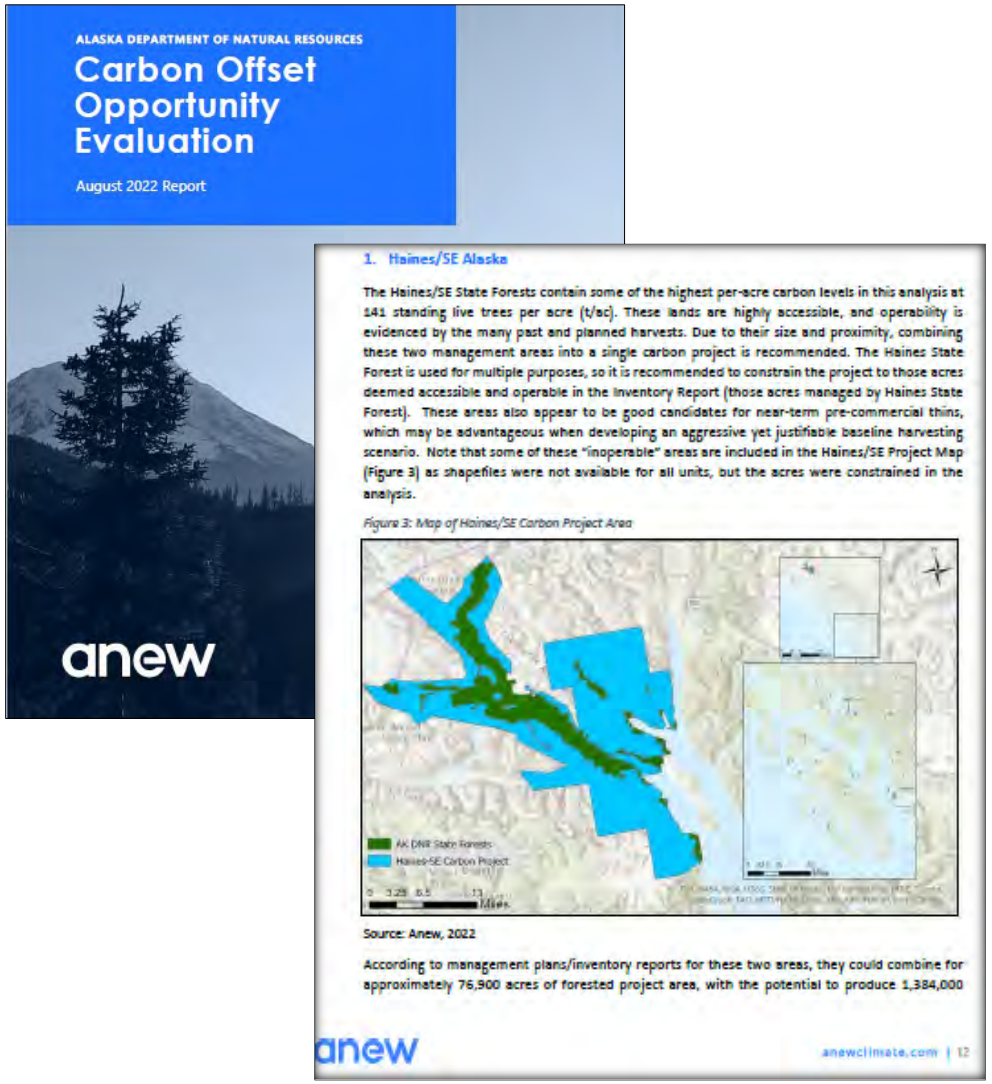
What Governor Dunleavy's Carbon Management legislation is not

- **New taxes on industry or Alaskans**
- **Emissions limits**
- **A "cap and trade" system**
- **Locking up land**

Carbon Offset Program (SB 48 / HB 49)

Opportunity for Alaska

- Alaska has the resources
  - Forest carbon potential:
    - 100 million acres of uplands
    - Tens of millions of acres of forested State lands
  - Kelp potential:
    - 60 million acres of tide and submerged lands
- Potential affirmed
- Benefits for revenue, diversification, economic development
- Constitutional responsibility for maximum use



State-owned forest land

Carbon markets - growth

"The voluntary carbon market: 2021 insights and trends" report by Shell and BGC

2021

Compliance market soared to

~$850bn in value

2.5x value of **2020**

~15 $GtCO_2$ transacted volume

The voluntary market reached

~$2bn in value

4x value of **2020**

~500 $MtCO_2$ transacted volume

Source: SP Global Refinitiv, Ecosystem Market Place, BCG analysis

2022

was a record-breaking year for both compliance and voluntary carbon markets

During which, approximately **166Mt** of carbon emissions were covered by retirements

Voluntary markets expected to be **5x** bigger by 2030

Reaching a market size of **$10-40 bn** in value and **0.5-1.5** $GtCO_2$ in scale[4]

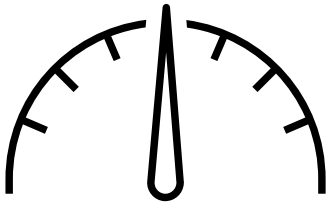
That is comparable to the emissions of the aviation industry, which reached ~1 $GtCO_2$ in 2019[5].

4. Future Size of the VCM, Trove Research, 2021.
5. Aviation report, IEA, 2022.

Key attributes of carbon credits

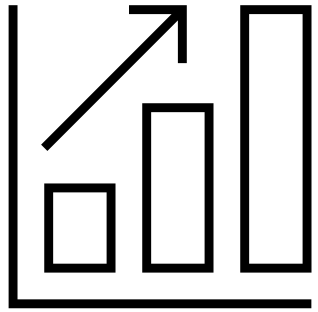
Robust verification and validation of carbon removal and reduction is essential to credibly claim credits

Real
A physical project with defined boundaries and a tangible impact on GHG emissions



Measured
Measurable and verifiable impact on GHG emissions

Permanent
Indefinite removal or reduction of GHG emissions



Additional
Project wholly reliant on Carbon finance

Independently Verified
Competent and independent assessment and verification

Status of SB 48 / HB 49

Senate Bill 48 Carbon Offset Program on State Land

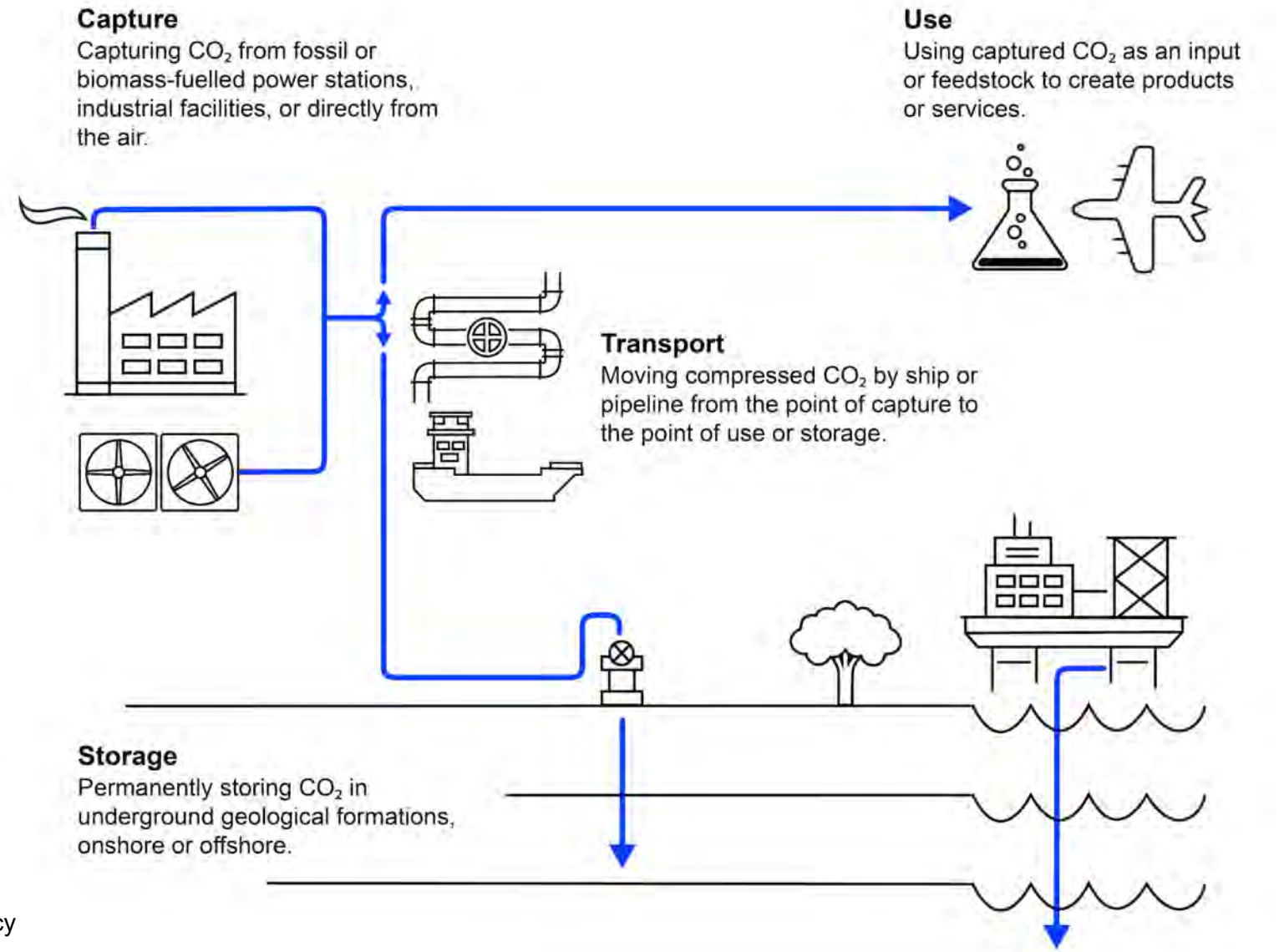
- 1/27/20203 Introduced by Gov. Mike Dunleavy
- Currently in Senate Resources
  - 2/24/2023 First hearing
- Next referral: Senate Finance

House Bill 49 Carbon Offset Program on State Land

- 1/27/2023 Introduced by Gov. Mike Dunleavy
- Currently in House Resources
  - 3/1/2023: First hearing
  - 3/15/2023 Public testimony
  - 3/17/2023 Hearing
- Next referral: House Finance

Carbon Storage - CCUS (SB 49 / HB 50)

Carbon capture, utilization, and storage



Source: International Energy Agency

CCUS – what and why?

What is it?

- Carbon Capture, Utilization, and Storage (CCUS) is a process to capture carbon dioxide (CO_2), from industrial processes, point sources, or even directly from the atmosphere, for the purpose of utilizing it for other activities or storing it underground in geologic formations

Why now?

- Sets the stage for potentiating continued development of Alaska's oil resources, and potential major gas development
- The CCUS market is rapidly expanding, both within the U.S. and worldwide
- Recent federal legislation has expanded grants and tax incentives for CCUS, increasing industry interest
- Federal funds are available for states seeking Class VI well permitting, showing federal support for state primacy
- Protracted project timelines and milestone requirements in the tax credit structure necessitate prompt action

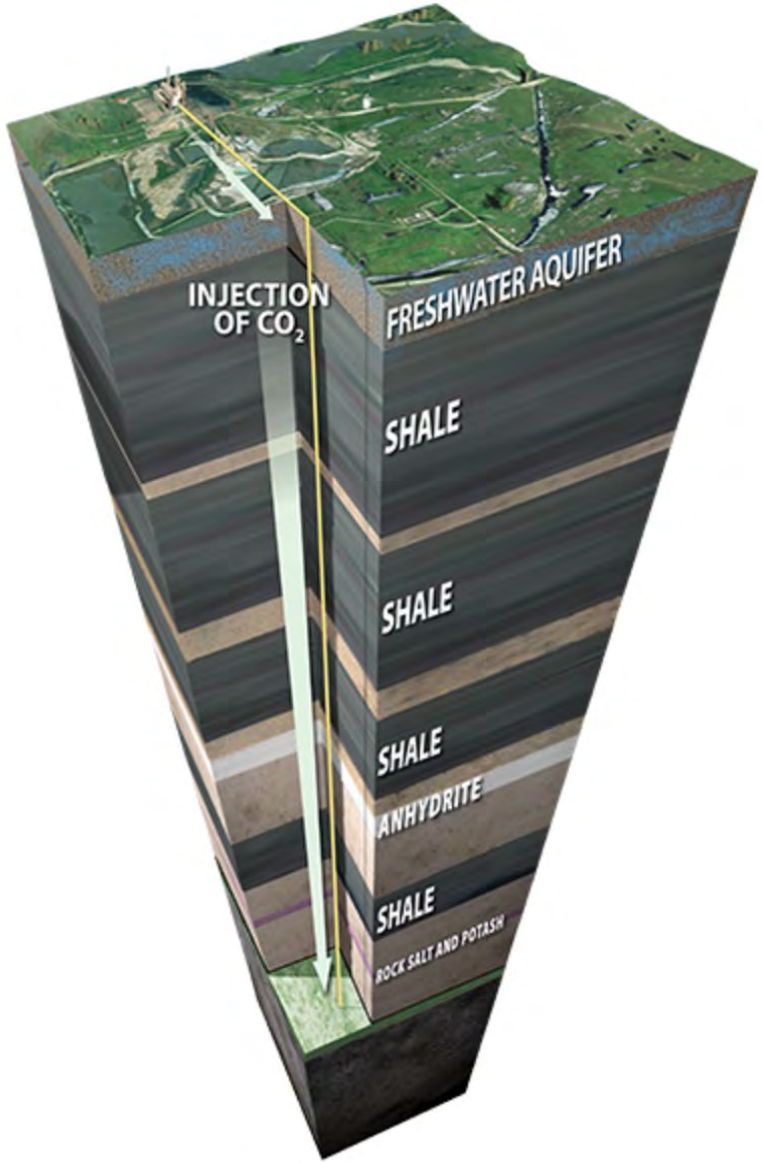
What is the potential in Alaska?

- Alaska's depleted oil & gas fields, saline aquifers, and deep coal seams have significant CO_2 storage potential
- Alaska has important competitive advantages – we own the pore space & we know the reservoirs
- Fifteen other states have passed CCUS omnibus legislation that we have learned from

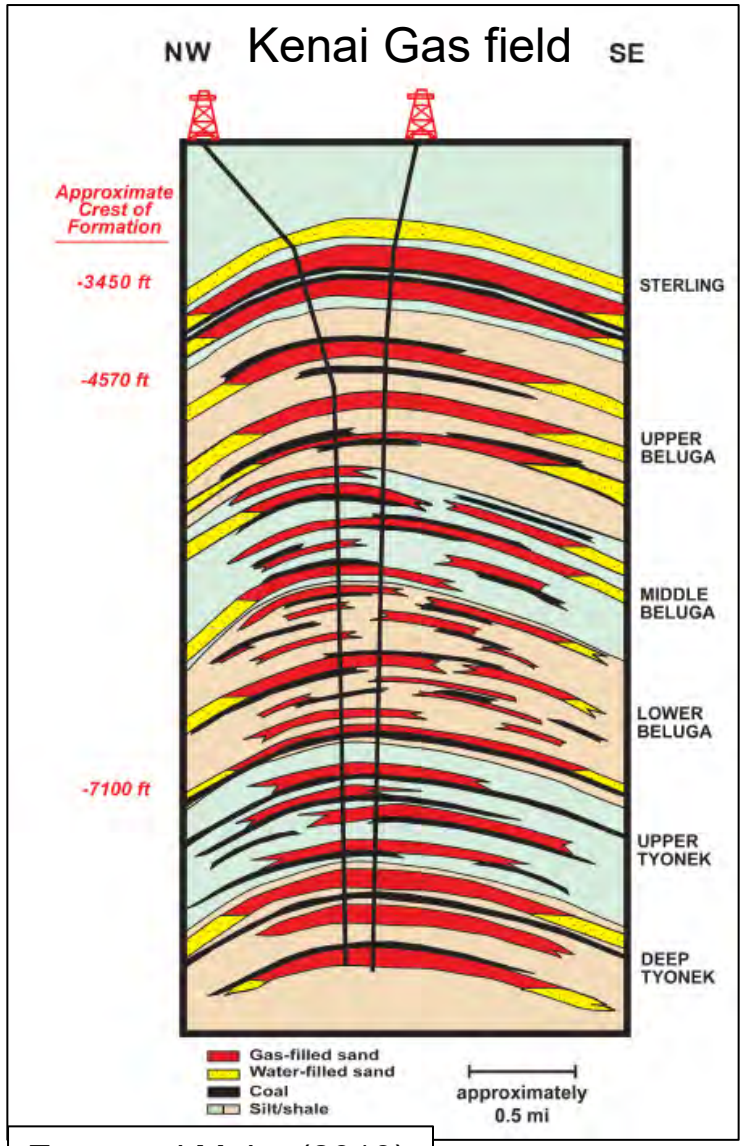
Enabling carbon storage

How SB 49/HB 50 enables carbon storage:

- Provides for the use of public lands for CCUS
- Accounts for the amalgamation of property interests and protection of correlative rights
- Outlines relationship between other commercial minerals and reservoirs to be used for storage
- Enables permitting for CO_2 pipelines
- Defines ownership of carbon dioxide and ascription of liability
- Addresses authority for Safe Drinking Water Act (SDWA) Underground Injection Control (UIC) Class VI well primacy

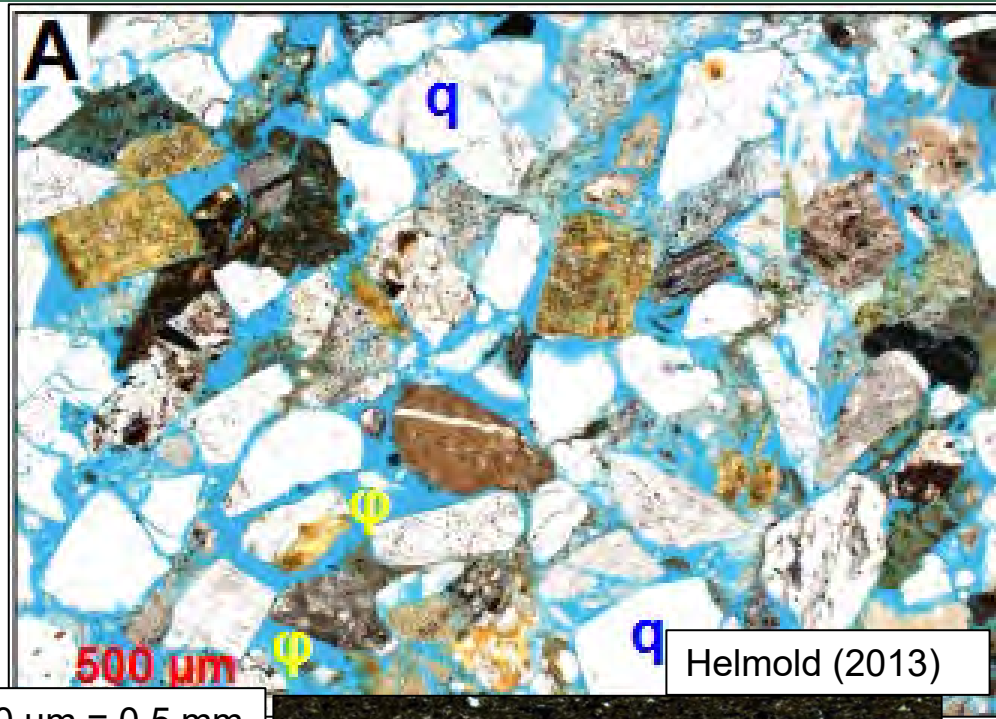


Requirements for geologic CO_2 storage



Enos and Maier (2013)

Sandstone, Tyonek Formation (blue is pore space)



Helmold (2013)

500 µm = 0.5 mm
200 µm = 0.2 mm

Depleted Reservoirs, Saline Aquifers, or Unmineable Coal Seams with:

Porosity – void space

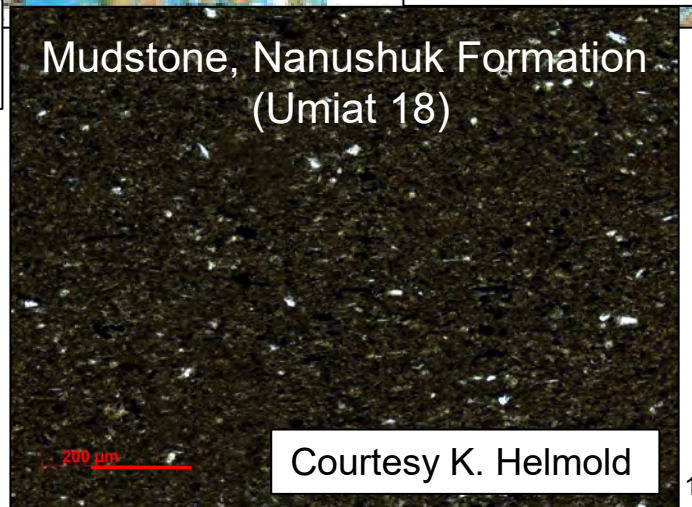
Permeability – interconnected voids

Trap

Seal

Depth >~2,600 ft

Impermeable mudstone (no blue space)



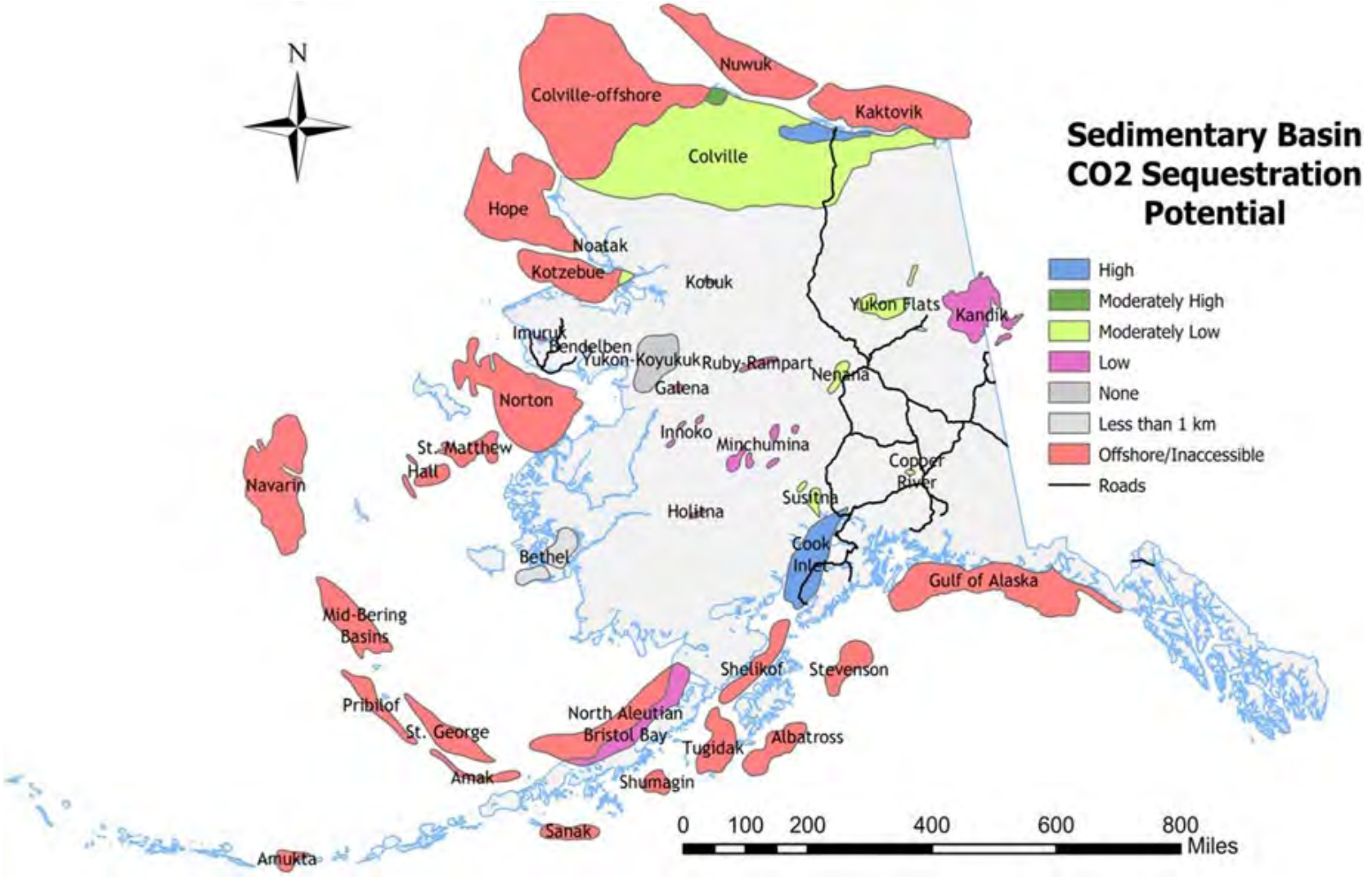
Courtesy K. Helmold

CCUS – where?

Geologic Storage Potential: 1600+ Gt

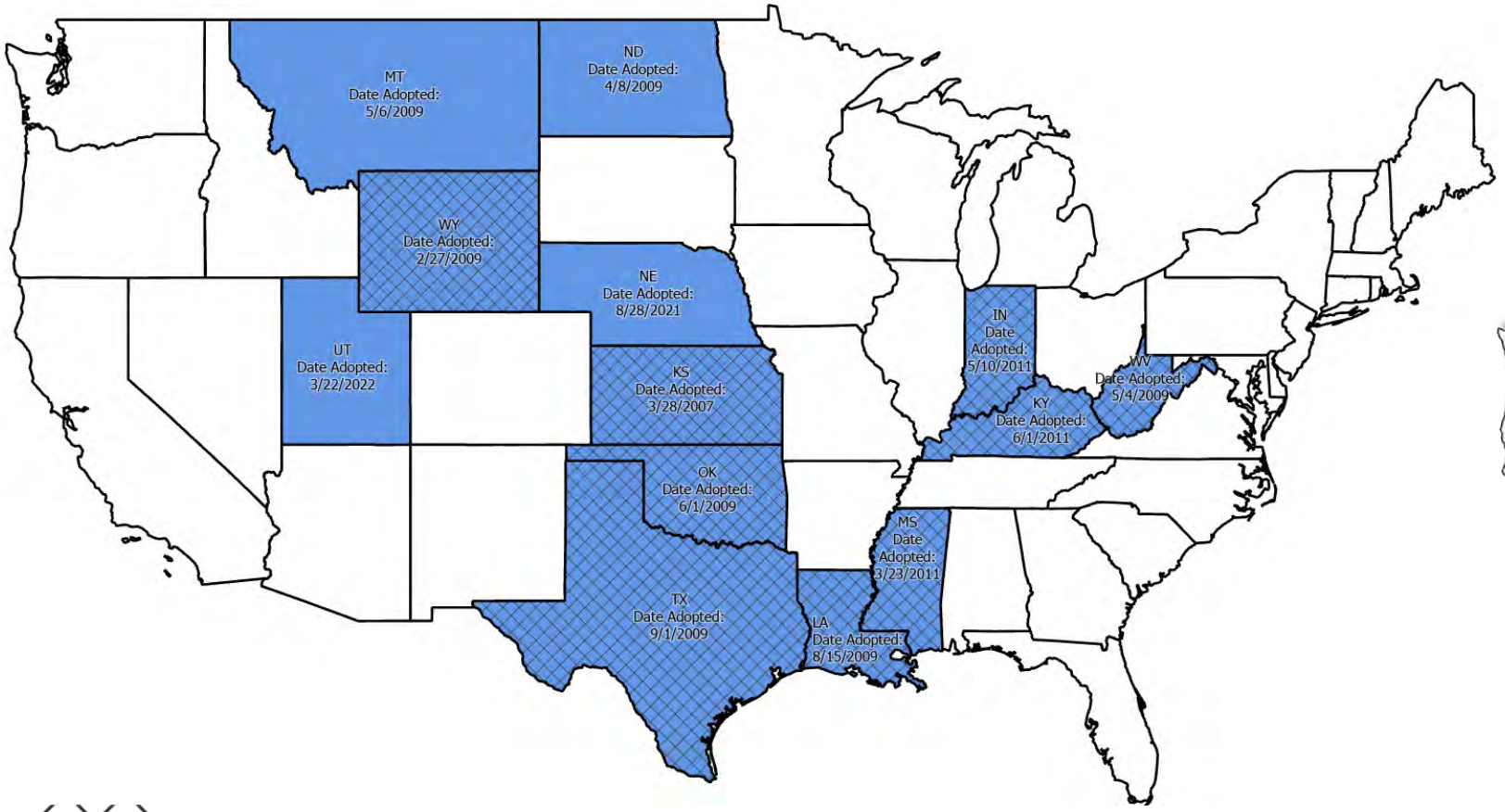
- 2021 Global CO_2 emissions 36.3Gt
- Storage Targets: Depleted Oil & Gas Fields, Saline Aquifers, Unminable Coal Seams

12.4 billions barrels through CO_2 EOR



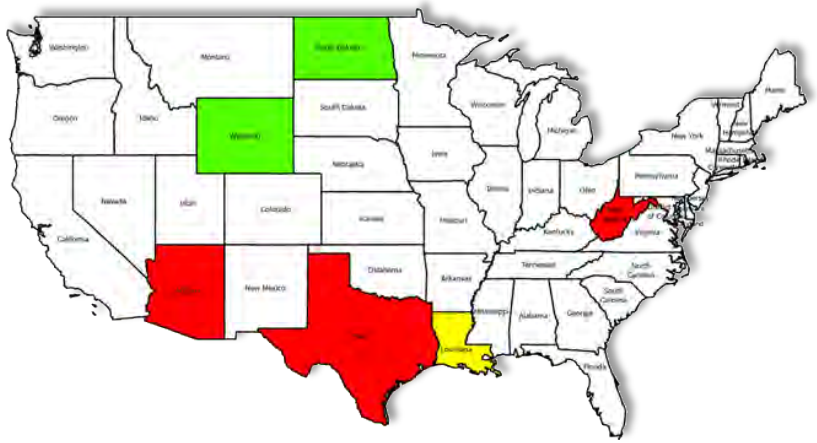
Source: Shellenbaum, D.P., and Clough, J.G. 2010. Alaska Geologic Carbon Sequestration Potential Estimate: Screening Saline Basins and Refining Coal Estimates: California Energy Commission

CCUS – where else?



Legislation Recently Updated

States with Comprehensive Legislation



Class VI Primacy Approved

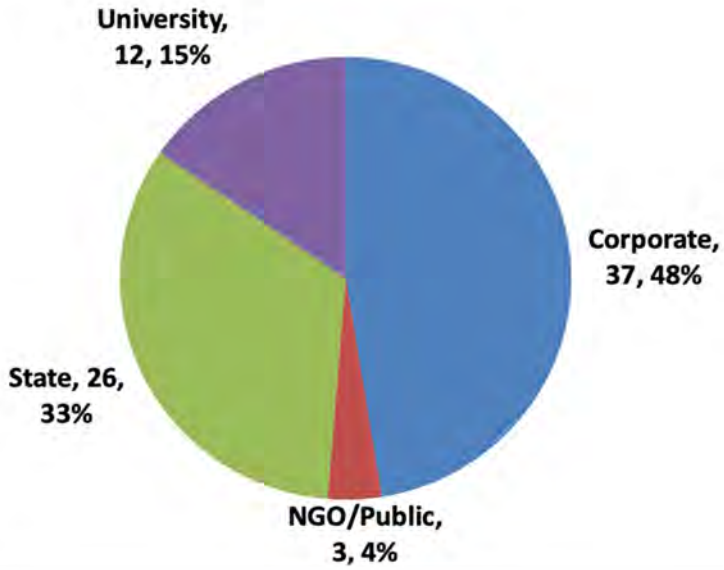
Class VI Pending Application

Class VI Pre-Application

Statewide CCUS workgroup

Workgroup Committees

1. Regulatory framework
   Stakeholder white paper
2. Government engagement and funding opportunities
3. CCUS Roadmap
4. Public outreach and education



Institute of Northern Engineering
University of Alaska Fairbanks

Status of SB 49 / HB 50

Senate Bill 49 Carbon Storage (CCUS)

- 1/27/20203 Introduced by Gov. Mike Dunleavy
- Currently in Senate Resources
  - 3/10/2023 First hearing
  - 3/13/2023 DNR presentation continued
- Next referral: Senate Finance

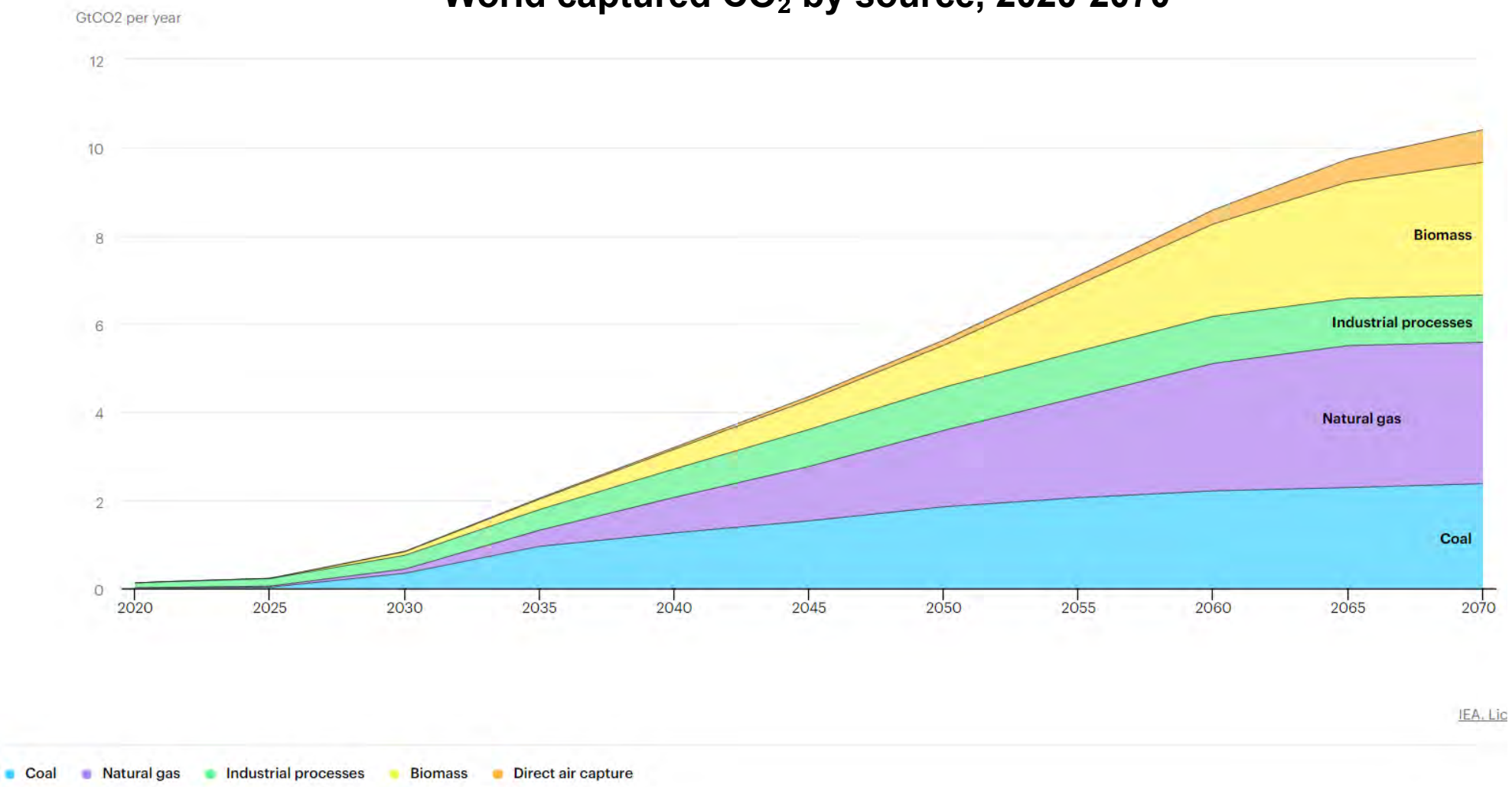
House Bill 50 Carbon Storage (CCUS)

- 1/27/2023 Introduced by Gov. Mike Dunleavy
- 2/10/2023 First hearing in House Resources
- 3/8/2023 Passed out of House Resources
- Currently in the House Finance Committee awaiting first hearing

Why is Carbon Management good for Alaska?

Carbon markets – more growth

World captured CO_2 by source, 2020-2070



- Approximately 35 commercial CCUS facilities today globally
- Targeted growth: 2,500 facilities to reach International Energy Agency (IEA) scenario of net zero carbon emissions by 2070

Source: International Energy Agency

Net zero greenhouse gas (GHG) initiatives of North Slope companies

ConocoPhillips Emissions Reductions Targets and Performance

- Reduce methane intensity by 10% and routine flaring to zero by 2025.
- Reduce Scope 1 and Scope 2 Greenhouse Gas (GHG) intensity by 40–50% (gross operated and net equity) by 2030
- Net zero Scope 1 and Scope 2 emissions by 2050

Emissions Reduction Targets | ConocoPhillips

ENI's Strategy Against Climate Change

- 35% reduction in net Scope 1, 2, and 3 emissions by 2030
- 55% reduction in net Scope 1, 2, and 3 emissions by 2035
- 80% reduction in net Scope 1, 2, and 3 emissions by 2040
- Net zero Scope 1, 2, and 3 emissions by 2050

Net Zero al 2050 | Eni

Exxon 2030 Greenhouse Gas (GHG) Emission Reduction Plans:

(Relative to 2016 level and apply to Scope 1 and Scope 2 GHG emissions from operated assets)

- 20–30% reduction in corporate-wide GHG intensity
- 40–50% reduction in upstream GHG intensity
- 70–80% reduction in corporate-wide methane intensity
- 60–70% reduction in corporate-wide flaring intensity

Advancing climate solutions | ExxonMobil

Hilcorp

"We have to operate to the same high standards as everyone else. We may be private, but we have capital providers, we have partners, we have lots of other people involved in business with us. They're feeling those pressures (i.e. ESG, emissions reductions), and we have to be responsive to those as well." — Greg Lalicker, Hilcorp CEO.

How America's Biggest Privately Owned Oil Company Takes A Divergent Approach To The Energy Transition (forbes.com)

Repsol Path Towards Decarbonization

- 55% reduction in scope 1 and scope 2 emissions in operated assets by 2025
- 30% reduction in scope 1, 2, and 3 net emissions by 2030
- Net zero by 2050

Net zero emissions by 2050 commitment | Repsol

Santos Path to Net Zero

- 26–30% reduction in scope 1 and scope 2 absolute emissions (from 2020 baseline) by 2030
- Actively work with customers to reduce scope 1 and scope 2 emissions by > 1 million tons of carbon dioxide per year by 2030
- Scope 1 and scope 2 absolute emissions at net zero by 2040.
- **Santos has committed to net-zero emissions (scope 1 and scope 2) for the Pikka Project**

Santos to be net-zero emissions by 2040 | Santos

Santos Announces Pikka FID | Santos

Questions?

Thank you!

John Boyle

DNR Commissioner-designee