

HB 50 Carbon Capture, Utilization, and Storage House Finance Committee

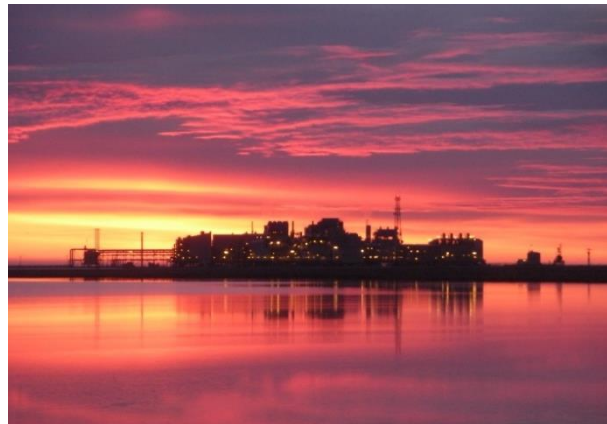


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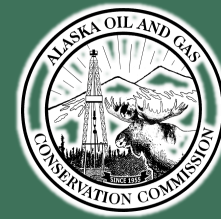
John Crowther, Deputy Commissioner, Department of Natural Resources

Haley Paine, Deputy Director, Division of Oil & Gas

April 7, 2023



OUTLINE



1. Introduction
2. CCUS project overview
3. Funding collection and revenue
4. High-level sectional summary
5. Section 14 Detail of DNR/DOG statutes
6. Sections 15–31 summary
7. Section 31 Detail of AOGCC statutes
8. Section 32–39 summary



Article VIII Alaska Constitution

- It is the policy of the State to encourage the settlement of its land and the development of its resources by making them available for maximum use consistent with the public interest.
- The legislature may provide for the leasing of, and the issuance of permits for exploration of, any part of the public domain or interest therein, subject to reasonable concurrent uses.

HB 50 AND THE ALASKA CONSTITUTION

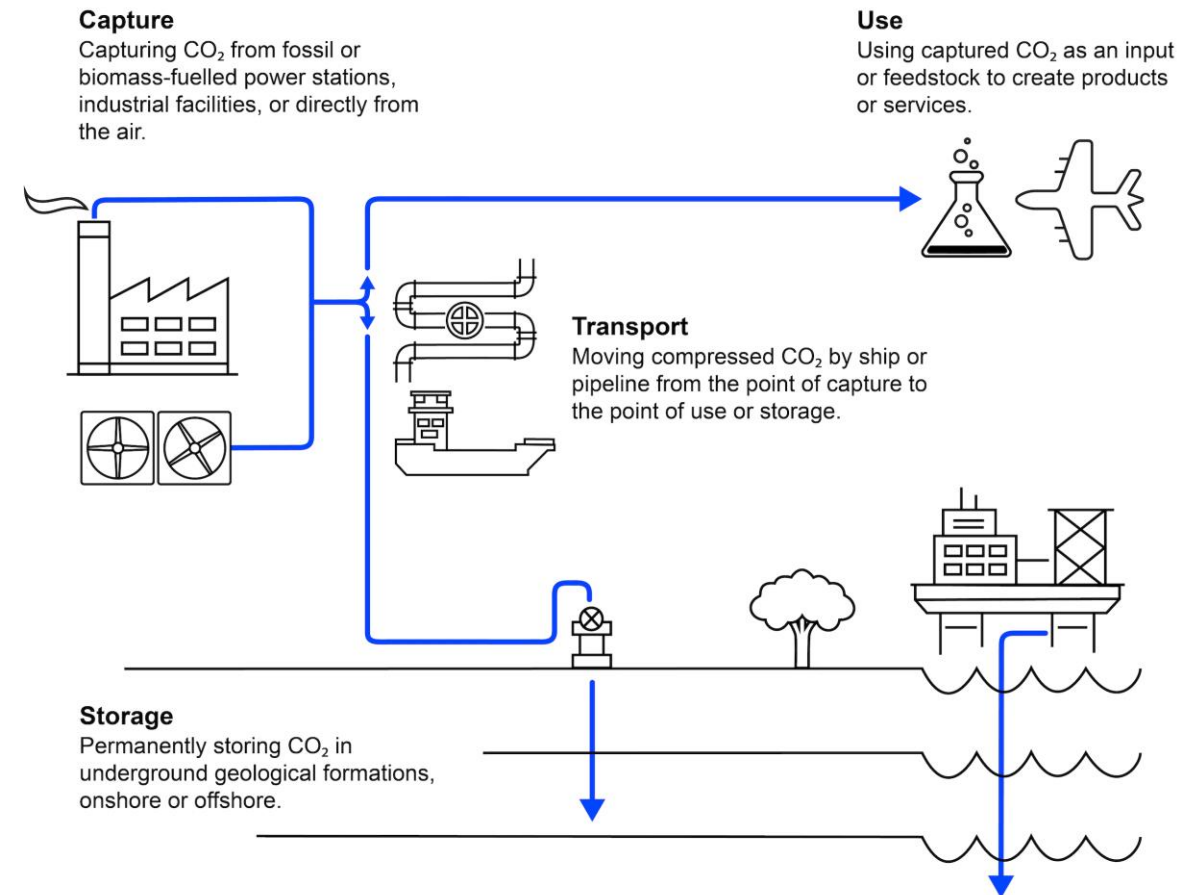


- Enables the State to maximize use of its pore space resource consistent with public interest.
- Provides for reasonable concurrent uses and protection of all parties.
- Empowers the Department of Natural Resources (DNR) and Alaska Oil and Gas Conservation Commission (AOGCC) to utilize existing authorities and expertise on carbon dioxide geologic storage.

WHAT IS CCUS?



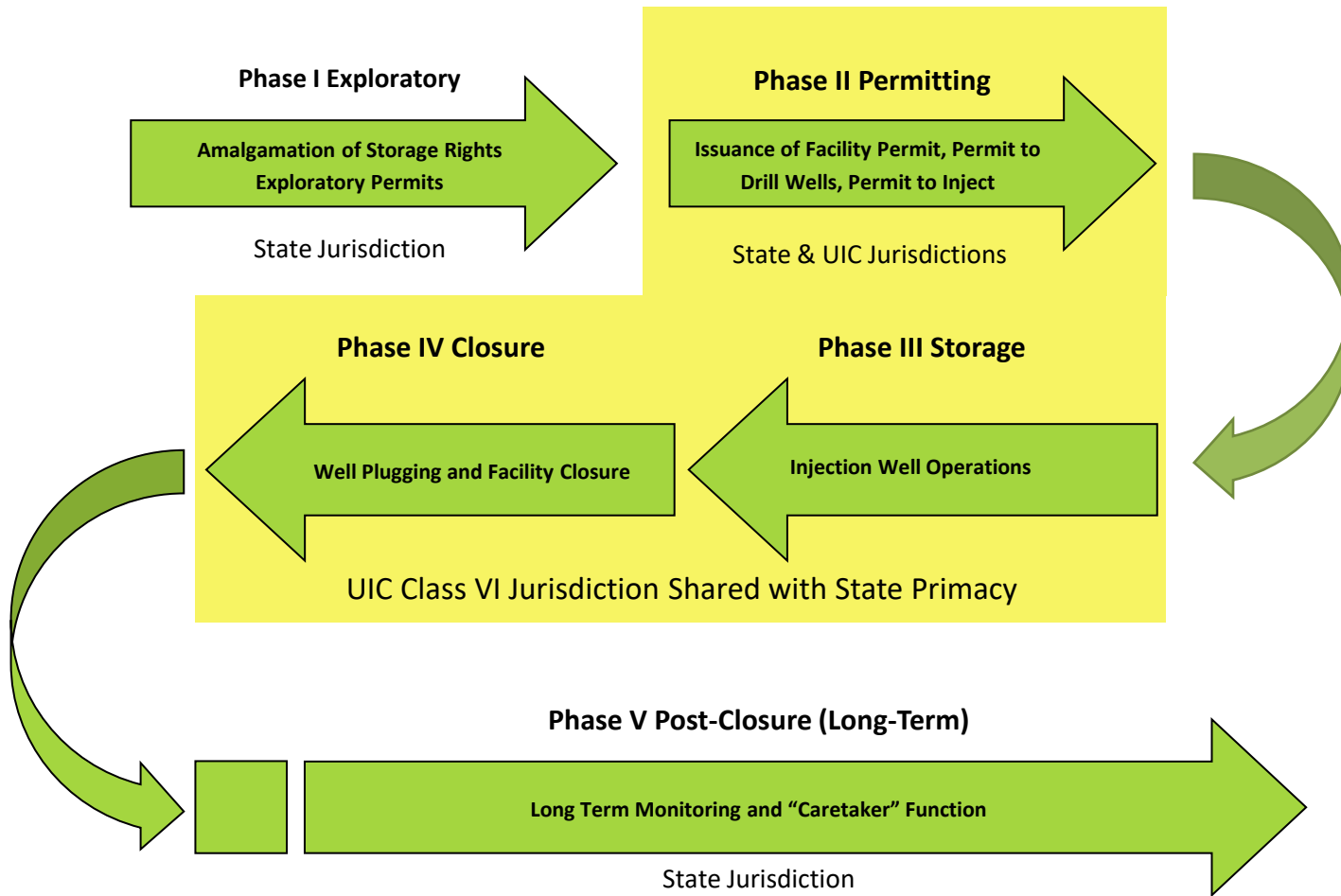
Carbon capture, utilization and storage (CCUS) is a process that captures carbon dioxide emissions from industrial processes, point sources like coal-fired power plants, or from the air and either reuses or stores it so it will not enter the atmosphere.



Source: IEA [CCUS in Clean Energy Transitions Report 2020](#)

PROJECT OVERVIEW

CCUS PROJECT PHASES



- Safe Drinking Water Act of 1974 established Underground Injection Control Program
- Class VI – Well class specifically for underground storage of CO₂
- AOGCC Class II Underground Injection Control primacy since 1986
 - Oversee more than 950 active injection wells

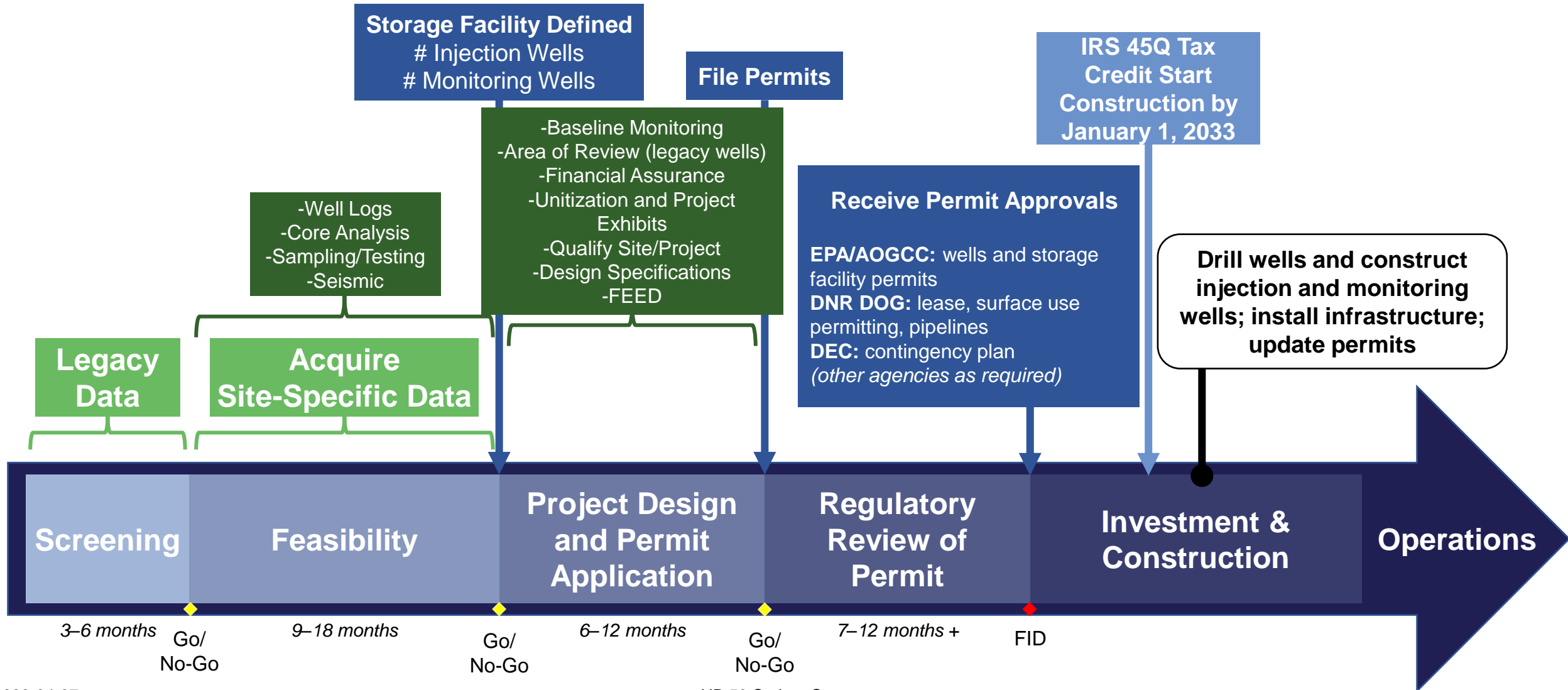
Yellow boxes show concurrent state and underground injection control (UIC) Class VI jurisdiction in Phases II, III, IV. Phase I and V show exclusive state jurisdiction.

Source: Interstate Oil and Gas Compact Commission, 2014

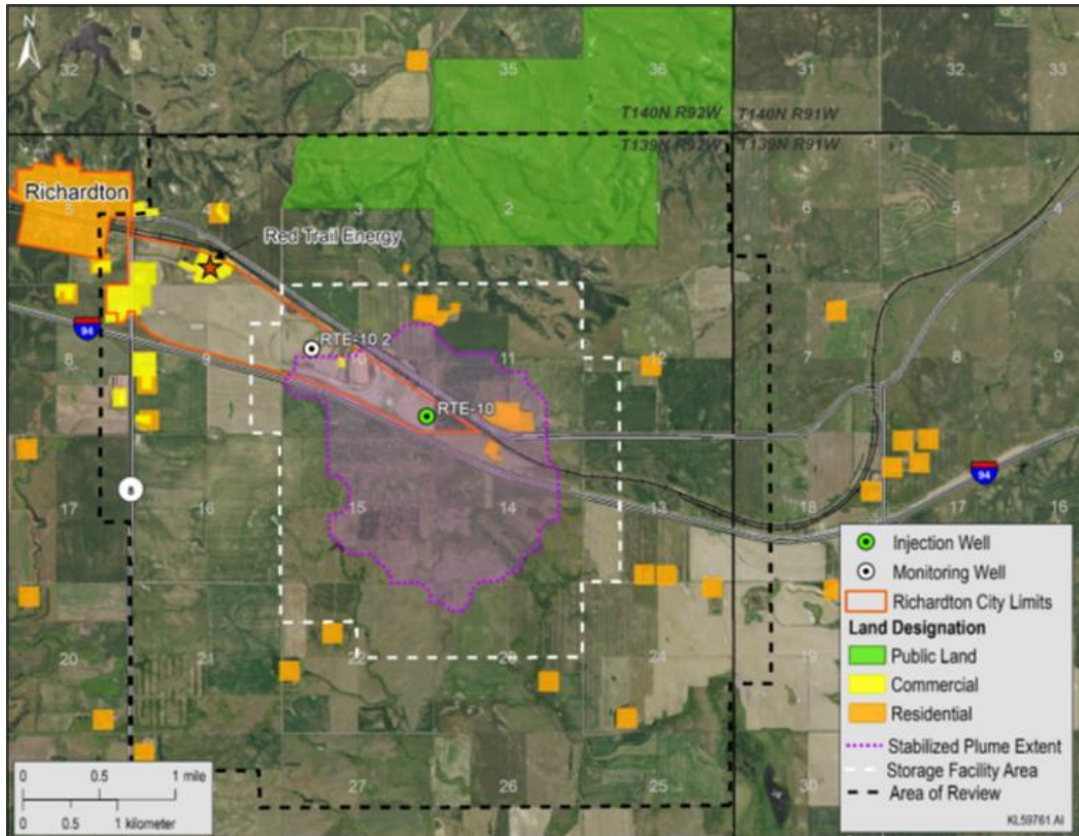
CCUS PROJECT TIMELINE



GENERALIZED TIMELINE TO IMPLEMENT GEOLOGIC CO₂ STORAGE



RED TAIL ENERGY PROJECT

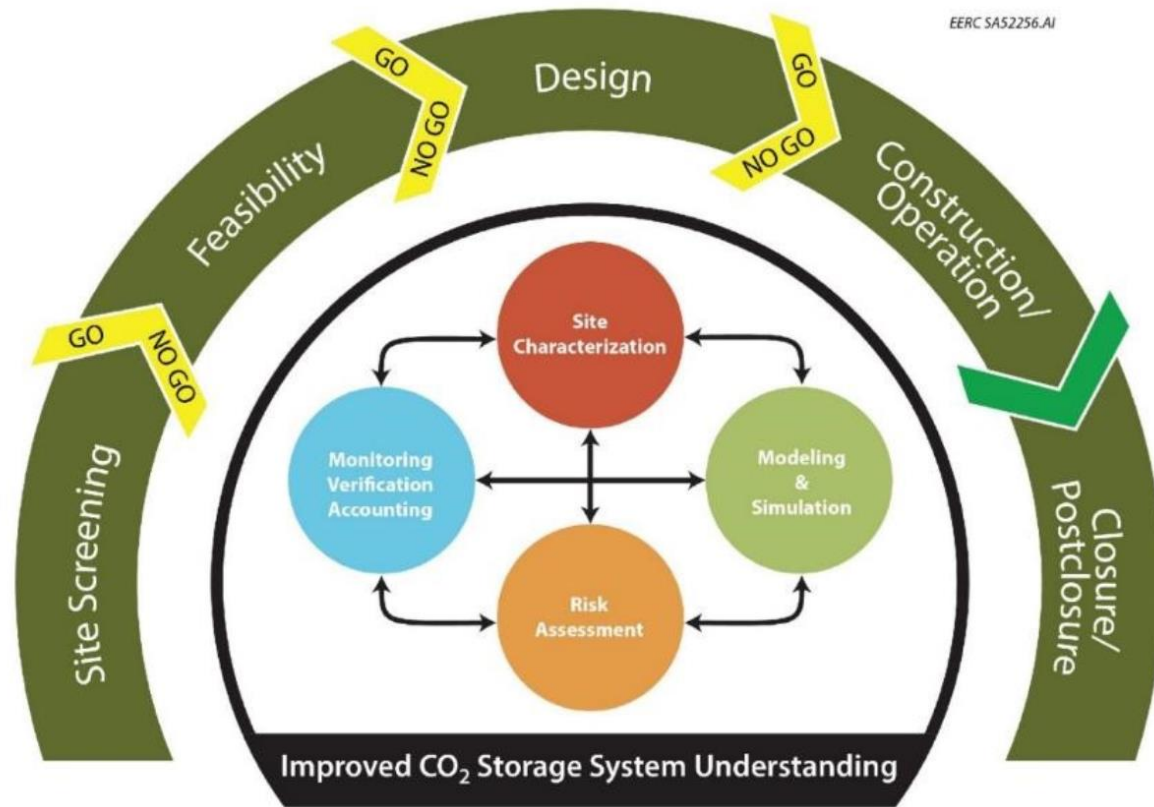


Once the permits are approved, the exploratory hole drilled in spring 2020 will be converted into the CO₂ injection well. The second test site, drilled in October, will be converted into a monitoring well for the CCS project.

Source: Energy & Environmental Research Center University of North Dakota

Project surface acreage: 3,480 acres (white outline)
Emissions: 180,000 metric ton/year (~200,000 ton/year)

RED TAIL ENERGY PROJECT

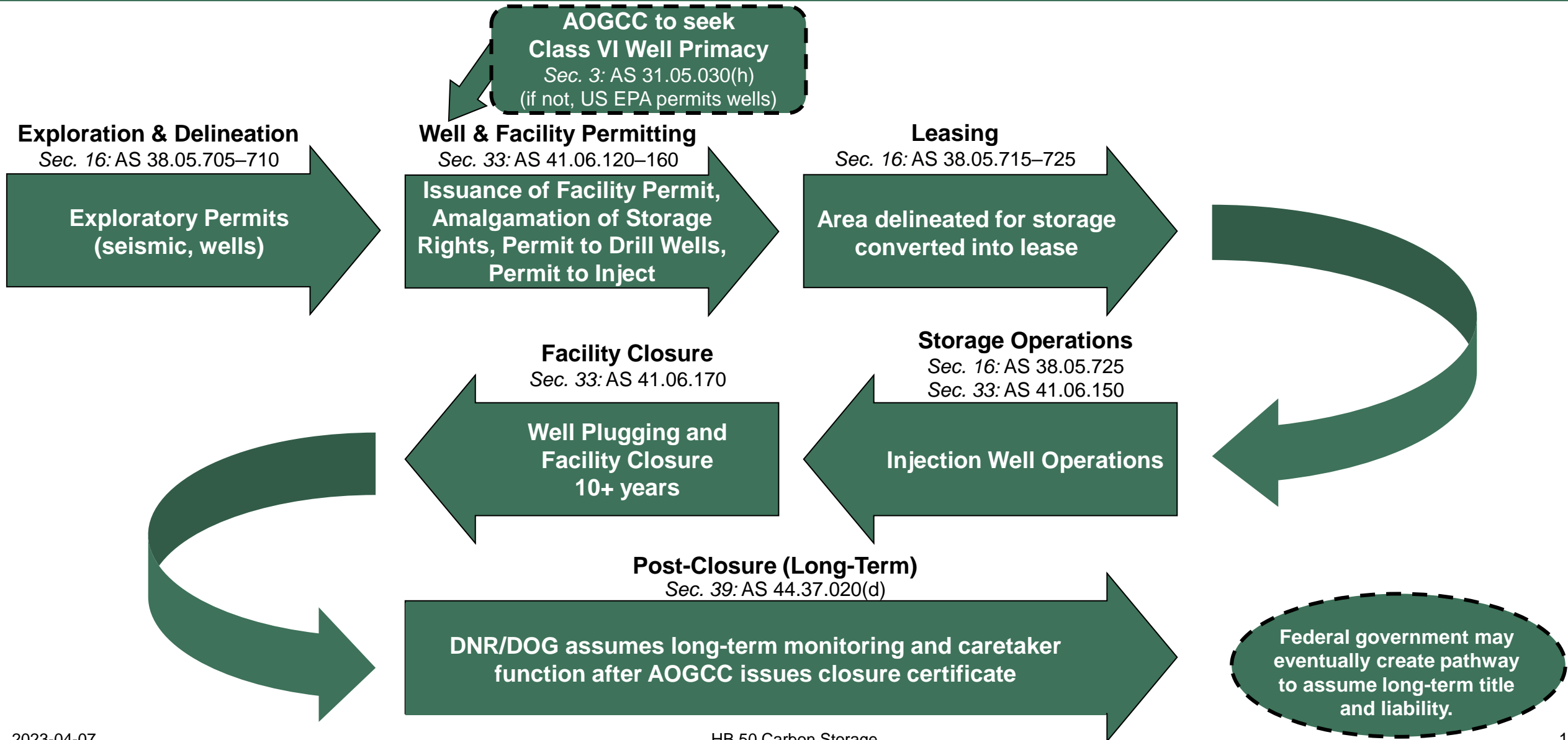


Red Tail Energy

- 5-year evaluation and design period
- North Dakota granted primacy for Class VI wells on April 24, 2018
- North Dakota CO₂ Storage Facility (Class VI) permit on October 19, 2021
- Commercial operation started on June 16, 2022

Source: Energy & Environmental Research Center University of North Dakota

CCUS PHASES AND LEGISLATION



FUNDING & REVENUE

FUNDING SOURCES



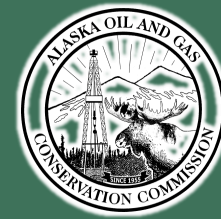
Regulatory Program AOGCC

- **Carbon Dioxide Storage Facility Administrative Fund**
 - **Sec. 33: AS 41.06.160**
 - Creates fund to cover AOGCC operating costs associated with oversight of carbon storage, like fees collected for oil and gas oversight
 - Account revenue sources:
 - Fees received under AS 41.06.160(a) – assessed per metric ton
 - Fees received under AS 41.06.120 (permit review) and 41.06.195 (determining storage amounts)
 - Earnings on the fund

Leasing & Licensing State Lands DNR

- **Carbon storage exploration licenses and leases**
 - **Sec. 16: AS 38.05.705–715**
 - Annual fees to be set by DNR in regulation
 - Commercial terms of license/lease to be determined by DNR in licensing/leasing process.
 - **Sec. 16: AS 38.05.730**
 - Payments from carbon storage exploration licenses and carbon storage leases flow to the general fund and Alaska Permanent Fund (Art. IX, Sec. 15, Alaska Constitution)

FUNDING: CLOSURE TRUST FUND



Sec. 6: AS 37.14.850. Carbon storage closure trust fund.

- Industry-funded and state-administered trust fund to be used solely for long-term monitoring of the site during the post-closure period
- Account revenue sources:
 - Payments received under AS 37.14.850(c)
 - AS 41.06.175. Carbon storage facility injection surcharge (*bill* Sec. 33)
 - Amount set by AOGCC on issuance of storage facility permit
 - Based on anticipated expenses to be incurred during post-closure phase
 - Earnings on the account

HYPOTHETICAL REVENUE OPPORTUNITIES



1. Regional Power Facility

- 250,000 metric tons/year, \$2.50 metric ton/year
- 20-year life
- Acreage ~1200 acres during injection, \$20 acre/year



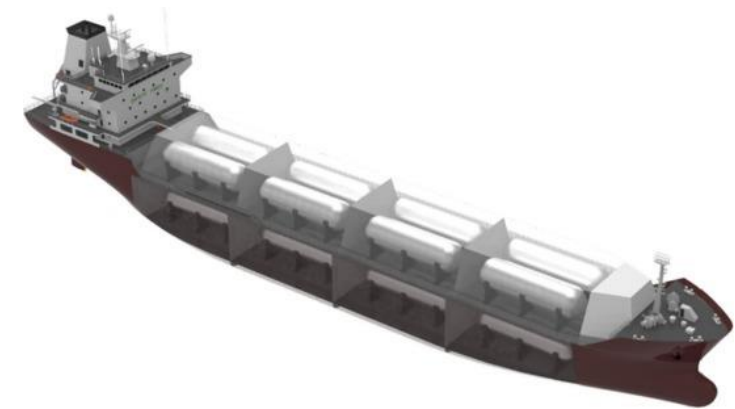
Chugach Electric Association, Inc. Southcentral Power Project

2. North Slope Emitting Facility

- 2,000,000 metric tons/year (50/50 EOR & Storage), \$2.50 metric ton/year (Storage)
- 20-year life
- Acreage ~10,000 acres during injection, \$20 acre/year

3. CO₂ Import & Sequestration Facility

- 10,000,000 metric tons/year, \$2.50 acre/year
- 40-year life
- Acreage ~ 50,000 acres during injection, \$20 acre/year



Conceptual design of CO₂ carrier.
Comparison of CO₂ liquefaction pressures for ship-based carbon capture and storage (CCS) chain. Int J Greenhouse Gas Control, 52 (2016)

EOR = enhanced oil recovery

HYPOTHETICAL REVENUE OPPORTUNITIES



- Not all CO₂ emissions are feasibly captured – technology continues to rapidly develop
- Capital expenditures to retrofit existing facilities cannot be met by existing incentives in some cases
- Import of CO₂ is dependent on further development of shipping technology and infrastructure
- Timing from bill passage, if project through screening phase:
 - Licensing Revenues \leq 2 years
 - Leasing Revenues \leq 5 years



HYPOTHETICAL REVENUE OPPORTUNITIES*

Hypothetical State Revenues		Scenario	Totals	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
				0	1	2	3	4	5	6	7	8	9
	1	Regional Power Facility CCUS	\$12,828,101 Over 20 years	\$92,753	\$92,753	\$92,753	\$24,921	\$24,921	\$625,000	\$625,000	\$625,000	\$625,000	\$625,000
		Exploration License		\$92,753	\$92,753	\$92,753							
		Development Lease					\$24,921	\$24,921					
		Injection							\$625,000	\$625,000	\$625,000	\$625,000	\$625,000
		Additional EOR Oil Revenue											
	2	North Slope Facility Standalone CCUS Project	\$219,013,591 Over 20 years	\$371,013	\$371,013	\$371,013	\$99,686	\$99,686	\$10,885,059	\$10,885,059	\$10,885,059	\$10,885,059	\$10,885,059
		Exploration License		\$371,013	\$371,013	\$371,013							
		Development Lease					\$99,686	\$99,686					
		Injection							\$2,500,000	\$2,500,000	\$2,500,000	\$2,500,000	\$2,500,000
		Additional EOR Oil Revenue							\$8,385,059	\$8,385,059	\$8,385,059	\$8,385,059	\$8,385,059
	3	CO₂ Import for Sequestration (10m)	\$1,014,120,961 Over 40 years	\$3,710,130	\$3,710,130	\$3,710,130	\$996,857	\$996,857	\$996,857	\$25,000,000	\$25,000,000	\$25,000,000	\$25,000,000
		Exploration License		\$3,710,130	\$3,710,130	\$3,710,130							
		Development Lease					\$996,857	\$996,857	\$996,857				
		Injection								\$25,000,000	\$25,000,000	\$25,000,000	\$25,000,000
		Additional EOR Oil Revenue											

Additional barrels of oil and revenue for North Slope facility assumes ½ of the CO₂ injected is for EOR purposes and other ½ is permanently sequestered.

*These scenarios represent a “best case,” hypothetical scenario relying on assumptions believed to be reasonable, including market conditions in other jurisdictions, and maturely developed capture, transportation and sequestration technology. They are developed purely for high-level scoping purposes. The Alaska market development will likely include a range of different commercial and economic arrangements.



Department of Natural Resources – Division of Oil & Gas ([note 7](#))

- Zero note (using existing staff resources to stand up program)

Department of Commerce, Community, and Economic Development – Alaska Oil & Gas Conservation Commission (AOGCC) ([note 6](#))

- \$1,058.0 FY 2024 funding 2 full-time positions with Gen Fund (UGF)
- Potential for federal grants through the EPA Class VI Grant Program to offset program start-up costs
- \$1,038.0 FY 2025 and \$988.0 FY 2026 onward funded with receipts into the Carbon Storage Closure Trust Fund (CSCTF) shown as DGF Temp (DGF)

Department of Environmental Conservation – Division of Air Quality ([note 5](#))

- Zero note (no anticipated costs)

Department of Revenue – Tax Division ([note 8](#))

- Zero note (Revenue potential uncertain, 45Q tax credits decoupled from State Corporate Income Tax)

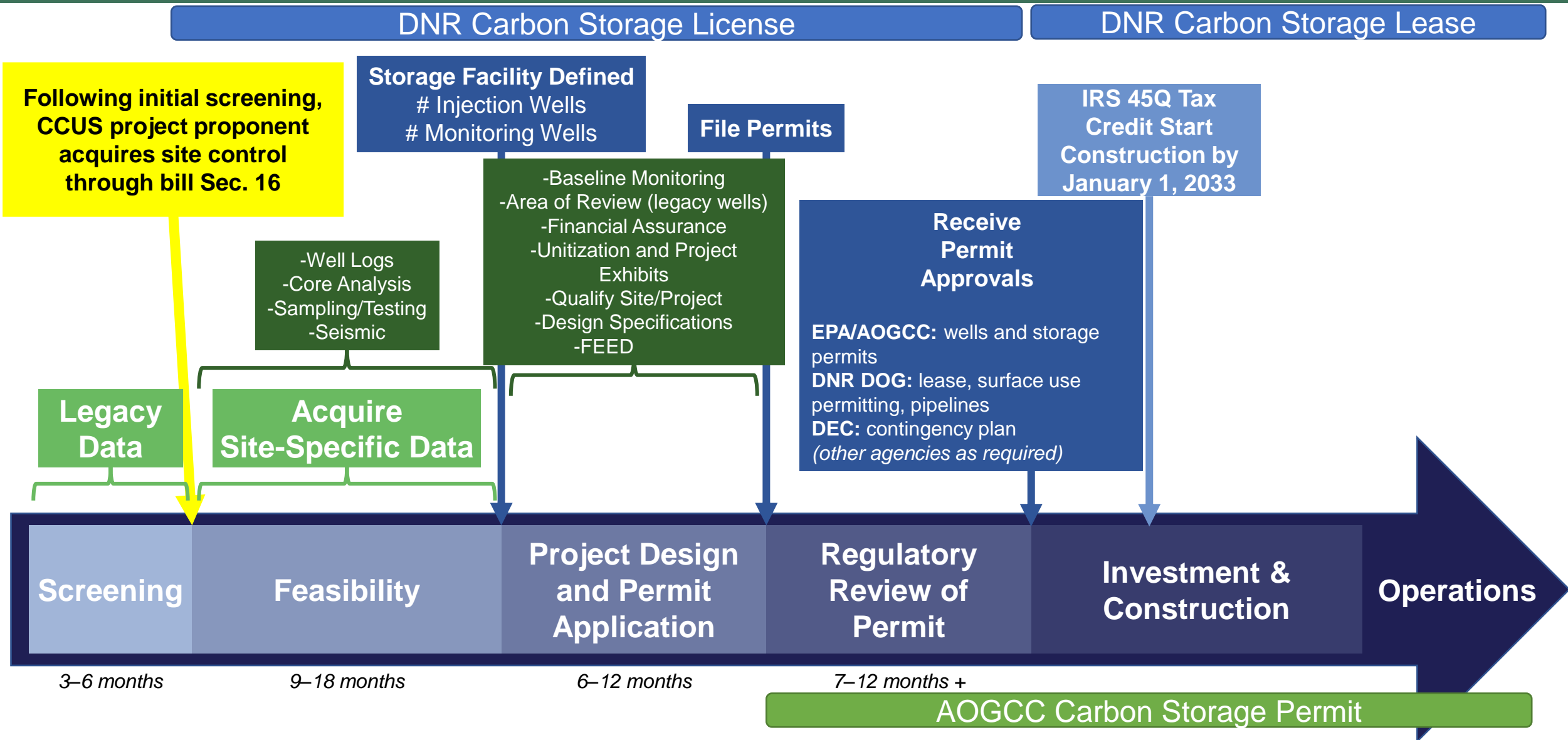
SECTIONAL SUMMARY

SECTIONAL SUMMARY



Section (Agency)	Summary
1	Short title of bill: Carbon Capture, Utilization, and Storage Act
2 (AOGCC)	AS 31.05.027 – Grants AOGCC jurisdiction to regulate carbon storage unit operations in the state like oil and gas (<i>bill</i> Sec. 16)
3 (AOGCC)	AS 31.05.030(h) – Authorizes AOGCC to seek primary enforcement authority for permitting and regulating Class VI injection wells for CO ₂
4 (AOGCC)	AS 31.05.030(m) – Conforming changes to clarify authority in the <i>Geothermal Resources</i> part of AS 41.06.
5 (AOGCC)	AS 37.05.146(c) – Adds carbon dioxide storage facility administrative fund to list of separate funds with sources not from UGF appropriations (<i>bill</i> Sec. 33, <i>proposed</i> AS 41.06.160)
6 (DNR/AOGCC)	AS 37.14.850 – Creates Carbon Storage Closure Trust Fund to provide non-sweepable fund account for post-closure operations of State agencies. Fund source is an injection surcharge (<i>bill</i> Sec. 33, <i>proposed</i> AS 41.06.175)
7 (DNR)	AS 38.05.069(e) – Adds carbon storage (<i>bill</i> Sec. 16) to mineral estate disposal exemptions for agricultural lands disposal
8 (DNR)	AS 38.05.070(a) – Adds exemption for carbon storage leasing (<i>bill</i> Sec. 16) from generalized state land leasing provisions in AS 38.05.070–105 (when state lands are leased for purposes other than extrication of natural resources)
9 (DNR)	AS 38.05.130 – Adds carbon storage to provisions requiring lessees to pay damages to landowners and post bond for that purpose; and providing lessee access to the mineral estate if a surface owner refuses to engage in a surface use agreement; same statutory process that exists for other mineral estate development of split estate created by AS 38.05.125
10–13 (DNR/DOG)	AS 38.05.135(a)–(e) – Adds carbon storage program (<i>bill</i> Sec. 16) to mineral leasing statutes primarily providing for revenue collection by adding reference to injection charges (<i>proposed</i> Sec. 38.05.700(c))
14 (DNR)	AS 38.05.140(a) – Adds carbon storage provision to exemptions for coal bed methane under AS 38.05.180(gg) and unconventional gas under AS 38.05.180(ff) because carbon storage leasing might be possible in unmineable coal seams
15 (DNR)	AS 38.05.184 – Adds carbon storage leases to prohibition in the Kachemak Bay oil and gas closure area
16 (DNR/DOG)	Adds new sections to AS 38.05 <i>Alaska Land Act</i> as Article 15A <i>Carbon Storage Exploration Licenses; Leases</i> (<i>proposed</i> AS 38.05.700–795); detailed summary after next slide

CCUS PROJECT THEORETICAL TIMELINE



SECTION DETAIL: SECTION 16 (DNR/DOG)



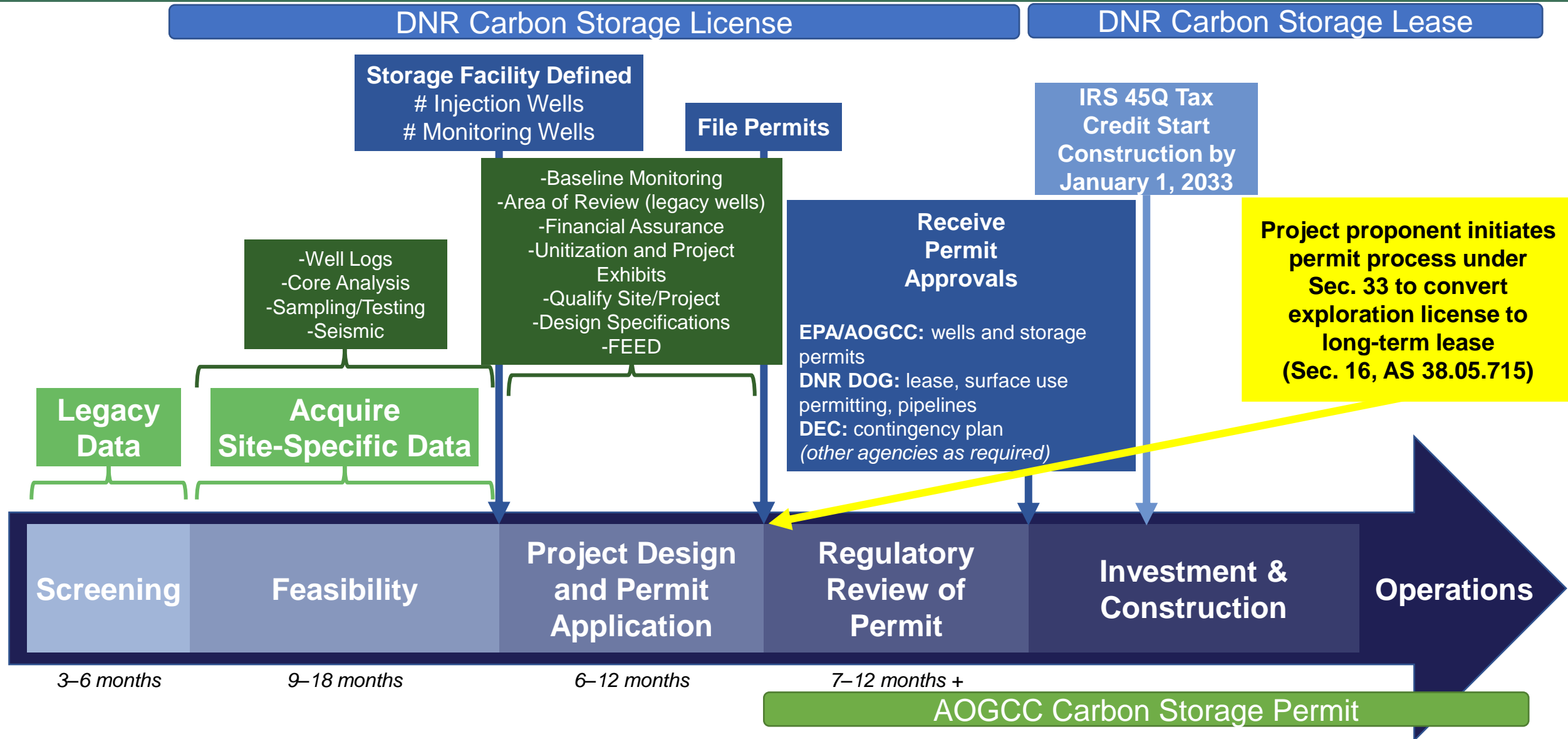
Proposed Section	Summary
AS 38.05.700	Provision for applicability carbon storage statutes and authority for DNR to adopt regulations to implement these statutes.
AS 38.05.705	<p>Allows the commissioner to issue carbon storage exploration licenses on state land and establishes work commitment obligations, minimum economic terms, bonding requirements, default provisions, and renewal provisions.</p> <ul style="list-style-type: none"> • 5-year exploration license term • Conversion of the license to a lease upon fulfillment of work commitment, acquiring storage facility permit from AOGCC, ability to meet commercial terms
AS 38.05.710	<p>Procedures for issuance of a carbon storage exploration license. These are modeled after existing procedures for oil and gas exploration licensing under AS 38.05.133.</p> <ul style="list-style-type: none"> • Identify land, minimum work commitment, economic terms, 90 days for competing proposals • Written finding – including competitive process if competing proposals are submitted • Subsection 715(h) provides a right-of-first-refusal opportunity for existing lessees under AS 38.05.135–181 (i.e., mineral lessees for coal, oil and gas, geothermal, or other exploitable minerals).
AS 38.05.715	Provision allowing conversion of an AS 38.05.705–710 carbon storage exploration license to a carbon storage lease.
AS 38.05.720	An oil and gas lessee converting from enhanced oil recovery to carbon storage must apply for a carbon storage lease.
AS 38.05.725	Requirements for plans of development and operations, and provision for unitization, as with oil and gas leasing.
AS 38.05.730	Payments from carbon storage licenses and leases are to be deposited in the general fund except for the amount allocated to the Permanent Fund under art. IX, sec. 15, of the Alaska Constitution.
AS 38.05.795	Definitions for specific terms used in the proposed Article 15A <i>Carbon Storage Exploration Licenses; Leases</i>

SECTIONAL SUMMARY: SECS. 15–31

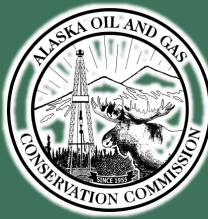


Section (Agency)	Summary
17 (DNR/DOG)	AS 38.35.020(a) – Amended to include carbon dioxide for pipeline transportation right-of-way (ROW) leasing purposes
18 (DNR/DOG)	AS 38.35.020(b) – Amended to allow the DNR commissioner to exempt pipelines from ROW leasing when transporting carbon dioxide for enhanced oil recovery or pressure support within existing fields (does <i>not</i> exempt pipelines from regulation, just a ROW)
19 (DNR/DOG)	AS 38.35.122 – Conforming amendment to bring some carbon dioxide pipelines under the same title as “product” pipelines
20–23 (DNR/DOG)	AS 38.35.230 – Amends definitions of “lease,” “pipeline” or “pipeline facility,” “transportation,” and adds “carbon dioxide” to accommodate carbon dioxide pipeline provisions
24–32 (AOGCC)	AS 41.06.005–060 – Conforming amendments separates AS 41.06 into two articles – one for geothermal and one for carbon storage
33 (AOGCC)	AS 41.06 – Adds new sections as Article 2. <i>Carbon Dioxide Injection and Storage</i> beginning at AS 41.06.105. Detailed summary on slide after next.

CCUS PROJECT THEORETICAL TIMELINE



SECTION DETAIL: SECTION 33 (AOGCC)



Proposed Sections	Summary
AS 41.06.105	Provides AOGCC jurisdiction over carbon dioxide storage facilities to prevent waste, protect correlative rights, and ensure public health and safety; “waste” is defined in AS 41.06.210
AS 41.06.110	Concerns AOGCC's authority to carry out the purposes and intent of AS 41.06.105–210 <ul style="list-style-type: none"> (a) contains an expansive statement of AOGCC's jurisdiction over persons and property necessary to carry out the purposes and intent of AS 41.06.105–210 – the State’s police power (b) allows AOGCC to suspend its statutes for lands committed to federal units, provided the conservation of resources is provided for (c) contains a list of specific AOGCC regulatory authorities (d) wells drilled for carbon dioxide are subject to AOGCC’s jurisdiction under AS 31.05 unless covered by AS 41.06.105–210 (e) AS 41.06.105–210 do not limit DNR’s authority over (1) carbon storage exploration licensing or leasing; or (2) approval and management of carbon storage units or operations that include state land
AS 41.06.115	Provides that waste is prohibited in a carbon storage facility or reservoir
AS 41.06.120	Provides permit requirements for storage facilities
AS 41.06.125	Creates a public hearing requirement for storage facility permits issued by AOGCC – notice is given to property owners within ½ mile
AS 41.06.130	Specifies the criteria for the AOGCC to approve a carbon storage facility permit
AS 41.06.135	Allows AOGCC to include parameters, limitations, or restrictions in a permit and to protect and adjust rights and obligations of persons affected by geologic storage
AS 41.06.140	Concerns amalgamation of property interests for storage facilities

SECTION DETAIL: SECTION 33 (AOGCC)



Proposed Sections	Summary
AS 41.06.145	Creates specifications for recording a carbon storage facility certificate to put future property purchasers on notice
AS 41.06.150	Creates statutory requirements for AOGCC to ensure environmental protection and reservoir integrity in storage facilities and reservoirs
AS 41.06.155	Clarifies preservation of rights, including deconfliction of development of other minerals by drilling through or near a storage reservoir
AS 41.06.160	Authority for AOGCC to collect fees and establishes the “carbon dioxide storage facility administrative fund” under the general fund
AS 41.06.165	Specifies that storage operators hold title to injected carbon dioxide until a certificate is issued under AS 41.06.175, including liability for damage associated with injected carbon dioxide
AS 41.06.170	Specifies the eight factor criteria for certificate of completion a transfer of title of CO ₂
AS 41.06.175	AOGCC will collect a “carbon storage facility injection surcharge” for post-closure administration, deposited in the “carbon storage closure trust fund” established in AS 37.14.850 (<i>bill</i> Sec. 6)
AS 41.06.180	AOGCC may impose civil penalties for violations of its carbon storage statutes
AS 41.06.185	Excludes AOGCC’s carbon storage statutes from enhanced oil recovery (EOR), except when an EOR-related reservoir is converted for storage
AS 41.06.190	Authority for AOGCC to enter into agreements with other government entities and agencies for carbon storage purposes
AS 41.06.195	AOGCC authority to determine injection and storage amounts, and providing for fees
AS 41.06.210	Definitions for terms used in AOGCC’s carbon storage statutes

SECTIONAL SUMMARY: 34–39



Section (Agency)	Summary
34–37 (DNR/Parks)	<p>Conforming amendments to parks and recreational facilities laws (AS 41.21)</p> <ul style="list-style-type: none"> AS 41.21.167(a) Wood-Tikchik State Par carbon storage prohibited AS 41.21.491(d) Willow Creek State Recreation Area carbon storage permitted AS 41.21.502(c) Kenai River Special Management Area carbon storage permitted AS 41.21.617 Alaska Chilkat Bald Eagle Preserve carbon storage prohibited
38 (DOR)	AS 43.20.036 – Adds new subsection (k) prohibiting 45Q tax credits from being applied against corporate state income tax
39 (DNR/DOG)	AS 44.37.020 – Adds new subsection (d) for DNR to administer storage facilities and stored carbon after certificate of completion is issued (<i>bill</i> Sec. 33, AS 41.06.170)
40 (DEC)	AS 46.03.020 – Amended to provide the DEC authority under Title 46 to adopt regulations for carbon dioxide pipelines
41–43 (DNR/AOGCC)	General provisions for authority to adopt regulations, title change for chapter AS 41.06, and effective date of the legislation

QUESTIONS?



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