

Heartland Greenway

A Navigator CO₂ Project

www.heartlandgreenway.com



HEARTLAND
GREENWAY

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About Navigator



We are pioneering a path to sustainable carbon solutions, while maximizing value for all stakeholders in the new carbon economy



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Navigator's Track Record



**\$1.3B Capital
Deployed**



**>1,300 Miles
of Pipeline
Built Since
2012**



**>200 Years of
Combined
Experience**



**Strong, Proven
Partnership with
BlackRock**



**Third Midstream
Infrastructure
Venture**

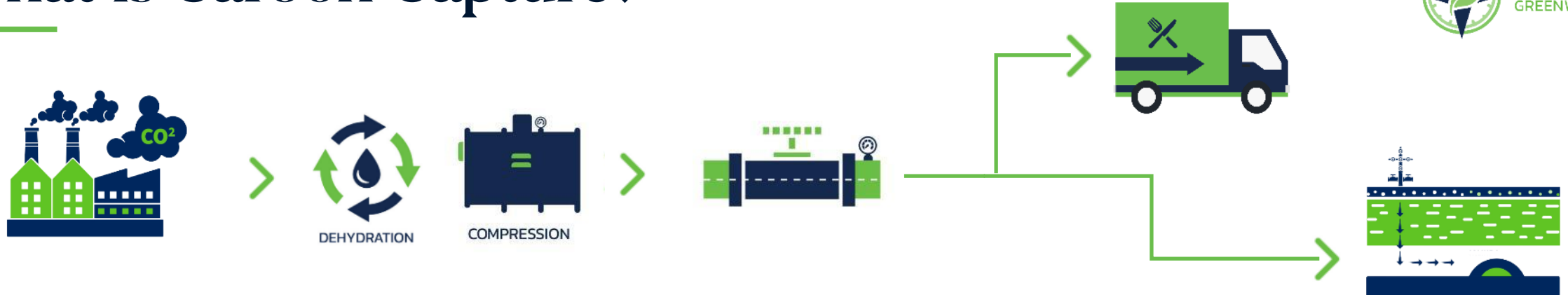


Project Overview

- ~1,300 miles of new liquid CO₂ pipeline in Phase 1
 - ~112 miles in South Dakota
 - 5 South Dakota counties
- Permanent storage in Illinois
- Up to 15 million metric tons/year
- Ethanol and fertilizer partner shippers:
 - Valero
 - POET
 - Big River Resources
 - OCI, Iowa Fertilizer Company
 - Siouxland Ethanol
- Financially backed by BlackRock

The most economical and actionable solution to industrial carbon management

What is Carbon Capture?



PRODUCTION

CO₂ is a byproduct of manufacturing

Industrial processes are responsible for ~25% of energy-related CO₂ emissions

CAPTURE

CO₂ is captured, dehydrated, and compressed into a liquid using equipment added onto the facility without interrupting normal operations

TRANSPORTATION

Liquid CO₂ is aggregated from connected facilities and transported in a network of new steel pipeline

UTILIZATION

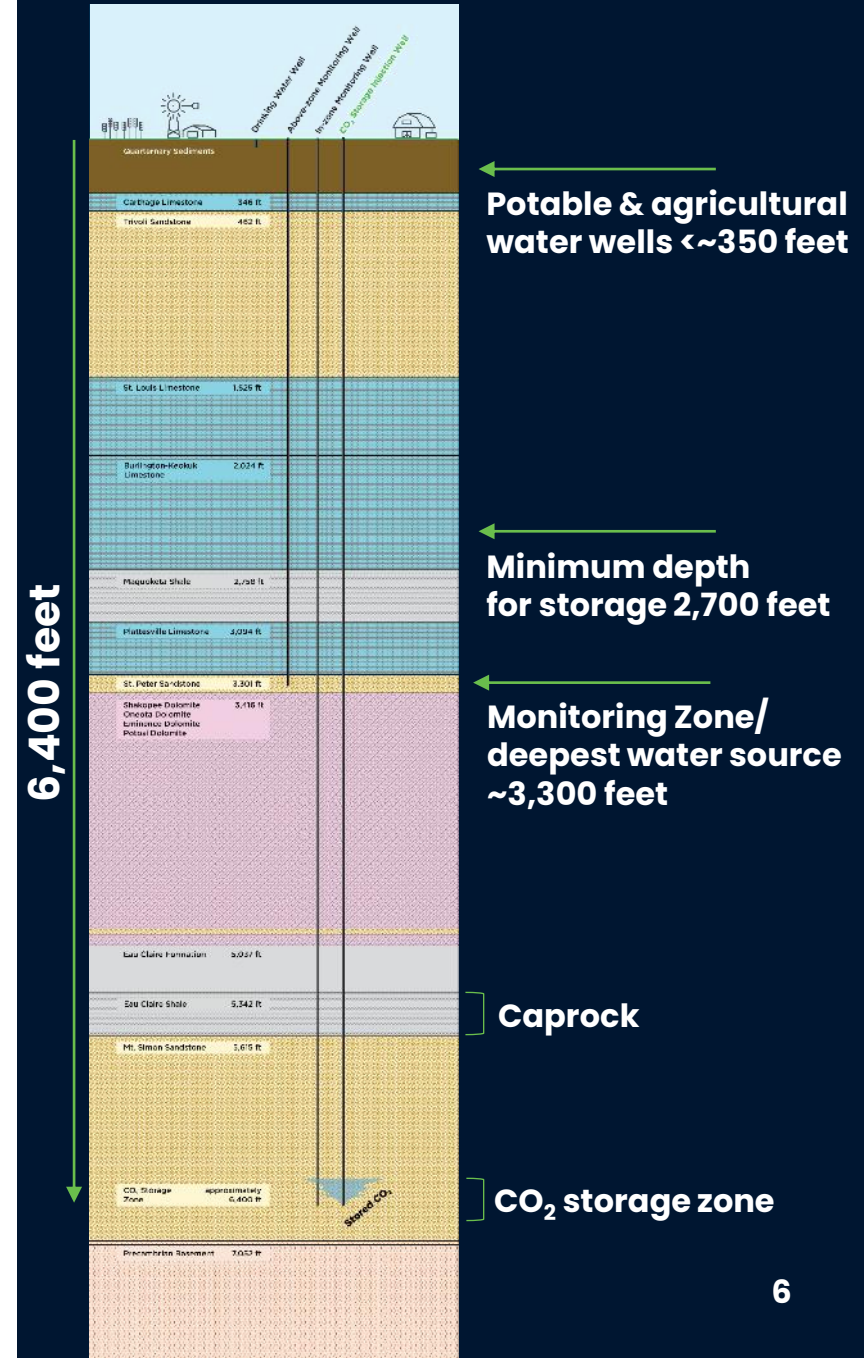
Liquid CO₂ is made available via truck terminals and pipeline offtake connections for value-added commercial and industrial uses

STORAGE

Liquid CO₂ is injected more than a mile below ground, far below critical water resources, where over time the carbon mineralizes

Storage Footprint

- **Industry leaders** helping develop the storage field in Central Illinois, where similar projects are safely operating and planned because of region's favorable geological properties
- Extensive geologic tests confirm the Mt. Simon sandstone formation will allow for **safe, secure, and permanent CO₂ storage**
- Pore space will cover approximately **30,000 acres** and include construction of **multiple injection wells with additional monitoring at each site**
- Once operational, non-stop monitoring will ensure the **long-term safety and integrity** of the storage field



Why Capture Carbon?



CO₂ Emissions

- Our customers produce some of the purest **quality CO₂**, making them great partners for CCUS
- **Dynamic infrastructure**, allows for sequestration and provides necessary supply chain backbone for future innovation of CO₂ uses



Commercial Model

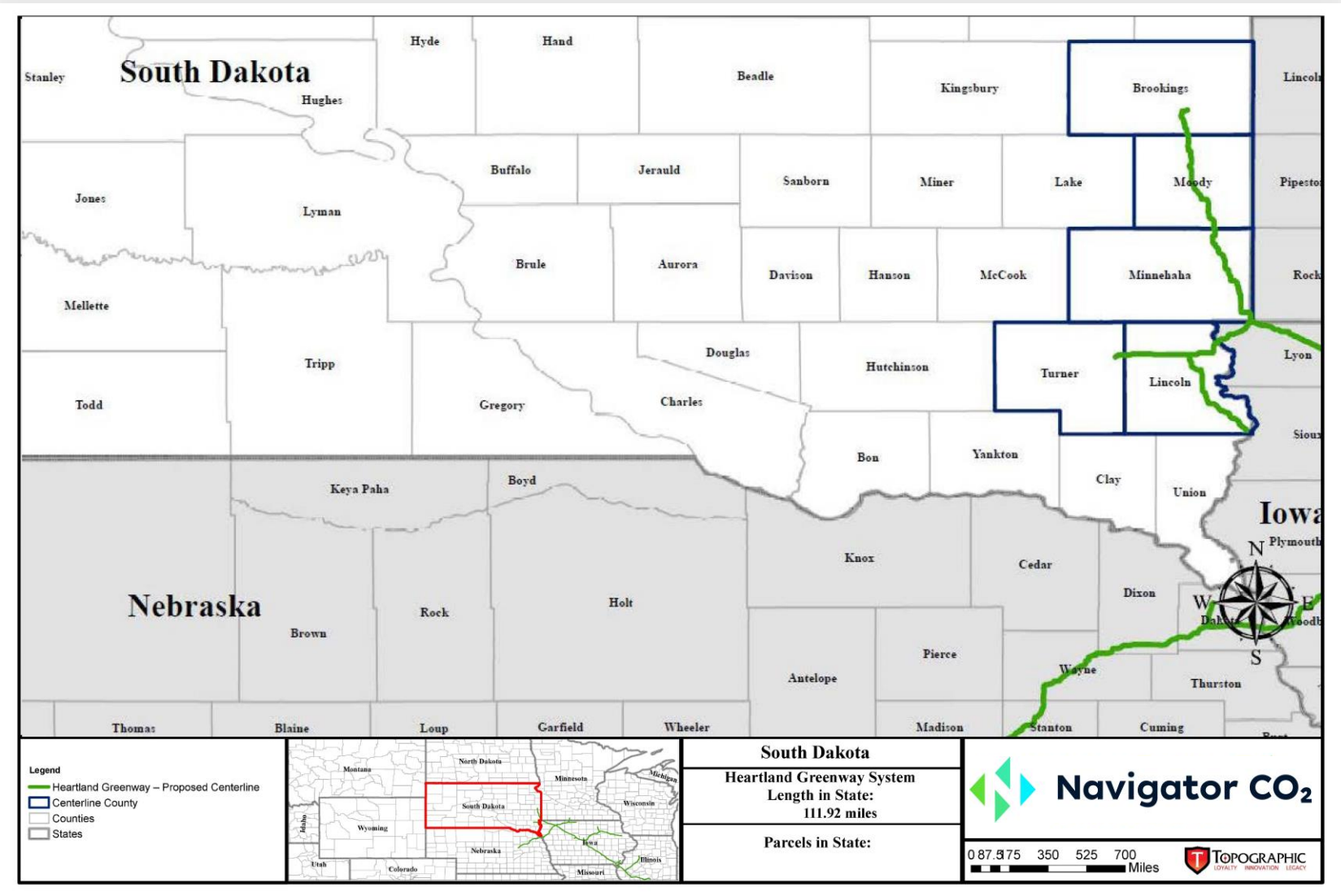
- A simple fee-based **common carrier** model
- Those responsible for decarbonization receive **economic incentives**:
 - 45Q Tax Credit
 - Low carbon fuel programs
 - Emission offsets



Unique Geology

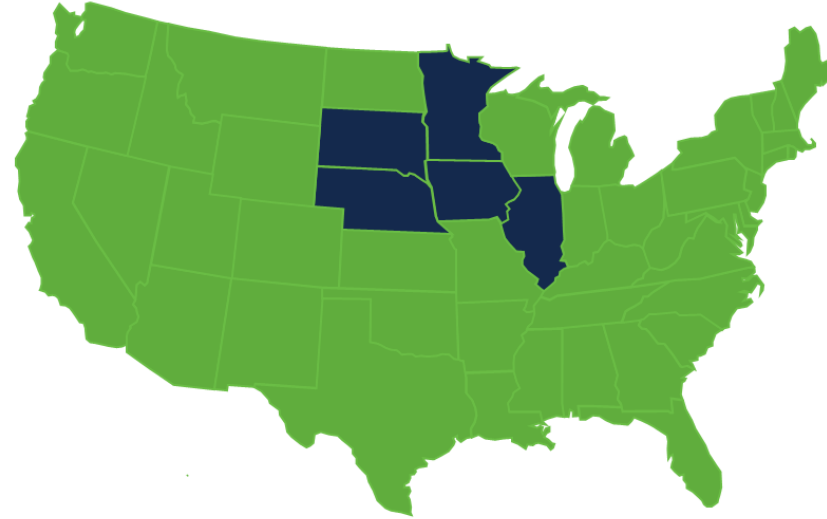
- Only certain areas have the **geology necessary** for this type of geological storage
- Pipeline infrastructure is best suited for **connecting our partner facilities** to these areas with storage capacity

South Dakota Proposed Project Map



\$3.1 Billion capital investment

Economic Benefits of Heartland Greenway

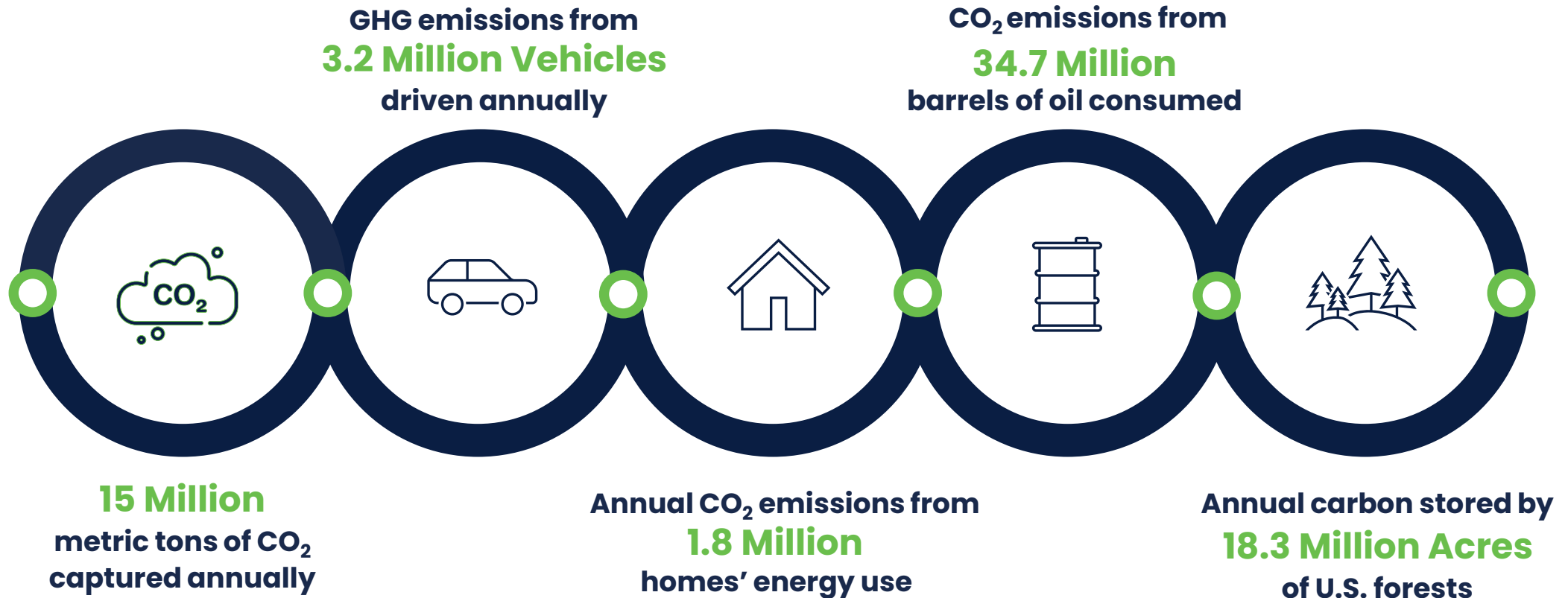


- **~17,000** direct and indirect jobs at peak construction phase in 2024
- **~1,900** permanent jobs in construction, local government, retail trade and utilities industries
- **~\$30.5M** in direct property tax payments annually once fully assessed

Environmental Benefits



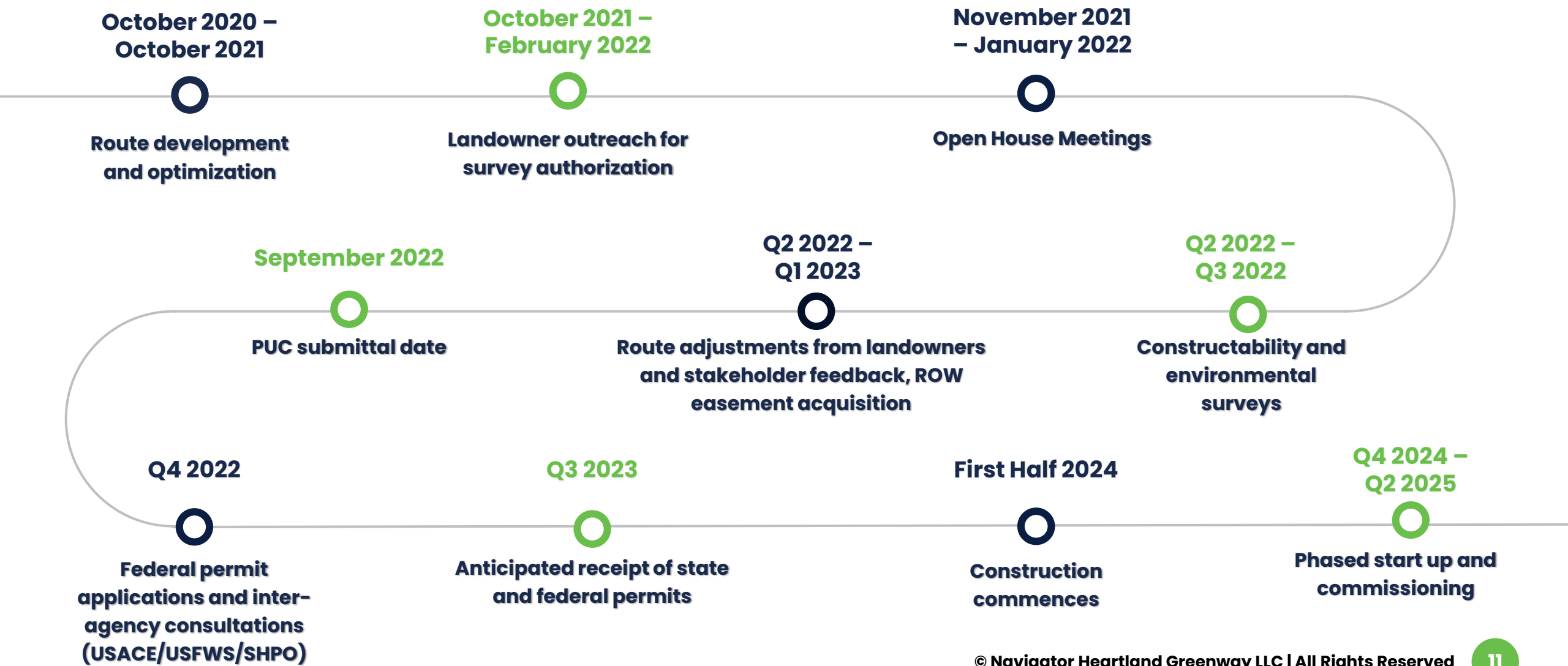
The carbon offset of the Heartland Greenway once fully expanded is equivalent to:



Source: <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

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Anticipated Project Timeline



Project Development and Execution Process



Planning begins years before any construction commences by determining commercial need and preliminary system options



Preparation and Permitting

Landowners and regulator engagement, robust analyses, design, permitting, and ROW acquisition



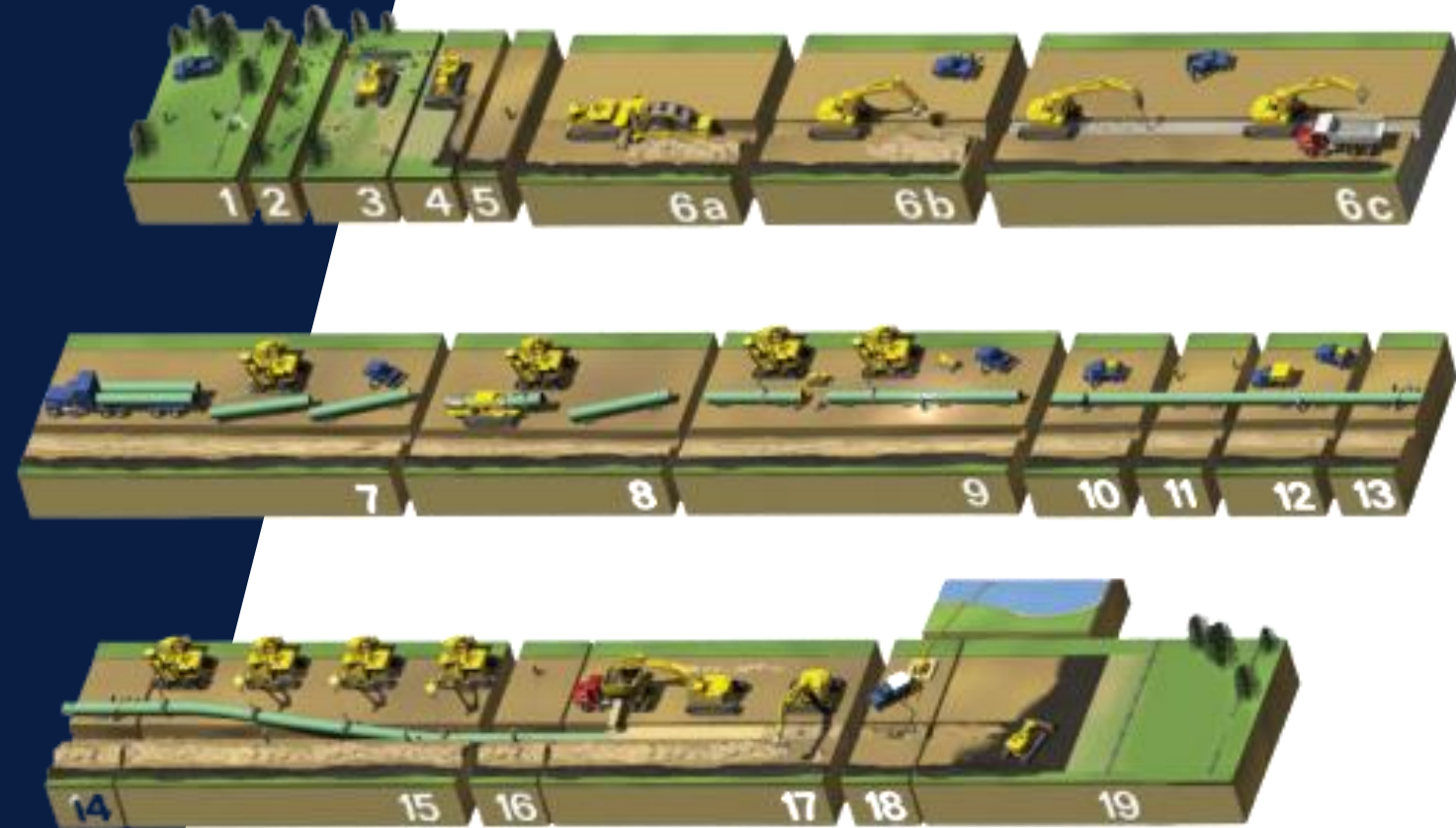
Construction

Survey, clearing, welding, x-ray, trenching, drain tile and irrigation measures, backfilling, erosion control installation



Inspection and Restoration

Third party and stakeholder inspection, topsoil replacement, final restoration



Landowner Summary

We are committed to working in good faith with all landowners throughout the ROW process to achieve mutually acceptable terms and conditions.



Right-of-Way (ROW) Process Explained:

- ✓ **Mailed landowner information packet**
- ✓ **Phone call from ROW agents/company representatives, who are responsible for:**
 - **Answering all landowner questions to the best of our ability**
 - **Gathering and accounting for information specific to each landowner, tenant, tract**
 - **Seeking voluntary survey permissions**
- ✓ **Conduct surveys in a manner to avoid/minimize impacts; repair, replace, or compensate for damages**
- ✓ **Utilize detailed market study to make easement offers based on regional, county, and township market values**
- ✓ **Account for unique landowner and tenant circumstances**

Surveys

Civil/Constructability

- Pedestrian surveys to capture elevation, property boundaries, utilities, structures, fence lines, etc.

Biological

- Pedestrian surveys to delineate water features, land use/vegetation, protected species habitat
- Occasional shovel test or soil probe to document soil conditions

Cultural

- Pedestrian surveys documenting historic and prehistoric artifacts
- Occasional shovel tests in 50m grid patterns. Hand excavated area ~2'W x 2' L x 2'D to sift soils that are replaced once documented

Geotechnical

- 2-4" diameter probes 20-200 ft deep
- Truck or track boring rig to evaluate geology for bore/HDDs
- Backfill holes with spoil and bentonite



Easement Options



Easement Configurations

- Expressly for CO₂ transportation
- Non-exclusive permanent easement
- 50' Permanent
- 50'–75' Temporary construction corridor

Easement Valuation

- Utilizing local/regional real estate market studies
- Negotiate terms of easement with an option
- 20% Paid after signing
- 80% Paid prior to construction as choice of: lump sum OR 20-year annual payment with escalation

Land Use Compensation



Local/Regional Ag Market & Land Study

- Utilize USDA National Agricultural Statistics Services data
- Identify crop types and percentage of land used for crops
- Account for CSR2 values for tillable acres and soil quality/productivity
- Current/historical crop yields
- Work with each landowner and tenant to address unique farming/ranching operations



5-Year Yield Loss Compensation Calculation

- Year 1 – 100% Yield
- Year 2 – 70% Yield
- Year 3 – 40% Yield
- Year 4 – 25% Yield
- Year 5 – 15% Yield



Paid Prior to Construction

Drain Tile Management



We understand and appreciate the importance of maintaining the integrity of drain tile systems and are committed to mitigating the impacts to agricultural fields across the project

01

Locate and Identify

- Landowner discussions
- Locate drain tile and identify type of system
- Consult local/regional subject matter experts
- Design 1'–2' of separation from CO₂ pipeline

02

Proactive Solutions

- Minimize damage to tile during construction
- Install header systems, if warranted
- Third party agricultural and county monitors to ensure compliance

03

Restore to Previous Condition

- Use local contractor or compensate landowners to restore if they prefer
- Scope tile line for damage outside trench, install in-trench supports, reconnect to original system outside of trench, restore gradient and alignment, tie-in connections

Construction Mitigation & Restoration



- ✓ **Minimize impacts from surveys and construction**
- ✓ **Repair, replace, or compensate for all damages**
- ✓ **Protect and restore all affected lands**
- ✓ **Account for the unique conditions of regional landscapes and land use practices**
- ✓ **Retain specialized restoration companies to develop and execute construction mitigation and restoration plan**
- ✓ **Topsoil stripping, segregation, protection, and decompaction**
- ✓ **Restore land use and production as quickly as practical**
- ✓ **Implement SD DANR, County Weed Supervisors, and NRCS recommendations**
- ✓ **Address each landowner's specific requirements from easement documents**
- ✓ **Robust monitoring and inspection program**

We are committed to ensuring impacts are temporary and returning the land to its pre-construction conditions

Pipeline Specifications



- **Design:** steel pipe expressly for liquid CO₂
- **Federal Regulation:** design, construct, operate to meet or exceed 49 CFR Part 195
- **Normal Operating Pressure:** 1,300 – 2,100 psig (MOP by design: 2,200 psig or ANSI 900)
- **Pipe Depth:** nominal 5', 18–24" separation from existing lines/utilities
- **Pipe Diameter:** 6" – 24" outside diameter
- **Operating Temperature:** Pipeline: 40–80°F
- **Mainline Valves:** nominal 30' x 70', strategically located
- **Booster Stations:** 3–4, 10-acre mainline booster stations, location TBD

Design and Safety Philosophy



Minimize Collective Impact

- Avoid and minimize High Consequence Areas (populations, environmental)
- Multiple **plume dispersion models** under various scenarios (ALOHA/PHAST)
- Strategically located mainline valves, **remotely monitored 24/7/365**, and valves that require no actuation (immediate closure – check valves)

Risk Mitigation

- Increased depth of cover to **≥5'** to reduce risk of 3rd party damage and stay beneath existing drain tile and utilities
- **Follow other existing utilities** when practical (increased public awareness and damage prevention plans)
- Warning tape installed **2' above** pipeline as a proactive warning measure
- Increased factor of safety/enhanced line pipe specs to protect from external forces and fracture propagation
- **24/7 monitoring** of CO₂ composition before entering pipeline

Exceed Regulatory Standards

- Utilize guidance from 49 CFR Part 192 (natural gas) and international recommended practices (DNV-RP-F104) in design & construction to meet and exceed Part 195 (hazardous liquid pipelines)

Pre-Commissioning

- **Hydrostatic testing** above max operating pressure
- Coordination with local first responders
- System-wide pre-startup and safety review

Operational Philosophy



Operations

- **24/7, State-of-the-Art Leak Detection**
 - Fiber optics (temperature, vibration, acoustic, pressure)
 - Compensated Mass Balance
 - Redundant communications to avoid outages
 - Cathodic protection equipment and monitoring
 - CO₂ monitoring at above ground facilities
- **Operations Control Room**
 - Manned 24/7/365
 - Continuously monitors all SCADA information
 - Can remotely operate the system (ex. valves/pumps)
- **Integrity Management Plan (maintenance and response)**
 - Continual risk assessment
 - Preventative, mitigative, and remedial measures

Maintenance & Response

- Routine pipeline testing, calibration, and inspection
- Annual desktop & semiannual field response simulations
- Contract with private responders located along route

Emergency Response and Public Awareness



CO₂ Characteristics

- Non-flammable, colorless, odorless, heavier than air
- Mildly toxic (concentration & exposure time sensitive) and asphyxiant
- Working proactively to develop **unique odorant**

EMS Engagement

- CO₂ training by county/HAZOP District
- Develop **Preliminary Emergency Response Plan** w/ EMS input
- Identify and provide resources to execute the Response Plan
- Development of **"Nav 911"** automated outcall system
- Navigator personnel/3rd party team to supplement EMS teams
- Perform drills to measure the Plan effectiveness, adjust accordingly prior to in-service
- **Semiannual response drills** throughout operations

Damage Prevention & Public Awareness

- Pipeline **identification markers** denoting location
- Weekly **aerial surveillance**, weather permitting
- **#811** public awareness and damage prevention
- Meetings, trainings, and communication with local liaisons

Thank You



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Contact Us



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