

A wide-angle photograph of a desert landscape during the "golden hour" of sunset. In the foreground, there are sandy dunes with sparse, dry vegetation, including a prominent yucca plant. The middle ground shows a flat, sandy plain. In the background, a range of rugged, reddish-brown mountains stretches across the horizon under a sky with soft, wispy clouds. The overall lighting is warm and golden.

BCarbon Stakeholder Meeting

June 8th, 2023

Agenda



- John McDougal
- Methane Protocol Updates & ***Gauging Consensus***
- Living shorelines buyer strategy
- General discussion

Upcoming Meetings

- ***Stakeholder Working Group*** –
Thursday, July 13th, 9 AM CT





anew

BCarbon Stakeholder Meeting

Anew Company Overview and Carbon
Forest Project Fundamentals

Confidential and Proprietary

www.anewclimate.com

Anew Carbon

Our Carbon team provides expert management of GHG mitigation, carbon neutral initiatives, and sustainability services

- Active in all compliance and voluntary GHG markets in North America
- Top ranked supplier of compliance and voluntary carbon credits
- Turnkey transaction service for sale, transfer, and retirement of credits
- Upstream project listing and management for value-optimized credit generation, including standardized protocol development

-
- **Forests, grasslands, wetlands**
 - **Regenerative agriculture**
 - **Landfill gas**

- **Household devices (e.g. cookstoves)**
- **Renewable energy**
- **Industrial projects**

100M+

Carbon tonnes transacted

6M+

Acres enrolled in carbon projects

\$182M

New revenue for landowners

110+

Registered forest carbon projects

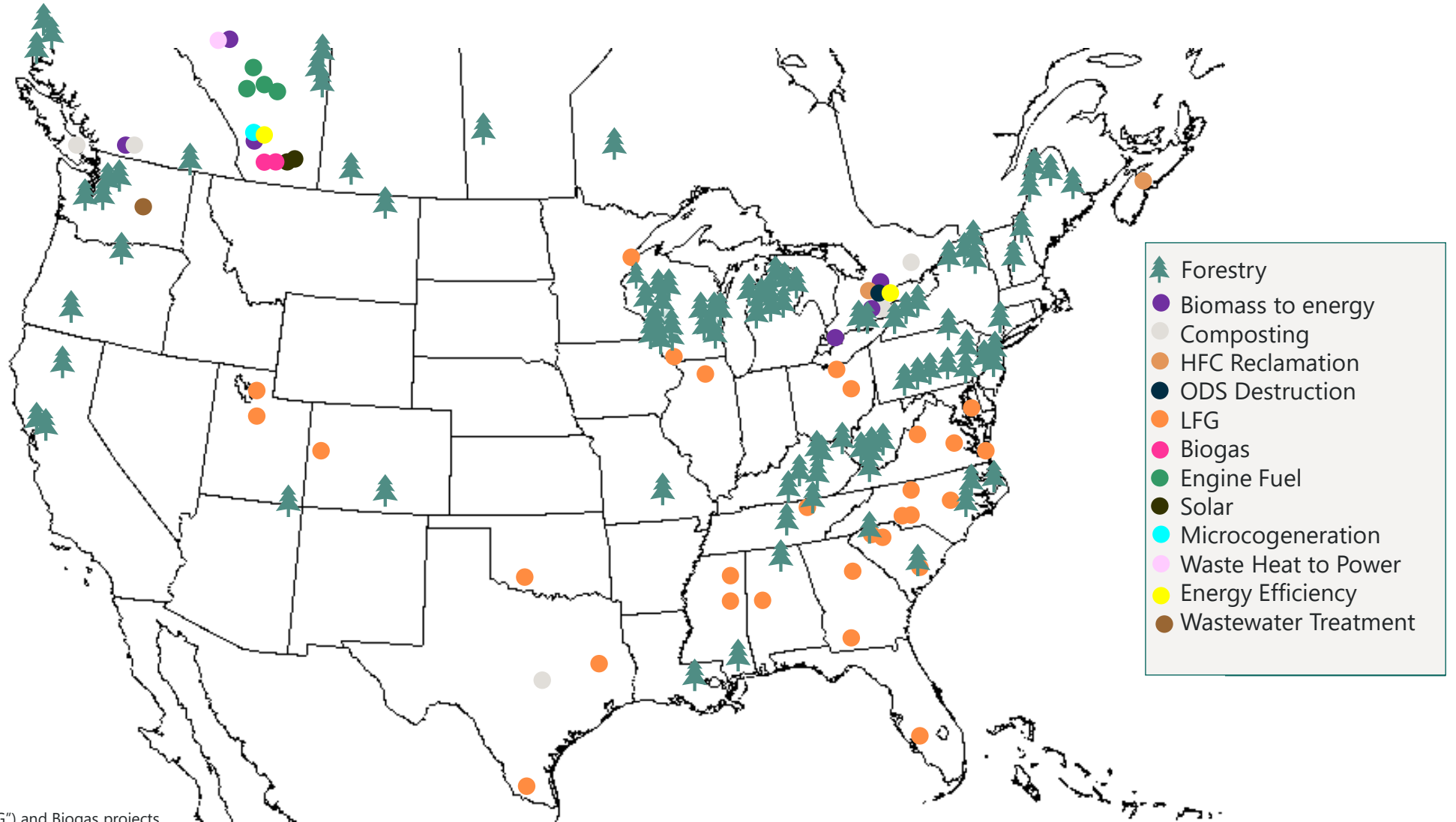
400+

Carbon projects in the Anew portfolio

Anew's Carbon Projects

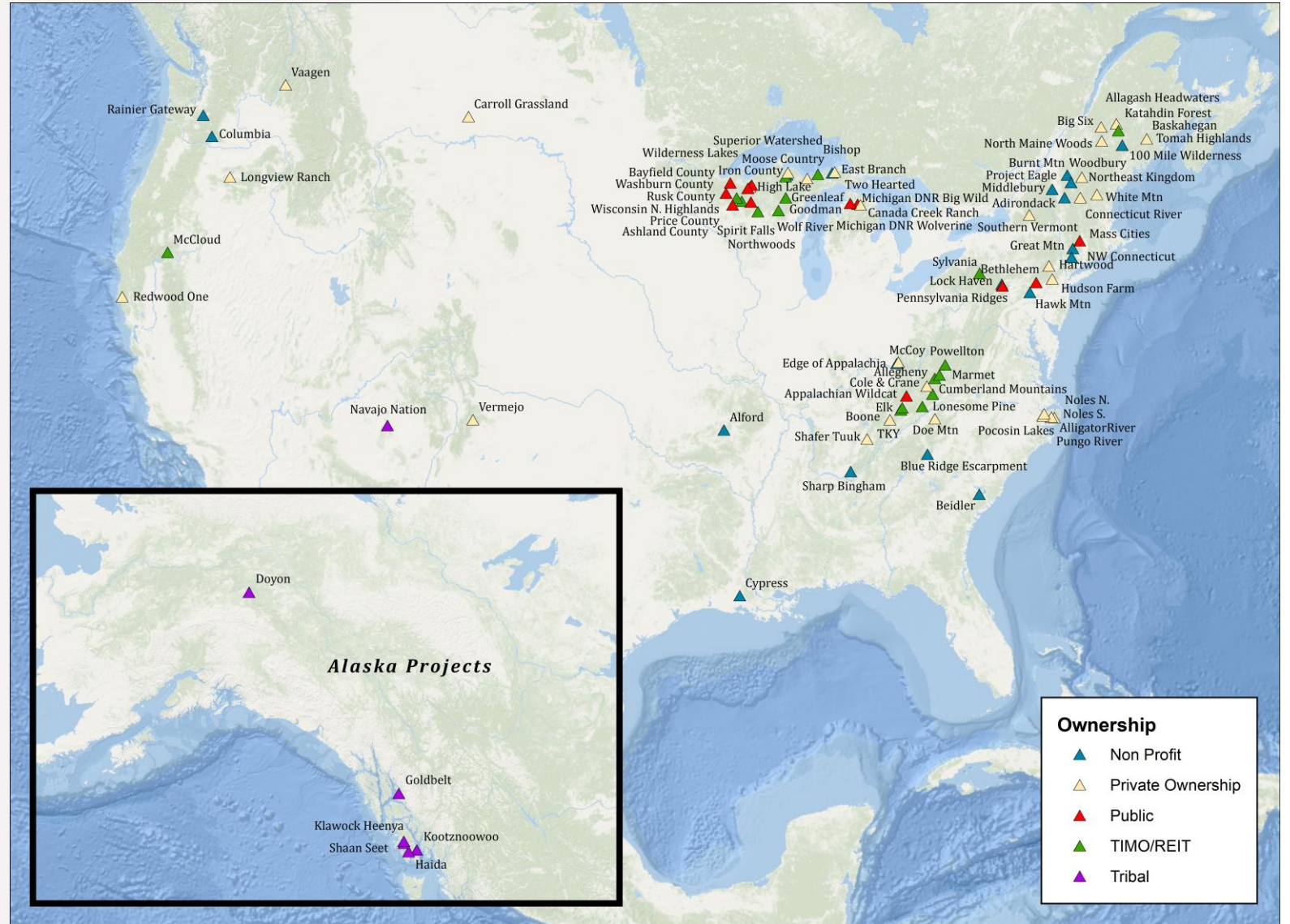
Carbon Projects

- North America's leading EA project developer
- Over 225 various EEA carbon projects in N. America, 77 of which are forestry
- 30+ EA types and 20+ technologies



Note: Does not include Renewable Natural Gas ("RNG") and Biogas projects.

Anew Forestry Project Map



Forest Carbon Project Types



**Afforestation/
Reforestation**



**Avoided
Conversion**



**Improved Forest
Management (IFM)**

The State of US Forests and Need for IFM

IFM projects keep forests from being converted to other uses.

- From 2000 to 2020, the U.S. experienced a net loss of 8.62 million acres of tree cover.
 - This equates to a loss of 1.2% of total forest coverage in the U.S.
- Market forces including commodity-driven deforestation (20%), agricultural shifts (5%), and urbanization (75%) are driving this loss.

IFM allows more carbon to be stored in the forest.

- IFM promotes the growth of healthy, larger trees as there is less pressure to harvest.
- If U.S. wood energy consumption and GDP continues to expand, U.S. timberlands would become a **source** of emissions by 2050 as more carbon is released from harvests than is sequestered by new growth.

Sources: Mark A. Drummond, Thomas R. Loveland, Land-use Pressure and a Transition to Forest-cover Loss in the Eastern United States, BioScience, Volume 60, Issue 4, April 2010, Pages 286–298, <https://doi.org/10.1525/bio.2010.60.4.7>

Nepal P, Ince P, Skog P, Chang SJ. Projection of U.S. forest sector carbon sequestration under U.S. and global timber market and wood energy consumption scenarios, 2010-2060. Biomass and Bioenergy 2012 Oct 45: 251-264. <https://doi.org/10.1016/j.biombioe.2012.06.011>

["Global Forest Watch," 2023.](#)

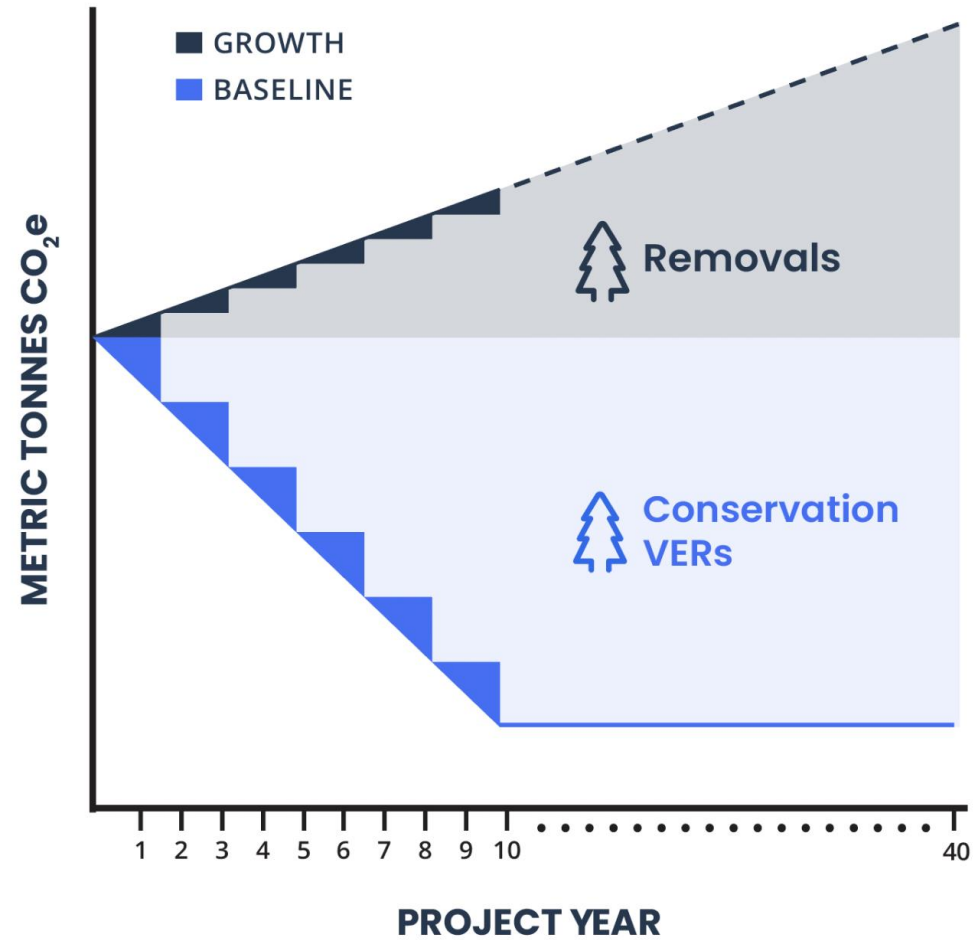
IFM: Additionality and Carbon Project Impacts on Forest Management

- **Projects must demonstrate project specific baselines using representative reference points to establish common practice of forest management**
- **Harvesting cannot exceed forest growth in any year**
- **Must meet sustainability requirements:**
 - Certification, government-approved FMP, or uneven-aged harvesting.

Carbon revenues replace timber revenues allowing the forest to grow larger trees and sequester more carbon.

Voluntary US ACR IFM Crediting Mechanics

IFM QUANTIFICATION



Additional Co-Benefits of U.S. IFM

- Habitat and Watershed Protection
- Recreation for all
- Nutrient Cycling
- Soil Protection
- Educational and Research Opportunities
- Economic development for rural areas
- Partnerships with Land Trusts and Conservation Groups

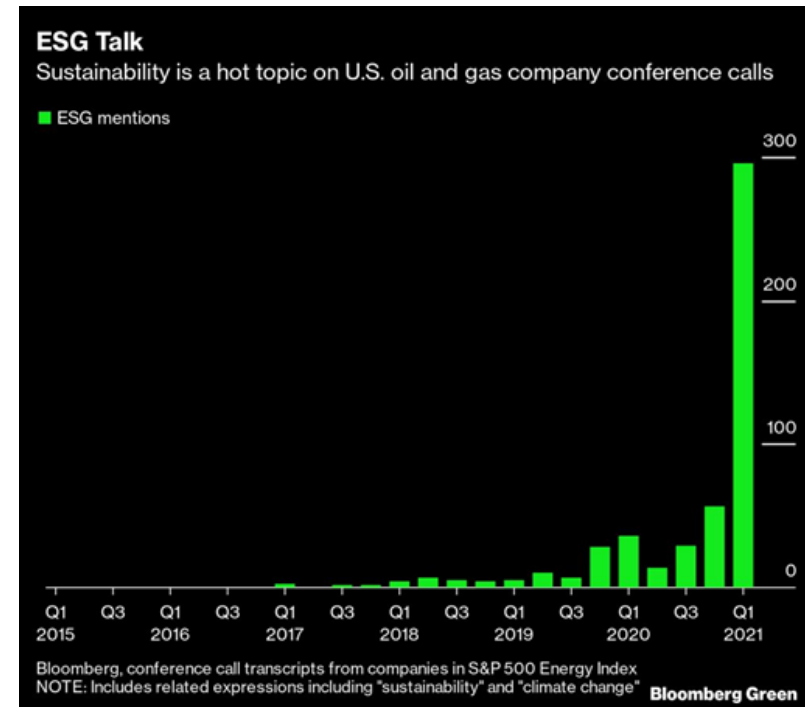


Carbon Markets Snapshot

Voluntary offset demand has been on the rise.

Offset demand has been increasing due to the following:

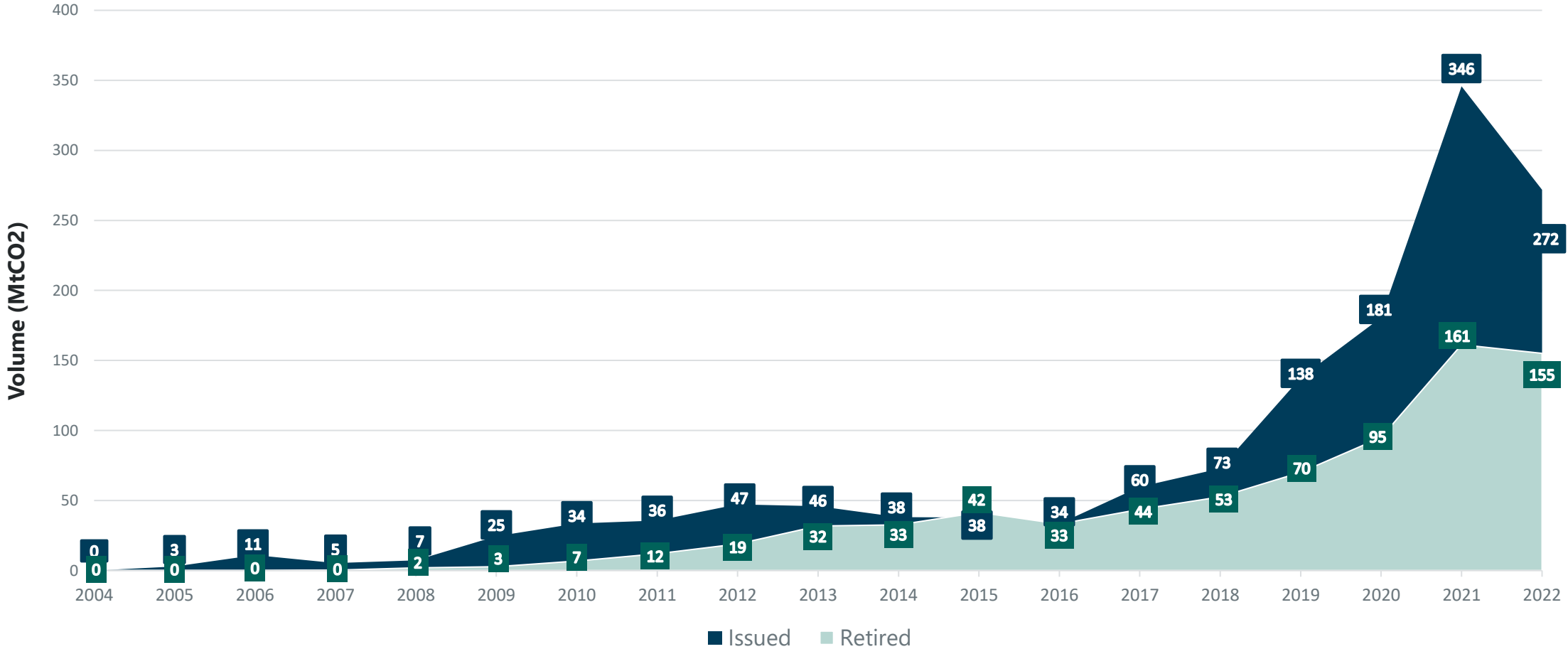
- Decarbonization and ESG goals set by corporates, universities, and other organizations
- Paris Agreement - Article 6
- Municipal Climate Action Plans
- CORSIA
- CEQA (potentially NEPA)



Increased carbon-neutral & net zero commitments and overall strengthened corporate ESG/ sustainability presence

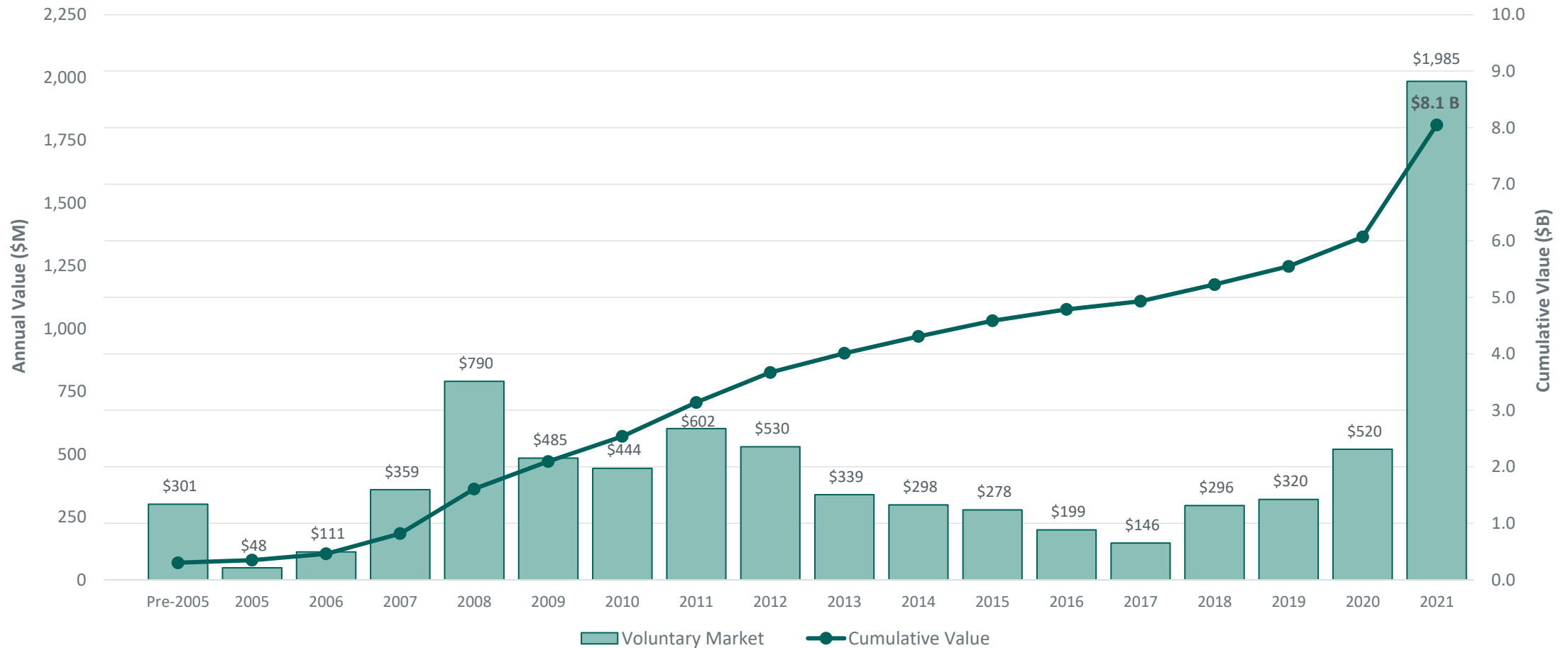


Historic Voluntary Carbon Offset Issuances & Retirements (VCS, GS, CAR, & ACR)



Recent Growth in Voluntary Carbon Markets

Market Size by Traded Value of Voluntary Carbon Credits, pre-2005 to 2021



Data Source: Ecosystem Marketplace, a Forest Trends Initiative.



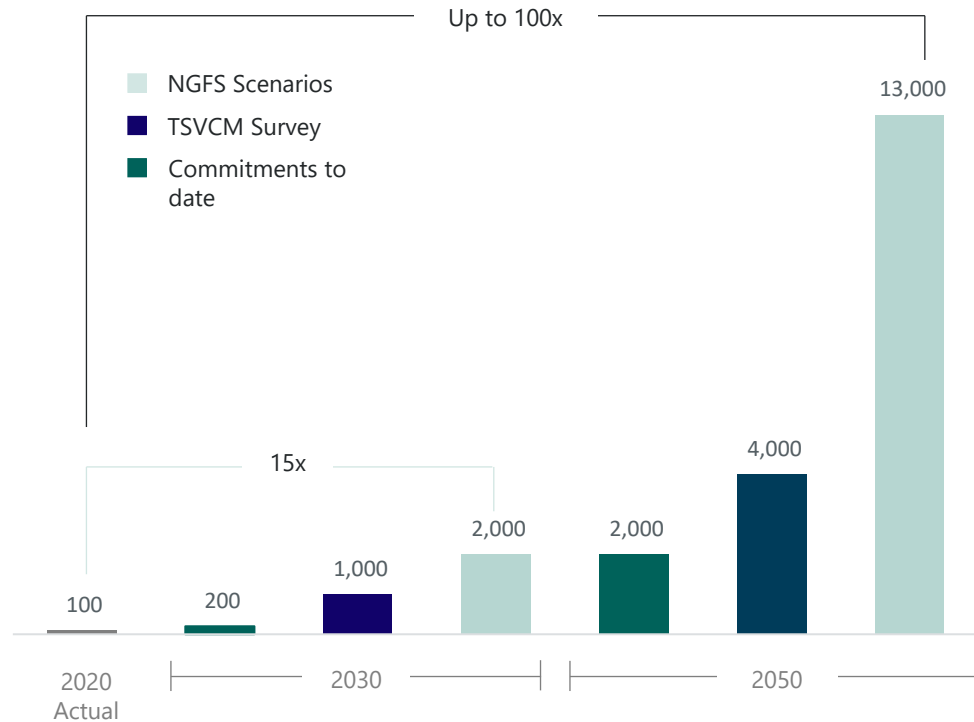
Thank you

John McDougal, VP – Portfolio Management

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Voluntary Carbon Demand – Past and Future

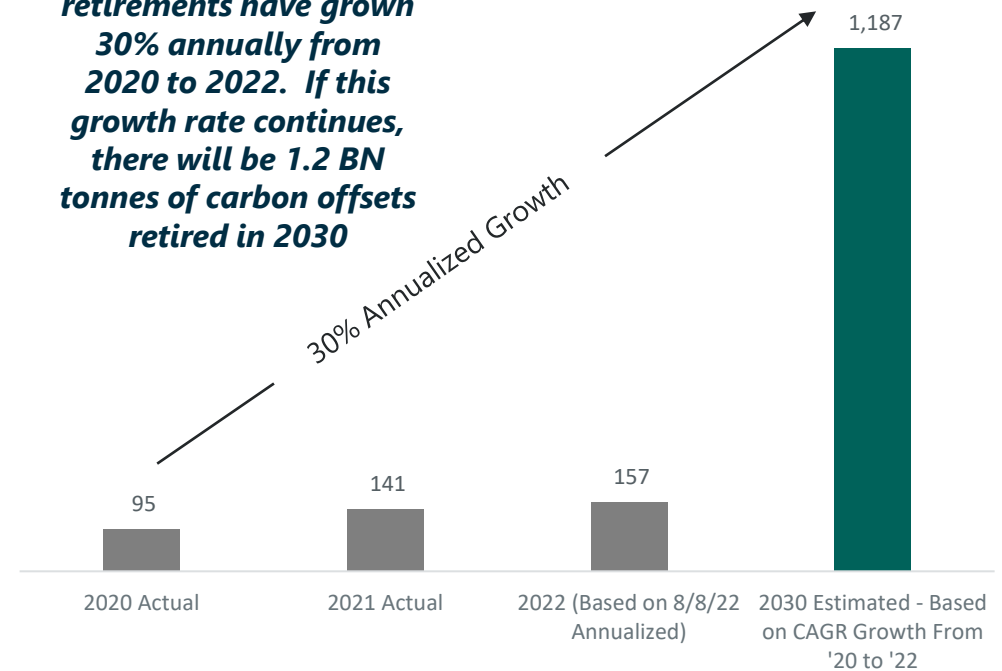
Third Party “Expert” Growth Estimates (MM Tonnes)



Source: McKinsey and CIBC Market Research.
 Note: TSVCM = Task force on Scaling Voluntary Carbon Markets. NGFS = Network for Greening the Financial System.

Recent Actual Retirements and Implied Market Growth (MM Tonnes)

Actual offset retirements have grown 30% annually from 2020 to 2022. If this growth rate continues, there will be 1.2 BN tonnes of carbon offsets retired in 2030



Note: 2020 and 2021 data based on actual retirement data from Verra, ACR, CAR and Gold Standard retirements. 2021 has been adjusted to exclude approximately 20 MM in retirements related to crypto carbon retirements which are considered non-recurring. 2022 based on annualizing actual retirement data through 8/8/22. 2030 estimate based on assuming compounded annual growth rate from 2020 to 2022 of 30% remains consistent through 2030.



Methane protocol: reviewing changes and gauging consensus

Our timeline

- *May 11th*: Introduced the methane protocol at the Stakeholder Meeting
- *May 12th*: Sent out protocol after the full group meeting
- *June 1st*: We received a mix of general thematic comments + technical comments
- *Now*: Incorporated feedback + bringing it to you

Does this protocol align with BCarbon's mission?

BCarbon's mission "is to be an independent not-for-profit corporation dedicated to developing and managing standards and related programs that enable governmental organizations, the private sector and civil society to achieve their sustainable development and climate change goals and to protect and conserve the environment for the benefit of the general public."

BCarbon seeks scientific, measurable capture or reductions in emissions.

Scale of Methane Emissions

- **>25%**

- The percentage of the global temperature increase since the start of the Industrial Revolution attributable to methane emissions.

- **84X**

- The Global Warming Potential of Methane compared to Carbon Dioxide.

- **29 million**

- Abandoned oil and gas wells worldwide, estimated by Reuters. Of the abandoned oil wells in America, 1.7 million are unplugged and **leaking**.

- **210 million**

- tons of CO₂ equivalent each year contributed by abandoned wells.

- **600%**

- The potential increase in emissions from the highest-productivity leaking wells.

Does this protocol fill a need in the marketplace?

- There has been widespread dissatisfaction with the only other methane capping protocol on the market.
- Our protocol has been modified to address the concerns of project developers.
- BCarbon is responding to demand and in pursuit of scalable carbon projects that make a tangible impact.

Will implementation of this protocol interfere with BCarbon's other programs?

BCarbon is in process of evaluating the bandwidth (personnel requirements etc) for reviewing and approving these applications, much of which will be done by outside experts.

"Cleaned Up" Excel Models

- Decline Curve Model and Leak Rate Model were updated to be more simplified for ease of use.
- No mathematical changes were made, only formatting changes.

Syntax/Clarity Edits

Section 1.1 Methane Emissions from Oil and Gas Wells

Recent numbers released by the U.S. Environmental Protection Agency (EPA) in their Inventory of U.S. Greenhouse Gas Emissions and Sinks report estimate that there are about 3.7 million abandoned oil and gas wells (including orphaned wells and other non-producing wells) within the United States. Wells that have been plugged have average

Section 3.2 BCarbon Review

- a. Project Developer pays a per carbon credit fee to BCarbon of \$0.10
- b. Project Developer pays [~~\$100~~] per well processing fee

Removal of Platform Specificity

4. BCarbon receives Notice to Proceed from d-MRV and uploads from the Provisional Project Plan the Validation Certificate from Validator
BCarbon issues carbon credits for Project, such carbon credits to be held on the BCarbon Registry within a Lock-Box Account to be released to the appropriate Project Developer account upon BCarbon receiving the Final Project Plan with final Total Project Emissions figures
5. Project Developer submits Final Project Plan to BCarbon's d-MRV direct access and notifies BCarbon
6. BCarbon receives Final Project Plan and automatically releases carbon credits from the Lock-Box Account to the appropriate Project Developer's account

Added to d-MRV details

Section 3.1 Project Submission

2. Final Project Plan (post-plugging) that includes:
 - a. Updates to each section of the Provisional Project Plan
 - b. Final GHG Calculations
 - c. d-MRV Details, including but not limited to demographic details listed below:
 - i. # of aquifers within 5 miles of the well
 - ii. # of water wells within 5 miles of the well
 - iii. # of children, women of child-bearing age, and disadvantaged people within 5 miles of the well
 - iv. # of hospitals, nursing/retirement homes, schools, churches, playgrounds, etc.
 - v. List of endangered species within 5 miles of the well
 - vi. Agricultural land acreage within 5 miles of the well
 - vii. Total acreage of land reclamation across all wells

Validation Updates- Clarifying language & review process change from 7 days to 30 days

Section 3.2 BCarbon Review

Process of Validation, Approval, Development, and Issuance of Carbon Credits

1. Pre-Plugging Submission to BCarbon contains:
Provisional Project Plan including d-MRV
2. BCarbon reviews Provisional Project Plan for completeness
3. BCarbon selects and contracts with a validator to review the Provisional Project Plan. Project Developer is responsible for such validation costs and will be notified of the estimated costs of validation prior to an agreement.
 - a. Validator reviews and returns a Validation Certificate to BCarbon
 - b. Review process timeline is 30 days

Eligibility Updates

Section 4.1 Eligibility

1. Geographic scope:

Projects must be located in the United States. At this time, BCarbon has received requests to include Canadian projects in the Protocol and is currently evaluating the issue of and the feasibility of doing so. Once completed, BCarbon will make a recommendation to stakeholders.

2. Accepted well types:

On-land or onshore wells (over freshwater) registered with the appropriate Local Regulator as oil or natural gas producing wells

3. Well with proof that either:

- a. The well has been transitioned to a non-producing status in filings with the Local Regulator or attestation from a certified engineer; or
- b. There has been no net production in the past 3 months

Added language: must meet any contractual requests imposed by existing mineral leases

5.10.2. Plugging and Surface Reclamation Standards

In the absence of plugging requirements set by local and state authorities, Project Developers are required to follow guidelines for design, placement, and verification of cement plugs as set by the American Petroleum Institute (API) Recommended Practice (RP) 65-3 – Wellbore Plugging and Abandonment Standard. Where applicable, plugging, abandonment and restoration must meet contractual requirements within existing mineral leases should those requirements exceed regulatory minimums. Such requirements are out of the purview of BCarbon and are solely within the Project Developer's responsibility.

May 2023 study shows additional harmful chemicals leaking from unplugged wells

- **Volatile organic compounds (VOCs)** including benzene found leaking out of 48 abandoned wells in Western PA
- 93% of these wells within <3,300 feet of buildings + homes
- Nearly **25% were just 328 feet from homes**

Chemical Characterization of Natural Gas Leaking from Abandoned Oil and Gas Wells in Western Pennsylvania

Dominic C. DiGiulio,* Robert J. Rossi, Eric D. Lebel, Kelsey R. Bilsback, Drew R. Michanowicz, and Seth B.C. Shonkoff



Cite This: *ACS Omega* 2023, 8, 19443–19454



Read Online

A dense forest of tall trees with green foliage. Sunlight filters through the canopy, creating a bright spot in the upper center. In the lower-left foreground, there is a piece of rusted metal machinery, possibly a crane or excavator, with a yellow stripe and some text on it. The overall scene is a lush, green woodland.

Gauging consensus

Living Shorelines & Potential Credit Buyers



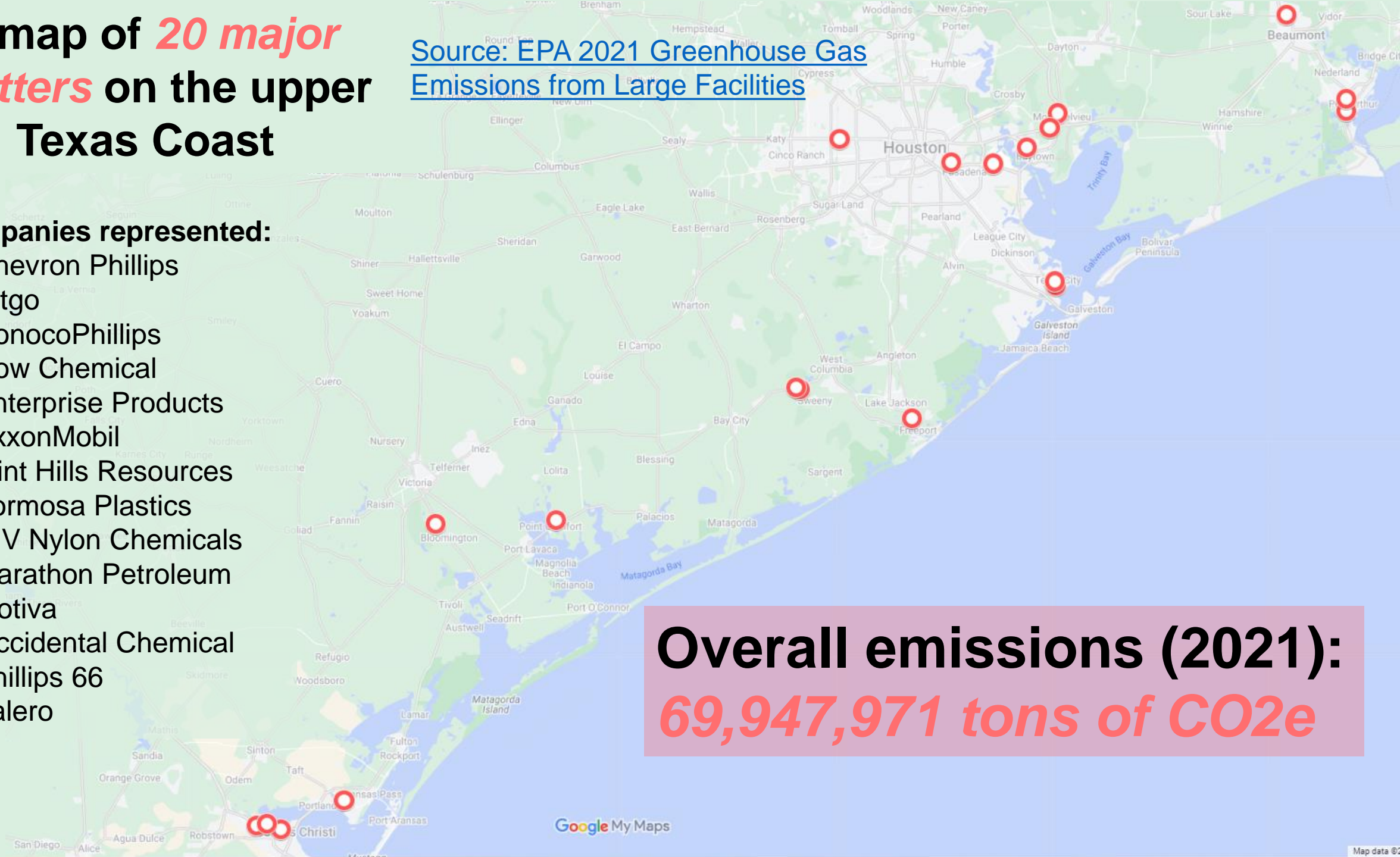
A map of *20 major emitters* on the upper Texas Coast

Source: EPA 2021 Greenhouse Gas Emissions from Large Facilities

Companies represented:

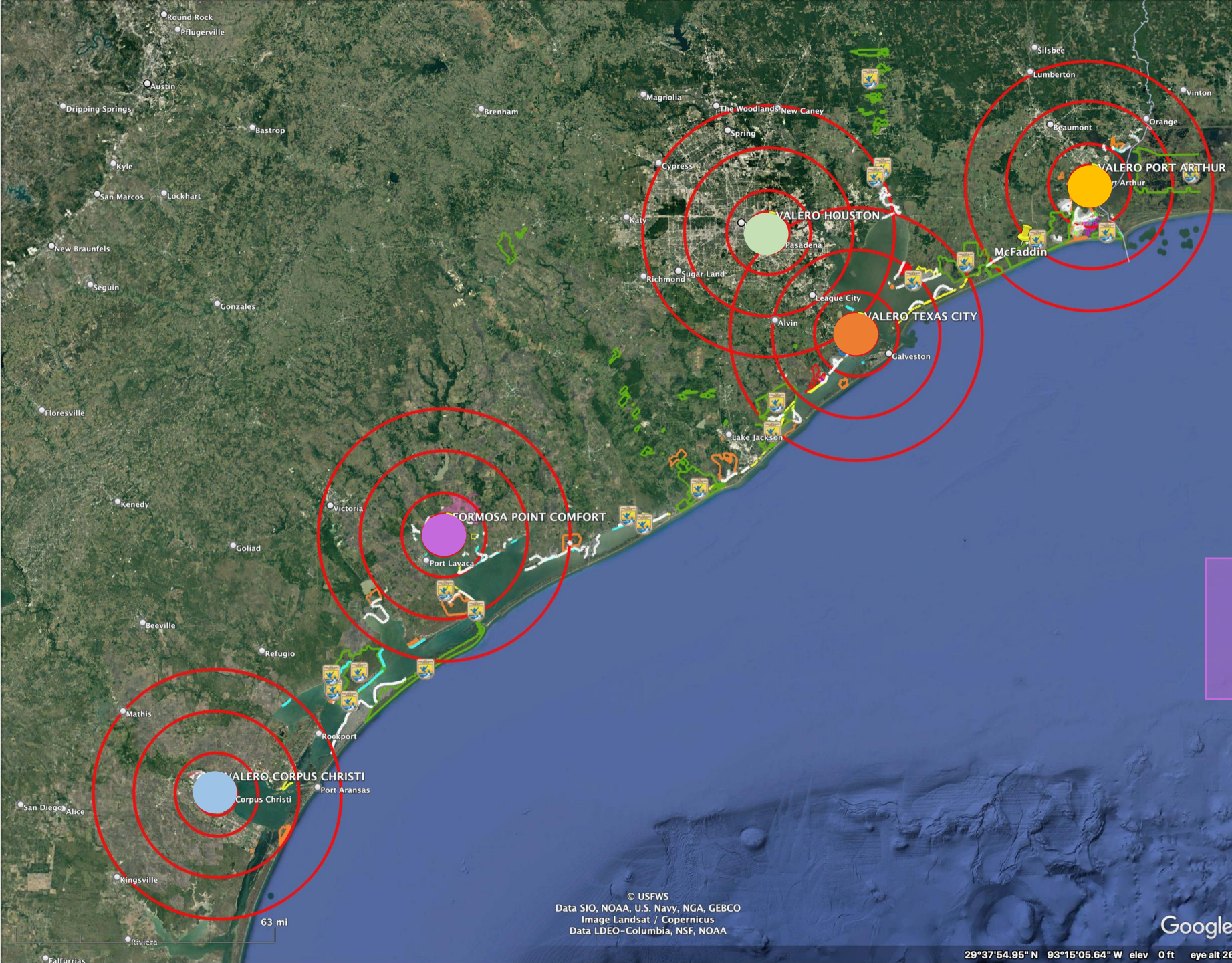
- Chevron Phillips
- Citgo
- ConocoPhillips
- Dow Chemical
- Enterprise Products
- ExxonMobil
- Flint Hills Resources
- Formosa Plastics
- INV Nylon Chemicals
- Marathon Petroleum
- Motiva
- Occidental Chemical
- Phillips 66
- Valero

Overall emissions (2021):
69,947,971 tons of CO₂e



If adopting a 50% emission reduction goal by 2030, these 20 facilities alone will need **3.5 mil. nature-based credits/year**

Assuming that, after avoiding and minimizing emissions, 10% of the 50% reduction will be accounted for by NbS



● Valero Port Arthur:
2.2 million tCO₂e (2021)

● Valero Texas City:
2.2 million tCO₂e (2021)

● Valero Houston:
1.6 million tCO₂e (2021)

● Formosa Point Comfort:
5 million tCO₂e (2021)

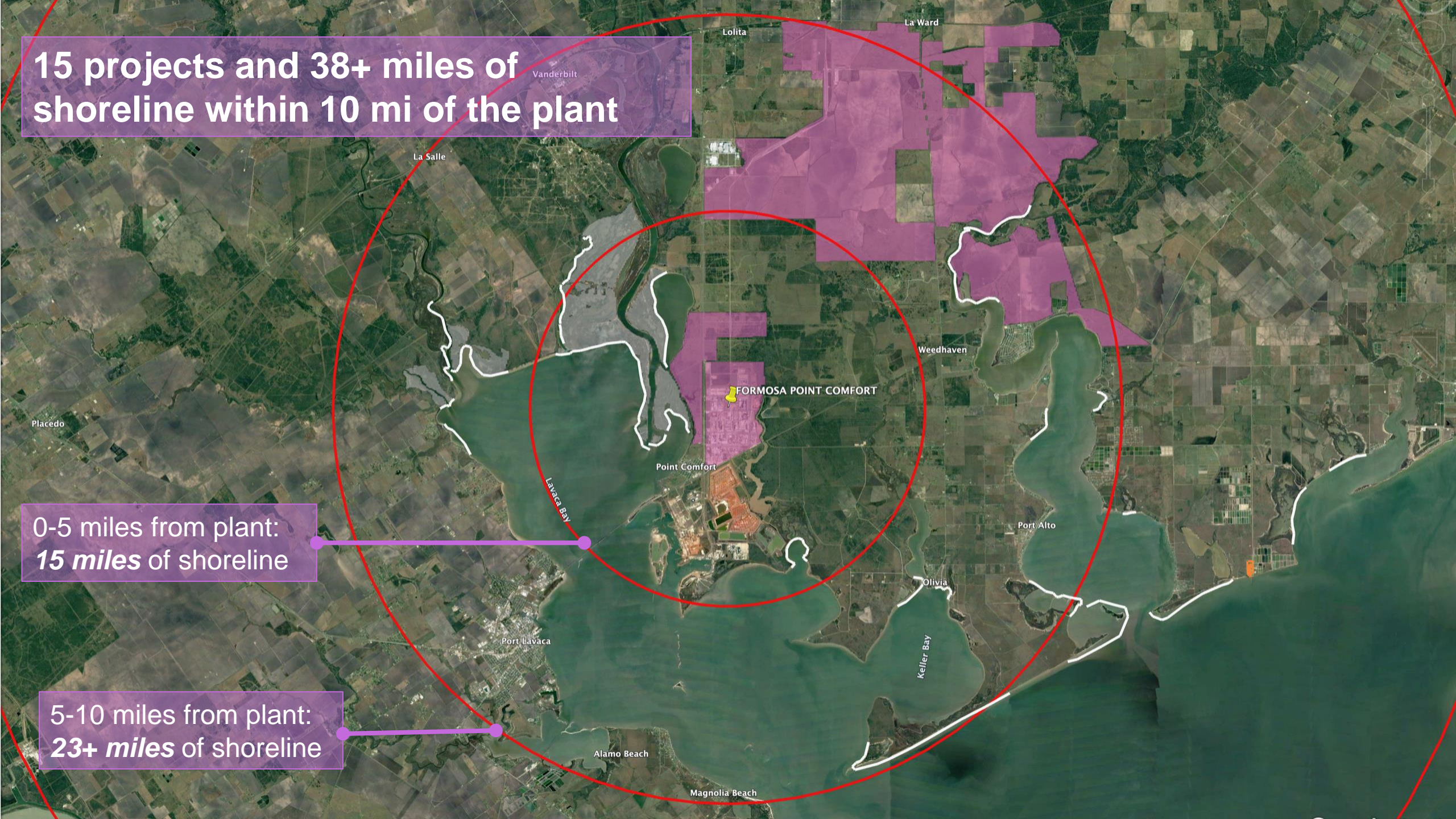
● Valero Corpus Christi:
4 million tCO₂e (2021)



15 projects and 38+ miles of shoreline within 10 mi of the plant

0-5 miles from plant:
15 miles of shoreline

5-10 miles from plant:
23+ miles of shoreline



Next Steps:

Developing the business case for living shoreline protocol use on the TX coast

- Understanding the up-front economic implications for developers and buyers
- Developing concept projects for companies of interest and pricing them out
- Packaging information that would be of use to interested buyers