

City Case Studies:

San Francisco - The Regulator

This case study is part of a series. The development of the case study was led by Carbon180, a partner in the City CDR Initiative, and received direct input from the San Francisco Environment Department

City: San Francisco, California**Capital City:** No**Location:** Coastal**Country Governance:** Federal country**Climate Zone:** Mediterranean**Population:** 842,000 (2024)**Carbon Footprint:**4.1 million metric tons of CO₂ equivalent (2022)**City Climate Targets:**

61% reduction in emissions by 2030. Net-zero emissions by 2040.

National Climate Targets:

N/a

Memberships:

[C40 Cities](#), [Covenant of Mayors](#), [ICLEI USA](#), [Carbon Neutral Cities Alliance](#), [Urban Sustainability Directors Network](#)

Capacity to Act:

The city of San Francisco has the political will and legal authority to develop supporting policies and regulations. While its financial resources and institutional capacity are limited, its regulatory powers, public support, a thriving R&D&I ecosystem, and its reputation as a leader in environmental stewardship, give San Francisco significant influence in advancing and accelerating CDR in the region.

POLICY LANDSCAPE ANALYSIS

At the core of the city's climate strategy is its net-zero emissions goal by 2040, defined in [Chapter 9 of the Environmental Code](#) as a 90% reduction in direct greenhouse gas emissions and removal of the remaining 10% through nature-based sequestration strategies. While the [2025 Climate Action Plan](#) (CAP) Update is still under development, the [2021 CAP](#) lays the groundwork, emphasizing decarbonization through energy transition, transportation reform, and land-use change. Although engineered CDR is not explicitly referenced, the CAP supports sequestration through ecosystem restoration, urban greening, and compost application, creating potential pathways for biochar and other biogenic CDR solutions.

Several municipal ordinances reinforce San Francisco's emissions reduction agenda and could serve as platforms for CDR integration:

- The [Carbon Mitigation Program \(Chapter 52\)](#) mandates offsets for official air travel emissions through funding local GHG reduction projects.
- The [Existing Buildings Energy Ordinance](#) and the [100% Renewable Electricity for Commercial Buildings Ordinance](#) drive energy efficiency and clean energy use in the building sector.
- The [Healthy Air and Clean Transportation Program](#) and [Commercial Garage EV Charging Ordinance](#) support the transition to low-emissions transportation.
- The [Mandatory Recycling and Composting Ordinance](#) reduces methane emissions and supports soil carbon storage through organics diversion.

In the urban landscape, the [Green Infrastructure Plan](#) and investments in regenerative agriculture enhance stormwater management, expand green spaces, and reduce fossil fuel dependency—offering co-benefits for CDR through increased soil and biomass carbon sequestration. Additionally, [zero-waste_goals](#) contribute to long-term carbon management by minimizing landfill methane and promoting composting practices.

There are no dedicated funding mechanisms or procurement signals currently established for engineered CDR pathways. Nonetheless, initiatives like the San Francisco [Climate Equity Hub](#) and Environmental Justice funding programs could provide a foundation for supporting community-led, co-beneficial CDR deployment, especially if aligned with resilience, workforce development, and local health benefits.

At the state level, upcoming legislation could influence local CDR implementation. [California Assembly Bill 306 \(AB 306\)](#), effective from June 1, 2025, to June 1, 2031, places a moratorium on local amendments to residential building codes unless they meet strict criteria. This bill, aimed at addressing the housing crisis, may limit new residential carbon management requirements but also create a predictable regulatory environment that could streamline broader decarbonization strategies.

GOVERNANCE LANDSCAPE ANALYSIS

[San Francisco Environment Department](#) (SFE) is the primary city department leading on sustainability and overseeing the development and implementation of the CAP. While there is currently no specific city department that has a dedicated CDR mandate, SFE is the most appropriate department to explore or oversee any CDR-related initiatives. Some of the relevant city departments and regional agencies for climate action include:

- [San Francisco Public Utilities Commission](#) (SFPUC): Manages water, wastewater, and power services. It also plays a role in decarbonization through clean energy programs, which could intersect with CDR strategies like bioenergy with carbon capture and storage (BECCS) or land-based carbon sinks. It also leads the implementation of the Green Infrastructure Plan.
- [The Office of Resilience and Capital Planning](#) (ORCP) focuses on climate adaptation, hazard mitigation, and long-term resilience, which may align with or support CDR as part of broader climate strategies.
- [The Bay Area Air Quality Management District](#) (BAAQMD) is a regional program that has begun exploring carbon management approaches.

The governance set-up shows significant potential for strategic leadership by SFE in advancing CDR. Working closely with the SFPUC and ORCP, it has the potential to shape and coordinate a multi-sectoral approach to the uptake of CDR across urban systems and infrastructure.

The mayor of San Francisco has an important role in promoting holistic decision-making. The mayor is responsible for overseeing city departments, preparing the budget, and implementing laws and policies. The mayor also appoints department heads and sets policy priorities, including those on climate and sustainability. Additionally, the city has a [Board of Supervisors](#). This 11-member legislative body represents geographic districts, is responsible for passing laws, approving the budget, and providing oversight.

GAPS AND OPPORTUNITIES

- Despite a range of ordinances and environmental initiatives, San Francisco has no explicit policies or agencies responsible for CDR.
- City agencies do not currently quantify the carbon sequestration impact of the various initiatives that lead to negative emissions, including their Healthy Ecosystems strategies. Accurately accounting for the carbon removal in the city's GHG inventory can serve as a basis for a city's CDR strategy.
- SFPUC (in collaboration with the San Francisco Estuary Institute) conducted a study to analyze the carbon sequestration capacity of SFPUC-owned lands. They found that land-based sequestration alone is likely not enough to meet climate targets. This represents an opportunity for complimentary carbon removal actions.
- The CAP only highlights natural climate solutions, such as wetland restoration and composting, as key methods for carbon sequestration. The 2025 CAP update could pave the way for integrating CDR into urban planning, development processes, and sustainable procurement.

CORE RECOMMENDATIONS

1

Identify where CDR can be realized and what urban planning is needed to support it in San Francisco and surrounding areas, including how to embed CDR into urban systems such as infrastructure planning and public utilities.

2

Develop a CDR strategy and action plan that builds on the CAP 2040 and 2050 goals, defines CDR needs against expected residual emissions, and leverages the work that current CDR developers are doing

3

Include explicit CDR language in the updated [2025 CAP update](#) to advocate for the development of a comprehensive CDR strategy for the city, including collaboration with other sub-national governance levels.

4

Leverage existing city goals (e.g., zero waste, green infrastructure) to include measurable CDR outcomes, and introduce a cross-departmental governance set-up to implement the CDR strategy and realize the identified outcomes.

5

Task SFE to convene a regional CDR Working Group with the mandate to launch a select number of pilot projects in the Bay Area within the next 5 years.

6

Build on existing successful business models and explore ways to substitute lost federal funding for San Francisco-based companies like Charm Industrial and Vesta who are pioneering CDR technologies.

EXISTING CDR PROJECTS AND STAKEHOLDERS

- [Vesta.Earth](#) - Coastal carbon capture developer.
- [Charm Industrial](#) - Biomass carbon removal developer.
- [Heirloom Carbon Technologies](#) - Direct Air Capture project developer.
- [Lithos Carbon](#) - Enhance Rock Weathering project developer.
- [Noya Labs](#) - Modular Direct Air Capture technology developer.
- [Lawrence Berkeley National Laboratory](#) - The Lab is located in Berkeley, near San Francisco, and includes the Carbon Negative Initiative, Carbon Removal and Mineralization Program, and Carbon Storage Program.
- SF is home to climate tech investors and accelerators supporting early-stage CDR ventures, such as Elemental Impact, Lowercarbon Capital, General Catalyst, Future Positive, and Prelude ventures.

