

Informational Update: Natural & Working Lands and Nature-Based Strategies

MAY 22, 2025



Natural & Working Lands: Critical Ecosystem Services



FORESTS & SHRUBLAND



GRASSLANDS



WETLANDS



CROPLANDS



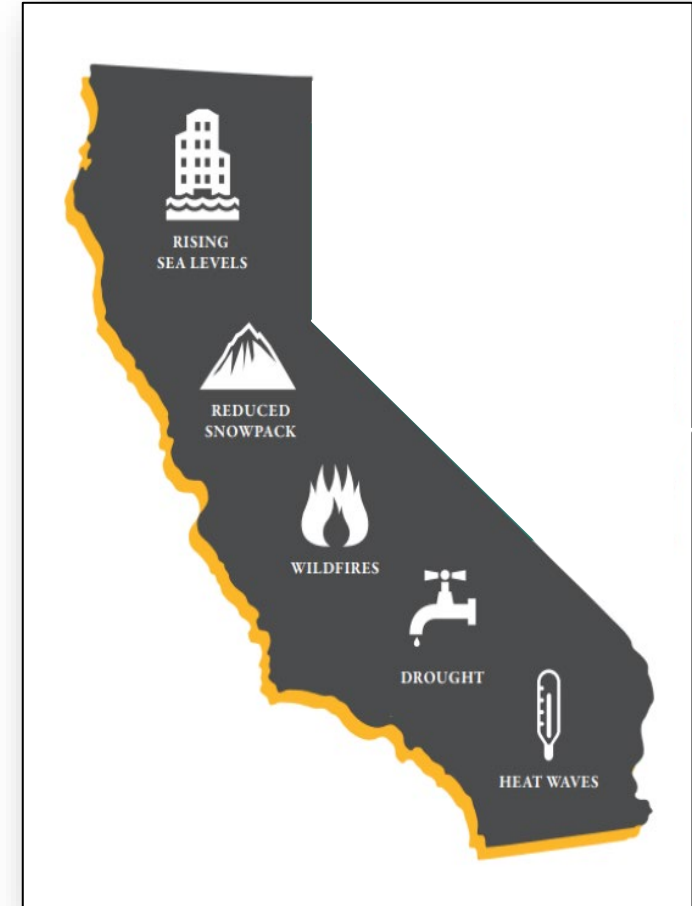
OTHER LANDS



DEVELOPED LANDS

Climate Change: Impacts to California

- California is ranked the worst state for natural disasters fueled by a changing climate.
- \$7.7 billion in losses occurred due to extreme heat over 10 years.
- In 2021, \$1.7 billion in losses occurred due to the drought, with ~14,600 jobs lost.
- Home insurance is harder and more expensive to get.



Climate Change: Science-Based Global Ambitions & California Leadership

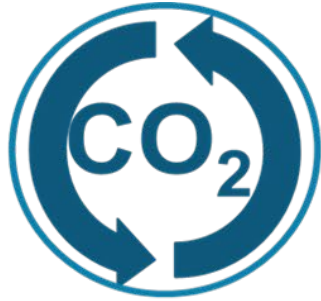


Carbon Neutrality



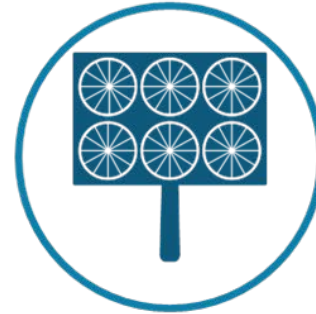
AB 32 Sources
Fossil Fuels/Industrial
Land fills
Dairies

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Natural and Working Lands

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Other Carbon Removal

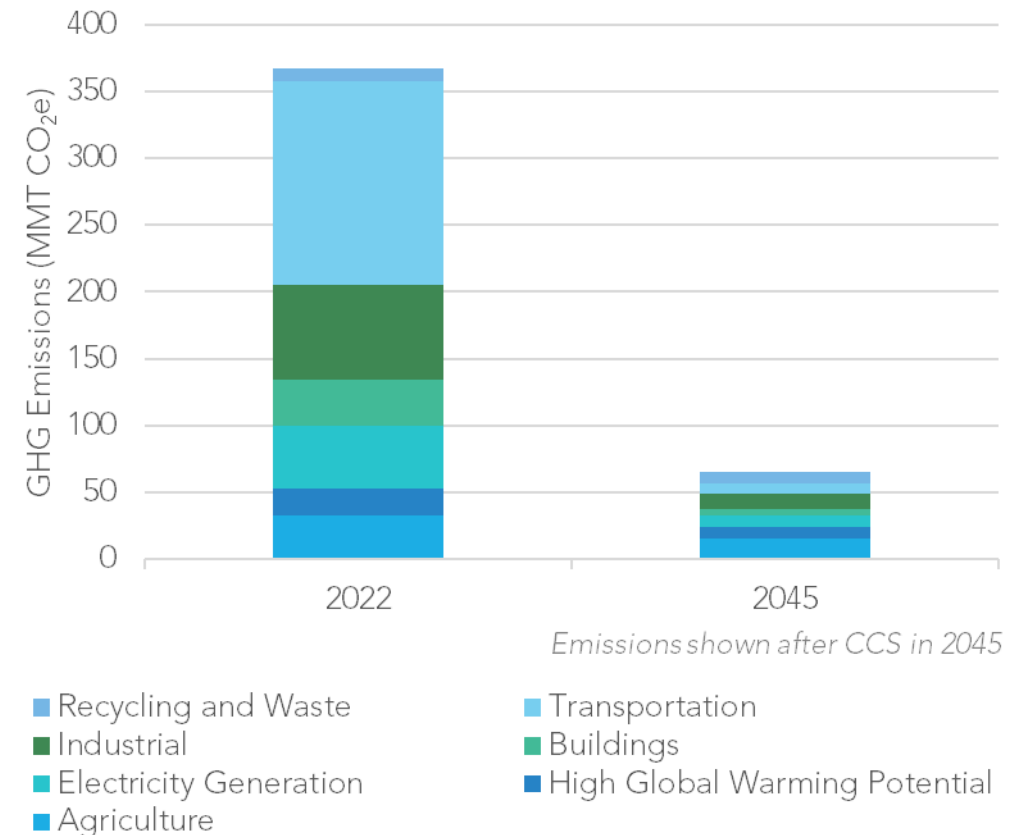
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Carbon
Neutral

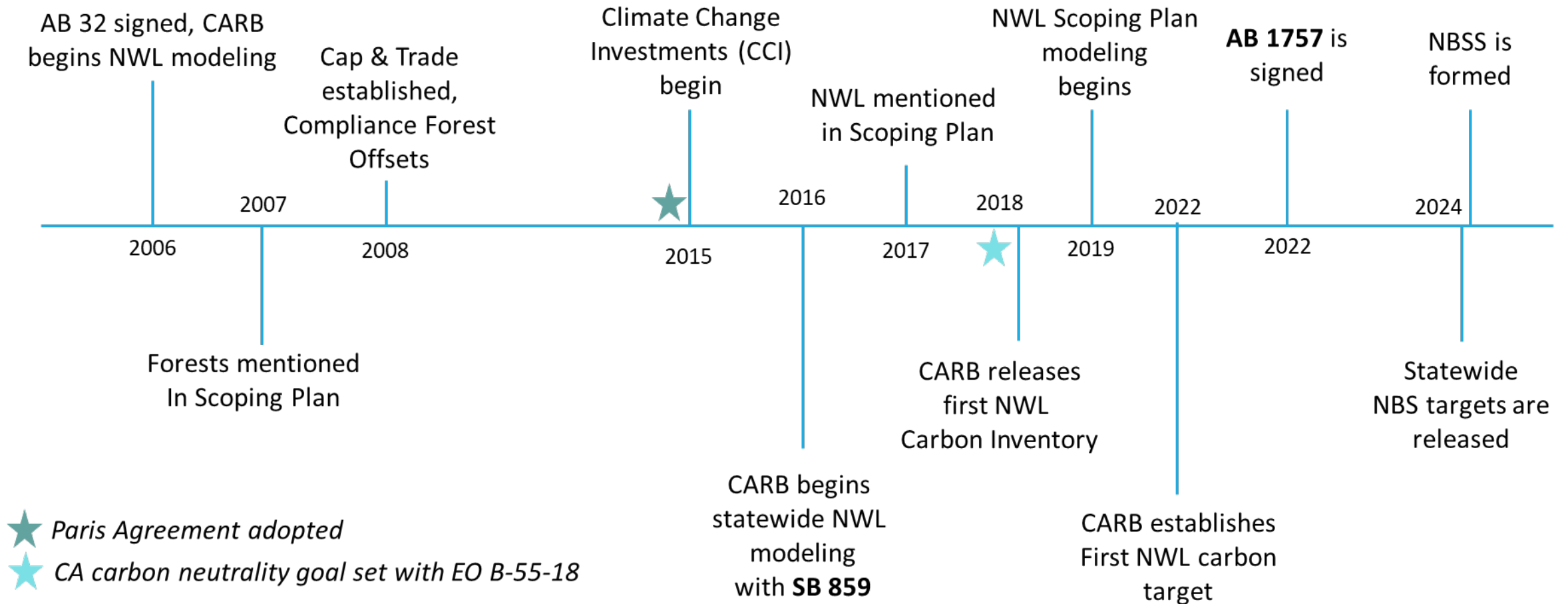
Ongoing Reductions in Anthropogenic GHGs

2045 Target: 85% Reduction below 1990

- Some emissions remain in the AB 32 Sectors even after application of CCS
- Need carbon dioxide removal to compensate for residual emissions to achieve carbon neutrality
- Governor's letter to include carbon removal targets for 2030 and 2045
- This decade requires unprecedented deployment and scaling of clean technology and energy
 - Leverage federal and state funds



Natural & Working Lands and Climate: History and Statutory Direction



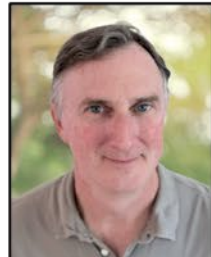
CARB NWL Expertise is Key to Success



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Many other contributors from CARB's research, air quality, climate investments, cap-and-trade offsets teams



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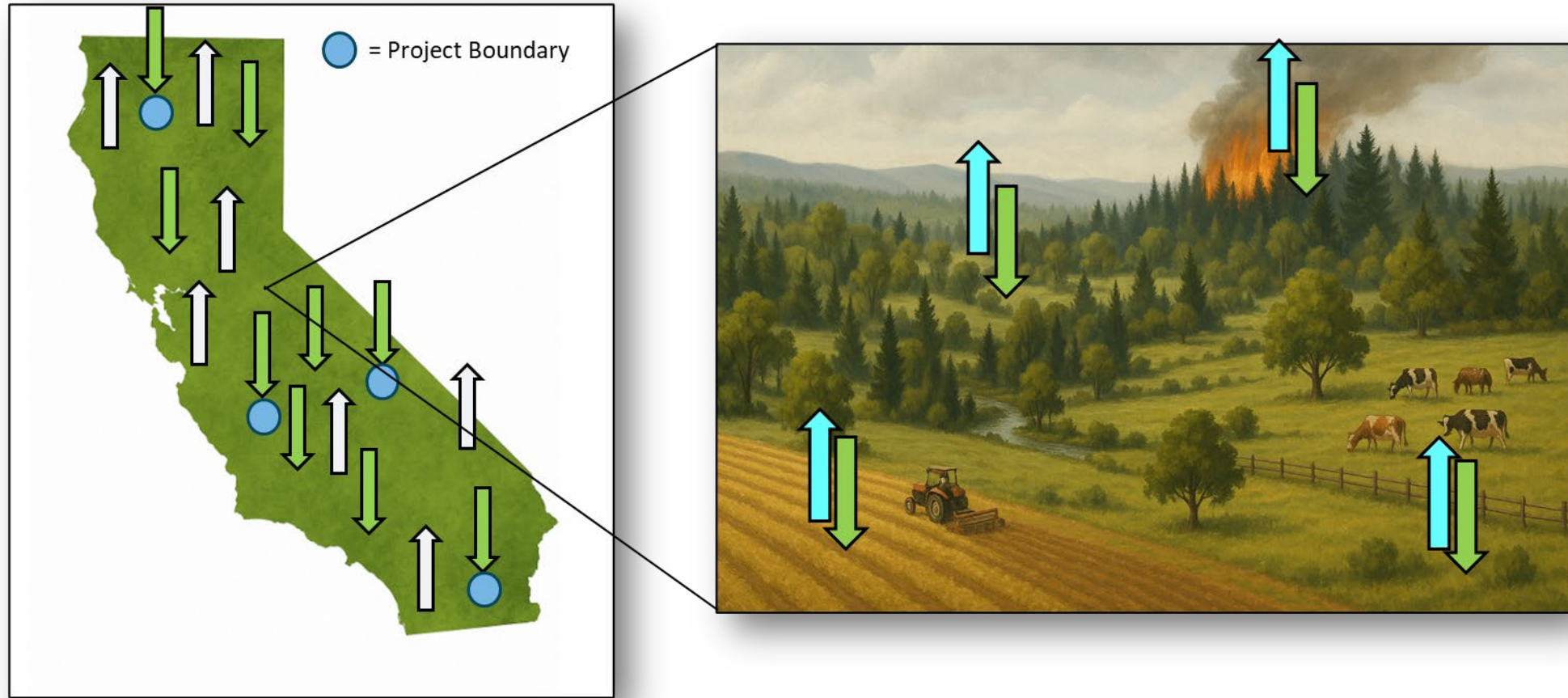


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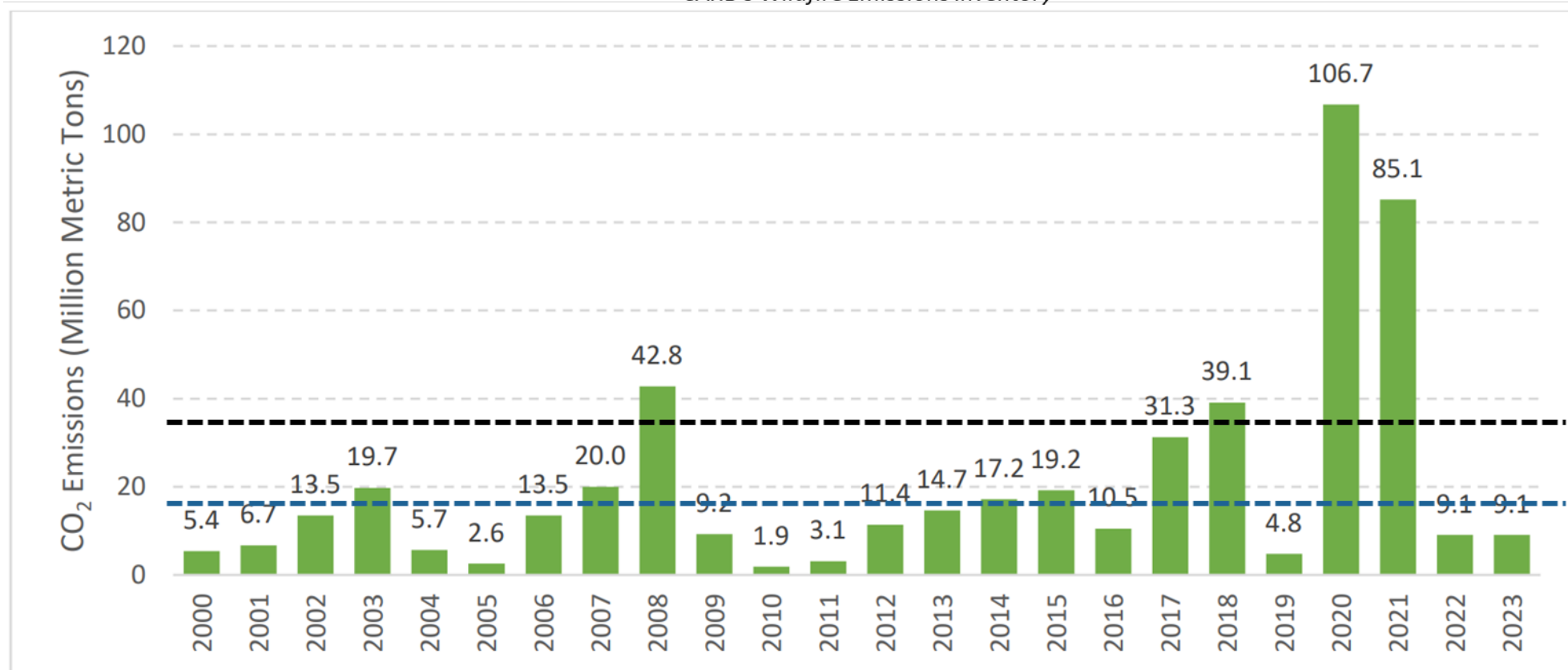
Natural & Working Lands Carbon Inventory: Purpose & Scope



Wildfire Emissions in Perspective

Total Wildfire CO₂ Emissions per Year

—CARB's Wildfire Emissions Inventory



Average Annual GROSS
Carbon Sequestration in
Forests and Rangelands

—CARB's SB 901 Report

Average Annual
Carbon Transformed
by Forest
Management

—CARB's SB 901 Report

Natural & Working Lands Carbon Inventory: 2025 Update (& Beyond)



- Best available, open-access methods and datasets
 - Field data
 - Flux towers
 - Drone, Airborne, Satellites
 - Super computers
- Tracks the contribution of lands to carbon neutrality
- Incorporate the impacts of climate action and inaction
- Includes wildfires, droughts, and other natural disturbances

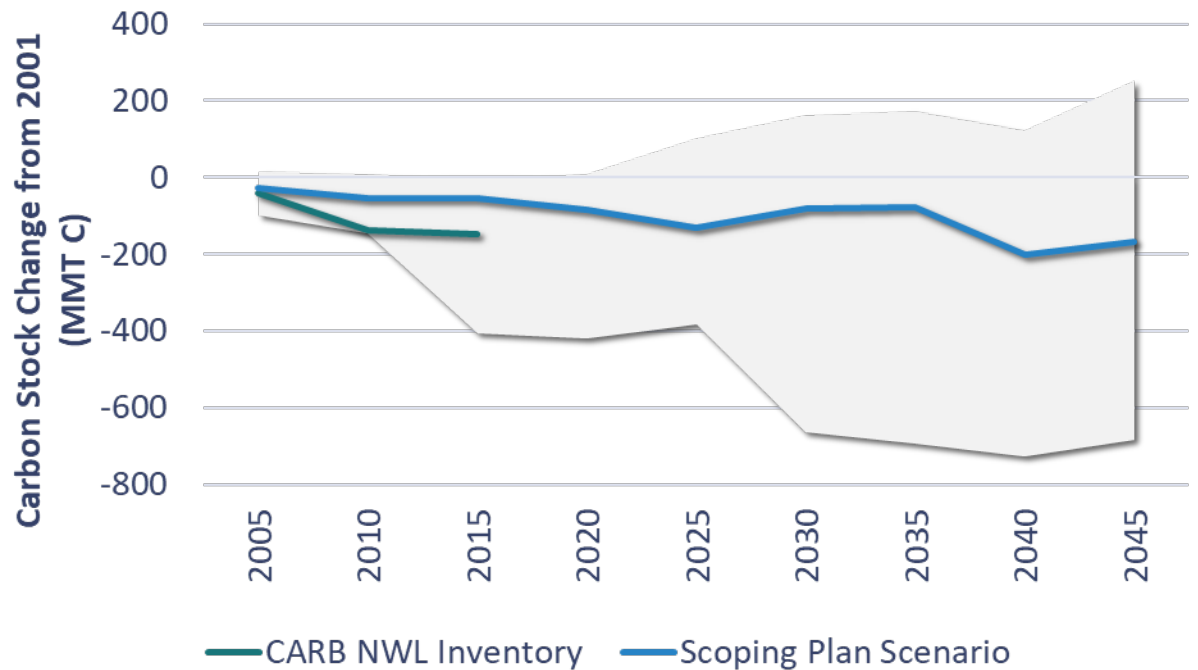
Nature-Based Solutions

- Promote sustainable carbon stocks and limit future GHG emissions
- Increase resilience to climate change impacts
- Safeguard public health
- Protect food and water security
- Foster biodiversity



2022 AB 32 Scoping Plan Update

- Carbon Target:
 - Lose no more than 4% carbon stock from California's lands from 2014 – 2045
- Actions can provide carbon dioxide removal to support carbon neutrality
- Actions provide health and other benefits
 - \$3.1B/year in health cost saving from avoided wildfire emissions alone.
 - Water quality benefits, reduced pesticide exposure, increased biodiversity, increased resiliency, and other benefits



AB 1757 Nature Based Solutions Targets

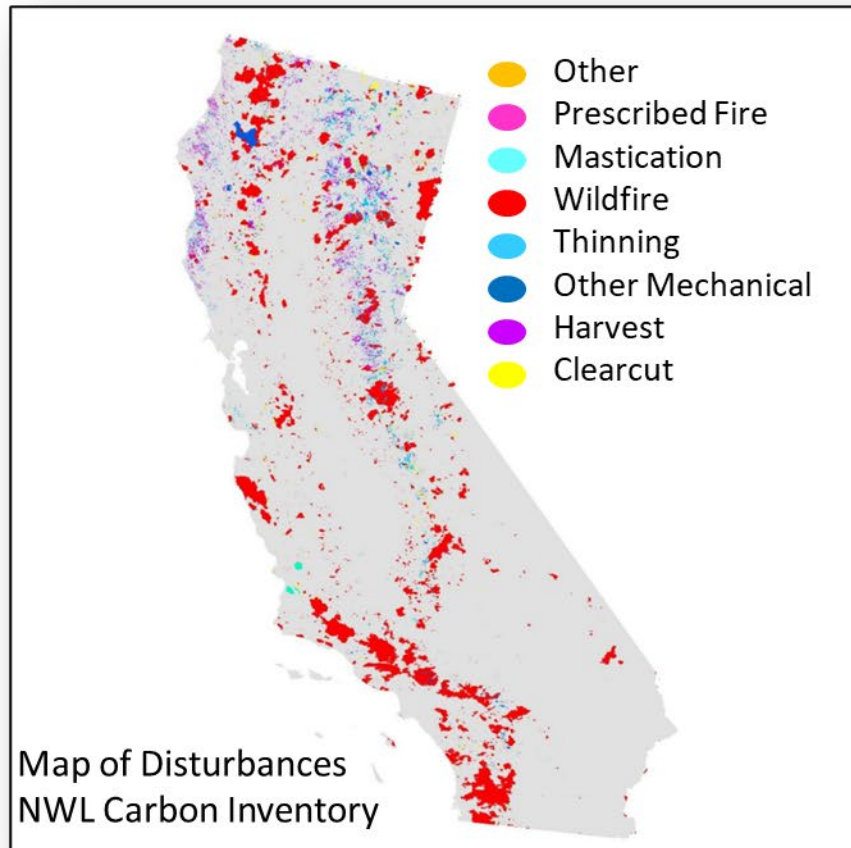
By 2045

- 30M+ acres of wildfire fuel reduction treatments
- 10M+ acres of restoration
- 8M+ acres of conservation
- 3M+ acres of healthy soils practices
- 20% total statewide agriculture in organic production
- 1M+ acres of afforestation
- 1M+ acres of urban greening, defensible space, sea level rise protection

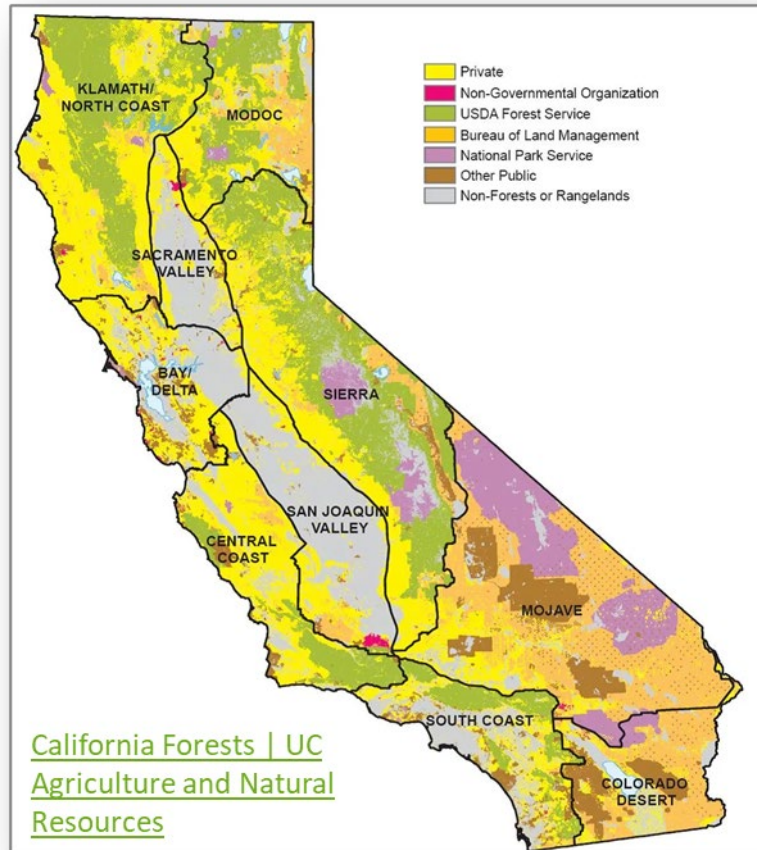
In 20 years, the equivalent of half of California's total area to receive NBS climate action



Land Management Tracking



Land Ownership is Diverse



Ownership by Land Type (%)

| Land Type | Federal | State | Local | Private | Non-profit |
|-----------------|-----------|----------|----------|-----------|--------------|
| Forests | 55 | 2 | 2 | 41 | <1 |
| Shrublands | 68 | 4 | 2 | 27 | <1 |
| Croplands | 1 | <1 | <1 | 98 | <1 |
| Wetlands | 17 | 8 | 3 | 71 | 1 |
| Developed lands | 8 | 1 | 3 | 88 | <1 |
| Grasslands | 13 | 2 | 2 | 81 | 1 |
| Other lands | 78 | 5 | 1 | 16 | <1 |
| TOTAL | 48 | 3 | 2 | 47 | <1 |

NWL Climate Smart Strategy

Collaboration

- Collaboration is key to advance CARB's work on nature-based solutions:
 - NBS land management & tracking
 - Policy development & implementation
 - Data products & methods development
 - Science & monitoring

Partners include:

- Within CARB: AQPSD, STCD, RD, and PIO
- State: CNRA, CDFA, CalFIRE, and many more
- Federal: USFS, USDA, NASA, USGS, EPA, and more
- Private: Academic, NGO, Industry



Take-aways

- Natural & working lands are an important part of California's strategy to achieve carbon neutrality.
- Nature-based climate solutions are needed to ensure California's lands lose no more than 4% carbon stock between 2014 and 2045.
- These dynamic landscapes require advanced science and technology to monitor trends, assess co-benefits, and evaluate trade-offs with other ecosystem services.
- In 2024, CARB expanded its in-house expertise to lead the nation on NWL climate science.
- Collaboration drives progress, connecting science, policy, and implementation through partnership with other agencies and organizations.