



Carbon Stock Inventory & Potential Sequestration Study



Strategic Goal: Carbon Neutral for all County Operations by 2030



Climate Action & Resiliency Pillar

Goal 1: Continue to Invest in wildfire preparedness & resiliency strategies

Goal 2: Invest in the community to enhance resiliency and become carbon neutral by 2030

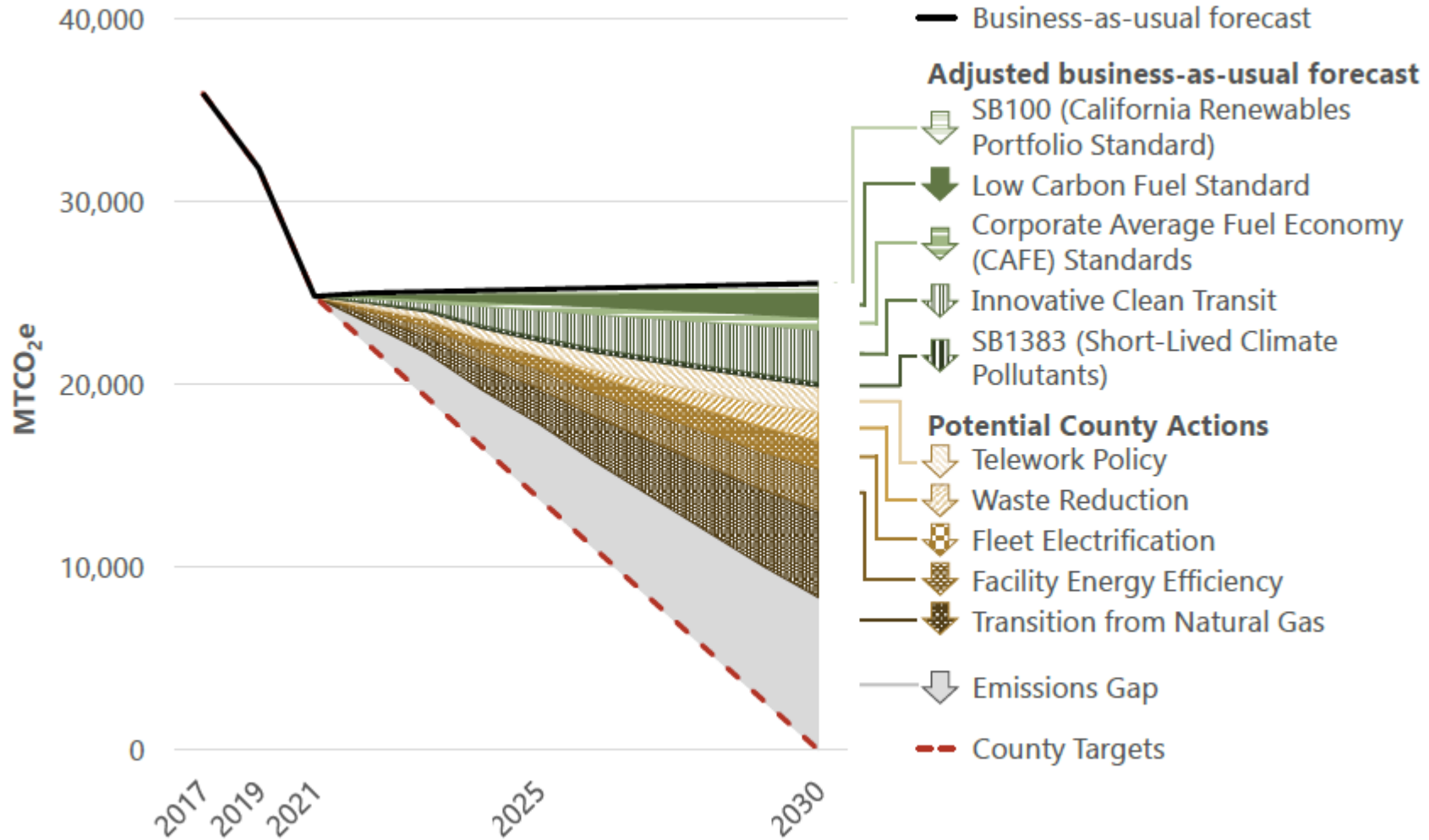
Goal 3: Make all County facilities carbon free, zero waste and resilient

Goal 4: Maximize sustainability and emissions reductions in all County Fleet vehicles

Goal 5: Maximize opportunities for mitigation of climate change and adaptation through land conservation work and land use policies

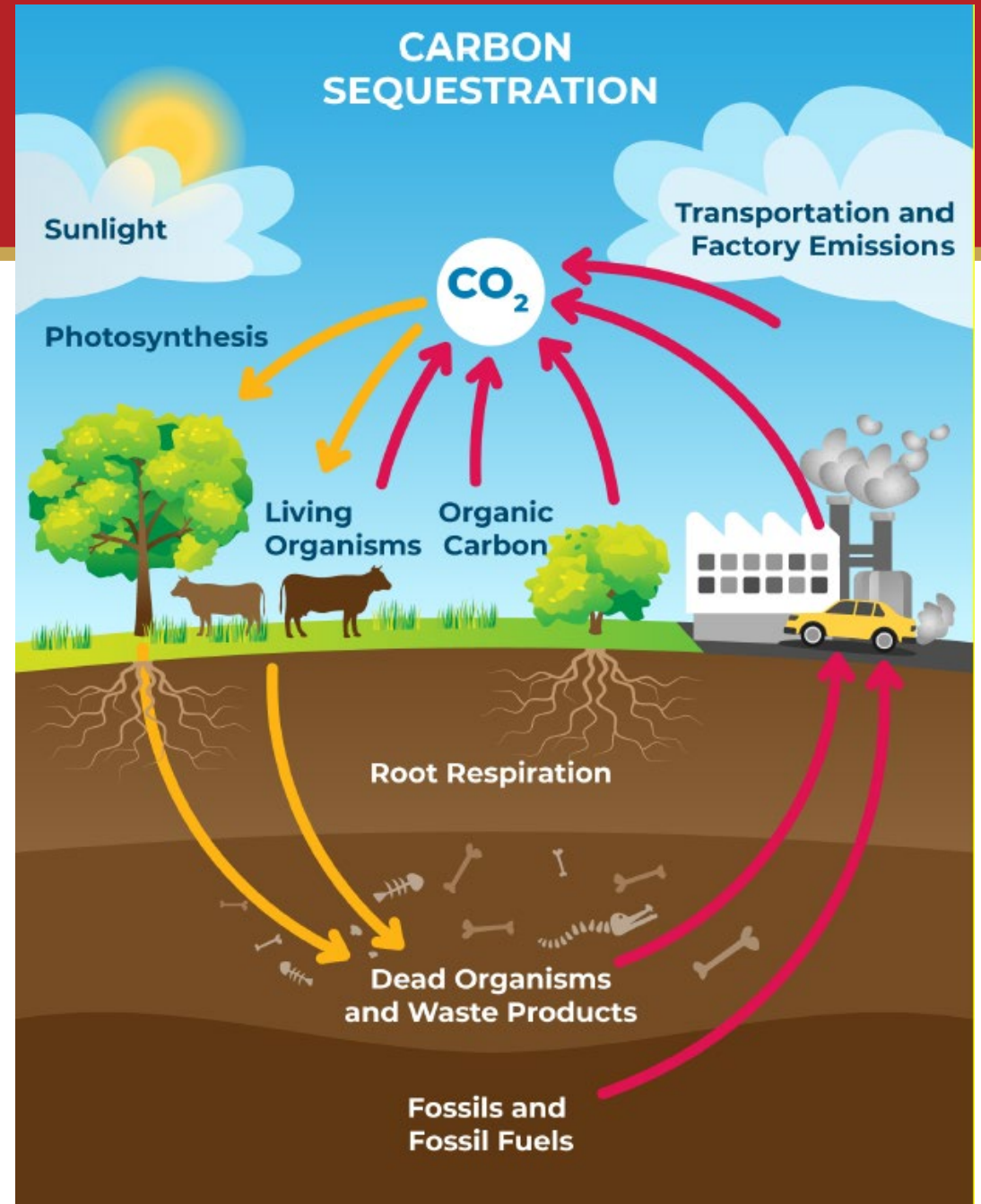
Strategic Goal: Carbon Neutral for all County Operations by 2030

Emissions Reduction & Gap between Carbon Neutrality Goal



The Carbon Cycle

- Carbon sequestration is the removal and storage of carbon from the atmosphere.
- This process occurs naturally through plant photosynthesis, where carbon is drawn from the atmosphere and into plants and soil.



How Much Carbon Can We Sequester in Sonoma County?

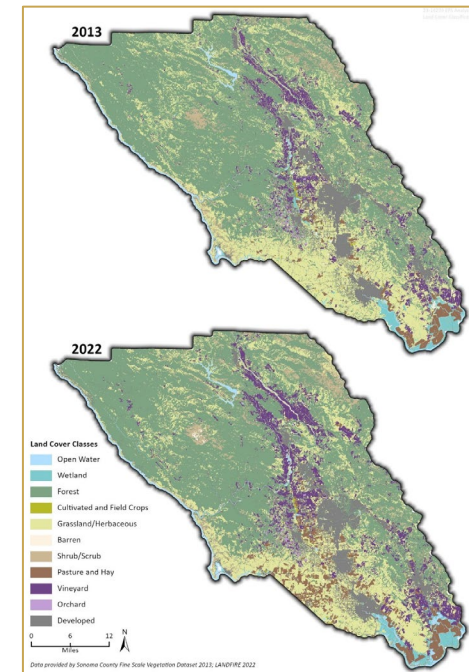
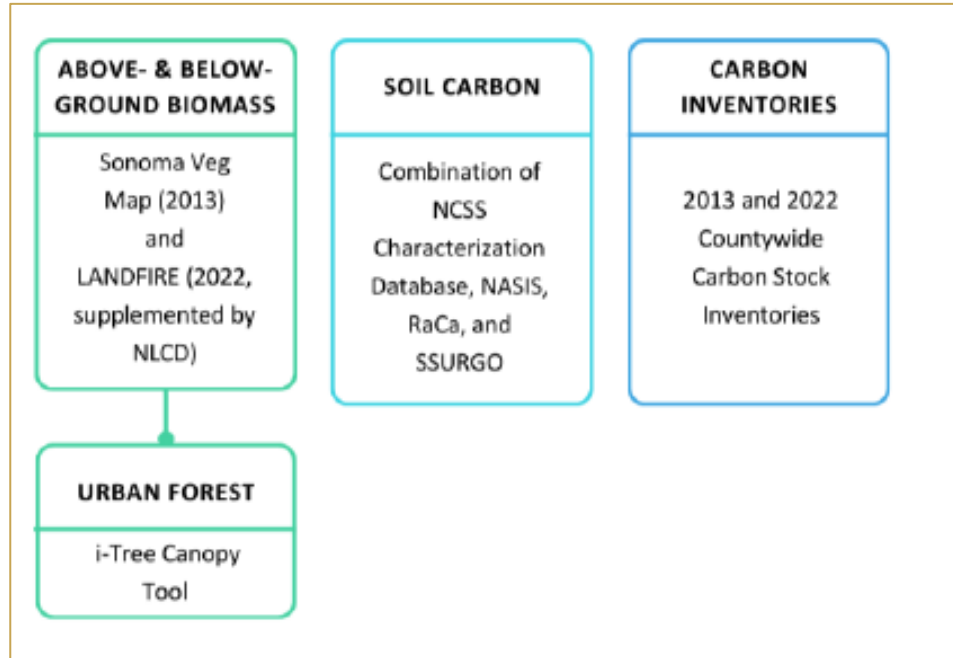
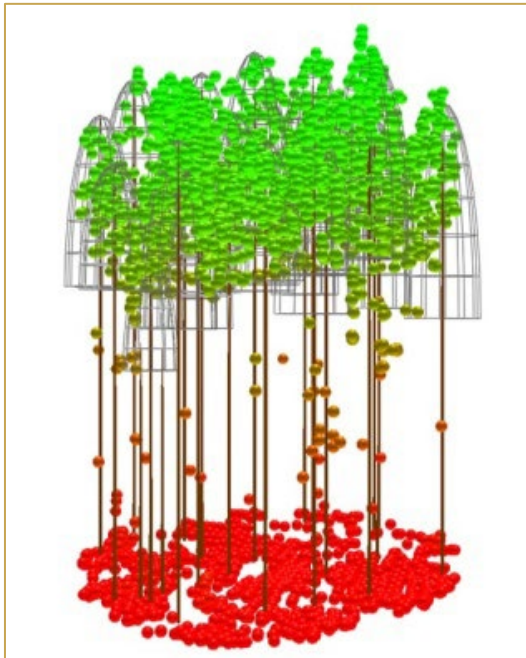


Sonoma County Carbon Stock Inventory

Assess the type of land cover

Quantify the amount of carbon stored in each land cover type

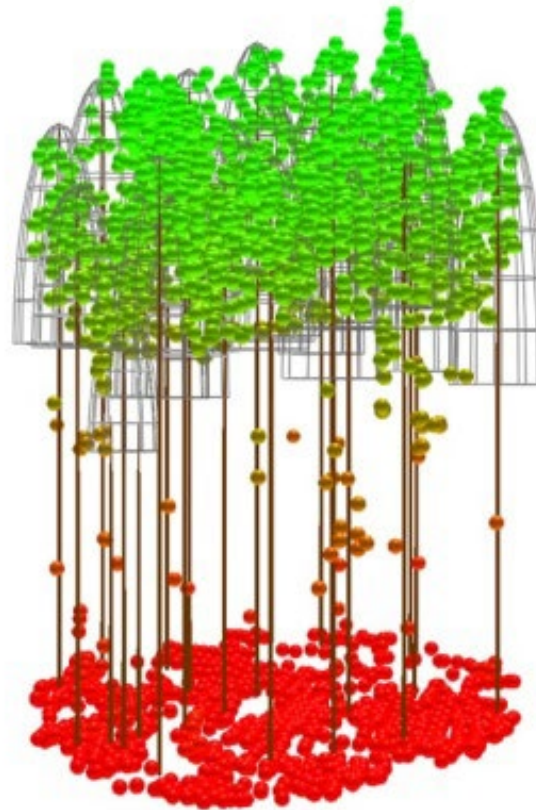
Compare land cover and carbon inventory between years



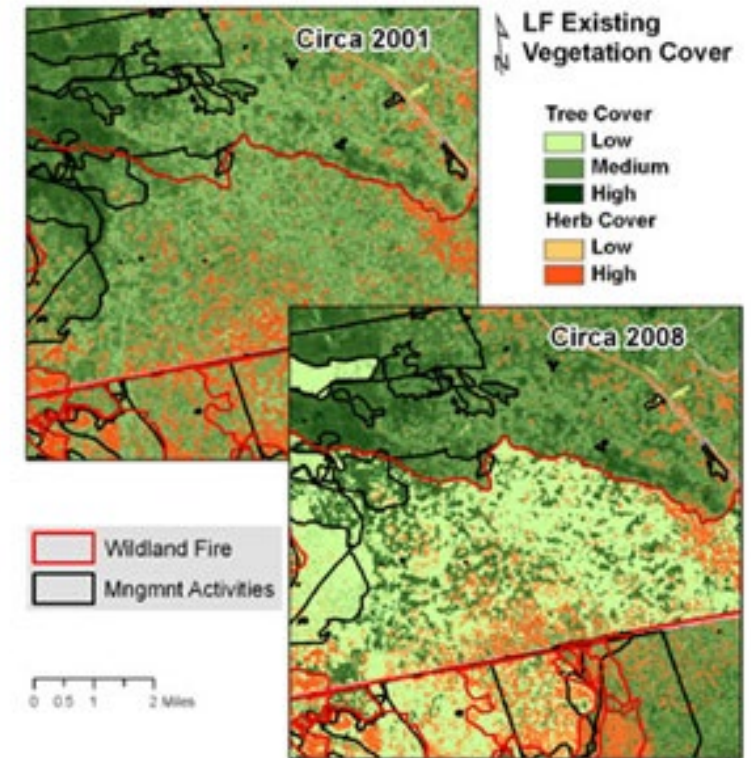
Assess Land Cover Types

- Large-Scale Spatial Data
- Accurate Carbon/Biomass Data
 - Above- and below-ground live biomass (e.g., trees, crops, shrubs, grasses, roots)
 - Above- and below-ground dead standing trees
 - Lying dead wood
 - Litter
 - Soil

2013 Sonoma Veg Map

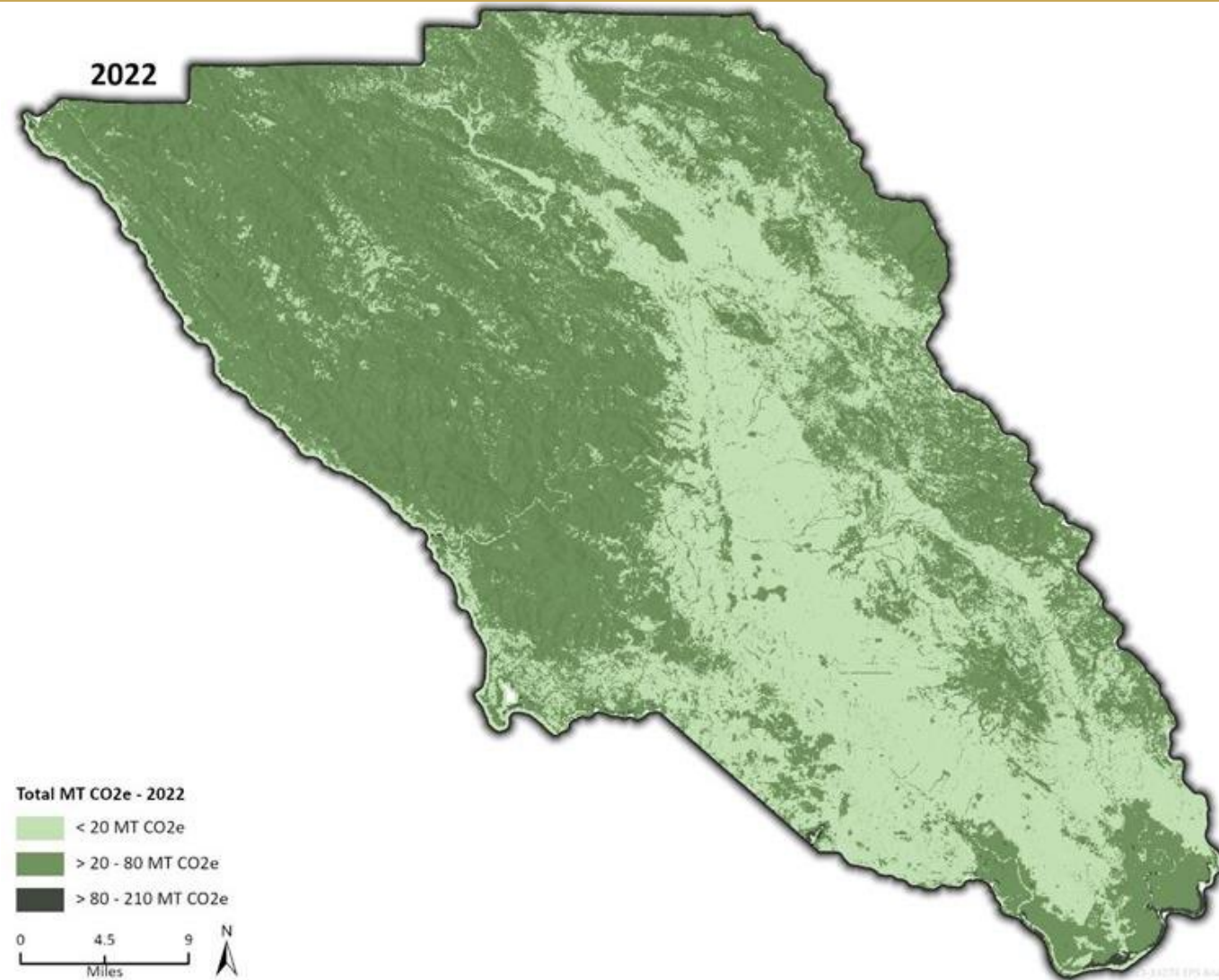


2022 LANDFIRE



Quantify Carbon Stored

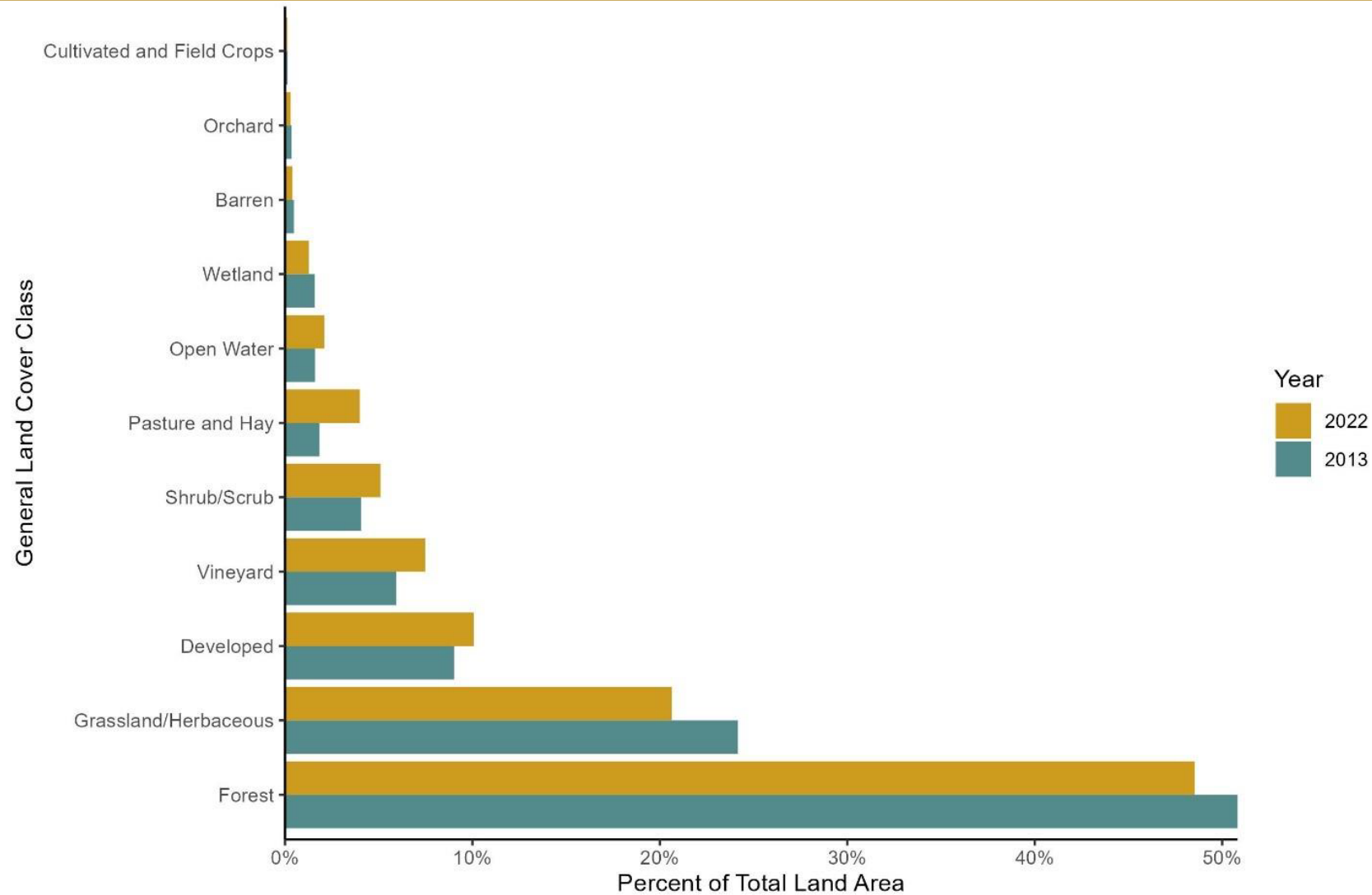
- Sonoma County's diverse landscapes hold approximately 105,365,590 MT CO₂e in carbon stocks (2022)
- Most of the carbon stock in the county is predominantly held in forested areas in the west and east, and wetlands in the south



Forests & Grasslands Are Sonoma County's Greatest Carbon Stocks

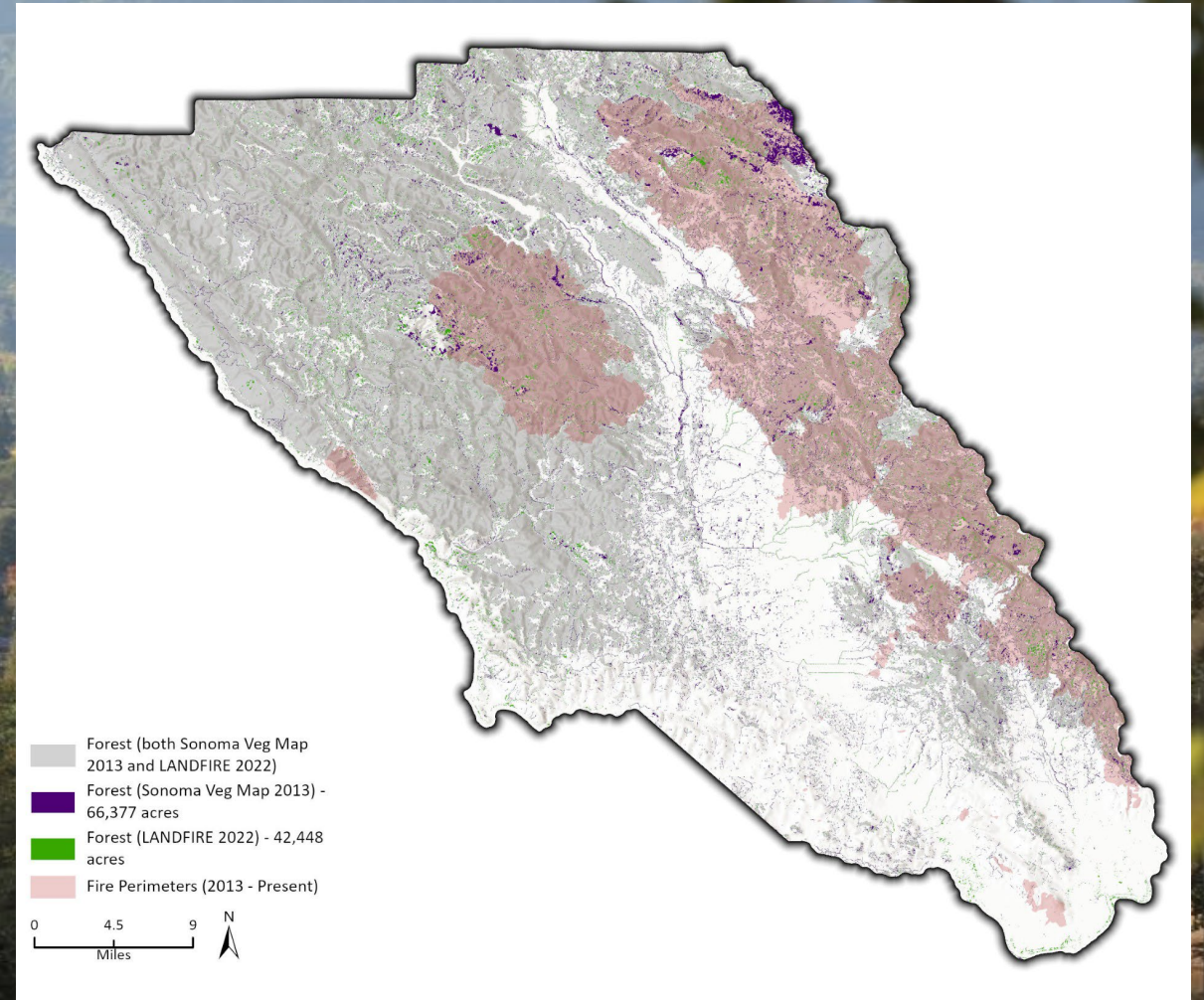


Land Cover Comparison 2013 - 2022

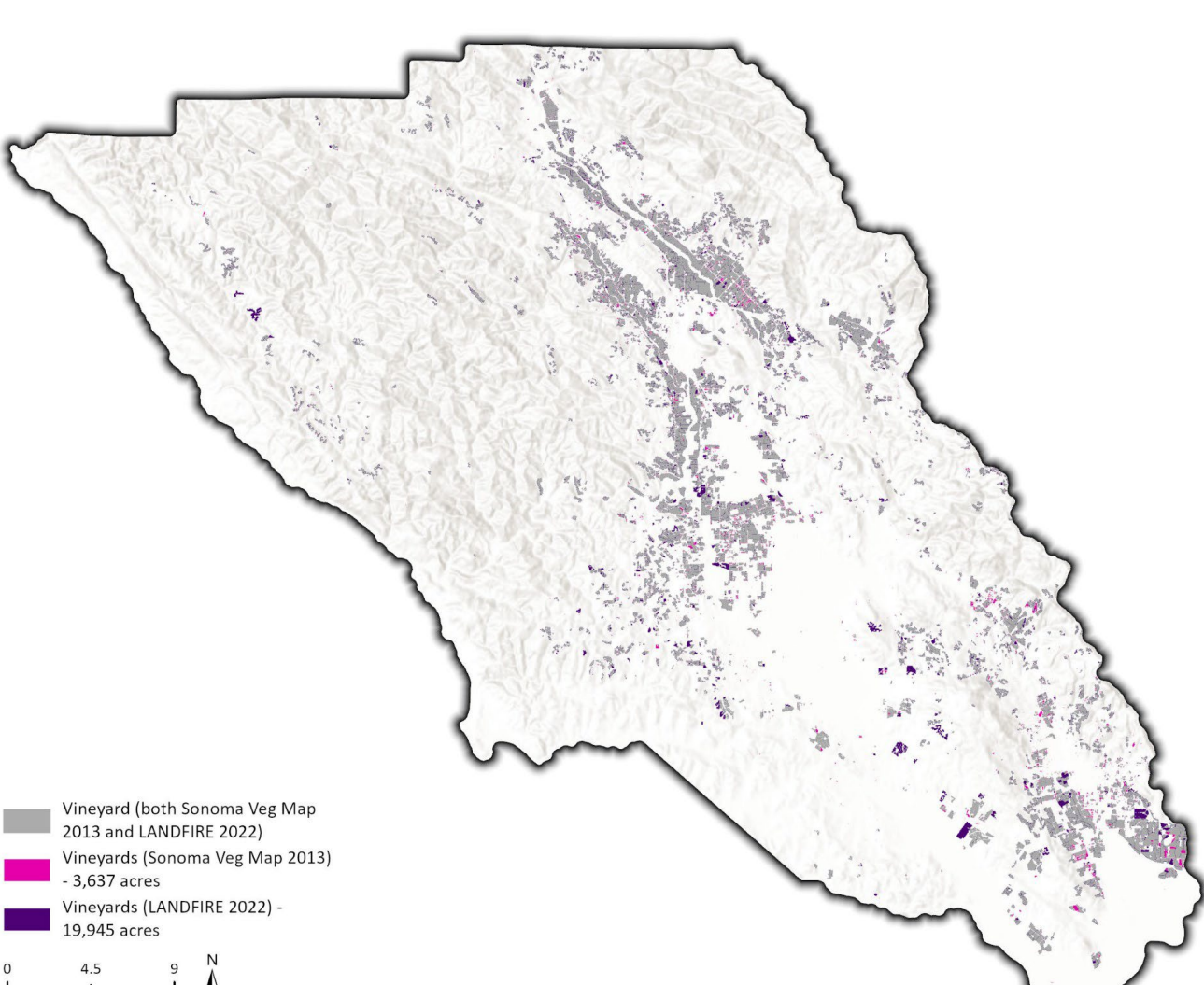


Carbon Stock Trends - Forests

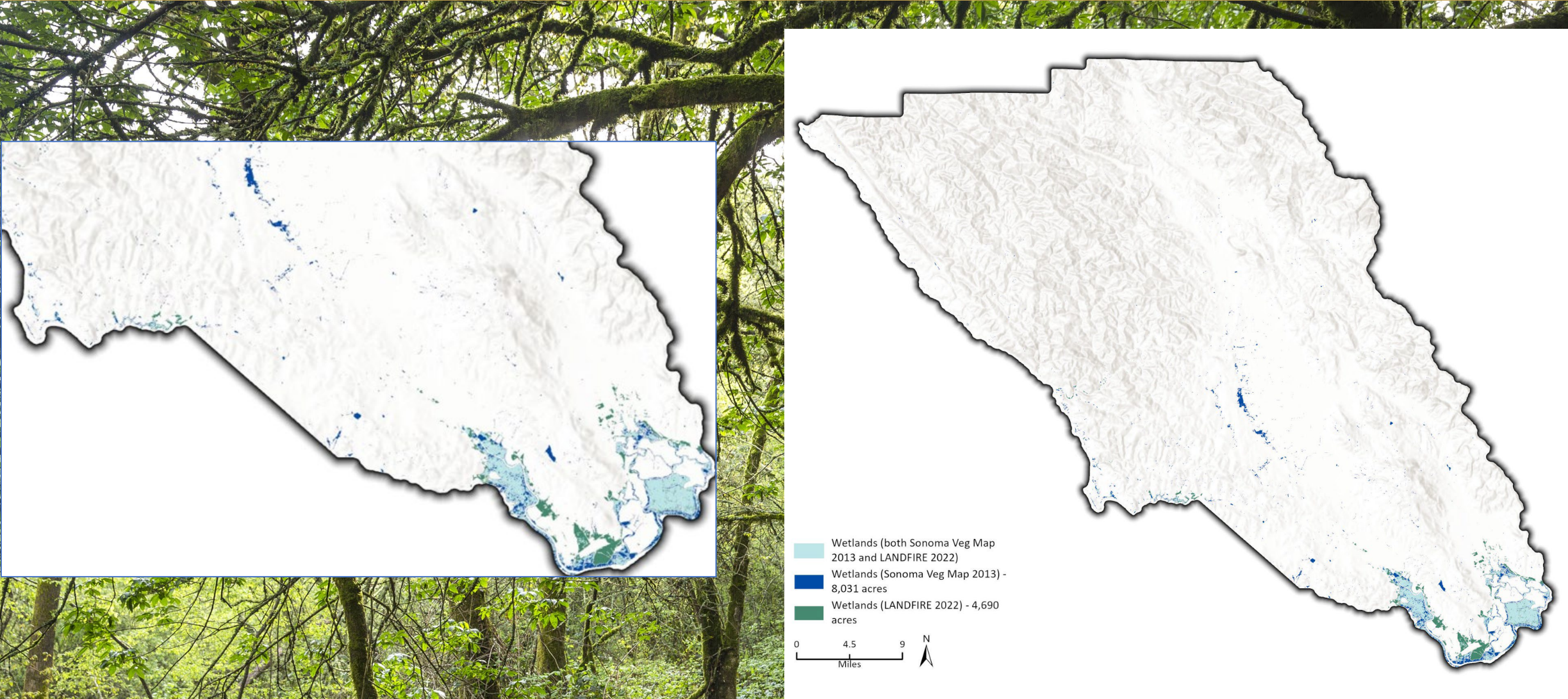
- Decline in forest carbon stocks between 2013 and 2022 due in large part to wildfire and prolonged drought impacts



Carbon Stock Trends - Vineyards



Carbon Stock Trends - Wetlands



Conservation Practices

- Climate Smart Practice List
 - With input from local planners
 - Estimated practice implementation acreage and potential CO₂e sequestration
- Local Carbon Farm Plans
 - Included data from practices planned in Sonoma County
 - Next step
 - Include growing local implementation datasets to assess where practices are planned
 - Re-calculate potential CO₂e based on plans
 - Monitor practice efficacy



Carbon Farming Design
10-year canopy level

Santa Rosa, CA

Scale 1:20

Legend

- Existing coniferous tree
- Existing deciduous tree
- Permanent fence line
- Temporary electrical fence

Multiple Benefits of Practices

- Engaging communities to leverage collective expertise and input to plan implementation
- Refine and localize the co-benefits analysis to project-specific and site-level nuances
- Develop a monitoring and evaluation framework for tracking the efficacy of implemented practices and adaptive management



Study Recommendations

1: Assess Existing Sonoma County Policies and Programs

Literature Review: Policy Review +

Existing policy scan included:

- Climate Action 2020 and Beyond (RCPA)
- Resolution 18-0166 (County of Sonoma)
- Sonoma Climate Mobilization Strategy (RCPA)
- Sonoma County 5-year Strategic Plan (County of Sonoma)
- Sonoma County Resilient Lands Strategy (County of Sonoma)
- Sonoma County Vital Lands Initiative (Ag + Open Space)

Stakeholder Workshop: Implementation Update + Feedback

Stakeholder attendees included:

- Permit Sonoma
- Ag + Open Space
- Regional Parks
- Sonoma Water
- RCDs (Gold Ridge and Sonoma)
- Carbon Cycle Institute
- Sonoma County Regional Climate Protection Authority
- Carbon Cycle Institute
- Occidental Arts and Ecology Center

2: Integrate new carbon sequestration values and emergent science

Carbon Stock Inventory + Sequestration Values

Study produced:

- New quantitative baseline for carbon stocks held across Sonoma County lands (2013 + 2022)
- Carbon sequestration potential values for climate smart practices (MT CO₂e)

Research emergent best practices

Research assessed:

- Emergent science around climate smart practices, which is summarized in Chapter 7 *Looking Ahead*, and incorporated into measures and actions

3: Produce new measures and actions

New Measures and Actions

New measures and actions reflect:

- Existing landscape of policy, programs, and values of key stakeholders (1)
- New values for carbon sequestration + carbon stock baseline
- Best available science for emergent practices

Next Steps

▶ The County of Sonoma's Climate Resiliency Master Action Plan

▶ Sonoma-Marin Ag + County Climate Coalition

▶ Grant Proposals - planning & implementation to support local partners & networks

