



NATURE-BASED
CLIMATE SOLUTIONS

CALIFORNIA'S NATURE-BASED SOLUTIONS CLIMATE TARGETS

AS REQUIRED BY ASSEMBLY BILL 1757 (2022, C. GARCIA)



**ADMINISTRATION OF GOVERNOR GAVIN NEWSOM
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NATURE-BASED CLIMATE SOLUTIONS

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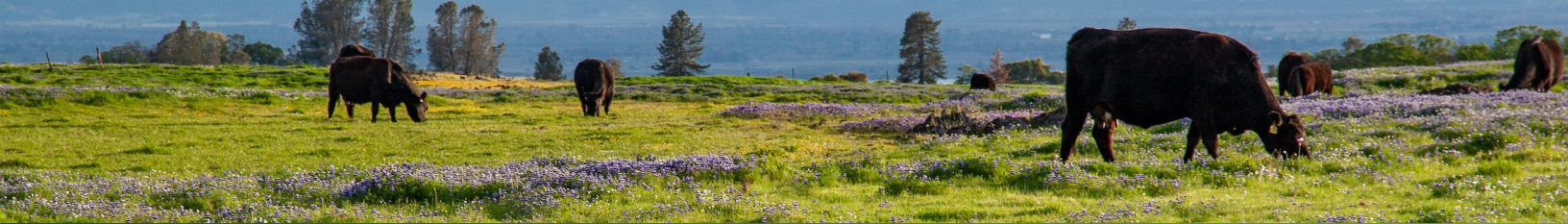
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SECTION ONE

INTRODUCTION AND KEY BACKGROUND



SECTION ONE

Introduction and Key Background

California is a global leader in combatting climate change.

Our State of California (State) government set one of the world's first binding targets to reduce carbon pollution in 2007 and since then has spearheaded action across our economy to transition to 100% clean energy and carbon neutrality by 2045.

California has a comprehensive plan to achieve carbon neutrality by 2045 and to achieve an 85% reduction in anthropogenic greenhouse gas (GHG) emissions by 2045.¹ The State has also implemented model policies that have been adopted across the world to achieve this transition, including zero-emission vehicle mandates, clean energy policies, carbon pricing, building and appliance efficiency standards, and others. Our State leaders have powered this transition with tens of billions of State investment in the last three years alone.

California has also responded to unprecedented climate change driven threats with fast, decisive action to protect residents, communities, and landscapes. Emergency response to wildfire, drought, floods, and extreme heat in California by federal, state, and local partners is world leading. Also importantly, comprehensive, forward-looking action plans have been developed to prepare for each of these threats, with an overarching strategy called the California Climate Adaptation Strategy that bridges these sectoral actions plans.

California is once again leading the world by advancing visionary, comprehensive and science-driven nature-based solutions (NBS) climate targets. These solutions harness the

power of nature to remove and store carbon from our atmosphere, buffer climate impacts, and build California's resilience to future climate-driven extremes.

NATURE-BASED SOLUTIONS

Scientists and climate experts around the world have identified the critical importance of NBS to stabilize global climate.² Lands managed for health and resilience can remove and store carbon, limit future GHG emissions, and increase resilience to climate impacts.

For example:

- Efforts to build forest health such as reintroducing beneficial fire and thinning reduce the urgent threat of catastrophic wildfire, support long-term carbon storage in our forests, and enable our forests to withstand future climate impacts such as droughts and extreme heat.
- Restoring coastal and Delta wetlands reduces the risk of dangerous flooding, expands the potential for carbon storage, and builds resilience of ecosystems, communities, and local economies.
- Greening urban areas through expanded parks, greening school yards, and planting trees improves carbon sequestration, limits temperature increase and urban heat islands (especially in formerly redlined communities lacking tree canopy cover) and provides places of refuge during heat waves.

¹ The California Air Resources Board, 2022: 2022 Scoping Plan for Achieving Carbon Neutrality. Sacramento, CA. <https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf>

² IPCC, 2023: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 35-115, doi:10.59327/IPCC/AR6-9789291691647

- Scaling up climate smart agricultural practices that improve soil health on croplands and grasslands reduces GHG emissions from soils and builds resilience to drought.
- Reducing soil disturbance and removing invasive species in deserts protects existing carbon stores and builds resilience to climate impacts, such as wildfire, drought, and flooding.

In addition to these climate benefits, NBS deliver on other critical policy priorities such as protecting water, safeguarding public health, advancing equity, expanding economic opportunity and prosperity, increasing food and water security, and protecting biodiversity.

When lands are not healthy, however, they release more greenhouse gases, increase climate risks to people and nature, and are more vulnerable to future climate change impacts. Lands stressed by climate change also threaten food and water security, economic prosperity, and treasured biodiversity. While we all pay a price when our lands are unhealthy – with our health, our economic growth, and our security – some of us are burdened more than others. Climate vulnerable communities experience heightened risk and increased sensitivity to climate change and have less capacity and fewer resources to cope with, adapt to, or recover from climate impacts.

The cost of no, slow, or incremental action is high - the longer we wait to act, the less potential our lands have to store carbon and serve as protection from climate change impacts.

CALIFORNIA'S APPROACH

Our State leaders recognize that expanding NBS is essential to meeting California's core climate goals:

1. Achieve carbon neutrality as soon as possible and no later than 2045.
2. Protect people and nature from climate risks here and now, such as record extreme

heat, historic drought, devastating flooding, and catastrophic wildfire.

3. Build physical, social, and natural resilience to future climate-driven disasters.

In October 2020, Governor Newsom issued an Executive Order ([N-82-20](#)) that outlined a comprehensive and results-oriented agenda to expand NBS across California. It called for restoring nature and landscape health to deliver on our climate change and biodiversity goals while also driving on other critical priorities, such as protecting public health and safety, securing our food and water supplies, and achieving greater equity across California.

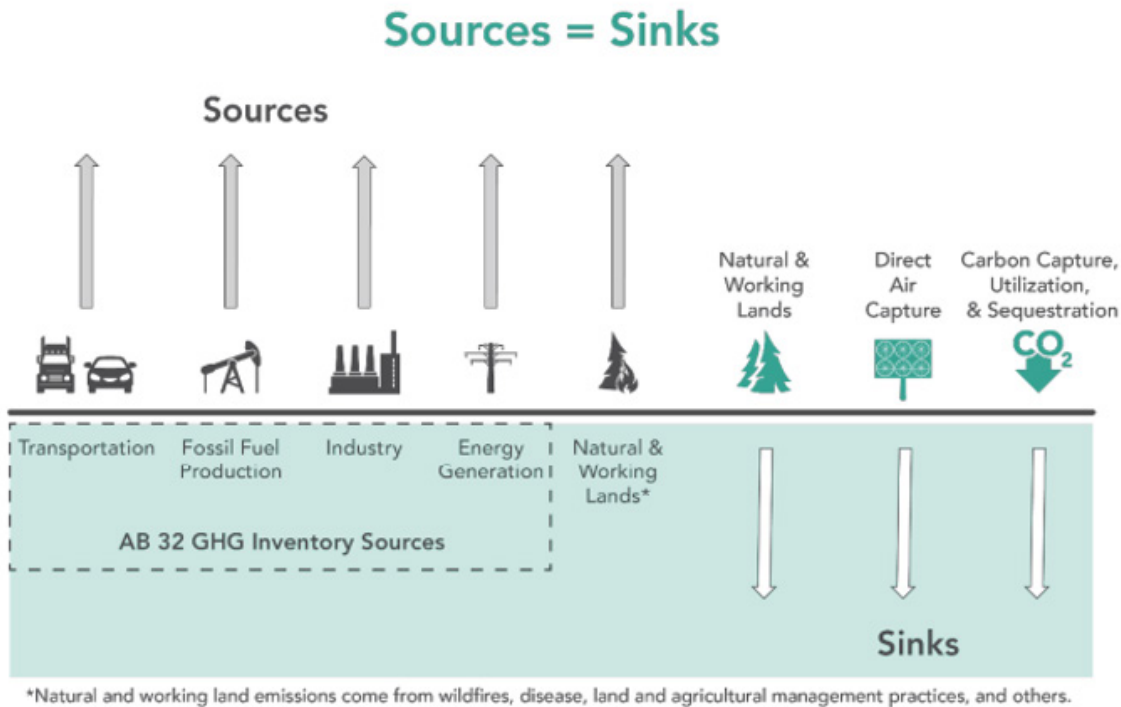
In response, the State has worked with diverse partners to strategically deepen and expand the role of NBS in our climate policy and investments. This catalyzed a range of actions across State government:

1. Established the 2022 [California's Natural and Working Lands \(NWL\) Climate Smart Strategy](#), which identifies priority NBS to deliver climate benefits across all of California's diverse landscapes and guides State programs and investments.
2. Integrated this strategy into the State's 2022 [Scoping Plan to Achieve Carbon Neutrality](#) by 2045.
3. Identified accelerating NBS and strengthening the resilience of natural systems as one of six priority "north stars" guiding [California's 2021 Climate Adaptation Strategy](#).
4. Invested approximately \$9.6 billion since 2020 to supercharge California's NBS climate action, as of April 2024.
5. Built new partnerships with NBS leaders around the world to accelerate and scale successful efforts, including [China](#), [Australia](#), [Canada](#), and [South Africa](#).
6. Enacted [Assembly Bill 1757 \(2022\)](#), a seminal law calling for a suite of actions to center NBS in California's climate efforts and urgently scale their implementation in line with best available science.

SETTING NATURE-BASED SOLUTION CLIMATE TARGETS

The 2022 Scoping Plan identified carbon neutrality as a science-based guide and touchstone for California's climate work for the first time. This required consideration of GHG emission sources and sinks:

Figure 1-5: Carbon neutrality: Balancing the net flux of GHG emissions from all sources and sinks



The 2022 Scoping Plan quantified current estimates of GHG emissions from California's lands and, for the first time, [modeled future greenhouse gas emission sources and sinks on our lands, while accounting for future climate change impacts](#). This analysis found California's lands are currently a net source of carbon emissions. This means that our lands, in aggregate, release more carbon emissions than they remove and store through natural processes.

The shift from carbon sink to source is largely due to historic land management and use decisions, disconnection from beneficial practices maintained by California Native American tribes, low levels of climate smart land management, and the accelerating impacts of climate change. Modeling also suggested lands will still be a source of emissions through 2045.

The 2022 Scoping Plan set a numeric target for California's lands to contribute as much as possible to achieving carbon neutrality by 2045: no more than 4 percent additional carbon stock losses below 2014 levels from California's lands by 2045.

State leaders directed further action to deepen California's NBS climate action on par with our approach to other sectors (such as energy and transportation) through [Assembly Bill 1757 \(2022\)](#). Among other critical action items, this law directs State agencies to determine an ambitious range of targets for NBS climate action.

The NBS climate targets established in Section II:

- Are designed to deliver resilient ecosystems and durable carbon stocks.
- Set out the implementation pathway to meet or exceed the Scoping Plan's carbon stock target.
- Respond to AB 1757 requirements by identifying an ambitious range of actions in 2030, 2038 and 2045 that support both achieving carbon neutrality and fostering climate adaptation and resilience.
- Directly drive on one of California's six climate adaptation priorities - to accelerate nature-based climate solutions and strengthen climate resilience of natural systems.

California State government is proud of our significant portfolio of [efforts already underway](#) to increase climate action on our lands. To further support implementation of the NBS climate targets, Section III identifies actions nearly 45 State entities are eager to advance in addition to existing efforts. Some of these actions can be executed with existing resources, while others would require additional funding.

COLLECTIVE ACTION

The targets identified here reflect the total amount of collective climate action on California's lands that is needed, regardless of ownership, to enhance the health and resilience of communities and ecosystems under the accelerating threat of climate change and deliver on the Scoping Plan's carbon stock target. Healthy and resilient communities and ecosystems are a prerequisite to durable and sustainable carbon stocks.

Meeting these long-term NBS climate targets will require time, effort, funding, and collaborative partnerships across many governments and sectors. The pace of implementation will depend upon the feasibility and availability of resources and competing priorities.

California's NBS climate targets represent among the most comprehensive, detailed agenda in the world to harness the power of nature to combat climate change. In this way, California is once again leading the world to solve the climate crisis.

CONTRIBUTORS

A diverse range of partners contributed to the development of these NBS climate targets. Members of the [Expert Advisory Committee](#) (EAC) established by AB 1757 provided time, expertise, and leadership to shape and guide these targets. The targets were also informed by feedback received through early tribal consultation and an inter-tribal workshop, public input, and NBS climate leaders in California and around the world. We are deeply grateful for this collective wisdom and partnership.

Did You Know?

[Health impact modeling](#) that informed the 2022 Scoping Plan estimated the health cost savings from reduced wildfire smoke emissions is approximately double the cost of 2.3 million acres/year of fuel reduction treatments.





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SECTION TWO

NATURE-BASED SOLUTIONS CLIMATE TARGETS



SECTION TWO NATURE-BASED SOLUTIONS CLIMATE TARGETS

These targets establish quantitative goals for the most effective NBS actions that increase resilience on our lands and thus support durable and sustainable carbon stocks. They are based on [best-available science](#) developed through the 2022 Scoping Plan, and designed to meet or exceed the Scoping Plan’s carbon target for lands and drive on the State’s 2021 Climate Adaptation Strategy.

The NBS climate targets are largely organized around the major land types in California, as detailed in [Appendix B](#) of the NWL Climate Smart Strategy. These land types are defined by their dominant land cover (what is physically on the land) for consistency with international carbon accounting methodologies. They provide a basis on which we can model, analyze, and measure climate action on our lands. The NBS climate targets also include a set of wildfire risk reduction targets that span several land types: forests, shrublands and chaparral, and grasslands. Major land types on which NBS actions are called for include:

Land Type	% of California’s Land	Total Acres
Shrublands & Chaparral	31%	32.9 million acres
Forests	27%	28.7 million acres
Sparsely Vegetated Lands	10%	10.2 million acres
Grasslands	9%	9.7 million acres
Croplands	9%	9.5 million acres
Developed Lands	6%	6.8 million acres
Wetlands & Seagrasses	2%	1.8 million acres

The NBS climate targets were quantified by estimating the statewide level of action on every land type needed to build the health and resilience of communities and ecosystems, thus ensuring durable and sustainable carbon stocks to meet the Scoping Plan’s carbon stock target.

These targets were calculated using multiple models, best-available data and information, and expert guidance. Targets for each land type were developed through considering:

- How lands are currently managed and associated carbon implications.
- Most effective NBS at the scale required by science that build resilience, and durable, sustainable carbon stocks.
- Technical and practical feasibility of NBS actions.
- The State’s ability to measure and track progress over time.

Appendix 1 provides greater detail on models and data used in setting targets, as well as the process and approach for setting these targets.

CALIFORNIA’S FIRST-EVER COMPREHENSIVE NBS CLIMATE TARGETS:

1. Are designed to be achieved each year from 2030 to 2045, with the exception of the outcome-based percentage targets. Annual targets recognize that effective land management is a consistent, ongoing activity.
2. Require high levels of collective action and investment from many partners, including but not limited to federal, tribal, State, and local governments, private landowners and managers, community groups, philanthropy, educators, development companies, scientists, investors, and more.
3. Are not mutually exclusive; a given acre of land could contribute to multiple targets.
4. Are activity-based and outcome-based, considering and/or building on existing targets in California’s NBS sector (ex. 1

million acres annually of forest treatment by 2025; conserving 30% of the state’s lands and coastal waters by 2030; etc.).

5. Are flexible and aspatial, meaning they do not prescribe specific implementation methods or locations implementation should take place. NBS are successful when implemented in a tribally, regionally, and locally appropriate manner.
6. Were calculated based on activities that could be quantified and include activities that deliver climate benefits but cannot yet be quantified which count toward meeting the targets.
7. Include conservation targets. In addition to protection, “conservation” encompasses active stewardship and management to ensure healthy, resilient lands and is more broadly defined than conserved land under The Pathways to 30x30 strategy.
8. Reflect quantified baselines of current levels of action wherever possible.
9. Will guide State investments and policy.
10. Can be measured and tracked over time.
11. Can be updated over time to align with best-available science and increased ambition as necessary.
12. Underscore the need to improve understanding of the nature-based solutions being implemented across all land types in California.

Many of the actions to achieve these NBS climate targets are being advanced through existing initiatives and strategies of the Newsom Administration, including but not limited to: the [Wildfire and Forest Resilience Action Plan](#), the [Water Resilience Portfolio](#), [Pathways to 30x30](#), [State Agency Action Plan on Sea Level Rise](#), [California’s Climate Action Plan for Transportation Infrastructure](#), and many more. Across these existing initiatives, significant actions are already underway to achieve the NBS targets established here.

KEY NEXT STEPS:

Progress will be measured through regularly inventorying the carbon stocks in California's lands using our [NWL carbon inventory](#),³ improving California's understanding of collective climate action in the land sector, and utilizing CARB's forthcoming standard methods to track NBS climate action. A progress report will be issued every two years.

It is critical to establish ambitious NBS climate targets now and take actions with urgency, given accelerating climate change and the scale of the climate crisis. At the same time, State agencies and partners will continue to improve our ability to consistently track and measure the outcomes of NBS climate action. This improved analysis could include moving toward more dynamic measurement of carbon flux, allowing for a more accurate understanding of how carbon is being sequestered and emitted by our lands over time.

This evolution and continuous improvement parallels that of other sectors where we have worked over many years to improve our understanding of emissions and the many factors that can influence emission rates.

For example, in the transportation sector, California first used data available on the total vehicles in the state, which then was coupled with extensive engine and vehicle testing and data collection on emission rates by vehicle type, fuel type, and driving mode to estimate total annual statewide transportation emissions. While useful for understanding the current number of vehicles on the road, relying on readily available data on vehicle counts alone has limitations for policy development.

The counts do not give much insight into how much driving is occurring, how much fuel (and what type) is being consumed, or how fuel usage changes over time. CARB did and continues to do testing and data collection on these additional variables to develop more precise estimates of total transportation emissions occurring each year and to continually improve and refine policy and regulatory interventions to reduce transportation emissions over time.

It took decades of staff work and monitoring/testing data collection to build these improved methods that allow for targeted and effective programs to reduce emissions in the transportation sector. In many ways, we expect that the land sector will also require a similar level of ongoing improvements and expansion of knowledge to improve our overall approach to tracking NBS climate action and progress towards these targets.

Future scientific and data advances (e.g., inventorying, monitoring, tracking, modeling, or research) will likely improve our knowledge of NBS climate action effectiveness and outcomes and may also inform potential target adjustments, as necessary. This evolution also parallels California's approach to other climate targets.

For example, the initiating AB 32 climate legislation and the first Scoping Plan identified a target of reducing AB 32 GHG emissions to 1990 levels by 2020. In recognition of the need for further climate action and the State's progress on the 2020 target, particularly from transportation and electricity sector reductions, subsequent legislation (SB 32) and the 2017 Scoping Plan Update set a new target to reduce emissions 40% below 1990 levels by 2030. And most recently in 2022, carbon neutrality legislation (AB 1279) and the latest 2022 Scoping Plan Update set new targets to reduce anthropogenic emissions 85% below 1990 levels by 2045 and achieve carbon neutrality by 2045. The 2022 Scoping Plan Update also identified the need to have greater emission reductions by 2030 than called for by 2017 Scoping Update to be on track to achieve the 2045 targets.

At each interval, these updated climate targets were informed by an ongoing improvement in our understanding of GHG emissions sources and GHG emission reductions strategies and effectiveness. That being said, targets must have time to materialize before they are adjusted.

3 The California Air Resources Board's Natural and Working Lands (NWL) Inventory is a quantitative estimate of the existing state of ecosystem carbon stored in the state's land base. The NWL Inventory tracks how much carbon exists in California's ecosystems, where that carbon is located, and estimates how much carbon is moving in and out of the various land types and carbon pools. It provides stored carbon "snapshots" and gives insight into the location and magnitude of NWL carbon stocks at discrete moments in time.

For this reason, the Scoping Plan is updated every five years, which allows for implementation, monitoring, and assessments to inform ever more ambitious climate targets. We expect the NBS climate targets will undergo a similar evolution over the coming years.



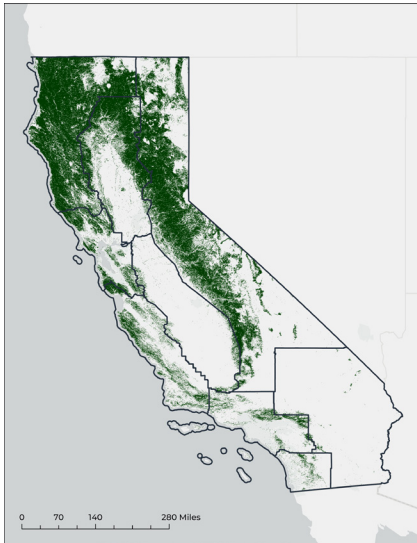
WILDFIRE RISK REDUCTION

NBS CLIMATE TARGETS

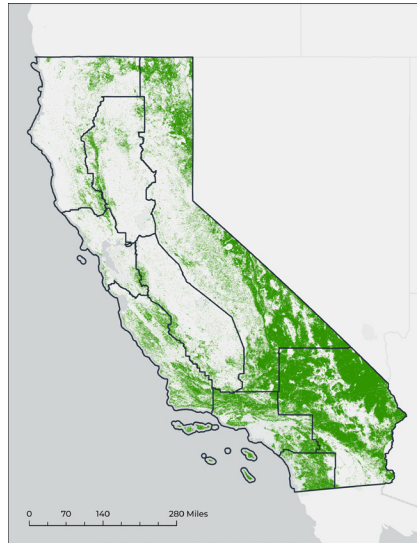
One of the largest sources of carbon emissions from California’s lands over the last eight years comes from catastrophic wildfire. Since 2020, over 7 million acres of California’s lands have burned, with more of these fires being extremely destructive to communities and ecosystems than California has seen historically. Cycles of wildfire are natural to California’s landscapes, but have been disturbed by decades of fire exclusion and disconnection from low-level managed wildfire practiced by Native American tribes. Climate change will continue to compound this challenge and expand wildfire threat, severity, and intensity. Limiting huge, dangerous, and catastrophic wildfires and restoring a natural wildfire regime across the state is one of the most important actions to limit carbon emissions from our landscapes.

STATEWIDE LAND COVER MAPS

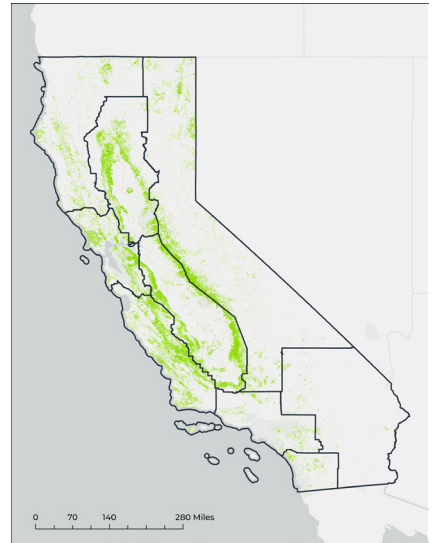
FORESTS



SHRUBLANDS AND CHAPARRAL



GRASSLANDS



Due to the nature of how wildfire spreads and because actions to address wildfire span across forests, shrublands, and grasslands, these landscapes have been grouped together for the wildfire risk reduction NBS climate targets. Combined, these three land types make up approximately 67% of California, or 71.3 million acres.

These targets, including expanding both beneficial fire and other fuel reduction activities, align with and build on California’s shared commitment with the U.S. Forest Service to treat a minimum of 1 million acres annually by 2025. They are also complemented by targets on California’s developed lands related to reducing community wildfire risk, decreasing wildfire ignition rates caused by vehicles, and treating roadside vegetation.

Significant investment is working across California’s forests and fire-prone landscapes to reduce catastrophic wildfire risk. Since 2020, approximately \$2.7 billion of state funding has been invested to plan and implement projects across the state that reduce the risk of huge, destructive wildfires. These investments are already demonstrating outcomes, including limiting fire growth within several wildfires in 2022 and 2023. Dozens of state entities are advancing this progress in close partnership with tribal, federal, and local governments and a broad range of non-governmental organizations.

ACREAGE TARGETS

Nature-Based Solution (activity acres/year)	2030	2038	2045
Beneficial Fire <ul style="list-style-type: none"> Prescribed broadcast burning, cultural burning, planned managed fire, planned treatment burned in wildfire⁴ 	800K	1.2M	1.5M
Other Fuel Reduction Activities <ul style="list-style-type: none"> Thinning, invasive species removal, prescribed herbivory (grazing),⁵ mechanical treatments (first entry and retreatments), and uneven-aged timber harvest 	700K	800K	1M
TOTAL activity acres/year	1.5M	2M	2.5M



⁴ Includes first entry and maintenance burning, does not include any acres from wildfires where suppression is the primary objective.

⁵ California's Wildfire and Forest Resilience Task Force defines prescribed herbivory as the use of domestic livestock to accomplish specific and measurable vegetation management objectives. Those would include things like removing biomass (fine fuel loads), reducing populations of specific plant species, slowing the re-establishment of shrubs on burned or mechanically thinned sites, and improving plant community structure for wildlife habitat values.

FOREST

NBS CLIMATE TARGETS

Forests make up 27% of California, or 28.7 million acres, from northern to southern California. Their trees, soils, and plants currently store the largest proportion of carbon across all of California's landscape types. Over the past century, forests have largely served as a carbon sink that removed carbon from our atmosphere. They are now a carbon source - emitting more carbon than they remove from the atmosphere. This shift is largely the result of:

- A century of fire exclusion practices
- Historic timber harvesting methods that removed large, fire-resilient trees
- Climate change impacts, such as drought and pest migration

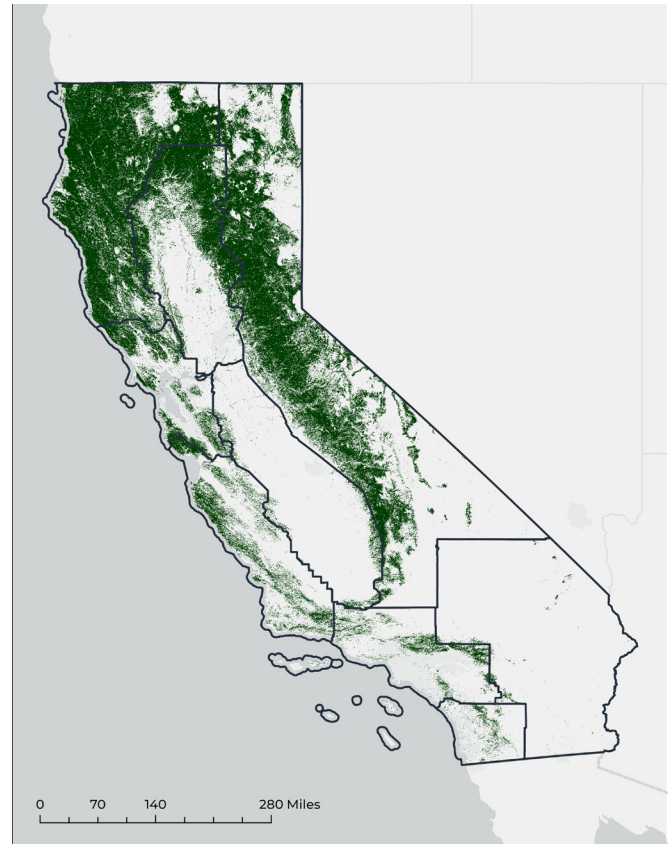
Without levels of climate smart forest management consistent with the NBS climate targets below, we cannot count on California's forests being carbon sinks in the future.

In addition to California's historic investments to reduce wildfire risk in our forests, the State is building forest health through planning and investments for post-fire reforestation and conservation. The California Wildfire and Forest Resilience Task Force is developing a report and action plan for filling critical gaps in the state's reforestation pipeline, as well as strengthening collaboration with non-profits and the federal government. Furthermore, recent budget years have seen significant investment in CAL FIRE's forest legacy, nursery, and post-fire reforestation and regeneration programs, the Wildlife Conservation Board's oak woodland conservation and riparian habitat conservation programs, and Conservancy-supported efforts to build forest health and resilience.



STATEWIDE LAND COVER MAPS

FORESTS



ACREAGE TARGETS

Nature-Based Solution (acres/year)	2030	2038	2045
Afforestation (adding trees) <ul style="list-style-type: none"> Oak woodland re-establishment in areas where they historically were found⁶ 	52.9K	52.9K	52.9K
Conservation <ul style="list-style-type: none"> Conserve old growth forests to preserve the oldest trees⁷ Conserve conifer, riparian, and oak woodland forests 	55.1K	55.1K	55.1K
Restoration <ul style="list-style-type: none"> Post high severity fire reforestation and restoration Restore health of degraded oak woodlands including enhancing riparian zones 	322.1K	462.1K	322.1K
Working Forest Conservation⁸ <ul style="list-style-type: none"> Extend harvest rotation lengths Shift intensity of harvests Restore and/or conserve wildlife habitat 	165.2K	165.2K	165.2K
TOTAL acres/year	595.3K	735.3K	595.3K
Percentage Targets	2030	2038	2045
1. Decrease the rate of illegal conversion and forest degradation by	20%	50%	90%
2. Through beneficial fire and other fuel reduction activities, shift the proportion of statewide high severity wildfire to low or moderate severity wildfire such that the total percentage of low to moderate severity wildfire ⁹ is	75%	83%	90%



⁶ Current oak woodland acreage stands at 8.5m. Historically, oak woodlands were estimated to cover 25.5m acres.

⁷ In some ecosystems, the oldest trees are also the largest, most resilient trees.

⁸ There are approximately 17m acres of working forests (timberlands) in California.

⁹ Current average percentage of low to moderate severity wildfire is approximately 64%.

SHRUBLANDS AND CHAPARRAL

NBS CLIMATE TARGETS

Shrublands and chaparral cover 31% of California, or 32.9 million acres across many regions of the state – including across California’s deserts.

Along with forests, shrublands and chaparral have the highest carbon density of any land type. In the absence of disturbance, shrub and chaparral lands can store carbon at the decade to century timescale.

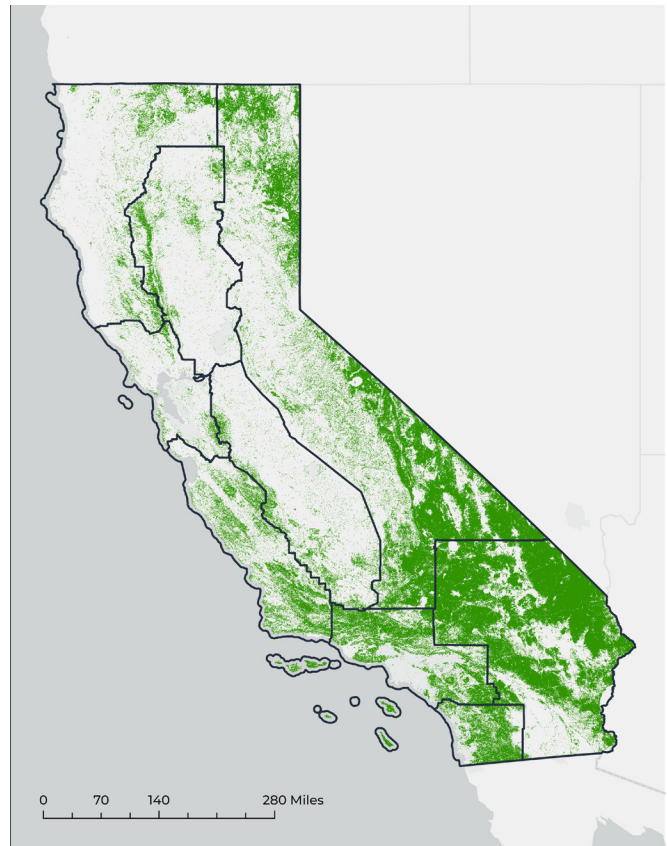
Evidence indicates that California’s shrublands are burning more frequently than they would have historically, leading to degraded conditions and reduced carbon storage.

Improving our management of shrubland and chaparral landscapes – particularly through protecting them from development - can reduce the risk of wildfire, protect water supplies, and maintain important habitat for California’s unique biodiversity. The shrubland and chaparral targets are also complemented by targets on California’s developed lands, related to reducing community wildfire risk, decreasing wildfire ignition rates caused by vehicles, and treating roadside vegetation.

California is taking an increasingly proactive approach to shrubland and chaparral conservation and restoration. Established in 2021, the Wildlife Conservation Board’s Desert Conservation Program provides significant resources for the protection and restoration of large swaths of desert shrublands and chaparral. The State has also invested record funding to protect shrublands and chaparral from wildfire, including through efforts to reduce human-caused ignitions that cause catastrophic damage.

STATEWIDE LAND COVER MAPS

SHRUBLANDS AND CHAPARRAL



ACREAGE TARGETS

Nature-Based Solution (acres/year)	2030	2038	2045
Conservation <ul style="list-style-type: none"> Conserve chaparral and shrublands, with a focus on old growth and undeveloped areas 	104.6K	104.6K	104.6K
Restoration <ul style="list-style-type: none"> Restore chaparral and shrublands, with a focus on addressing threats from invasive species and fire; post-disturbance restoration; transitional zones; enhancing native vegetation; and re-establishing wildlife connectivity 	37K	40K	45K
TOTAL acres/year	141.6K	144.6K	149.6K



GRASSLANDS

NBS CLIMATE TARGETS

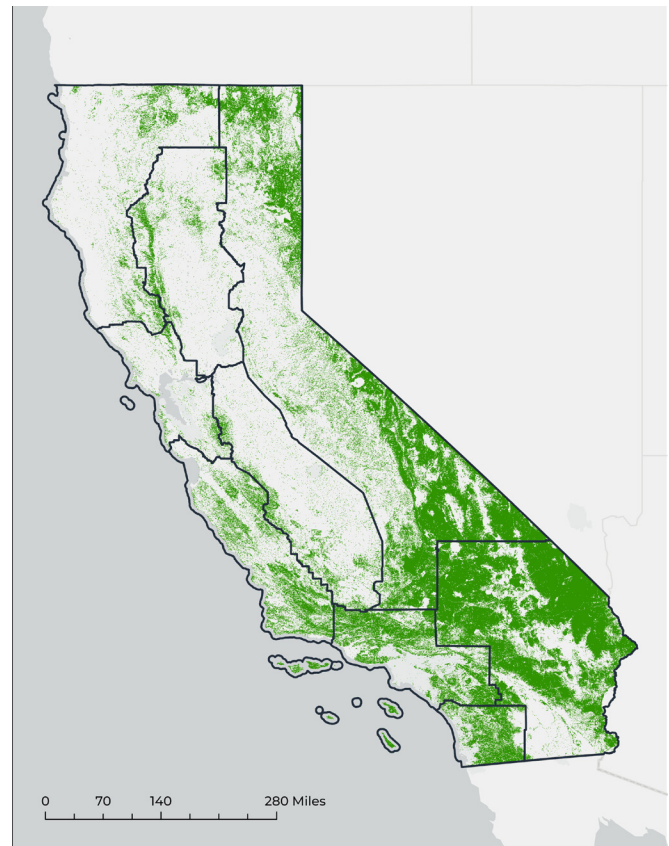
Grasslands cover 9% of California, or 9.7 million acres. The bulk of their carbon storage is in soil and root systems, offering a potentially significant carbon sink. In addition to carbon storage, grasslands provide open space, habitat for wildlife, grazing land, and important water filtration and recharge benefits.

Over the past few centuries, native perennial grasses with large root systems have been replaced by invasive annual grass species across California. The state's grasslands are also experiencing the stress of climate change. Increasing climate smart land management at the levels called for in the targets below will protect and enhance carbon stocks, expand climate-smart agricultural opportunities, support biodiversity, and increase soil water function.

The State has increased investment in the health of California's grasslands in recent years, through programs designed to protect lands from development; improve soil health; restore riparian areas; and sequester carbon. The State has also invested heavily in reducing wildfire risk on grasslands; oak woodland conservation and restoration; and grazing. These investments over the last few years alone have delivered climate benefits on thousands of grassland acres.

STATEWIDE LAND COVER MAPS

GRASSLANDS



ACREAGE TARGETS

Nature-Based Solution (acres/year)	2030	2038	2045
Conservation <ul style="list-style-type: none"> Protect grasslands with a focus on remaining native grasslands, oak trees, and foothill pines 	33K	33K	33K
Restoration <ul style="list-style-type: none"> Restore degraded grasslands to native vegetation communities and diverse, perennial, deep-rooted grasses; soil amendments¹⁰ and prescribed grazing in line with the NWL Climate Smart Strategy; re-establishing a sustainable fire regime; riparian restoration 	55.1K	55.1K	55.1K
TOTAL acres/year	88.1K	88.1K	88.1K



¹⁰ There is a diversity of soil amendments, including compost. It is unknown whether sufficient compost will exist for scaling of this practice. Additionally, composting that replaces synthetic fertilizer should be prioritized to ensure the greatest climate benefit.

CROPLANDS

NBS CLIMATE TARGETS

Irrigated croplands cover nine percent of California, or 9.5 million acres. Although croplands are found throughout the state, these lands are concentrated in places with high-quality soils across the center of California and in the Imperial Valley as well as key coastal areas. They provide over a third of all vegetables and two-thirds of the fruits and nuts in the United States and make the State a global leader in agriculture.

Aside from developed lands, croplands are the most intensively managed landscapes in the state; closely tied to society through both the food they produce and the constant, direct human interaction with the land through cropland management.

Through climate smart farming practices in line with the NBS climate targets below, California's farmers can increase carbon storage in and reduce GHG emissions from the state's croplands.

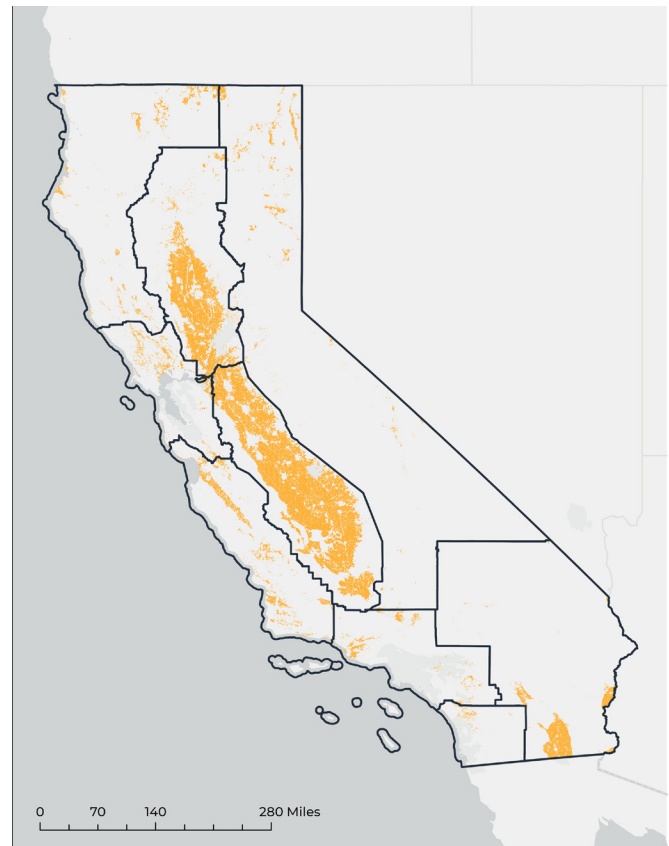
These efforts will also protect food and water security, improve air and water quality, create local jobs and contribute to regional economic prosperity, and support habitat for beneficial insects, animals, and other plant species.

The croplands NBS climate targets support resiliency in agriculture by improving soil health and water holding capacity, improving nutrient management, and reducing the use of synthetic inputs - supporting California's climate commitments while improving the lives of those who live and work in the agricultural community.

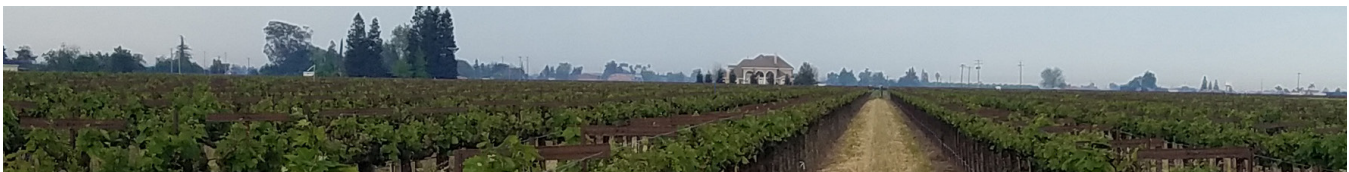
The State has made significant investments in climate-smart agriculture innovations resulting in reduced GHG emissions, more efficient water use, healthier soils, and croplands that are more

STATEWIDE LAND COVER MAPS

CROPLANDS



resilient to climate shocks. Since 2014, California has invested over \$275 million in 2,600 multi-benefit, climate-smart agriculture projects. These investments have resulted in 2 MMT CO₂e emission reductions and 1.5m acre feet of water savings. The state's related programs are consistently oversubscribed. Other key investments have been made in support for pollinator habitat and nutrient management planning, enabling farmers and ranchers to incorporate climate-smart planning into their operations and promoting biodiversity.



ACREAGE TARGETS

Nature-Based Solution (acres/year)	2030	2038	2045
Healthy Soils Practices <ul style="list-style-type: none"> Implement healthy soils practices on annual and perennial croplands, such as compost application, cover cropping, hedgerows/windbreaks, no and reduced till, riparian buffers, whole orchard recycling, etc. 	140K	190K	190K
Conservation <ul style="list-style-type: none"> Conserve annual and perennial croplands 	12K	16K	19.5K
TOTAL acres/year	152K	206K	209.5K
Percentage Targets	2030	2038	2045
Convert conventional to organic systems in annual and perennial croplands	10%	15%	20%



DEVELOPED LANDS

NBS CLIMATE TARGETS

Developed lands cover six percent of California, or 6.8 million acres, and are where most Californians call home.

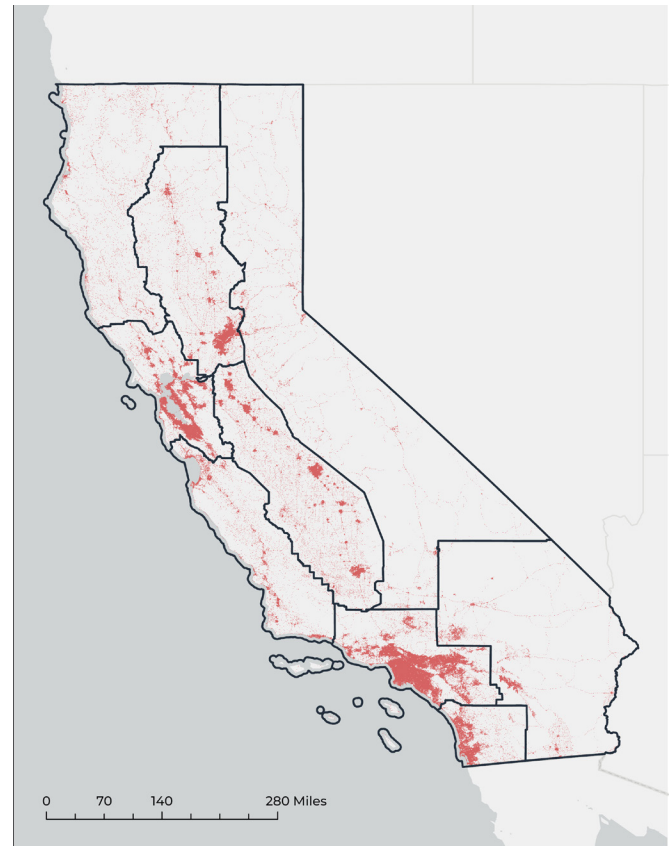
They support the vegetation within cities and communities,¹¹ as well as along infrastructure. Community greenspaces and parks, soils, green infrastructure, landscaping, and community gardens in urban, suburban, and rural communities are all part of developed lands.

Nature-based solutions in line with the developed lands climate targets below will sequester and store carbon, support air and water filtration, reduce climate risks, increase access to nature, and improve mental health.

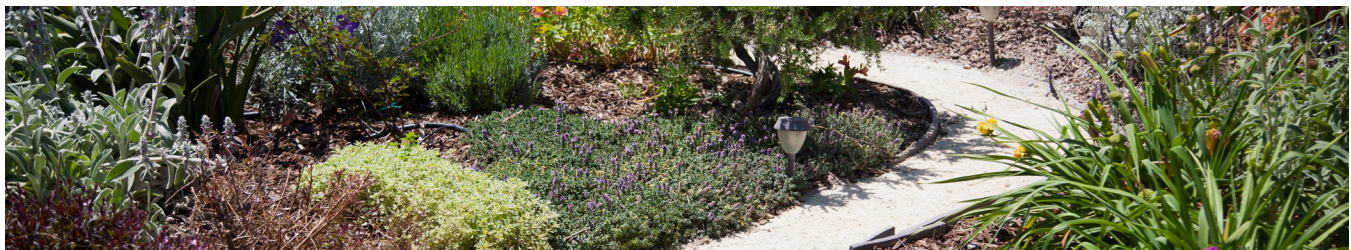
They also create opportunities to deliver economic benefits, such as improving public health outcomes during extreme heat events; creating and maintaining high quality local urban forestry jobs; reducing risk of costly property damage through flood protection; providing recreational opportunities; and decreasing energy costs through strategic shading of homes and buildings.

STATEWIDE LAND COVER MAPS

DEVELOPED LANDS



Record funding for nature-based solutions in recent years is delivering critical climate benefits across California's diverse communities. For example, historic funding in urban and community greening and forestry is supporting carbon neutrality, cooling communities vulnerable to extreme heat, protecting people and property from flood risks, and contributing to the resilience of California's energy grid. Other investments have restored urban streams to increase water resilience; protected open space and built parks that support natural carbon sequestration and boost community resilience; transformed schoolyards to increase green space that protects the health of California's most heat-vulnerable communities; delivered transportation projects that are aligned with local conservation priorities; and managed vegetation near roads and energy infrastructure to reduce wildfire risk.



¹¹ Under the California Public Resources Code, these areas are considered "urban forests," which are defined as "those native or introduced trees and related vegetation in the urban and near-urban areas, including, but not limited to, urban watersheds, soils and related habitats, street trees, park trees, residential trees, natural riparian habitats, and trees on other private and public properties."

ACREAGE TARGETS

Nature-Based Solution (acres/year)	2030	2038	2045
Afforestation (adding trees) between communities and croplands <ul style="list-style-type: none"> Establish tree line buffers between croplands and communities to reduce chemical exposure and enhance access to green space¹² 	133	185	230
Conservation <ul style="list-style-type: none"> Protect existing urban tree cover 	17.3K	17.3K	17.3K
Urban and Community Greening and Forestry <ul style="list-style-type: none"> Increase tree canopy cover in cities, communities, and schoolyards Establish drought-tolerant vegetation, remove grass yards Increase green space, such as parks, gardens, schoolyards, greenways/greenbelts, street trees, green roofs, rain gardens, etc. 	34.7K	34.7K	34.7K
Reducing Community Wildfire Risks <ul style="list-style-type: none"> Defensible space establishment on properties in the wildland urban interface area 	11K	11K	11K
TOTAL acres/year	63.1K	63.2K	63.2K



¹² This is similar to the healthy soils practice of tree establishment, except with the explicit function of protecting and enhancing communities.

Percentage Targets

Decrease wildfire ignition incidents caused by vehicles

Treat priority roads that function as primary evacuation routes

2030	2038	2045
10%	20%	30%
50%	70%	100%

Additional Targets

Urban and Community Greening and Forestry (trees planted/year)

- Increase large canopied, drought-tolerant trees meaningful to the community; prioritize communities with low tree canopy

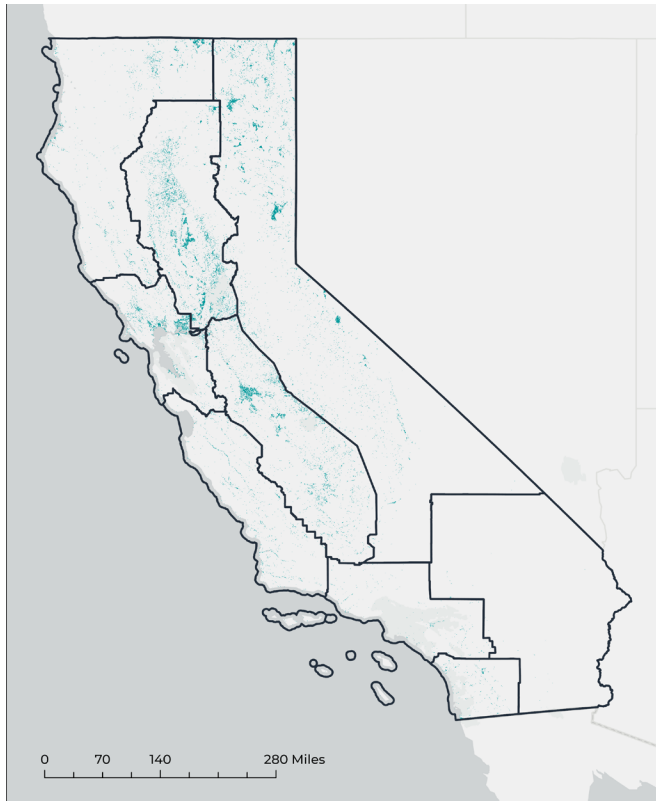
2030	2038	2045
200K	200K	200K



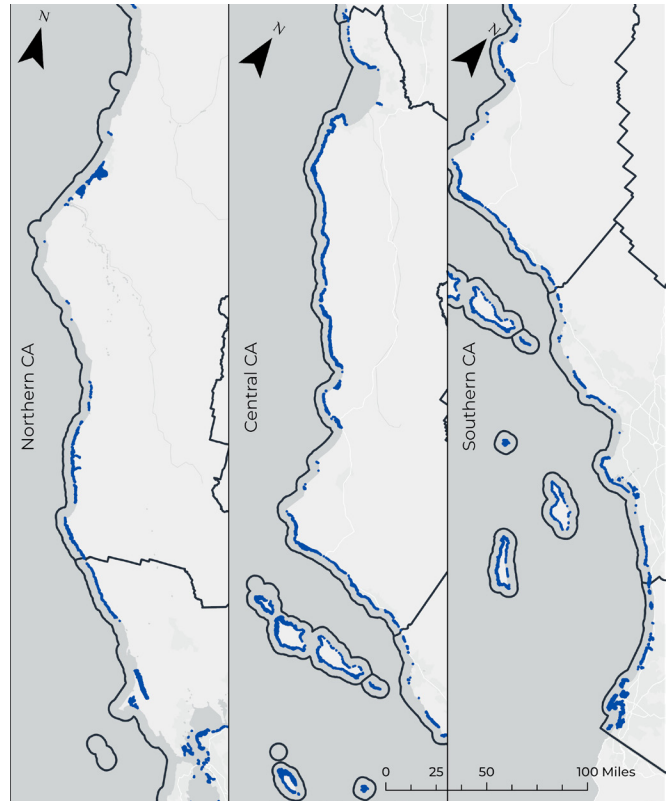
WETLANDS AND SEAGRASSES

NBS CLIMATE TARGETS

STATEWIDE LAND COVER MAPS WETLANDS



STATEWIDE LAND COVER MAPS SEAGRASSES AND SEAWEEDS



Wetlands, seagrasses and seaweeds cover approximately two percent of California, or 1.8 million acres. Wetlands have been severely degraded through reclamation, diking, draining, and dredging practices; estimates suggest less than 10 percent of California’s historical wetlands remain. And in recent years, California has seen dramatic declines of both seagrasses and seaweeds.

These lands are essential to California’s communities as they serve as hotspots for biodiversity, contain considerable carbon¹³ largely in soils and trapped sediments, are critical to the state’s water supply, and protect upland areas from flooding due to sea level rise and storms.

Implementing the wetland NBS climate targets will reduce GHG emissions, increase carbon storage, improve water quality and supply, buffer communities from flooding and storm surge, provide habitat for culturally and commercially important species, and continue to support California’s biodiversity.

California has long been committed to protecting, restoring and building the health of the state’s diverse wetlands, from mountain meadow wetlands in the Sierra Nevada, managed wetlands and rice cultivation in the Delta, to tidal wetlands and seagrass beds along the coast. The State has recently invested historic levels of funding to accelerate and scale these efforts through programs that restore and re-wet Delta wetlands to reduce GHG emissions from lands and increase the region’s resilience to climate impacts; restore mountain meadow wetlands to increase forest and watershed health; and build the resilience of California’s coastal communities and economy.

¹³ Seaweeds could represent carbon sequestration potential, but more research is needed to understand how much carbon is sequestered versus re-released into the atmosphere after kelp dies.

ACREAGE TARGETS

Nature-Based Solution (acres/year)	2030	2038	2045
Conservation <ul style="list-style-type: none"> Conserve coastal wetlands, seagrass beds¹⁴, Delta wetlands, and mountain meadow wetlands 	1.3K	1.3K	1.3K
Restoration <ul style="list-style-type: none"> Restore and/or re-establish coastal wetlands, including through beneficial reuse of sediment Restore and/or re-establish seagrass beds, with a focus on eelgrass meadows Restore Delta wetlands, including through re-establishing brackish and freshwater tidal wetlands on previously drained or seasonal wetlands, and rewetting deeply subsided areas through the creation of non-tidal managed wetlands or rice cultivation Restore and/or rewet previously drained San Francisco Bay wetlands Restore mountain meadow wetlands through restoring proper hydrologic flow, removing conifer encroachment, and/or beaver reintroduction 	9.2K	9.2K	9.2K
Sea level rise protection of ecosystems <ul style="list-style-type: none"> Restore coastal wetlands in a manner that enables them to keep pace with sea level rise, including conserving upland space needed for wetland migration 	1.7K	1.7K	1.7K
TOTAL acres/year	12.2K	12.2K	12.2K



¹⁴ Seagrass bed restoration numbers are specific to the San Francisco Bay and thus are likely a conservative estimate. Better mapping and modeling are needed to scale up to statewide.

SPARSELY VEGETATED LANDS

NBS CLIMATE TARGETS

Sparsely vegetated lands cover approximately 10% of the state, or 10.2 million acres and consist of extremely diverse areas across the state:

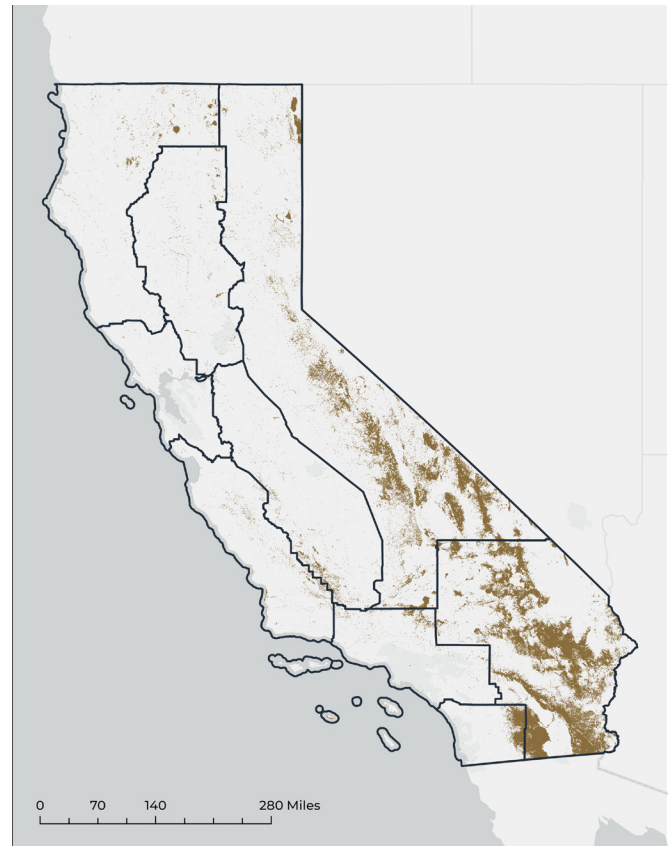
- Portions of California's Mojave, Colorado, and Great Basin deserts that have low levels of above-ground vegetation¹⁵
- Beach and dune areas with less than 10% vegetation cover
- Bare rock landscapes
- Areas covered in ice or snow such as those above the tree line in mountainous regions
- Barren lands with hostile growing conditions

Many of these lands are home to endemic and specially adapted plant and animal species. Land use change threatens these unique lands, so protecting them from disturbance is important. Management of sparsely vegetated lands in line with the NBS climate targets below can protect existing carbon stores, improve air quality, protect biodiversity, buffer communities from climate impacts, and boost sustainable recreation and tourism.

Many state agencies are driving toward climate-smart management of California's sparsely vegetated lands, with recent investments accelerating efforts to protect and restore lands within the Mojave and Colorado deserts; undertake restoration projects that address air quality and ecological threats at the Salton Sea; control invasive species; restore dunes and increase living shorelines to build coastal resilience; conserve desert lands through 30x30; and deliver on our clean energy goals in line with the Desert Renewable Energy Conservation Plan, which identifies areas in the desert appropriate for the utility-scale development of wind, solar, and geothermal energy projects.

STATEWIDE LAND COVER MAPS

SPARSELY VEGETATED LANDS



¹⁵ Seaweeds could represent carbon sequestration potential, but more research is needed to understand how much carbon is sequestered versus re-released into the atmosphere after kelp dies.

ACREAGE TARGETS

Nature-Based Solution (acres/year)	2030	2038	2045
Conservation <ul style="list-style-type: none"> Conserve lands to prevent conversion and/or disturbance 	20K	30K	40K
Restoration <ul style="list-style-type: none"> Restore native vegetation on previously disturbed areas (or on those otherwise dominated by invasive species) including through invasive species removal and restoration of riparian zones 	55.1K	55.1K	55.1K
TOTAL acres/year	75.1K	85.1K	95.1K



03

SECTION THREE

ADDITIONAL STATE ACTIONS



SECTION THREE ADDITIONAL STATE ACTIONS

California is a global NBS leader, having built and expanded our portfolio of NBS action over decades. Between 2020 and 2023 alone, the State invested approximately \$9.6 billion in nature-based solutions (as of April 2024). In 2022, the NWL Climate Smart Strategy catalogued over [350 efforts across State agencies](#) to deliver NBS climate action, including activities related to:

- Legislative Directives
- Stewardship of State-Owned Lands
- Strategies and Plans
- Grant Funding
- Partnerships
- Science, Research, Data, Analysis
- Policies and Regulations
- Outreach, Education, Capacity and Technical Support
- Leveraging Funding and Finance
- Market Mechanisms
- Equity
- Tracking Action and Measuring Outcomes

This comprehensive list of state efforts to support NBS climate action will be updated in the 2025 update to California's NWL Climate Smart Strategy.

To further support implementation of the NBS climate targets, this Section identifies actions nearly 45 State entities are eager to advance in addition to their existing efforts. Some of these actions can be executed with existing resources, while others would require additional funding.

ALL STATE AGENCIES

1. Track efforts to deliver on California's NBS climate targets and report on them through biennial reporting called for in AB 1757.
2. Adopt and utilize the standard methods developed by CARB to measure and track climate actions and benefits of State investments in nature-based climate solutions.
3. Explore the opportunity to deepen collaboration with federal land-owning partners to deliver on the NBS climate targets, in addition to positioning California for successfully securing the unprecedented federal NBS climate funding available.
4. Explore opportunities as appropriate to align procurement policy in support of delivering on the NBS climate targets.



BUSINESS, CONSUMER SERVICES AND HOUSING AGENCY

1. Reflect upon lessons learned from the Department of Housing and Community Development's programs to develop case studies that demonstrate how funding for parks can be an incentive to build climate-smart, infill housing.
2. Complete a pilot to integrate mass timber into the designs of affordable and/or market rate housing projects in partnership with CNRA and other agencies.
3. Explore partnerships to identify options that create or improve parks in communities with State affordable housing investments. Evaluate opportunities to align requirements in housing and community development programs and park programs to facilitate urban cooling and improve urban forestry.
4. Track the number and percentage of infill housing development projects permitted by cities and counties.



CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

1. Increase trainings and technical assistance for farmers interested in using organic and sustainable pest management crop practices.
2. Expand markets for climate-smart agricultural products produced by a diverse range of farms and ranches.
3. Develop a Climate Resilience Strategy for California agriculture to implement the State's NBS climate targets and other actions to mitigate greenhouse gas emissions, reduce climate risks to and build resilience of the agriculture sector.
4. Invest in the development of California's circular bioeconomy, supporting initiatives to utilize agricultural biomass to create new useful products, create high-paying local



jobs, and improve the environment.

5. Collaborate with entities doing R&D to support on-farm soil carbon testing and analysis.
6. Build lab capacity in California to analyze and process soil samples and evaluate soil health metrics.
7. Develop a network of farms that have implemented climate smart practices to serve as demonstration sites so farmers can see those practices in action.
8. Significantly increase climate-smart agriculture technical assistance across the state in collaboration with federal and State agencies and community-based organizations.
9. Support the rapid development of conservation agriculture plans.
10. Increase outreach, including to Socially Disadvantaged Farmers and Ranchers, to facilitate equal access to block grant and direct-to-farmer grant funds from the Healthy Soils Program to implement healthy soils practices.
11. Significantly increase participation of ranchers in the Healthy Soils Program Identify and consider incentives for commercial nursery producers and providers to increase availability of climatically appropriate species for restoration plantings.
12. Coordinate with relevant State agency and department partners to consider pathways to reduce annual conversion of California's grasslands.

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY



California Air Resources Board

1. Update the NWL inventory of ecosystem carbon, incorporating additional landscapes, data sources, and methodology updates.
2. Initiate research to improve understanding of current and historical carbon storage, the potential for future carbon sequestration with restoration, or management, and the risk of carbon loss due to climate change or land use change in California's land sector.
3. Improve statewide modeling tools for projecting how climate smart agricultural practices impact carbon stocks in California.
4. Increase understanding of economic feasibility and economic benefits of implementing climate smart land management practices.
5. Develop a road map outlining the air quality needs to support a future where California will gradually ramp up to 1.5M acres of beneficial fire annually by 2045.
6. In conjunction with the NWL inventory of ecosystem carbon, develop with CNRA and CDFA, a monitoring program to meet CARB, CNRA, and CDFA specific needs, that will assess the impact of climate and management.
7. In support of the 2027 Scoping Plan, work with other agencies to enhance CARB's ability to model and monitor carbon stocks across more landscapes where possible, e.g., coastal wetlands.



State Water Resources Control Board

1. Develop incentive programs to promote regional stormwater infiltration projects that reduce impervious surfaces and increase urban greenspaces.
2. Set and implement policies that encourage climate-ready urban landscaping and urban forests.



Department of Pesticide Regulation

1. In partnership with CDFA and UCANR, significantly increase the availability of Department of Pesticide Regulation-accredited continuing education credits for Pest Control Advisors that address sustainable pest management practices in California.
2. Increase the number of Pest Control Advisors trained in sustainable pest management crop practices as part of a holistic way of reducing pest pressures in partnership with CDFA and UCANR.
3. Develop a cross-agency plan to accelerate integrated pest management and sustainable pest management on State-owned lands in partnership with relevant agencies, including CDFA, Caltrans, DGS, and CNRA (including State Parks, CDFW, and DWR).



CalRecycle

1. Identify and implement permitting efficiencies for small and medium size organics recycling and composting facilities.
2. Facilitate relationships between jurisdictions, farms, school districts, and food banks to increase recovery of edible food and education on best practices around fresh food recovery and recycling organics.
3. Partner with CDFA to assist composters in complying with regulations and encourage on-farm composting.
4. Develop an approach to increase investment in community composting and increase community composting sites throughout California.



5. Incentivize the application of certified high-quality compost, whole orchard recycling, and the construction of facilities that allow the production of marketable agricultural and municipal-derived compost and manure compost.
6. Invest in the production and application of high-quality compost from municipally derived feedstocks suitable for application on lands; support expanding or building composting facilities and related equipment and transportation costs. This equipment could be cooperatively owned and deployed regionally.
7. Develop an overarching soil amendment strategy for the State, in partnership with relevant agencies, to estimate availability of compost and other soil amendments in support of the State's climate goals.

CALIFORNIA HEALTH AND HUMAN SERVICES AGENCY



Department of Public Health

1. Compile data on the health benefits of NBS strategies.
2. Provide State agencies that manage land with data on health risks and outcomes, to prioritize communities and locations for investments in NBS that may yield health benefits.
3. Improve understanding of the health effects of drought and of extreme precipitation events.
4. Assess population exposure impacts of particle pollution from wildfire smoke.
5. Assess differential health impacts among diverse population subgroups in the evaluation of health impacts associated with wildland fire smoke.



CALIFORNIA NATURAL RESOURCES AGENCY



All Departments, Commissions and Conservancies across California's Natural Resources Agency

1. Coordinate a process with internal teams to identify opportunities to ensure regulatory requirements critical to achieving the NBS climate targets are efficient and effective.
2. Coordinate a process with internal teams to identify opportunities to reduce barriers to accessing CNRA's NBS funds.
3. Coordinate with internal teams to develop common language, guidance, and model terms to deliver climate outcomes through easements.
4. Accelerate rate of new access and co-management agreements and ancestral land return projects in partnership with California Native American tribes.

California Natural Resources Agency

1. Identify existing NBS activity tracking and reporting processes and systems, and explore their expansion and/or connection.
2. Launch a campaign to increase public awareness of NBS climate targets, opportunities for Californians to support achieving them, and how State investments are driving progress.
3. Coordinate regular NBS climate convenings to deepen connections among the statewide community of NBS climate leaders.
4. Identify key strategies to expand 30x30 conservation to contribute to NBS climate targets.
5. Provide coordination, guidance, and support for early, often, and meaningful tribal consultations on NBS work and to advance tribal access, co-management, and ancestral land return across the state.



Timber Regulation and Forest Restoration Program (TRFR Program)

1. Quantify baseline levels of illegal conversion and forest degradation.
2. Establish interagency reforestation approach to respond to high-severity wildfire incidents with rigor, urgency, and professional oversight.
3. Expand field-based monitoring of forest health/fuel reduction treatments to all applicable permit types.
4. Increase TRFR Program education and outreach to build towards compliance with Forest Practice Rules and related regulation.
5. Expand TRFR Program enforcement staff to respond to violations.
6. Work with the Department of Conservation and CAL FIRE to expand programs that incentivize retail purchase of California waste wood products derived from forest health and fuel reduction permits issued in the state.
7. Explore opportunities to create a new program that incentivizes extended timber harvest rotation lengths commensurate with State carbon neutrality objectives.
8. Identify State and federally listed threatened or endangered species that may be particularly affected by the Wildfire Risk Reduction NBS targets, and develop an interagency action plan to directly address species needs.



Department of Conservation

Optimize climate benefits of local jurisdictions land-use decisions through DOC-managed tools.



Office of Energy Infrastructure Safety

Determine guidance for Wildfire Mitigation Plans to address wildfire risks in shrubland/chaparral landscape types along key ignition pathways.



California's Wildfire and Forest Resilience Task Force

1. Coordinate across State, federal, tribal, and private organizations to update California's Wildfire and Forest Resilience Action Plan to include regionally specific targets.
2. Identify additional actions to help deliver on NBS climate targets.
3. Focus the efforts of the Task Force's multijurisdictional Joint Strategy Work Groups to align with and help deliver on the NBS climate targets, the Wildfire and Forest Resilience Action Plan, and the USDA Forest Service Wildfire Crisis Strategy.



Department of Forestry and Fire Protection

1. Increase support for research on headwaters forest resilience and the effects of wildfire on restored and unrestored meadows to better understand their resilience and ability to act as important natural fuel breaks in the face of climate-induced megafires.
2. Increase support for forest health monitoring and evaluation of management actions.
3. Explore adopting a no-net-loss canopy policy for California's urban forests.
4. Identify specific regional workforce development needs through targeted outreach and use the outcomes of this engagement to shape relevant programs.
5. Create statewide cultural fire education training for CAL FIRE staff that reflects the diversity of cultural fire practices in California, focusing early training for burn boss staff.
6. Increase support for tree seed and seedling production capacity.
7. Explore partnership opportunities to increase access to a broader variety of urban tree/plant species that are climate smart and locally adapted.



8. Improve understanding of how California's forthcoming climate projections indicate shrubland/chaparral landscapes are expected to be impacted by climate change in the future and adjust management strategies as appropriate.
9. Substantially increase public awareness of tools that help individuals and communities make appropriate, climate-smart planting decisions.
10. Scale training of professional vegetation consultants specializing in WUI compliance and provision of technical information visually appealing landscaping strategies that achieve defensible space for landowners.
11. Support the Board of Forestry and Fire Protection's review of underutilized permitting options for forest fuels management and subsequently support their increased uptake.

California Conservation Corps

1. Increase hours each year to advance forest health and forest and fire resiliency.
2. Ensure that fire crews and forestry crews provide maximum assistance toward the wildfire risk reduction NBS climate targets.
3. Increase number of NBS projects delivered through state and local Corps programs.
4. Double the number of CCC tribal corps programs working on NBS projects.



Department of Water Resources

1. Launch a climate-smart land stewardship program for DWR-owned land that will help DWR achieve its NBS actions.
2. Increase restoration of Delta wetlands on DWR-owned land to improve ecological function and flood protection.
3. Track conversion of subsided Delta peatlands to rice cultivation and managed wetlands on DWR-owned lands.
4. Track DWR's efforts to restore and enhance California's rivers, floodplains, and estuaries



and facilitate their natural function and connectivity.

5. Encourage reactivating flood plains on working croplands for flood management, aquifer recharge, and habitat enhancement.
6. Enhance research and monitoring of wetlands through DWR project efforts in the Delta.

Department of Fish and Wildlife

1. Complete the development of a statewide, fine-scale vegetation map through CDFW's Vegetation Classification and Mapping Program.
2. Expand the use of CDFW-managed lands for grazing, where consistent with the ecological purposes of those State lands.
3. Release updated statewide maps of potential climate change refugia using the climate projections developed for California's Fifth Climate Change Assessment.
4. Begin tracking the number of restoration or habitat improvement projects on CDFW-managed lands, and identify areas where restoration or improvement is still needed.
5. Evaluate the climate vulnerability of CDFW-owned lands.



Department of Parks and Recreation

1. Increase public awareness of the NBS climate targets through State Park interpretation and education activities.
2. Develop a roadmap for aligning State Parks approach to land management with the NWL Climate Smart Strategy
3. Continue investing in and growing State Parks' beneficial fire program to expand restoration of fire adapted lands.



Ocean Protection Council

1. Complete coastal wetlands inventory to inform coastal wetland acreage targets.



2. Develop an approach for predicting climate-driven changes in rocky intertidal and beach ecosystems.
3. In coordination with CARB, conduct research on coastal wetlands and seagrasses to evaluate them for carbon storage and sequestration.
4. Consult with California Native American tribes to implement pathways for the consideration of tribal expertise in coastal and ocean management decisions, and co-develop projects with tribes.
5. Expand opportunities for environmental justice communities and California Native American tribes to access OPC funding by enhancing grant processes and providing technical assistance opportunities.
6. Through OPC-funded projects and programs, identify NBS opportunities that optimize local economic benefits for community members.

State Lands Commission

1. Develop a map layer of NBS and a process to track lease applications and projects that incorporate nature-based climate solutions and contribute towards the State's NBS climate targets.
2. Complete an inventory and map of the Commission's fire-prone lands to better inform efforts to support wildfire resilience.
3. Recommend short-term leases for existing hard armoring structures, when feasible, to more frequently evaluate Public Trust impacts and Public Trust consistency. In some cases, lease terms for existing hard armoring structures may require lessees to develop plans to transition hard armoring structures to NBS for upland flood control and protection.
4. Complete a regional GIS inventory of State tidelands as a proof of concept to inform planning for a statewide inventory. The inventory will be analyzed to identify locations where hard armoring (grey infrastructure) is adversely impacting Public Trust uses and could be transitioned to NBS.



California Coastal Commission

1. Track and report on the number of Local Coastal Programs that explicitly prioritize nature-based climate solutions.
2. Track and report on local assistance funding awarded for planning efforts that assess feasibility/opportunities for delivering climate benefits through nature-based climate solutions.
3. Develop interpretive guidance to support efforts to accelerate permitting of shoreline restoration and nature-based adaptation projects.



San Francisco Bay Conservation and Development Commission

1. Identify and commence implementing regulatory improvements to expedite permitting of wetland restoration projects and nature-based climate adaptation projects.
2. Continue to staff the San Francisco Bay Restoration Regulatory Integration Team (BRRIT) to accelerate the permitting process for multi-benefit habitat restoration projects in the San Francisco Bay and along its shoreline.
3. Complete the Sediment for Wetland Adaptation Project to improve regional sediment management and initiate the process to update the Commission's San Francisco Bay Plan policies appropriately.



Delta Stewardship Council

1. Act as a convener through the Delta Plan Interagency Implementation Committee to implement the short-term priority NBS adaptation strategies identified in the Delta Adapts Climate Adaptation Plan.
2. Explore innovative funding approaches for NBS in the Sacramento-San Joaquin Delta and Suisun Marsh.



3. Partner with tribes to identify and invest in shared NBS implementation priorities and co-manage restored public areas in the Delta.
4. Partner with local community groups, including socially vulnerable communities, to understand and consider their priorities for implementing NBS in the Delta.
5. Track the number of projects and funding for research to study NBS and related topics in the Sacramento-San Joaquin Delta.

Sacramento-San Joaquin Delta Conservancy

1. Support implementation of tidal wetland restoration projects and projects that re-wet the deeply subsided peat soils to control CO2 emissions and subsidence.
2. Increase utilization of the American Carbon Registry-adopted California Wetland Protocol to incentivize conversion to managed wetland or rice cultivation.



San Joaquin River Conservancy

Protect, enhance and restore critical floodplain and habitat areas along the San Joaquin River between Friant Dam and Highway 99 that includes:



- Acquiring or partnering to conserve land contributing to the Parkway Trail.
- Continue proven management activities that sequester or avoid emissions of carbon including restoration, fire prevention, and soil health.
- Explore new management techniques to sequester carbon including mulching, chipping for whole-orchard recycling, and biochar to turn tree mortality into soil health where appropriate.
- Cooperate with partners to manage non-conservancy lands in a way that promotes meeting the NBS climate targets.

State Coastal Conservancy

1. Invest 40% of NBS funds to benefit systemically excluded communities.
2. Invest in projects that return power to tribes, including land return projects, co-management projects and projects that utilize traditional ecological knowledge.
3. Conserve coastal habitat, including wetlands, grasslands, and forests.
4. Restore or enhance coastal habitat.



Tahoe Conservancy

1. Support or implement the acquisition, conservation, or restoration of mountain meadow wetlands in the California side of the Tahoe Basin.
2. Support or implement projects using the Tahoe PTEIR to streamline CEQA process for forestry projects that deliver on California's NBS climate targets.
3. Support or advance projects using the CEQA Statutory Exemption for Restoration Projects (SB 155) to streamline CEQA process for wetland/meadow projects.
4. Establish or support climate monitoring as part of wetland restoration projects.
5. Identify critical habitat linkages to allow for wildlife movement for climate change adaptation in the California side of the Tahoe Basin, and incorporate protection measures into project planning and land management.



Sierra Nevada Conservancy

1. Provide grant writing and management training to build capacity for regional partners to successfully apply for forest health, wildfire resilience, and ecosystem restoration grants.



2. Build the capacity of Sierra Nevada/Cascade tribes to pursue, accept and administer funding for efforts that advance California's NBS climate targets implementation and tribal objectives.
3. Release a plan to build the capacity of all the region's organizations and/or collaborative bodies to acquire and administer grants for large-scale and long-term landscape restoration.

Wildlife Conservation Board

1. Conserve land to deliver on California's NBS climate targets, with as many of these acres as possible also contributing to achieving California's goal of conserving 30% of our lands and coastal waters by 2030.
2. Invest in acquisition and restoration projects that connect biodiversity hotspots and provide wildlife connectivity to climate refugia.
3. Conserve working lands to accelerate implementation of the NBS climate targets.
4. Update WCB Strategic Plan metrics to align with and accelerate implementation of the NBS climate targets.



California Energy Commission

Coordinate planning for 100 percent clean electricity and the State's NBS climate targets.



Baldwin Hills and Urban Watersheds Conservancy

1. Establish and track NBS climate projects benefiting vulnerable communities.
2. Increase and track newly restored native habitat within the Conservancy's existing parklands.
3. Implement a land conservation program that delivers on the NBS climate targets and increases the amount of publicly accessible open space in the Conservancy's territory.



4. Remove and track biomass from urban/wildland interface.

California Office of Emergency Services

1. Develop and deliver technical assistance to incorporate NBS into federal and State grant proposals, and track State and federally funded hazard mitigation projects that support implementation of California's NBS climate targets.
2. Pilot an educational program on climate adaptation and risk reduction, inclusive of NBS, for emergency management professionals.



California Public Utilities Commission

1. Encourage avoidance or minimization of the development of new access roads and encourage abandonment of all unnecessary access roads. Where new access roads are required, encourage brush mowing for their installation rather than grading.
2. Ensure that vegetation removal is minimized or avoided because of the construction of new energy and communication infrastructure and upgrades to existing facilities; encourage the incorporation of climate smart land management into project designs.
3. Require compensatory mitigation for the loss of native vegetation communities.
4. Encourage the use of climate smart land management throughout existing project lifetimes.
5. When vegetation must be removed for public safety, ensure these areas are managed to protect watershed health, prevent the expansion of invasive weeds into natural areas, and avoid large areas of bare soil.
6. For applications by utilities to dispose of real property under Section 851 of the Public Utilities Code, work with the utilities, tribes, FERC, local and State agencies, and other interested parties to encourage and




incentivize the conservation and restoration of native habitat on all or portions of these properties. The acreage of land established in conservation easements and the acreage of land restored under these transactions shall be reported by habitat type.

7. Determine how Wildfire Mitigation Plans can include a focus on reducing wildfire risks in shrubland/chaparral landscape types along key ignition pathways.

CALIFORNIA STATE TRANSPORTATION AGENCY



California Department of Transportation

1. Increase landscaping in line with priority NBS in the NWL Climate Smart Strategy. 
2. Increase roadside tree planting.
3. Incentivize climate smart land management through State transportation infrastructure funding programs.
4. Develop a partnership between Caltrans and CalRecycle to expand use of compost within Caltrans right of way and develop a plan to create district usage goals.
5. Develop a training plan with a university or community college for wildland fire and fuels curriculum and heavy equipment certification, customized to management of all vegetation types along roads.
6. With partners, identify locations where beneficial fire could be applied within the State highway right of way.
7. Lead workshops in partnership with Counties to review relevant plans to identify priority roads that function as primary evacuation routes for communities

CALIFORNIA VOLUNTEERS

1. CV's Climate Action Corps, College Corps, Youth Jobs Corps, and Neighbor-




to-Neighbor programs will provide descriptions of the actions and projects that deliver on California's NBS climate targets.

2. Increase and track the number of Corps Members and community volunteers deployed to implement projects that deliver on California's NBS climate targets.

CALIFORNIA GOVERNMENT OPERATIONS AGENCY



Department of General Services

1. Explore opportunities to align State procurement in support of delivering on the NBS climate targets. 
2. Issue guidance to State facility managers on how to integrate priority nature-based climate solutions identified in the NWL Climate Smart Strategy into their agency's sustainability efforts.
3. Evaluate the SITES certification process and its application to DGS facilities.

DEPARTMENT OF FINANCE



Consider prioritizing NBS investments in a future climate resilience bond or other climate funding.

INFRASTRUCTURE AND ECONOMIC DEVELOPMENT BANK



1. Increase leverage of the Infrastructure and Economic Development Bank to, where appropriate, attract additional capital that can deliver on California's NBS climate targets.

2. Increase awareness of IBank’s commitment to supporting investments that deliver on California’s NBS climate targets.
3. Seek federal capital for IBank’s Catalyst Fund expressly for purposes of flexible, low-interest lending for all relevant priority NBS called for in the NWL Climate Smart Strategy, for which lending strategies are a sound approach.

LABOR AND WORKFORCE DEVELOPMENT AGENCY



Explore the development of a Nature-Based Solutions Workforce Development Program in partnership with relevant State agencies to increase essential pipelines/supplies for workforce in a suite of regionally appropriate skills-based climate jobs in the lands sector (ex. land restoration, organic agriculture, wildland and urban foresters, etc.). Convene regional roundtables to identify opportunities that support local priorities as well as the hiring needs of NBS employers offering quality jobs.

LANDOWNER AGENCIES



1. Increase overall tree canopy on State-owned properties under their jurisdiction located within developed lands and report progress biennially through Sustainability Roadmaps.
2. Replace non-functional irrigated turf at State-owned facilities under their jurisdiction with MWELo compliant landscaping, and report progress biennially through Sustainability Roadmaps.
3. Achieve 100% compliance regarding defensible space requirements at State facilities under their jurisdiction in the urban wildland interface early, and report progress biennially through Sustainability Roadmaps.

OFFICE OF PLANNING AND RESEARCH



1. Include guidance on how to consider fire regimes and risks, and how they may change based on California’s most recent climate change projections in General Plan Guideline updates.
2. Partner with CNRA, CDFR, and CARB in advance of updating General Plan Guidelines to consider adjustments to support accelerated implementation of California’s NBS targets.
3. Provide guidance on how CEQA analyses can integrate California State carbon sequestration standards, and prioritize development that avoids impacts to, and expands, natural working lands, including to oak woodlands.
4. Include guidance, recommendations, and best practices for local governments to integrate build-out perimeter planning into general plans that align with Housing Element commitments in updates to the General Plan Guidelines.
5. Create a zoning and planning map that incorporates relevant plans for permitted existing growth and planned future growth to identify where growth pressure is greatest, where local governments can foster densification and infill, and where open space easements may most effectively limit urban expansion.
6. Coordinate with relevant interagency partners to identify opportunities for grant program guidelines to reward regions, cities, and counties for planning for stable long-term urban perimeters while meeting their Housing Element commitments, identifying models among state programs for limiting developed land expansion and encouraging infill to increase equity and promote environmental justice.
7. Develop a menu of local planning strategies, policies, and incentives in updates to the General Plan Guidelines to support implementation of California’s NBS climate targets.

STATE BOARD OF EDUCATION

Prioritize the integration of green schoolyards for school facilities through the School Facility Program, ensuring that greening schoolyards is not just a consideration but an integral expectation when local educational agencies undertake new school construction projects and modernization projects.

CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION



1. Implement nature-based climate solutions at facilities particularly vulnerable to climate impacts, such as heat and flooding.
2. Explore opportunities to create more green infrastructure that also create rehabilitative and skill development opportunities, such as community gardens.
3. Build a strategy in partnership with CNRA, LDWA and other relevant agencies to support nature-based workforce needs (e.g., wildfire risk mitigation).
4. Manage established protected areas using climate smart land management practices.
5. Refine initiatives to mitigate climate change impacts through the CDCR Sustainability Roadmap.



The background is a stylized, layered illustration of a landscape. At the top, a sun with rays rises over a range of hills. Below the hills is a field with wavy lines representing grass or crops. The entire scene is rendered in a gradient of green and blue tones, with the sun and hills in lighter shades and the field in darker shades.

CALIFORNIA'S NATURE-BASED SOLUTIONS CLIMATE TARGETS

A P R I L 2 0 2 4

<https://resources.ca.gov/Initiatives/Expanding-Nature-Based-Solutions>

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