



**California Program Office**

980 Ninth Street, Suite 1730 | Sacramento, California 95814 | tel 916.313.5800  
[www.defenders.org](http://www.defenders.org)

December 16, 2016

Mary D. Nichols, Chair  
Members of the Board  
California Environmental Protection Agency  
Air Resources Board  
1001 I Street  
Sacramento, CA 95814

**Re: Discussion Draft of the 2030 Target Scoping Plan Update**

Dear Chair Nichols, Members of the Board, and staff,

On behalf of Defenders of Wildlife and our more than 170,000 California members, we thank you for the opportunity to comment on the discussion draft of the 2030 Scoping Plan Update. We support the state's commitment for the conservation and restoration of natural and working lands, as well as its commitment for a sustainable transportation sector. Along with our support, we offer the following suggestions to help make more robust natural and working lands and transportation sustainability sections of the scoping plan.

**Natural and Working Lands Sector**

Defenders supports the state's commitment to the conservation and restoration of natural and working lands for their greenhouse gas (GHG) reduction benefits. This commitment was reinforced with the enactment of Senate Bill 1386. The conservation and restoration of natural and working lands have the benefit of sequestering a tremendous amount of GHGs, while also providing numerous co-benefits to humans and wildlife.

We believe, however, that the 2030 target goals for the natural and working lands sector must include a quantifiable target for the conservation of natural lands. A conservation strategy focused on keeping natural lands intact and undisturbed is particularly important as it is likely the best GHG sequestration strategy for some land types, such as desert lands. The Lawrence Berkeley National Laboratory model includes target scenarios for the protection of natural and working lands. These scenarios should be included in the 2030 scoping plan and be quantified with specific measures to achieve them. Further, the state should consider more ambitious target scenarios than 50% and 25% of baseline urban growth (urban expansion) for the model's suggested conservation goals. Considering there is a predicted loss of 294,000 acres of shrubland at baseline, decreasing urban growth by 50-75% of 2050 predicted growth levels still allows for a conversion of 74,000 acres of natural and working lands in the best case scenario.

We urge the state to develop specific GHG reduction plans for each land type. There have been several steps taken to establish specific plans for forest and agriculture in the natural and working lands sector. However, a vision for other land types such as deserts, wetlands, and mountain meadows have not been developed. For these land types, the plans must include a research and monitoring component to further develop GHG sequestration data on these lands. For more specific information on carbon sequestration on desert lands and the co-benefits of including them in the natural and working lands portion of the scoping plan, please see our attached comments submitted for the Cap and Trade Triennial Investment Plan, Second Draft Investment Plan and California's Climate Change 2030 Vision and Goals Update for Natural and Working Lands.

We also would like clarification on exactly how the state will utilize the Lawrence Berkeley National Laboratory model to set GHG reduction targets in the natural working lands sector. With the current data available to the public, the model appears to be missing some key components. For example, the model only included a few of the many management practices that can be employed to sequester GHGs. Further, data on baseline GHG sequestration did not include root carbon sequestration and did not take into account GHG loss from soil disturbance. Without these key components, the model does not fully evaluate and articulate how much GHG is sequestered. Therefore, it is a tool of limited value and utility for calculating conservation and management goals. We also request that you release more details on how the model was created.

Finally, natural and working land strategies to meet 2050 GHG reduction goals, like conservation and restoration, can be closely aligned with the state's adaptation strategies. We recommend making climate adaptation strategies a top priority and include this co-benefit as an actionable goal within the state's GHG reduction plan. A significant issue with the state's adaptation strategies, like the State Wildlife Action Plan or the Safeguarding California Plan, is the lack of funding for implementation. Aligning these goals with the state's goals for GHG reduction will go a long way in helping implement them.

## **Transportation Sustainability Sector**

The ideas presented in the Transportation Sustainability Section of the discussion draft lay a solid foundation for actions that the state must take to continue to reduce GHG emissions for 2030 goals and beyond. While we support the discussion draft, we urge the state to consider the attached comments we submitted for the Transportation Sector update for the 2030 Target Scoping Plan to ensure that California will meet its GHG emission reductions goals while protecting California's resources and providing healthy, livable communities for all Californians.

Some key points highlighted in our comments were to prioritize the conservation and management of natural and working lands within this sector by emphasizing infill development. Further, short and intermediate term solutions to reach 2030 goals in the transportation sector are missing from the state's strategy. Specifically, the focus on strategies that include future technology, like replacing current shipping engines with zero emission engines, might fall short if the technology takes longer than expected to introduce. For more detailed suggestions, please see our attached comments submitted for the Transportation Sector 2030 Target Scoping Plan.

## Conclusion

Thank you for the opportunity to comment on the Discussion Draft of the 2030 Scoping Plan. It is a positive step forward for a climate resilient California. Please consider the information presented to you in this comment letter. Should you require more information or have any questions, feel free to contact me at [jhanthorn@defenders.org](mailto:jhanthorn@defenders.org) or (916) 442-5780.

Sincerely,



Joshua Hanthorn  
Defenders of Wildlife  
California Program Associate





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November 16, 2016

Ms. Rajinder Sahota, Branch Chief  
Climate Change Program Evaluation Branch  
California Air Resources Board  
1001 I Street  
Sacramento, CA 95814

**RE: 2030 Target Scoping Plan Update: Natural and Working Lands**

Dear Ms. Sahota,

On behalf of Defenders of Wildlife (Defenders) and our more than one million members and supporters, I am writing to request that intact desert land be included as a resource in the natural and working lands section of the 2030 Target Scoping Plan. Defenders strongly supports the state's commitment to the conservation and restoration of natural and working lands for their greenhouse gas (GHG) reduction benefits as well as their numerous co-benefits to humans and wildlife. Investments put towards forests, croplands, rangelands, wetlands, and oceans not only help us meet our climate goals but also make California a better place for us all to live.

We do believe, however, that the 2030 target for the natural and working lands sector is missing a significant opportunity by not including desert conservation and restoration as resource with its significant GHG sequestration and mitigation benefits. The updated scoping plan must include a land type target for deserts. For more information on the carbon sequestration advantage and the co-benefits of including deserts in the natural and working lands portion of the scoping plan, please see our attached comments submitted for the Cap and Trade Triennial Investment Plan, Second Draft Investment Plan and California's Climate Change 2030 Vision and Goals Update for Natural and Working Lands.

Thank you for considering these comments and we look forward to working with you on the scoping plan in the future.

Sincerely,

Joshua Hanthorn  
California Program Associate  
Defenders of Wildlife





April 6, 2016

U.S. INTERNET SUBMITTAL

Mary D. Nichols  
Air Resources Board Chairman  
California Air Resources Board  
California Environmental Protection Agency  
1001 I Street  
Sacramento, CA 95814

**RE: Comments on the March 23, 2016, Natural and Working Lands  
Draft 2030 Target Scoping Plan**

Dear Ms. Nichols,

On behalf of Defenders of Wildlife (Defenders) and our more than one million members and supporters, I am writing in strong support of the natural and working lands scoping plan. Defenders strongly supports the state's commitment to the conservation and restoration of natural and working lands for their greenhouse gas (GHG) reduction benefits as well as their numerous co-benefits to humans and wildlife. Investments put toward forests, wetlands, deserts, rangeland, agricultural lands, and urban greening will not only help us meet our 2030 climate goals but also make California a better place for us all to live now and well into the future. Along with our support, Defenders has some suggestions to help make a more robust Natural and Working Lands section of the scoping plan.

**Include Desert Lands in the Next Draft of the Scoping Plan.**

Defenders requests that intact desert lands specifically be a carbon sequestration resource in the visions and goals of the natural and working lands section of the scoping plan update. Several land types were mentioned in the public comment discussion paper, yet deserts were not, even though desert soils are capable of sequestering and storing massive amounts of carbon.

With its size, large ecosystem and potential to sequester and store carbon, the conservation and restoration of deserts can help us meet our 2030 climate goals while also supporting significant co-benefits to humans, plants, and animals. Desert lands make up 28% (more than 29 million acres) of California's land mass, which is the second largest land type in the state. California deserts are largely unpopulated and still unfragmented by

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development. They are of global significance, as California deserts represent perhaps the largest intact ecosystem in the US outside of Alaska. Defenders encourages California to take the lead in providing funding to protect our desert lands as a part of the state's comprehensive greenhouse gas reduction strategy. For more information on the carbon sequestration advantage and the co-benefits of including deserts in the natural and working lands portion of the scoping plan, please see our attached comments submitted for the Cap and Trade Triennial Investment Plan and Second Draft Investment Plan.

Appendix C of the First Update to the Climate Change Scoping Plan mentioned that desert lands, even though not mentioned in the working paper, are included in the rangeland management category of the scoping plan. Since not all desert lands are used for grazing, this makes the rangeland category overly broad. Subsequently, land use management practices for rangelands are not applicable to achieving the maximum carbon sequestration in these non-grazing areas. Moreover, these land types have different land managers and fall under the authority of different agencies. To avoid confusion between different land use management practices and the multiple stakeholders involved, desert lands should be in a separate category in the next scoping plan update.

Under the Farmlands and Rangelands category of the Management and Restoration section of the working paper, several land use management practices are listed, but none are applicable to desert lands. For sequestering carbon in the desert lands specifically, there are a number of proactive steps, beyond protection that land managers can do to increase the soil's carbon intake. One proactive step is applying weed control to invasive grasses in desert lands. Another is identifying desert locations with high organic and inorganic carbon (especially microphyll woodlands) and prioritizing these areas for conservation and stewardship. Also, restoring microphyll woodlands in desert water channels (groundwater as well as surface) that are disturbed can maximize water channel areas for carbon intake. Defenders suggests the inclusion of these land use management practices for desert land management in the next scoping plan update.

### **Include a Research and Monitoring Component for New Programs.**

Defenders recommends new projects include a research and monitoring component to further expand the level of data on carbon sequestration benefits in those areas. While there is clear scientific evidence of the carbon sequestration benefit of protection and restoring desert lands and new blue carbon projects, it would be prudent to use these projects as an opportunity to increase the level of scientific knowledge regarding sequestration and methodologies and metrics for measuring sequestration. For these new projects, make research and monitoring a priority.

The University of California's Institute for the Study of Ecological and Evolutionary Climate Impacts (ISEECI) is a great resource for agencies looking to confirm the carbon sequestration data for land types where the research is not fully developed.<sup>1</sup> ISEECI offers a platform for synthesizing past, current and future environmental climate change research, and building on those studies for understanding and mitigating future climate change challenges. Led by a consortium of UC scientists, ISEECI coordinates mechanistic studies and biotic surveys across broad geographic scales. Defenders recommends using ISEECI to develop the carbon inventory of new programs, such as desert lands and blue carbon projects, to finalize the scientific research in those areas.

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<sup>1</sup> <http://www.ucnrs.org/research/iseeci.html>



### **Use Regional/Subregional Scaled Targets Specific to the Land Type.**

The discussion paper puts proper emphasis on creating a vision for regional instead of statewide scaled planning. Regional scaled planning will ensure participation in multiple regions of the state while statewide targets could result in regions with the maximum carbon sequestration benefit getting most, if not all of the funds.

The discussion paper also properly emphasizes the desire to set distinct carbon intake targets to each land type. Every land type sequesters and stores carbon differently, therefore each one should have a different target goal.

### **Integrate Adaptation Plans into the Scoping Plan**

We concur with CARB's emphasis on integrating other plans into natural and working lands visions and goals of the scoping plan. Defenders recommends making climate adaptation strategies in those plans a top priority. A major issue with the state's adaptation strategies, like the State Wildlife Action Plan (SWAP) or the Safeguarding California Plan, is the lack of funding to implement them. Supporting these plans with funds from the Greenhouse Gas Reduction Fund will go a long way in helping to implement them, providing multiple benefits.

Specifically, Defenders appreciates the inclusion of specific goals from other plans, such as the SWAP goal to increase habitat by 5% by 2020. Stating specific goals allows for better coordination between multiple plans and we recommend working with the lead agencies in helping implement these multiple benefits. Goals like this should be updated to reflect the latest revision of these plans, for example the SWAP's final draft sets the goals for increasing habitat by 2025, not 2020. Furthermore, recognize that these goals are standardized however, they lack underlying methodology, a critical component to achieving this goal.

Also, the California Air Resources Board (CARB) should work with other agencies to only include specific goals from other plans that are achievable by 2030. For example, achieving a 5% increase in habitat in California by 2025 may not be achievable through the scoping plan alone. Setting the bar too high in one or multiple areas might lead to not meeting any of the goals set in this scoping plan.

### **Set the Right Land Use Valuation and Emphasize Co-Benefits**

Defenders applauds CARB for the emphasis on recognizing the co-benefits of conserving and stewardship of natural and working lands in the scoping plan. Since some land management strategies have the potential to maximize risk or carbon objectives at the expense of other objectives, CARB should ensure that carbon offset programs do not provide the singular incentive to maximize carbon storage.

Conservation and stewardship of natural and working lands in California can benefit the state well into the future, past 2030 and 2050 targets. We recommend that when evaluating the best strategies for natural and working lands projects should be prioritized that maximize the longevity of climate mitigation, adaptation and their co-benefits to get the maximum value under this program.

Thank you for considering these comments and we look forward to working with you on the scoping plan in the future.

Sincerely,

A handwritten signature in dark ink, appearing to read 'J. Hanthorn', with a stylized flourish at the end.

Joshua Hanthorn  
California Program Associate  
Defenders of Wildlife



November 13, 2015

**Via Electronic Mail**

Shelby Livingston  
Cap and Trade Auction Proceeds Branch Chief  
Air Resources Board  
California Environmental Protection Agency  
1001 I Street  
Sacramento, CA 95814

**RE:       Comments on the October 27, 2015, Draft Second  
Investment Plan**

Dear Ms. Livingston,

On behalf of Defenders of Wildlife (Defenders) and our more than one million members and supporters, I am pleased to provide comments on the Draft Cap and Trade Auction proceeds Second Investment Plan ("Draft Investment Plan"). These comments are a supplement to the recommendations we submitted individually on August 28, 2015 (attached), and as part of the California Natural Working Lands Coalition on September 1, 2015. We were pleased to see the Draft Investment Plan include natural and working lands as part of the effort to help the state meet its long-term greenhouse gas emission goals.

After reviewing the Draft Investment Plan, we would like to highlight some specific recommendations from our previously submitted comments that remain relevant.

The Draft Investment Plan should acknowledge that a greater and sustained amount of funds should be dedicated to the natural and working lands sector. In the 2014-15 fiscal year, approximately 8% of the overall Greenhouse Gas Reduction Fund (GGRF) was dedicated to natural and working lands and no funds have been released for the 2015-16 fiscal year. Given that the Governor's executive order (B-30-15) identifies natural and working lands as one of the essential five pillars to meet the state's longer term greenhouse gas reduction goals, greater and more secure funding should be allocated to natural and working lands.

The Draft Investment Plan also should specify that desert lands provide greenhouse gas reduction benefits and the conservation and restoration of those lands are eligible for GGRF funding. While the Draft Investment Plan references "other natural lands," there was no specific reference that

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intact desert lands are considered an eligible resource in the natural and working lands section of the cap and trade proceeds investment plan update.

We appreciate the opportunity to submit these comments. If you have any questions, please do not hesitate to contact me at (916) 201-8277.

Sincerely,

A handwritten signature in dark ink, appearing to read "Kim Delfino", with a stylized flourish at the end.

Kim Delfino  
California Program Director  
Defenders of Wildlife



August 28, 2015

Shelby Livingston  
Cap and Trade Auction Proceeds Branch Chief  
Air Resources Board  
California Environmental Protection Agency  
1001 I Street  
Sacramento, CA 95814

**RE: Draft Cap and Trade Auction Proceeds Triennial Investment Plan**

Dear Ms. Livingston,

On behalf of Defenders of Wildlife (Defenders) and our more than one million members and supporters, I am writing to request that intact desert land be included as a resource in the natural and working lands section of the cap and trade proceeds investment plan update. Defenders strongly supports the state's commitment to the conservation and restoration of natural and working lands for their greenhouse gas (GHG) reduction benefits as well as their numerous co-benefits to humans and wildlife. Investments put towards forests, wetlands, rangeland, agricultural lands, and urban greening not only help us meet our climate goals but also make California a better place for us all to live now and well into the future.

We do believe, however, that the natural and working lands sector of the cap and trade investment plan is missing a significant opportunity by not including desert conservation and restoration as resource with significant GHG sequestration and mitigation benefits. The updated investment plan should include deserts so they may be recognized for their GHG benefits and have the potential for funding through the Greenhouse Gas Reduction Fund. Defenders wishes to submit the following comments in support of such a proposal.

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**Carbon Sequestration Benefits in the Desert**

California's deserts are home to a unique and varied collection of habitats that support a large diversity of wildlife. The three main deserts in the state are the Mojave Desert, the Colorado Desert, and the Great Basin desert. Collectively, they account for 29 million acres, or 28% of California's landmass, with elevations ranging from 250 feet below sea level to nearly 12,000 feet<sup>1</sup>. The California deserts are largely unpopulated and still unfragmented by development, the California desert is of global significance, as it represents perhaps the largest intact ecosystem in the US outside of Alaska.

<sup>1</sup> Desert Landscape, Mojave Desert Land Trust, (2015). <http://www.mojavedesertlandtrust.org/landscape.php>.

California's deserts currently store large amounts of carbon buried as caliche, or calcium carbonate, in the soil. Disturbance of the fragile desert soil results in the fragmentation and exposure of caliche to the atmosphere. This exposure releases carbon, adding to GHG emissions. Additionally, recent studies in the southwestern U.S. show that deserts may represent a larger carbon sink than was previously thought.<sup>2</sup>

Carbon is stored in desert soil once it is sequestered by vegetation. Despite common assumptions, California's deserts support an abundant variety of plants, all of which actively sequester carbon. Multiple studies have calculated the potential of carbon sequestration in desert soil, including the Center for Conservation Biology at the University of California, Riverside ("Center"). In a report prepared by the Center for the California Energy Commission, carbon dioxide is fixed and stored in desert soil at an annual rate of 60 - 600g/m<sup>2</sup>, (equivalent to 0.25 - 2.5 tons/acre) dependent upon the particular ecosystem<sup>3</sup>. This is equivalent to rangelands which are currently listed in the cap and trade investment plan. In a different study, net uptake of carbon in the Mojave Desert ranged from 102 - 127 g/m<sup>2</sup> annually during a three year period (equivalent to 0.46-0.57 tons/acre)<sup>4</sup>. Recently, the rate of carbon sequestration was shown to increase as the level of atmospheric CO<sub>2</sub> increases,<sup>5</sup> meaning that deserts like the Mojave could play a major role in absorption of increased atmospheric CO<sub>2</sub> resulting from current emissions.

Unfortunately, while the California deserts are one of our more intact ecosystems, the desert landscape has been destroyed by development, mining, off-highway vehicle use, and other land-disturbance activities. These activities continue to expand across the desert landscape, resulting in large amounts of carbon released into our atmosphere from the disturbed desert soils.

It is also important to note that a significant amount of carbon has been released into the atmosphere due to land use practices that lead to desertification or increasingly arid and degraded landscapes. Historically, global desertification caused by human action has led to approximately 20-30 Petagrams (Pg), or 20-30 billion metric tons, of carbon released into the atmosphere<sup>6</sup>. A shift away from land use practices that lead to desertification would allow for significant sequestration of soil organic carbon. In addition to soil organic carbon, inorganic carbon sequestration occurs in desert ecosystems through the formation of secondary carbonates.<sup>7</sup>

The estimates of carbon sequestration are indicative of what may be possible under ideal conditions. Realization of this potential, however, requires a vigorous and coordinated effort towards desertification control, restoration of degraded ecosystems, protection of intact desert lands, and adoption of resource management plans for land uses on arid lands. Carbon is being cycled in

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<sup>2</sup> Evans, R.D. et al. (2014). Greater ecosystem carbon in the Mojave Desert after ten years exposure to elevated CO<sub>2</sub>. *Nature Climate Change* Vol. 4, pp. 394-497.

<sup>3</sup> *Carbon Balance in California Deserts: Impacts of widespread Solar Power Generation*, Center for Conservation Biology, University of California, Riverside. (2013) p.11, <http://www.energy.ca.gov/2014publications/CEC-500-2014-063/CEC-500-2014-063.pdf>

<sup>4</sup> Wohlfahrt, G. et al (2008). Large annual net ecosystem CO<sub>2</sub> uptake of a Mojave Desert ecosystem. *Global Change Biology*. Vol. 14, Issue 7, pp. 1475-1487.

<sup>5</sup> Evans, R.D. et al (2014). Greater ecosystem carbon in the Mojave Desert after ten years exposure to elevated CO<sub>2</sub>. *Nature Climate Change* Vol. 4, pp. 394-497.

<sup>6</sup> Lal, R. (2004) Carbon Sequestration in Dryland Ecosystems. *Environmental Management* Vol. 33 No. 4, pp. 528-544

<sup>7</sup> Monger, H. C., and R. A. Gallegos. (2000) Biotic and abiotic processes and rates of pedogenic carbonate accumulation in the southwestern United States. *Relationship to atmospheric CO<sub>2</sub> sequestration*. pp. 273-290 in R. Lal, J. M. Kimble, H. Eswaran, and B. A. Stewart, Eds, *Global climate change and pedogenic carbonates*. CRC/Lewis Publishers, Boca Raton, Florida.

complex ways through desert vegetation and that cycle is lost from areas stripped of vegetation. The protection of native riparian desert woodland and vegetation types is important to guard buried inorganic soil carbon stocks and carbon sequestration capacity. Additionally, biological soil crusts can also sequester substantial amounts of carbon. The carbon can accumulate in the microbial biomass, ultimately adding soil organic matter to the system.

### **Co-benefits of California's Deserts**

In addition to GHG sequestration, conservation and restoration of California's intact desert lands provide significant co-benefits to human health, plants, and wildlife.

**Benefits to Public Health:** Once desert land is disturbed, the exposed soil is easily stirred up by strong desert winds creating public health issues for surrounding communities. In fact, many desert soils that have been intact and stabilized for thousands of years can release harmful fungal spores that have resulted in outbreaks of respiratory illness referred to as "valley fever"<sup>8</sup>. By investing in desert land protection, we are investing in increased public health for desert communities as well.

**Benefits to Biological Soil Crusts:** Biological soil crusts are considered to be the fertile mantle of desert landscapes. The microbial communities within soil crusts are especially crucial to the ecological functioning of desert ecosystems. The crusts harbor diverse taxa including mosses, lichens, fungi, green algae, diatoms, and cyanobacteria that bind together mineral soil particles into water and wind stable aggregates at the soils surface. This crust is vital because it prevents erosion in sparsely vegetated landscapes. In addition, their contribution to soil fertility is essential. Some crust microbes are capable of converting atmospheric nitrogen to ammonium, an essential but limited nutrient in desert systems. Thus, crusts represent an important nitrogen source for associated vascular plant communities or soil food webs.<sup>9</sup>

**Benefits to Plant Diversity:** The California desert supports a high level of plant biodiversity – it is home to the oldest vascular plants in California such as the creosote bush and the brittlecone pine, and the shortest-lived plants such as the ephemeral summer annuals that can germinate and produce viable seed in just three weeks. A mid-elevation eastern Mojave Desert alluvial fan has 90-120 plant species per 2.5 acres which is comparable to the primeval coastal redwood forest of northwest California (90-125 plant species per 2.5 acres)<sup>10</sup>. At present, approximately 2,450 native plant species have been documented in the California desert, representing 38% of the state's entire native flora. About 350 species (15%) are listed by the California Native Plant Society as threatened, endangered, or of special concern.

The California desert remains relatively unexplored – many desert mountain ranges remain virtually uncollected and most have fewer than 250 herbarium records. Those records are restricted primarily to roadside collection during spring and early summer. We have only scratched the surface in our

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<sup>8</sup> Scientific name for disease is Coccidioidomycosis. It is a disease endemic to arid regions in the western hemisphere, and is caused by the soil-dwelling fungus *Coccidioides immitis*. For more information see: Kolivras, K.N. et al. (2001) Environmental Variability and coccidioidomycosis (valley fever). *Aerobiologia*. Vol. 17, Issue 1, pp. 31-42.

<sup>9</sup> Pietrasiak, N. and J. R. Johansen. (2014). Microbiotic Soil Crust Communities: A Critical Component of California's Deserts. *Franseria, Journal of the California Native Plant Society*. Vol. 42, No. 1, pp. 18-19

<sup>10</sup> Andre, J. (2014) Floristic Discovery in the California Desert. University of California, Natural Reserve System. <http://www.ucnrs.org/floristic-discovery-in-the-california-desert.html>

understanding of the desert flora. Prominent researcher and botanist, James Andre, estimates that 10% of the California desert flora remains undescribed.

Benefits to Microphyll Woodland: Streams are rarely perennial in the California deserts but they provide all of the same ecosystem services despite their episodic nature. Streams and their floodplains provide not only critical wildlife habitat, but also a foundation for much of the desert's biotic diversity. In some areas that are dominated by desert pavement, nearly all wildlife habitat is found along streams, even in the smallest channels. Larger ephemeral streams support stands of palo verde, ironwood and sinoketree that provide shade and habitat for many desert species. These desert riparian areas are of conservation concern due to their rarity as well as their ability to provide critical habitat for endangered breeding bird species such as Southwestern Willow Flycatchers, Western Yellow-Billed Cuckoos, and Least Bell's Vireos. Dry washes in the Sonoran desert represent less than 5% of the land area but support 90% of its bird life. In fact, The National Audubon Society has recognized Desert Microphyll Woodland as an Important Bird Area.

Benefits to Wildlife: Contrary to popular belief, the California deserts support an abundance of wildlife biodiversity. Similar to desert plants, many desert wildlife species are endemic – found in the California desert and nowhere else. Due to the fact that food and water resources are scarce, species require large expanses of habitat to roam and find what they need for survival. Of particular interest, the desert is home to the federally threatened desert tortoise, the Mohave ground squirrel, desert bighorn sheep, golden eagle, multiple species of pup fish, Mojave fringe-toed lizard, flat-tailed horned lizard and many other species of importance to the state of California. An investment in protection of intact desert lands would provide important co-benefits to wildlife in addition to the carbon sequestration benefits.

Benefits to Climate Change Adaptation: Climate change is already impacting desert ecosystems. Average daily temperatures have been increasing over the past decade and precipitation patterns are changing. In response to climate change impacts, wildlife species will move to higher elevations and latitudes to avoid extreme heat and drought. Protecting intact desert lands will allow for overall landscape connectivity and intactness and allow wildlife the ability to move in response to climate change.

### **Greenhouse Gas Reduction Fund Proposal**

Defenders of Wildlife requests that deserts be included in the cap and trade proceeds investment plan as an additional natural land capable of sequestering and storing carbon. By doing so, conservation and restoration projects that focus on carbon sequestration enhancement will be eligible for grants under the Greenhouse Gas Reduction Fund (GGRF). We believe the California Department of Fish and Wildlife would be the most appropriate department to oversee such a program as it already administers the wetlands and watersheds program. This could reduce administrative costs and time.

We recommend that investment projects should include a component further expanding the level of knowledge regarding the carbon sequestration benefits of desert conservation projects similar to what has been done for high mountain meadow projects. While there is clear scientific evidence of the carbon sequestration benefit of protection and restoring desert lands, it would be prudent to use these projects as an opportunity to increase the level of scientific knowledge regarding sequestration.



A deserts program should be funded at similar levels as other natural and working lands GHG sequestration programs. Based on allocations to these programs over the last two years, we believe a desert program should receive no less than \$50 million from the GGRF to fund restoration projects and additional administrative costs during its first year of operation. The following are potential investment projects that would provide direct greenhouse gas mitigation benefits:

- **Conservation easements:** Conservation easements protect intact desert land, soil and plants so that they can continue to sequester and store carbon. Easements could protect our most critical habitat from potential development, an increasingly necessary need as we look to the desert for community expansion and renewable energy siting.
- **Protection of all microphyll woodland habitat in CA deserts:** Microphyll woodland, as described above, provides direct carbon sequestration benefit as well as multiple co-benefits to wildlife. Areas containing microphyll woodland should be protected and restored for the greatest GHG sequestration benefits and co-benefits.
- **Change grazing practices:** Grazing on desert soils releases carbon from soils into the atmosphere. Grazing also hinders the ability of desert plants to sequester carbon.
- **Closure of OHV illegal routes:** Illegal OHV use disturbs desert soils which releases stored carbon into the atmosphere. Enforcement of OHV closures and off-limits areas will help ensure intact desert lands are not disrupted by OHV use.
- **DRECP implementation:** The Desert Renewable Energy Conservation Plan aims to design and implement a desert-wide, scientifically-based conservation strategy to protect intact desert lands and species habitat. This plan is moving forward in two phases. Phase 1 which is currently underway consists of the BLM finalizing the public lands portion of the conservation strategy including the designation of Areas of Critical Environmental Concern and National Conservation Lands. This plan, once approved, will require significant resources for implementation and enforcement. Phase 2 of the DRECP aims to bring private lands into alignment with the overarching conservation strategy for the DRECP. This will require coordination and collaboration among state and federal agencies, and counties; and may involve acquiring land for conservation or placing easement on private lands.
- **Salton Sea restoration projects:** The Salton Sea will be the site of extensive restoration activities in response to the impacts to the Sea from the Quantification Settlement Agreement and water transfer. Some of these projects will involve protecting existing desert landscapes around the Sea from development.

Innovative greenhouse gas sequestration and emissions reduction projects for desert lands provide a significant leadership opportunity for California. Deserts take up a significant portion of California as well as the world. The conservation and restoration of these areas can help us meet our climate goals while also supporting significant co-benefits to humans, plants, and animals. Defenders encourages the State of California to lead in providing funding to protect our desert lands as a part of the state's comprehensive greenhouse gas reduction strategy.

Sincerely,



Kim Delfino  
California Program Director





**California Program Office**

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September 28, 2016

Chair Mary Nichols and Members of the Board  
California Air Resources Board  
1001 I Street  
Sacramento, CA 95814

**Re: 2030 Target Scoping Plan Update, Transportation Sector**

Dear Chair Nichols and Members of the Board:

On behalf of Defenders of Wildlife (Defenders) and our more than 170,000 California members and supporters, we are writing in support of California Air Resources Board's (CARB) vision of the transportation and land use scoping plan. The ideas presented in the Draft Vision and other workshop materials lay a strong foundation for actions that the state must take to continue reducing greenhouse gas (GHG) emissions for 2030 goals and beyond. While we support the Draft Vision, we provide the following additional recommendations to include in the final Vision to ensure that California will meet its GHG emission reductions goals while protection California's resources and providing healthy, livable communities for all Californians.

**I. Prioritize the Conservation and Management of Natural and Working Lands as Part of the Effort to Create Healthy, Livable Communities.**

Senate Bill 1386 was signed into law on September 23, 2016. It requires that all state agencies "consider the protection and management of natural and working lands as an important strategy in meeting the state's greenhouse gas reduction goals."<sup>1</sup> Moreover, state agencies are directed to "implement this requirement in conjunction with the state's other strategies to meet its greenhouse gas emission reduction goals."<sup>2</sup> This legislation includes the finding that promoting the conservation and management of natural and working lands includes not only actively managing these lands to sequester carbon, but that agencies must also avoid the loss of these lands. The destruction or elimination of natural and working lands not only prevents those lands from continuing to sequester carbon, but it will also result in the release of more carbon into the atmosphere from land disturbance and destruction. The law takes effect on January 1, 2017. We urge CARB to ensure that the conservation and management – including the avoidance of the destruction of these lands – is a prominent part of the Draft Vision.

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<sup>1</sup> California Public Resources Code Section 9001.5(a)

<sup>2</sup> California Public Resources Code Section 9001.5(c)

In addition to providing carbon sequestration benefits, the conservation and management of natural and working lands also ensures that the ecological (or living) systems and processes that result in clean air, clean water, healthy soil and abundant species (e.g., microbes, insects, fish, wildlife and birds) will be maintained for the benefit of humans who depend on these living systems. We urge that the Draft Vision includes in its “Vision” section a more specific articulation of the benefits of maintaining healthy living systems and process by conserving and managing natural and working lands as part of the effort to reduce GHG emissions, provide climate adaptation and support thriving and healthy communities.

## **II. Prioritize Infill Development and the Conservation and Management of Natural and Working Lands in CARB’s Vision for 2030 Goals.**

Defenders recommends prioritizing infill development as the primarily tool for the transportation and land use sector to maximize the benefits of keeping the natural and working lands intact. As discussed above, natural and working lands are critical to California’s GHG efforts as well as to the goal of providing healthy, livable communities. Infill development will not only result in less vehicle miles traveled, improved air quality, more livable and walkable communities, it will also provide a benefit of the avoided loss of these lands from the avoidance of sprawl and greenfield development.

A functional network of connected habitats is essential to the continued existence of California’s diverse species and natural communities in the face of both human land use and climate change. Terrestrial species must navigate a landscape that meets their needs for breeding, feeding and shelter. Natural landscape must be large enough and connected enough to meet the needs of all species that use them. This requires connected wildlife corridors stay intact so fish and wildlife can transit from one area to another to get to food, mates and other life requisites.

Further, as habitat conditions change in the face of climate change, some species ranges are already shifting. Wildlife must be provided greater opportunities for movement, migration, and changes in distribution. Aquatic connectivity is critical for anadromous fish like salmon that encounter many potential barriers as they return upstream to their places of origin. Development must take into consideration the predicted future migration of fish and wildlife in the area. Furthermore, development must minimize the effects of existing barriers by creating wildlife crossings or fish passage structures.

While the Draft Vision discusses actions that establish land conservation targets and tools for land protection as well as developing policies for infrastructure siting, the vision fails to focus on an essential tool for implementing these actions – land use planning that identifies the important natural and working lands essential to keeping living systems functioning and land use tools to implement this land use planning. For example, CARB should focus on the implementation of large landscape scale conservation planning through the implementation of Assembly Bill 2087 (Regional Conservation Investment Strategies), Natural Community Conservation Plans, Habitat Conservation Plans and Open Space and Natural Lands Elements in General Plan updates in addition to the use of Urban Growth Boundaries. These tools should be incorporated into the Vision and into the list of State Level Strategies to Advance Sustainable Equitable Communities and Reduce Vehicle Miles of Travel. Without good planning that includes the identification of important natural lands critical for keeping natural systems working and tools to implement this planning, there will be little progress made to increase infill development and land conservation.

### **III. Integrate Climate Adaptation Planning into the Scoping Plan**

We agree with CARB's emphasis on integrating other plans into the transportation and land use visions and goals of the scoping plan. Defenders recommends making climate adaptation strategies in those plans a top priority. A major challenge with the state's adaptation strategies, like the State Wildlife Action Plan or the Safeguarding California Plan, is the lack of mechanisms and funding to implement them. Supporting these plans with funds from the Greenhouse Gas Reduction Fund will go a long way in helping to implement them.

### **IV. Establish Concrete Measures to Meet the Vision Proposed**

Defenders applauds CARB for the detailed vision to achieve GHG reductions in the transportation and land use sector while also ensuring natural and working lands are considered in future development. To ensure an effective vision for the transportation and land use sectors, CARB should create concrete measures to achieve stated goals. For example, in the vision for the natural and working lands sector of the 2030 scoping plan, a stated goal in the working paper is to "restore an additional 10,000 acres of managed wetlands in the Sacramento-San Joaquin Delta by 2030 that are unrelated to compliance obligations." This set measure allows government entities to implement strategies with set values so the goal can be achieved. Setting concrete measures like the one set for wetlands in the natural and working lands working paper will help strengthen this sector for future implementation. In addition, CARB should clarify that natural and working lands includes more than forests, rangelands and wetlands. Desert lands are critical carbon sequestration lands that should also be conserved and managed.<sup>3</sup> We urge CARB to use the definition of natural and working lands as set forth in SB 1386.<sup>4</sup>

### **V. Create Short and Intermediate Term Solutions that can Start Greenhouse Gas Reductions Right Away**

Defenders approves of the ambitious goals set for the transportation sector in the working papers of the 2030 scoping plan, specifically transitioning the sector to zero carbon emission engines by 2030. To get to the state's goal of emission levels 40% below 1990 levels by 2030 and 80% below 1990 levels by 2050, CARB will have to be even more ambitious. Until we can get to the point that we can rollout zero emission transports, we should implement short and intermediate actions to get the state on the path toward meeting GHG reduction goals. There are many steps the state can take until zero emission transports can be used statewide. We suggest:

#### **A. Set a Speed Limit within 3 Nautical Miles of Land and in Shipping Lanes for Ship Freight Transports**

Shipping off of the California coast is a major source of GHG pollution. Pollution from oceangoing ships represent some 15-30% of global nitrogen oxides (NOx) emissions and 5-7% of global sulfur oxides (SOx) emissions, while fuel usage ranges 2-4% of world fossil fuels. In 2007, container shipping alone (about 4% of the world's marine fleet) consumed more than 70 million metric tons of bunker fuel and emitted more than 230 Mmt of carbon dioxide (CO<sub>2</sub>). It takes 191,590,000 acres

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<sup>3</sup> Wohlfahrt, G. et al (2008). Large annual net ecosystem CO<sub>2</sub> uptake of a Mojave Desert ecosystem. *Global Change Biology*. Vol. 14, Issue 7, pp. 1475-1487.

<sup>4</sup> California Public Resources Code Section 9001.5(d)1 &(d)2

of pine forest one year to sequester that much CO<sub>2</sub> from the atmosphere.<sup>5</sup> Fortunately, several studies have revealed slowing down the shipping fleet is the most feasible and cost effective way to lower the GHG emissions of the shipping industry.<sup>6</sup>

The value of lowering ships' speeds for GHGs emission reductions is evident. CARB is already aware of the clean air benefits of implementing a speed restriction off of the California coast. CARB sponsored a 2012 report which concluded that a reduction of 61% of CO<sub>2</sub>, 56% of NO<sub>x</sub>, and 69% of fine particulates (PM<sub>2.5</sub>) was observed when container ships reduced speeds from cruise to 12 knots or less.<sup>7</sup>

Further, lowering ship speeds would make it the most efficient transport of goods when compared to land and air transport. At reduced speeds, ships are one order of magnitude more efficient than land transport and two orders more efficient than air transport.<sup>8</sup> But, as ship speeds increase, much of these efficiencies are lost. In fact, faster ships have similar demands as airplanes.<sup>9</sup>

Some California shipping ports, like the Ports of Long Beach and Los Angeles have jumped onboard realizing these benefits of speed. These ports reward ships with incentives for remaining at or below 12 knots. The program participation rates exceeds 90%, which has resulted in significant reductions in ship emissions.<sup>10</sup> In 2007, those programs resulted in a GHG reduction of 1,345 tons of NO<sub>x</sub>, 832 tons of SO<sub>x</sub>, 112 tons of PM<sub>2.5</sub>, and 55,502 tons of CO<sub>2</sub>.<sup>11</sup>

The shipping industry is also beginning to recognize the economic and environmental value of reducing vessel speed and the need for regulation to set a standard.<sup>12</sup> Some have voluntarily implemented a policy of operating ships at reduced speeds in order to burn less fuel. In 2007, Maersk, a major international shipping company, shared this sentiment in a comprehensive study that proved its container ships could travel efficiently and safely at lower speeds.<sup>13</sup> In the second half of 2009, numerous shipping lines followed suit citing a desire to have less of an environmental footprint and achieve business sustainability.<sup>14</sup>

A speed restriction within coastal waters and in shipping lanes off the coast of California would also benefit whale conservation by reducing the number of ship strikes with whales in nearshore waters.

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<sup>5</sup> Maestad, O., Evensen, A.J., Mathiesen, L., Olsen, K. (2000 at 39). International climate policy –consequences for shipping. *SFN-Report* No. 82.

<sup>6</sup> Friends of the Earth International (FOEI). (2007b at 6). *Review of MARPOL Annex VI and the NO<sub>x</sub> Technical Code: Allocation and Forecasting of Global Ship Emissions*. Submitted to the 48 Bulk Liquids and Gases Sub-committee, IMO (Jan. 12, 2007). Prepared by J. Corbett *et al.* for the Clean Air Task Force.

<sup>7</sup> Dr. J. Wayne Miller In-use Emissions Test Program at VSR Speeds for Oceangoing Container Ship <https://www.arb.ca.gov/ports/marinevess/vsr/docs/vsr.pdf>

<sup>8</sup> Isensee and Bertram 2004. Quantifying external costs of emissions due to ship operation. *Proceedings of the Institution of Mechanical Engineers, Part M: Journal of Engineering for the Maritime Environment* 218: 41.

<sup>9</sup> *Id.*

<sup>10</sup> Port of Long Beach. 2010 at 5. Green Flag Incentive Program Monthly Report, (1/1/09 to 12/31/09), Operator Compliance at 20 nm. Available at <http://www.polb.com/civica/filebank/blobload.asp?BlobID=6130> (accessed June 2, 2011).

<sup>11</sup> See <http://www.cleanairactionplan.org/strategies/vessels/vsr.asp>

<sup>12</sup> (Rickmers 2010, Rosenthal 2010, Vidal 2010, White 2010)

<sup>13</sup> Rosenthal, F. Feb. 17, 2010. "Slow Trip Across Sea Aids Profit and Environment." *New York Times*.

<sup>14</sup> Rickmers Maritime Newsletter, Feb., 2010. Super slow steaming heats up shipping industry.

Scientific research has shown that there is a direct correlation between vessel speed and ship strikes resulting in whale mortality.<sup>15</sup> Vanderlaan and Taggart report only at speeds slower than 11.8 knots does the chance of a fatal injury to a large whale drop below 50%.<sup>16</sup> Moreover, Pace and Silber found that the probability of serious injury or mortality increased from 45% at 10 knots to 75% at 14 knots, exceeding 90% at 17 knots.<sup>17</sup> Requiring a speed limit in California's coastal waters and in shipping lanes would provide whales with a greater opportunity to detect an approaching ship and avoid being hit.<sup>18</sup>

Even with the comprehensive amount of data concluding that there are numerous benefits in having a speed restriction on ships off of the California coast, CARB is not considering it in their 2030 transportation vision. With proven results and popular support, a speed restriction should be implemented to reduce GHG emissions while the shipping industry is transitioning to zero emission engines. Defenders recommends a speed restriction of 10 knots in these areas to lower emissions and also benefit whale populations off of the coast.

### **B. Create and Implement a Policy to Limit Highway Expansion on California State Roads**

Expanding current roads or building new ones in California will influence people to travel more, leading to more GHG emissions. Widening highways or building new ones influences more vehicle travel and does not ease congestion, resulting in greater GHG emissions.<sup>19</sup> Researchers Turner and Duranton investigated the relationship between interstate highways and highway vehicle kilometers traveled (VKT) in US cities and determined that VKT increases proportionately to highway expansion.<sup>20</sup> They identified three important sources for the extra VKT: an increase in driving by current residents; an increase in transportation intensive production activity; and an inflow of new residents.<sup>21</sup> It is evident that road expansion will lead to increased vehicle travel resulting increased GHG emissions, so a policy that restricts expansion is needed in California. We recommend CARB, in coordination with CalTrans and the California Legislature, implement a policy drastically limiting any new road expansion to transition the state to meet 2030 goals. New roads should be discouraged and avoided in favor of improving existing roads and promoting public transportation and infill development.

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<sup>15</sup> Laist, D.W., Knowlton, A.R., Mead, J.G., Collet, A.S. and Podesta, M. 2001. Collisions between ships and whales. *Marine Mammal Science* 17(1): 35-75.

<sup>16</sup> Vanderlaan, A.S.M. and Taggart, C.T. 2007. Vessel Collisions with Whales: The probability of lethal injury based on vessel speed. *Marine Mammal Science* 23(1): 144-156, 149-152.

<sup>17</sup> *Id.*

<sup>18</sup> Silber, G.K., Slutsky, J., and Bettridge, S. 2010. Hydrodynamics of a ship/whale collision. *Journal of Experimental Marine Biology and Ecology* 391: 10-19.

<sup>19</sup> Gilles Duranton, Matthew A. Turner THE FUNDAMENTAL LAW OF ROAD CONGESTION: EVIDENCE FROM US CITIES; <http://www.nber.org/papers/w15376.pdf>

<sup>20</sup> *Id.*

<sup>21</sup> *Id.*

## VI. Conclusion

Thank you for an ambitious and robust transportation and land use vision. It is a tremendous step forward for a climate resilient California. Please consider the information presented to you in this comment letter. Should you require more information or have any questions, feel free to contact me at [jhanthorn@defenders.org](mailto:jhanthorn@defenders.org) or (916) 442-5780.

Sincerely,

A handwritten signature in black ink, appearing to read 'J. Hanthorn', with a stylized flourish at the end.

Joshua Hanthorn  
Defenders of Wildlife  
California Program Associate