Statement of Louis Blumberg, The Nature Conservancy

Senate Committee on Natural Resources and Water
Senate Select Committee on Climate Change
Hearing on Climate Change Adaptation
Santa Monica, California
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Good morning, Senator Pavley and members of the committee. I am Louis Blumberg, Director of Climate Change for the California Chapter of The Nature Conservancy. Thank you for the opportunity to testify today.

The Nature Conservancy's mission is to preserve the plants, animals, and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive.

The Conservancy's Board of Directors, which sees climate change as the single largest threat to our mission, is implementing a comprehensive program to address climate change in California, the United States, and around the world. Here I discuss the role of nature in addressing climate change and at the request of the Committee, focus my remarks on forests, wildfire and watersheds. Others are covering the equally important issues of adaptation fish and wildlife and their habitat and ecosystems, coastal issues including sea level rise and the opportunity to use wetland conservation to reduce risks and public health.

Climate change is real and happening now. Seemingly every week, new scientific reports document the escalating impacts of climate change. This year's rash of extreme weather events underscores the seriousness of the threat to human well-being that climate change poses. These extreme weather events are consistent with scientific predictions, but they are happening faster than predicted, just like the melting of polar ice.

Research funded by the state through the Public Interest Energy Research program (PIER) has documented the current and predicted impacts of climate change on California. Continuing this research is critical for decision makers at all levels in ensuring a reliable supply of electricity, meeting the state's climate and energy goals, and in crafting effective adaptation actions. Thus, the Nature Conservancy recommends that the Legislature:

RECOMMENDATION 1: Reinstate funding for research on climate change and the environment including adaptation through the Public Interest Energy Research program or some similar entity.

Critical role of nature. Nature is a powerful tool in our efforts to combat climate change. Nature can help reduce the cause of the problem, for example, by avoiding emissions from deforestation, and can also help human communities adapt to its unavoidable impacts. Using "green" responses provides cost-effective strategies to combat climate change while providing many other benefits like clean water and avoiding greenhouse gas emissions. Green infrastructure like flood plain restoration and wetland protection can be cheaper and quicker to implement then "gray" actions like pouring concrete for levees and sea walls. And green infrastructure is flexible allowing for changes in the future. Using conservation this way as part of an overall strategy to reduce the risk of climate change to people is what we call "nature-based adaptation." The Nature Conservancy recommends that the Legislature

RECOMMENDATION 2: Adopt policy promoting nature-based adaption by establishing a preference for green infrastructure over gray actions where feasible.

In 2009, the state adopted a Climate Adaptation Strategy. It made recommendations for adaptation actions for seven sectors including forests, water and biodiversity, and set a framework for initiating cross-sector activity. While some work has begun, much more action is needed. The Nature Conservancy recommends that the Legislature:

RECOMMENDATION 3: Conduct a review of the implementation of the state's Climate Adaptation Strategy; mandate the preparation of a climate change vulnerability assessment; provide direction to state agencies and coordinated guidance to regional planning agencies and local governments for comprehensive adaptation; and mandate periodic updates of the state Climate Adaptation Strategy

Forests and benefits. Healthy forests are crucial to California's way of life — to the air we breathe, to the water we drink, to our economy. Healthy, resilient forests are valuable to all of us. Forests provide many public benefits, including habitat for fish and wildlife for recreation, and wood products for home construction; both vital to local economies.

When it comes to climate change, forests are both part of the problem and part of the solution. Conserving forests provides both mitigation and adaptation benefits.

Globally, logging, burning and clearing of forests contributes about 15% of annual greenhouse gas emissions. In California, one study estimated a net loss of 1.16 million acres of forest statewide from 1973 to 2000, with the sharpest decline coming between

1992 and 2000 (Sleeter et al.). Some forest has been lost to wildfire, and much has been converted to other land uses.

Standing forests also provide a crucial carbon storage (or "sequestration") benefit. California's old-growth redwood forests are the most carbon-dense forests on earth. Each year, forests around the world absorb about 25% of global carbon emissions (Y. Pan et al., 2011). In California, forests hold huge stores of carbon (1.1 billion tonnes of carbon stored in live forests greater then 1 inch in diameter). Ecosystems, including forests, across the state on average have sequestered from 14 to 24 million tonnes of carbon annually in good water years. This is equivalent to the emissions of 9 to 15.6 million cars on the road in a year, offsetting about half of our emissions from cars in California.

Reducing deforestation and increasing carbon sequestration through forest conservation and tree planting are crucial to addressing climate change.

A suite of well-calculated forest conservation policies can provide incentives to produce these climate benefits today, including AB 32's provisions for forest offset credits as well as new regional land use plans being developed for SB 375 implementation.

RECOMMENDATION 4: Support full implementation of AB 32 with a role for forests. Allocate a portion of the revenue from the auction of AB 32 allowances for adaptation, including nature-based adaptation.

RECOMMENDATION 5: Integrate climate benefits from conservation and nature-based adaptation strategies into local land use planning through SB 375 implementation, the mandate of the Strategic Growth Council, and other measures.

Other initiatives are beginning to capitalize on the capacity of nature to reduce emissions and store carbon by conserving wetlands and restoring natural floodplains and riverbanks. But climate change poses increased threats to the survival of our forests and the many public benefits they provide.

Increase in wildfires. As the changing climate increases temperature and drought, wildfires pose a greater risk — especially to areas like southern California. Wildfires are a threat to public safety, private property, our economy, and the environment. Clear and effective strategies at the state and local levels are crucial to preventing catastrophic wildfires.

Research funded by the state through the PIER program concluded that without significant reduction in global emissions, the state would by 2085 experience a substantial, long-term increase in wildfires ranging from 58% to 128%. Likewise, the estimated total size of burned areas was predicted to increase by 57% to 169% under the higher emissions pathway. (Westerling, 2008)

The dramatic increase in size and intensity of wildfires is already happening. The recent wildfires in Texas, where the state experienced record heat and drought followed by the

worst fire season in history, demonstrate this trend. From January 1 to September 15, more than 22,600 wildfires burned nearly 3.8 million acres destroying at least 2,690 homes and killing four people. This Texas firestorm cost over $1 billion, and the drought added $5.2 billion more in agricultural losses. In 2003, the Cedar Fire in San Diego County burned, 280,278 acres, destroyed 2,232 homes and resulted in 14 deaths ; it is the second largest fire in the state's history.

In California, the projected increase of wildfire will also be expensive, with costs in 2085 estimated to range from $500 million to $14 billion. The state will face additional costs from loss of transmission lines to wildfire, impacts on reservoirs from post-fire erosion, and related disruptions in electricity and water for people and agriculture.

RECOMMENDATION 6: To reduce the risks of these impacts, the state should expand its fire prevention program for residents in areas of high fire risk

RECOMMENDATION 7: the state should work with counties to minimize new dispersed residential development in rural areas, especially in southern California, the Sierra foothills, and other areas at high risk of wildfire.

Unfortunately, observed changes in the climate are producing impacts today in our forests and watersheds.

Watersheds threatened. Ensuring that Californians have access to clean water is essential. The majority of California's water comes from the forested watersheds of the Sierra Nevada, but climate change is altering — and will continue to alter — runoff patterns and timing, bringing more severe flooding events and longer droughts, which will threaten the reliability of our water supply, food supply and even public safety. Maintaining and restoring wetlands, natural floodplains, habitat alongside rivers and streams and forest watersheds will reduce flood risks and contribute to more reliable water supplies.

Impacts on the state's hydrology, including earlier snowmelt and earlier spring runoff, have already been observed and measured. Coupled with potential changes in precipitation and a predicted increase in wildfire, future climate projections indicate that the reliability of the State Water Project and federal Central Valley Project water supply systems will be reduced. Without changes in operating rules, the introduction of nature-based actions, gains in efficiency, and expanded infrastructure, the reliability of statewide water supply systems could be severely diminished.

The financial impact of climate change will also be substantial. The net economic loss for the water delivery system due to climate change is predicted to be between $140 and $400 million annually by the end of the century. The added risk of a major failure of the levee system in the Sacramento–San Joaquin Delta due to accelerated rise in sea levels, storm surges, and flooding could substantially increase the risk of negative economic impacts and threaten public safety and agriculture.

The Nature Conservancy recommends a suite of nature-based responses to protect critical watersheds and reduce the risk of water supply disruption to people and to our food supply:

RECOMMENDATIONS: FOR WATERSHEDS TO REDUCE RISK FO FIRE AND FLOODS

8. **Forest health.** Promote forest health through forest conservation and ecosystem management, including removal of the most flammable trees and brush. Targeted acquisitions and proper forest management will build resilient forests that can survive climate change impacts while continuing to provide the benefits that society depends on.

9. **Expansion of the forest biomass industry** will also help promote forest health and reduce the risks associated with climate change.

10. **Control development in fire-prone watersheds.** Reduce fire risk through controlling the patterns of development in fire-prone watersheds through local land use planning and enhanced fire prevention education. For example, the state legislature could require certification of fire clearance compliance when property is transferred from one owner to another.

11. **Reconnect rivers** to their floodplains, set levees back wherever possible, and expand or create new bypasses to reduce flood risk and minimize adaptation costs.

12. **Restore riparian forests** to reduce runoff, flood risk, store carbon, and enhance habitat for birds, fish, and other wildlife.

13. **Reinstate funding for the state's forest nursery** to enhance resilience through genetic diversity and replacement stock for the 1/3 of California covered with forests. Due to prior budget cuts, this program has been eliminated, threatening the long term viability of our forest resources as the climate changes.

Conclusion

The time has come for the state to develop a comprehensive program to reduce the risk to people and natural resources from the impacts of a changing climate. Nature is a powerful tool and should be fully integrated into this program. Using green infrastructure instead of gray infrastructure can reduce risk while also providing a suite of public benefits. Green infrastructure can be cheaper and quicker to implement than engineered responses, and will avoid the greenhouse gas emissions associated with construction of traditional flood-protection infrastructure like levees and sea walls. Deploying the power of nature through

green infrastructure creates flexible solutions and avoids locking us into actions that could be difficult, expensive or even impossible to modify should circumstances demand as the climate changes over time.

Unfortunately, given "sooner or later", "later" is not an option. Based on prior emissions, the laws of physics and chemistry dictate that the planet will be different – it is our actions today that will determine just how different it will be. A list of our recommendations is attached as an appendix below.

I congratulate you and your committees for holding this hearing on such an important issue. On behalf of The Nature Conservancy, I offer our support to work with you and the committee to develop a robust public policy platform that will help minimize the risks and negative impacts of a changing climate.

Appendix 1

Recommendations for Climate Change Adaptation Policy

1. Fund scientific research, data collection and monitoring on climate change and the environment, including adaptation and the role of forests and nature through reauthorization of the Public Interest Energy Research program or a similar entity.
2. Adopt a policy promoting nature-based adaption by establishing a preference for green infrastructure over gray actions where feasible.
3. Conduct a review of the implementation of the California Climate Adaptation Strategy. Mandate the preparation of a climate change vulnerability assessment and periodic update of the state Climate Adaptation Strategy including direction to state agencies and coordinated guidance to regional planning agencies and local governments for comprehensive adaptation to climate change.
4. Support full implementation of AB 32 with a role for forests; allocate a portion of the revenue from the auction of AB 32 allowances for adaptation, including adaptation for people and natural resources.
5. Integrate climate benefits from conservation and nature-based adaptation strategies into local land use planning through SB 375 implementation, the mandate of the Strategic Growth Council and other measures.
6. To reduce the risks of these impacts, the state should expand its fire prevention program for residents in the high fire risk areas and encourage the insurance industry to send a price signal through its rate structure.
7. In addition, the state should work with counties to minimize new dispersed residential development in rural areas, especially in southern California, the Sierra foothills and other high fire risk areas.

Recommendations for watersheds – build resiliency through

8. Promote forest health through forest conservation and ecosystem management, including removal of the most flammable trees and brush. Targeted acquisitions and proper forest management will build resilient forests that can survive climate change impacts while continuing to provide the benefits that society depends on.
9. Expansion of the forest biomass industry will also help promote forest health and reduce the risks associated with climate change.
10. Control development in fire-prone watersheds. Reduce fire risk through controlling the patterns of development in fire-prone watersheds through local land use planning and enhanced fire prevention education. For example, the state legislature

could require certification of fire clearance compliance when property is transferred from one owner to another.

11. Reconnect floodplains to their rivers and streams in order to enhance natural flows; set levees back from the streams to reduce flood risk and minimize adaptation costs.

12. Restore riparian forests to reduce flood risk, store carbon, and enhance habitat for birds, fish, and other wildlife.

13. Reinstate funding for the state's forest nursery to enhance resilience through genetic diversity and replacement stock for the 1/3 of California covered with forests. Due to prior budget cuts, this program has been eliminated, threatening the long term viability of our forest resources as the climate changes.