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HOUSE COMMITTEE ON NATURAL RESOURCES
CONGRESS OF THE UNITED STATES, WASHINGTON, DC

TESTIMONY OF SENATOR CHRIS LEE BEFORE THE HOUSE OF REPRESENTATIVES NATURAL RESOURCES COMMITTEE

LEGISLATIVE HEARING ON OCEAN-BASED CLIMATE SOLUTIONS

TUESDAY, JUNE 22, 2021

Chair Grijalva, Ranking Member Westerman, and distinguished members of the Committee, thank you for the opportunity to submit this written testimony regarding the Oceans-Based Climate Solutions Act. It is an honor to be able to provide a unique perspective on this measure from state and local governments working on these important issues.

I am a State Senator representing the 25th Senate District in the State of Hawaii. For 13 years I have been fortunate to serve the people of our state representing a district that stretches over 1,200 miles across the Pacific Ocean, encompassing populous areas of the main Hawaiian Islands, as well as countless other islands, coastal and marine habitats, fisheries, and the Papahanaumokuakea Marine National Monument.

I currently serve as the chair of the Senate Committee on Transportation, and previously chaired both the House Committee on Judiciary and House Committee on Energy and Environmental Protection. Throughout my time in office our committees worked diligently with government, business, non-profit, and community stakeholders to address the harmful impacts of climate change on our taxpayers, economy, and way of life. Together, we have taken bipartisan action to address ocean degradation and climate change, while also reducing cost to taxpayers, growing new markets, industries, and jobs, with positive real-world results.

I am testifying today in strong support of the Oceans-Based Climate Solutions Act. Despite Hawaii and other states beginning to take individual action on climate change, significantly more must be done to avoid costly and irreversible climate damage in the years to come. Climate change is not a challenge that can be resolved by any one state, it is a challenge faced in some way by every state. Nationwide coordination, resources, and execution will be critical to future success. Federal partnership and investment proposed by the Oceans-Based Climate Solutions Act will be necessary to maximize the ocean's potential to help mitigate this threat.

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Healthy oceans can fight climate change and reduce climate impacts. Oceans have already absorbed over a third of our carbon emissions and 90 percent of the excess heat we have generated, moderating the impacts of climate change. However, the ocean's capacity to safely absorb carbon and heat is limited. This has already resulted in warming waters, stronger hurricanes, ocean acidification, sea level rise, shifting fish stocks, and coral reef die-offs. The Oceans-Based Climate Solutions Act is an important step forward that provides a coordinated roadmap for ocean and coastal climate resilience. The investments it makes will help preserve our oceans and minimize the worst impacts of our changing climate.

Changing climate is already impacting people, businesses, and economies in states around the country, draining state and local resources.

Often lost in discussions about future impacts from climate change are the taxpayers and businesses in states around the country already being impacted by the effects of climate change today. Many are already paying higher costs for adaptation and need help. Globally, weather disasters have doubled since the 1980s, resulting in billions in annual economic losses and increased costs to taxpayers.[1] Recent years have seen record fires in states like California and Oregon. Warming temperatures are shifting seasons in Idaho, Utah, and Wyoming. Hurricanes and flooding are increasingly devastating Louisiana, Florida, and Gulf Coast states. Declining rainfall and drought are threatening water supplies in Arizona, Nevada, and the Southwest. Heatwaves are baking Colorado, Nebraska, and Kansas. And large industries such as agriculture are being impacted across the country.

Sea level rise, warming, and ocean acidification are jeopardizing local economies and increasing costs to taxpayers and businesses. Federal coordination and assistance is needed.

Around the country sea level rise is already threatening coastal communities and infrastructure at a rapid pace. Over the past century, Hawaii has experienced about 8 inches of sea level rise, with most of the increase coming from accelerating rise in recent years. The rising ocean has pushed over 70 percent of Hawaii's shoreline into a state of chronic erosion.[2]

On Oahu and Maui, homes and roads are being undermined by rising waves, and private homeowners in multiple counties are losing property and investments. As sea levels continue to rise, an additional $19 billion in coastal assets will be exposed to damage and loss as sea levels

[1] https://reliefweb.int/report/world/human-cost-weather-related-disasters-1995-2015
[2] Fletcher, C.H., Romine, B.M., Genz, A.S., Barbee, M.M., Dyer, M., Anderson, T.R., Lim, S.C., Vitousek, S., Bochicchio, C., and Richmond, B.M. (2012) National assessment of shoreline change: Historical shoreline change in the Hawaiian Islands: U.S. Geological Survey Open-File Report 2011–1051, 55 p.

in Hawaii approach 3 feet, perhaps as soon as 2060.[3] This includes 38 miles of roads, 6,500 structures, 20,000 residents displaced, 25,800 acres of land, and 550 cultural sites.[4]

State and local governments in the islands are already being forced to spend hundreds of millions of dollars to move, retrofit, or replace critical infrastructure, such as projects increasing the height of the docks at Honolulu Harbor, and moving coastal highways on Maui and Oahu inland. The State Department of Transportation has identified an additional $15 billion in projects to move, raise, or harden threatened coastal highways that serve as lifelines for population centers.

Sea level rise is also responsible for the loss of over 13 miles of sandy beaches around the state through the latter half of the 20th century. Beaches are critical to Hawaii's communities and economy. The loss of Waikiki Beach alone is projected to cause annual losses of $2 billion to Honolulu's local economy. As a result, in 2014 local hotels and businesses groups worked together to establish a new tax applied to about 6,000 commercial properties in Waikiki to raise funds to regularly replenish eroding sand on Waikiki Beach.

Ocean acidification and warming sea surface temperatures threaten Hawaii's coral reefs. We have already seen an 8.7% increase in ocean acidity in just 30 years.[5] Warmer, acidic ocean water is dissolving corals and killing reefs. As a result, by midcentury nearly all of Hawaii's reefs will be experiencing annual bleaching and ecosystem collapse from which most are unlikely to recover.[6] Reefs host about 25% of the ocean's marine life, and losing reefs means massive losses to fishing communities and disruption of the global food chain.

Hawaii's top tourist attraction is Hanauma Bay, a world-famous coral reef reserve that draws more visitors per year than Pearl Harbor. Hanauma Bay and reefs around the state were valued at $33.57 billion in 2011.[7] They currently contribute $477million to the local economy each year.[8] Losing these reefs will have a crippling effect on jobs and our tourism-dependent economy.

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[3] https://science2017.globalchange.gov/chapter/12/

[4] Anderson, T., Fletcher, C., Barbee, M., Romine, B., & Lemmo, J. (2018) Modeling multiple sea level rise stresses reveals up to twice the land at risk compared to strictly passive flooding methods. Nature Scientific Reports 8: 14484 DOI:10.1038/s41598-018-32658-x

[5] https://coralreefwatch.noaa.gov/satellite/publications/state_of_the_environment_2017_hawaii-usapi_noaa-nesdis-ncei_oct2017.pdf

[6] Van Hooidonk, R., et al. (2014) Opposite latitudinal gradients in projected ocean acidification and bleaching impacts on coral reefs. Global Change Biology, 20.

[7] Richard C. Bishop, David J. Chapman, Barbara J. Kanninen, John A. Krosnick, Bob Leeworthy, and Norman F. Meade. 2011. Total Economic Value for Protecting and Restoring Hawaiian Coral Reef Ecosystems: Final Report. Silver Spring, MD: NOAA Office of National Marine Sanctuaries, Office of Response and Restoration, and Coral Reef Conservation Program. NOAA Technical Memorandum CRCP 16. 406 pp.

[8] Keener, V., D. Helweg, S. Asam, S. Balwani, M. Burkett, C. Fletcher, T. Giambelluca, Z. Grecni, M. Nobrega- Olivera, J. Polovina, and G. Tribble (2018) Hawai'i and U.S.-Affiliated Pacific Islands. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 1242–1308. doi: 10.7930/NCA4.2018.CH27

By a different measure, Hawaii's reefs also provide natural protection and buffer high waves and storm surges, providing $860 million in flood-risk benefits to property owners and people's livelihoods every year.[9] Reefs also provide other coastal states like Florida with similar protections and benefits. Losing these reefs means increasing damage from hurricanes, which themselves are growing in number and intensity as a result of warming seas providing more fuel and shifting tracks into Hawaiian waters.[10] More hurricanes also threaten the Atlantic seaboard and Gulf Coast causing billions in damage and lives lost.

The Oceans-Based Climate Solutions Act will help address these critical issues facing coastal states. It will provide coordination and resources to enhance coastal barriers to better protect against natural disasters, expand coastal barrier programs to include the Pacific Coast and offshore islands, update the Coastal Zone Management Act, enable indigenous and underserved communities to better manage coastal resources, provide grants for coastal resiliency and adaptation work, and provide for better research and understanding to act on ocean acidification to protect coastal communities and economies.

Plastics and other pollutants in the ocean are harming coastal communities, ecosystems, and increasing costs to taxpayers for cleanup

Shorelines in coastal states around the country from Alaska to Florida have been inundated with trash, pollutants, and microplastic debris. About 40 percent of today's global plastic waste continues to end up in the environment with 11 million metric tons of plastic leaked into the ocean in 2016 alone.[11] Plastic debris is now so common in the ocean that by 2050 the world may have more plastics in the ocean than fish, by weight.[12]

Plastic and other debris litters marine environments in coastal states where it is being ingested by fish, turtles, birds, and is now showing up in local catch at our supermarkets. Plastic debris often ends up breaking into millions of small microplastic contaminants that are incredibly difficult to clean up. In Hawaii every single beach, including those regularly rated "the best beach in the country" are now littered with microplastic. One beach on Oahu's Kahuku coastline is notorious for high volumes of marine debris. In a single 90-minute cleanup there with 100 volunteers it is possible to remove as much as 10,000 pounds of debris.

Taxpayers are being forced to pay the costs to clean up plastics and other pollutants in Hawaii and in cities around the country. In recent years California has spent over $400 million per year

[9] Reguero, B.G., Storlazzi, C.D., Gibbs, A.E. et al. (2021) The value of US coral reefs for flood risk reduction. Nat Sustain (2021). https://doi.org/10.1038/s41893-021-00706-6
[10] Murakami, H., et al. (2013) Projected increase in tropical cyclones near Hawai'i. Nature Climate Change, v. 3, August, pp. 749-754.
[11] https://www.pewtrusts.org/-/media/assets/2020/07/breakingtheplasticwave_report.pdf
[12] https://www.weforum.org/reports/the-new-plastics-economy-rethinking-the-future-of-plastics

to help prevent trash and plastic debris from getting into waterways, and eventually the ocean.[13] Residents in New York City have spent over $40 million per year on waste management fees for single-use plastic foodware.[14] Taxpayers in other places around the country commonly pay for similar cleanup efforts in their states and cities. Reducing the amount of plastics and debris entering the waste stream will reduce the burden for cleanup that is passed on to taxpayers.

The Oceans-Based Climate Solutions Act will help reduce the unfair burden of cleanup currently passed on to taxpayers. It will place a 5-cent tax on virgin plastic manufacturers that would create a market-based incentive encouraging more plastic to be recycled properly so less ends up in the ocean. Funds raised will be directed to address ocean-based climate solutions and could potentially be used for plastics and pollutants cleanup. That will allow people who wish to purchase virgin plastic products the freedom to do so without unfairly passing the cost of cleanup along to their neighbors.

Expanding opportunities for offshore wind and transitioning to clean energy can reduce cost and risk for ratepayers, as well as reduce greenhouse gasses.

Switching to renewable electricity generation from fossil fuels not only reduces greenhouse gas emissions but can also help reduce energy costs for ratepayers. The cost of solar panels and batteries have decreased by about 85 percent over the last decade. The cost of wind power has declined about 50 percent. As a result, renewables are now the cheapest form of energy to install on the electric grid in many places, and their cost continues to fall. Additionally, renewables operate at a fixed cost and aren't subject to price volatility due to supply shortages or foreign events that can drive up the cost of fossil fuel energy, which makes renewables a much safer long-term financial investment for ratepayers.

Mitigating climate change means rapidly decarbonizing the economy. To this end, 11 states have already established targets to achieve economy-wide carbon neutrality by mid-century. They include Montana, California, Louisiana, Michigan, Nevada, and Maine, among others. An additional 12 states have established paths to significantly reduce carbon emissions, typically a reduction of 80% below 2005 levels by mid-century.

Hawaii was the first state to commit to achieving 100% clean electricity and a carbon-negative economy by 2045. Over the last decade Hawaii has more than tripled renewable energy on the electric grid resulting in significant savings to ratepayers. Utility scale solar, wind, and battery storage projects have helped stabilize volatile fossil fuel electric rates. Most significantly, today one in three single family homes in Hawaii has rooftop solar panels. Collectively, rooftop solar is the single largest source of power on the electric grid and together with energy efficiency

[13] https://www.nrdc.org/resources/waste-our-water-annual-cost-california-communities-reducing-litter-pollutes-our-waterways
[14] https://uploads-ssl.webflow.com/5d696bc69fa6c2515873360a/5e618b692785ae55f96072f7_The%20Dirty%20Truth%20About%20Disposable%20Foodware_vF.pdf

upgrades is a key driver that helped reduce electric bills by an average of $39 per month since 2011.[15]

Rapid declines in the price of renewable technology have now made renewable projects financially viable all around the country. If Hawaii can transition to clean, renewable power resulting in cost savings for residents and the economy, the same can be done faster, better, and cheaper in other places with larger electric grids with greater economies of scale, more flexible resources, and declining costs of renewable technology.

The Oceans-Based Climate Solutions Act has immediate potential to unlock those opportunities for appropriately sited offshore wind that can provide some of the largest sources of clean energy for coastal and inland states. Requiring approvals for reasonable amounts of wind generation creates an instant market providing certainty to project financiers, developers, and communities seeking to benefit from the opportunity. This is one of the quickest ways to help deploy these resources and spur change.

Ocean-based climate solutions can create new jobs and innovative industries

Perhaps one of the most notable benefits of taking action to protect our oceans and address climate change through the Oceans-Based Climate Solutions Act is the potential for new jobs and innovative industries that it creates.

In 2018, America's ocean economy contributed roughly $373 billion to the nation's gross domestic product, with coastal tourism and recreation bringing in $143 billion.[16] With support from the Oceans-Based Climate Solutions Act, resources could begin flowing through grants and other means into ocean-based economies with the potential to expand local benefit.

In Hawaii, NOAA's Economics National Ocean Watch found that the islands' ocean-dependent economy can support over 114,000 employees in 47 industries across six sectors, producing a conservative estimate of over $8 billion in the annual gross domestic product.[17] Today, Hawaii's ocean sector is believed to be underperforming its potential to provide jobs to local residents. The Oceans-Based Climate Solutions Act can help seed work that properly assesses, manages, and restores Hawaii's marine resources. Restoration of natural habitat, sustainable fishing, recreation and other sectors can in turn expand markets and create new potential for more community and economic benefit.

Right now the energy and climate technology market is the strongest it has ever been, with climate tech investment growing 3 times faster than investments in artificial intelligence and 5 times faster than the average growth of general venture capital. In 2019, over $13B was invested

[15] https://energy.hawaii.gov/wp-content/uploads/2019/07/2019-FF_Final.pdf
[16] https://www.noaa.gov/media-release/marine-economy-in-2018-grew-faster-than-us-overall
[17] NOAA Office for Coastal Management. 2018. ENOW Hawaii: Exploring the Hawaii Ocean Economy through a Deeper Dive into the ENOW Dataset. https://coast.noaa.gov/data/digitalcoast/pdf/econ-hawaii.pdf

into climate technology which is more than double what it was in 2016. These funds have birthed startups and companies working on climate issues such as CarbonCure, a sustainable carbon-sequestering concrete company that now provides carbon-infused cement for Hawaii's roadways. There is incredible potential for entrepreneurial innovation in the climate and oceans space.

Around the country the transition to cheaper, cleaner, renewables has spawned an entire new sector of high paying jobs. In Hawaii alone, jobs in solar installation, energy efficiency, and renewable fuel production totaled over 15,000 in 2016, paying an average of $3 to $7/hour higher than the state's median wage. Clean energy jobs related to renewables such as appropriately-sited offshore wind have been proven to similarly create decades of high-paying work for local residents.

In Conclusion

Thank you once more for the opportunity to provide these comments on the Oceans-Based Climate Solutions Act. State and local governments have taken steps which prove that investing in climate solutions helps to address climate impacts, reduces costs to taxpayers, and promotes economic growth. However, no state can solve climate change on its own. Coordination, planning, and resources will be needed if we are to succeed. I appreciate the role the federal government has to play to help address this global issue, because our time to meaningfully address it is running out. Our oceans, our economy, our way of life, and our future depend on it.