CLIMATE DEADLINE ALLIANCE

Governors and Legislators Brief

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Climate Reality Check

"Before we dive into the solution, I want to make a quick climate reality check to calibrate where we all are. Keep in mind I am basically a *scientist testifying* except I am losing money to be here. I have no investment here except to see our future generations grow up with a future. Like a good scientist I first need to calibrate my instruments and for the moment that's you. **Raise your hand or nod if you are**:

- Aware that emissions reductions and alternative energy can never help to resolve global warming or climate change?
- Know what a Feedback-Cascade is?
- Know what a Tipping Point is?
- Aware that one of Earth's heat-transporting ocean currents has recently stopped functioning — for the first time in planetary history?
- Knows that 60% of our planet has lost "biospheric systems integrity"? BSI refers to the ability of Earth's living systems—plants, animals, microbes, ecosystems—to balance and co-regulate. When 60% of this planetary stability of it fails, we're losing planetary self-regulation."
- Aware that emissions reductions and alternative energy cannot reverse global warming?
- Aware that before Trump took office CO_2 in the atmosphere was increasing by 2.3-2.7 ppm and now is increasing by 3.75 ppm annually?
- Aware that Earth has never failed to shift epochs (ending most attempts at life) once CO_2 hits ~450 ppm — and that we're now at 422.8?

I ask these questions not to alarm, but to orient. Because what I'm about to share isn't just a policy idea — it's a way to reclaim initiative for the good guys (the ones who believe in principles over greed), restore stability, and build a regenerative economy before the next epoch change locks in.

"It's Endgame for Civilization. We Just Won't Survive This. What We Are Saying Is, We Have to Refreeze the Arctic Region, And We Have to Refreeze It Quickly."

-Sir David King, Chief Climate Advisor British Government

"The carbon pile-up around the Earth is not natural. We did it and we have to undo it. There are a few governments that are on the right track with Direct Air Carbon Capture. The problem is the scale of what must be done. I believe the Interstate SkyCarbon Initiative is our remaining hope for rescuing our future generations!"

- Leonardo DiCaprio, Actor and U.N. Messenger of Peace

NEW MEXICO WILDFIRES JUNE 2024

"The warnings about climate disruption have been extremely clear. We are facing a global climate crisis. We are running out of time, and we must have a planetary solution to a planetary crisis."

– Al Gore, Former US Vice President

"By the time we saw that Climate Change was really, really bad, our ability to fix it was extremely limited. If you reduce emissions, things are still going to get worse. If we don't remove the massive amount of carbon already in the atmosphere immediately, we will forfeit our children's future. Full stop!'

- Bill Gates, Founder of Microsoft

"Very few people on Earth ever get to say: 'I am doing, right now, the most important thing I could possibly be doing.' If you'll join Dr. Komor and the fight for Carbon Negative Shot, that's what you'll get to say."

– Bill McKibben, Author, The End of Nature

"Every other human problem or endeavor is already in the shadow of Climate Change, and since January 2025, we have a double shadow, as it were. We must immediately start to create some daylight, or we will lose our ability to even exist on this planet and take most other species with us!'

- Climate Deadline Alliance

"Unrecoverable Tipping Points (UTPs) are so dangerous because if you pass them, the climate is out of humanity's control. If an ice sheet disintegrates and starts to slide into the ocean, in turn releasing huge stores of methane, there's nothing we can do about that. Several times in Earth's history, rapid global warming occurred, apparently spurred on by these types of amplifying feedbacks. In each case, more than half of plant and animal species became extinct."

- James Hansen, Former Director, NASA Goddard Institute

"Climate change is the greatest hoax ever perpetrated on the world," Trump declared, calling it a scam pushed by "stupid people" with "evil intentions." He dismissed the concept of a carbon footprint as "nonsense" and warned that nations embracing green policies were "headed for destruction unless they abandon the green scam." Renewable energy, especially wind and solar, was ridiculed as "a joke," "pathetic," and "too weak and too expensive to power modern infrastructure." He vowed, "We're not going to let windmills and solar panels ruin our landscape like they did in Europe," and claimed that the U.K. and other European countries had "destroyed their economies" by pursuing green energy, despite widespread data showing renewables' cost-effectiveness.

Trump's 09/25 U.N. Remarks on Climate and "Green Energy"

Direct Federal Anti-Climate Action (2025)

It is important to know that not only is the situation with climate change extremely dire, but vast, powerful and continuing efforts are being made to commit omnicide by climate change against the American People. Our actions must be comprehensive, determined and forceful. Here is a very incomplete sampling of the efforts currently being made to dismantle America's abilities to recover from Climate Change:

- **GHG Standards Repealed** (*June*): EPA proposed eliminating CO_2 limits for new coal plants, stating it does not significantly endanger public health.
- **Mercury and Air Toxics Rule Rolled Back** (*June*): Reversion to 2012 standards raised health risks, especially for children and cardiovascular patients.
- **NEPA Regulations Gutted** (*Feb*): Environmental impact reviews for federal projects eliminated, threatening Indigenous land and public health.
- **California Clean Air Act Waiver Revoked** (*Feb*): Triggered multistate legal battles over states' rights to set stronger pollution standards.
- **EPA Guidelines Nullified** (*Feb*): Power plant and vehicle emissions rules rescinded.
- **Revoked EPA GHG Standards** – Removed emissions limits for power plants and vehicles.
- **Repealed Mercury/Air Toxics Rule** – Increased health risks for vulnerable populations, especially children and those with cardiovascular conditions.
- **Frozen Clean Energy Funding** – Stalled solar, EVs, and grid modernization initiatives.
- **Reopened Arctic and Public Lands for Drilling** – Reversed longstanding conservation protections; opened new tracts via closed bids and minimal review.
- **Eliminated Clean Energy Tax Credits** – Reduced renewable competitiveness; no new incentives introduced for solar, wind, or EVs.
- **Expanded Fossil Fuel Subsidies** – Raised support above $20B annually; Interior and Agriculture fast-tracked coal leases.
- **Terminated Environmental Justice and DEI Offices** – Erased protections for frontline communities.
- **Slashed International Climate Aid** – Destabilized vulnerable global regions; USAID climate grants cut.
- **Rescinding Climate Health Protections (April)** – Ordered EPA to revisit the 2009 "endangerment finding," threatening its mandate to regulate climate pollution as a public health hazard.
- **Suspension of Fulbright and Peace Corps Programs (April)** – Slashed funding for global education and development diplomacy.
- **EPA Grant Freezes (Spring)** – Suspended programs like "Solar for All" and climate pollution reduction grants.
- **Carbon Capture Undermined (Spring)** – DOE-backed pipeline projects stalled due to land disputes and loss of federal support; DAC reclassified as "low priority."
- **Executive Order: Coal as Strategic Resource (April)** – Accelerated leasing, expanded mining access, and boosted coal exports. Coal-linked stocks surged.
- **Repeal of GHG Emissions Standards (June)** – EPA proposed eliminating CO_2 limits for new coal plants, claiming it "does not significantly endanger public health."
- **Rollback of Mercury and Air Toxics Standards (June)** – Reverted to 2012 rules; medical experts warned of neurodevelopmental and cardiovascular risks.

- **Projected Regulatory Savings (June)** – EPA estimated $19B in reduced compliance costs; public health advocates warned of devastating human and environmental tolls.
- **Clean Energy Program Cuts (Jan–Mar)** – Halted dozens of IRA and IIJA initiatives; solar/EV rebates frozen; DOE grants canceled.
- **EPA Emissions Deregulation (Feb)** – Nullified power plant and vehicle emission limits; revoked California's Clean Air Act waiver.
- **NEPA Regulations Gutted (Feb)** – Stripped environmental impact assessments from major federal projects.
- **Closure of National Climate Assessment Program (March)** – Disbanded the scientific body informing U.S. climate policy.
- **Closure of EPA Office of Research and Development (July)** – Dismantled the agency's scientific core; restricted access to air, water, and health data.
- **Strategic Nuclear Submarine Deployment (Aug 1)** – Ordered repositioning near Russia; critics warned of escalated tensions.
- **EPA Structural Overhaul (Late July–Aug)** – Consolidated regional offices; reassigned enforcement staff to "economic development zones."
- **Revocation of Climate Emergency Designation (July)** – Nullified executive powers used to fast-track clean energy and disaster response.
- **Suspension of International Climate Cooperation (Ongoing)** – Paused U.S. participation in Mission Innovation and the Climate Club.
- **Dismissal of National Climate Assessment Authors (July)** – Halted next report cycle; severed scientific backbone of federal climate policy.
- **Executive Order: Regulatory Relief for Strategic Industries (July)** – Granted two-year exemptions from EPA rules for coal, chemical, and taconite sectors.
- **EPA Staff Suspensions Over "Declaration of Dissent" (July)** – 140 employees placed on leave for protesting climate rollbacks.
- **FEMA Flood Mitigation Program Canceled (July)** – Terminated BRIC program; Chesapeake Bay lost nearly $1B in resilience funding.
- **Emergency Preparedness Gutting (2025)** – Eliminated one-third of FEMA's workforce; attempted to abolish FEMA entirely.
- **National Park Signage Purge (Summer)** – Ordered removal of signs referencing climate change, slavery, Indigenous history, and internment. Interior officials called them "brainless fear-mongering rhetoric." SOS project archived 10,000+ removed materials.
- **Deletion of Federal Climate Tools and Webpages (Ongoing)** – Scrubbed datasets from EPA, NOAA, CEQ, OSTP; removed CEJST and climate references from White House pages.
- **Executive Order to Boost Logging (Spring)** – Increased timber production across 280 acres of national forests.
- **Rollback of the Roadless Rule (Spring)** – Opened 58 million acres to road construction and development.
- **Rollback of Social Cost of Carbon (June)** – Dismantled economic damage metrics for carbon emissions.
- **Second Withdrawal from the Paris Agreement (Spring)** – Reinstated U.S. exit from the global climate accord.
- **Silencing Science Tracker Entries (First 100 Days)** – Columbia's Sabin Center logged 61 anti-science actions, including censorship, budget cuts, and personnel purges.
- **Somalia Malnutrition Crisis (Sept)** – Save the Children warned nearly 50% of children under five could face acute malnutrition by July 2026 due to climate shocks, war, and funding cuts.
- **Global Sumud Flotilla Attacked (Sept)** – Humanitarian convoy with climate activists bombed in international waters. Drones and chemical agents damaged vessels. No casualties reported. Israel accused; Spain and Italy deployed naval escorts. UN Rapporteurs called it a potential war crime.

- **National Park Signage Purge -** Ordered removal of climate change, slavery, Indigenous history, and internment references from interpretive signs across multiple parks. Acadia National Park, Fort Pulaski, and others were targeted under the directive titled *"Restoring Truth and Sanity to American History"*. Signs about climate impacts like rising seas and storm surge, plus Indigenous history, were taken down from Cadillac Mountain and Great Meadow. Fort Pulaski (Georgia): Even iconic photos of formerly enslaved individuals have been removed. Parks were given a deadline to remove any signage that didn't "focus on the greatness of the achievements and progress of the American people".
    - **Deputy Press Secretary, Department of the Interior Aubrie Spady** issued a statement calling the removed signage "brainless fear-mongering rhetoric used to steal taxpayer dollars." She added: "Thanks to President Donald Trump, Interior is ensuring that the American people are no longer being fed the lies of the delusional Green New Scam".
    - **Interior Secretary Doug Burgum** ordered a nationwide review of park signage and interpretive panels, targeting those that "cast a disparaging light on the country" or fail to "emphasize the beauty and grandeur of public lands" and dismissing climate signage as "brainless fear-mongering rhetoric".
- **Deletion of Federal Climate Tools and Webpages -** Scrubbed critical datasets and tools from EPA, NOAA, and CEQ websites. Removed the **Climate and Economic Justice Screening Tool (CEJST)**, which identified communities facing disproportionate climate impacts. Archived versions are being preserved by watchdog groups like the National Security Archive and EDGI.
- **Executive Order to Boost Logging -** Signed an order to increase timber production across 280 acres of national forests.
- **Rolled back the Roadless Rule** - Opening 58 million acres to road construction and development.
- **Rollback of Social Cost of Carbon** - Dismantled Obama-era regulations that quantified the economic damage of carbon emissions. This weakens the foundation for climate-related cost-benefit analyses in federal rulemaking.
- **Second Withdrawal from the Paris Agreement -** Reinstated U.S. withdrawal from the global climate accord, signaling a retreat from international climate commitments.
- **Mass Deletion of Federal Climate Tools and Webpages – EPA, NOAA, CEQ, OSTP**: Entire sections removed, including datasets, emissions calculators, and environmental justice tools like the CEJST. White house climate pages scrubbed of references to climate science and environmental policy coordination.
- **Silencing Science Tracker Entries** - Columbia's Sabin Center logged **61 anti-science actions** in the first 100 days — up from 39 in the same period in 2017. Includes censorship, budget cuts, misrepresentation of data, and personnel purges.

THE BLACK SWAN MATRIX

Environmental feedback cascades are accelerating climate change to a **confluence of tipping points and resource exhaustion less than 10 years away**. Thousands of paleoclimate records and advanced historic modeling studies confirm that once sufficient critical thresholds are crossed (approx.. 450 ppm atmospheric CO_2), Earth's systems reorganize, the current epoch ends, and a "new normal" begins which **does not include most current species**. (Examples: Eocene Epoch 56–34 million years ago - **450-600 ppm**; the Paleocene–Eocene Thermal Maximum; the Pliocene Epoch 3–5 million years ago - **400 ppm**; and the Pleistocene Epoch 2.6 million–11,700 years ago - **300 ppm**). While 450 ppm is an average, it stands as a **critical threshold** where Earth's systems historically reorganize — from ocean currents to ice sheets to biosphere integrity. It's not just a number; it's a **geological pattern**. And with current levels at **422.8 ppm and rising 3.75 ppm/year**, we're on the brink. This is what is known as a **"Black Swan Matrix".**

All other problems now fall under the shadow of this Black Swan Matrix. All other solutions for your constituents are palliative at best if we do not fix this overarching emergency, and our time has run out at an inconvenient socio-political moment in history. In Washington, Trump and his billionaire cohort believe they've executed a corpocratic coup—profiting wildly as greenhouse gas emissions surge. **What they fail to grasp is that the CO_2 they've unleashed into our atmosphere isn't just pollution—it's stranded carbon, a misallocated resource waiting to be reclaimed as feedstock** and used safely and productively for the benefit of those States interested in the public good including:

1. California
2. Colorado
3. Connecticut
4. Delaware
5. Hawaii
6. Illinois
7. Maine
8. Maryland
9. Massachusetts
10. New Jersey
11. New Mexico
12. New York
13. Oregon
14. Rhode Island
15. Washington
16. Arizona
17. Michigan
18. Minnesota
19. North Carolina
20. Pennsylvania
21. Wisconsin

21 States Working Together Can:

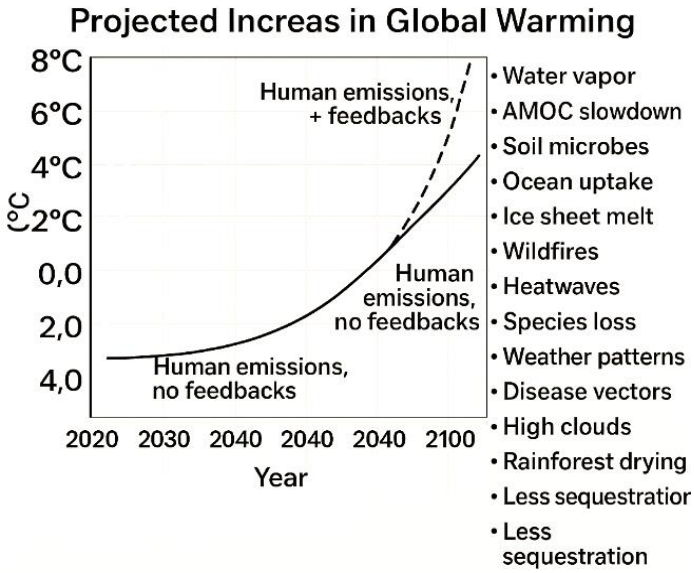
1. Rescue our children from climate-driven death and restore the future America promised them not a future of fear, division and powerlessness.
2. Harness a bold Democratic economy—ironically built from the greed of MAGA-variant excess.
3. Create thousands of new jobs by
4. Transforming recovered CO_2 (R-CO_2) into fuels, biodegradable plastics, building materials, and public infrastructure.
5. Reignite America's fractured esprit de corps through shared purpose and planetary repair.
6. Pre-win Democratic victories for years to come—by delivering results that voters can see, feel, and survive.

Even at this late date *We Can Fix This* through a ***Carbon Renaissance*** - In 2-3 years, that will no longer be true.),

Governors & Legislators Brief: Black Swan Matrix

(1) Threat Picture

- The traditionally conservative World Economic Forum projects that **by 2050, climate disruption will be causing 14.5 million deaths annually and $12.5 trillion in losses.**
- In 2019 the Intergovernmental IPBES report found that **between 1900 and 2050 more than 1 million species of land and aquatic animals will have become extinct**.
- **Resource depletion:** freshwater, soil, pollinators, and phosphorus are all trending toward collapse by 2040–2050.
- **Societal fault lines are showing**: food insecurity, water conflict, migration surges, public health collapse, economic destabilization, increased violence - all trending toward **collapse by 2040-2050**.
- **Over 15 cascading feedback loops: permafrost thaw, AMOC weakening, wildfire amplification, ocean heatwaves are now active** with more coming online each year. Some examples:
    - **Ocean Warming & Deoxygenation -** Warmer oceans hold less oxygen, disrupting marine respiration. Mass fish die-offs, coral bleaching, and collapse of food chains.
    - **Cryosphere Collapse -** Melting glaciers and ice sheets reduce albedo (reflectivity), accelerating warming. Greenland or West Antarctic Ice Sheet destabilization could lock in meters of sea level rise.
    - **Permafrost Thaw & Methane Release -** Thawing Arctic soils release methane — a potent greenhouse gas. Methane feedback loop could overwhelm DACR gains if not countered.
    - **Jet Stream Disruption -** Warming weakens polar jet streams, causing weather whiplash: droughts, floods, heat domes. Persistent blocking patterns that destabilize agriculture and infrastructure.
    - **Ecological Collapse & Human Systems -** Biodiversity loss undermines pollination, soil health, and disease regulation. Food system fragility: fish die-offs, crop failures, zoonotic spillovers.

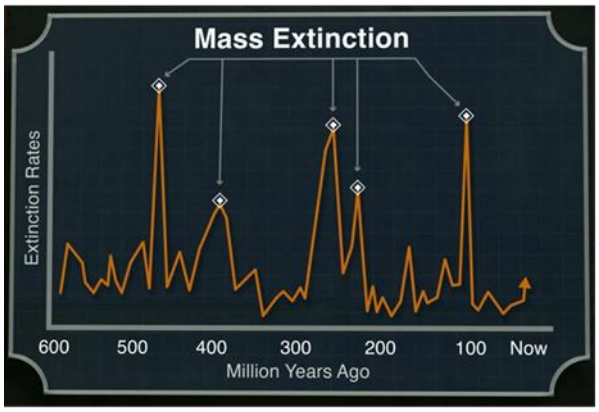


If we add secondary feedback cascades and interactions between those feedback cascades we get a true picture of what's happening with climate change.

(2) Fatal Carbon Reductionism

- Denial of climate reality through **fantasy that emissions reduction, sustainability and mitigation will magically remove legacy carbon already in atmosphere.** They do not and will not.
- **Do not make the mistake of thinking human civilizations live forever. We have had 5 mass extinctions already in our planetary history.**

(3) Interstate SkyCarbon Initiative (ISI)



- We can and **must manually remove 781 $GtCO_2$ (213 GtC) to return to 350 ppm and avoid irreversible collapse and do it within our 7 year window.**
- **Direct Atmospheric Carbon Recovery** (DACR) is the **only scalable tool** that can directly reverse atmospheric loading and is already deployed in several countries.
- The **Interstate SkyCarbon Initiative** is **a coordinated, multi-state effort to deploy Direct Atmospheric Carbon Removal (DACR) across 20+ Democratic-led States - goal of removing and repurposing atmospheric carbon (R-CO_2).**
- Can only build and drawdown so fast. Must begin now before feedback loops lock in and resources run out.

(4) The Costs Will Be Manageable — and Strategic

Direct Air Carbon Removal (DACR) isn't theoretical. It's already running (Climeworks, Project Cypress) and ready to scale across infrastructure. The **Interstate SkyCarbon Recovery Initiative (ISRI)** proposes a 21 state mobilization to remove **781 gigatons of CO_2** over 7–10 years. Each participating state would remove about **34 gigatons** total — roughly **3.4 gigatons per year**.

Deployment Timeline & Cost Trajectory

Year	Cost per Ton	Deployment Level	Focus
2025	$500	5%	Pilots, foundational builds
2030	$295	60%	Full-state coverage
2035	$175	100%	DACR network complete

Costs are dropping fast. Some modular systems already operate below **$100/ton**, and with states working together, we can scale faster and cheaper than going it alone.

Net Cost Breakdown (10-Year Horizon)

Metric	Total (10 yrs)	Annualized
Gross DACR Cost	$10.18T	$1.02T
Strategic Reductions	−$5.09T	−$509B
R-CO_2 Product ROI	−$2.5T	−$250B
Financing Tools	−$2.8T	−$280B
Final Net Exposure	**$0–1.5T**	**$0–100B**

Revenue Streams for Initial DACR Funding

A. Carbon-Linked Utility Surcharge

- Small surcharge on fossil fuel-based electricity or natural gas bills (e.g., $0.002/kWh)

- Framed as a "Climate Stabilization Fee"
- Revenue earmarked for DACR deployment and R&D

B. Industrial Emissions Levy
- Modest per-ton fee on large emitters (cement, ethanol, ag processors)
- Can be offset with DACR credits once RCO_2 markets mature
- Encourages early buy-in from industry

C. Green Bond Issuance
- States issue climate resilience bonds backed by DACR ROI projections
- Investors fund infrastructure, states repay via future RCO_2 revenues or avoided climate costs

D. Sales Tax Fractional Allocation
- Divert 0.1–0.2% of existing state sales tax to DACR fund
- No new tax — just a reallocation
- Frame as: "One penny per $5 spent to secure the atmosphere"

E. Severance Tax Extension (for fossil states)
- Extend or increase severance taxes on oil, gas, or coal extraction
- Earmark portion for DACR transition fund
- Frame as: "Extractive legacy pays for regenerative future"

F. Agricultural DACR Partnership Fee
- Small fee on ag chemical sales (fertilizer, pesticides)
- Funds DACR pilot projects tied to soil carbon and rural resilience
- Frame as: "Protecting the land that feeds us"

G. Tourism or Lodging Climate Fee
- $1/night surcharge on hotel stays
- Funds DACR installations near parks, ski areas, or climate-sensitive zones
- Frame as: "Visitors help protect what they came to see"

H. Matching Grants: Use state funds to unlock federal or philanthropic DACR matching

I. DACR Trust Fund: Create a dedicated, transparent fund with citizen

(5) Economic Upside for DACR: We don't know the R-CO2 market yet – it's a new American invention. Reasonable estimates include:

- **Creates tens of thousands of skilled jobs** in construction, engineering, and clean tech.
- **Revitalizes local economies, and stabilizes public health** via air quality gains**.**
- Community resilience and environmental justice **alignment.**
- Long-term **GDP growth** through infrastructure innovation.

Recovered-CO_2 is a *Commodity Engine*. DACR's captured carbon is not waste—**it's feedstock with an annual revenue potential of $9.4 trillion across 21 states and a projected R-CO_2 market: $10–25 trillion by 2050.** R-CO_2 can be **embedded into roads, buildings, polymers, and fuels, creating a durable market for carbon-stored materials.** States can mandate **public infrastructure projects** to use R-CO_2-based inputs, ensuring demand and generating revenue. Each ton of R-CO_2 becomes a financial instrument—tradable, re-

investable, and visible in the built environment. Revenue projections range from $1M to $25M annually per state, depending on scale and market maturity.

By treating carbon as a strategic asset, we flip the narrative from doom to opportunity. R-CO_2 is not waste—**it's a natural resource.**

- **Infrastructure:** CO_2-cured concrete, asphalt, and aggregates. Improved water recovery. Fire-proofing and heat-reflectance. Protective sealants for bridges, tunnels, tracks.
- **Transportation:** Aviation and R-CO2+Green Hydrogen fuels. Enhanced tire production. Carbon-negative asphalt additives. Rail ties, station components, insulation, lightweight train panel bodies.CO2-derived compressed fuels. Seating foams, adhesives, electrolytes and solvents for lithium-ion batteries
- **Housing:** Fire-resistant housing. Safer insulation materials. R-744 refrigerant. Concrete and adhesives. *Imagine easing your states housing crunch with raw materials pulled from the sky!*
- **Energy:** synthetic fuels, CO_2 batteries, supercritical turbines. Bridge your states energy needs while renewables take hold.
- **Agriculture:** biochar, fertilizer synthesis, greenhouse enrichment.
- **Consumer goods:** carbon-negative plastics, textiles, diamonds, vodka. The global market for CO_2-derived products is projected to exceed $1 trillion by 2030.

(6) Social Upside

- **Immigration:** A 20-40% reduction in humanitarian, unauthorized and employment-based migration as climate pressures ease.
- **Workforce development:** Based on the DOE's estimates, 4-5 million jobs per state during the initial 5 years stabilizing at 2 million O&M jobs ongoing.
- **Establish a proactive playing field**: to counter the field of darkness the Trump Administration has created—just as the fight against Nazism lifted the United States out of Depression and into world leadership in the 1940s. Resisting darkness is important – more important is **creating a positive playing field voters are drawn to – a large, over-riding cause that will rise above the dark, fearful playing field created by MAGA-Trump**. This is a moment to reclaim moral leadership and define the future, not just to resist. ISRI offers a blueprint for climate-led prosperity and unity as WWII offered a worthy cause against the backdrop of the Great Depression.
- **Draw "lost sheep" back into the American fold.** Climate change affects MAGA and Democrats alike. While some won't admit global warming exists, polling shows up to 54-75% of MAGA voters are willing to take action on climate when framed around jobs, health, and national pride.

(7) The Cost of Boutique DACR

There is a huge difference between a carbon boutique and a national carbon utility. Even under the most optimistic projections, entrepreneurial DACR alone won't cut it. It can however provide a starting point for a government-directed scale-up akin to wartime mobilization.

DACR Facilities Currently Removing ≥9,000 Tons CO_2/Year

1. Climeworks – Mammoth Plant (Iceland)

- **Capacity**: Up to 36,000 tons/year
- **Status**: Operational ramp-up
- Website | Hellisheidi, Iceland

2. 1PointFive / Occidental – Stratos DAC Hub (Texas, USA)

- **Capacity**: Projected 500,000 tons/year
- **Status**: Under construction; early modules expected to exceed 10,000 tons/year
- Website | Ector County, TX
- info@1pointfive.com | +1 (713) 215-7000

3. Global Thermostat – Commerce City, CO

- **Capacity**: ~10,000 tons/year across modular deployments
- Website | 6175 Brighton Blvd, Commerce City, CO
- info@globalthermostat.com | +1 (212) 935-0300

4. Heirloom Carbon Technologies – Tracy, CA

- **Capacity**: ~10,000 tons/year (2025 target)
- Website | 800 S MacArthur Dr, Tracy, CA
- hello@heirloomcarbon.com

5. AspiraDAC – New South Wales, Australia

- **Capacity**: ~10,000 tons/year (2025 deployment)
- Website | 1 Central Ave, Eveleigh NSW 2015
- info@aspiradac.com | +61 2 9209 4000

Why So Few? According to the IEA:

- Only **27 DAC plants** have been commissioned globally, capturing a combined **~10,000 tons/year**.
- Over **130 DAC facilities** are in development, but most are **pre-commercial or conceptual**.
- The U.S. leads in policy support, with **$3.5B DAC Hub funding** and **45Q tax credits** driving scale-up.

Expansion Trajectory

- Average pilot scale: hundreds to low thousands of tons/year
- Projected commercial scale: 1 $MtCO_2$/year per facility by 2027–2030 (optimistic)
- Current growth rate: doubling every 2–3 years (based on pipeline and investment trends)
- Current atmospheric CO_2: 429 ppm
- **Current DAC removal rate: 0.01 Mt/year**
- Target: 350 ppm → requires removing ~1.1 trillion tons of CO_2 (rough estimate)
- **Even with exponential growth, say DAC reaches 1 Gt/year by 2050 (still ambitious)**

Scenario 1: Status Quo Trajectory

- **At 0.01 Mt/year → 1.1 trillion tons / 0.01 Mt/year = 110 billion years**
- Even if we hit 1 Gt/year by 2050 and hold steady:
    - 1.1 trillion tons / 1 Gt/year = 1,100 years

We do not win wars, or solve national emergencies, by handing out grants and encouraging entrepreneurs. Government must take charge, create a battle plan, and then "defense production act" the involvement of industry and citizenry. Climate Change has been defined as a threat to national security since the 2014 Quadrennial Defense Review which called climate change a "threat multiplier" that exacerbates existing risks like political instability, resource scarcity, and humanitarian crises. In 2015 a DoD Report explicitly stated that climate change poses "immediate risks to national security." Recently a 2021 DoD Climate Risk Analysis reaffirmed that climate change is a "destabilizing force affecting military readiness, infrastructure, and global conflict zones. This framing has bipartisan roots and is echoed by intelligence agencies, which warn that climate-driven disruptions—like

droughts, migration, and extreme weather—can fuel conflict and undermine global stability. If there was ever a time states needed to pull out their DPA-like powers this is it!

(8) Green Readiness Without Atmospheric Reckoning = Citizen Mortality

Government leaders don't just win elections, they accept the burden of leading and protecting citizens when they take their oath. In recent years *Climate Deadline Alliance* has met with more than one hundred federal and state legislators (and, or their LA's). With a few exceptions they were caught in the trap of green readiness without atmospheric reckoning, missing the critical reality that **there is no sustainable future without first removing our Legacy Carbon Burden from the atmosphere.** They are, in effect, installing solar panels on a sinking ship, planting trees in a vault no one will open, rationing sugar during WWII without building the Liberty ships. The cost for this denial of reality will be massive and it will fall on our children and their children.

(8a) Mortality Burden from GHG-Induced Climate Change by State

This Atmospheric GHG Mortality Burden reflects compounding effects across:

- **Heat stress and cardiovascular collapse**
- **Water scarcity and sanitation failure**
- **Vector-borne disease expansion**
- **Crop failure and food insecurity**
- **Respiratory degradation from wildfire smoke and ozone**
- **Mental health deterioration, suicide, and trauma**
- **Severe weather fatalities from floods, hurricanes, and wildfires**

Projected % of Annual Deaths Attributable to Climate Change (No DACR Scenario)

State	Burden Level	Estimated % of Annual Deaths	Dominant Vectors
Arizona	Severe	9–12%	Heat, water scarcity, respiratory, mental health
California	Elevated	5–8%	Wildfires, respiratory, crop stress, mental health
Colorado	Elevated	4–6%	Water stress, respiratory, suicide, vector expansion
Connecticut	Moderate	3–5%	Severe weather, respiratory, mental health
Delaware	Moderate	3–5%	Flooding, vector-borne disease, mental health
Hawaii	Elevated	5–7%	Sea-level rise, vector-borne disease, food stress
Illinois	Elevated	4–6%	Heat, crop failure, respiratory, mental health
Maine	Moderate	3–5%	Vector expansion, food stress, mental health
Maryland	Moderate	3–5%	Flooding, respiratory, mental health
Massachusetts	Moderate	3–5%	Severe weather, respiratory, mental health
Michigan	Elevated	4–6%	Heat, crop failure, vector-borne disease
Minnesota	Moderate	3–5%	Vector expansion, respiratory, mental health
New Jersey	Moderate	3–5%	Flooding, respiratory, mental health
New Mexico	Elevated	5–7%	Heat, water scarcity, respiratory, mental health
New York	Elevated	4–6%	Heat, flooding, respiratory, mental health

State	Burden Level	Estimated % of Annual Deaths	Dominant Vectors
Oregon	**Elevated**	**4–6%**	**Wildfires, respiratory, mental health**
Pennsylvania	**Moderate**	**3–5%**	**Flooding, respiratory, mental health**
Rhode Island	**Moderate**	**3–5%**	**Sea-level rise, respiratory, mental health**

This projection framework is calibrated for mid-century (2050) under a no-DACR, high-emissions scenario, assuming continued accumulation of legacy greenhouse gases and insufficient atmospheric drawdown. In these states, the Atmospheric GHG Mortality Burden ranges from 3% to 12% of annual deaths—driven not just by heat, but by water collapse, respiratory degradation, crop failure, and despair. Without DACR, these governors are presiding over a slow-motion, exponentially deepening, mass casualty event. By 2050, the burden becomes structural, not episodic.

(8b) Financial Cost

The cost of inaction—projected at over $15 trillion nationally this decade far exceeds the investment required for DACR. (When paired with R-CO_2 utilization, the total fiscal upside reaches $17.71 trillion, excluding second-order benefits like competitiveness and regional stability.) As many damages compound these numbers will increase exponentially year-upon-year.

Sector	National Cost	Per-State Estimate	Explanation
Infrastructure Damage	$1.2–1.5 trillion	$57–71 billion	Roads, bridges, and drainage systems degrade from flooding, landslides, and heat stress.
Tourism Losses	$450–600 billion	$21–29 billion	Wildfires, heatwaves, and degraded natural beauty reduce travel and tourism revenue.
Insurance Market Collapse	$700–900 billion	$33–43 billion	Rising claims from disasters destabilize property insurance markets and increase premiums.
Energy Cost Surge	$300–500 billion	$14–24 billion	Increased demand for cooling and filtration strains grids and drives up energy bills.
Material Breakdown	$150–250 billion	$7–12 billion	Heat accelerates wear on buildings, vehicles, and equipment, shortening replacement cycles.
Disaster Recovery	$1.1–1.4 trillion	$52–67 billion	More frequent and severe disasters stretch emergency budgets and recovery resources.
Healthcare System Strain	$800–1.2 trillion	$38–57 billion	Heat-related illness, respiratory issues, and mental health crises overwhelm hospitals.
Mass Violence & Social Unrest*	$100–200 billion	$4.7–9.5 billion	Climate stressors correlate with spikes in violence, unrest, and public safety costs.
Consumer & Business Inflation	$900–1.3 trillion	$43–62 billion	Supply chain disruptions and crop failures drive up prices across all sectors.
Agriculture & Livestock Costs	$600–850 billion	$28–40 billion	Drought, heat stress, and feed shortages increase costs and reduce yields.
Housing Market Volatility	$300–500 billion	$14–24 billion	Flood and fire risk make neighborhoods uninsurable and drive down property values.

Sector	National Cost	Per-State Estimate	Explanation
Transportation & Logistics Disruption	$250–400 billion	$12–19 billion	Extreme weather damages roads and ports, delaying shipments and increasing costs.
Industrial Productivity Decline	$200–350 billion	$9.5–17 billion	Heat stress reduces worker output and damages machinery, lowering productivity.
Education System Strain	$50–100 billion	$2.4–4.8 billion	School closures and HVAC retrofits disrupt learning and increase operating costs.
Fisheries & Aquatic Collapse	$100–150 billion	$4.7–7.1 billion	Ocean warming and acidification reduce fish populations and coastal economies.
Water Treatment & Sanitation Costs	$150–250 billion	$7–12 billion	Droughts and floods overwhelm water systems, requiring costly upgrades.
Legal & Liability Exposure	$50–100 billion	$2.4–4.8 billion	States face lawsuits over environmental harm and failure to protect citizens.
Biodiversity & Ecosystem Loss	$200–300 billion	$9.5–14 billion	Loss of pollinators, soil health, and natural carbon sinks impacts agriculture and air quality.
Migration & Displacement Costs	$150–250 billion	$7–12 billion	Climate refugees strain housing, healthcare, and social services.
Firefighting & Emergency Services	$100–200 billion	$4.7–9.5 billion	Longer wildfire seasons require more personnel, equipment, and recovery funding.

Total Per-State Estimate: $397–586 billion

* A Special Note on School Shootings

While school shootings are typically driven by **individual pathology, social isolation, and access to firearms**, climate change may act as a **background amplifier**. Recent studies have found strong correlations between **abnormally high temperatures** and **increased rates of shootings**, especially in urban areas:

- A study led by Vivian Lyons (University of Washington) analyzed data from 100 U.S. cities and found that **nearly 7% of all shootings** were linked to days with above-average temperatures.
- The effect was strongest in the **Northeast and Midwest**, where seasonal temperature spikes are more pronounced.
- These shootings disproportionately occurred in **under-resourced communities** facing environmental racism, housing discrimination, and heat exposure — all climate-related stressors.
- **Elevated temperatures** are known to increase irritability, impulsivity, and violent behavior — all relevant to school environments under stress**.**
- **Climate anxiety**, displacement, and economic instability can exacerbate mental health issues in youth, which are often precursors in school shooting profiles.
- **Youth exposed to climate disasters** (wildfires, floods, extreme heat) show elevated rates of anxiety, depression, and PTSD — all known precursors to violent ideation in vulnerable individuals.
- Climate events lead to school closures, displacement, and **loss of routine** — which can destabilize at-risk students and reduce access to mental health services
- Climate-related economic stress can **reduce funding** for school counselors, safety officers, and violence prevention programs.

Conclusion: By acting now and treating carbon as a resource and embedding removal into public infrastructure, states can lead a climate recovery that is financially sound, socially equitable, politically game-changing and technologically bold. **The path to 350 ppm is not just a scientific necessity—it is a blueprint for national rescue and revitalization.**

(9) Fossil Majors Running "Wide Open" Are on a Collision Course With Atmospheric Saturation, Economic Destabilization, And Biospheric Collapse

The Myth: Removing carbon just cleans up the fossil fuel industry's mess and lets them keep polluting.
The Reality: Removing carbon is not a favor to fossil majors—it's a rescue mission for the biosphere. And if done right, it's a transfer of power. Recovered CO_2 becomes a feedstock for fuels, plastics, concrete, and carbon-negative infrastructure. We're not erasing their crimes—we're weaponizing the evidence.

While some worry that Direct Atmospheric Carbon Removal (DACR) might inadvertently incentivize fossil fuel producers to continue emitting, the reality is that DACR creates a **positive feedback loop of accountability and innovation**. By monetizing recovered carbon into durable goods and clean fuels, we shift the economic center of gravity away from extraction and toward regeneration. Yes, we remain vigilant about ecological tripwires — ocean warming, methane release, biodiversity collapse — but these risks are precisely why we must act now. After decades of delay and six months of 3.75 ppm escalation, DACR offers not a license to pollute, but a **scalable mechanism to repair**, redirect, and reclaim our atmospheric future. The fossil majors are sprinting toward a wall. They're burning the house to stay warm, forgetting that the roof collapses when the carbon load hits critical mass. Climate change is the fossil industry's profit collapse in slow motion. *Every ton they burn makes their own business model more expensive, more fragile, and more hated*. They're not just cooking the planet—they're cooking their margins.

Policy Guardrails DO Matter

DACR must be paired with:

- Hard caps on new emissions
- Phase-out mandates
- Carbon accounting that distinguishes legacy vs. new

However, Traditional Energy Producers Are On Course For Self-Extinction

Infrastructure Fragility "You can't drill profitably when your rigs are underwater and your roads are washed out."

- Refineries, pipelines, and offshore rigs are vulnerable to floods, hurricanes, wildfires, and sea-level rise.
- Maintenance and insurance costs are skyrocketing.

Supply Chain Disruption

- Heatwaves and storms disrupt transport, labor, and energy grids.
- Global shipping volatility raises costs for extraction, refining, and distribution.

Insurance Retreat

- Insurers are pulling out of high-risk zones—leaving fossil infrastructure exposed.
- Premiums are rising fast, and self-insurance is unsustainable.

Water Scarcity

- Fracking, refining, and cooling systems require massive water inputs.

- Droughts and aquifer depletion make operations more expensive and politically toxic.

Regulatory Blowback
- Climate-driven disasters fuel public demand for regulation, litigation, and carbon pricing.
- Fossil majors face mounting legal liabilities and stranded asset risks.

Investor Flight
- ESG mandates, youth activism, and climate litigation are driving capital away.
- Fossil stocks are increasingly seen as **climate-risk liabilities**, not long-term bets.

Atmospheric Saturation
- The atmosphere can only absorb so much before feedback loops kick in:
  - Arctic permafrost melt
  - Amazon dieback
  - Ocean deoxygenation
- These loops **amplify emissions**, making fossil fuel expansion self-defeating.

Economic Instability
- Climate damages are compounding:
  - $1.5 trillion/year in global losses by 2050
  - Insurance retreat, crop failure, infrastructure collapse
- DACR and clean tech are creating **parallel markets** that siphon legitimacy and capital.
- Fossil majors may profit short-term, but they're **undermining the economy that sustains demand**.

Social & Political Blowback
- Youth movements, litigation, and divestment are accelerating.

The Carbon Saturation Formula (Simplified)
Annual Global Emissions ≈ 40 billion tons CO_2
Remaining Carbon Budget for 1.5°C ≈ 250 billion tons CO_2
Time to Budget Exhaustion at Current Pace ≈ 6 years (That's not a forecast—it's a countdown.)

Conclusion: Removing carbon isn't cleanup—it's repossession and DACR is the only way to clean up the mess without letting them profit from it twice. We're reclaiming the atmosphere from MAGA-variant vandalism and turning it into a Democratic economy. Every ton we recover is a ton they can't weaponize.

By acting now and treating carbon as a resource and embedding removal into public infrastructure, states can lead a climate recovery that is financially sound, socially equitable, politically game-changing and technologically bold. **The path to 350 ppm is not just a scientific necessity—it is a blueprint for national rescue and revitalization.**

(10) Initial Steps for the Interstate SkyCarbon Initiative

Phase 1: Strategic Orientation – Climate cost audit and geospatial mapping.

• Identify top-emitting sectors in the state—energy, agriculture, transportation, manufacturing—with granular emissions data and regional overlays.
• Quantify economic losses from climate inaction: rising healthcare costs, infrastructure degradation, insurance volatility, and agricultural yield declines.

• Map key players and DACR-adjacent assets: utilities, universities, tech incubators, basalt-rich zones, Class VI well candidates, and private sector allies with carbon-intensive operations or offset mandates.

Examples of Companies Likely to Purchase R-CO_2 by State

California

Company	Sector	Notes
California Resources Corporation	Oil & Gas	Developing Terravault CCS hub in Kern County
Ebb Carbon	Ocean Carbon Removal	Converts CO_2 into ocean alkalinity; based in San Carlos
Lithos Carbon	Agriculture	Uses CO_2 for enhanced rock weathering to boost crop yields
Carbon Blade Corporation	DAC Technology	Builds modular DAC units; potential buyer for R-CO_2 reuse
Wildcat Discovery Technologies	Battery Materials	CO_2 used in lithium-ion battery R&D; San Diego-based

Washington

Company	Sector	Notes
Homeostasis Systems Corp	Battery Manufacturing	Converts CO_2 into graphite for lithium-ion batteries; Tacoma-based
Climate Foundation	Marine Permaculture	Uses CO_2 in seaweed-based carbon export systems; Seattle-based
Banyu Carbon	DAC & Carbon Markets	Seattle-based DAC startup with carbon credit ambitions
AMBERSEA LLC	Aquaculture	CO_2-integrated seawater farming; Tumwater-based

Oregon

Company	Sector	Notes
PacifiCorp	Utilities	Major grid operator investing in carbon management
Portland General Electric	Utilities	Clean energy provider with CO_2 offset potential
ESS Inc.	Energy Storage	Long-duration storage firm; may use CO_2-derived materials
Green Diamond Resource Co.	Forestry & Offsets	Manages carbon offset lands; impacted by Bootleg Fire

Arizona

Company	Sector	Notes
CarbonCapture Inc.	DAC Manufacturing	Building DAC modules in Mesa; plans to remove 2M tons/year7

Company	Sector	Notes
Block-Lite	Construction Materials	Uses captured CO_2 in concrete production; Flagstaff-based
Arizona Climate Ventures	Investment & Tech	Supports CO_2-based startups; Phoenix-based

New Mexico

Company	Sector	Notes
Occidental Petroleum (Oxy)	Oil & Gas	Operates CO_2-EOR and storage in Hobbs; MRV-approved
Petroleum Recovery Research Center (NM Tech)	Carbon Storage R&D	Manages Four Corners sequestration project; $41M federal funding

Maine

Company	Sector	Notes
Clean Maine Carbon	Biochar & Carbon Credits	Produces biochar for carbon credit sales; Greenville-based
Sebago Brewing Co.	Food & Beverage	Installed CO_2 recovery system; Gorham-based

Massachusetts

Company	Sector	Notes
Carbix Corporation	Building Materials	Converts CO_2 into carbonates for construction; Quincy-based
Mantel	Carbon Capture Tech	Develops high-temp CO_2 capture systems for industry
Commonwealth Fusion Systems	Energy Tech	May use CO_2-derived materials in fusion systems; MIT spin-off

Delaware

Company	Sector	Notes
Delaware Refinery (PBF Energy)	Oil & Gas	Emits 3.4M tons CO_2/year; prime candidate for R-CO_2 reuse
Chemical & Hydrogen Facilities	Industrial	6+ facilities eligible for 45Q credits; potential buyers

North Carolina

Company	Sector	Notes
Plantd	Building Materials	Produces carbon-negative panels; Oxford-based
Windlift	Wind Energy Tech	Advanced wind systems; may use CO_2-derived composites
Mystic Farm & Distillery	Food & Beverage	Zero-waste distillery with solar integration; Durham-based

Virginia

Company	Sector	Notes
Apex Clean Energy	Renewables	Utility-scale wind and solar; Charlottesville-based
Hexagon Energy	Clean Energy Dev	Developing biomass and DAC projects; Charlottesville-based
Earthrise Energy	Power Producer	Converts fossil infrastructure to clean energy; Arlington-based
UVA Climate Restoration Initiative	Research & Deployment	Mapping DAC and BECCS feasibility statewide

Phase 2: Infrastructure & Policy Readiness – Survey carbon capture potential and regulatory levers.

• Inventory industrial sites with high CO_2 output—cement plants, ethanol refineries, ammonia producers, and natural gas processors—with proximity to storage zones.
• Identify geologic storage candidates: deep basalt formations, saline aquifers, depleted oil fields, and legacy wells with retrofit potential.
• Review permitting pathways (Class VI, NEPA, state-level siting), environmental review timelines, pore space ownership, and liability frameworks for long-term stewardship.

Phase 3: Technical Mobilization – Launch DACR Task Force with deployment focus.

• Include state agencies, climate scientists, geologists, engineers, economic planners, and tribal representatives to ensure inclusive and technically sound planning.
• Frame DACR as a climate-tech buildout: grid resilience, rural revitalization, workforce training, and industrial decarbonization.
• Conduct site feasibility studies—soil, seismic, hydrologic—and host community briefings to preempt opposition and build durable support.

Phase 4: Pilot Deployment – Select 1–2 high-impact sites for early DACR deployment.

• Prioritize locations with basalt substrate, Class VI permitting potential, transport access, and grid connectivity for energy-intensive DAC operations.
• Partner with DACR firms for tech demos, injection testing, monitoring protocols, and workforce training aligned with local labor markets.
• Use pilot data to refine siting criteria, validate MRV (Measurement, Reporting, Verification) systems, and attract private investment through proven impact.

Phase 5: Metrics, Messaging, Momentum – Track impact and amplify results.

• Build dashboards showing CO_2 removed, jobs created, dollars saved, and avoided climate damages—updated quarterly for transparency.
• Use results to pressure neighboring states, secure federal matches, and build coalition momentum through regional compacts and media amplification.
• Translate technical wins into public narratives: “DACR saved our ag exports,” “DACR stabilized our grid,” “DACR created 500 new jobs in rural counties.”

THE FOLLOWING ARE CLIMATE HAZZARD OVERVIEWS FOR THE 21 SUGGESTED INTERSTATE SKYCARBON INITIATIVE STATES

Climate Threats: Arizona

Climate Vulnerability Profile | Interstate SkyCarbon Recovery Initiative (ISRI) Date: September 2025

Escalating Climate Feedbacks

• Extreme Heat: Phoenix recorded 54 days over 110°F in 2023; projections show up to 80 such days annually by 2050. • Megadrought Persistence: Colorado River Basin entering its third decade of drought; Lake Mead and Lake Powell at crisis levels. • Dust Storm Intensification: Monsoon shifts and land degradation fueling more frequent and severe haboobs. • Wildfire Expansion: Fire season now 60+ days longer; 2021's Telegraph Fire burned 180,000 acres.

Resource Depletion & Ecological Stress

• Water Scarcity: Groundwater overdraft accelerating; aquifers in Pinal and Santa Cruz counties nearing collapse. • Agricultural Disruption: Cotton, lettuce, and citrus yields declining; irrigation cuts threaten farm viability. • Ecosystem Collapse: Sonoran Desert biodiversity threatened by heat, drought, and invasive species.

Societal Fault Lines

• Public Health Crisis: Heat-related deaths rising; Maricopa County saw 645 fatalities in 2022 alone. • Housing Vulnerability: Mobile home parks and low-income housing face extreme heat exposure and cooling cost burdens. • Tribal Water Rights Conflict: Indigenous communities face historic water insecurity and legal battles over access.

Economic Impact of Inaction

Sector	Projected 2050 Cost	Key Risks
Water Systems	$6.3B	Aquifer collapse, river depletion
Agriculture	$3.7B	Crop failure, irrigation cuts
Public Health	$2.9B	Heat illness, mortality, disease spread
Infrastructure	$3.4B	Fire damage, dust storm disruption
Energy Systems	$2.1B	Grid strain, cooling demand surge

Total Estimated Cost by 2050: $18.4B+ in cumulative damages and disruptions

Strategic Implications

• Arizona's climate threats are desert-driven and deeply systemic — water, heat, and health are converging. • Delay risks irreversible aquifer loss and mass displacement. • DACR deployment offers resilience: water-smart agriculture, heat-buffered housing, and R-CO_2 desert restoration.

Climate Threats: California

Climate Vulnerability Profile | Interstate SkyCarbon Recovery Initiative (ISRI) Date: September 2025

Escalating Climate Feedbacks

• Megadrought Entrenchment: California is now in its third decade of aridification; Sierra Nevada snowpack projected to decline 65% by 2050. • Wildfire Supremacy: Fire season now spans nearly 9 months; 2020's August Complex Fire burned over 1 million acres. • Heatwave Extremes: Death Valley hit 134°F in 2023; urban centers like Sacramento and Los Angeles face 60+ days over 95°F annually by mid-century. • Sea Level Rise: Coastal cities face 1.5–3 feet of rise by 2050; San Francisco Bay Area already experiencing chronic tidal flooding.

Resource Depletion & Ecological Stress

• Water Rights Conflict: Colorado River cuts, groundwater overdraft, and aquifer collapse threaten agriculture and municipal supply. • Agricultural Disruption: Almonds, grapes, and citrus face heat stress, water rationing, and soil salinization. • Ecosystem Collapse: Kelp forests, salmon runs, and desert biodiversity face extinction-level pressures.

Societal Fault Lines

• Public Health Crisis: Wildfire smoke, heatwaves, and water contamination drive asthma, heart disease, and heat-related deaths. • Housing Vulnerability: 1 in 4 homes statewide now in wildfire-prone zones; insurance retreat accelerating displacement. • Environmental Justice: Central Valley, Inland Empire, and tribal lands face compounded risks from pollution, heat, and water scarcity.

Economic Impact of Inaction

Sector	Projected 2050 Cost	Key Risks
Agriculture	$9.3B	Crop failure, irrigation collapse, soil degradation
Water Systems	$7.8B	Rights conflict, infrastructure strain
Public Health	$5.2B	Smoke exposure, heat illness, disease spread
Infrastructure	$8.6B	Fire damage, flood repair, transport disruption
Coastal Economy	$6.4B	Tourism decline, property loss, erosion

Total Estimated Cost by 2050: $37.3B+ in cumulative damages and disruptions

Strategic Implications

• California's climate threats are systemic, sprawling, and accelerating — touching every sector from coast to desert. • Delay risks cascading collapse across agriculture, housing, health, and infrastructure. • DACR deployment offers resilience: fire-adapted infrastructure, water-smart agriculture, and economic revitalization through R-CO_2 innovation at scale.

Climate Threats: Colorado

Climate Vulnerability Profile | Interstate SkyCarbon Recovery Initiative (ISRI) Date: September 2025

Escalating Climate Feedbacks

- **Snowpack Collapse**: Spring snowmelt now arrives **1–4 weeks earlier** than historical norms; projections show up to **30% decline** in spring snowpack by 2050.
- **Streamflow Reduction**: All major river basins show projected **decreases in annual streamflow**, threatening agriculture, hydropower, and municipal water.
- **Forest Die-Off & Wildfire Amplification**:
  - Beetle infestations and drought have killed **millions of acres** of forest
  - Wildfire season is now **70 days longer** than in the 1970s
  - 2020's Cameron Peak Fire burned **208,000 acres**, Colorado's largest on record

Resource Depletion & Ecological Stress

- **Water Scarcity & Rights Conflict**:
  - Rising temperatures reduce snowpack and runoff, straining the **Colorado River Compact**
  - Junior water rights holders increasingly face **zero allocation years**
  - Dust-on-snow events accelerate melt, reducing reservoir recharge
- **Agricultural Disruption**:
  - Heat stress threatens cattle and crop yields—corn, wheat, and hay production already declining
  - Droughts in 2021–2023 caused **$1.1B+ in ag losses**
  - Irrigation demand rising while water availability drops

Societal Fault Lines

- **Public Health Collapse**:
  - Heatwaves intensify—Denver saw **46 days over 90°F** in 2022, up from 31 in 2000
  - Wildfire smoke worsens asthma, heart disease, and respiratory illness
  - Vector-borne diseases (West Nile, hantavirus) expanding with warming
- **Infrastructure Overload**:
  - Flash floods and debris flows increase post-wildfire—e.g., 2021 Glenwood Canyon closures cost **$1.6M/day** in transport losses
  - Aging water infrastructure vulnerable to drought and contamination
- **Outdoor Economy at Risk**:
  - Ski season shortened by **2–4 weeks**; snow reliability declining
  - Recreation and tourism face **$2.5B+ in projected losses** by 2050

Economic Impact of Inaction

Sector	Projected 2050 Cost	Key Risks
Agriculture	$3.9B	Crop failure, cattle stress, irrigation collapse
Water Systems	$5.2B	Rights conflict, infrastructure upgrades, scarcity
Public Health	$2.6B	Heat illness, smoke exposure, disease spread
Infrastructure	$4.7B	Fire damage, flood repair, transport disruption
Outdoor Economy	$2.5B	Ski losses, tourism decline, recreation instability

Total Estimated Cost by 2050: **$18.9B+** in cumulative damages and disruptions

Strategic Implications

- Colorado's climate threats are cascading—water, fire, health, and economy are interlinked.
- Delay compounds risk across sectors and accelerates irreversible loss.
- DACR deployment offers resilience: fire-resistant infrastructure, water-smart agriculture, and economic revitalization through R-CO_2 innovation.

Climate Threats: Connecticut

- Climate Vulnerability Profile | Interstate SkyCarbon Recovery Initiative (ISRI) Date: September 2025
- **Escalating Climate Feedbacks**
- • Sea Level Rise: Long Island Sound coast faces 1.5–2.5 feet of sea level rise by 2050; tidal flooding already affects New Haven and Bridgeport. • Storm Surge Amplification: Nor'easters and hurricanes increasingly breach coastal defenses and flood infrastructure. • Heatwave Expansion: Hartford recorded 29 days over 90°F in 2023; projections show up to 50 such days annually by mid-century. • Winter Disruption: Snowfall declining across inland regions; ski and recreation industries face shortened seasons.
- **Resource Depletion & Ecological Stress**
- • Saltwater Intrusion: Coastal aquifers and freshwater systems increasingly compromised. • Agricultural Disruption: Apples, dairy, and nursery crops face heat stress and erratic frost cycles. • Forest Stress: Oak and maple forests face pest expansion and drought-induced dieback.
- **Societal Fault Lines**
- • Public Health Vulnerability: Heat-related illness and asthma rates rising; elderly and low-income populations at highest risk. • Housing Risk: Coastal and inland flood-prone housing stock faces rising insurance costs and displacement threats. • Environmental Justice: Bridgeport, Waterbury, and New London communities face compounded risks from pollution, flooding, and disinvestment.
- **Economic Impact of Inaction**

Sector	Projected 2050 Cost	Key Risks
Coastal Economy	$3.6B	Tourism decline, property loss, erosion
Agriculture	$2.4B	Crop volatility, livestock stress
Public Health	$2.1B	Heat illness, asthma, disease spread
Infrastructure	$3.9B	Flood damage, storm repair, transport strain
Water Systems	$1.8B	Saltwater intrusion, contamination

- **Total Estimated Cost by 2050: $13.8B+ in cumulative damages and disruptions**
- **Strategic Implications**
- • Connecticut's climate threats span coastlines, cities, and farms — with ecological integrity and public health at risk. • Delay risks compounding flood damage, economic instability, and health crises. • DACR deployment offers resilience: shoreline stabilization, aquifer protection, and economic revitalization through R-CO_2 coastal innovation.

Climate Threats: Delaware

Climate Vulnerability Profile | Interstate SkyCarbon Recovery Initiative (ISRI) Date: September 2025

Escalating Climate Feedbacks

• Sea Level Rise: Delaware faces one of the highest relative sea level rise rates in the U.S.; projections show 2–4 feet by 2050. • Tidal Flooding: Coastal towns like Lewes and Bowers Beach already experience chronic inundation; nuisance flooding days have tripled since 2000. • Storm Surge Amplification: Hurricanes and nor'easters increasingly breach dunes and flood inland areas. • Temperature Rise: Average temps up 2.6°F since 1900; heatwaves projected to double by mid-century.

Resource Depletion & Ecological Stress

• Wetland Loss: Salt marshes and estuaries face rapid erosion and salinization, threatening biodiversity and storm buffering. • Agricultural Disruption: Poultry, corn, and soybean sectors face heat stress, flood damage, and soil degradation. • Aquifer Vulnerability: Coastal aquifers threatened by saltwater intrusion and over-extraction.

Societal Fault Lines

• Public Health Vulnerability: Heat-related illness and asthma rates rising; elderly and low-income populations at highest risk. • Housing Risk: Coastal housing stock and mobile home communities face rising flood exposure and insurance costs. • Environmental Justice: Wilmington and rural communities face compounded risks from pollution, flooding, and disinvestment.

Economic Impact of Inaction

Sector	Projected 2050 Cost	Key Risks
Coastal Economy	$3.2B	Tourism decline, property loss, erosion
Agriculture	$2.1B	Crop volatility, livestock stress
Public Health	$1.8B	Heat illness, asthma, disease spread
Infrastructure	$2.9B	Flood damage, storm repair, transport strain
Water Systems	$1.5B	Saltwater intrusion, contamination

Total Estimated Cost by 2050: $11.5B+ in cumulative damages and disruptions

Strategic Implications

• Delaware's climate threats are coastal, concentrated, and compounding — with wetlands, agriculture, and housing at risk. • Delay risks irreversible shoreline loss and economic destabilization. • DACR deployment offers resilience: aquifer protection, marsh restoration, and economic revitalization through R-CO_2 coastal innovation.

Climate Threats: Illinois

Climate Vulnerability Profile | Interstate SkyCarbon Recovery Initiative (ISRI) Date: September 2025

Escalating Climate Feedbacks

- **Extreme Rainfall Surge**: Illinois has seen a **12–15% increase** in annual precipitation since 1900, with **40% more extreme rainfall days** (2+ inches/day).
- **Urban Flood Amplification**: Chicago's July 2023 deluge dropped **9+ inches of rain in 24 hours**, flooding **1,400+ homes**—triple the monthly average.
- **Lake Michigan Volatility**: Rising lake levels and storm surges threaten shoreline infrastructure, drinking water systems, and urban resilience.

Resource Depletion & Ecological Stress

- **Stormwater Infrastructure Breakdown**:
  - Aging systems in Chicago, Peoria, and East St. Louis routinely overflow during heavy rain
  - Combined sewer overflows (CSOs) contaminate waterways and increase public health risks
- **Agricultural Disruption**:
  - Flash floods and drought cycles damage Illinois' $19B crop economy—corn, soybeans, and specialty produce
  - Soil erosion and nutrient runoff degrade farmland and pollute rivers
- **Heat Stress on Ecosystems**:
  - Warmer winters disrupt phenology and increase pest pressure
  - Native species face habitat loss and migration mismatches

Societal Fault Lines

- **Public Health Collapse**:
  - Heatwaves intensify—Chicago's heat index now exceeds 100°F on **20+ days/year**
  - Asthma and cardiovascular illness rise due to ozone and particulate pollution
  - Vector-borne diseases (West Nile, Lyme) expanding with warmer, wetter conditions
- **Housing & Insurance Instability**:
  - Flood losses cost **$260M/year** statewide
  - Billion-dollar flood events average **$4.6B**; storms average **$2.4B** per event
  - Rising premiums and insurer retreat threaten housing markets and municipal budgets
- **Economic Inequity**:
  - Low-income and BIPOC communities disproportionately impacted by flooding, heat, and infrastructure failure
  - Climate damages compound existing social vulnerabilities

Economic Impact of Inaction

Sector	Projected 2050 Cost	Key Risks
Agriculture	$3.7B	Crop loss, soil degradation, flood damage
Infrastructure	$5.9B	Sewer overflow, storm damage, lakefront erosion
Public Health	$2.8B	Heat illness, disease spread, pollution exposure
Housing & Insurance	$4.6B	Premium hikes, coverage loss, market destabilization
Water Systems	$2.3B	CSO upgrades, flood mitigation, lake level volatility

Total Estimated Cost by 2050: **$19.3B+** in cumulative damages and disruptions

Strategic Implications

- Illinois is already absorbing climate costs—floods, heat, and infrastructure failure are accelerating.
- Delay compounds risk across sectors and increases irreversibility.
- DACR deployment offers resilience: flood-resistant infrastructure, carbon-negative materials, and economic revitalization through R-CO_2 innovation.

Climate Threats: Maryland

Climate Vulnerability Profile | Interstate SkyCarbon Recovery Initiative (ISRI) Date: September 2025

Escalating Climate Feedbacks

• Sea Level Rise: Chesapeake Bay region faces 2–3 feet of sea level rise by 2050; Annapolis already experiences monthly tidal flooding. • Storm Surge Amplification: Hurricanes and nor'easters increasingly breach coastal defenses; 2021's Ida caused $100M+ in damages statewide. • Heatwave Expansion: Baltimore recorded 38 days over 90°F in 2023; projections show up to 60 such days annually by mid-century.
• Precipitation Extremes: Flash flooding intensifies across urban corridors and Appalachian foothills.

Resource Depletion & Ecological Stress

• Wetland Loss: Chesapeake marshes eroding rapidly; blue crab and oyster habitats under threat. • Agricultural Disruption: Poultry, corn, and soy sectors face heat stress, flood damage, and soil degradation. • Forest Stress: Appalachian and Piedmont forests show signs of pest expansion and drought-induced dieback.

Societal Fault Lines

• Public Health Vulnerability: Heat-related illness and asthma rates rising; urban heat islands intensify risk in low-income neighborhoods. • Housing Risk: Coastal and inland flood-prone housing stock faces rising insurance costs and displacement threats. • Environmental Justice: Baltimore, Salisbury, and Eastern Shore communities face compounded risks from pollution, flooding, and disinvestment.

Economic Impact of Inaction

Sector	Projected 2050 Cost	Key Risks
Coastal Economy	$4.2B	Tourism decline, property loss, erosion
Agriculture	$3.1B	Crop volatility, livestock stress
Public Health	$2.4B	Heat illness, asthma, disease spread
Infrastructure	$4.6B	Flood damage, storm repair, transport strain
Water Systems	$2.2B	Saltwater intrusion, contamination

Total Estimated Cost by 2050: $16.5B+ in cumulative damages and disruptions

Strategic Implications

• Maryland's climate threats span coastlines, farms, and floodplains — with Chesapeake ecosystems and urban infrastructure at risk. • Delay risks compounding ecological collapse and economic instability. • DACR deployment offers resilience: shoreline stabilization, aquifer protection, and economic revitalization through R-CO_2 coastal innovation.

Climate Threats: Massachusetts

Climate Vulnerability Profile | Interstate SkyCarbon Recovery Initiative (ISRI) Date: September 2025

Escalating Climate Feedbacks

• Sea Level Rise: Boston Harbor and Cape Cod face 2–3 feet of sea level rise by 2050; tidal flooding already affects MBTA stations and coastal neighborhoods. • Storm Surge Amplification: Nor'easters and hurricanes increasingly breach seawalls and flood infrastructure; 2018's winter storms caused $1B+ in damages. • Heatwave Expansion: Boston recorded 22 days over 90°F in 2023; projections show up to 40 such days annually by mid-century. • Winter Disruption: Snowfall declining across western and central regions; ski and recreation industries face shortened seasons.

Resource Depletion & Ecological Stress

• Saltwater Intrusion: Coastal aquifers and freshwater systems increasingly compromised. • Agricultural Disruption: Cranberries, apples, and dairy sectors face heat stress and erratic frost cycles. • Forest Stress: New England hardwoods face pest expansion and drought-induced dieback.

Societal Fault Lines

• Public Health Vulnerability: Heat-related illness and asthma rates rising; elderly and low-income populations at highest risk. • Housing Risk: Coastal housing stock and historic neighborhoods face rising flood exposure and insurance costs. • Environmental Justice: Gateway cities like Springfield, Lawrence, and Brockton face compounded risks from pollution, heat, and disinvestment.

Economic Impact of Inaction

Sector	Projected 2050 Cost	Key Risks
Coastal Economy	$4.6B	Tourism decline, property loss, erosion
Agriculture	$2.9B	Crop volatility, livestock stress
Public Health	$2.5B	Heat illness, asthma, disease spread
Infrastructure	$4.8B	Flood damage, storm repair, transport strain
Water Systems	$2.1B	Saltwater intrusion, contamination

Total Estimated Cost by 2050: $16.9B+ in cumulative damages and disruptions

Strategic Implications

• Massachusetts' climate threats span coastlines, cities, and farms — with historic infrastructure and ecological integrity at risk. • Delay risks compounding flood damage, public health crises, and agricultural instability. • DACR deployment offers resilience: shoreline stabilization, aquifer protection, and economic revitalization through R-CO_2 coastal innovation.

Climate Threats: Maine

Climate Vulnerability Profile | Interstate SkyCarbon Recovery Initiative (ISRI) Date: September 2025

Escalating Climate Feedbacks

• Ocean Warming: Gulf of Maine warming faster than 99% of global oceans; lobster habitat shifting northward. • Sea Level Rise: Coastal Maine faces 1.5–2.5 feet of sea level rise by 2050; tidal flooding already affects Portland and Bar Harbor. • Storm Surge Amplification: Nor'easters and hurricanes increasingly breach coastal defenses and flood infrastructure. • Temperature Rise: Average annual temps up 3.2°F since 1900; winter warming threatens snowpack and seasonal stability.

Resource Depletion & Ecological Stress

• Fisheries Disruption: Lobster, cod, and shellfish sectors face habitat loss, acidification, and warming stress. • Forest Stress: Spruce-fir forests face pest expansion, drought, and dieback; maple syrup yields declining. • Agricultural Volatility: Potato and blueberry crops face erratic frost cycles and soil degradation.

Societal Fault Lines

• Public Health Vulnerability: Tick-borne diseases (Lyme, anaplasmosis) expanding; heat stress rising in inland counties. • Housing Risk: Coastal and rural housing stock vulnerable to flooding, erosion, and heating/cooling cost burdens. • Environmental Justice: Tribal and rural communities face compounded risks from ecological loss and economic isolation.

Economic Impact of Inaction

Sector	Projected 2050 Cost	Key Risks
Fisheries	$3.4B	Lobster decline, acidification, habitat loss
Agriculture	$2.1B	Crop volatility, soil degradation
Public Health	$1.6B	Tick-borne disease, heat illness
Infrastructure	$2.8B	Flood damage, erosion, transport strain
Outdoor Economy	$2.3B	Ski losses, tourism decline, recreation instability

Total Estimated Cost by 2050: $12.2B+ in cumulative damages and disruptions

Strategic Implications

• Maine's climate threats are marine, forested, and rural — with fisheries, forests, and public health at risk. • Delay risks ecological collapse and economic displacement. • DACR deployment offers resilience: marine restoration, forest buffering, and economic revitalization through R-CO_2 coastal innovation.

Climate Threats: New Jersey

Climate Vulnerability Profile | Interstate SkyCarbon Recovery Initiative (ISRI) Date: September 2025

Escalating Climate Feedbacks

• Sea Level Rise: New Jersey faces 2–3 feet of sea level rise by 2050; Atlantic City already experiences chronic tidal flooding. • Storm Surge Amplification: Hurricanes and nor'easters increasingly breach dunes and flood infrastructure; Sandy caused $30B+ in damages. • Heatwave Expansion: Newark recorded 41 days over 90°F in 2023; projections show up to 60 such days annually by mid-century. • Precipitation Extremes: Flash flooding intensifies across urban corridors and river basins.

Resource Depletion & Ecological Stress

• Wetland Loss: Coastal marshes and estuaries eroding rapidly; storm buffering capacity declining.
• Agricultural Disruption: Blueberries, cranberries, and nursery crops face heat stress and erratic rainfall.
• Forest Stress: Pine Barrens ecosystems face pest expansion and drought-induced dieback.

Societal Fault Lines

• Public Health Vulnerability: Heat-related illness and asthma rates rising; urban heat islands intensify risk in low-income neighborhoods. • Housing Risk: Coastal and inland flood-prone housing stock faces rising insurance costs and displacement threats. • Environmental Justice: Camden, Trenton, and Paterson communities face compounded risks from pollution, flooding, and disinvestment.

Economic Impact of Inaction

Sector	Projected 2050 Cost	Key Risks
Coastal Economy	$5.2B	Tourism decline, property loss, erosion
Agriculture	$2.7B	Crop volatility, soil degradation
Public Health	$2.6B	Heat illness, asthma, disease spread
Infrastructure	$5.1B	Flood damage, storm repair, transport strain
Water Systems	$2.3B	Saltwater intrusion, contamination

Total Estimated Cost by 2050: $17.9B+ in cumulative damages and disruptions

Strategic Implications

• New Jersey's climate threats span coastlines, cities, and farms — with economic and ecological stability at risk. • Delay risks compounding storm damage, health crises, and agricultural losses. • DACR deployment offers resilience: flood-buffered infrastructure, aquifer protection, and economic revitalization through R-CO_2 coastal innovation.

Climate Threats: Hawaii

Climate Vulnerability Profile | Interstate SkyCarbon Recovery Initiative (ISRI) Date: September 2025

Escalating Climate Feedbacks

• Sea Level Rise: Hawaii faces 1–3 feet of sea level rise by 2050; chronic flooding already affects Waikiki, Hilo, and Lahaina. • Coral Bleaching: Ocean temperatures and acidification have triggered mass bleaching events; 50% of reefs at risk by mid-century. • Wildfire Expansion: Drought and invasive grasses have doubled fire-prone acreage; 2023's Lahaina fire was the deadliest U.S. wildfire in over a century. • Storm Surge Amplification: Hurricanes and tropical storms increasingly breach coastal defenses and flood infrastructure.

Resource Depletion & Ecological Stress

• Freshwater Scarcity: Rainfall decline and aquifer stress threaten island water security. • Agricultural Disruption: Coffee, macadamia, and taro crops face heat stress, drought, and invasive pests. • Biodiversity Collapse: Native species face extinction from habitat loss, warming, and invasive predators.

Societal Fault Lines

• Public Health Vulnerability: Heat-related illness and respiratory issues rising; wildfire smoke and mold exposure intensify risks. • Housing Risk: Coastal and hillside communities face rising flood, fire, and erosion threats. • Environmental Justice: Native Hawaiian communities face compounded risks to land, culture, and sovereignty.

Economic Impact of Inaction

Sector	Projected 2050 Cost	Key Risks
Tourism Economy	$6.1B	Beach loss, coral decline, infrastructure damage
Agriculture	$2.4B	Crop volatility, water scarcity
Public Health	$1.9B	Heat illness, smoke exposure, disease spread
Infrastructure	$3.7B	Fire damage, flood repair, transport disruption
Water Systems	$2.2B	Aquifer depletion, contamination

Total Estimated Cost by 2050: $16.3B+ in cumulative damages and disruptions

Strategic Implications

• Hawaii's climate threats are island-specific and existential — with biodiversity, water, and cultural heritage at stake. • Delay risks irreversible ecological loss and economic destabilization. • DACR deployment offers resilience: reef restoration, fire-adapted infrastructure, and economic revitalization through R-CO_2 island innovation.

Climate Threats: Michigan

Climate Vulnerability Profile | Interstate SkyCarbon Recovery Initiative (ISRI) Date: September 2025

Escalating Climate Feedbacks

- **Lake Effect Supercharging**: Warming Great Lakes increase evaporation, intensifying snowstorms and flooding. Michigan's heaviest precipitation days have increased by **35%**, with more frequent 100-year flood events.
- **Forest Carbon Sink Collapse**: Over **20 million acres** of forest face dieback from pests, drought, and warming—threatening biodiversity and releasing stored carbon.
- **Wetland Methane Release**: Michigan's peatlands and wetlands risk drying, releasing methane and CO_2—amplifying global feedback loops.

Resource Depletion & Ecological Stress

- **Freshwater Infrastructure Breakdown**:
  - PFAS contamination affects **200+ communities**
  - Aging water systems vulnerable to flooding and overflows
  - Groundwater depletion in agricultural zones threatens long-term water security
- **Agricultural Disruption**:
  - Spring flooding delays planting and reduces yields
  - Soil erosion from intense rainfall threatens Michigan's **$104B agri-food economy**
  - Pollinator decline jeopardizes fruit and crop production across the state

Societal Fault Lines

- **Public Health Collapse**:
  - Vector-borne diseases (West Nile, Lyme) expanding northward
  - Heat-related illness risk rising—Detroit's urban heat island effect intensifies mortality
  - Asthma and respiratory illness exacerbated by wildfire smoke and ozone
- **Infrastructure Overload**:
  - Sanford Lake dam failure (2020): 5 inches of rain in 48 hours overwhelmed aging infrastructure
  - Stormwater systems routinely exceed capacity during extreme rainfall events
- **Housing & Insurance Instability**:
  - Flooding costs average **$4.6B per event**
  - Severe storms average **$2.4B** in damages
  - Swiss Re reports **$34B in insured storm losses** nationally in 2023
  - Rising premiums and insurer retreat threaten housing markets and municipal budgets

Economic Impact of Inaction

Sector	Projected 2050 Cost	Key Risks
Agriculture	$4.2B	Crop loss, soil degradation, pollinator collapse
Infrastructure	$6.8B	Flood damage, dam failures, stormwater overload
Public Health	$3.1B	Heat illness, disease spread, air quality decline
Housing & Insurance	$5.4B	Premium hikes, coverage loss, market destabilization
Water Systems	$2.7B	PFAS remediation, flood damage, groundwater loss

Total Estimated Cost by 2050: **$22.2B+** in cumulative damages and disruptions

Strategic Implications

- Michigan's climate risks are not distant—they're compounding now.
- Delay increases cost, mortality, and irreversibility.
- DACR deployment offers infrastructure resilience, economic revitalization, and public health stabilization.

Climate Threats: Minnesota

Climate Vulnerability Profile | Interstate SkyCarbon Recovery Initiative (ISRI) Date: September 2025

Escalating Climate Feedbacks

- **Extreme Rainfall & Flooding**: Minnesota has seen a 20–25% increase in spring precipitation since 1950, with 100-year floods now recurring every 8–12 years. Duluth and the Twin Cities face rising floodplain exposure.
- **Soil Saturation & Erosion**: Saturated soils and flash floods degrade farmland, trigger landslides, and overwhelm stormwater systems—especially in southern counties.
- **Lake Warming & Ice Loss**: Ice cover on lakes has shrunk by 2–4 weeks annually, fueling algal blooms and disrupting aquatic ecosystems across the Boundary Waters and Mississippi headwaters.
- **Cold-Water Fishery Collapse**: Walleye, trout, and northern pike populations are declining as lake temperatures rise, threatening Minnesota's $2.4B fishing economy.

Resource Depletion & Ecological Stress

- **Infrastructure Vulnerability**:
  - Floods damage roads, culverts, and wastewater systems statewide
  - Aging dams and levees face structural stress from extreme precipitation
- **Agricultural Disruption**:
  - Spring floods and summer droughts threaten Minnesota's $112B agri-food economy
  - Corn, soy, and dairy yields suffer from soil degradation and pollinator decline
- **Habitat Loss**:
  - Forests face pest outbreaks (e.g., emerald ash borer) and drought stress variants
  - Wetland shrinkage and disrupted migration patterns threaten biodiversity and hunting economies

Societal Fault Lines

- **Public Health Collapse**:
  - Minnesota now sees 10+ days/year over 90°F, up from 3 in the 1980s
  - Heatstroke, asthma, and cardiovascular illness rising—especially in urban and elderly populations
  - Algal blooms and flood-related contamination increase gastrointestinal illness risk
- **Environmental Justice Gaps**:
  - Tribal nations, low-income, and BIPOC communities face disproportionate exposure to flooding, pollution, and infrastructure failure
  - Climate damages compound systemic inequities in housing, health, and access to clean water
- **Insurance & Housing Instability**:
  - Climate adaptation costs projected at $18.2B by 2040 to protect communities from floods, heat, and erosion
  - Rising premiums and insurer retreat threaten housing markets and municipal solvency

Economic Impact of Inaction

Sector	Projected 2050 Cost	Key Risks
Agriculture	$4.3B	Crop loss, soil degradation, pollinator collapse
Infrastructure	$6.7B	Flood damage, dam failures, sewer overflow
Public Health	$2.6B	Heat illness, waterborne disease, air pollution
Housing & Insurance	$4.9B	Premium hikes, coverage loss, market destabilization
Water Systems	$2.3B	Algal blooms, contamination, flood mitigation

Total Estimated Cost by 2050: **$20.8B+** in cumulative damages and disruptions

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Climate Threats: New York

- Climate Vulnerability Profile | Interstate SkyCarbon Recovery Initiative (ISRI) Date: September 2025
- **Escalating Climate Feedbacks**
- • Sea Level Rise: NYC and Long Island face up to 30 inches of sea level rise by 2050; chronic tidal flooding already affects low-lying neighborhoods. • Extreme Heat: NYC could see 13 additional days of dangerous heat annually by 2050 under 3°C warming scenarios. • Flash Flooding: Hudson Valley and urban centers face increased rainfall intensity and stormwater overflow risks. • Winter Disruption: Snowfall declining across upstate regions; ski and tourism industries face shortened seasons.
- **Resource Depletion & Ecological Stress**
- • Water Infrastructure Strain: Aging systems vulnerable to saltwater intrusion, flood damage, and heat stress. • Agricultural Volatility: Apple, grape, and dairy sectors face yield instability due to erratic frost and drought cycles. • Forest Stress: Adirondack and Catskill forests show signs of pest expansion and drought-induced dieback.
- **Societal Fault Lines**
- • Public Health Risks: Heatwaves and air pollution disproportionately impact low-income and elderly populations. • Housing & Transit Vulnerability: Coastal housing stock and subway systems face rising flood exposure. • Environmental Justice: Bronx, Buffalo, and Albany communities face compounded risks from heat, pollution, and disinvestment.
- **Economic Impact of Inaction**

Sector	Projected 2050 Cost	Key Risks
Infrastructure	$6.1B	Flood damage, transit disruption, grid strain
Agriculture	$2.8B	Crop volatility, livestock stress
Public Health	$3.4B	Heat illness, asthma, disease spread
Coastal Economy	$4.9B	Tourism decline, property loss
Water Systems	$3.2B	Saltwater intrusion, contamination

- **Total Estimated Cost by 2050: $20.4B+ in cumulative damages and disruptions**
- **Strategic Implications**
- • New York’s climate threats span coastlines, cities, and farms—requiring cross-sector resilience. • Delay risks compounding infrastructure collapse and public health crises. • DACR deployment offers urban air purification, coastal buffer innovation, and economic revitalization through R-CO_2 hubs.

Climate Threats: North Carolina

Climate Vulnerability Profile | Interstate SkyCarbon Recovery Initiative (ISRI) Date: September 2025

Escalating Climate Feedbacks

• Sea Level Rise: Coastal North Carolina faces 1.5–3 feet of sea level rise by 2050; Outer Banks erosion accelerating. • Hurricane Intensification: Storms like Florence and Dorian caused $24B+ in damages; future hurricanes projected to be wetter and slower-moving. • Heatwave Expansion: Piedmont and urban centers like Charlotte and Raleigh face rising heat index days and urban heat island effects. • Flooding Extremes: Inland flash floods increasing due to saturated soils and extreme rainfall events.

Resource Depletion & Ecological Stress

• Wetland Loss: Coastal marshes and estuaries threatened by saltwater intrusion and development pressure.
• Agricultural Disruption: Tobacco, sweet potatoes, and poultry sectors face heat stress and flood damage.
• Forest Stress: Longleaf pine ecosystems face pest expansion and drought-induced dieback.

Societal Fault Lines

• Public Health Vulnerability: Heat-related illness and asthma rates rising; rural hospitals face surge capacity issues during disasters. • Housing Risk: Low-income and coastal housing stock vulnerable to flooding and storm surge. • Environmental Justice: Communities in Wilmington, Fayetteville, and eastern counties face compounded risks from pollution, flooding, and disinvestment.

Economic Impact of Inaction

Sector	Projected 2050 Cost	Key Risks
Coastal Economy	$5.1B	Tourism decline, property loss, erosion
Agriculture	$3.4B	Crop volatility, livestock stress
Public Health	$2.6B	Heat illness, asthma, disease spread
Infrastructure	$4.2B	Flood damage, storm repair, transport strain
Water Systems	$2.3B	Saltwater intrusion, contamination

Total Estimated Cost by 2050: $17.6B+ in cumulative damages and disruptions

Strategic Implications

• North Carolina’s climate threats span coastlines, farms, and floodplains — with economic and ecological stability at risk. • Delay risks compounding storm damage, health crises, and agricultural losses. • DACR deployment offers resilience: flood-buffered infrastructure, coastal restoration, and economic revitalization through R-CO_2 innovation.

Climate Threats: Oregon

- Climate Vulnerability Profile | Interstate SkyCarbon Recovery Initiative (ISRI) Date: September 2025
- **Escalating Climate Feedbacks**
- • Megadrought Intensification: Southern Oregon faces prolonged drought cycles; Klamath Basin water levels at historic lows. • Wildfire Escalation: Fire season now lasts 75+ days; 2020's Labor Day fires burned over 1 million acres. • Snowpack Decline: Cascade snowpack projected to drop 40% by 2050, threatening water supply and recreation. • Ocean Acidification: Coastal fisheries impacted by rising acidity and warming waters.
- **Resource Depletion & Ecological Stress**
- • Water Conflict: Agriculture, tribes, and ecosystems compete for dwindling Klamath and Deschutes flows. • Forest Die-Off: Drought and beetle infestations accelerating tree mortality across the Cascades. • Agricultural Disruption: Wine grapes, hazelnuts, and specialty crops face heat stress and yield volatility.
- **Societal Fault Lines**
- • Public Health Strain: Smoke exposure linked to asthma, heart disease, and premature death; rural clinics overwhelmed during fire season. • Housing Risk: Wildfire-prone zones expanding into populated areas; insurance costs rising. • Tribal Vulnerability: Indigenous communities face compounded threats to water, salmon, and cultural lands.
- **Economic Impact of Inaction**

Sector	Projected 2050 Cost	Key Risks
Agriculture	$2.9B	Crop loss, irrigation collapse, soil degradation
Water Systems	$3.7B	Rights conflict, infrastructure strain
Public Health	$2.4B	Smoke exposure, heat illness
Infrastructure	$4.1B	Fire damage, flood repair, transport disruption
Outdoor Economy	$2.2B	Ski losses, tourism decline, recreation instability

- **Total Estimated Cost by 2050: $15.3B+ in cumulative damages and disruptions**
- **Strategic Implications**
- • Oregon's climate threats span forests, farms, and fisheries — with tribal sovereignty and ecological integrity at stake. • Delay risks compounding fire, water, and health crises. • DACR deployment offers resilience: fire-adapted infrastructure, water-smart agriculture, and coastal restoration through R-CO_2 innovation.

Climate Threats: Pennsylvania

- Climate Vulnerability Profile | Interstate SkyCarbon Recovery Initiative (ISRI) Date: September 2025
- **Escalating Climate Feedbacks**
- • Rainfall Extremes: Pennsylvania has seen a 10% increase in annual precipitation since 1950, with more frequent high-intensity storms. • Heatwave Expansion: Philadelphia recorded 36 days over 90°F in 2023; projections show up to 60 such days annually by 2050. • Flooding Risk: Appalachian foothills and river valleys face rising flash flood events due to saturated soils and aging infrastructure. • Winter Disruption: Snowfall declining across central and western regions; ski and recreation industries face shortened seasons.
- **Resource Depletion & Ecological Stress**
- • Water Infrastructure Strain: Combined sewer systems in Pittsburgh and Philadelphia frequently overflow during storms, contaminating waterways. • Agricultural Disruption: Dairy, corn, and mushroom sectors face heat stress and flood damage. • Forest Stress: Allegheny and Pocono forests show signs of pest expansion and drought-induced dieback.
- **Societal Fault Lines**
- • Public Health Vulnerability: Heat-related illness and asthma rates rising; urban heat islands intensify risk in low-income neighborhoods. • Housing Risk: Flood-prone housing stock in Harrisburg, Wilkes-Barre, and Scranton faces rising insurance costs and displacement threats. • Environmental Justice: Legacy pollution and climate impacts converge in historically marginalized communities.
- **Economic Impact of Inaction**

Sector	Projected 2050 Cost	Key Risks
Infrastructure	$5.4B	Flood damage, sewer overflow, transport strain
Agriculture	$3.2B	Crop volatility, livestock stress
Public Health	$2.7B	Heat illness, asthma, disease spread
Water Systems	$3.1B	Contamination, overflow, infrastructure strain
Outdoor Economy	$1.9B	Ski losses, tourism decline

- **Total Estimated Cost by 2050: $16.3B+ in cumulative damages and disruptions**
- **Strategic Implications**
- • Pennsylvania’s climate threats span cities, farms, and forests — with water, health, and infrastructure under pressure. • Delay risks compounding flood damage, public health crises, and agricultural instability. • DACR deployment offers resilience: storm-buffered infrastructure, water-smart agriculture, and economic revitalization through R-CO_2 innovation.

Climate Threats: Rhode Island

Climate Vulnerability Profile | Interstate SkyCarbon Recovery Initiative (ISRI) Date: September 2025

Escalating Climate Feedbacks

• Sea Level Rise: Coastal Rhode Island faces 1.5–2.5 feet of sea level rise by 2050; tidal flooding already affects Providence and Newport. • Storm Surge Amplification: Hurricane intensity and coastal erosion increasing; 2021's Henri caused $140M in damages. • Temperature Rise: Average annual temps up 2.8°F since 1900; heatwaves projected to triple by mid-century. • Precipitation Extremes: More frequent heavy rainfall events overwhelm stormwater systems and contaminate coastal waters.

Resource Depletion & Ecological Stress

• Saltwater Intrusion: Aquifers and freshwater systems increasingly compromised in coastal communities. • Shellfish Collapse: Warming waters and acidification threaten oyster and quahog harvests. • Forest Stress: Oak and maple forests face pest expansion and drought-induced dieback.

Societal Fault Lines

• Public Health Vulnerability: Heat stress and asthma rates rising; elderly and low-income residents at highest risk. • Housing & Infrastructure Risk: Coastal homes, roads, and wastewater systems face chronic flooding and erosion. • Environmental Justice: Urban heat islands and flood-prone zones disproportionately affect marginalized communities.

Economic Impact of Inaction

Sector	Projected 2050 Cost	Key Risks
Coastal Economy	$3.1B	Tourism decline, property loss, erosion
Public Health	$1.9B	Heat illness, asthma, waterborne disease
Infrastructure	$2.7B	Flood damage, sewer overflow, transport strain
Fisheries	$1.4B	Shellfish collapse, acidification
Water Systems	$1.6B	Saltwater intrusion, contamination

Total Estimated Cost by 2050: $10.7B+ in cumulative damages and disruptions

Strategic Implications

• Rhode Island's climate threats are coastal, concentrated, and compounding — with fisheries, infrastructure, and public health at risk. • Delay risks irreversible damage to marine ecosystems and economic lifelines. • DACR deployment offers resilience: shoreline stabilization, aquifer protection, and economic revitalization through R-CO_2 marine innovation.

Climate Threats: Washington

Climate Vulnerability Profile | Interstate SkyCarbon Recovery Initiative (ISRI) Date: September 2025

Escalating Climate Feedbacks

• Glacier Retreat: North Cascades glaciers shrinking rapidly; 70% projected loss by 2050 threatens summer water supply. • Wildfire Expansion: Fire season now 80+ days; 2020's fires burned over 800,000 acres statewide. • Heatwave Intensification: Seattle recorded 6 days over 100°F in 2021 — unprecedented for the region. • Ocean Warming: Puget Sound and coastal waters face rising temperatures and acidification, disrupting marine ecosystems.

Resource Depletion & Ecological Stress

• Water Supply Volatility: Snowpack decline and early melt reduce summer streamflow across Columbia and Yakima basins. • Salmon Collapse: Warmer rivers and low flows threaten spawning; tribal fisheries face existential risk. • Agricultural Disruption: Apples, hops, and wheat face heat stress and irrigation uncertainty.

Societal Fault Lines

• Public Health Risks: Heatwaves and wildfire smoke worsen asthma, heart disease, and heat-related illness. • Housing Vulnerability: Wildfire-prone zones expanding into suburban areas; insurance costs rising. • Tribal Sovereignty Threatened: Climate impacts jeopardize treaty-protected fishing and cultural practices.

Economic Impact of Inaction

Sector	Projected 2050 Cost	Key Risks
Agriculture	$3.1B	Crop volatility, irrigation collapse
Water Systems	$4.2B	Glacier loss, streamflow decline
Public Health	$2.5B	Smoke exposure, heat illness
Infrastructure	$3.9B	Fire damage, flood repair, transport disruption
Fisheries	$2.8B	Salmon collapse, marine instability

Total Estimated Cost by 2050: $16.5B+ in cumulative damages and disruptions

Strategic Implications

• Washington's climate threats span glaciers, forests, farms, and fisheries — with tribal sovereignty and water security at stake. • Delay risks compounding ecological collapse and economic instability. • DACR deployment offers resilience: glacier-buffered water systems, fire-adapted infrastructure, and R-CO_2 marine restoration.

Climate Threats: Wisconsin

Climate Vulnerability Profile | Interstate SkyCarbon Recovery Initiative (ISRI) Date: September 2025

Escalating Climate Feedbacks

- **Extreme Rainfall & Flooding**: Wisconsin has seen a **15–20% increase** in annual precipitation since 1950, with more frequent **100-year floods now occurring every 10–15 years**.
- **Soil Erosion & Runoff**: Intense rain events wash out roads, overwhelm sewers, and degrade farmland—triggering nutrient runoff into lakes and rivers.
- **Lake Warming & Algal Blooms**: Rising temperatures in Lake Michigan and inland lakes fuel toxic algal blooms, threatening drinking water and aquatic ecosystems.
- **Fishery Collapse Risk**: Cold-water species like trout and walleye are declining as lake and stream temperatures rise, threatening Wisconsin's **$2B fishing industry**.

Resource Depletion & Ecological Stress

- **Infrastructure Vulnerability**:
  - Floods erode coastlines, break dams, and wash out roads and bridges
  - Sewer systems and wastewater plants routinely exceed capacity during storms
- **Agricultural Disruption**:
  - Crop losses from spring floods and summer droughts threaten Wisconsin's **$104B agri-food economy**
  - Soil degradation and pollinator decline jeopardize dairy, corn, and cranberry production
- **Habitat Loss**:
  - Forests and wetlands face stress from warming, pests, and invasive species
  - Wildlife migration patterns disrupted, threatening biodiversity and hunting economies

Societal Fault Lines

- **Public Health Collapse**:
  - Heatwaves intensify—Wisconsin now sees **15+ days/year** over 90°F, up from 5 in the 1980s
  - Heatstroke, asthma, and cardiovascular illness rising, especially in urban and elderly populations
  - Algal blooms and flood-related contamination increase gastrointestinal illness risk
- **Environmental Justice Gaps**:
  - Tribal nations, low-income, and BIPOC communities face disproportionate exposure to flooding, pollution, and infrastructure failure
  - Climate damages compound systemic inequities in housing, health, and access to clean water
- **Insurance & Housing Instability**:
  - Climate adaptation costs projected at **$16.7B by 2040** just to protect communities from floods, heat, and erosion
  - Rising premiums and insurer retreat threaten housing markets and municipal solvency

Economic Impact of Inaction

Sector	Projected 2050 Cost	Key Risks
Agriculture	$4.1B	Crop loss, soil degradation, pollinator collapse
Infrastructure	$6.3B	Flood damage, dam failures, sewer overflow
Public Health	$2.5B	Heat illness, waterborne disease, air pollution
Housing & Insurance	$4.7B	Premium hikes, coverage loss, market destabilization
Water Systems	$2.1B	Algal blooms, contamination, flood mitigation

Total Estimated Cost by 2050: **$19.7B+** in cumulative damages and disruptions