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Climate Change in Colorado: Part 1 – The Biden Administration's Template

This is the first of a four-part series dealing with climate change in Colorado. Following a summary of recent scientific studies and reports focused on climate change worldwide and in the U.S., this first blog will address the Biden Administration's Executive Orders and recent federal legislation that establish federal policy.

The Climate Crisis – 2023 Warmest Year on Record

The State of the Global Climate 2023 report prepared by the World Meteorological Organization (WMO)[1] confirmed that 2023 was the warmest year on record. The global average near-surface temperature was 1.45 ± 0.12 °C above the pre-industrial baseline; the warmest 10-year period on record. Other highlights (perhaps "lowlights" is more appropriate) of the report include the following.

1. Concentrations of the three main greenhouse gases – carbon dioxide, methane, and nitrous oxide – reached record-high observed levels in 2022.
2. Real-time data show that levels continued to increase in 2023.
3. Global mean sea level reached a record high. The rate of sea-level rise in the past 10 years (2014-2023) has more than doubled since the first decade of the satellite record (1993-2002).
4. Antarctic sea-ice extent reached an absolute record low in February. The annual maximum extent was about million km2 below the previous record low maximum.
5. Preliminary data from the global set of reference glaciers for the hydrological year 2022-2023 show they experienced the largest loss of ice on record (1950-

2023), driven by extremely negative mass balance in both western North America and Europe. Glaciers in Switzerland have lost about 10 percent of their remaining volume in the past two years.

6. Extreme weather continued to lead to severe socioeconomic impacts. Extreme heat affected many parts of the world. Wildfires in Canada, Europe, and the U.S.'s Hawaii led to loss of life, the destruction of homes, and large-scale air pollution.
7. Flooding associated with extreme rainfall from Mediterranean Cyclone Daniel affected Greece, Bulgaria, Turkey, and Libya, with particularly heavy loss of life in Libya.
8. Food security, population displacement, and impacts on vulnerable populations continued to be of mounting concern in 2023, with weather and climate hazards exacerbating the situation in many parts of the world.

The Key Greenhouse Gases

On the global scale, the U.S. Environmental Protection Agency (EPA) has described in its overview – the key greenhouse gases emitted by human activities:

- Carbon dioxide (CO_2): Fossil fuel use is the primary source of CO_2. CO_2 can also be emitted from the landscape through deforestation, land clearance for agriculture or development, and degradation of soils. Likewise, land management can also remove additional CO_2 from the atmosphere through reforestation, improvement of soil health, and other activities.
- Methane (CH_4): Agricultural activities, waste management, energy production and use, and biomass burning all contribute to CH_4
- Nitrous oxide (N_2O): Agricultural activities, such as fertilizer use, are the primary source of N_2O emissions. Chemical production and fossil fuel combustion also generates N_2
- Fluorinated gases (F-gases): Industrial processes, refrigeration, and the use of a variety of consumer products contribute to emissions of F-gases, which include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

In its annual Inventory of U.S. Greenhouse Gas Emissions and Sinks the EPA tracks U.S. greenhouse gas emissions and sinks by source, economic sector, and greenhouse

gas going back to 1990. The inventory provides a comprehensive accounting of total greenhouse gas emissions for all man-made sources in the U.S., including carbon dioxide removal from the atmosphere by "sinks," (*e.g.,* through the uptake of carbon and storage in forests, vegetation, and soils) from management of lands in their current use or as lands are converted to other uses. The gases covered by the inventory include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride.

The U.S. Is Number Two in the Top Three GHG Emitters – But Number One Per Capita

The World Resources Institute provides an interactive chart showing changes in the emissions from the top 10 emitters in the world. The top three GHG emitters – China, the U.S., and India – contribute 42.6 percent total emissions, while the bottom 100 countries only account for only 2.9 percent.

While India ranks high among emitters, when one identifies per capita GHG emissions, India (with a population of over 1.4 billion) ranks significantly lower than the other top 10 emitters. Collectively, this group of 10 nations account for over two-thirds of global GHG emissions.

With only one of many GHGs as its focus, the International Energy Agency (IEA) prepared the following chart that shows the total CO2 emissions on a per capita basis for the years 2000-2023 demonstrating that the U.S. (with, for example, less than 25 percent of the population of India) far outpaces other emitters on a per-capita basis.

The United Nations Call to Action

The United Nations Secretary-General has called on national governments to prepare new economy-wide national climate action plans to tackle the climate emergency stating:

1. The transition to renewable energies, to drastically reduce global greenhouse gas emissions, remains at the heart of the UN agenda in 2024.

2. In addition to the next UN Climate Change Conference, COP29, which will take place November 11-22 2024, in Baku, Azerbaijan, the reports of the Intergovernmental Panel on Climate Change (IPCC), the WMO, and the UN Environment Programme (UNEP) will continue to set the benchmark.
3. The UN is also focusing on financing green transitions for developing countries, such as through the proposed Climate Solidarity Pact proposed by the Secretary General that urges all major emitters to make extra efforts to cut emissions and for wealthier countries to support emerging economies and wealthier countries to mobilize financial and technical resources to support emerging economies in a common effort to keep the goal of 1.5°C alive.

The U.S. Response to the Secretary General's Call to Action

Recent federal government initiatives are grounded on a series of executive orders issued by President Biden and related actions initiated by his administration since his inauguration and significant federal legislation signed into law thereafter.

On January 20, 2021, shortly after taking office, President Biden signed an executive order titled Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis. In addition to establishing his administration's policy to reduce greenhouse gas emissions and to bolster resilience to the impacts of climate change, the administration issued a list of actions that relevant federal agencies should consider suspending, revising, or rescinding to further the policy priorities articulated in the order including, among others, the outgoing administration's rollback of the clean car standards, actions to weaken energy efficiency standards, and the decision to permit logging in the Tongass National Fores.

One year later, on January 27, 2021, President Biden signed the Executive Order on Tackling the Climate Crisis at Home and Abroad. The order (1) stated that climate change would be a priority in policy making across the federal government; (2) established several new offices; and (3) instructed agency heads to take steps towards developing climate policies.

On February 24, 2021, President Biden signed an executive order titled America's Supply Chains calling for a review of the state of domestic supplies of batteries, key

battery minerals, and other equipment used in electric cars, in addition to minerals used in wind turbines and other renewable energy facilities.

On May 20, 2021, the president signed an Executive Order on Climate-Related Financial Risk, which, among other things, ordered the Director of the National Economic Council and the National Climate Advisor to develop a government-wide strategy for (1) measuring, assessing mitigating and disclosing climate-related financial risks to government programs; (2) financing needs associated with achieving net-zero greenhouse gas emissions by 2050; and (3) identifying areas in which private and public investments can complement each other to meet those needs.

On October 14, 2021, the White House published a report titled A Roadmap to Build a Climate Resilient Economy, which details the administration's climate risk accountability framework and its implementation strategy to address climate-related financial risk across all federal agencies.

On August 5, 2021, the White House issued an Executive Order on Strengthening American Leadership in Clean Cars and Trucks setting a goal for 50 percent of all new passenger cars and light trucks sold in 2030 to be zero-emission vehicles and directing the EPA and National Highway Traffic Safety Administration to begin rule making related to motor vehicle emissions and corporate average fuel economy standards consistent with that goal. The order also directs the agencies to consider issuing standards for heavy-duty vehicles for model year 2030.

On September 9, 2021, the White House issued a fact sheet outlining a government-wide effort to cut aviation emissions by 20 percent by 2030.

On November 15, 2021, President Biden signed into law the Infrastructure Investment and Jobs Act, which provided $1.2 trillion in federal spending, a major portion of which addresses climate change.

On November 18, 2021, President Biden signed Executive Order 14052: Implementation of the Infrastructure Investment and Jobs Act, which contains implementation priorities for the Infrastructure Investment and Jobs Act, several of which are relevant to climate resilience and environmental justice:

- “Investing public dollars equitably, including through the Justice40 Initiative, which is a government-wide effort toward a goal that 40 percent of the overall benefits from federal investments in climate and clean energy flow to disadvantaged communities.”
- “Building infrastructure that is resilient and that helps combat the crisis of climate change.”

The order also creates an Infrastructure Implementation Task Force to coordinate effective implementation of the Infrastructure Investment and Jobs Act and other related significant infrastructure programs within the executive branch.

On December 8, 2021, President Biden signed his Executive Order on Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability, directing the federal government to use its procurement power to limit greenhouse gas emissions and to achieve five ambitious goals:

- 100 percent carbon pollution-free electricity (CFE) by 2030, at least half of which will be locally supplied clean energy to meet 24/7 demand.
- 100 percent zero-emission vehicle (ZEV) acquisitions by 2035, including 100 percent zero-emission light-duty vehicle acquisitions by 2027.
- Net-zero emissions from federal procurement no later than 2050, including a Buy Clean policy to promote use of construction materials with lower embodied emissions.
- A net-zero emissions building portfolio by 2045, including a 50 percent emissions reduction by 2032.
- Net-zero emissions from overall federal operations by 2050, including a 65 percent emissions reduction by 2030.

In addition to the five new commitments outlined above, the order also directed the federal government to orient its procurement and operations efforts in line with the following principles and goals:

- Achieving climate resilient infrastructure and operations;
- Building a climate- and sustainability-focused workforce;
- Advancing environmental justice and equity;

- Prioritizing the purchase of sustainable products, such as products without added perfluoroalkyl or polyfluoroalkyl substances (PFAS); and
- Accelerating progress through domestic and international partnerships.

On March 31, 2022, President Biden signed a memorandum pursuant to the Defense Production Act directing the Secretary of Defense to expand domestic production of various materials – such as lithium, nickel, cobalt, graphite, and manganese – required for the development of clean energy technology.

On April 22, 2022, President Biden signed an Executive Order on Strengthening the Nation's Forests, Communities, and Local Economies that includes measures to enhance the climate resiliency of the nation's forests, including through reforestation efforts. The executive order also directs federal agencies to study ways that nature-based solutions could be deployed to tackle climate change.

On May 11, 2022, the White House published a Permitting Action Plan to Rebuild America's Infrastructure, Accelerate the Clean Energy Transition, Revitalize Communities, and Create Jobs. Several portions of the action plan address climate-specific actions. The administration has organized sector-specific teams to address issues concerning offshore wind energy and transmission, onshore renewable energy and transmission, production and processing of critical minerals, transportation, and climate-smart infrastructure. Concerning environmental reviews, the Action Plan requires the Council on Environmental Quality to establish clear and consistent standards for assessing the climate change impacts of projects.

On August 16, 2022, President Biden signed the Inflation Reduction Act into law, marking the most significant Congressional action on clean energy and climate change in the nation's history.

As summarized by Congressional leadership and by the Environmental and Energy Study Institute:

The Inflation Reduction Act (IRA) will provide $369 billion to combat the climate crisis over the next 10 years and is expected to reduce carbon emissions by 40 percent by 2030 according to a joint statement released by Senate Majority Leader Chuck Schumer (D-N.Y.) and Senator Joe Manchin (D-W.Va.), who hammered out the

compromise. While the legislation includes provisions related to fossil fuel development, it will expand tax credits for clean energy and electric vehicles, boost energy efficiency, establish a national climate bank, support climate-smart agriculture, bolster production of sustainable aviation fuel, reduce air pollution at ports, and invest $60 billion to advance environmental justice priorities.

In January 2023, the administration published the second version of the Guidebook to the Inflation Reduction Act's Investments in Clean Energy and Climate Action that outlines the path for implementation of over two-dozen tax provisions, grants, loans, rebates, incentives, and other investments authorized by the act. This guidebook provides a program-by-program overview of the Inflation Reduction Act, including who is eligible to apply for funding and for what purposes.

One can find the most recent information on the Inflation Reduction Act at CleanEnergy.gov, which is updated as new funding announcements and program details become available.

On June 3, 2023, President Biden signed into law the Fiscal Responsibility Act of 2023 (FRA) that, in part, and for the first time, significantly amended the National Environmental Policy Act (NEPA).

The FRA amendments to NEPA:

- Codify that environmental impact statements should include discussion of reasonably foreseeable effects of a proposed action, reasonably foreseeable effects that cannot be avoided, and a reasonable range of alternatives to the proposed action. (Sec. 102(2)(C); 42 U.S.C. § 4332(2)(C));
- Clarify requirements for determining whether to prepare an environmental document and the appropriate level of NEPA review. (Sec. 106; 42 U.S.C. § 4336);
- Clarify the roles and responsibilities of lead agencies and cooperating agencies, including designation of such agencies. (Sec. 107(a); 42 U.S.C. § 4336a(a));
- Promote development of a single environmental document. (Sec. 107(b); 42 U.S.C. § 4336a(b));
- Set page limits and deadlines for environmental impact statements and environmental assessments. (Sec. 107(e) and (g); 42 U.S.C. § 4336a(e) and (g));

- Direct agencies to develop procedures for how, under Federal agency supervision, project sponsors may prepare environmental assessments and environmental impact statements. (Sec. 107(f); 42 U.S.C. § 4336a(f));
- Provide time lengths and circumstances for when agencies can rely on programmatic environmental documents without additional review. (Sec. 108; 42 U.S.C. § 4336b);
- Establish a process for Federal agencies to use another agency's categorical exclusions. (Sec. 109; 42 U.S.C. § 4336c);
- Require CEQ to conduct a study of online and digital technologies to help provide for efficient reviews and improve public accessibility and transparency. (Sec. 110; 42 U.S.C. § 4336d); and
- Define terms used in NEPA, including cooperating agency, environmental document, lead agency, major Federal action, participating Federal agency, programmatic environmental document, and special expertise. (Sec. 111; 42 U.S.C. § 4336e).

Among other things, part 2 of this blog series will discuss the new NEPA and climate change regulatory guidance issued on May 1, 2024, by the White House Council on Environmental Quality (CEQ) to implement the requirements of the FRA.

Next Steps

With six years left to reduce greenhouse gas emissions in the U.S. by 50-52 percent below 2005 levels by 2030, the U.S. government has established a series of major on-the-ground goals in multiple sectors, including electricity, transportation, buildings, industry, and agriculture, forestry and land use to meet that ambitious target. With the initiatives outlined above as prelude, the next installment of this series will focus on federal agencies' actions to implement federal policy, followed by an installment focused solely on legislative and regulatory actions at the state level, with a fourth segment addressing local initiatives in Colorado.

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[1] March 19, 2024