PANORAMIC

CLIMATE REGULATION

USA

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Climate Regulation

Contributing Editors

James M Auslander and Brook J Detterman

Beveridge & Diamond PC

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Contributors

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Beveridge & Diamond PC

Brook J Detterman bdetterman@bdlaw.com

MAIN CLIMATE REGULATIONS, POLICIES AND AUTHORITIES

International agreements

Do any international agreements or regulations on climate matters apply in your country?

The United States is a party to the Paris Agreement. The United States signed the Paris Agreement in April 2016 and later ratified it, committing, alongside nearly 200 other countries, to limit global warming to 1.5°C above pre-industrial levels. In June 2017, the Trump administration announced that the United States would pull out of the Paris Agreement, and the United States did briefly withdraw from the Paris Agreement on 4 November 2020; however, following the election of President Joe Biden, President Biden used executive authority to re-enter the Agreement, which took effect on 19 February 2021. In April 2021, the United States submitted a new 'Intended Nationally Determined Contribution' (NDC), committing to reduce economy-wide greenhouse gas (GHG) emissions by 50–52 per cent below 2005 levels in 2030. Whether the United States remains a party to the Paris Agreement may depend on the outcome of the upcoming US presidential election.

The United States is also a party to the Vienna Convention for the Protection of the Ozone Layer and a protocol to that treaty, the Montreal Protocol on Substances that Deplete the Ozone Layer, since its finalisation in 1987. Under the Montreal Protocol and Title VI of the US Clean Air Act (CAA), some ozone-depleting substances (ODS), such as chlorofluorocarbons, have now been phased out except for a small quantity for uses agreed upon as 'essential'. Hydrochlorofluorocarbons (HCFCs) are currently being phased down through incremental decreases in consumption and production, with a complete phase-out planned by 2030. On 15 October 2016, at the 28th Meeting of the Parties in Kigali, the parties agreed to amend the Montreal Protocol, expanding its scope to include certain hydrofluorocarbons (HFCs). The United States has now adopted the agreement. With a strong bipartisan alliance and support from both environmental groups and industry, the US Senate voted 69-27 to ratify the Kigali Amendment on 21 September 2022.

The Environmental Protection Agency (EPA) and the Federal Aviation Administration (FAA) traditionally have worked with the International Civil Aviation Organization (ICAO) to establish aircraft emissions standards. The United States participates in the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), to which the United States is committed under Annex 16, Volume IV of the Convention on International Civil Aviation, more commonly known as the Chicago Convention. Under CORSIA, all ICAO member states whose aircraft operators undertake international flights must develop a monitoring, reporting, and verification system for CO2 emissions from international flights subject to CORSIA. CORSIA eventually requires offsetting new emissions (above the baseline year of 2019) from covered international flights beginning in 2024, with a pilot phase from 2021–2023. In January 2021, EPA finalised CAA emission standards with domestic limits that mirror the ICAO's standards (86 Fed Reg 2,136 (11 January 2021)). EPA explained that aligning domestic standards with international standards would bring 'substantial benefits for future international cooperation' on aircraft emissions, which the agency deemed 'key for achieving worldwide emission reductions' (86 Fed Reg 2,144–45). Now that EPA has promulgated this rule, CAA section 232 requires the FAA to issue regulations enforcing and applying these standards when certifying engines for US aircraft manufacturers (87 Fed Reg 36,076 (June 15, 2022)).

On 11 November 2014, the United States struck a bilateral agreement with China, under which both nations seek to significantly reduce GHG emissions. On 17 April 2021, the Special Envoys from the United States and China released a joint statement after meeting to discuss the climate crisis. The US-China Joint Statement Addressing the ClimateCrisis details the two countries' commitment to cooperate in multilateral processes. Special Envoy John Kerry travelled to China for four days of climate talks in July 2023. As a result of these talks, the United States and China issued the Sunnylands Statement on Enhancing Cooperation to Address the Climate Crisis in November 2023. The Sunnylands Statement reaffirmed commitment to the Joint Statement and established the Working Group on Enhancing Climate Action in the 2020s, co-led by the two special envoys on climate change. The US–China relationship, however, is in a constant state of flux.

In June 2016, the United States, Mexico, and Canada announced a joint goal of achieving 50 per cent 'clean power' generation across all three countries and reducing methane emissions from the oil and gas sector by 40 per cent to 45 per cent by 2025. On 23 February 2021, the Biden administration released the Roadmap for a Renewed US-Canada Partnership, a statement in which the Biden administration and Canadian Prime Minister Trudeau set forth goals to accelerate climate ambitions. On 10 June 2022, the Biden administration released a joint statement on United States, Mexico and Canada cooperation, reaffirming their collective commitment to take action regarding the climate crisis. The 10th North American Leaders' Summit, held on 9-10 January 2023, further reaffirmed this goal: the Declaration of North America commits the three countries to both achieving their respective 2030 NDCs under the Paris Agreement and continuing to implement their 2021 joint commitments. The three countries also pledged to protect biodiversity in partnership with Indigenous Peoples, meeting the '30 by 30' target adopted at the UN Biodiversity Conference under the Convention on Biological Diversity (CBD) at COP 15. Note, however, that the United States is not a party to the CBD, although it actively participated in the COP 15 discussions.

Law stated - 23 August 2024

International regulations and national regulatory policies

How are the regulatory policies of your country affected by international regulations on climate matters?

Although the United States lacks a binding comprehensive policy to regulate GHG emissions at the national level, the United States has expressed its alignment with the Paris Agreement and committed to both achieving a 50–52 per cent reduction in GHG emissions by 2030 and reaching net-zero emissions by 2050. In January 2021, President Biden signed Executive Order 14008 on Tackling the Climate Crisis at Home and Abroad, which reaffirmed US commitment to a wide range of international groups and treaties addressing the climate crisis. These executive actions are currently leading to both regulatory changes and new legislative proposals aimed at further regulation of GHG emissions in the United States, as well as the creation of incentives for voluntary GHG emissions reductions and carbon sequestration. Additional regulation and legislation are focused on high-potency GHG emissions, transportation, and the energy sector in the short term, while incentive programmes are generally focused on the transportation sector, renewable energy and carbon sequestration. Separately, financial regulators in the United States are considering additional regulations related to GHG risks and disclosures and may take into account

parallel regulatory processes in the European Union and elsewhere as they develop new US standards.

In addition, the European Union's newly approved Carbon Border Adjustment Mechanism (CBAM), which took effect in October 2023, triggered trade discussions between the United States and the European Union. The CBAM imposes a fee on certain goods imported into the European Union, based on carbon intensity. In response, the United States has requested an exemption for its steel and aluminium exports; however, trade deals have effectively been postponed, and the Biden administration has extended partial tariff exemptions on EU-produced steel and aluminium until December 2025. The EU CBAM has spurred efforts in the United States to better quantify emissions from covered sectors, including legislative proposals to create a CBAM, and may spur further regulation under existing frameworks (such as the CAA).

Law stated - 23 August 2024

Main national regulatory policies

Outline recent government policy on climate matters.

Within hours of his inauguration on 20 January 2021, President Biden signed Executive Order 13990, 'Protecting Public Health and the Environment and Re storing Science to Tackle the Climate Crisis'. Among other things, that order required a review of actions taken under the prior Trump administration. Several states challenged Order 13990, including provisions aimed at reinstating use of the 'social cost of carbon' metrics in calculating the costs and benefits of federal agency decisions. The federal government now refers to the social cost of carbon as encompassing three different metrics, collectively referred to as the 'social cost of greenhouse gases' or 'SC-GHG'. Following a flurry of litigation, on 5 April 2023, the US Court of Appeals for the Fifth Circuit dismissed challenges to the Biden administration's continued use of SC-GHG estimates. In November 2023, in the context of a rule targeting methane emissions from the oil and gas sector, EPA issued a report, sharply increasing SCC metrics, and continues to weigh public comment on adjustments to the SC-GHG figures.

One week after gaining office, the Biden administration hosted 'Climate Day' at the White House, where President Biden described a 'government-wide' focus on climate change issues and signed Executive Order 14008, 'Tackling the Climate Crisis at Home and Abroad'. Louisiana and other states promptly challenged aspects of the Executive Order. Despite various challenges, the Biden administration's executive orders aimed at climate change generally remain in effect and continue to guide the administration's aggressive actions on climate change.

President Biden has taken other actions on climate change, such as assembling a team at the White House and at EPA with deep experience of climate change and GHG policy. In May 2021, President Biden issued an Executive Order on Climate-Related Financial Risk, which called for the development of a US government-wide climate risk strategy, published in October 2021. In addition to setting a 2030 GHG emissions reduction target under the Paris Agreement, President Biden has announced the objective of achieving net-zero GHG emissions for the United States by 2050, both of which are driving additional legislative proposals and regulatory actions under the Biden administration.

On 21 April 2023, President Biden also issued Executive Order 14096, 'Revitalizing Our Nation's Commitment to Environmental Justice for All', in which climate justice considerations feature prominently. The order expressly orders federal agencies to consider all impacts of their actions, 'including those related to climate change', and to identify opportunities for 'climate mitigation, adaptation, and resilience'.

In the absence of national legislation broadly regulating GHG emissions, individual US states and federal agencies have historically implemented climate policy under pre-existing regulatory authority, primarily by promulgating regulations and implementing sector-based actions under the CAA and parallel state authorities. For example, EPA has promulgated regulations aimed at GHG reductions from various larger sources of GHG emissions, including: motor vehicles and other mobile sources, such as heavy-duty vehicles, aircraft and locomotives; large stationary sources under the Prevention of Significant Deterioration (PSD) and Title V operating permit programmes; methane emissions from the oil and gas sector and certain solid waste landfills; high-potency GHGs; and other sectors or emissions sources.

In recent years, EPA began to regulate HFCs through two CAA Title VI programmes: the refrigerant management programme under section 608 of the CAA and theSignificant New Alternatives Policy (SNAP) programme under section 612 of the CAA. The refrigerant management programme was extended to HFCs pursuant to a 2016 rule by EPA. Since that time, SNAP rules have seen various permutations and challenges, ultimately resulting in the vacature of some requirements. Several states promulgated replacement regulations, with California leading the charge to replace or bolster SNAP rules and impose even more stringent requirements.

In December 2020, Congress passed the American Innovation and Manufacturing Act (AIM Act), a law that impacts the regulation of HFCs in the United States in three significant ways:

- requiring EPA to promulgate a rule by September 2021 initiating an incremental phasedown on the production and import of HFCs by 85 per cent over the next 15 years;
- authorising EPA to promulgate new refrigerant management and leak repair regulations for HFCs; and
- authorising EPA to promulgate new technology transition regulations that restrict the use of HFCs in various applications to potentially replace and expand the vacated SNAP rules.

In May 2021, EPA published its first rule pursuant to the AIM Act to begin the phasedown of the manufacture and import of HFCs in 2022 through an allowance-based trading programme. Industry challenged the rule in court; however, on 20 June 2023, the Court of Appeals for the District of Columbia unanimously upheld EPA's authority to regulate HFC blends as part of its phasedown programme. At the same time, this decision vacated EPA's prohibition on single-use canisters, as well as certain cylinder tracking measures, which EPA claimed it had adopted in an effort to address smuggling activity. But although those provisions were vacated, EPA's broader authority to regulate HFC blends remains intact following the Fifth Circuit decision.

EPA has also received petitions from various environmental groups, states and industry groups to promulgate refrigerant management and technology transition rules under the AIM Act. The agency granted some of these petitions and is currently reviewing others. On 24 October 2023, EPA finalised a rule addressing the AIM Act's technology transition requirements (88 Fed Reg 73098). The rule would phase out the use of certain HFCs under the AIM Act while addressing issues raised by the petitions the EPA granted. On 19 October 2023, EPA published a proposed rule aimed at better management and reuse of existing HFCs. The comment period ended on 18 December 2023, and the rule is now under EPA review.

Law stated - 23 August 2024

Main national legislation

Identify the main national laws and regulations on climate matters.

In November 2021, Congress passed the the Infrastructure Investment and Jobs Act (IIJA), a trillion-dollar infrastructure bill that includes numerous provisions aimed at climate change, including additional funding for electric vehicles (EVs) and EV infrastructure, improvements to electricity grids, and other infrastructure improvements aimed at reducing GHG emissions. EPA has also pushed forward major climate rules, under its existing Clean Air Act authority, including a recent rule adopting new GHG emissions standards for passenger and commercial vehicles, power plants, and the oil and gas sector.

In addition, a US$370 billion climate and tax package, the Inflation Reduction Act (IRA), was enacted on 16 August 2022 and contains numerous climate change provisions. The IRA represents one of the most significant actions by the federal government on climate change. Among other things, the IRA contains the following measures aimed at bolstering GHG reductions in the United States:

- expansion of offshore leasing for wind energy, although with parallel provisions requiring oil and gas leases to be offered over large tracts of the outer continental shelf as a condition of making wind leases available;
- air emissions: the IRA includes major provisions aimed at reducing GHG emissions, such as HFC refrigerants;
- methane: the IRA substantially increases support for EPA's existing efforts to address methane emissions and also creates a new system of fees that would impose charges on owners of oil and gas infrastructure if methane emitted from that infrastructure exceeds specified thresholds;
- agriculture and forestry: the IRA includes several programmes aimed at reducing GHGs from agriculture, promoting soil and forestry-based carbon sequestration, and improving the climate resiliency of farms and forests;
- alternative fuels: the IRA contains substantially expanded federal support for biofuels, sustainable fuels, hydrogen as a fuel and sustainable aviation fuels; and
- manufacturing: the IRA provides support for decarbonisation of GHG-intensive industries through measures like energy efficiency, transition to low-carbon inputs and use of materials that capture large volumes of carbon during manufacturing.

The IRA also includes major revisions to the nation's system of tax credits for renewable energy production, carbon capture and sequestration, and advanced manufacturing. It will extend the existing system of investment tax credits and production tax credits, and it will maintain or increase tax credits available for projects that are built using labour that is paid prevailing wages with qualifying apprenticeship programmes. The IRA also creates several new tax credits, such as for renewable aviation fuels and clean hydrogen.

After 2025, the IRA also will phase out the existing system of renewable electricity tax credits in favour of a new technology-neutral system. On 29 May 2024, the US Department of the Treasury and the IRS proposed a rulemaking related to carbon-free electricity tax credits. This rule would allow 'qualified facilities' to benefit from the new technology-neutral clean electricity production tax credit (PTC) in section 45Y of the Tax Code and the clean electricity investment tax credit (ITC) in section 48E. These programmes will replace the current production tax credit and business energy investment tax credit. Qualified facilities eligible for the tax credits are electricity generation facilities placed in service after 31 December 2024 for which GHG emissions rates are zero, as determined through a lifecycle approach. The new tax credits would phase out either at the end of 2032 or when national electricity GHG emissions fall below 20 per cent of the 2022 level, whichever occurs later.

The IRA represents a major expansion of US climate policy. While some of the provisions within the IRA became effective immediately, many require implementation through agency rulemaking and other actions. As a result, it may be several years before the full impact of the IRA is apparent. Once fully implemented, measures included in the IRA will enable the United States to cut GHG emissions by 40 per cent below 2005 levels by 2030, a significant step towards achieving the US NDC of a 50 per cent reduction from 2005 by 2030.

Law stated - 23 August 2024

National regulatory authorities

Identify the national regulatory authorities responsible for climate regulation and its implementation and administration. Outline their areas of competence.

EPA is the primary national regulatory authority with responsibility for the regulation of GHG emissions. EPA's authority includes the promulgation and enforcement of CAA standards for GHG emissions for both mobile and stationary sources, GHG reporting programmes, adaptation to a changing climate, and protection of drinking water aquifers under the federal Safe Drinking Water Act with respect to underground injection of carbon dioxide and other materials.

The Council on Environmental Quality (CEQ) is charged with ensuring federal agencies comply with the National Environmental Policy Act (NEPA) in assessing the potential environmental impacts of major federal actions. Consideration of climate change impacts in NEPA analyses continues to be primarily guided by court decisions on agency rulemaking processes, land use planning documents, leasing decisions and individual project permitting decisions, most often in the energy or transportation contexts. These litigation outcomes have not been uniform, but generally trend toward requiring greater consideration of GHG emission impacts, including downstream effects further removed from the immediate federal action. The Biden administration undertook a two-step process to unwind certain

Trump-era NEPA rules and strengthen GHG requirements under NEPA. In April 2022, CEQ restored some of the provisions modified under the Trump administration, including changes to streamline the NEPA review process. In May 2024, CEQ made broader changes to NEPA in Phase 2 of its rulemaking, including requiring federal agencies to consider 'reasonably foreseeable' climate change and environmental justice impacts, and adding new processes to consider tribal impacts and communities. These new regulations codify GHG-specific requirements previously only included in guidance documents and executive orders, and will impose a range of requirements on agencies approving projects or permits subject to NEPA, including quantification of GHG emissions, identifying climate-related effects, and considering possible conflicts between an action and federal, regional, state, tribal or local climate change objectives. With respect to environmental justice, agencies must now consider 'the cumulative impacts of environmental and other burdens'. These significant reforms to NEPA have been met with resistance, with 20 US states challenging the Phase 2 rule in court. That litigation remains pending as at the time of writing.

The CEQ also regulates and maintains the Climate and Economic Justice Screening Tool, which helps track communities in the United States considered disadvantaged because they live in areas that experience significant burdens, including ones related to climate change. President Biden has established a President's Council of Advisors on Science and Technology and a Task Force on Scientific Integrity. The Environmental Justice Subcommittee of the National Science and Technology Council, created by President Biden's April 2023 Executive Order 14096, works with the CEQ and develops biennial research plans to promote environmental and climate justice, including cumulative impacts and anticipated climate change impacts.

Additional federal agencies are also responsible for programmes and regulations related to climate change, such as the Department of Energy; Department of Agriculture (USDA); Department of the Interior; Department of State; Department of Commerce; and National Aeronautics and Space Administration (NASA). Additionally, the Department of the Treasury and the Internal Revenue Service play an increasingly important role due to the proliferation of GHG tax incentives, such as 45Q for carbon sequestration. Meanwhile, the Securities and Exchange Commission (SEC) finalised a rule standardising GHG disclosures for investors in March 2024 as part of its emphasis on ESGs. The rule requires public companies to provide GHG disclosures, including both risk and emissions disclosures, in their annual reports and registration statements. Reporting companies must provide information about material GHG emissions; material climate-related risks and governance and oversight of such risks; risk management processes for material climate-related risk; and material climate targets and goals. The rule has been challenged across the country and is, as at the time of writing, pending judicial review in the Eighth Circuit Court of Appeals. The SEC has stayed the effectiveness of the rule pending resolution of legal challenges.

Law stated - 23 August 2024

GENERAL NATIONAL CLIMATE MATTERS

National emissions and limits

What are the main sources of emissions of greenhouse gases (GHG) (or other regulated emissions) in your country and the quantities of

emissions from those sources? Describe any limitation or reduction obligations. Do they apply to private parties in your country?

The most recent comprehensive GHG emissions data for the United States is EPA's 'Inventory of US Greenhouse Gas Emissions and Sinks', which covers the period from 1990 to 2022. Mandatory GHG reporting began in 2011 for certain industries and in 2012 for others. As a result, EPA's 2024 report includes robust GHG emissions data from various sectors of the US economy. In 2022, total gross US GHG emissions were 6,343 million metric tons of carbon dioxide equivalent after accounting for sequestration from the land sector. The main sources of GHG emissions include the electricity generation, transportation, industrial, agricultural and commercial sectors. Complete figures by sector are available in EPA's 2024 GHG Inventory.

Another valuable resource is the US Energy Information Administration, which provides detailed analyses of carbon dioxide emissions by state, by fuel and by sector. Numbers are updated annually, with the next update anticipated for April 2025.

GHG emissions standards apply to private commercial entities to the extent that the entity is subject to regulation by the relevant national or state authority. There is no national GHG emissions legislation or regulation; rather, sources currently are regulated under the CAA and other federal laws, and by state laws.

Law stated - 23 August 2024

National GHG emission projects

Describe any major GHG emission reduction projects implemented or to be implemented in your country. Describe any similar projects in other countries involving the participation of government authorities or private parties from your country.

At the federal level, GHG emission reductions are primarily driven by US CAA regulation, which does not currently contemplate GHG emissions reduction projects or carbon offsets as compliance mechanisms. Certain other programmes provide incentives for carbon sequestration and other GHG removals. EPA also implements strategies to help organisations reduce their GHG emissions, including the ENERGY STAR programme and Green Power Partnership. At the state level, GHG emissions reductions are driven by a range of policies, including state and regional cap and trade programmes, renewable power requirements, low carbon fuel programmes, energy efficiency programmes, and a range of other sector-specific measures adopted under state law.

Section 45Q of the Tax Code provides tax credits for capturing and sequestering carbon oxides that would otherwise escape to the atmosphere, and the USDA also implements various programmes to support and incentivise carbon sequestration and production of 'climate-smart commodities' in the agricultural and forestry sectors. The 45Q tax credit programme and USDA incentive programmes have spurred innovation and the development of various GHG removal or sequestration actions in the United States. In 2022, the US Congress expanded 45Q, reducing capacity requirements for eligible projects. 45Q now provides up to US$85 per tonne of carbon dioxide permanently stored and increased credit amounts for direct air capture projects of up to US$180 per tonne of carbon dioxide. Private carbon offset markets also have spurred development of a wide array of carbon

sequestration projects and programmes in the forestry and agriculture sectors, among others. The Inflation Reduction Act will continue to substantially expand tax credits available for eligible carbon sequestration activities.

Law stated - 23 August 2024

DOMESTIC CLIMATE SECTOR

Domestic climate sector

Describe the main commercial aspects of the climate sector in your country, including any related government policies.

Commercial climate business in the United States is fragmented, largely owing to the lack of comprehensive national climate change regulation and the lack of a single registry or exchange for the trading of GHG allowances, offsets and other instruments. Voluntary projects to offset or inset GHG emissions are accelerating, and the generation of GHG offset or reduction credits has increased as entities seek to comply with California's cap-and-trade programme and to fulfil voluntary GHG reduction commitments. At the same time, US financial regulators are revisiting their regulation and oversight of environmental commodities markets, including carbon offsets. In parallel with efforts to increase regulatory scrutiny, a range of voluntary efforts are presently aimed at increasing transparency and quality in the global carbon markets, such as the Integrity Council for the Voluntary Carbon Market. US carbon projects and carbon buyers are reacting with a trend towards higher-quality carbon reduction projects and procurement of high-quality carbon reduction assets.

In October 2023, California AB 1305, which imposes disclosure requirements for voluntary carbon transactions and claims based on use of carbon offsets. AB 1305 imposes new disclosure requirements on businesses that market, buy or sell voluntary carbon offsets within California, or those that make specified climate-related claims within California (eg, 'net zero' or 'carbon neutral'). Businesses failing to meet these requirements may be subject to substantial civil penalties.

On 28 May 2024, the Biden administration released the Joint Statement of Policy and New Principles for Responsible Participation in Voluntary Carbon Markets (VCMs). The statement announced seven principles seeking to codify and strengthen existing practices to support development of VCMs. It was cosigned by Treasury Secretary Janet Yellen, Agriculture Secretary Tom Vilsack, Energy Secretary Jennifer Granholm, Senior Advisor for International Climate Policy John Podesta, National Economic Advisor Lael Brainard and National Climate Advisor Ali Zaidi. The seven principles aim to address concerns over the lack of transparency in carbon markets and enhance confidence that carbon offset credits will deliver real decarbonisation benefits. The principles are as follows:

- Carbon credits and the activities that generate them should meet credible atmospheric integrity and represent real decarbonisation;
- Credit-generating activities should avoid environmental and social harm and should, where applicable, support co-benefits and transparent and inclusive benefits sharing;
- Corporate buyers that use credits ('credit users') should prioritise measurable emissions reductions within their own value chains;

- Credit users should publicly disclose the nature of purchased and retired credits;
- Public claims by credit users should accurately reflect the climate impact of retired credits and should only rely on credits that meet high integrity standards;
- Market participants should contribute to efforts that improve market integrity; and
- Policymakers and market participants should facilitate efficient market participation and seek to lower transaction costs.

Law stated - 23 August 2024

GENERAL GHG EMISSIONS REGULATION

Regulation of emissions

Do any obligations for GHG emission limitation, reduction or removal apply to your country and private parties in your country? If so, describe the main obligations.

Various national, regional and state programmes exist in the United States to regulate GHG emissions. The main programmes are regulations issued under the CAA for stationary sources, federal motor vehicle fuel economy standards, cap-and-trade programmes in California and Washington, and the Regional Greenhouse Gas Initiative (RGGI) between the Northeast states. California and Oregon also have low carbon fuel programmes (LFCS), which govern the carbon intensity of certain fuels, while Washington and New Mexico have adopted similar clean fuel standards.

In April 2023, California obtained two waivers from the EPA to establish stricter air quality standards for motor vehicles, specifically heavy-duty vehicles and engine emission standards, under CAA section 209. EPA is still reviewing a third requested waiver as at the time of writing. Historically, California's waivers have allowed the state to set stricter standards for motor vehicle emissions, which other states may then adopt instead of the federal ones. DC, California and 14 other states signed a memorandum of understanding in 2020, creating a pathway to zero-emission vehicles by 2050 within these states. These most recent California waivers have experienced some pushback: in June 2023, 19 Republican-led states challenged EPA's waiver grant to California's Advanced Clean Trucks Rule; that challenge remains pending in court as at the time of writing. However, in April 2024, a court upheld EPA's waiver allowing California to set its own GHG emissions standard for passenger vehicles and run a zero-emission vehicles programme.

The Biden administration's 'whole-of-government' approach to climate change is having an enormous impact on US GHG policy, as is the administration's goal of net-zero GHG emissions for the United States by 2050. Individual states are also driving significant changes in US climate policy. At present, 20 states have binding net-zero GHG emissions targets (typically by 2045 or 2050) and another four have similar non-binding targets. Several other states have binding GHG emissions reduction requirements in the 80–95 per cent range. Collectively, these state and federal policy pronouncements are creating significant changes in both voluntary and mandatory GHG reduction and regulation programmes around the country across numerous sectors.

Law stated - 23 August 2024

GHG emission permits or approvals

Are there any requirements for obtaining GHG emission permits or approvals? If so, describe the main requirements.

Certain stationary sources are required to obtain CAA Title V operating permits and prevention of significant deterioration (PSD) permits for GHG emissions. Under the CAA's 'cooperative federalism' approach, most states manage GHG permitting in conjunction with any applicable state laws or programmes. When obtaining permits under the PSD programme, sources must evaluate available emissions reduction options to determine the 'best available control technology' for that facility, which are made on a case-by-case basis considering energy, environmental and economic impacts, and other costs. Over time, technological advancements increase the degree of attainable emissions reductions. The Clean Air Act also contains provisions governing New Source Performance Standards (NSPS) for various sectors, and EPA has adopted NSPS rules targeting GHG emissions from the electricity and oil and gas sectors. Typically, under the Clean Air Act, any applicable PSD or NSPS GHG emissions limits will be incorporated into a facility's Title V operating permit. GHG considerations also become relevant in certain permitting actions, including those under NEPA and analogous state laws, which may require permit applicants to take into account GHG emissions related to a specific project.

Several market-based permit systems also exist: California and Washington now have state-level cap-and-trade programmes requiring major emitters to obtain permits to release GHGs, and 11 states participating in the RGGI have a cap-and-trade programme covering the electricity sector. New York and Oregon also are developing cap-and-trade programmes.

Law stated - 23 August 2024

Oversight of GHG emissions

How are GHG emissions monitored, reported and verified?

EPA's mandatory GHG Reporting Rule requires reporting of GHG data and other relevant information for facilities in 41 source categories. EPA compiles reported GHG emissions to create its annual GHG inventory for the United States. Compliance for covered sources is mandatory and administrative. Civil or criminal penalties may apply for violations. Several states have also implemented GHG reporting rules, and the reporting thresholds differ by state. Entities must comply with both federal and state GHG reporting requirements, if applicable. According to EPA, the GHG Reporting Rule covers over 8,000 US facilities.

In 2010, the SEC issued interpretive guidance regarding required disclosures by companies of their climate change-related risks. On 4 March 2021, the SEC announced the creation of a Climate and ESG Task Force within the Division of Enforcement. In May 2022, the SEC proposed new disclosure and reporting requirements for public companies that would significantly expand current climate risk reporting requirements while also imposing new requirements related to GHG and ESG disclosures. The most controversial aspects of the proposed rule were the requirements of Scope 3 emissions disclosure (disclosure about a company's value chain emissions) and the financial statement disclosures. In March 2024, the SEC finalised a GHG disclosure rule with several key differences from the proposed rule. Importantly, companies will not have to disclose Scope 3 emissions. The rule nonetheless

imposes detailed and significant new disclosure obligations on corporate registrants to be phased in from fiscal year 2025 up to 2033. Key requirements include disclosing:

- material climate-related risks, the impacts of such risks, and risk management;
- certain information about oversight of climate-related risks;
- information on any climate-related targets or goals that are material to the registrant's business, results of operations or financial condition; and
- material GHG emissions data for Scope 1 and Scope 2 emissions.

The rule also contains additional and specific financial statement disclosure requirements.

The rule was subject to numerous challenges, which are now consolidated in the US Court of Appeals for the Eighth Circuit. Pending resolution of the challenge, the SEC has stayed the rule.

Environmental groups, investors and shareholders also are increasingly driving changes to climate risk reporting by companies in the United States. Companies may now face dozens or even hundreds of requests for data and information on how they assess and disclose climate-related risks, and there has been increased adoption of third-party disclosure standards, including those published by the Task Force for Climate-Related Financial Disclosures and the Sustainability Accounting Standards Board.

The US Federal Trade Commission (FTC) appears poised to significantly refresh its guidelines for the Use of Environmental Marketing Claims (Green Guides). On 2 July 2021, the FTC published its 10-year regulatory review schedule, announcing an agency review of the Green Guides in 2022. The FTC then published a proposed rule revising the Green Guides on 20 December 2022, which is scheduled to be released sometime in 2024. This action is in line with the global trend toward more scrutiny of claims and substantiation, including actions within the European Union requiring enhanced substantiation for environmental claims.

At the state level, California recently adopted two GHG disclosure laws, requiring companies to disclose climate-related financial risks and GHG emissions from 2026 onwards. Under the first law, SB 253, or the Climate Corporate Data Accountability Act, companies doing business in California with total global annual revenues over US$1 billion dollars must disclose Scope 1 and Scope 2 GHG emissions for the entity's prior fiscal year. Beginning in 2027, and annually thereafter, companies must publicly disclose Scope 3 GHG emissions no later than 180 days after it discloses its Scope 1 and Scope 2 emissions for the prior fiscal year. Under the second law, SB 261, focused on 'Greenhouse gases: climate-related financial risk', companies doing business in California with a total global annual revenue of over US$500 million must disclose (1) the business' climate-related financial risk, in accordance with the recommended framework and disclosures contained in the Final Report of Recommendations of the Task Force on Climate-Related Financial Disclosures (June 2017) or any subsequent publication, and (2) the measures taken to reduce and adapt to the disclosed climate-related financial risks. These laws are not restricted to publicly traded companies and will impact many US and international companies doing business in California.

Law stated - 23 August 2024

GHG EMISSION ALLOWANCES (OR SIMILAR EMISSION INSTRUMENTS)

Regime

Is there a GHG emission allowance regime (or similar regime) in your country? How does it operate?

There is no mandatory GHG allowance regime at the federal level. The Regional Greenhouse Gas Initiative (RGGI), California and Washington operate cap-and-trade programmes with associated emissions allowance regimes.

RGGI, the first market-based GHG reduction scheme in the United States, currently encompasses the eastern states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont and Virginia (although Virginia is poised to exit the programme). RGGI lowered its GHG emissions cap beginning in 2014 to 91 million short tonnes, with annual follow-on decreases of 2.5 per cent from 2015 to 2020. In August 2017, RGGI members approved measures to extend RGGI to 2030, with a further 30 per cent reduction in GHG emissions during that time. Membership in RGGI is voluntary and subject to change. North Carolina considered joining, but that now seems unlikely following the defeat of a related measure by the North Carolina Legislature.

RGGI is limited to the power sector and uses an allowance system for compliance; electric power generators subject to RGGI are required to hold carbon dioxide allowances equal to the amount of carbon dioxide they emit in a given compliance year. Each RGGI state issues allowances in an amount defined by each state's applicable law or regulation implementing RGGI. Collectively, these allowances comprise the annual RGGI cap and are distributed through quarterly auctions. RGGI also utilises a cost containment reserve system to allocate and auction additional allowances when needed to limit price volatility that, combined with periodic over-supply, has kept prices low but has also frustrated efforts to create a market for carbon offsets in RGGI states. An Emissions Containment Reserve, which allows states to withhold allowances from auction if reduction costs are lower than projected, will allow more dynamic response to market conditions and may have the effect of stabilising or raising slightly the cost of RGGI allowances. RGGI is currently in the midst of its Third Program Review, during which the member states consider impacts and potential changes to their carbon dioxide budget trading programmes. This review will include modelling the electricity sector, reviewing programme elements, and considering environmental justice and equity principles. An updated RGGI Model Rule was anticipated for fall 2023 but has not been released as at the time of writing.

California's Global Warming Solutions Act (AB 32), signed into law on 27 September 2006, established a mandate to reduce GHG emissions to 1990 levels by 2020 and granted broad authority to the California Air Resources Board (CARB) to develop and implement a broad strategy to achieve that goal. In September 2016, a new bill (SB 32) extended and expanded the state's commitment to reducing GHG emissions, establishing a new reduction target of 40 per cent below 1990 levels by 2030. CARB's strategy to achieve these emission reduction goals is set forth in its Scoping Plan and includes programmes in nearly every sector of the economy. CARB's updated 2022 Scoping Plan outlines a concrete plan for the state to achieve carbon neutrality by 2045. The Plan builds on the 2017 update evaluating emissions reductions needed in the electricity, transportation, industrial and building sectors. The 2022 update went beyond the 2017 plan to detail strategies for reductions in short-lived climate pollutants and carbon dioxide removal. It also reduced the role that the multi-sector

cap-and-trade GHG emissions programme, first implemented in 2013, will play. As proposed in 2017, the programme governed 80 per cent of GHG emissions in the state and is one of the largest carbon markets in the world. However, according to the 2022 plan, to meet its goal, the state needs 27 per cent lower emission reductions from cap-and-trade than what was planned for in 2017. The cap-and-trade programme will be revised in 2023. On top of these mandates, the Clean Energy and Pollution Reduction Act of 2015 establishes state-wide goals in California for 2030 of 50 per cent electricity generation from renewable resources and doubling energy efficiency in electricity and natural gas usage.

CARB sets an annual cap on GHGs and issues a limited number of emission allowances, each of which authorises its holder to emit one MtCO2e. The number of available allowances is limited by the cap and declines by approximately 3 per cent each year. Entities that emit 25,000 MtCO2e annually are obliged to surrender a certain number of compliance instruments to CARB, consistent with each entity's reported emissions. Compliance instruments consist primarily of allowances, which can be purchased from CARB at quarterly auctions. In addition, at present up to 4 per cent of a covered entity's obligation can be met with CARB-certified offsets, increasing to 6 per cent in 2026. Both allowances and offsets may also be bought and sold on the secondary market, subject to certain restrictions. Covered entities are required to disclose substantial information to CARB, including information about corporate ownership and affiliates, directors and officers, high-level employees, and legal and market-strategy advisers.

On 17 May 2021, Washington Governor Jay Inslee signed into law the Washington Climate Commitment Act, which creates a state-wide cap on GHG emissions that will decline over time, and a limited trading system for carbon credits that can be sold to entities requiring credits to meet their individual GHG emission limits. Beginning on 1 January 2023, all sources emitting more than 25,000 MtCO2e will be subject to the cap and will be required to purchase credits sufficient to meet their emissions. Allowed permits will decline over time until a 90 per cent reduction in GHGs over 1990 emissions levels is achieved in 2050. An annual auction of GHG permits will be conducted by the Washington Department of Ecology (Ecology), with revenues dedicated to programmes for the reduction of carbon emissions, climate resiliency, support of renewable energy and reduction of GHGs in agriculture. Trading linkages will be established to carbon markets in other jurisdictions to permit the purchase of allowances from those markets, which could then be applied to Washington's GHG limits. The programme started in January 2023, after Ecology sought public comment and published the final Climate Commitment Act Program Rule (Chapter 173-446 WAC). As of 2023, Ecology is also exploring options for linking Washington's efforts with similar programmes in California and Quebec. It also includes a focus on environmental justice and populations disproportionately impacted by climate change. The proposal would adopt specific administrative rules governing the operation of Washington's 'cap-and-invest' programme.

In 2023, New York Governor Kathy Hochul also adopted a cap-and-invest programme to reduce GHG emissions. The programme establishes a declining cap on GHG emissions while investing in programmes that drive emissions reductions in an equitable manner and limit costs to vulnerable households. Begun in January 2023, the programme sets an annual cap on New York pollution emissions, aiming to meet a 40 per cent emission decrease by 2030 and at least 85 per cent reduction from 1990 levels by 2050. Governor Hochul also proposed legislation to create a Climate Action Rebate which, if adopted, is expected to drive over US$1 billion in future cap-and-invest proceeds to New Yorkers.

Similarly, Oregon's 2022 cap-and-trade programme, the Climate Protection Programme, aims to reduce GHG emissions by at least 80 percent from 1990 levels by 2050. Implemented as a result of Oregon governor Kate Brown's 2020 administrative order, the programme imposes a cap on GHG emissions attributable to fuel suppliers that will decrease annually. The rule covers GHG emissions from fuel and natural gas combustion but excludes emissions from biofuels and biomass fuels. Certain large stationary sources, emitting at least 25,000 MtCO2e, must also implement a best available emissions reduction approach.

Law stated - 23 August 2024

Registration

Are there any GHG emission allowance registries in your country? How are they administered?

There is no GHG allowance regime at the federal level. The registry for RGGI allowances is called the 'CO2 Allowance Tracking System'. Each RGGI allowance has a unique serial number, which then tracks initial ownership, transfer and retirement of allowances. California and other linked jurisdictions utilise the Compliance Instrument Tracking System Service (CITSS) as an allowance registry, which tracks the issuance, initial ownership, transfer and retirement of allowances and offsets within the Western Climate Initiative (WCI), which encompasses the CA programme. WCI conducts financial audit reports and RGGI periodically assesses the presence of any anticompetitive effects. New York and Oregon may develop similar regimes as well.

Law stated - 23 August 2024

Obtaining, possessing and using GHG emission allowances

What are the requirements for obtaining GHG emission allowances? How are allowances held, cancelled, surrendered and transferred? Can rights in favour of third parties (eg, a pledge) be created on allowances?

There is no GHG allowance regime administered by the federal government. California (and its CITSS platform) and RGGI each maintain rules and systems for the issuance, auction, trading, banking, transfer and retirement of emissions allowances. Any qualified party can participate in RGGI allowance auctions; auction rules limit the number of allowances that associated entities may purchase in a single auction to 25 per cent of the total allowances offered for auction. California conducts quarterly auctions of GHG emission allowances. Both entities that are covered by California's cap-and-trade programme, and others opting into the programme, can participate in the auctions. Washington will follow a model similar to California's.

While some CA allowances are allocated to entities to prevent leakage, most are auctioned. RGGI and California auctions have recently set price records, with RGGI allowances selling for US$12.73 as of June 2023 and CA allowances selling at US$30.33 as of May 2023. In general, market participants must hold instrument trading accounts and be eligible to purchase and hold such instruments. Holding caps may also apply. Compliance entities must surrender or

retire a volume of instruments equal to their covered GHG emissions each reporting period; retirement is facilitated through the relevant registry system.

Law stated - 23 August 2024

TRADING OF GHG EMISSION ALLOWANCES (OR SIMILAR EMISSION INSTRUMENTS)

Emission allowances trading

What GHG emission trading systems or schemes are applied in your country?

There is no national GHG allowance regime or national-level emission trading system. Concerning voluntary markets, there is no consolidated registry or trading system. Each allowance issuer or registry maintains its own trading platform, and as a result, the market is fragmented. Most transactions occur as over-the-counter bilateral transactions or through brokers. Each registry or issuer has its own rules concerning trading, banking and retirement; but, in general, voluntary carbon offsets may be freely transacted, pledged or securitised. The Commodity Futures Trading Commission (CFTC) regulates carbon offsets as environmental commodities, and certain transactions may be subject to CFTC rules. The CFTC held its second voluntary carbon markets convening on 19 July 2023, to discuss recent trends and initiatives related to carbon markets and how the CFTC can promote integrity for high-quality carbon credits and potentially further regulate or oversee the voluntary carbon market to reduce risk.

Law stated - 23 August 2024

Trading agreements

Are any standard agreements on GHG emissions trading used in your country? If so, describe their main features and provisions.

There are no standard agreements on GHG emissions trading in the United States, although a variety of common terms are found in most emissions reduction purchase agreements and similar agreements used to facilitate such transactions. As a result, many transactions are conducted through similar Emissions Reduction Purchase Agreements. Increasingly, large companies are developing their own procurement criteria and contracts for carbon assets.

Law stated - 23 August 2024

SECTORAL REGULATION

Energy sector

Give details of (non-renewable) energy production and consumption in your country. Describe any regulations on GHG emissions. Describe any obligations on the state and private persons for minimising energy consumption and improving energy efficiency. Describe the main features

> of any scheme for registration of energy savings and for trade of related accounting units or credits.

The United States is the world's largest producer of oil and natural gas and is likely to remain so given recent approvals of new projects including the Willow Project in Alaska, the next biggest exploitation of oil and gas on public lands. The US EIA predicts that US crude oil production will increase steadily through 2024, with a forecast average of 13.19 million barrels per day (b/d). This is expected to rise to 13.65 b/d in 2025 – a record high.

In 2023, there were 45.63 trillion cubic feet of gross withdrawals of natural gas in the United States, and the country consumed 32.50 trillion cubic feet of natural gas. In 2021, the United States produced 577,431,000 short tons of coal and consumed 545,685,000 short tons. In 2023, the United States produced 50,000 pounds of uranium concentrate, and nuclear power plants generated 775 billion kilowatt hours of electricity. According to EPA's 2024 report, total US GHG emissions in 2022 were 6,343 MMtCO2e, representing an increase of 1 per cent from 2021 levels.

When GHGs became a 'regulated pollutant' under the CAA, EPA undertook various rulemaking processes to incorporate GHG emissions into programmes applicable to stationary sources, which include the Title V operating permit programme and the Prevention of Significant Deterioration programme, as well as New Source Performance Standards (NSPS) for both existing and new electric generating units. In an early effort to regulate GHG emissions from existing coal-fired power plants, EPA released the Clean Power Plan (CPP) in 2015. That rule and its Trump-administration replacement, the Affordable Clean Energy Rule were the subject of fierce litigation and were eventually scrapped. On 26 April 2024, EPA adopted new final regulations that impose sweeping measures to govern power plant GHG emissions under section 111 of the CAA. Among other things, the rule:

- imposes emissions standards for most new and reconstructed natural gas generation units based on hydrogen-cofiring and, for baseload generation, the use of carbon capture and storage (CCS);
- classifies existing coal-fired units into three categories, with those planning to operate past 2040 required to utilise CCS capturing 90 per cent of carbon dioxide emissions, and
- creates a non-regulatory docket seeking comments on how to best regulate GHG emissions from existing gas-fired turbine generators.

As anticipated, the rule is being challenged in court. If the rule survives, it will dramatically lower US GHG emissions from the power sector over time.

In 2016, EPA issued new standards specific to methane emissions from new and modified oil and gas wells and related facilities. In late 2021, the Biden administration took several new actions on methane emissions, such as proposing a rule that would reduce methane and other emissions from both new and existing sources in the oil and natural gas industry, as well as releasing a US Methane Emissions Reduction Action Plan. Separately, the 2022 Inflation Reduction Act (IRA) imposes a system of fees aimed at reducing certain methane emissions from pipelines, orphaned wells and other fossil fuel infrastructure. The IRA also establishes a waste emissions charge for methane from facilities reporting more than 25,000 metric tonnes of carbon per year. On 24 July 2023, and as part of the IRA's Methane Emissions Reduction Program, EPA and DOE released a Notice of Intent (NOI) announcing

US$1.5 billion in new funding opportunities related to reducing or monitoring methane emissions from the oil and gas sector.

In December 2023, EPA issued a final rule under the CAA that adopts NSPS standards for the oil and gas sector, covering methane and certain other emissions from upstream, midstream and downstream operations. These rules target emissions from new and modified sources, and also include emissions guidelines to assist states in developing rules to govern existing sources. Legal challenges to these rules are pending.

The DOE runs the Federal Energy Management Program, which focuses on reducing energy consumption and increasing the proportion of renewable energy utilised at federal agencies. The DOE also runs a 'Better Buildings' programme, intending to increase building energy efficiency by 20 per cent over the next decade across the commercial, public, industrial and residential sectors. Through these and other programmes, the federal government continues to create incentives and support energy efficiency and related technologies to reach net-zero emissions by 2050.

California, Oregon and Washington have all enacted Low-Carbon Fuel Standards requiring significant reductions in the carbon intensity of transportation fuels, joining with British Columbia to create a market for low-carbon fuels covering the entire West Coast. California's programme requires a 20 per cent reduction in the carbon intensity of motor fuels by 2030, which refiners can achieve either by blending biofuels with gasoline or diesel, or by purchasing credits, which can be generated by, for example, vehicle electrification. The other states have adopted similar mandates. As of July 2024, New Mexico has become the fourth US state to adopt a similar clean fuel standard.

Law stated - 23 August 2024

Other sectors

Describe, in general terms, any regulation on GHG emissions in connection with other sectors.

In 2009, EPA determined that the six primary GHGs recognised by the UN reasonably may endanger public health and welfare. Concurrently, EPA determined that GHG emissions from motor vehicles contribute to pollution that endangers public health and welfare. Since then, EPA has worked to implement GHG reductions from on-road vehicles through fuel efficiency and certain vehicle efficiency requirements.

In September 2011, in coordination with the National Highway Traffic Safety Administration (NHTSA), EPA established fuel economy standards for light-duty cars and trucks and the first phase for medium and heavy-duty trucks. Under the Obama administration, NHTSA proposed aggressive Corporate Average Fuel Economy (CAFE) standards for cars and light trucks for model years 2022–2025. These were rolled back by the Trump administration but were re-established by the Biden administration in March 2022. The CAFE standards for model years 2024–2026 require fuel economy of 49 mpg by model year 2026. Under appending proposal released by the NHTSA in July 2023, the CAFE standard would increase to 58 mpg in 2032; the proposal also would require a 10 per cent annual fuel economy improvement for certain commercial vehicles (those between 8,500 and 14,001 pounds) for model years 2030–2035.

While EPA generally has nationwide authority to set emission standards, the US Clean Air Act (CAA) grants California the special ability to set its standards, which may be followed by other states, so long as California receives a waiver from EPA. California Governor Gavin Newsom declared in a September 2020 Executive Order, that all new consumer car sales in California must be zero-emission vehicles by 2035, and all new medium-duty and heavy-duty trucks and buses must be zero-emission by 2045. Many other states have adopted CAA emissions requirements for vehicles, and a few have also announced similar zero-emissions policies.

On 15 August 2016, EPA promulgated an endangerment finding under section 231(a)(2)(A) of the CAA for aircraft, which determined that GHG emissions from certain classes of aircraft engines, including those used by most large commercial aircraft, contribute to the air pollution that causes climate change and endangers public health and welfare. According to EPA, GHG emissions from aircraft represent 12 per cent of transport-related GHG emissions in the United States, and 3 per cent of total US GHG emissions. In March 2019, the Federal Aviation Administration (FAA) announced its Monitoring, Reporting, and Verification Program for CORSIA. Applying to US air carriers and commercial and general aviation operators, the FAA's programme consists of voluntary carbon emissions reporting to establish standardised practices to implement CORSIA. On 11 January 2021, the EPA finalised the first domestic GHG emission standards for aircraft. See ***Final Rule, Control of Air Pollution from Airplanes and Airplane Engines: GHG Emission Standards and Test Procedures***, 86 Fed Reg 2136. These CAA standards would apply to manufacturers of new aircraft and new aircraft engines, with compliance determined as part of the FAA's airworthiness certification process. The standards rely largely on fuel efficiency and draw heavily from the 2017 Airplane CO2 Emission Standards established by the International Civil Aviation Organization (ICAO). The EPA explained that aligning domestic standards with international standards would bring 'substantial benefits for future international cooperation' on aircraft emissions, which the agency deemed 'key for achieving worldwide emission reductions.' Id at 2,144–45. In November 2021, the FAA also published the US Aviation Climate Action Plan, which outlines strategies for moving the domestic aviation industry towards net-zero emissions by 2050. The plan relies on more efficient aircraft and engine technologies, production and use of sustainable aviation fuels, advancements in airport operations, international cooperation, and support for climate science research. At the same time, the plan notes that 'the decarbonisation of the aviation sector is extremely challenging'.

Law stated - 23 August 2024

RENEWABLE ENERGY AND CARBON CAPTURE

Renewable energy consumption, policy and general regulation

Give details of the production and consumption of renewable energy in your country. What is the policy on renewable energy? Describe any obligations on the state and private parties for renewable energy production or use. Describe the main provisions of any scheme for registration of renewable energy production and use and for trade of related accounting units or credits.

The Energy Policy Act (EPAct) of 1992 was enacted to address many aspects of energy supply and demand, including alternative fuels, renewable energy, and energy efficiency. Significant amendments in 2005 further created or bolstered federal incentives for energy

efficiency, biofuels and numerous types of renewable energy. Since then, the US Congress has regularly extended tax credits for wind and solar energy production, while adopting new tax incentives for carbon sequestration. The federal government also has a programme for leasing federal lands on the outer continental shelf for offshore wind development, as well as onshore leasing of federal lands for wind, solar and other energy development. In addition, the Federal Energy Regulatory Commission (FERC) announced in 2021 several measures aimed at expanding transmission and other infrastructure to support renewable energy development across the United States. In addition, FERC published an interim policy statement in February 2022, describing the agency's procedures for evaluating climate impacts under NEPA and integrating climate considerations into public interest determinations under the Natural Gas Act. In 2023, FERC issued a landmark final rule, Order No. 2023, to reform procedures and agreements that electric transmission providers use to integrate new generating facilities into the electric grid.

Tax incentives for renewable energy are discussed above. Additionally, the DOE loan guarantee programme backs investment in renewable power, energy efficiency and commercial climate technologies. Loans backed by the DOE have supported investment in solar, wind, geothermal, nuclear and energy storage technologies, among others. In 2013, the DOE announced the availability of US$8 billion in loan guarantees for advanced energy projects that substantially reduce GHGs and other air pollution. In 2014, the DOE announced the availability of US$4.5 billion in loan guarantees available for innovative renewable energy and energy efficiency projects in the United States that reduce GHG emissions. In 2021, DOE announced it had more than US$40 billion in loan guarantee capacity available to support clean energy projects. In 2022, it announced its first loan guarantee of US$504 million for advanced Clean Energy Storage in nearly a decade. The IRA also expanded DOE's Title 17 Clean Energy Financing Program to include facility decarbonisation and energy infrastructure reinvestment projects. The DOE runs parallel loan programmes for nuclear energy projects and 'advanced fossil energy' projects, each with its own solicitations and funding caps. As of 2023, DOE's Loan Programs Office had US$412 billion in estimated, remaining loan capacity due to the IIJA and IRA.

The federal government is working to facilitate renewable power generation on public lands through a variety of programmes designed to streamline permitting and leasing. For example, the Department of the Interior and Bureau of Land Management facilitate a solar energy programme in six western states. The Bureau of Ocean Energy Management (BOEM) is working to identify and lease offshore wind energy areas for commercial wind development, announcing in 2023 an offshore wind lease sale in the Gulf of Mexico and along the Atlantic Coast. The federal government is also working to streamline permitting for renewable energy projects on federal lands, and to support the development of additional electricity transmission. In April 2024, BOEM finalised a rule to streamline regulations for offshore wind and other clean energy developments on the Outer Continental Shelf.

A number of states have binding requirements to shift to 100 percent renewable or non-emitting sources in the electricity sector by mid-century. These include California, Connecticut, Delaware, Illinois, Hawaii, Oregon, Washington, Colorado, Nevada, New Mexico, North Carolina, Maine, Massachusetts, Maryland, Michigan, Minnesota, Rhode Island, Virginia, Vermont and New York, as well as the District of Columbia and Puerto Rico. Several other states have regulatory or executive orders in place requiring the same goal, including Wisconsin, Louisiana, New Jersey and Arizona.

Approximately 30 states, plus the District of Columbia, have enacted binding renewable portfolio standards (RPS). Several other states have non-binding RPS programmes or renewable energy goals. State RPS programmes operate by setting renewable energy targets for each year and requiring electric utility companies to achieve that level of renewable power. As a result, RPS programmes are the primary drivers for renewable energy investment in the United States and are spurring significant investment in renewable energy infrastructure in many states. RPS compliance is usually managed through a system of tradeable renewable energy credits (RECs), with one REC representing one MWh of renewable power. In general, RECs are registered by state agencies and are tradeable instruments.

In addition to mandatory RPS programmes, 'green power' programmes allow US energy consumers (including residential, commercial and industrial users) to purchase renewable or 'green' power from their utility company or independent power supplier. Both energy suppliers and businesses looking to offset energy consumption purchase RECs on the voluntary market to meet green power targets and demand. Voluntary REC supply is dominated by wind, though solar is increasing its market share. At least 50 per cent of retail customers in the United States now have an option to purchase 'green' or low-carbon power from their utility. Net metering programmes allow grid-connected customers with renewable energy systems installed on their property to offset their electrical usage and sell excess electricity to their utility. Several states have also implemented feed-in-tariff programmes that provide a higher price to consumers generating certain types of renewable energy. These programmes have aided the expansion of residential and commercial solar projects in the United States, but net metering programmes are not universal across the United States.

Law stated - 23 August 2024

Wind energy

Describe, in general terms, any regulation of wind energy.

Wind energy projects are subject to a range of federal, state and local environmental, land use, and natural resources laws and regulations. A project may require multiple permits, along with consultation and coordination between multiple agencies. Access to transmission also remains a significant constraint for many wind projects since wind energy resources in the United States are not always located near demand. Developing new or expanded transmission lines can increase the complexity of the above regulatory requirements. For projects located on federal land and tribal, federal land management agencies act as the primary permitting authority. For projects on private or state land, permitting authority is vested in one or more state agencies in some states. In others, the primary permitting authority for a wind facility is the local planning commission, zoning board, city council or county board.

BOEM administers the offshore wind leasing process on the outer continental shelf (OCS) (three nautical miles offshore) through a competitive bidding process. Offshore wind projects also must coordinate with the US Coast Guard during construction and to address any navigational hazards. BOEM has held several auctions, resulting in the sale of various leases to develop offshore wind projects, primarily on the east coast. The timeline for developing an offshore wind project, however, is long, and the first wind turbines were only installed in US federal waters in 2020. The Biden administration has set a goal of developing 30 GW of offshore wind by 2030. BOEM has approved several large offshore wind projects,

several of which are under construction. The IRA will further open up large parts of federal lands and the OCS to wind energy leasing and production but would also condition such wind leases on first holding future federal oil and gas lease sales.

Renewable energy projects have seen significant litigation over environmental impacts and other issues. Litigation may involve local issues, such as noise, siting and site-specific impacts, or may implicate broader state or national policies. With respect to wind energy, impacts on birds are a frequent focus of litigation. The Migratory Bird Treaty Act (MBTA), the Endangered Species Act and the Bald and Golden Eagle Protection Act all protect certain species of birds with civil and criminal penalties. Under the Trump administration, the Department of the Interior determined in 2017 that the MBTA is inapplicable to incidental injuries or killings of birds, including those caused by wind projects. The Biden administration has since withdrawn this determination: the Fish and Wildlife Service (FWS) published its final rule revising the MBTA interpretation on 4 October 2021, reinstating its position that 'incidental takes' are prohibited under the MBTA.

Law stated - 23 August 2024

Solar energy

Describe, in general terms, any regulation of solar energy.

Solar energy experienced another record year in 2023, accounting for approximately 53 per cent of all new generating capacity nationally, although solar power (both small and large-scale) still generates only a small percentage of the total electricity in the United States. However, 22 states generated over 5 per cent of their electricity from solar in 2023, up from 16 states in 2022. Overall, US solar capacity grew by 26.0 gigawatt-hours (a 34 per cent increase over 2022), despite ongoing tariffs on imported solar cells and modules and uncertainty created by supply chain problems. Predictions estimate that solar energy could represent over 20 per cent of total US electricity by 2050.

Many states and the District of Columbia continue to offer incentives, such as upfront rebates, tax credits (including exemptions from property and sales taxes), production-based incentives and solar renewable energy credits. An anticipated increase in the need for end-of-life management of photovoltaic (PV) solar panel waste is driving states such as California to take measures in support of streamlined solutions, including through a new 2020 regulation designating PV waste as 'universal waste', alongside electronics, batteries and other low-risk hazardous waste. A few states are experiencing some pushback as solar expands, due to both transmission issues and high costs to ratepayers. They are in the process of reaching the right balance. Net metering policies are one target of such pushback.

These trends reflect how residential solar, as well as commercial and utility-scale, projects have gained notable traction in an increasing number of jurisdictions across the country. Even so, traditional regulatory approvals and permits are required for these projects, regardless of scale. Residential solar installations, such as rooftop solar projects, generally do not require major regulatory approvals but are required to meet local and state building, zoning, land use and development regulations – including the acquisition of necessary permits. Larger commercial and utility-level solar energy projects implicate a much larger array of federal, state, and local laws – including those concerning land access, siting, water

rights, transmission and environmental review – all of which may be subject to litigation in the process of seeking regulatory approvals.

Law stated - 23 August 2024

Hydropower, geothermal, wave and tidal energy

Describe, in general terms, any regulation of hydropower, geothermal, wave or tidal energy.

FERC issues licences for construction of new hydropower projects. During the permitting process, FERC and the applicant must ensure compliance with NEPA and must obtain a water quality certification from the appropriate state agency under the Clean Water Act (CWA). In recent years, with an eye toward encouraging this emissions-free resource, both Congress and FERC have enacted laws intended to reduce regulatory barriers for small hydropower projects, projects on existing dams, and projects in man-made conduits such as irrigation canals. In many cases, permittees also must obtain authorisations under various federal laws, including those protecting wildlife, such as the Endangered Species Act. In some states, additional authorisation may be required for hydropower resources to qualify for RPS or net metering programmes. With climate change as an increasing concern, some states have increased focus on hydropower as a source of energy; in particular, states in the north-east are exploring ways to import more hydropower from Canada and increase capacity and production at existing hydropower facilities. In 2020, the EPA finalised a rule revising its regulations for the CWA water quality certification process intended to promote hydropower projects. In November 2023, the EPA finalised a new rule aimed at modifying the CWA Section 401 Certification Process in response to the Trump administration's changes in 2020.

Geothermal projects are regulated by a mix of federal and state agencies, with requirements varying by state and whether the project is located on state, tribal, federal or private land. The Geothermal Steam Act of 1970 requires the Department of the Interior to establish rules and regulations for the leasing of geothermal resources on lands managed by federal agencies. These regulations are issued by the Bureau of Land Management. Existing EPA Underground Injection Control Regulations under the federal Safe Drinking Water Act define Class V injection wells to include injection wells associated with the recovery of geothermal energy.

Law stated - 23 August 2024

Waste-to-energy

Describe, in general terms, any regulation of production of energy based on waste.

Waste-to-energy is defined as a renewable energy source in many states and plants are therefore eligible to sell RECs. At present, the United States has 75 waste-to-energy facilities that combust municipal solid waste. There has been little development of new waste-to-energy plants since the 1980s and the 1990s; the first new waste-to-energy plant since 1995 was built in 2015. As combustion units, waste-to-energy systems are subject to

regulatory requirements similar to those regulating fossil fuel-fired power plants, but often significantly more stringent. The CAA imposes numerous requirements on waste-to-energy facilities, which also must comply with the CWA, the Resource Conservation and Recovery Act and other federal, state and local laws. Waste-to-energy facilities and related ash landfills have come under increased legal and regulatory scrutiny in recent years and are at times the subject of lawsuits brought under environmental laws.

Law stated - 23 August 2024

Biofuels and biomass

Describe, in general terms, any regulation of biofuel for transport uses and any regulation of biomass for generation of heat and power.

In 2007, EPA established a national Renewable Fuel Standard (RFS) programme that requires transportation fuel refiners to displace certain amounts of petrol and diesel with renewable fuels such as cellulosic biofuel, biomass-based diesel, and advanced biofuel. The programme established the annual renewable fuel standards, responsibilities of refiners and other fuel producers, a trading system, compliance mechanisms, and record-keeping and reporting requirements. Companies that refine, import or blend fossil fuels are obligated to meet certain individual RFS quotas based on the volume of fuel they introduce into the market. The production of biofuels is also subject to regulation under the CAA and other environmental laws. EPA adopted a new ethanol rule in 2019, which allows fuel blends containing up to 15 per cent ethanol to be sold year-round in 31 states. In 2023, EPA set the required minimum volume for transportation sector use at 20.94 billion gallons of renewable fuel in 2023 (up from 20.63 in 2022), 21.54 billion gallons in 2024, and 22.33 billion gallons in 2025. There is significant new investment in biofuel and biogas facilities in the United States.

The Biden administration had delayed rules setting RFS volumes for 2021 due to pressure on both sides of the issue, and tension continues with respect to what level of biofuels EPA should require. Relatedly, the US Supreme Court in 2023 issued a decision affirming the validity of 'waivers' issued to some smaller refineries that exempt those refineries from certain federal biofuels requirements. On the other hand, conservationists are repeatedly suing EPA for failing to properly consider how increased land conversion and pesticide and fertiliser use needed to meet both the 2022 and the 2023–2025 biofuel targets would impact endangered species.

In 2018, EPA issued a policy statement indicating 'EPA's policy in forthcoming regulatory actions will be to treat biogenic CO2 emissions resulting from the combustion of biomass from managed forests at stationary sources for energy production as carbon neutral'. The goal of EPA's pending actions was to 'promote the environmental and economic benefits of the use of forest biomass for energy at stationary sources, while balancing uncertainty and administrative simplicity when making programmatic decisions', acknowledging the need for clear regulatory policy even in the face of continued debate on an accounting framework for biogenic carbon dioxide emissions. Disagreement surrounding the potential rule stalled its progress in early 2020. The Biden administration has not indicated that it intends to finalise this rule, although EPA is facing pressure to maintain its carbon-neutral stance.

Law stated - 23 August 2024

Carbon capture and storage

Describe, in general terms, any policy on and regulation of carbon capture and storage.

Carbon capture and storage (CCS) has substantial potential to reduce GHG emissions from industrial sources but has not been widely demonstrated on a commercial scale. On 1 December 2010, EPA published its final rule concerning an expansion of its GHG reporting rule to include facilities that inject and store carbon dioxide for geologic sequestration or enhanced oil and gas recovery.

In January 2014, EPA issued a final rule excluding carbon dioxide streams in CCS projects from classification as a hazardous substance under the Resource Conservation and Recovery Act, provided that the streams are injected into Class VI wells and not mixed or co-injected with any hazardous wastes. CCS projects are potentially affected by several other regulatory programmes. For instance, NEPA and state equivalents may present regulatory hurdles by requiring environmental review of project impacts. State and local agencies may also impose permitting requirements on CCS projects. High costs, complex regulatory schemes and the low price of natural gas have hindered the widespread development of CCS projects. In the future, lower technology costs and the development of multiple revenue streams from the carbon dioxide associated with CCS projects, particularly using captured carbon dioxide for enhanced oil recovery (EOR), may help spur CCS additional development.

President Biden's administration has supported CCS activities, including funding for research and development to support this emerging industry. On 13 January 2021, the Treasury Department finalised rules to implement section 45Q of the Tax Code. The 45Q programme provides tax credits for capturing and sequestering carbon oxides that would otherwise escape to the atmosphere. 45Q now provides up to US$85 per tonne of carbon dioxide permanently stored and increased credit amounts for direct air capture projects of up to US$180 per tonne of carbon dioxide. The DOE also intends to accelerate geological carbon storage projects, each capable of permanently storing at least 50 million metric tons of captured carbon dioxide. BOEM also plans to initiate a process to create a programme for leasing offshore federal lands on the OCS for carbon storage, which could greatly accelerate development of large-scale projects, particularly in the Gulf of Mexico.

A number of actions spanning both the public and private sectors are aimed at increasing forest preservation and conservation to increase carbon sequestration and to incentivise agricultural practices that either reduce GHG emissions or increase soil carbon sequestration. In February 2022, the USDA announced it would invest US$1 billion on projects for farmers, ranchers and forest landowners to facilitate practices that reduce emissions and capture and store carbon. The IRA adds significant additional funding for carbon capture based on agricultural or silvicultural practices. The USDA also oversees several voluntary conservation programmes that provide financial incentives for farmers and forest landowners to maintain and enhance carbon benefits. With the USDA's charge to promote sustainable land management to increase sequestration, increased funding to these programmes through the IRA translate into renewed efforts to implement these programmes.

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CLIMATE MATTERS IN TRANSACTIONS

Climate matters in M&A transactions

What are the main climate matters and regulations to consider in M&A transactions and other transactions?

Entities must consider a range of climate issues when undertaking M&A transactions. Risks generally fall into three categories: regulatory, economic and operational risk related to climate change impacts. Some matters also present M&A opportunities, such as incentives related to renewable energy. Increasingly, GHG disclosure and risk reporting requirements are also a factor when considering M&A activities. Matters to consider include:

- material operational or financial risk related to climate change impacts on infrastructure, facilities, supply chains, etc;
- GHG reporting and permitting obligations;
- existence of voluntary GHG reduction goals, attainment of those goals, any roll-back of or failure to attain GHG reduction goals, and related public disclosures and messaging, including compliance with consumer protection laws and the FTC Green Guides;
- EPA and state regulation of GHG emissions and related costs for higher-emitting industries;
- regulatory uncertainty given the rapid development of climate change law in the United States and globally;
- regulatory costs associated with assuring compliance with a plethora of federal, state and local climate change, energy efficiency and renewable energy programmes;
- litigation exposure to claims based upon alleged climate impact of corporate operations or of climate changes on corporate operations;
- financial and risk disclosure and compliance obligations under Securities and Exchange Commission rules and state laws, including emerging disclosure requirements on GHG emissions;
- adherence to the Equator Principles, if applicable, which include requirements for climate impacts;
- impacts on coastlines, ports and other infrastructure related to increased storm intensity and rising sea levels;
- impacts on natural resources and commodities related to climate change, such as water supplies, fisheries, forestry products and crops;
- global economic and security risks related to potentially destabilising impacts of climate change in certain regions; and
- market opportunities related to renewable power, renewable energy credits and offset trading, GHG mitigation and energy efficiency.

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UPDATE AND TRENDS

Emerging trends

Are there any emerging trends or hot topics that may affect climate regulation in your country in the foreseeable future?

The US is moving on multiple fronts to reduce and regulate GHG emissions. We expect these efforts to continue at both the state and federal levels. At the federal level, these efforts are focused on deploying incentives for GHG reduction measures and adopting new sector-specific GHG emissions reduction requirements.

Implementation of the IRA in 2023 is already bringing significant impact in certain sectors, including efforts to develop and deploy technologies such as offshore wind and carbon sequestration. Combined with the US$1.1 trillion bipartisan infrastructure law, government procurement initiatives, permitting reforms, and agency actions to support GHG reduction across various sectors, the federal government has, over the past few years, unleashed a wide range of incentives and programmes that will lead to both significant GHG reductions and related economic realignment in certain industries.

In addition to incentives, the federal government is focusing on further regulation of high-emitting sectors, with new GHG emissions standards either recently adopted (subject to pending challenges) or under development. And in alignment with global trends, US financial regulators and the FTC are focused on new laws and guidelines governing GHG disclosures and consumer protection standards for GHG claims.

Many states also have continued or increased climate regulation at the state level and through regional programmes. California still leads the charge, but faces competition from New York, Washington, Oregon, Massachusetts and other states developing aggressive GHG programmes, including increased deployment of renewable energy and a strong focus on the transportation sector, which is now the largest GHG-emitting sector in many states.

While some of these federal and state actions are being challenged or facing pushback, they have led to increased GHG regulation and action on climate change. Should the Republican party claim control of the White House in 2025, federal emissions requirements are likely to see a roll-back on several fronts, most notably in the energy and transportation sectors. At the same time, incentive programs are less likely to be impacted due to broad and bipartisan popularity for many of those measures.

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