Authors' Defense of the "Reference Guide on Climate Science"

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February 25, 2026

On January 29, 2026, a coalition of 27 state attorneys general, led by West Virginia Attorney General John B. McCuskey, sent a letter to the Federal Judicial Center (FJC) demanding immediate withdrawal of the "Reference Guide on Climate Science" from the Fourth Edition of the Reference Manual on Scientific Evidence ("Reference Manual").[1] Twenty-two of the state attorneys general also sent a letter to the House and Senate Judiciary Committees on February 2, 2026, urging the Committees to investigate and potentially defund the FJC based on their objections to the Reference Manual, most notably the inclusion of the chapter on climate science.[2]

On February 6, 2026, the FJC sent a letter to Attorney General McCuskey stating that it had "omitted the climate science chapter" from the Reference Manual in response to the January 29 letter.[3] No further explanation was provided for the omission. Twenty-one of the state attorneys general are now pressuring the National Academies of Sciences, Engineering, and Medicine ("National Academies") to remove the chapter from their version of the Reference Manual as well.[4]

We wrote the climate science chapter,[5] and this is our response to the substantive criticisms raised the by the state attorneys general.

1. Scientific Consensus on Anthropogenic Climate Change

In their letter to the FJC, the state attorneys general claimed that the climate science chapter would "undermine[] the judiciary's impartiality" by offering "conclusive opinions on matters of serious dispute."[6] They argued that it is inappropriate to acknowledge that certain aspects of the field are "unequivocally" established, because this would "doom" a litigant who took a different view.[7] They cited three examples of "unequivocal" or "conclusive" findings: (i) that human activities have "unequivocally warmed the climate," (ii) that it is "extremely likely" human

[1] Letter from West Virginia Attorney General John B. McCuskey and Others to Judge Robin L. Rosenberg, Director of the Federal Judicial Center (Jan. 29, 2026), https://ago.wv.gov/sites/default/files/2026-01/2026.01.29%20--%20AG%20Climate%20Science%20Manual%20Letter.pdf.

[2] Letter from Nebraska Attorney General Mike Hilgers and Others to Jim Jordan, Chairman of the House Committee on the Judiciary, and Others (Feb. 2, 2026), https://ago.nebraska.gov/sites/default/files/doc/Letter_5.pdf.

[3] Letter from Judge Robin L. Rosenberg to West Virginia Attorney General John B. McCuskey (Feb. 6, 2026), https://ago.wv.gov/sites/default/files/2026-02/2026.02.06%20--%20Federal%20Judicial%20Center%20Letter%20Chapter%20Withdrawal.pdf.

[4] Letter from Montana Attorney General Austin Knudsen and Others to Marcia McNutt, President of the National Academies (Feb. 19, 2026), https://content.govdelivery.com/attachments/MTAG/2026/02/19/file_attachments/3559530/2026-02-19%20AGs'%20Ltr%20to%20NAS%20FINAL.pdf.

[5] Jessica Wentz & Radley Horton, *Reference Guide on Climate Science,* in REFERENCE MANUAL ON SCIENTIFIC EVIDENCE, FOURTH EDITION (NATIONAL ACADEMIES PRESS 2025) (hereinafter "Chapter"). Note that although the Chapter was removed from the FJC version of the Reference Manual, it is still available through the National Academies website: https://www.nationalacademies.org/publications/26919.

[6] Letter from State Attorneys General (Jan. 29) at 1, 3.

[7] *Id.*

influence drives ocean warming, and (iii) that researchers are "virtually certain" about ocean acidification—all treating contested litigation positions as settled fact."[8]

The quoted statements are direct references to scientific findings issued by the Intergovernmental Panel on Climate Change (IPCC) in its Sixth Assessment Report (AR6). The United States Global Change Research Program (USGCRP) issued the same findings in the Fifth National Climate Assessment (NCA5). Most notably, IPCC AR6 and NCA5 both concluded that there is "unequivocal" evidence that human activities have warmed the climate, resulting in widespread changes to the atmosphere, ocean, biosphere, and cryosphere.[9] There is overwhelming scientific support for this conclusion, including many converging lines of evidence from different data sources and researchers.[10]

As discussed in the "How Science Works" chapter of the Reference Manual, consensus is often reached where a hypothesis: (i) has been tested and garnered support many times in many ways; (ii) helps explain disparate and previously unexplained observations; (iii) can more closely explain those observations than other hypothesis; (iv) can be broadly applied; and (iv) is consistent with well-established hypothesis in neighboring fields. [11] All five of these factors are met with regard to the scientific consensus on anthropogenic climate change. Moreover, this is precisely the sort of foundational knowledge that judges would need in order to assess the credibility and reliability of expert testimony on climate science.

The anthropogenic origin of climate change is the only scientific finding on climate change that the chapter presents as a "settled" fact. The chapter does not suggest that other aspects of climate science have been "unequivocally" established. Rather, the chapter acknowledges that there are varying degrees of scientific uncertainty and confidence with regards to the detection,

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[8] *Id.* at 3.

[9] *See* IPCC, CLIMATE CHANGE 2021: THE PHYSICAL SCIENCE BASIS, CONTRIBUTION OF WORKING GROUP I TO THE SIXTH ASSESSMENT REPORT OF THE IPCC (Valérie Masson-Delmotte et al. eds.) [hereinafter IPCC AR6 WGI], Technical Summary, at 41("It is unequivocal that the increase of CO_2, methane (CH_4) and nitrous oxide (N_2O) in the atmosphere over the industrial era is the result of human activities and that human influence is the main driver of many changes observed across the atmosphere, ocean, cryosphere and biosphere."); USGCRP, FIFTH NATIONAL CLIMATE ASSESSMENT (A.R. Crimmins et al., eds, 2023) [hereinafter NCA5] at 2-4 ("The evidence for warming across multiple aspects of the Earth system is incontrovertible, and the science is unequivocal that increases in atmospheric greenhouse gases are driving many observed trends and changes.")

[10] In particular, there is both an *abundance* of evidentiary support, as well as *multiple lines of evidence* that all support the conclusion that humans are causing climate change. The converging sources of evidence include observational data from thousands of different instruments and datasets; paleoclimate records; physical understanding and insights from laboratory experiments; climate models and model-data agreement; and more. In other words: there is a tremendous amount of corroborating evidence. This factual premise is also entirely cohesive, i.e., it is internally coherent and consistent with established scientific understanding of the climate system and the greenhouse gas effect, and there is no alternative hypothesis that would explain the observed warming trends and related changes in the climate system. *See* IPCC AR6 WGI; NCA5; NATIONAL ACADEMIES, CLIMATE CHANGE: EVIDENCE AND CAUSES – UPDATE (2020), https://www.nationalacademies.org/publications/25733; NATIONAL ACADEMIES, EFFECTS OF HUMAN-CAUSED GREENHOUSE GAS EMISSIONS ON U.S. CLIMATE, HEALTH, AND WELFARE (2025), https://www.nationalacademies.org/projects/NRCEO-CCX-25-02/publication/29239; NASA, *Evidence of Climate Change*, https://science.nasa.gov/climate-change.

[11] Michael Weisberg & Anastasia Thanukos, *How Science Works,* in REFERENCE MANUAL ON SCIENTIFIC EVIDENCE, FOURTH EDITION (National Academies Press 2025) at 98-99.

attribution, and projection of different types of climate impacts.[12] The chapter does not take a position as to whether specific impacts or injuries (of the sort that would be at issue in a lawsuit) are definitively attributable climate change.

2. Reliance on the Intergovernmental Panel on Climate Change and Other Scientific Authorities

The state attorneys general criticized the chapter for citing "authoritative science bodies" such as the IPCC, the USGCRP, and the National Academies. Notably, the chapter includes background information about each of these scientific authorities to help judges determine how much weight to assign to their findings.

The chapter most frequently refers to IPCC findings because the IPCC is widely recognized as the leading global authority on climate science. This is not merely our opinion; this view is reflected in statements and documents issued by the National Academies and many other scientific and legal authorities.[13] Notably, the IPCC has been cited in at least 48 judicial opinions in the U.S. (including opinions from the Supreme Court and Federal Courts of Appeal), many of which have recognized the IPCC as an authoritative source of scientific information on climate change, and none of which have cast doubt on the IPCC's credibility in this domain.[14]

The IPCC also plays a pivotal role in the dissemination of climate science because it produces consensus reports that synthesize a huge body of scientific research and have undergone an extensive public input and review process. The chapter describes the IPCC and its assessment methodology. The goal of this discussion is to enable judges to understand how the IPCC operates – and how it arrives at scientific conclusions – so that judges can make their own decisions about whether and how to utilize IPCC findings when evaluating the reliability and credibility of expert testimony.

The chapter's reliance on findings from the IPCC and other scientific bodies is consistent with the discussion of "Achieving Scientific Consensus" in the Reference Manual chapter on "How Science Works." In particular, that chapter notes:

> The path to consensus generally involves the accumulation of multiple lines of converging evidence, as studies are conducted, published, scrutinized, and iterated on, bringing more and more of the community into agreement. This process works most effectively when it is carried out by a diverse group of scientists adhering to the expectations and norms outlined above. … When a judge is presented with a disagreement among scientific experts, it is reasonable to seek clarification on how representative of the scientific community the two views are. Is this

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[12] *See, e.g.,* Chapter at 1597 ("There is *high confidence* that oxygen levels have dropped in many upper ocean regions since the mid-20th century, and *medium* confidence that human-induced ocean warming contributed to this drop.")

[13] *See, e.g.,* NATIONAL ACADEMIES CLIMATE REPORT (2025); AGU STATEMENT ON IPCC WORKING GROUP II SIXTH ASSESSMENT REPORT (February 2022), https://fromtheprow.agu.org/agu-statement-on-ipcc-working-group-ii-sixth-assessment-report/; SCIENCE ACADEMIES' STATEMENT: GLOBAL RESPONSE TO CLIMATE CHANGE (2005), https://www.scj.go.jp/ja/info/kohyo/pdf/kohyo-19-s1027.pdf; International Court of Justice (ICJ), Advisory Opinion of 23 July 2025 on the Obligations of States in Respect of Climate Change, ¶ 74; Massachusetts v. EPA, 549 U.S. 497, 508-509 (2007); Coal. for Responsible Regul. v. EPA, 684 F.3d 102 (D.C. Cir. 2012); Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin., 538 F.3d 1172, 1189 (9th Cir. 2008); Diné Citizens Against Ruining Our Env't v. Haaland, 59 F.4th 1016 (10th Cir. 2023).

[14] These cases are on file with the author. Notable examples are listed in the footnote above.

> a case of truly unsettled science, where methodologically sound studies have been carried out and scrutinized, but open questions and disagreements remain because the hypothesis has not yet been thoroughly investigated, in which case, each party may have comparable claims on scientific reliability? Or is it a case of relatively settled science, in which one party has recruited experts who interpret the evidence differently than most of the community?[15]

The state attorneys general also took issue with the suggestion that judges consider whether expert testimony is "based on principles, methodologies, or findings that have been accepted as credible by the IPCC and other scientific institutions" when considering the admissibility of that testimony.[16] They argued that it is inappropriate to consider scientific consensus when applying the *Daubert* test. However, the fifth *Daubert* factor instructs judges to consider whether the methodologies and theories underpinning expert testimony have gained widespread acceptance within a relevant scientific community. The degree of acceptance by the IPCC and other scientific institutions is clearly relevant when applying this factor.

The chapter does not suggest that consistency with IPCC reports should be dispositive when assessing admissibility. To the contrary, the chapter presents this as a non-exhaustive list of factors that judges *may* consider. Moreover, the chapter acknowledges that judges may admit expert testimony that falls outside the scope of IPCC assessments or relies on more novel research techniques (see response to point 6, below). The chapter also acknowledges that:

> [J]udges may confront disputes regarding the accuracy of IPCC findings, particularly if there is more recent and credible scientific research that calls those findings into question. Although IPCC reports are typically afforded greater weight in the scientific community than individual studies, the science is constantly evolving, and subsequent research may provide new insights on the nature of climate change and its consequences.[17]

Thus, the Chapter explicitly contemplates that situations may arise where judges confront legitimate disputes about IPCC findings. This is consistent with the previously quoted guidance from the "How Science Works" chapter.[18]

3. Failure to Discuss "Contrarian" Views

The state attorneys general asserted that the chapter is biased because "[the authors] did not consult any experts who might take a view inconsistent with [their] conception of 'consensus.'"[19] They specifically referred to the fact that we did not cite findings from the U.S. Department of Energy (DOE) Climate Working Group (CWG), specifically the draft CWG report which was issued in 2025.[20] However, that report is not a credible source of scientific information on climate

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[15] Michael Weisberg & Anastasia Thanukos, *How Science Works,* REFERENCE MANUAL ON SCIENTIFIC EVIDENCE, FOURTH EDITION (National Academies Press 2025) at 98-99.
[16] Letter from State Attorneys General (Jan. 29) at 2 (citing Chapter at 1584-85).
[17] Chapter at 1581.
[18] E.g., "[w]hen a judge is presented with disagreement among scientific evidence it is reasonable to seek clarification on how representative of the scientific community the two views are."
[19] Letter from State Attorneys General (Jan. 29) at 2.
[20] U.S. DOE, CLIMATE WORKING GROUP, DRAFT REPORT: A CRITICAL REVIEW OF IMPACTS OF GREENHOUSE GAS EMISSIONS ON U.S. CLIMATE (2025).

change, and the attorneys general do not cite any examples of credible scientific authorities, independent research, or scientific theories that were omitted from the chapter.

The DOE CWG was a small group of people (four scientists and one economist), all of whom are known to have "contrarian" views on climate science (e.g., skepticism about the human role in observed climate change). These individuals were selected by the Trump administration to prepare a report in conjunction with the proposed repeal of the Environmental Protection Agency (EPA)'s Greenhouse Gas Endangerment Finding. The CWG met in secret and failed to provide public notice of meetings. They prepared their July 2025 report, *A Critical Review of Impacts of Greenhouse Gas Emissions in the U.S. Climate*, in a very short timeframe and it did not undergo any form of peer review, nor was it open for public comment before it was published and utilized in agency decision-making.[21] The public statements accompanying the report made it clear that it was specifically prepared to support the proposed repeal of greenhouse gas emissions standards.[22] The CWG was disbanded immediately after the conclusion of a notice-and-comment period, and the CWG never published a final report nor did it respond to any public comments. On January 30, 2026, the U.S. District Court for the District of Massachusetts issued a judgment finding that the Trump administration had violated federal law when it secretly formed the CWG and tasked it with presenting substantive policy recommendations.[23]

The CWG draft report also received widespread criticism from the scientific community. More than 85 climate scientists and experts published a comprehensive report detailing many ways in which the DOE report misrepresented and misused scientific evidence, in particular by cherry picking data and omitting key evidence.[24] The American Meteorological Society published a separate critique of the DOE report, highlighting many of the same problems.[25] In addition, the National Academies published a Consensus Study Report which directly contradicted the findings in the DOE report, specifically finding that the "evidence for current and future harm to human health and welfare created by human-caused greenhouse gases is beyond scientific dispute."[26]

The state attorneys general also claimed that our chapter did not acknowledge "significant" criticisms of the IPCC. They cited one example of such criticism – a short article written by an

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[21] The DOE subsequently invited public comments on the report, but it never published a final version incorporating those comments, and the Climate Working Group was disbanded in September 2025 following legal challenges and widespread criticism of the July 2025 report.

[22] *See* DOE, *Department of Energy Issues Report Evaluating Impact of Greenhouse Gasses on U.S. Climate, Invites Public Comment* (July 29, 2025), https://www.energy.gov/articles/department-energy-issues-report-evaluating-impact-greenhouse-gasses-us-climate-invites *("*The report was published today as part of the U.S. Environmental Protection Agency's (EPA) proposed rule repealing the 2009 Endangerment Finding.").

[23] Judgment, Environmental Defense Fund v. Wright, No. 25-12240-WGY (D. Mass. Jan. 30, 2026).

[24] *Climate Experts' Review of the DOE Climate Working Group Report* (August 30, 2025), https://essopenarchive.org/users/260056/articles/1330312-climate-experts-review-of-the-doe-climate-working-group-report.

[25] *See* American Meteorological Society Responds to DOE Climate Synthesis Report (August 28, 2025), https://www.ametsoc.org/ams/about-ams/news/news-releases/american-meteorological-society-responds-to-doe-climate-synthesis-report/pdf/.

[26] National Academies of Sciences, Engineering, and Medicine, Effects of Human-Caused Greenhouse Gas Emissions on U.S. Climate, Health, and Welfare (2025), https://www.nationalacademies.org/news/national-academies-publish-new-report-reviewing-evidence-for-greenhouse-gas-emissions-and-u-s-climate-health-and-welfare.

economist/lawyer who works for the Fraser Institute (an organization that opposes environmental regulation).[27] The cited article contains inaccurate and misleading critiques of IPCC reports, e.g.:

- The author claims that the IPCC "completely fails" to acknowledge that, prior to the development of instrumental surface temperature measurements, temperature estimates are reconstructed from sources such as tree ring growth records. In fact, IPCC AR6 goes into great detail about the difference between "observational" and "reanalysis" datasets[28] and how paleoclimate archives are used to reconstruct climatic conditions before the instrumental era.[29]
- The author claims that IPCC AR6 "fails entirely to note that recent surface temperature increases are much larger than trends in the troposphere measured by satellites." There are two major problems with this statement. First, the premise is flawed: observational records indicate that there are minor differences in surface and tropospheric warming, and there is some evidence that the upper troposphere has warmed more rapidly than the lower troposphere in recent years.[30] Second, the claim about the IPCC's analysis is incorrect: IPCC AR6 consistently distinguishes between tropospheric and surface temperature records;[31] discusses regional and structural variation in tropospheric and surface warming;[32] and is explicit about the degree of confidence in different warming trends.[33]

The Fraser Institute article also raises structural critiques of the IPCC - most notably that it is an intergovernmental body and there is a potential for bias in the assessment process. Our chapter acknowledges the structural critiques of the IPCC (e.g., recognizing that it has been "critiqued on the grounds that it is a political institution subject to the governance of member states" and that concerns have been raised about the inclusion of experts with potential bias).[34] As discussed therein, there are many different actors with many different interests involved in the assessment processes – these include government representations, NGOs, fossil fuel companies, environmental organizations – and there is no clear evidence of a pervasive industry or environmental basis embedded in the IPCC reports.

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[27] Jason S. Johnston, *Reliance on Climate Change Data from IPCC is Badly Misplaced,* FRASER INSTITUTE (Sep. 13, 2022), https://www.fraserinstitute.org/studies/hand-government-intergovernmental-panel-climate-change.

[28] The term "reanalysis" appears on over 300 pages of IPCC AR6 WGI.

[29] Paleoclimate archives include ice cores, corals, marine and lake sediments, tree rings, soils and more. *See* IPCC AR6 WGI at 158.

[30] Specifically, for the period from 1960-2020, the estimated average increase in global mean surface temperature was 1.04°C, and the for 1960-2019, the estimated average increase in lower tropospheric temperature was 1.08°C. *See* IPCC AR6 WGI, Tables 2.4 and 2.5. The second estimate deals with *lower* tropospheric warming, because there is more uncertainty about upper tropospheric warming trends. There is evidence that some sections of the troposphere are warming at rates that are equal to or exceed the lower troposphere. *Id.* at 327. A more recent study found that the upper troposphere has warmed approximately 1°C during the first two decades of the 21st century, suggesting that it may be warming even more rapidly than the lower troposphere and the surface. *See* Florian Ladstaädter et al., *Resolving the 21st Century Temperature Trends of the Upper Troposphere-Lower Stratosphere with Satellite Observations,* 13 SCIENTIFIC REPORTS 1306 (2023).

[31] *See* IPCC AR6 WGI Ch. 2.

[32] E.g., records indicate that that temperatures in the tropical upper troposphere may have increased more rapidly than those at the surface since 2001. IPCC AR6 WGI at 328.

[33] E.g., although it is "virtually certain" that tropospheric temperatures have risen, there is "low confidence" in the vertical structure of temperature trends in the upper tropical troposphere. IPCC AR6 WGI at 327. Regarding the latter point, the report explains that most CMIP5 and CMIP6 models have overestimated upper tropical troposphere warming by about 0.1°C per decade between 1979 and 2014. *See* IPCC AR6 WGI at 49.

[34] Chapter at 1648.

4. Discussion of Climate Impacts and Attribution Methods

a. "Novel" Research Methods

The state attorneys general took issue with a paragraph discussing how judges may evaluate "novel" research when applying the Daubert test.[35] Specifically, the chapter recommends that judges confronted with novel research findings or methodologies should "consider whether the novel aspects are rooted in existing and accepted scientific techniques."[36] The chapter points out that some techniques which may seem novel are based on small changes or advances in well-established methods. For example, extreme event attribution is in some respects "novel" but extreme event studies use the same climate models that are used to attribute changes in average conditions to climate change, and some probabilistic studies adapt methods that have been utilized in epidemiological research.

The state attorneys general clearly do not think that expert testimony should be automatically rejected due to inconsistency with IPCC reports (and we agree). It is therefore important to recognize that there are contexts in which a judge may admit expert testimony that advances novel theories or relies on novel techniques that have not yet gained "widespread scientific acceptance." As noted in the "How Science Works" chapter, expert testimony need not always be based on scientific consensus because "disputed facts in litigation may hinge on questions of science that are still emerging, and so evidence is lacking, or that are so specific that new research must be conducted to inform the litigation."[37]

b. Impacts and Damages from Climate Change

The state attorneys general also criticized the discussion of attribution research as it relates to impacts and damages from climate change. For example, they argued that "the authors conceive of climate-related impacts in the broadest possible terms—which would in turn support the most substantial findings of liability for climate-driven plaintiffs."[38] But we did not "conceive" of climate-related impacts in the broadest possible terms. The discussion of impacts in the chapter reflects the fact that climate change has widespread and pervasive effects on natural and human systems. If anything, the list of impacts in the chapter is underinclusive, not overinclusive.

Moreover: the mere recognition that there are categories of impacts which have been attributed to climate change with varying degrees of confidence does not support the "most substantial findings of liability for climate-driven plaintiffs." Climate liability claims raise many factual and legal questions that are beyond the scope of this chapter. The chapter's generalized discussion of climate science does not answer specific questions about, e.g., whether a particular injury or impact is attributable to climate change, and whether a defendant is responsible for that injury.

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[35] "[T]he authors offer a cursory defense of "novel" attribution methods—sweepingly reassuring judges that these methods "[i]n many cases" are not "novel" at all." Letter from State Attorneys General (Jan. 29) at 3.
[36] Chapter at 1585.
[37] "How Science Works" at 56.
[38] Letter from State Attorneys General (Jan. 29) at 3.

The state attorneys general specifically critiqued the chapter's discussion of research on losses and damages from climate change.[39] The chapter recognizes that "in some cases" it is possible to quantify the contribution of human-induced climate change to economic and non-economic losses. This is not the authors' opinion – it is a statement based on the discussion of damages, harms, economic, and non-economic losses in IPCC AR6 WGII Report on *Impacts, Adaptation, and Vulnerability* (and it is properly attributed as such). The chapter briefly identifies some examples of methods that are used to estimate losses, such as fixed-effect regression methods (for microeconomic applications). It also acknowledges that qualitative damage assessments may be more suitable where there are exogenous and confounding variables that would impede precise quantification of damages.

Notably, the discussion of research on economic damages is limited to a single paragraph, the purpose of which is to acknowledge that researchers are now merging physical climate science techniques with economic approaches to develop damage estimates.[40] The chapter does not take any position on the accuracy or precision of climate damage estimation techniques. This can be contrasted to the language used to describe general trends which have been attributed to climate change with high confidence and certainty. For example, the chapter states that "researchers can draw *fairly robust* conclusions about the *general* causal connection between climate change and many types of impacts" – in contrast, no such claim is made for these damage estimation techniques.[41]

c. Causal Inferences and Climate Impact Attribution

The state attorneys general asserted that the chapter "provides a three-part causation test for judges to apply when determining whether defendants' emissions contributed to plaintiffs' injuries" and that "[t]his is not neutral education, but rather a decision tree for resolving the central contested issue in climate tort litigation."[42] This claim refers to a passage which discusses how judges might evaluate causal inferences when considering the admissibility of expert testimony – i.e., is the causal inference reliable and credible? Is it based on a reasonable application of climate science? The cited passage acknowledges that there are contexts where it may be reasonable for an expert to use deductive causal reasoning, i.e., drawing inferences about the localized effects of climate change based on general or regional trends. Specifically:

> The reasonableness of such inferences would depend on factors such as the nature and location of the impact, the strength of the "signal" of anthropogenic climate change relative to natural variability, and the level of spatial or temporal variability in the impact. In particular, when

[39] *Id.*

[40] The state attorneys general further argue that we "race[d] to embrace a controversial study that ties specific harms to emissions from specific 'major' sources." Letter from John B. McCuskey (Jan. 28) at 3. The paragraph on damages includes citations to three studies which illustrate different approaches to damage estimation: (i) Christopher W. Callahan & Justin S. Mankin, *National Attribution of Historical Climate Damages*, 172 Climatic Change 1 (2022); (ii) Benjamin H. Strauss et al., Economic Damages from Hurricane Sandy Attributable to Sea Level Rise Caused by Anthropogenic Climate Change, 12 Nature Commc'ns 2720 (2021); and (iii) Kristie L. Ebi et al., Using Detection and Attribution to Quantify How Climate Change Is Affecting Health, 39 Health Affs. 2168 (2020). These are presented for illustrative purpose; the chapter does not take a position on the accuracy or precision of these studies, nor does it discuss any of the findings contained therein.

[41] Chapter at 1609.

[42] Letter from State Attorneys General (Jan. 29) at 3.

> evaluating the potential causal link between climate change and a specific event or impact, a judge could consider whether (1) a widespread pattern in a geographic area has been observed and attributed to climate change, (2) there is not too much spatial or temporal variability in the impact, and (3) the expert is inferring that this pattern applies to a particular locale. [43]

This is clearly written as a non-exhaustive set of factors that a judge "could" consider when evaluating the reasonableness of a deductive inference in expert testimony on climate science. It is not a definitive "causation test" nor is it a "decision tree for resolving the central contested issue in climate tort litigation." None of the content in this chapter was written with a specific focus on climate-related tort claims, as such claims are extremely rare in federal courts.[44]

5. Contested Issues in Litigation

One of the overarching critiques raised by the state attorneys general was that the chapter should not treat "contested issues" in litigation as "settled fact" – and more generally, that the chapter should not influence how judges view claims related to climate science and climate impact attribution.[45] There are two major problems with this critique.

First, the only scientific finding that is presented as a "settled fact" in the chapter is the fact that humans are causing climate change. To our knowledge, there are no active cases in the U.S. where there are "hotly disputed questions" as to *whether human activities are causing climate change.*[46] To the contrary, the scientific disputes in climate litigation deal with much more specific causation and attribution questions – e.g., whether and to what extent a contested action will contribute to climate change, and whether a plaintiff has experienced a specific injury that can be fairly traced to climate change. The chapter contains scientific information that may assist a judge in evaluating the reliability and credibility of expert testimony aimed at answering these questions, but it does not provide the answers to those questions.

Second, there is no reason that the Reference Manual should omit scientific information simply because it is relevant to current or future lawsuits. This would undermine the entire purpose of the manual, which is to assist judges in assessing the credibility and reliability of expert testimony in actual cases. It would also be unethical for a chapter on climate science to ignore scientific findings about human-induced climate change simply because these findings are the subject of political or legal disputes.

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[43] Chapter at 1584.

[44] The chapter explicitly lists such tort claims among the "exceptions" that fall outside of the main areas of climate litigation. Chapter at 1628, 1631.

[45] See, e.g., Letter from State Attorneys General (Jan. 29) at 1 ("The [chapter] places the judiciary firmly on one side of some of the most hotly disputed questions in current litigation: climate-related science and 'attribution.'").

[46] For example, during a preliminary hearing on climate science in one of the climate tort cases, the attorney for Chevon stated that: "Chevron accepts the consensus in the scientific communities on climate change. There's no debate about climate science." The attorney also relied extensively on IPCC reports in his testimony on climate change. *See* Debra Kahn, *Oil company blames humans for warming but denies guilt,* CLIMATEWIRE (March 22, 2018), https://subscriber.politicopro.com/article/eenews/1060077139.

6. Case Law Discussion

Finally, the state attorneys general criticized the chapter's discussion of case law, arguing that it "canvass[es] legal issues divorced from the scientific considerations that the *Manual* is meant to address" and turns the chapter "into a litigation playbook."[47]

The section on "Legal Applications" is a descriptive assessment of the types of claims that often implicate climate science and the ways in which scientific evidence may factor into the adjudication of those claims.[48] We included this section based on initial conversations with the editors about the scope of the chapter, and refined it based on feedback from the committee. The cases discussed in this chapter provide context (and establish precedent) that may be relevant when a judge is assessing the reliability and probative value of expert testimony on climate science (e.g., by demonstrating how courts have engaged with IPCC reports).

The state attorneys general specifically took issue with the discussion of how federal courts have confronted claims about climate science being "too speculative" to support agency decision-making. They argued that the chapter "dismiss[es] any suggestion that climate science is too speculative or uncertain to justify relief."[49] In making this claim, they referred to the case descriptions of: (i) Coalition for Responsible Regulation v. EPA, where the D.C. Circuit upheld EPA's GHG endangerment finding and rejected the argument that there was "too much uncertainty" about the science underpinning climate change, and that EPA had improperly "delegated" its judgment to the IPCC, USGCRP, and NRC by relying on those assessments of climate science; and (ii) Endangered Species Act (ESA) decisions upholding the federal government's use of climate science and rejecting arguments that projections of future climate change are "too speculative" to support the government's assessment of risk.

The chapter discuss these cases because they are key examples of legal precedent from Federal Courts of Appeal which may be relevant when considering whether testimony on climate change is "too speculative" to meet the preponderance of the evidence standard for reliability under Rule 702. The chapter does not "dismiss any suggestion that climate science is too speculative or uncertain to justify relief" – to the contrary, the chapter recognizes that such factual determinations are "case-specific" and entirely dependent on the specific legal and factual claims at issue in any given case.[50]

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[47] Letter from State Attorneys General (Jan. 29) at 3.

[48] See, e.g., Chapter at 1564 (noting that climate science is used to evaluate claims related to causation and harms, foreseeability of harm, and the nature of legal obligations and authorities).

[49] Letter from State Attorneys General (Jan. 29) at 4.

[50] *See, e.g.,* Chapter FN 293 (recognizing that questions about causation and harm contributions in the context of standing and tort liability are "case-specific determinations").