

Unfinished Business

A Review of Public Comments on the Environmental Protection Agency's Cumulative Impacts Framework

HIGHLIGHTS

Cumulative impacts analysis evaluates the combined effects of multiple stressors and burdens—social, environmental, health, historical, cultural, and economic—to inform more comprehensive and equitable decisionmaking. After decades of efforts by advocates and experts, the US Environmental Protection Agency (EPA) issued a new framework in November 2024 for the use of cumulative impacts in policymaking and requested public comment. Since January 2025, however, the Trump administration has made changes that undermine environmental justice and public health, including the EPA's ability to use the Cumulative Impacts Framework, and has not responded to any comments on the Framework.

The Union of Concerned Scientists (UCS) reviewed and analyzed public and Tribal community comments on the Framework. UCS also convened four meetings of experts to review the Framework. In the absence of federal leadership, this report will help inform efforts to advance cumulative impacts policies and practices.

Kristie Ellickson, PhD

Darya Minovi, MPH

Robin Morris Collin, JD, Esq., PhD

Alan Walts, JD

Carol Ann Gross-Davis, PhD, MS

Samuel Kay, PhD

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Introduction

People experience overlapping environmental and socioeconomic burdens and stressors that impact their health. Assessing and addressing these cumulative impacts (CI) require tools, processes, and policies that incorporate this lived reality into environmental protection programs, such as CI programs, that combine and consider civil rights, environmental justice (EJ), public health, and environmental science to achieve long overdue results (EPA 2022).

Cumulative impacts is a driver of change, not a theory. It drives solutions and results. —Robin Morris Collin

For decades, the public and several advisory groups have recommended that the US Environmental Protection Agency (EPA) advance CI programs, practices, and procedures (UCS 2025a). Grassroots and EJ groups push for CI policies as a solution to the disproportionate stressors and burdens felt by their communities (Environmental Justice State by State, n.d.).

Under the Biden administration, the EPA committed to developing and implementing a CI framework under its 2023 Equity Action Plan, in response to Executive Order 14096, “Revitalizing Our Nation’s Commitment to Environmental Justice for All” (UCS 2025a; Fed Reg 2023). On November 21, 2024, after three years of internal development, the EPA published the Interim Framework for Advancing Consideration of Cumulative Impacts (CI Framework) (EPA 2024). The CI Framework was made available to the public for a 90-day public comment period spanning a transition in administrations and concluding in February 2025.

The CI Framework provides a snapshot of the EPA’s understanding of CI, high-level guidance to develop an EPA CI program, and a potential process to consider and incorporate CI into decisions and agency goals. These approaches could include, for example, conducting a CI analysis to inform permitting decisions or review of human health risks under the Toxic Substances Control Act (1976). The CI Framework also called on the EPA to make “significant and urgent progress” in addressing cumulative and disproportionate impacts (EPA 2024). This need remains, especially given the second Trump administration’s unprecedented EPA rollbacks and broader attacks on science and programs related to equity and justice (Minovi et al. 2025).

Since January 2025, the Trump administration has made changes at the EPA that undermine the CI Framework and EJ initiatives (US Congress 2025). On his first day in office, President Trump rescinded EJ executive orders dating back to 1994 and disbanded key federal advisory committees that advised the EPA on EJ and CI, including the National Environmental Justice Advisory Council (NEJAC) and the White House Environmental Justice Advisory Council (The White House 2025a; GSA, n.d.; The White House 2025b). As a result, the Equity Action Plans were deleted from the EPA’s website.

These actions, combined with the significant cuts at the EPA—including the elimination of the EPA’s Office of Environmental Justice and External Civil Rights and its Office of Research and Development—leave very few staff and leadership to review and deliberate on the public

comments regarding the CI Framework (much less finalize it), despite the White House including cumulative exposures in its Make America Healthy Again strategy (The White House 2025c). Furthermore, the EPA has not stated or indicated that it plans to finalize the CI Framework, and there is no policy commitment to do so.

Had the EPA followed through on its commitment, an internal agency working group would have advanced the CI Framework from “interim” to “final.” That group would have reviewed the public comments and engaged with external advisors, including the Science Advisory Board, NEJAC, the Local Government Advisory Council, and the National Academies of Sciences, Engineering, and Medicine (NASEM) (UCS 2025c).

Box 1. Recommendations to the EPA on Cumulative Impacts

During the Biden administration, multiple external advisory committees provided advice and input to the US Environmental Protection Agency (EPA) on advancing cumulative impact (CI) assessment science and policy. This work included reviews of and comments on the agency’s Interim Framework for Advancing Consideration of Cumulative Impacts.

The EPA contracted the National Academies of Sciences, Engineering, and Medicine (NASEM) to advise it on how to advance “the scientific foundation underlying the practice of cumulative impact assessment” (NASEM 2025). In October 2025, after a series of workshops, NASEM released a consensus report: State of the Science and the Future of Cumulative Impact Assessment. The report included recommendations to the EPA on the CI Framework.

The National Environmental Justice Advisory Committee also submitted recommendations in its report Reducing Cumulative and Disproportionate Impacts and Burdens in Environmental Justice Communities. The Local Government Advisory Committee provided recommendations on implementing CI assessments in 2023 and 2025. The Children’s Health Protection Advisory Committee wrote a letter supporting actions by the EPA to inform CI from a children’s health perspective.

The UCS facilitated four convenings, bringing together people with formal expertise and lived experience to better understand the public comments on the CI Framework. The convening planning team provided summaries of these documents and the documents themselves to participants in preparation for the facilitated conversations.

Here, the Union of Concerned Sciences provides a substantive review and qualitative analysis of public and Tribal community comments on the CI Framework and recommendations for CI implementation. In the absence of federal leadership, this report can inform partners who continue critical work to advance CI policy and practice.

Methods

Of the 2,984 public comments, the EPA identified 92 as unique. Some public comments include attachments, resulting in a total of 107 documents submitted. A mass comment campaign resulted in 2,890 similar comments being submitted, and there are two comments missing from the Federal Register docket. We read and analyzed all 107 documents on the docket and identified themes only in the documents directly pertaining to the CI Framework, resulting in 101 coded documents. Commenters included individuals, academics, and representatives of nonprofits, state and Tribal governments, industry, and community organizations (Table 1).

Table 1. Public Comments by Organization Type

Organization Type	Number of Comments
Academic	3
Anonymous	1
Community organization	6
Environmental justice organizations	7
Environmental law organization	2
Environmental organization	5
Health organizations	3
Individual	41
Industry lobby	6
Multiple organizations	4
National nonprofit	7
State government	3
Tribal government	2
Tribal organization	2
Mass comment (aggregated in the Federal Register)	2,984

Our qualitative analysis revealed five themes (which include several subthemes): establishing requirements for consideration and assessment of CI, shaping and executing a CI program, ensuring desired outcomes, conducting community outreach and engagement, and developing a CI assessment (Figure 1).

This report also synthesizes insights from four convenings supported by UCS and facilitated by UCS staff and independent researchers who used to work at the EPA. These convenings were organized so we could hear directly from those who commented and thereby expand and improve the report.

Figure 1. Themes and Subthemes of Public Comments on the EPA Interim CI Framework

Requirements for CI Consideration	Shaping and Executing a CI Program	Ensuring Desired Outcomes	Outreach and Engagement	Developing CI Assessments
Specific rule or law mentioned	Rationale	CI assessments inform actions and decisions	Representation and influence	Subjects, topics, approaches, or disciplines
Nonfederal decisionmaking	Influential partners	Actions and decisions lead to desired outcomes	When and how	Characteristics and qualities
Regulatory underreach	Qualities and values		Risk communication and information transparency	
Regulatory overreach	Intragovernmental coordination			
Lack of rule or law	Initiation			
	Fulfilling goals or evaluation			

Information from public comments on the CI Framework and feedback at the four convenings were coded into five major themes and several subthemes.

Note: These original themes and subthemes were used to code the comments. These phrases and words were shortened for clarity in some parts of this report or explained to describe their meaning. For example, “initiation” is described in the report as “initiation triggers,” and “regulatory overreach” is described in the figures as simply “overreach.”

Establishing Requirements for Consideration and Assessment of CI

The public comments and the input from the convenings identify key legal, institutional, and governance challenges to requiring and implementing CI consideration. Moreover, these interested parties emphasized that effective CI implementation depends on assigning clear legal authority and coordinating across federal, state, Tribal, and local levels of government.

It's not effective to establish new requirements for local governments without state-level pressure and support to ensure they are followed. The framework also does not clarify roles and responsibilities. So state staff can push you off to the next person if they don't want to tackle the problem, because it isn't clear whether it's their responsibility.
—Ben Pauli

A central theme across comments was the scope and clarity of legal authority to require CI assessments (Requirements for CI Consideration, Figure 1). This issue appeared in 467 references across 68 public comments (Figure 2a, top). Convening participants stressed that legal authorization is essential not only to require a CI assessment but also to ensure it is

meaningfully integrated into decisionmaking processes. Participants underscored that without clearly defined authority, implementation will remain fragmented and ineffective.

Commenters expressed differing perspectives. Many urged the EPA to fully exercise its existing statutory authority in many areas, while others called for expansion or clarification of that authority. Nine commenters raised concerns about potential regulatory overreach.

Across these perspectives, a consistent worry emerged: The absence of clearly defined roles, responsibilities, and decisionmaking authority creates uncertainty and limits accountability. Commenters stressed the importance of explicitly identifying which entities are responsible for conducting CI assessments, which agencies review and validate those analyses, and which decisionmakers have authority to act on findings, including modifying or denying permits. Commenters also noted that without such clarity written into policies, implementation will be inconsistent and difficult.

Use of Existing Authority (Address Regulatory Underreach)

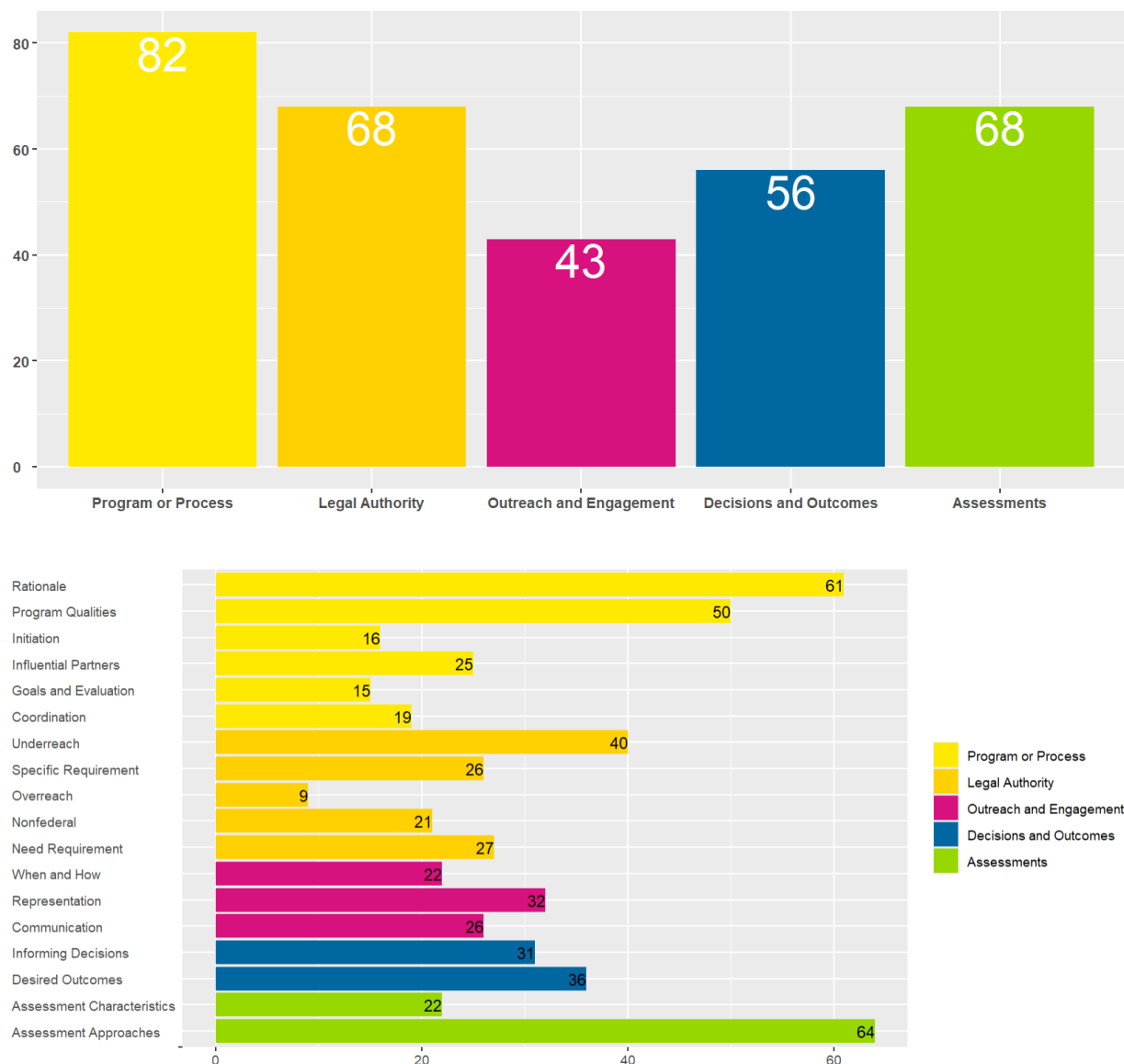
A substantial number (Figure 2b, bottom) of commenters asserted that the EPA already has sufficient authority to incorporate CI into regulatory decisionmaking and that current challenges reflect the underutilization of that existing authority rather than its absence. Key recommendations included use of existing statutory discretion to incorporate CI assessments (such as the EPA's authority under the Clean Air Act to issue permits or its authority to conduct chemical reviews under the Toxic Substances Control Act). In addition, they suggested applying CI data to identify high-risk permits and support regulatory intervention when standards are not met (Fed Reg 2025, comment #8).

Commenters called on the EPA to clearly define when CI assessments are required, explain decisions when it determines authority is lacking, and establish stronger implementation guidance and accountability mechanisms.

However, these parties also noted that existing environmental laws—often structured around a single medium (e.g., air or water)—can limit effective consideration of CI. They recommended improved coordination across statutory frameworks and increased investment in research and analytic tools.

Several commenters also emphasized that CI assessments should be conducted as the best available science in appropriate cases, even when not explicitly required by statute (i.e., based on discretionary authorities).

Figure 2 a and b. Occurrence of Themes and Subthemes in Public Comment Documents



Most comments were related to aspects of CI programs or the regulatory authority to consider CI. Within the subthemes, the majority of comments provided a rationale for considering CI, discussed current regulatory underreach regarding CI, or described potential assessment approaches.

Note: The first plot reflects the number of times each theme was coded in the comments. In the second plot, each individual bar represents the number of times a document reflected that subtheme. Comments can reflect multiple themes or subthemes, and so the subthemes in this chart do not sum to the total number of times the documents reflect a single theme.

Calls for a New or Amended Law

Many commenters argued that existing environmental statutes do not consistently or adequately require CI consideration (Lack of rule or law, Figure 1), and key recommendations included making CI assessments mandatory for major regulatory actions.

A recurring concern was that efforts to incorporate CI into existing statutory frameworks—such as the Clean Air Act—may be insufficient or poorly suited to the complexity of CI. Commenters therefore emphasized the need to develop new or amended laws specifically designed to address CI, establish clear statutory language defining when a CI assessment is required, and create comprehensive frameworks that specify implementation processes and accountability structures.

Cumulative impacts assessments need to be overarching—not only regarding decisions related to siting and permitting facilities that impact air quality, but also regarding water, energy sources and consumption, land use and quality, transportation, wildlife, data centers, other technology, and disproportionate impacts.
—Mona Munroe-Younis

Commenters highlighted several critical elements that any new or amended legal framework should address, including clear triggers for CI assessments, defined roles across agencies and levels of government, and explicit authority to act on findings, including modifying or revoking permits (Fed Reg 2025, comments #63 and #62). They also emphasized the need to establish mechanisms for interagency coordination, dedicated funding and staffing, and fee structures that do not create barriers to implementation. Commenters noted that weak or ambiguous statutory frameworks contribute to uneven enforcement.

Concerns About Exceeding Authority

Nine commenters cautioned (Regulatory overreach, Figure 2b) that new CI-related requirements could increase administrative burden, delay permitting processes, introduce regulatory uncertainty, and rely on insufficiently developed scientific methodologies (Fed Reg 2025, comment #57).

These commenters recommended integrating CI assessments into existing regulatory frameworks, rather than creating entirely new processes, and limiting mandatory CI assessments to contexts in which related analytical requirements already exist.

Authorities Beyond the EPA

Commenters consistently emphasized that advancing CI implementation requires engagement beyond the federal level (Nonfederal decisionmaking, Figure 2b). They noted that states, Tribes, and local governments play critical roles in implementing CI frameworks and often serve as laboratories for innovation.

Commenters also noted that the EPA should provide guidance and oversight to support consistent adoption of CI practices, particularly in delegated programs. However, they

emphasized that reliance on federal leadership alone is insufficient and, in some contexts, unrealistic.

Commenters highlighted that many environmental and land use decisions are most effectively addressed at the local level. However, local action is often constrained without state-level authority, resources, or mandates. Convening participants discussed the complexity of implementing CI frameworks across federal, state, and local systems, noting the coordination required, including mechanisms to ensure that local decisionmakers are empowered—and, when necessary, compelled—to act.

Integrating CI Fundamentals into Legal Frameworks

Convening participants emphasized the importance of explicitly incorporating public health objectives alongside the environmental goals in statutory and regulatory frameworks.

They noted that community-identified health outcomes should not be constrained by traditional environmental law structures, that public health indicators are already measurable and can be integrated into implementation, and that fragmented regulatory approaches—such as separating pollutants, exposure pathways, or health end points—undermine effective CI assessments.

There are many practices that are contradictory to considering CI such as fractured permitting, including direct effluent and not atmospheric deposition, separating pollutants and not estimating their combined impacts by health endpoints. —Kristie Ellickson

Convening participants also identified community engagement as a core component of CI implementation and thought it helpful to closely link such engagement to legal requirements. Government agencies have broad authority to enhance how they engage communities. Current metrics for evaluating engagement focus on process (e.g., the number of convenings, comments received) but should shift to health and equity outcomes and community awareness of CI. Despite legal requirements and authority in some states and cities, participation often depends on whom advocates can organize to show up. Therefore, less-connected community members can be excluded.

In New Jersey, there are meaningful public participation guidelines to ensure robust fulfillment of the EJ Law. While facilities meet technical requirements, time and again, they do not embrace the spirit of the law and community engagement. In reality, the only people in the room are the people that we have been able to reach with coordinated advocacy, engagement, and partnership with local organizations. It should not be the responsibility of residents to bring neighbors into the room, when it is the facility that is asking for a permit to operate in an already overburdened community. —Brooke Helmick

Commenters stated that new requirements should clearly define who will conduct CI assessments when triggered, how cumulative burden is identified, what analytical components

are required, how findings will influence regulatory decisions, what the consequences are for permitting and enforcement, how interagency coordination will be structured, when accountability mechanisms are applicable, and what metrics will be used to evaluate outcomes.

The insights from the convenings underscore that effective CI consideration requires not only technical tools, but also durable legal and institutional frameworks capable of translating analysis into meaningful action.

Shaping and Executing a CI Program

Eighty-two of the comments on the CI Framework (more comments than for any other theme and subtheme received) touched on how a CI process or program should be developed, implemented, or evaluated. Here are the covered elements that should be considered when shaping a CI program: rationale, qualities and values, influential partners, initiation triggers, intragovernmental coordination, and program goals.

Rationale

Over two-thirds of the public comments provided a rationale for why CI programs and assessments are important. Most pointed to the existing health and environmental burdens in communities with disproportionately higher percentages of people with low incomes and people of color. Multiple commenters emphasized the life-and-death stakes of CI, including health impacts (such as asthma, cardiovascular disease, and cancer). They noted that certain communities disproportionately suffer from these morbidity and mortality burdens.

Exposure to multiple and varying stressors at different stages of human development means that laboratory and medical science cannot adequately capture all stressors and impacts, nor can they establish causality. It is necessary to act even without individual causation. — Sarah Bucic

Strikingly, many of the convening participants had explained CI to lay audiences and taught about it and had been met with surprise that the country's environmental protection framework does not already consider existing sources of pollution. As a result, public commenters and the convening participants emphasized the need to move beyond defending the rationale for CI programs and focus on developing methods and decision frameworks for implementing them.

For the typical layperson, asking them if polluters should be judged within the context of other pollution happening—there would be an obvious answer. Yes. The outlandishness of the injustice needs to be stated plainly. —Manuel Salgado

Qualities and Values

Commenters recommend the following as important CI program qualities and values: fairness, equity, the centering of EJ, efficiency, transparency, accountability, coordination, and consistency. They suggested that CI programs follow the evidence and science and anchor work in the expertise and context of those potentially impacted by a decision. Commenters and convening participants emphasized the importance of considering CI from different experiences and disciplines.

Influential Partners

Many of the written comments (which totaled 25) opened with a description of the commenter's work and expertise. Many commenters indicated interest in being present during CI program development, rather than being engaged on an assessment-by-assessment basis. They also offered to serve as resources for education efforts, workforce development, community engagement, and research analyses.

Initiation

Sixteen of the comment letters recommended initiation triggers for CI processes or assessments, acknowledging that CI assessments are most needed in communities that already shoulder disproportionate burdens of poor health, lower economic status, and higher pollution exposure. Some suggested entities initiate a CI process whenever EPA decisions could increase pollution, emissions, or discharges. Convening participants elaborated: CI assessments should be initiated based on proximity to other pollution sources or when aggregate CI indicators are high. Commenters and convening participants stated that initiation procedures should transparently disclose when and why a government entity did or did not begin a process or choose a particular approach, and that initiation should, in part, be based on community input.

Intragovernmental Coordination

Implementation of CI requires removing technical and procedural barriers to improve coordination among programs and agencies, so people and data can be more effective. Nineteen of the comments suggested more and continued intragovernmental coordination to unite fragmented environmental protection processes, avoid unintended consequences, and avoid a lack of accountability when issues are moved across governmental agencies without being addressed.

Moreover, many comments touted intragovernmental coordination as a way to improve government efficiency. Such coordination, they argued, results in better use of time and budgets, shared data to tell more unified stories, mutual program benefits across agencies, and improved abilities to identify and mitigate undesirable trade-offs (Fed Reg 2025, comments #8, #44, #46, #55). Some convening participants offered that a Health in All Policies approach could provide valuable lessons for coordination (APHA, n.d.).

When burdens are found to be high, then cross-agency integration matters, because the harm doesn't fit under one agency or statutory silo. —Sandra Whitehead

Fulfilling Goals or Evaluation

Fifteen commenters recommended ensuring that CI programs have clear and consistent goals with achievable and quantifiable metrics. Their suggestions went beyond recommending program goals to suggesting how to ensure program goals are achieved—for example, using checkpoints, performance measures, and implementation timelines with deadlines.

Commenters likely emphasized timelines because of the long arc in implementing a CI program at the EPA, spanning from the 2004 NEJAC report (NEJAC 2004) until the CI Framework was published in 2024. Commenters and convening participants recommended developing programs to improve public health by having assessments reflect the experiences of impacted communities.

Public health and environmental issues shouldn't be separated.
—Alan Walts

Convening participants emphasized the need to define program success based on short-, intermediate-, and longer-term outcomes in an impacted area or knowledge about CI gained by a community. In addition, they noted that interim indicators and accountability mechanisms are needed not just at the end of a program, but also during the program, to track progress (with assigned roles and responsibilities).

Successful programs are, in part, due to well-informed staff and leadership, and to this end, commenters called for comprehensive training. Convening participants suggested actions to fulfill CI program goals, such as having a connected data architecture, aligning CI with the agency's mission, integrating interdisciplinary workforce and training, having good documentation, allocating budget resources effectively, and incorporating CI roles in job descriptions.

When people see how cumulative impacts advance the Agency's mission, confusion gives way to alignment, and alignment changes perspectives. —Ameesha Meta-Sampath

Ensuring Desired Outcomes

Fifty-six of the comments focused on the relationships across a CI assessment, related decisionmaking, and the CI assessment's real-world outcomes and impacts. They noted that meaningful CI program outcomes are by no means inevitable and depend on numerous factors.

Use in Decisionmaking

Commenters and convening participants called for the EPA to increase requirements for CI assessments when multiple facilities are already present and recommended that the EPA used CI assessment results in agency decisionmaking (such as permitting, rulemaking, zoning, and allocation of programmatic resources). With such decisionmaking (CI assessments inform actions and decisions, Figure 1), commenters recommended a comprehensive, integrated approach (sometimes called “whole of government” approach)—for example, considering multiple exposure pathways in integrated water and air permits (Ortenzi et al. 2022).

There's often interest from scientists to link exposures directly to health outcomes or build models that better define exposure-outcome relationships. But for decisionmakers, advocates, impacted communities, all of that isn't always necessary. Sometimes we simply need to consider population or neighborhood characteristics to inform decisions so that overburdened communities aren't further burdened.

—Courtney Woods

In addition to having CI assessments inform permitting conditions and limits, multiple commenters called for thresholds that would require permit denials. Some commenters called for a presumptive denial of any new permits in areas with high existing burdens.

Commenters and convening participants discussed how to expand rather than change current risk assessment practice to fit within a CI assessment. Cumulative risk assessment is an enhanced classic risk assessment and tends to include a quantitative approach to assessing risks for multiple chemical exposures through multiple pathways. To this end, commenters discussed highly specific assessment details, such as the importance of including both cancer and noncancer risks and developing decisionmaking thresholds for each. Commenters also called for the EPA to integrate CI assessment results as “other health factors” within the component of rulemakings that considers health protectiveness. This suggestion will require more thought and intention to assign meaning to multiple exposure estimates and avoid limiting decisionmaking to one public health condition.

Two of the comment letters mentioned “Circular No. A-4,” a guidance document authored by the Office of Management and Budget (OMB) (Office of Management and Budget 2023). OMB assists presidents with their missions, supports budget development, oversees federal agencies, and coordinates and reviews agency regulations. OMB updated “Circular No. A-4” during the Biden administration to improve consistency in regulatory assessments. It also provided guidance for agencies to assess the cumulative and unequal benefits and costs of regulatory actions, thereby linking CI to decisionmaking. The second Trump administration rescinded the circular, but the archived document can still benefit the work of state and local governments.

Enforcement and Accountability

Thirty-six of the comments (Desired outcomes, Figure 2b) asserted that decisions that consider CI should translate into improved outcomes in impacted communities (Actions and decisions lead to desired outcomes, Figure 1), and both commenters and convening participants specifically discussed enforcement and accountability measures as means to get there. Implementation of environmental regulations involves conducting the assessment, finalizing the rule, and then using compliance and enforcement activities to ensure that regulated parties comply. When regulated parties are not in compliance with requirements, they are held to account.

Commenters described being let down by the agency’s use of CI as merely an advisory or research tool, without instituting concrete policy changes or giving it a clear role in decisionmaking and resulting enforcement and accountability. They called for specific

enforcement mechanisms that would fine polluters and ensure the funds benefited communities.

The thing that hits me the most is the need for accountability, and for it to drive an action so it's not just research. CI itself is important, and we should understand the consequences of decisions. But if that acknowledgment doesn't go anywhere, it stays as a check-box exercise. —Laura McKelvey

Convening participants affirmed that accountability must be built into policy, law, and regulations with clear mandates and enforcement mechanisms, such as civil and criminal enforcement, pollution control technologies, and remediation. Multiple commenters stated that robust enforcement measures are key when developing CI policies, to avoid loopholes and noncompliance, and convening participants acknowledged that both government officials and engaged community members must have a role and be held to account.

It needs to be everyone's responsibility so that it doesn't become no one's responsibility. —Maria Lopez-Nuñez

Commenters highlighted that pollution and impacts cross state lines, and therefore, a federal and regional regulatory approach should be a part of linking CI to decisionmaking. Interestingly, as with other comments, some of the described concerns could also be used as indicator data in the assessment. Namely, commenters noted that chronic noncompliance is an important indicator in CI assessments and recommended improved monitoring to better characterize CI and to identify noncompliance.

CI Program Community Outreach and Engagement

Forty-three of the 101 coded documents relate to the overarching theme of community outreach and engagement (Outreach and Engagement, Figure 1). This focus aligns with the NASEM State of the Science and the Future of Cumulative Impact Assessment and Constructing Valid Geospatial Tools for Environmental Justice reports, which both modeled and described the importance of engaging impacted communities in CI work (NASEM 2025; NASEM 2024).

Many of the comments pointed to past and current examples of communities being left out of policy decisions—including projects such as the siting of industrial facilities and construction of highways—noting that these projects now contribute to disproportionate burdens. Many government agencies pursue community engagement through the typical public comment process, but trustworthy and meaningful engagement occurs over time and cannot happen only when issues arise (UCS 2025b).

Community engagement and participation are critical links to the implementation of cumulative impacts assessments. One cannot be successfully done without the other. They're like the two chambers of a heart. —Robin Morris Collin

Commenters also communicated that engagement was crucial and provided feedback about how CI programs could engage with impacted communities. The majority of the comments coded in these categories urged the EPA to approach community and invested parties' engagement as an essential part of conducting a CI assessment and noted that engagement requires thoughtful and considerable investment, including in defining what engagement looks like and socializing that definition (UCS 2025b).

This work could include engaging communities in a review of the assessment, data collection, or the sharing of other information or expertise. Key recommendations included providing early and meaningful public notice and conducting direct outreach to individual community members (rather than relying solely on community-based organizations). In the convenings, participants emphasized that CI assessments and community engagement are interdependent, and they relayed positive experiences with agencies developing long-term, trustworthy engagement and getting better outcomes by hiring people specifically to conduct community outreach.

Representation and Influence

It is necessary for agencies to respond to public feedback so communities see how their input influences decisions. Thirty-two (nearly one-third) of the public comments reflected themes of representation and influence. They discussed who should inform or review CI assessments and/or the actions or decisions that result from an assessment, including who should influence what is assessed and how.

Commenters and convening participants discussed the need to build trust between the EPA and impacted communities and to ensure meaningful engagement with overburdened EJ communities. This work includes ensuring that these groups are engaged early, often, and respectfully throughout the process; are given ample opportunity to engage; are empowered to lead and aware that their participation is valued and acknowledged; and are involved in the decisionmaking process following a CI assessment. "Meaningful engagement" or "participation" was explicitly mentioned in 20 of the public comments.

Meaningful engagement requires structures that give communities influence over scoping, analysis, and ultimately decisions—not just participation. —Aya Nagano

Commenters also called for engagement with Tribes and Tribal groups in ways that ensure and uphold sovereign authority. They also stressed the importance of valuing Indigenous Knowledge and science, specifying that Tribal consultation is a separate and essential process from community outreach and engagement.

Convening participants recommended involving youth in engagement activities and making sure their voices are heard and their knowledge and opinions are valued.

Commenters and convening participants explained the structural disparities in community engagement, as regulated industries often know the regulatory landscape, have relationships with agency personnel, and have interacted with agencies well before public convenings. Community members need to have the same opportunities.

Box 2. Equal Engagement Opportunities for Impacted Communities

Implementing successful cumulative impacts (CI) programs in the United States requires cultural changes to the development and administration of environmental protections. Legal mandates for community engagement may exist, but agency belief systems and corresponding structures may not support meaningful implementation.

The regulated community typically has a better understanding of government procedures and has ongoing relationships with regulators. Its representatives can step in at multiple points to influence policy development, assessments, and decisions. This is called corporate or regulatory capture and has led to the loss of community trust in government agencies over time.

Building trust and recognition between agencies and communities requires long-term, consistent engagement, not just minimal engagement to comply with statutory requirements. While it may not be possible to legislate culture, policy language that calls for the level of coordination that CI inherently requires—across agencies, disciplines, and impacted communities—will drive change.

Commenters also discussed barriers and exclusionary practices, including systemic racism and racial injustice, that have historically left impacted communities out of environmental decisionmaking. They urged the EPA to be intentional about ensuring that “historically marginalized communities have an actual seat at the table” (Fed Reg 2025, comment #32). Some of this work could involve local storytelling organizations, to help community members share their stories during public comment periods.

Risk Communication and Information Transparency

More than one-quarter (26) of the public comments were coded for risk communication and information transparency. These comments addressed whether and how the assessment process, data, results, or other information should be communicated from the assessor to the engaged parties. One-way communication needs to be fine-tuned to those potentially impacted—for example, with notices sent to specific zip codes and to tenants, not just property owners. Convening participants emphasized the importance of tailoring communication approaches to a community’s context to ensure materials are relevant.

Convening participants suggested it could be helpful for agencies to describe the regulation process to the public, so they know when to provide feedback. Such descriptions could explain what government agencies do and how they affect lives.

Many commenters discussed the need for transparent data reporting, open communication in languages spoken by those in the impacted communities, and, in some situations, communication from people in the community. Furthermore, commenters strongly recommended the use of plain language, consideration of cultural or language barriers, and creation of glossaries or visual aids (Fed Reg 2025, comment #35).

The focus is on the community being impacted. I see myself as explaining the concepts of CI and helping to explain the legal dynamics of CI as a whole. —Sasha Lewis-Norelle

Several commenters raised concerns about the EPA’s current risk communication practices—especially regarding air pollution exposure—which may underestimate cancer or other risks to a community. Commenters therefore urged the EPA to communicate cumulative public health risks and impacts and expand its idea of what government communication looks like. Such communication could include a community snapshot in a permit application, to provide context.

Commenters also discussed the need for the EPA to report to impacted communities the decisions made following a CI assessment, to provide publicly accessible data platforms to track pollution levels, and to restore access to data tools such as EJSCREEN, which were removed under the Trump administration (Fed Reg 2025, comment #27; Public Environmental Data Partners, n.d.).

Timing and Engagement Approaches

More than one-fifth of the comments (22) suggested ways to achieve more meaningful engagement and/or reduce barriers to participation, including recommendations for how and when engagement should happen (When and how, Figure 1).

Commenters and convening participants urged the EPA to engage impacted communities early, often, and throughout all steps of the assessment and decisionmaking processes. Such engagement would include communicating “what exact actions will be taken into consideration when ... decisions are made” (Fed Reg 2025, comment #32).

Commenters also urged the EPA to be mindful of the barriers to and time commitment of engagement and to provide ample time for people to engage and understand the issues. The agency should ensure that engagement respects and recognizes diverse cultures and experiences to reach populations that may have language or logistical barriers (such as farmworkers). This work may also include communicating in ways that can engage people with disabilities, hosting in-person events in accessible spaces (and including people who may not be US citizens), providing technical assistance to facilitate engagement, and providing virtual engagement opportunities. They also emphasized that while engagement is more than convenings, convenings should be structured, purposeful, and outcome focused.

Having public participation that is convenient for the public to participate in is key. —Sophia Longworth

Developing a CI Assessment

Sixty-eight of the public comment letters and attachments address how to develop CI assessments, including the type of scientific exploration or data needed to assess CI and the qualities and characteristics of the evidence, information, and scientific studies. Commenters and convening participants described a need to fine-tune assessments for the impacted communities.

Across the record, many commenters stated that CI assessments required a comprehensive evaluation and one noted that “a CI assessment must identify, measure, or quantify all exposures and effects that may burden a community” (Fed Reg 2025, comment #31). A substantial number of commenters highlighted the importance of accounting for chemical and nonchemical stressors, with one observing that “it is the multiplicity of our exposures to both chemical and non-chemical (e.g., noise, excessive heat, etc.) stressors that can significantly impact our overall health” (Fed Reg 2025, comment #64).

Convening participants and commenters indicated that a CI assessment needs to rely on a mix of quantitative, semiquantitative, and qualitative information, particularly when fully quantified data are limited.

While biological markers of allostatic load or epigenetic weathering are one approach to assess cumulative impacts, these biological methods are not necessarily better or more appropriate for measuring the lived experience of cumulative impacts. —Alexa Dietrich

Convening participants and commenters described potential roles that impacted community members could play in assessments. They noted that those with community knowledge and lived experience can provide important information for characterizing stressors that is not readily captured through existing datasets. One person explained that “stressors such as food insecurity, preexisting conditions, and discrimination are not easily measured—and the easiest way to obtain this data is often through firsthand account” (Fed Reg 2025, comment #56). Commenters also discussed the importance of using previously collected public comments as data and of codeveloping CI assessments with impacted communities.

Include community leaders and community-based science and do ground-truthing to determine if it is strong enough to result in change for people on the ground. —Kathleen Curtis

Characteristics and Qualities

Twenty-two of the comments included descriptions of commenters’ preferred CI assessment qualities and characteristics. These traits involved data, study design, evidence, and demographic information (e.g., rural or urban classification, income level, race and ethnicity,

Tribal status, occupation, possession of hunter or fisher license, and life stage). Commenters emphasized that a CI assessment should reflect *disproportionate* stressors and burdens that may not be adequately represented in traditional datasets. One commenter noted that CI Frameworks are especially important for “Black, Brown, and low-income communities who are exposed to higher levels of pollution” (Fed Reg 2025, comment #49).

In 2021, the City of Chicago issued a statement that racism is a public health crisis and mentioned reducing the life expectancy gap between Black and White residents. Tying this racial health equity framework back to cumulative impacts is critical and mirrors what we’re trying to do at the local level. —Gaby Wagener-Sobrero

Many commenters also stressed the importance of rigor and systematic methods. One commenter stated that “consistently analyzing and quantifying CI is critical to performing a robust environmental justice analysis” and highlighted the need for “a robust and systematic evaluation of both quantitative and qualitative data, when appropriate and in the right contexts” (Fed Reg 2025, comment #22).

With environmental science, it cannot be neutral; it needs to be grounded in a justice approach that elevates who is impacted by that data and why. —Dionna Brown

Commenters stress the use of the best available science, with one commenter explaining that the EPA should “use the best available data, even when such data is imperfect or incomplete” and that a CI assessment can represent the best available science by providing a more accurate picture of the multiple stressors communities face (Fed Reg 2025, comment #56).

Remember that multiple and disproportionate environmental risks are identifiable and measurable and well within EPA’s mission to address. —Andrew Geller

Commenters also stated that high-quality evidence should be transparent, equitable, accessible, and spatially resolved enough to identify disproportionate burdens.

Subjects, Topics, Approaches, and Disciplines

Commenters offered many suggestions for the subjects, topics, approaches, and disciplines to include or reflect in CI assessments, with 64 of the 92 comments coded with this subtheme. The comments communicated that a CI assessment should reflect economic, health, or socioeconomic data; various types of exposure and burdens; and the social determinants of health and their use in cross-discipline approaches.

A commenter emphasized that CI assessments should “collect and analyze data at finer geographic scales” and must reflect “the totality of environmental, economic, and social factors that create unequal and harmful conditions for vulnerable communities” (Fed Reg 2025, comment #25). Many commenters highlighted the following disciplines as foundational

to developing a CI assessment: epidemiology, exposure science, toxicology, and monitoring techniques. There were examples of practice within these disciplines such as the need for research spanning from human populations to chamber studies, improved tools, and strategically sited measurements in and near overburdened communities.

Convening participants and commenters also underscored the value of systems-based and holistic approaches, including mixed-method approaches, One Health, and life-cycle perspectives citing the EPA's CI definition as evidence (Fed Reg 2025, comment #10; EPA 2024).

There were many discussions in the comments and the convenings about human health risk assessments. Many contended and could point to evidence that human health risk assessment based on single chemical exposures has not protected communities. However, these methods are, in part, a reflection of current law and policy and are informed by years of study.

In addition, commenters highlighted the value of integrating diverse sources of knowledge and expertise, with one speaker noting that “integration of TEK [Traditional Ecological Knowledge] with modern Western science will offer a more comprehensive and culturally informed understanding of environmental impacts during assessments” (Fed Reg 2025, comment #11).

These remarks characterize CI assessments as fundamentally multidisciplinary with various data sources and analytical techniques.

Finally, regarding making progress in methodologies and assessments, convening participants and nearly half of the commenters underscored the importance of considering the temporal dimension of CI. One stated CI assessments should capture “the ways in which disadvantage can accumulate over time at the local level to contribute to health and social inequalities over the lifespan and across generations” (Fed Reg 2025, comment #28). Commenters also recommended advancement in and analysis of existing CI mapping tools, to compare thresholds for decisionmaking in a variety of policies.

Conclusion

The public comments and convening discussions regarding the EPA's CI Framework reflect broad agreement on the importance of CI assessments and a range of views on how best to implement it. The commenters provide important concepts for developing CI policies, programs, and practices, as well as refining the CI Framework to advance environmental protections.

Based on our analysis, the comments cover five key areas of a robust cumulative impacts policy and program: 1) understanding and defining the scope of the legal authority on which to base a CI program (Requirements for CI Consideration, Figure 1), 2) defining the core components of a program (Shaping and Executing a CI Program, Figure 1), 3) engaging communities during program development and implementation (Outreach and Engagement, Figure 1), 4) defining CI assessment components and approaches (Developing CI Assessments, Figure 1), and 5) ensuring desired outcomes (Ensuring Desired Outcomes, Figure 1).

Yet much unfinished business remains in requiring and crafting assessments that lead to reduced pollution for overburdened communities. Seventy percent of the public comments brought up a concern for health in overburdened communities. Commenters and convening participants urged movement from providing a rationale for CI programs to implementing them and called for progress in evaluating program outcomes.

Accomplishing this, in part, requires investigation into the outcomes of existing CI policies by tracking individual and CI metrics over time, as well as gaining a better understanding from those who are impacted. Yet another important action is to continue to gather groups with diverse expertise to push for the consideration of CI in decisionmaking, as was the motivation for this discussion of the CI Framework's unfinished business.

Authors

Kristie Ellickson, PhD, is a senior scientist in the Center for Science and Democracy at UCS. **Darya Minovi, MPH**, is the manager of fair access research in the program. **Robin Morris Collin, Professor Emerita of Law, J.D., Esq. (retired), PhD (honoris causa)**, is an independent researcher and was a Willamette University School of Law professor and the EPA senior advisor to the administrator for environmental justice. **Alan Walts, JD**, is an independent researcher and was director of environmental review and environmental justice at EPA Region 5. **Carol Ann Gross-Davis, PhD, MS**, is the chief epidemiologist for the Philadelphia Department of Public Health and was an EPA environmental epidemiologist and exposure scientist and a Thomas Jefferson University adjunct professor. **Samuel Kay, PhD**, is the chief of the Air Quality Planning Branch of the DC Department of Energy & Environment and was an EPA environmental protection specialist and scientist and a University of Washington assistant professor in geography.

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* Served as convening rapporteurs

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