

Draft Standards and Guidelines Cumulative Impact Analysis (CIA)

Executive Office of Energy and Environmental Affairs

Office of Environmental Justice and Equity

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I. Introduction

A. Background

As Massachusetts accelerates its transition to a clean energy future, it must do so in a way that protects public health, promotes equity, and ensures that no community bears an unfair share of environmental burdens. Understanding and accounting for cumulative impacts is essential to making equitable, health-conscious decisions about clean energy infrastructure. Rather than evaluating a proposed project in isolation, a cumulative impacts framework considers how multiple environmental and social indicators interact and build over time in a given area.

Understanding cumulative impacts is essential to making equitable, health-conscious decisions about clean energy infrastructure.

Cumulative burden has direct implications for public health. Communities facing multiple overlapping indicators tend to experience higher rates of chronic disease, lower life expectancy, and greater vulnerability to environmental hazards. Incorporating cumulative impact considerations into energy planning and permitting is therefore a critical strategy for protecting human health and reflects the Commonwealth's priority of ensuring that state agencies meaningfully address the longstanding and interconnected inequities concerning environmental exposure and infrastructure development. Although much of the language in these guidelines are directed towards the development of cumulative impact analysis ("CIA") regulations for clean energy siting processes, the Energy Facilities Siting Board ("EFSB") is also required to implement CIA for facilities that do not qualify as clean energy facilities under its jurisdiction. G.L. c. 164, § 69G, as amended by Section 53 of the Acts of 2024, Chapter 239.

As the Commonwealth continues to lead on clean energy and climate policy, the Department of Public Utilities ("DPU"), the EFSB, and the Department of Energy Resources ("DOER") play a critical role in ensuring that energy infrastructure is sited and permitted in a way that accounts for the full range of project impacts in a community. Requiring project applicants to assess cumulative impacts supports more transparent, data-driven decision-making by recognizing historical inequities, reducing exposure to compounding burdens, and promoting more equitable distribution of environmental and economic benefits.

The purpose of these guidelines is to establish a clear and consistent framework for the preparation of a CIA that incorporates cumulative impacts and environmental justice considerations in siting and permitting decisions for energy infrastructure projects, particularly as they impact areas experiencing an existing unfair or inequitable environmental burden or related public health consequence. This document outlines the core principles of a CIA and provides a practical roadmap for integrating those principles into the regulatory and decision-making processes of the EFSB. Developers pursuing a consolidated local permit for small clean energy infrastructure projects reviewed by a local government are not required to conduct a CIA under these Standards and Guidelines,

though a small clean energy infrastructure project reviewed by the EFSB is required to conduct a CIA.

B. Key Terms

- ✓ **Burdened Area (“BA”):** A census block group, which is subject to an existing unfair or inequitable environmental burden or related health consequence. These conditions are determined using the MassEnviroScreen score of 75 or greater (i.e., at or above the 75th percentile, statewide), or an annual median household income of 65 percent or less of the statewide annual median household income.
- ✓ **Community Benefit Agreement (“CBA”):** A legally binding, negotiated agreement between a project applicant and a community, often represented by a coalition of community groups or a local government body, which outlines benefits the communities will receive.
- ✓ **Community Benefit Plan (“CBP”):** A non-legally binding document which outlines how a project will engage with and benefit local communities during development and operation of an energy facility.
- ✓ **Cumulative Impact Analysis (“CIA”):** The process to assess cumulative impacts, benefits, and burdens required to be completed by certain applicants of energy infrastructure facilities in accordance with G.L. c. 164, § 69G, and 980 CMR 15.00.
- ✓ **Environmental Justice (“EJ”):** The equal protection and meaningful involvement of all people and communities with respect to the development, implementation, and enforcement of energy, climate change, and environmental laws, regulations, and policies and the equitable distribution of energy and environmental benefits and burdens.
- ✓ **Environmental Justice Principles:** Principles that support protection from environmental pollution and the ability to live in and enjoy a clean and healthy environment, regardless of race, color, income, class, handicap, gender identity, sexual orientation, national origin, ethnicity or ancestry, religious belief or English language proficiency, which includes: (i) the meaningful involvement of all people with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies, including climate change policies; and (ii) the equitable distribution of energy and environmental benefits and environmental burdens.
- ✓ **Indicators:** A statistical measure, which is used to evaluate a census block group’s environmental exposures, environmental effects, climate effects, sensitive populations, and socioeconomic factors.
- ✓ **MassEnviroScreen:** A GIS-based mapping tool developed and administered by the Office of Environmental Justice and Equity that uses Indicators to produce an MES Score and provide Indicator data for every census block group across the state.

- ✓ **Meaningful Engagement:** Early, continuous, accessible, and culturally competent public communication that allows for community input to inform decision-making and public policy.
- ✓ **Specific Geographical Area (“SGA”):** An area in which a proposed facility would be located, including the Proposed Site/Route and the Noticed Alternative Site/Route, and is determined based on facility-specific radial distances from the Facility boundary, as established by the EFSB.
- ✓ **Project Impact:** An effect to the environment, socioeconomic and public health conditions, or climate change resiliency, resulting from construction and operation of the Project. A Project Impact can be either positive or negative.

C. What is a Cumulative Impact Analysis?

A CIA is a key tool in supporting equitable, informed decision-making to advance public health and environmental justice. A CIA is a comprehensive examination of a proposed energy project, including clean energy facilities and facilities that do not qualify as clean energy facilities, in the context of past and present activities that affect a specific geographic area. This analysis considers environmental burdens – such as air and water pollution and public health consequences through the lens of environmental exposures, environmental effects, climate risks, sensitive populations and socioeconomic factors.

CIA is a key tool for identifying and addressing disproportionate environmental and health burdens on disadvantaged communities and supports more equitable, informed decision-making.

The goal is to ensure that infrastructure development does not create disproportionate adverse effects in BAs or materially exacerbate indicators that are already elevated. This analysis must be grounded in community engagement and utilize publicly available data sources and tools. Moreover, the CIA should serve as a foundational tool guiding EFSB’s siting and permitting decisions. While not required by statute, OEJE recommends the CIA process result in a report that triggers action to alleviate disproportionate adverse effects in a BA, as well as permit conditions with enforceable measures that maximize accountability.

D. Legislative and Regulatory Context

Several key legislative, regulatory, and planning frameworks guide the integration of CIA into clean energy decision-making. Together, they reinforce the need for an equity-centered approach that identifies and mitigates disproportionate harm while ensuring the fair distribution of benefits across areas.

- i. **2024 Climate Act:** The 2024 Climate Act in Massachusetts, officially entitled *An Act promoting a clean energy grid, advancing equity, and protecting ratepayers*,

establishes a critical framework for advancing clean energy development while addressing systemic inequities in environmental and social impacts. The Climate Act Statute at M.G.L. Chapter 164, §69G, as amended by Section 53 of the Acts of 2024, Chapter 239 defines the following:

“Cumulative Impact Analysis,” a written report produced by the applicant assessing impacts and burdens, including but not limited to any existing environmental burden and public health consequences impacting a specific geographical area in which a facility, large clean energy infrastructure facility or small clean energy infrastructure facility is proposed from any prior or current private, industrial, commercial, state or municipal operation or project; provided, that if the analysis indicates that such a geographical area is subject to an existing unfair or inequitable environmental burden or related health consequence, the analysis shall identify any: (i) environmental and public health impact from the proposed project that would likely result in a disproportionate adverse effect on such geographical area; (ii) potential impact or consequence from the proposed project that would increase or reduce the effects of climate change on such geographical area; and (iii) proposed potential remedial actions to address any disproportionate adverse impacts to the environment, public health and climate resilience of such geographical area that may be attributable to the proposed project. Said cumulative impact analysis shall be developed in accordance with guidance established by the Office of Environmental Justice and Equity established pursuant to section 29 of chapter 21A and regulations promulgated by the board.

This legislation defines a CIA and highlights the importance of incorporating CIA into planning and decision-making processes to ensure that the burdens and benefits of clean energy projects are equitably distributed. The Act emphasizes the need to remediate disproportionate adverse impacts, aligning with its broader goals of protecting ratepayers and accelerating an equitable transition to a sustainable and inclusive energy grid.

- ii. **Clean Energy Goals and Siting Process:** Massachusetts's ambitious clean energy goals, including achieving net-zero emissions by 2050 and fostering a sustainable energy future, necessitate a thoughtful and equitable approach to project planning and siting. As the Commonwealth accelerates its transition to clean energy, the need for CIA becomes increasingly vital to ensure that clean energy infrastructure does not disproportionately burden already burdened communities. By incorporating CIA into the siting process, Massachusetts will align its clean energy initiatives with environmental justice principles and thus promote equity while advancing sustainability and reducing greenhouse gas emissions.
- iii. **EEA Office of Environmental Justice and Equity:** The Massachusetts Office of Environmental Justice and Equity (“OEJE”), as established by M.G.L. c. 21A, is responsible for implementing environmental justice principles, as defined in section 62 of chapter 30. OEJE, “shall develop standards and guidelines governing the potential use and applicability of: (i) community benefit plans and agreements; and (ii)

cumulative impact analyses in developing energy infrastructure with input from representatives of utilities, the renewable energy industry, local government, environmental justice community organizations, environmental sectors and other representatives as deemed appropriate by the office”. The CIA is a critical tool in this effort. By integrating CIA into planning and decision-making, OEJE seeks to prevent and mitigate disproportionate harm and promote meaningful community engagement. This approach aligns with the OEJE's mission to embed equity into all policies and programs, ensuring that clean energy initiatives and other environmental efforts contribute to healthier, more resilient communities across the Commonwealth.

E. Guiding Principles

CIA is a powerful tool for understanding the implications of proposed projects in their given context. Projects that introduce additional stressors, disproportionate impact, burdened areas, or risk exacerbating environmental inequities will need to be thoroughly vetted from a cumulative impact lens. Whenever possible, project applicants should aim to prevent negative impacts before they are introduced. When this is not possible, applicants should aim to reduce impacts in BAs and enhance access to environmental and other benefits. Utilizing a CIA as a decision-making framework allows the EFSB to align its regulations with equity, transparency, and sustainability while proactively addressing potential cumulative impacts. In practice, this will mean that EFSB considers the potential impacts on BA in its decision-making process.

II. MassEnviroScreen

OEJE has developed the Massachusetts Environmental Justice Screening Tool ([MassEnviroScreen](#)), to identify and prioritize the most environmentally vulnerable or burdened communities in Massachusetts. This mapping tool generates a cumulative impact score for each community – defined at the census block group level – based on a list of thirty Indicators which fall into one of the following categories: environmental exposures, environmental effects, climate risks, sensitive populations and socioeconomic factors. The full list of indicators which inform this cumulative impact score is below in Table 1.

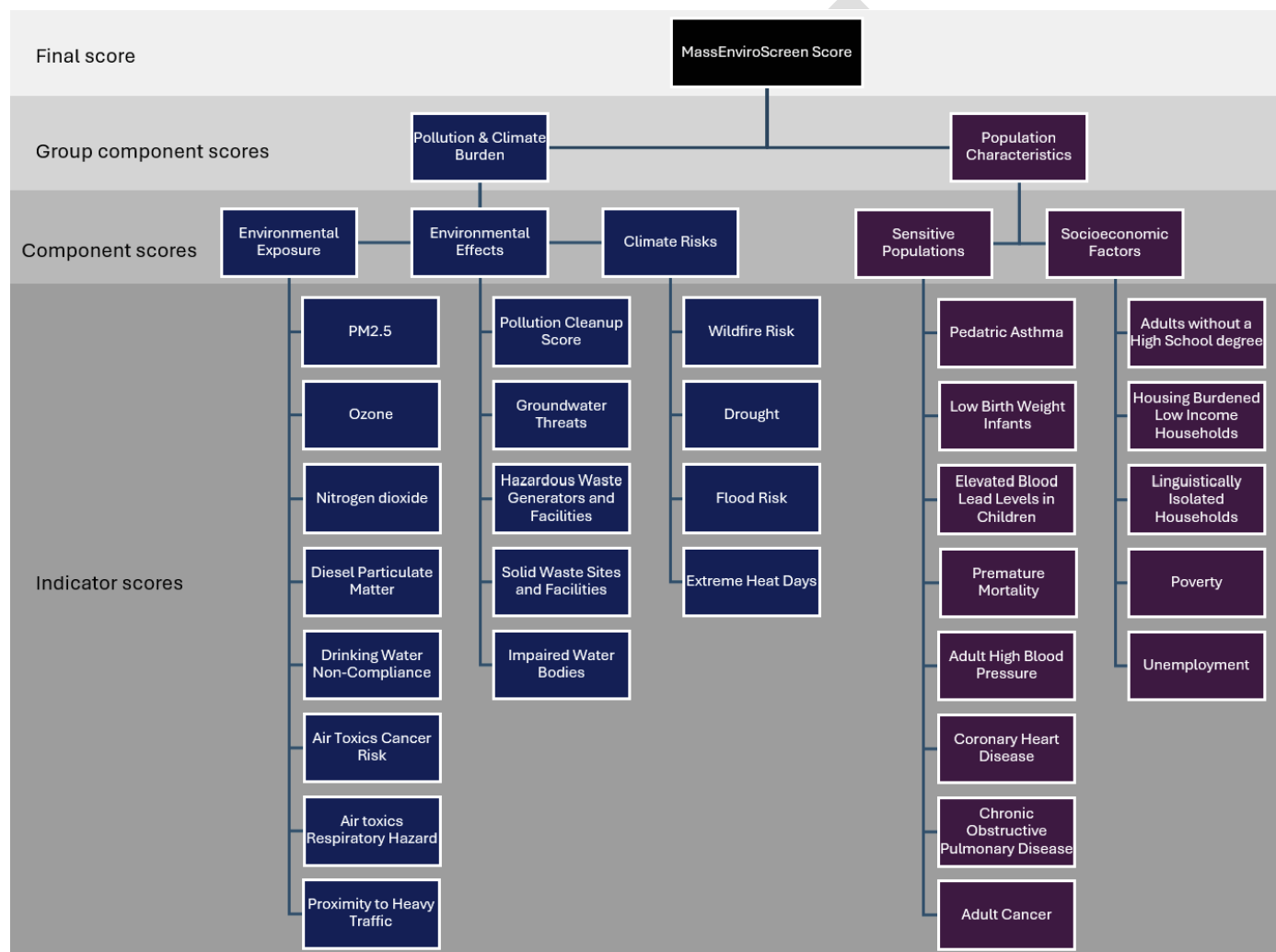
Each community's cumulative impact score is a numerical value ranging from 0 to 100, where higher scores indicate greater cumulative burden. These scores represent percentile ranks, meaning the score reflects the percentage of communities with an equal or lower score. For example, a census block group with a MassEnviroScreen score of 75 has a cumulative burden equal to or greater than 75% of the block groups statewide. A score of 75 or above is used as a key threshold to designate Burdened Areas.

Burdened Areas are communities (i.e., census block groups) that meet one or more of the following criterion:

- cumulative burden percentile score (i.e., MassEnviroScore) of 75 or greater, OR

- annual median household income is 65 percent or less of the statewide annual median household income.

Table 1: MassEnviroScreen Score Indicators



To support transparency and accessibility, an interactive map has been developed that displays the cumulative impact score for every community across Massachusetts. This map clearly highlights which communities meet the criteria for Burdened Areas. Users can click on any census block group to view its [MassEnviroScreen](#) cumulative impact score as well as the component sub-scores.

This tool will serve as a central resource to support the CIA analysis. By integrating this tool into the CIA process, applicants, agencies, stakeholders, and decision-makers will have access to a common, reliable, data-driven foundation for understanding existing

burdens and evaluating how proposed projects may contribute to or mitigate those burdens. This approach promotes consistent, transparent, and equitable assessment of project impacts across the Commonwealth.

III. Cumulative Impact Analysis Process

Applicants proposing a project in a Specific Geographical Area (“SGA”) containing a Burdened Area are required to complete a CIA during the pre-filing stage of the EFSB process and submit the report with their application.¹ In the pre-filing process, OEJE will collaborate with the DPU’s Department of Public Participation (“DPP”) and can assist applicants in determining whether a project’s SGA includes any Burdened Areas.

The CIA process follows a series of research and analysis steps to comprehensively evaluate cumulative impacts.

The following sub-sections provide further guidance on each of these steps.

Step 1: Identify the SGA in which a proposed facility would be located

Project applicants must first identify the SGA of the proposed project. The SGA of a project is defined by the geographic location of the project and its physical footprint, as well as a radius around the project determined by the Energy Facilities Siting Board (EFSB). The SGA shall be bounded by a perimeter line that is the distance(s) indicated in EFSB regulations 980 CMR 15.05(1)(b). Table 2 below describes the proposed radii of different energy technologies subject to review for CIA.

Table 2: SGA Distances

Facility Type	Distance from Facility Boundary
Transmission and Distribution Line (part of an LCTDIF or SCTDIF)	1/4 Mile
Clean Energy Storage Facility (LCESF or SCESF)	1 Mile
Substation (Part of an LCTDIF or SCTDIF)	1/2 Mile
Ground-Mounted Photovoltaics (LCEGF or SCEGF)	1/2 Mile

¹ If the project site does not include any Burdened Areas, the applicant will instead complete a site suitability assessment. Per the 2024 Climate Act, transmission and distribution projects are not required to complete a site suitability assessment, unless they are in “newly developed public right of ways.”

Onshore Wind Facility or Anaerobic Digester (LCEGF or SCEGF)	1 Mile
Liquid Natural Gas Facility (§ 69J)	1 Mile (no Air permit) 2 Miles (non-Major Air Permit)
Gas Pipeline (§ 69J)	1/2 Mile
Fossil Generating Facility (§ 69J¼)	2 Miles (non-Major Air Permit) 5 Miles (Major Air Permit)
Gas Compressor Station (§ 69J, as part of a Gas Pipeline)	1 Mile (no Air permit) 2 Miles (non-Major Air Permit)

Step 2: Determine if the Project's SGA Overlaps with any BAs

The project applicant must then examine whether the SGA overlaps or intersects with one or more BAs as identified by the MassEnviroScreen. If the SGA does not overlap with any BAs, the project applicant can terminate the CIA process and issue their CIA report. However, a clean energy infrastructure facility with an SGA that does not intersect a Burdened Area may be required to perform a Site Suitability Assessment, including Site Suitability Scoring, as applicable. If the SGA overlaps or intersects with one or more BAs, then the project applicant must continue to develop a CIA report for those relevant BAs. The analysis will only be within the identified BAs intersecting a project's SGA, not the entire SGA.

Step 3: Catalog Indicators for any BAs within the SGA.

Using data from MassEnviroScreen, the project applicant must document in its CIA report the baseline percentile values for all indicators that contribute to the cumulative impact score. The applicant must clearly identify any indicators that are at or above the 50th percentile in the BA ("Elevated Indicators"). This comprehensive inventory establishes the existing conditions using quantitative data, which will be used to assess the project's incremental impact. The project applicant should engage with key stakeholders to discuss conditions on the ground and lived experiences, in order to validate and contextualize the data gathered from MassEnviroScreen.

Step 4: Identify Project Impacts on Elevated Indicators and Determine if there is a Disproportionate Adverse Effect

The applicant must then assess and document the potential impact of the proposed project on each Elevated Indicator. The impact assessment should be comprehensive and include community input gathered from Step 3.

For each Elevated Indicator, the applicant must determine if the project will:

1. Worsen the condition of that indicator during either the construction phase or the operation phase of the project, or

2. Improve the condition of that indicator during those same phases.

If the project is likely to materially exacerbate an Elevated Indicator, this impact will be considered a disproportionate adverse effect.

Step 5: Propose Mitigation for Any Disproportionate Adverse Effects

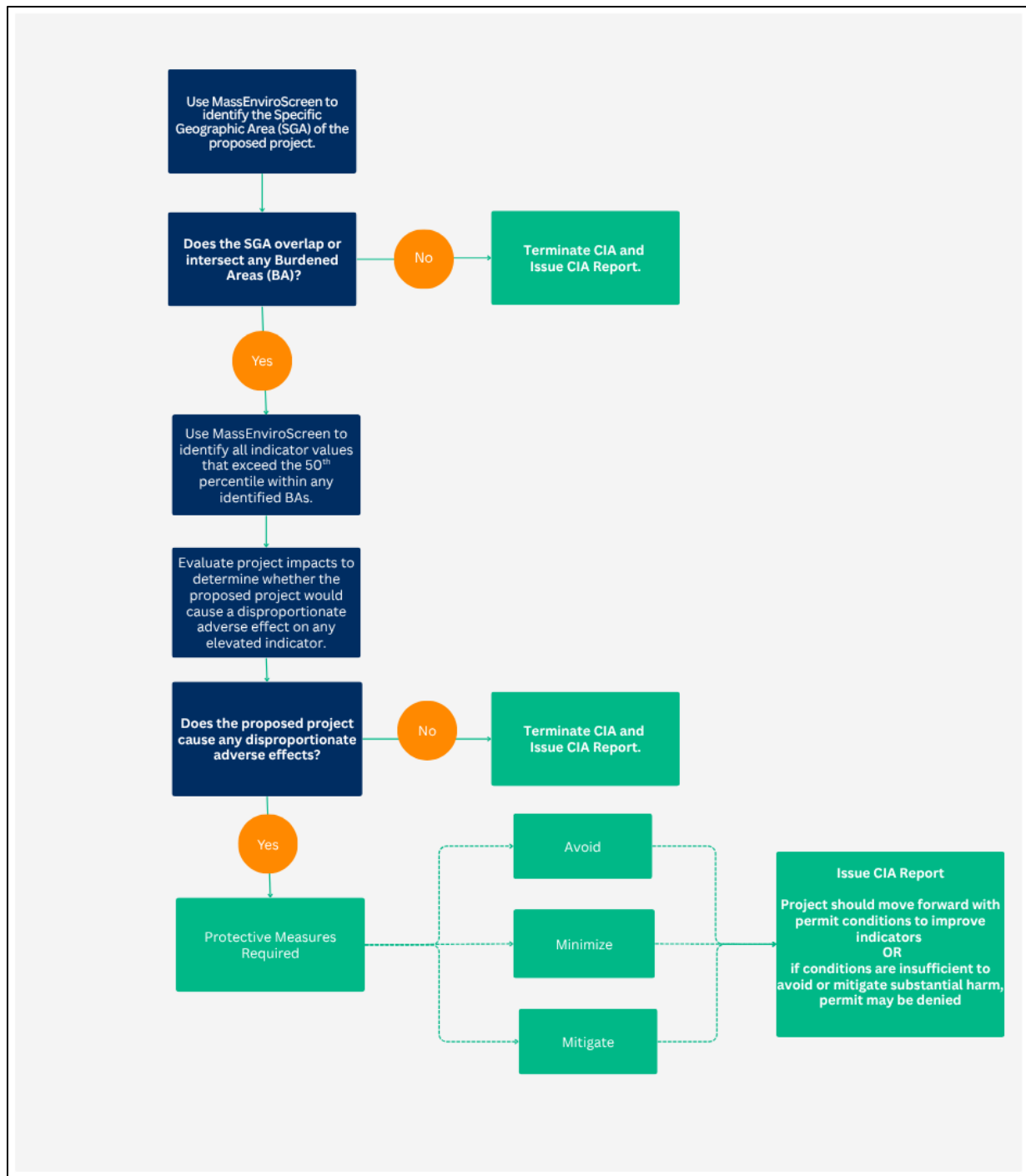
If the proposed facility is determined to cause a disproportionate adverse effect on an Elevated Indicator within a BA, the applicant is required to follow the mitigation hierarchy. The mitigation hierarchy is a statutory framework that ensures that projects first seek to prevent harm by avoiding impacts where possible, reduce unavoidable impacts to the greatest extent feasible, and address remaining effects through appropriate mitigation measures, which may include rehabilitation, restoration, or offsets.

To demonstrate how this hierarchy could be applied in practice, consider the example of tree preservation and removal during project development:

- **Avoid:** The applicant should first explore all feasible options to avoid negative impacts on the BA, for example, preserving existing trees that provide critical shade and contribute to local air quality, or designing the project footprint or access routes to maintain tree canopy to help prevent harm before it occurs.
- **Minimization:** Where impacts cannot be avoided, such as the need to remove certain trees, the applicant should seek to minimize harm. This could include limiting tree removal to the smallest necessary area, avoiding the cutting of trees in especially sensitive or highly visible locations, or scheduling removal to minimize ecological disruption.
- **Mitigation:** For impacts that remain despite avoidance and minimization, the applicant must implement mitigation measures to compensate for loss or damage. For example, if a significant number of trees must be cut, the applicant should restore or rehabilitate the community's tree canopy by planting new trees as part of a community tree canopy enhancement program designed to increase local tree canopy cover and improve biodiversity. Priority should be given to on-site mitigation, such as planting new trees within the project area or nearby. If on-site mitigation is not feasible, off-site mitigation should be pursued, planting trees elsewhere in the BA to provide similar environmental and social benefits. Permit conditions will include enforceable mitigation measures designed to alleviate existing cumulative impacts and preemptively address prospective ones.

These examples demonstrate the stepwise application of the mitigation hierarchy to systematically identify, evaluate, and implement measures that effectively reduce disproportionate adverse effects. If impacts cannot be adequately avoided, minimized, or mitigated, the EFSB has the ability to consider CIA as one of many factors which could lead to a denial of the project application.

The flow chart below summarizes the steps within the CIA process.



IV. Engaging the Community in the CIA Process

- 1. Why Community Engagement Matters:** Community engagement is a cornerstone of an effective CIA. Involving community members ensures that the analysis reflects the lived experiences, concerns, and priorities of those directly affected by proposed projects. By fostering transparent communication and active participation, the EFSB can identify hidden challenges, build trust, and incorporate community perspectives into decision-making processes. Engaged communities are essential to promoting environmental justice, addressing inequities, and creating policies that lead to equitable and sustainable outcomes for all. Communities can be allies in supporting clean energy projects in their neighborhoods. Engagement that occurs early and often has the potential to prevent project delays.
- 2. How to Involve Local Residents and Organizations:** A meaningful engagement process includes outreach efforts such as public forums, surveys, and stakeholder meetings to gather diverse input, foster collaboration, and build trust. It is important that community engagement is done authentically, and that applicants find avenues to incorporate the feedback and lived experiences that are learned through these efforts. It's also imperative that communication is done early, broadly, and continuously. By empowering local voices and leveraging the expertise of community organizations, the EFSB can create more inclusive policies that reflect the needs of affected communities.
- 3. Sharing Information:** Effective communication of CIA findings is essential for transparency between ESFB and the communities it serves. Sharing information in accessible formats ensures that all stakeholders, including historically overburdened or underserved populations, can understand and engage with the results. This includes utilizing strategies such as public meetings, simplified reports, language access services, visually engaging infographics, and digital platforms. By presenting findings in ways that are clear, inclusive, and tailored to community needs, the DPU and EFSB can promote meaningful participation, address concerns, and align decisions with environmental justice principles.
- 4. How to Integrate Qualitative Data into the Analysis:** Incorporating qualitative data is essential for a comprehensive cumulative impact. Qualitative data, such as personal testimonies, community narratives, and key stakeholder interviews, provide valuable context that complements quantitative metrics. This approach captures the lived experiences and perceptions of impacted populations, offering a deeper understanding of the social and cultural dimensions of cumulative impacts. By integrating qualitative data through methods like interviews, focus groups, and public consultations, the EFSB can ensure that policies reflect the realities of affected communities, promote equity, and align with environmental justice principles. In cases where quantitative indicators suggest an area is not burdened or at-risk, qualitative data can provide a different perspective—helping to identify and protect communities from additional adverse impacts. Qualitative data, which includes community input, should also inform the assessment of potential adverse indicators, as noted earlier,

as well as the identification of the most appropriate remedial actions. Applicants should apply a fit-for-purpose approach to assessing, addressing, and aligning cumulative impacts with the specific requirements of the decision or action it is intended to inform.

- 5. Community Benefit Plans and Agreements:** While an effective CIA should help to inform meaningful CBP or CBA, a community benefit does not substitute any required mitigation measures. Mitigation is a mechanism to address any impact of the project. It is meant to keep an area at or near its current “status quo.” CBAs should be developed to ensure that communities affected by proposed developments receive tangible, equitable benefits that address their specific and local needs and priorities in addition to required mitigation. By fostering transparent collaboration between project developers and residents, a CBA can promote environmental justice, bring meaningful benefits to an area, and strengthen trust.

V. Resources²

- [*Interim Framework for Advancing Consideration of Cumulative Impacts*](#) : A foundation of information and resources that can support EPA’s programs in developing and implementing approaches to incorporate analysis and consideration of cumulative impacts into their work, with the goal of achieving results that improve health and quality of life in America’s communities.
- [*Guidance on Conducting Cumulative Impact Analysis*](#): Guidance released by the Massachusetts Department of Protection (DEP) on how to conduct a cumulative impact assessment including public outreach, assessment of existing community conditions, and analysis of cumulative impacts.
- [*Cumulative Impact Assessment and Community Benefit Plans Literature Review*](#): A report by StarLuna Consulting, LLC that synthesizes the literature that describes both cumulative impacts analysis and community benefits plans.

² OEJE is providing these as additional resources for informational purposes and does not necessarily endorse the statements within.