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BACKGROUND DOCUMENT

ON PROPOSED AMENDMENTS TO

310 CMR 7.00
CUMULATIVE IMPACT ANALYSIS
IN COMPREHENSIVE PLAN APPROVALS

REGULATORY AUTHORITY:
Chapter 8 of the Acts of 2021, Sections 56, 58, 60 and 102C
M.G.L. c. 21A, Sections 2 and 8,
M.G.L. c. 111, Sections 2C and 142A through 142E

December 29, 2022

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I. SUMMARY

In accordance with Chapter 8 of the Acts of 2021, the Massachusetts Department of Environmental Protection (MassDEP) is proposing to amend 310 CMR 7.00 *Air Pollution Control* to require a cumulative impact analysis (CIA) for Comprehensive Plan Applications (CPA) for facilities located in or near an environmental justice (EJ) population.[1] The proposed CIA requirements are contained in a new section, 310 CMR 7.02(14), and include enhanced public outreach to, and involvement of, environmental justice populations, assessment of existing community conditions, and analysis of cumulative impacts of a proposed project to be included in a CPA to MassDEP.[2]

II. BACKGROUND

On March 26, 2021, Governor Baker signed Chapter 8 of the Acts of 2021 (entitled "An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy," hereafter called the "Climate Roadmap Act" or "CRA"). Section 102C of the CRA directed MassDEP to evaluate and seek public comment on incorporating cumulative impact analyses into certain permits, and to propose regulations within 18 months requiring cumulative impact analysis for certain categories of air quality permits. Section 102C states the following:

> *SECTION 102C. The department of environmental protection shall evaluate and seek public comment on the incorporation of cumulative impact analyses in the assessment and identification of certain categories of permits and approvals. Not later than 18 months after the effective date of this act, the department of environmental protection shall propose regulations to include cumulative impact analyses for defined categories of air quality permits identified through the evaluation and public comment process.*

Section 56 of the CRA defines the term "Environmental Justice Population" (EJ Population) and section 60 requires the Secretary of the Executive Office of Energy and Environmental Affairs (EEA) to direct all its agencies, including MassDEP, to consider environmental justice principles in making any policy, determination or taking any other action related to a project review, or in undertaking any project pursuant to sections 61 through 62J, inclusive, of chapter 30 of the General Laws, and related regulations that is likely to affect environmental justice populations. Section 58 of the CRA also requires submission of an environmental impact report (EIR) to the Massachusetts Environmental Policy Act Office (MEPA Office) for any project that triggers MEPA review and is located within 1 mile of an EJ Population or any project that triggers MEPA review and impacts air quality and is located within 5 miles of an EJ Population. The EIR must state the results of "an assessment of any existing unfair or inequitable environmental burden and related public health consequences" impacting the EJ Population based on any "prior or current private, industrial, commercial, state, or municipal operation or project that has damaged the environment." If the assessment finds such a burden or consequences, the EIR

[1] The term "Environmental justice population" is defined in Section 56 of Chapter 8 of the Acts of 2021 (entitled "An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy").

[2] This regulation is proposed for promulgation under Sections 56, 59 and 102C of the CRA, M.G.L. c. 21A, §§2 and 8, and M.G.L. c. 111, §§ 2C and 142A through 142E.

must identify any environmental and public health impacts from the project that would likely result in a "disproportionate adverse effect" on the identified EJ Population and potential impacts or consequences of the project that would increase or reduce the effects of climate change on the EJ Population.

The MEPA Office amended its regulations at 301 CMR 11.00 in December 2021 to implement the Act and published an EJ protocol for public involvement and an interim protocol for assessing project impacts on EJ Populations.[3] While the MassDEP and MEPA programs have different mandates, MassDEP and the MEPA Office are coordinating on the development of these programs because both address impacts to EJ populations.

Environmental Justice Populations

The proposed CIA regulation applies to non-major CPAs within 1 mile of an Environmental Justice Population and major CPAs within 5 miles of an EJ Population, to better protect the health and welfare of these populations. MassDEP's current CPA regulations, 310 CMR 7.02(5), require an applicant to obtain a CPA before construction of emissions sources that pose a potential impact on air quality. The proposed amendments require an applicant to conduct a CIA for a proposed project located in or near an EJ Population before it submits the CPA application, since the added emissions from such projects could have a further adverse effect on the EJ Population, which may have already suffered disproportionate exposure to air pollutants and other environmental harms resulting in negative health consequences. Numerous studies have shown that minorities, low-income neighborhoods, and neighborhoods with high percentages of residents with limited English proficiency face disproportionately higher exposure to pollution (including air pollution) and attendant health consequences, as compared with other communities.[4]

Limiting applicability of the CIA regulation to EJ Populations acknowledges the importance of focusing on environmental justice by requiring an enhanced analysis of the cumulative impacts a new or modified source of air pollution may have on EJ Populations, especially EJ Populations that may already be overburdened from past pollution. The proposed regulation provides people living within an EJ Population with additional opportunities for meaningful public involvement.

[3] The MEPA regulations and protocols are available at https://www.mass.gov/service-details/important-update-concerning-mepa-operations

[4] De Moura, Maria Cecilia Pinto, et al., "Inequitable Exposure to Air Pollution from Vehicles in Massachusetts: Who Bears the Burden?" Union of Concerned Scientists, 2019, http://www.jstor.org/stable/resrep24098. See also, Jbaily, A., Zhou, X., Liu, J. et al., "Air pollution Exposure Disparities Across U.S. Population and Income Groups," Nature 601, 228–233 (2022). https://doi.org/10.1038/s41586-021-04190-y; Bell, M. L. & Ebisu, K. "Environmental inequality in exposures to airborne particulate matter components in the United States." Environ. Health Perspect. 120, 1699–1704 (2012); and Dwyer-Lindgren, L., Kendrick, P., Kelly, Y. O. et al., "Life Expectancy by County, Race, and Ethnicity in the USA, 2000–19: a Systematic Analysis of Health Disparities," The Lancet (2022). https://doi.org/10.1016/s0140-6736(22)00876-5. See also Attachment 1 to this Background Document and the studies cited therein.

Cumulative Impact Analysis Approaches

Most traditional pollutant emissions permitting programs do not include a cumulative impact analysis that considers existing pollution or health conditions and vulnerabilities in affected communities. A cumulative impact analysis takes a holistic approach to understanding the total effects of historical or legacy pollution on a community by evaluating the potential environmental and health impacts of a permit decision in the context of the existing environmental and health burdens experienced by a community.

Incorporating cumulative impact analysis into a permitting process has several benefits, including the ability to evaluate current environmental, health and socioeconomic conditions to provide important context (e.g., existing health disparities, poverty levels, presence of other polluting facilities in the area) that is important to the community, affected populations, the permit applicant and permitting agency. Cumulative impact analysis helps identify areas already overburdened by air and other types of pollution and other vulnerabilities that make affected populations more susceptible to experiencing negative outcomes from increased emissions. It also provides increased opportunities for expanded community engagement that can improve the transparency of permit decisions and be used to identify mitigation strategies to reduce or mitigate health and environmental hazards.

As part of the process for designing the CIA regulation, MassDEP looked at how the federal government and other states are currently using cumulative impact analysis. Cumulative impact analysis[5] approaches have been used in the United States and internationally to evaluate various large projects (e.g., highways, mines, dams). In the United States, the National Environmental Policy Act (NEPA) requires analysis of potential direct, indirect, and cumulative environmental effects for certain projects.[6] The U.S. Environmental Protection Agency (EPA) addresses cumulative risks in some of its programs.[7] Several states also have begun to address cumulative effects, particularly in relation to environmental justice efforts, and have developed analysis approaches and tools.

California defines cumulative impacts as the exposures, public health or environmental effects from the combined emissions and discharges, in a geographic area, including environmental pollution from all sources, whether single or multi-media, routinely, accidentally, or otherwise released. Impacts consider "sensitive populations and socio-economic factors, where applicable and to the extent data are available." California uses an analytical tool called "CalEnviroScreen" to compare communities, allocate funding, and direct programs resources.[8]

Minnesota includes cumulative impacts in certain air permits based on a 2008 statute that requires the Minnesota Pollution Control Agency (MPCA) to analyze and consider "cumulative levels and effects of past and current pollution" before a permit may be issued for a facility located in a geographically defined section of South Minneapolis. To implement this

[5] "Cumulative impact analysis" is commonly referred to as "cumulative impact assessment." MassDEP uses the term "cumulative impact analysis" to match the language in Section 102C of the CRA.
[6] Information about NEPA is available at https://ceq.doe.gov/index.html
[7] See https://www.epa.gov/risk/framework-cumulative-risk-assessment
[8] Information about CalEnviroScreen is available at https://oehha.ca.gov/calenviroscreen

statute, MPCA requires a Cumulative Levels and Effects (CL&E) Analysis as part of the air permit application that includes evaluation of environmental health data, community stressors and vulnerabilities, contributions from nearby sources, and modeling results for air toxics and criteria pollutants. [9]

New Jersey enacted a 2020 EJ statute that requires a comparative impact analysis in permits for certain facilities located in overburdened areas, including major source air permits issued by the New Jersey Department of Environmental Protection (NJDEP). The law provides explicit authority for NJDEP to deny a permit if it would result in disproportionate cumulative environmental or public health stressors in the overburdened community that are higher than those borne by other communities. In June 2022 NJDEP proposed draft regulations and an EJ mapping and assessment tool to support the regulations. NJDEP's proposed program is based on a comparison of environmental and public health stressors between different areas of the state and is not based on a risk characterization approach (i.e., meeting acceptable thresholds for potential risks to human health).[10]

MassDEP's CIA regulation builds off the approaches used in these other jurisdictions.

MassDEP Stakeholder Process

To meet the requirements of Section 102C of the CRA, MassDEP held a series of six sets of webinar stakeholder meetings (for each of the six, daytime and evening meetings were held) from August 2021 to April 2022 to review and seek input on: the stakeholder engagement process; different approaches to CIA; MassDEP's air permitting process; environmental, health, and socioeconomic indicators that could be assessed in a CIA; and a draft CIA framework. A broad range of stakeholders participated in these meetings, including residents and individuals representing environmental and public health organizations, environmental justice groups, tribes, business and industry associations, regulated entities and consultants, municipalities, regional planning agencies, and state and federal government agencies. MassDEP offered language translation services for these meetings. Attendees at the daytime webinars ranged from 64 to 237 with an average of 103. Attendees at the evening webinars ranged from 22 to 30 with an average of 25. Participants were provided several opportunities to provide input during the webinars and through online surveys and via a designated email address. Overall, comments were generally positive toward the process and direction of the CIA framework. Community and EJ stakeholders raised concerns that past and existing air pollution and health burdens should be addressed in the CIA and suggested that permit applications should be denied where communities already were overburdened by pollution. Business stakeholders raised concerns that CIA requirements should only apply to major sources, that existing sources that increase emissions by a small amount should not be required to conduct a CIA, and that the requirements should be clear and achievable (letters were submitted by Associated Industries of Massachusetts, Massachusetts Chemistry & Technology Alliance, New England Convenience Store & Energy Marketers Association, and Massachusetts Aggregate and Asphalt Pavement

[9] Information about Minnesota's cumulative impacts programs is available at https://www.pca.state.mn.us/air/cumulative-impact-analysis

[10] Information about NJDEP's proposed program is available at https://www.nj.gov/dep/ej/index.html

Association). MassDEP also met with the Massachusetts Environmental Justice Table[11] to keep its members informed of the CIA stakeholder process, encourage their engagement and ensure community-based organizations had adequate access to meetings and information. MassDEP hired Abt Associates to support technical research and analysis and hired Environmental Research Group (ERG) to support the stakeholder process.[12] MassDEP also met with its Air Quality Advisory Committee in July 2022. MassDEP considered the comments it received during the stakeholder process before it developed the proposed CIA regulation.

III. DESCRIPTION OF PROPOSED REGULATIONS

The proposed amendments establish a new section 310 CMR 7.02(14) *Cumulative Impact Analysis* within 310 CMR 7.02 *Plan Approval and Emission Limitations*. Under the existing regulations, 310 CMR 7.02, plan approvals are the primary type of pre-construction air quality permits that MassDEP issues for sources of air pollutants. Under the program, applicants must submit either a Limited Plan Application (LPA) for smaller, less complex sources of air pollutants, or a Comprehensive Plan Application (CPA) for larger, more complex sources of air pollutants. MassDEP reviews the LPA or CPA in accordance with the regulations and decides whether to approve or deny the application.

The proposed amendments would only apply to CPA applications and establish the following overall steps in the CIA process, which are described below:

1. Applicability
2. Public Notice and Involvement
3. Assessment of Existing Community Conditions
4. Air Quality Dispersion Modeling
5. Risk Characterization of Air Toxics
6. Evaluation of Project Cumulative Impacts
7. Cumulative Impact Analysis Report
8. MassDEP Review and Decision (including public notice and involvement)

The proposed amendments also add several new definitions, including "environmental justice population," "cumulative impact analysis," "nearby environmental justice population," "neighborhood," and "proposed project." The definition of "environmental justice population" is based on the definition included in the MEPA regulations which in turn is based on the definition in Section 56 of the CRA.

[11] The Massachusetts Environmental Justice Table is a statewide coalition of community-based, environmental, Indigenous, and civil rights organizations led by grassroots, community of color-led organizations to support and influence environmental justice legislation and policy in the Commonwealth.

[12] Video recordings of the stakeholder meetings and supporting materials are available at https://www.mass.gov/lists/past-cumulative-impact-analysis-meeting-materials#virtual-stakeholder-meetings:-april-26-&-27,-2022-

Step 1: Applicability

The proposed amendments require an applicant to conduct a CIA for a CPA for any new facility in or near an EJ Population. The distance at which a facility is considered "near" an EJ Population depends on whether it is a "major source" as defined elsewhere in MassDEP's regulations (310 CMR 7.00: Appendix C). Specifically, an applicant for a facility that is not a "major source" of air pollutants must conduct a CIA for a CPA if the facility is within 1 mile of an EJ Population, and an applicant for a facility that is a "major source" of air pollutants must conduct a CIA for a CPA if the facility is within 5 miles of an EJ Population. The new requirement to conduct a CIA will apply to any CPA subject to the regulation that is filed with MassDEP after the effective date of the CIA regulation. Examples of facilities that are and are not "major sources" are shown below:

A facility is not a "major source" if it meets any of the following but is below major source thresholds:

- Potential annual process (i.e., non-combustion) emissions ≥ 10 tons per year
- Combustion units that meet certain fuel input thresholds (e.g., ≥ 40 mmBTU/hour natural gas boiler)
- Non-emergency engines (however note that the proposed amendments would not require a CIA for non-emergency engines restricted to 100 hours of operation per year)

A facility is a major source if it has potential annual emissions of:

- 50 tons of nitrogen oxides or volatile organic compounds
- 100 tons of any other criteria pollutant (i.e., sulfur dioxide, particulate matter, carbon monoxide, lead)
- 25 tons of combined hazardous air pollutants (HAPs)
- 10 tons of any individual HAP

The proposed amendments also would require a CIA for an existing facility in or near an EJ population that already has an approved CPA and submits a new CPA that would increase facility-wide net emissions one ton or more per year. While an increase of one ton is considered a relatively small increase under the current regulations, this increase would be in addition to the emissions the facility already is emitting under its existing CPA that may be affecting nearby EJ populations. Therefore, MassDEP believes it is appropriate to require a CIA to consider the facility's existing emissions in combination with the planned increase in emissions, as well as emissions from other nearby facilities. However, the proposed amendments would not require a CIA for a CPA for an existing facility that proposes a project to decrease overall emissions but that would temporarily increase emissions (for no more than 2 years). While this situation is not common, an example is a facility that is upgrading emissions units but doing so sequentially or a facility that is closing and must alter operations to facilitate the facility closure. In these cases, since there would only be a temporary increase in emissions to accommodate projects that would reduce emissions, a CIA would not be warranted.

Under the proposed amendments, CPAs in or near EJ populations that result in emission decreases (e.g., replacing older equipment with new less polluting equipment) would not require a CIA because there would be no cumulative impacts to analyze (i.e., impacts are reduced). Not requiring a CIA for these CPAs also would avoid creating a potential disincentive for facility owners undertaking beneficial projects that decrease emissions.

It should be noted that under MassDEP's existing EJ Public Involvement Guidance, for all CPAs in or near EJ populations MassDEP notifies EJ populations to ensure EJ populations are aware of and have the opportunity to be involved in the CPA review and approval process, regardless of whether a CIA would be required under the proposed amendments (e.g., including for a project resulting in emission decreases).

Step 2. Public Notice and Involvement

Ensuring public notice and involvement for a proposed project before a permit application is filed is important so that EJ Populations can learn about the proposed project early in the process, provide input to the applicant and MassDEP on how the proposed project may affect their health and the environment in which they live and other information that can help inform the CIA. The proposed amendments require the applicant, at least 60 days prior to filing a CPA application that will include a CIA, to provide notice of the proposed project to the appropriate MassDEP Regional Office that will review the CPA, MassDEP's EJ Director, nearby EJ populations, and local officials. The notice must include a fact sheet that describes the proposed project, identifies the EJ populations that may be impacted by the project, and the applicant's contact information for submitting comments or requesting additional information or public involvement activities. The proposed amendments next require the applicant to meet with MassDEP to discuss public outreach and involvement measures and development of the CIA. In support of the proposed amendments, MassDEP is developing draft guidance on conducting a CIA for applicants to use, including on providing public notice, how and where to provide notice, and public involvement activities to engage with nearby EJ populations.

Step 3. Assessment of Existing Community Conditions

When preparing the CIA, the proposed amendments require the applicant to assess existing community conditions by gathering data on 33 air quality, environmental, health, and socioeconomic indicators. The proposed indicators are listed in Table 1 below. The assessment of the indicators would characterize existing pollution sources, health vulnerabilities, and other stressors that could be exacerbated by the effects of increased air emissions from the proposed project. In addition to gathering data on the listed indicators, the applicant would document concerns raised through the public involvement process, including by nearby EJ Populations, on any other existing air quality and public health issues in the community. The community assessment would create greater public awareness of existing conditions and health burdens and could result in an applicant modifying the proposed project and/or proposing measures to mitigate impacts. The community assessment must include indicator data tables and maps showing indicators in relation to the project location and surrounding communities. These data would be accompanied by an overall narrative.

During the stakeholder process MassDEP received many helpful suggestions on indicators that are important to EJ populations and worked with Abt Associates to evaluate a total of 88 indicators. MassDEP selected the 33 indicators in Table 1 for inclusion in the assessment of existing community conditions based on data availability and quality, the ability to extrapolate data to an appropriate geographic scale (e.g., census tracts and block groups), relevance to air quality and the air permitting context, and the unique value of each indicator.[13] MassDEP plans to make the indicators readily available online from the data sources listed in Table 1. Attachment 1 contains a memorandum prepared by Abt Associates summarizing the indicators and a spreadsheet listing all of the indicators evaluated.

Table 1: Indicators	**Data Source**
AIR QUALITY / CLIMATE	
Particulate Matter 2.5 (PM2.5) levels in air in microgram per cubic meter ($\mu g/m^3$), annual average and state percentile	EJScreen
Ozone summer seasonal average of daily maximum 8-hour concentration in air in parts per billion (ppb) and state percentile	EJScreen
Traffic proximity by block group and state percentile	EJScreen
Diesel particulate matter level in air in $\mu g/m^3$ and state percentile	EJScreen
Air Toxics Cancer Risk per million and state percentile	AirToxScreen
Air Toxics Respiratory Hazard Index (HI) and state percentile	AirToxScreen
Impervious surface percent and state percentile	MassDEP
NEARBY REGULATED FACILITIES	
Facilities with DEP air permits	DPH[1] EJ Tool
Facilities reporting under the EPA Toxics Release Inventory program	DPH EJ Tool
Facilities reporting under the Toxics Use Reduction Act (i.e., Large Quantity Toxic Users)	DPH EJ Tool
Hazardous waste treatment, storage and/or disposal facilities	DPH EJ Tool
Solid waste diversion and disposal facilities[3]	MassMapper
Large quantity hazardous waste generators	DPH EJ Tool
Wastewater treatment plants	DPH EJ Tool
Airports	DPH EJ Tool
Freight rail yards	DPH EJ Tool
Port facilities	MassMapper

[13] For comparison, CalEnviroScreen includes 21 indicators, EPA's EJScreen includes 19 indicators, and the New Jersey Department of Environmental Protection has proposed a list of 26 stressors (i.e., indicators) in its draft regulations proposed on June 6, 2022.

HEALTH	
Asthma prevalence in schools per 100 students total both sexes for each individual school (k-8),[2] public and private averaged for the most recent 3 school years available	DPH MEPHT[2]
Elevated blood lead levels prevalence (rate per 1,000 screened of confirmed blood lead levels above 5 micrograms per deciliter (µg/dL) for ages 9 months to 47 months) averaged for 3 years	DPH
Low birth weight (rate per 1,000 of full-term singleton births ≤ 2500 grams) averaged for 5 years	DPH
Premature deaths per 100,000 before age 75 years averaged for 5 years	DPH RVRS[3]
Chronic obstructive pulmonary disease (COPD) among adults aged 18 years or older, crude prevalence (percentage)	CDC[4] Places
Coronary heart disease among adults aged 18 years or older, crude prevalence (percentage)	CDC Places
SOCIOECONOMIC	
Median household income and percent of state median for each EJ block group	EEA[5] EJ Viewer
Minority population percent for each EJ block group	EEA EJ Viewer
English language isolation household percent for each EJ block group	EEA EJ Viewer
Younger (<5 years old) (percent and percentile)	EJScreen
Older (>65 years old) (percent and percentile)	EJScreen
NEARBY SENSITIVE RECEPTORS	
Schools (k-12)	DPH EJ Tool
Long-term care residences	DPH EJ Tool
Public housing	EJScreen
Childcare facilities	DEEC[6] Search
Prisons	EJScreen

[1] DPH – Massachusetts Department of Public Health
[2] MEPHT – Massachusetts Environmental Public Health Tracker
[3] RVRS – Registry of Vital Records and Statistics
[4] CDC – Centers for Disease Control and Prevention
[5] EEA – Energy and Environmental Affairs
[6] DEEC –Department of Early Education and Care

Steps 4. Air Quality Dispersion Modeling of Criteria Air Pollutants

The proposed amendments require the applicant to conduct air dispersion modeling of criteria pollutants to demonstrate compliance with applicable Massachusetts ambient air standards and EPA's National Ambient Air Quality Standards (NAAQS)[14]. Air dispersion modeling is a tool that can be used to predict how a potential new or modified emission source will affect air

[14] EPA has established NAAQS for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead; Massachusetts has ambient air quality standards that are identical to the NAAQS. NAAQS are national air emissions standards that EPA establishes based upon scientific evaluation of what standards will be protective for sensitive populations.

quality. MassDEP requires the use of the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) air quality dispersion model, which is the standard model used to support federal and state regulatory air permitting. This model uses emission rates, source parameters, and meteorological inputs to predict concentrations of pollutants at downwind receptor grid locations. Generally, the modeling is used to perform a worst-case analysis, in that it uses the maximum potential emission rates for each pollutant from each emissions unit and combines that with the most recent 5 years of representative hourly meteorological data to calculate and locate the highest concentrations over a receptor grid surrounding a proposed new emissions source. These concentrations are then compared to, and must meet, applicable standards and guidelines.

The proposed regulations require air dispersion modeling of criteria air pollutants, which would be similar to current modeling practices except that if a proposed project would include significant new vehicle emissions, those vehicle emissions would be included in the modeling (MassDEP is developing guidance on modeling including incorporating significant vehicle emissions). Air pollutants are often found at higher concentrations near roads and highways than other areas, and people who live, work, or attend school near a major roadway or other transportation facility may be affected by traffic-related air pollution. Proximity to traffic is also associated with increased exposure to noise, diesel particulate matter, and other pollutants. Children, older adults, people with preexisting cardiopulmonary disease, and people of low socioeconomic status are at higher risk of developing health problems from air pollution near roadways.[15] The criteria pollutant modeling would consist of cumulative interactive modeling that includes potential emissions from the proposed project (including significant vehicle emissions associated with the project), existing facility-wide emissions (if the CPA is for an existing facility), actual emissions from nearby significant sources for pollutants above significant impact levels set by EPA (SILs[16]), and background concentrations of the criteria pollutants modeled based on data from ambient air monitoring stations. The modeled concentrations of criteria pollutants would be required to meet Massachusetts and National Ambient Air Quality Standards.

Steps 5. Risk Characterization of Air Toxics

The proposed amendments require the applicant to conduct a cumulative air toxics risk characterization. Air toxics are pollutants that may be present in ambient air and are associated with increased risk of cancer or other serious health conditions after exposure to elevated concentrations for many years. Referred to as "hazardous air pollutants" (HAPs) under the federal Clean Air Act, these pollutants are regulated separately from the criteria air pollutants. Air toxics can have effects (e.g., difficulty breathing, headaches) associated with high short-term exposure (e.g., minutes to hours) and with low long-term exposures (many years) that may lead

[15] See U.S. EPA (U.S. Environmental Protection Agency). 2014. Near Roadway Air Pollution and Health: Frequently Asked Questions. Accessed September 15, 2022 https://www.epa.gov/sites/default/files/2015-11/documents/420f14044_0.pdf and the research and sources cited therein.

[16] Used in air dispersion modeling of criteria pollutants, a Significant Impact Level (SIL) is a pollutant-specific ambient air concentration level set by the U.S. Environmental Protection Agency that denotes a significant impact. If the highest modeled concentration of an emitted pollutant is less than its SIL, the pollutant is considered *de minimis* and is assumed to comply with national ambient air quality standards for that pollutant and does not require further modeling analysis.

to cancer, birth defects, disorders of the respiratory and nervous systems and other serious health conditions. A cumulative risk characterization evaluates potential human health risks from exposures to air toxics by adding up the cancer and noncancer risks posed by each air toxic and comparing the cumulative risks to acceptable health-based risk standards or guidelines. Potential cancer risk is expressed as excess lifetime cancer risk, and non-cancer risk is expressed as a hazard index.

To facilitate the risk characterization, MassDEP, with assistance from Abt Associates, has developed a risk screening spreadsheet tool based on a tool developed by the Minnesota Pollution Control Agency as part of its program for conducting Cumulative Levels and Effects Analysis. MassDEP has adjusted the tool to make it Massachusetts-specific, and MassDEP's Office of Research and Standards (ORS) has populated the tool with updated and new toxicity information for more than 230 air toxics. The tool contains default air dispersion factor values, and after the applicant (or their consultant) inputs certain information, the tool generates cumulative risk levels. Since the tool is a screening tool using conservative default dispersion factor values, an applicant may choose to conduct air dispersion modeling (i.e., using EPA's AERMOD) to generate air dispersion factor values to enter in the tool. The applicant also could choose to not use the spreadsheet tool and instead conduct a refined risk characterization using more facility-specific information rather than relying on the tool, which uses default parameters. MassDEP must review and approve an applicant's protocols for alternative air dispersion factor values or risk characterization approaches.

To use the spreadsheet tool, the applicant would input into the risk screening spreadsheet tool potential emissions from the proposed project, existing facility-wide emissions (if the CPA is for an existing facility), and actual emissions from nearby significant sources (where data are available). In addition, the applicant would input stack heights and distances to receptors. Based on this information, the risk screening tool would calculate cumulative cancer risks and non-cancer risks using chemical-specific toxicity information in the tool developed by MassDEP's ORS. Cumulative cancer risks would be required to meet an excess lifetime cancer risk equal to ten in one million and cumulative non-cancer risks would be required to meet a hazard index equal to one. These proposed risk standards are the same standards MassDEP uses in its waste site cleanup program to determine acceptable total risks for a site cleanup. To increase transparency and understanding of potential risks, the risk characterization results would be summarized to graphically show risk levels at the fence line of the facility and at a location in the nearest EJ population.

Steps 6. Evaluation of Project Cumulative Impacts

In addition to the technical analyses described in Steps 4 and 5, the proposed amendments require the applicant to provide an overall evaluation of how the proposed project's air emissions could affect the environmental and health conditions in the nearby EJ Populations, using information from the existing community conditions assessment and analysis of criteria air pollutant emissions and air toxics risk characterization. This evaluation would summarize and tie together the CIA components and highlight results and conclusions. It also would provide an opportunity for the applicant to describe mitigation measures, if any, that will be implemented to reduce or minimize the impacts of the proposed project. If an applicant was required to file an

Environmental Impact Report (EIR) for the project pursuant to MEPA, the applicant would summarize the EIR's conclusions regarding any existing unfair or inequitable environmental burden and related public health consequences and any potential disproportionate adverse impacts on nearby environmental justice populations, and measures that will be taken to avoid, minimize, or mitigate such impacts.

Step 7. CIA Report

The proposed amendments require the applicant to prepare a CIA report and submit it with the CPA application. The CIA report would include a description of public involvement activities and how public comments were addressed; the assessment of existing community conditions and evaluation of project impacts; and supporting technical reports, including the air quality dispersion modeling and risk characterization reports. Upon submittal of the CPA application and CIA report to MassDEP, the applicant would notify the MassDEP EJ Director, nearby EJ populations, and local officials that the CPA application, including the CIA report, is available for review and that the public may submit comments or questions to MassDEP. This would be an informal comment opportunity prior to formal public comment allowing nearby EJ populations to submit comments or raise concerns to MassDEP while MassDEP reviews the CPA application and CIA report. MassDEP is requiring that the CIA report be provided publicly early in the process to ensure that the community and all interested parties have time to review the report prior to the commencement of the formal public comment period on the CPA application and the CIA report.

Step 8. MassDEP Review and Decision

Under the proposed amendments, MassDEP would review the CPA application and CIA report, including any comments submitted by the public, and issue a proposed decision to approve or deny the CPA. In addition to the informal public comment period, MassDEP will require that the CPA application and CIA report be published and available for a 60-day formal public comment period on its proposed decision, which is longer than the current 30-day comment period requirement for proposed CPA decisions. After considering the comments submitted during the informal and formal public comment period, MassDEP would issue a final decision to approve or deny the CPA. This decision would be subject to appeal, as currently provided under 310 CMR 7.51(1). In accordance with 310 CMR 7.51(1), any person who may want to appeal a CPA issued after conducting a CIA must provide comments during the formal public comment period and the scope of their appeal will be limited to the issues raised in the comments.

Comparison of Proposed CPA/CIA process with Current CPA Process

The proposed amendments described above add several new components to MassDEP's current CPA review process, including:

- Requirement that the applicant complete a CIA, where applicable, and submit a CIA report to MassDEP when it submits the CPA application to inform MassDEP's permit decision;
- Pre-application EJ population notice and involvement in the CIA and CPA application;

- Assessment of existing community conditions;
- Inclusion of significant added vehicle emissions from the project in criteria pollutant air dispersion modeling;
- Cumulative air toxics risk characterization and cancer and non-cancer risk standards;
- Description of potential impacts on conditions in EJ Populations and mitigation actions, if any;
- Opportunity to comment on CIA / CPA application to inform MassDEP review; and
- Extension of formal public comment period from 30 to 60 days.

Additional Rulemaking in 2023

MassDEP has not been able to fully address all the issues raised in the stakeholder process given the statutory deadline for proposing draft regulations by the end of 2022. For example, the April 2022 draft CIA Framework developed through the stakeholder process raised the possibility of establishing more protective air pollution limits for certain EJ populations. MassDEP has been developing an approach for identifying at-risk EJ populations and setting more protective air limits and plans to seek stakeholder input on a specific proposal in mid-2023.

Program Review

MassDEP has included in the proposed amendments a provision requiring a program review within two years of the effective date of the CIA regulations. This provision is included in recognition that the science of, and regulatory approaches to, cumulative impact analysis are evolving and there is ongoing research and development on the methods and application of assessing cumulative impacts.

The proposed amendments represent a first step to assess cumulative impacts in a regulatory permit program and it will be important to gain experience implementing the CIA regulations that can inform the need for any adjustments or improvements in the regulations. There also will be lessons learned from other state and local jurisdictions, EPA, and the academic research community as other cumulative impact analysis programs are developed and implemented.

For example, while MassDEP is proposing to address criteria pollutant emissions from added vehicles associated with a proposed project, additional research and analysis is needed on how to incorporate existing vehicle emissions affecting EJ populations into the CIA. In addition, further development of the risk characterization tool is needed to incorporate air toxic pollutants from existing and added vehicles associated with a project. While MassDEP welcomes comments on these issues, they will be addressed in the program review. Also, EPA has recognized the need to assess environmental and health burdens more holistically and recently began a 3-year research effort to develop cumulative impact analysis methods. EPA's research effort, through its Office of Research and Development (ORD), is designed to strengthen the scientific foundation for assessing cumulative impacts across a range of environmental media. In support of this effort, EPA's ORD published a white paper on potential research priorities to be conducted over the next three years.[17] MassDEP will follow national and state efforts to better

[17] EPA ORD's white paper is available at https://www.epa.gov/healthresearch/cumulative-impacts-research.

develop the science and application of CIA, including how to better assess vehicle emissions, which will inform the program review that would lead to a second rulemaking phase aimed at improving the regulations.

IV. IMPACTS OF PROPOSED REGULATIONS

1. Economic Impacts

The proposed amendments establish new CIA requirements for applicants who submit certain CPAs in or near EJ populations, such as the EJ population outreach and involvement activities, assessment of existing community conditions, air dispersion modeling (where it may otherwise have not been required by MassDEP), air toxics risk characterization, and CIA report preparation. Compliance with these new requirements will increase project costs. A wide range of entities apply for CPAs that may require a CIA and may be affected by the increased costs, including large and small businesses, power plants, universities and hospitals, and state agencies and municipalities that operate power generation facilities. MassDEP believes that the increased costs likely will be similar to the added costs that entities have begun incurring under the MEPA Office's December 2021 regulation amendments, since the new MEPA regulations require enhanced EJ population notice and engagement and assessment of existing EJ population conditions using environmental, health, and socio-economic indicators.

The proposed regulations also will affect the timing of proposed projects for which a CIA would be required. Proposed project schedules will have to take account of the 60-day advance notice prior to filing a CPA application and the 60-day public comment period for MassDEP's proposed decision on a CPA application. Note that MassDEP permit staff likely will need to devote more review time for proposed projects for which applicants submit a CIA with their CPA application since the CIA will require staff review. Therefore, MassDEP is planning to develop proposed amendments to 310 CMR 4.00 Timely Action Schedule and Fees regulation to increase the technical review period for CPAs with CIAs to account for review of the CIA and public comments received.

While there will be increased compliance costs for individual applicants, MassDEP does not expect a significant overall economic impact because there are a relatively small number of facilities that require a CPA. MassDEP receives an average of 30 CPA applications per year, and not all CPAs will require a CIA under the proposed amendments (i.e., CPA applications in EJ populations that do not increase emissions and CPA applications that are not in or near EJ populations). The proposed amendments are expected to have a positive effect on EJ populations by providing added protections for these populations and ensuring opportunities for meaningful community involvement.

2. Impacts on Massachusetts Municipalities

Pursuant to Executive Order 145, state agencies must assess the fiscal impact of new regulations on the Commonwealth's municipalities. In general, the proposed amendments do not establish new requirements for municipalities. Some municipal facilities (generally, power generating facilities) have been issued CPAs by MassDEP. It is possible that a modification that increases

emissions at one of these existing facilities could require a CIA and the municipality would incur increased costs associated with the CIA. MassDEP notes that ownership and operation of a power plant, which municipalities may voluntarily undertake, is not a mandated municipal service. Therefore, costs associated with operation of a power plant are not mandated costs subject to the restrictions of Proposition 2 ½ (Town of Norfolk v. Department of Environmental Quality Engineering, 407 Mass 233 (1990)).

3. Massachusetts Environmental Policy Act (MEPA)

Pursuant to 301 CMR 11.03(12) (Massachusetts Environmental Policy Act Regulations), MassDEP is not required to file an Environmental Notification Form (ENF) regarding the proposed regulations because the regulations do not reduce standards for environmental protection, nor do they reduce opportunities for public involvement in review processes or public access to information generated or provided in accordance with the regulations.

V. PUBLIC HEARING AND COMMENT

MassDEP will hold public hearings and a comment period on the proposed regulation amendments in accordance with M.G.L c. 30A. The public hearings notice and proposed regulations are available on MassDEP's website at: http://www.mass.gov/eea/agencies/massdep/service/regulations/proposed-and-recently-promulgated-regulations.html. For further information, please contact Joanne Morin at joanne.o.morin@mass.gov.