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Client: NC Department of Environmental Quality,
Division of Water Resources - Planning Section



Incorporating Environmental Equity into NC DEQ Regulatory Impact Analyses

A handwritten signature in black ink, appearing to read 'Iqra Ahmed'.

Iqra Ahmed, MEM-ESC

A handwritten signature in black ink, appearing to read 'Emma DeAngeli'.

Emma DeAngeli, MEM-EEP

A handwritten signature in black ink, appearing to read 'Betsy Albright'.

Dr. Betsy Albright, Faculty Advisor

Masters project submitted in partial fulfillment of the requirements for the Master of Environmental Management degree in the Nicholas School of the Environment of Duke University.

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Executive Summary

Incorporating Environmental Equity into NC DEQ's Regulatory Impact Analysis is a project in collaboration with the North Carolina Department of Environmental Quality's (NC DEQ) Division of Water Resources (DWR) Planning Section. The goal is to provide DWR a standard operating procedure to formalize and operationalize environmental justice and equity concerns into their rulemaking process, which entails creating regulations and rules to carry out the laws and statutes outlined by the legislature. The project's central objective is to ensure that DWR provides stewardship for *all* North Carolinians by "intentionally and systematically integrat[ing] socioeconomic, race and ethnicity considerations into the regulatory impact analysis (RIA) process" (NC DEQ Division of Water Resources). Regulatory Impact Analyses are used to "identify, quantify, monetize, and communicate the anticipated effects of the proposed rule" by divisions within NC DEQ and given to the Environmental Management Commission as a way to understand proposed rules before making their decision (*NC DEQ Division of Water Resources*).

With the rising prioritization of environmental justice (EJ) in federal and state landscapes, this project comes at a relevant time. While there seems to be broad interest for equity, governmental agencies and departments are not always given clear guidelines about how to move forward with practices to consider and integrate environmental justice. We hope that this project could have implications for other state environmental agencies and the NC DEQ as a whole.

This project explores two target areas for the DWR's considerations to integrate and address equity: 1) incorporating equity considerations into the RIA, and 2) furthering DWR's knowledge of how to better incorporate community input and engagement into RIA development and the general rulemaking process.

We used the following guiding questions to assist in our research as well as the development of the project deliverables:

1. How can equity considerations be incorporated into NC DEQ's policy development and rulemaking processes?
2. Are there identifiable gaps in DWR's development of regulatory impact analysis that could lead to inequities or overlooked communities?
3. How can NC DEQ's rulemaking process better achieve procedural equity and include community engagement that builds trust and meaningfully addresses concerns?

We focused our research on four categories to inform our methodologies: 1) what other state environmental agencies and municipalities are currently doing to incorporate equity; 2) what the federal government is currently doing and has historically done to incorporate equity and justice into their rulemaking processes; 3) the current economic and academic literature around how equity can be incorporated into RIAs and cost-benefit analyses; and 4) the affected communities and whether the RIAs adequately reflect their needs. This literature review informed the research

questions posed in the remainder of the project, additional deliverables, and the basis for interviews that we conducted.

As a result, the methods we utilized included an analysis of existing methods and frameworks to integrate equity into rulemaking procedures; a comparison of the integration of equity in other state environmental departments; interviews with various stakeholders involved in rulemaking; and the development of supplementary deliverables for the client's use (including a literature review examining how to incorporate equity into rulemaking; a comparison document examining other state environmental agencies; an environmental justice educational primer; a policy matrix; and, a standard operating procedure containing our final recommendations).

There were several main findings from our research, analysis, and interviews: equity considerations can be tied into the cost-benefit analysis portion of the regulatory impact analysis and outside the cost-benefit analysis, though both have advantages and disadvantages. One key finding is the importance of improving procedural equity in order to understand regulated communities and the cumulative effects from regulations that they may face before attempting to promulgate new rules. Additionally, community engagement can be improved through adjustments to the public comment process and the creation of documents, content and websites for public audiences. As such, we've recommended tweaks to current Standard Operating Procedures steps in the RIA development process in addition to the inclusion of three new steps: 1) Understanding the foundations of justice and equity; 2) Initiation of public comment earlier on in the RIA process; 3) Development of an RIA for public consumption.

This master's project holds an immense amount of potential as any change that our clients at the Division of Water Resources are able to successfully implement in their Division can mean larger structural change within NC DEQ. A lot of the challenges and obstacles we discovered through our research, interviews, and analysis point to inequity being caused by bureaucratic methodology or historic structures. A fair and just regulatory NC DEQ is one that serves ALL North Carolinians, as stated in the agency's mission. In order to accomplish this, the agency's procedures must be examined in order to understand where the rulemaking is unjust and to gain insight as to how to further procedural and distributive equity in a way that creates a just process and fair treatment for all residents. This project focuses on the first step of the rulemaking process: the analysis of impacts of proposed rules, an integral starting point for authentic integration of equity considerations.

1. Introduction and Background

Incorporating Environmental Equity into NC DEQ's Regulatory Impact Analysis is a project in collaboration with the North Carolina Department of Environmental Quality's (NC DEQ) Division of Water Resources (DWR) Planning Section. The goal is to facilitate DWR's desire to formalize and operationalize environmental justice and equity concerns into their rulemaking processes, which entails creating regulations and rules to carry out the laws and statutes outlined by the legislature. The project's goal is to ensure that DWR provides stewardship for *all* North Carolinians by "intentionally and systematically integrat[ing] socioeconomic, race and ethnicity considerations into the regulatory impact analysis (RIA) process" (NC DEQ Division of Water Resources). Regulatory Impact Analyses are used to "identify, quantify, monetize, and communicate the anticipated effects of the proposed rule" by divisions within NC DEQ and given to the Environmental Management Commission as a way to understand proposed rules before making their decision (*NC DEQ Division of Water Resources*).

There were several methods through which this project was implemented. One component of the project included benchmarking against other state governments' departments and their incorporation of environmental justice and equity. We conducted a thorough literature review and subsequent analysis of different frameworks to incorporate equity into RIAs, interviewed various experts regarding what other state agencies do to achieve similar goals of equity and environmental justice, and conducted stakeholder interviews to understand how the DWR's rulemaking has affected communities. This work culminated in developing a Standard Operating Procedure that DWR can use to incorporate equity in future RIAs.

With the rising prioritization of environmental justice (EJ) in the Biden administration and the increasing awareness of its importance in large environmental organizations that are traditionally white, this project comes at a relevant time (McCambridge, 2014). While there seems to be broad interest for equity, governmental agencies and departments are not always given clear guidelines about how to move forward with practices that promote environmental justice. President Biden's Justice40 initiative started their pilot collaborations with various agencies in 2021 and thus only have initial results. Outside of this recent establishment, there is not much precedent for legitimate inclusion of environmental justice in federal practices. We hope that this project could have implications for other state agencies and the NC DEQ as a whole.

1.1 History of Environmental Justice in U.S. Rulemaking

Environmental justice is defined by the U.S. Environmental Protection Agency as:
the meaningful involvement and fair treatment of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. This goal will be achieved when everyone enjoys: 1) the same degree of

protection from environmental and health hazards, and 2) equal access to the decision-making process to have a healthy environment in which to live, learn, and work. (Environmental Protection Agency, n.d.).

Though the EJ movement generally dates back to the 1980s, the formal codifying of environmental justice into federal law began in 1994 with Executive Order 12898 signed by President Bill Clinton, directing federal agencies to address “the disproportionately high and adverse human health and environment effects of its many programs, policies, and procedures on minority populations and low-income populations.” E.O. 12898 was issued to create an environmental and health focus to its complement: E.O. 12550 issued in 1980 with its legal basis in Title VI of the Civil Rights Act of 1964 (Cavender, 2021).

This led the EPA to accordingly promulgate “Nondiscrimination in Programs or Activities Receiving Federal Assistance from the Environmental Protection Agency” as its main course to implementing Title VI of the Civil Rights Act of 1964 and thus addressing E.O. 12550 (Cavender, 2021). Since the EPA’s rules affect state regulatory agency actions that rely upon federal funding and that involve environmental permitting, complaints are filed directly with the EPA (Cavender, 2021). EPA then investigates and resolves noncompliance. In 1997, the Council on Environmental Quality (CEQ), which oversees E.O. 12898 compliance as well as implementation of the National Environmental Policy Act, published [official guidance](#) on how to apply environmental justice principles to federal activities and permitting. In this CEQ guidance, agencies are told to consider environmental justice at each and every step of the NEPA process (Cavender, 2021).

Additionally, federal legislators have proposed initiatives to promulgate environmental justice (Cavender, 2021). Recently, the 2021 Environmental Justice for All Act (H.R. 2021) advocated for the restoration, reaffirmation and reconciliation of environmental justice and civil rights (Edwards, 2021). H.R. 2021 also proposes the establishment of the Interagency Working Group on Environmental Justice Compliance and Enforcement (Edwards, 2021). The bill included congressional findings about how environmental hazards disproportionately affect communities of color, low-income communities, Tribal populations, and other marginalized/vulnerable populations through “polluted air, waterways, and landscapes” (Edwards, 2021). The 117th Congress introduced a shorter bill, the Environmental Justice Act of 2021, which overlaps heavily with H.R. 2021 but has a stronger focus on permitting actions (Cavender, 2021).

President Biden issued Executive Order 13990 as one of his first actions in his presidency in 2021; this contains a mandate to all federal agencies to integrate, prioritize, and advance environmental justice, particularly mandating that agencies integrate a calculation for a global social cost of carbon (Cavender, 2021) (Graham, 2022). Michael Regan, current EPA Administrator and previous Secretary of the NC DEQ, has directed all EPA offices to integrate

environmental justice and equity into all their planning and programs (Cavender, 2021). Among other initiatives created since the mandate, the EPA released a new tool on March 22nd, 2022, “[ECHO Notify](#)”, to increase public awareness of environmental violations and enforcement actions of federal regulation. They have also recently updated their EJSCREEN tool.

1.2 Environmental Justice in North Carolina

Following the lead of the federal executive orders and mandates, North Carolina Governor Roy Cooper signed a 2022 [executive order](#) which directs cabinet agencies to consider environmental justice in all climate change, resilience, and clean energy actions (Cooper, 2022). Governor Cooper will appoint an Environmental Justice Lead to each cabinet agency who will be tasked with increasing community engagement and participation when projects are likely to affect neighborhoods. Each Environmental Justice Lead will serve as point person for all EJ efforts in their agency. Simultaneously, they will inform the development and implementation of public participation plans, work with other EJ leads, publish on any actions that significantly impact underserved communities, and generally aim to increase awareness on the history and current impacts of environmental, economic, and racial justice among agency staff (“Cabinet Agency Environmental Justice and Equity Leads”, 2022). In total, there are 12 cabinet agency EJ and equity leads. The E.O. has also called for more funding in order to increase public awareness around environmental justice as well as regular public updates on air pollution, heat-related illness risks, and the disproportionate burdens on communities of color (Cooper, 2022).

The roots of the environmental justice movement emerged during the civil rights movement of the 1960s, as communities of color sought justice from environmental inequities and public health hazards. A few notable protests leading up to the galvanization of the EJ movement in the 1980s, including the 1968 Memphis sanitation strike, where sanitation workers advocated for better working conditions and fairer compensation (Horton & Oren, 2022). The first lawsuit charging environmental discrimination in waste facility siting, *Bean v. Southwestern Waste Management, Inc.*, referenced civil rights laws in 1979 and opened the doors for future environmental justice cases (Horton & Oren, 2022).

Though many other groups protested the injustices of environmental racism before what is now considered the official founding of the environmental justice movement in the 1980s, Warren County, North Carolina is often considered the birthplace of environmental justice (“The Environmental Justice Movement”). In 1982, a small, predominately African-American community was chosen for the siting of a hazardous waste landfill which would host PCB-contaminated soil (“The Environmental Justice Movement”). The soil was from illegally dumped toxic waste on the sides of roadways by Robert Burns, the owner of a trucking company based in New York (Fears & Dennis, 2021). Robert Burns had stockpiled then-banned PCB oil trying to sell to companies that still needed the chemical (Fears & Dennis, 2021). However, Burns realized this was financially unfeasible and instead decided to dump the chemicals altogether. He

first tried to dump them at Fort Bragg, but the soil didn't absorb the liquid (Fears & Dennis, 2021). As an alternative to rid themselves of the chemical, Burns told his sons to spray it along rural North Carolina roads – so for three months, the family spent their nights dumping 30,000 gallons of PCBs spanning 14 counties and 211 miles (Fears & Dennis, 2021). This left the state of North Carolina to clean up the mess (Fears & Dennis, 2021). Governor James B. Hunt Jr. first considered treating the soil where it was, but EPA shut down that plan (Fears & Dennis, 2021). Gov. Hunt then pursued an alternative option, which was to dump 10,000 truckloads of the contaminated PCB soil into a soybean field in Warren County – at the time, home to a largely poor area comprised of a 60% Black population (Fears & Dennis, 2021). The National Association for the Advancement of Colored People (NAACP) and the United Church of Christ staged a massive protest as a response to this decision (which ended up resulting in the arrest of 500 protestors) (“The Environmental Justice Movement”). The protests ultimately failed to prevent the siting of the disposal facility, though they did jumpstart the country's environmental justice movement (“The Environmental Justice Movement”).

National media sources covered the Warren County demonstrations – a definitive first for a Black community's environmental protest. Across the country, low-income populations and communities of color sought to “fight pollution from rail yards, coal-fired power plants, sewage treatment facilities, oil and gas refineries and concrete batch mills” (Fears & Dennis, 2021). Charles Lee, a Chinese-American researcher and renowned environmental justice advocate, read the 1983 federal report [Siting of Hazardous Waste Landfills and Their Correlation with Racial and Economic Status of Surrounding Communities](#), published by the General Accounting Office, which revealed that three out of four major landfills in the South surrounded Black communities (Fears & Dennis, 2021). This spurred him to work with the United Church of Christ to publish the first major environmental justice study entitled “Toxic Wastes and Race in the United States” (Fears & Dennis, 2021). The 1987 study found that “communities with greater minority percentages of the population are more likely to be the sites of commercial hazardous waste facilities” (Fears & Dennis, 2021).

Forty years later, the struggle for environmental justice remains in North Carolina. Low-income and communities of color now battle with persistent environmental burdens: industrial farming, the energy sector, and utility companies, on top of existing pollution hazards. (Newsome, 2021). Ryke Longest, co-director of the Duke Environmental Law and Policy Center, has remarked on the true cause here: even when adjusting for income, members of disenfranchised communities – such as Black, LatinX, and Indigenous peoples – are consistently more likely to live near CAFOs. (Newsome, 2021). Unfortunately, the NC Department of Environmental Quality, tasked with protecting the environment for all North Carolinians, has a complicated history with the movement.

One of the main environmental justice issues in North Carolina is concentrated animal feed operations or “CAFOs,” about which the NC DEQ has a history of receiving complaints (“Agricultural Complaint Data”). Although a 2007 moratorium was placed on the creation of new hog farms and the expansion of existing ones, industry circumvents the requirements and continues to expand their facilities and operations. In 2014, community groups filed a complaint about the permitting process for swine operations and argued that it disproportionately burdens communities of color (Sorg). While the NC DEQ was able to settle in 2018, there has been recent debate about biogas permitting from hog farming. NC DEQ allowed four concentrated animal feeding operations to capture biogas while environmental justice advocates, like the Southern Environmental Law Center, argue that this system violates civil rights of nearby neighborhoods (Azhar). The EPA decided to probe whether this was legal, and it is now an ongoing investigation (Carolina Public Press).

Unrelated to hog farming, the NC DEQ also came under fire for allowing Chemours to release GenX, a toxic chemical, into waterways (O’Neal). NC DEQ began an investigation in 2017, sampling water from various locations to analyze the health impacts on local communities. As a result of the investigation, the waterways are now under compliance for safe nutrient levels (“GenX Investigation”).

1.3 Background on NC Department of Environmental Quality

The North Carolina Department of Environmental Quality is the state agency leading stewardship and protection of North Carolina’s environmental resources. NC DEQ’s mission is to “provide science-based environmental stewardship for the health and prosperity of all North Carolinians” (North Carolina Department of Environmental Quality, n.d.). The agency administers programs overseeing the protection and improvement of air quality, water quality, and public health (North Carolina Department of Environmental Quality, n.d.). NC DEQ is also working to advance an energy strategy that fits the state’s needs in alignment with those protections. Additionally, NC DEQ offers technical assistance and educational programs (North Carolina Department of Environmental Quality, n.d.). Currently, Elizabeth S. Biser serves as the Secretary of NC DEQ and Sushma Masemore serves as the Assistant Secretary for Environment (North Carolina Department of Environmental Quality, n.d.).

There are ten divisions comprising the agency as shown below in **Table 1**. (“NC DEQ Divisions”, n.d.). Additionally, NC DEQ also houses several boards and commissions, also shown in **Table 1** (“Boards and Commissions”, n.d.). The Environmental Management Commission adopts rules for several divisions, including the Division of Water Resources (“Environmental Management Commission”, n.d.).

Table 1. Overview of the 10 NCDEQ Divisions and the 8 Boards and Commissions.

NC DEQ Divisions	NC DEQ Boards and Commissions
Air Quality	Environmental Management Commission
Coastal Management	Energy Policy Council
Energy, Mineral and Land Resources	N.C. Coastal Resources Commission
Environmental Assistance and Customer Service	Marine Fisheries Commission
Environmental Education and Public Affairs	N.C. Oil and Gas Commission
Marine Fisheries	Sediment Control Commission
Mitigation Services	Secretary’s Environmental Justice and Equity Board
Waste Management	Secretaries’ Science Advisory Board
Water Infrastructure	
Water Resources	

The NC DEQ also houses an Environmental Justice Program under the larger umbrella of its Outreach and Education efforts. Three main activities of the Environmental Justice Program include ensuring compliance with Title VI of the Civil Rights Act, administering the [community mapping tool](#), which is used to inform department decisions based on socioeconomic factors (structured similarly to EPA’s EJSCREEN tool); and environmental justice reports, which evaluate permit applications through an environmental justice lens with special consideration of socioeconomic, disproportionate and cumulative impacts .

In 2018, the NC DEQ launched the Secretary’s Environmental Justice and Equity Advisory Board to work with NC DEQ staff “to achieve and maintain the fair treatment and meaningful involvement of North Carolinians regardless of where they live, or their race, religion, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” (*Environmental Council of the States*, 2018). This Board has 17 members who represent a diverse background of cultures, experiences and sectors.

North Carolina Rulemaking Process

In North Carolina, all agencies trying “to adopt, amend, or repeal a rule must first publish a notice of text in the North Carolina Register” (NC Office of Administrative Hearings, 2021). This notice is comprised of the text of the proposed rule, a short justification for the rule, as well as:

a citation to the law that gives the agency the authority to adopt the rule, a proposed effective date of the rule, the date, time, and place of any public hearing schedule on the rule or instructions on how a person may demand a public hearing on a proposed rule if the notice does not schedule a public hearing on the proposed rule, the period of time during which and the person to whom written comments may be submitted on the proposed rule, if a fiscal note has been prepared for the rule, a statement that a copy of the fiscal note can be obtained from the agency, and the procedure by which a person can object to a proposed rule and the requirements for subjecting a proposed rule to the legislative review process (NC Office of Administrative Hearings, 2021).

In this process, all agencies must prepare a fiscal note, also known as a regulatory impact analysis (RIA), in advance of the legislative review process. Within the NC DEQ's Division of Water Resources, there is a branch dedicated to Planning – or, in other words, the research and preparation of fiscal notes/RIAs (“Master's Project Proposal”, 2021). DWR's RIAs contain largely qualitative cost-benefit analyses and sensitivity analyses, which examine the costs and benefits of any given project while accounting for uncertainty in the accuracy of the employed methods. Once the rule is proposed, DWR staff initiate the process of RIA creation, using whatever research they can find as advised by other departments and the state budget office. Usually, the analyses are qualitative due to the lack of data and dedicated staff economists at the NC DEQ. Once the RIAs are complete, DWR presents it to the Environmental Management Commission for review and approval.

After the notice is published, the agency must wait 15 days before hosting a public hearing and at least 60 days before any action is taken on the proposed rule (NC Office of Administrative Hearings, 2021). In the NC DEQ, proposed rules are overseen and adopted by the Environmental Management Commission (EMC) (“Master's Project Proposal”, 2021). The EMC is composed of 15 members appointed by the Governor of North Carolina, the Senate Pro Tempore, and the Speaker of the House (Roy Cooper, Senator Phil Berger, and Tim Moore, respectively) (“Environmental Management Commission”, 2022). Members are specifically appointed to represent various sectors such as medicine, agriculture, engineering, natural resources, pollution control, municipal or county governments and the public in order to adopt rules “for the protection, preservation, and enhancement of the state's air and water resources” (“Environmental Management Commission”, 2022).

1.4 Challenges of Incorporating EJ into Rulemaking Processes

Since the founding of the Environmental Justice movement in Warren County, environmental justice communities have continued to disproportionately bear burdens caused by new developments, expanding industry, and the climate crisis. In 2017, a joint study published by the NAACP, the Clean Air Task Force, and the National Medical Association showed the Black communities face 38% more polluted air than white American and “are 75% more likely to live in fence-line communities affected by noise, odor, traffic, chemical emissions” or other pollutions/hazards from an adjacent company or industrial facility (Perls, 2021).

Today, though there are executive orders and state laws, there is no comprehensive federal law that governs environmental justice (Perls, 2021). This means that agencies have no authority to wield in order to mandate actions or remedies to address EJ concerns outside of authority given to them for other statutes. Though we now have Executive Order 12898 from President Clinton and Executive Order 13990 under President Biden, these orders are not judicially enforceable (Perls, 2021). In 2020, a report by the EPA’s Office of Inspector General (OIG) and the Government Accountability Office (GAO) found that EPA has consistently failed to measure up to its own definition of environmental justice and that this remains one of EPA’s top challenges (Mangle, 2020). The OIG also found that many of EPA’s activities and oversight of state programs, including “managing air quality, drinking water, toxic release to surface waters, emergency response, and environmental education” face environmental justice gaps (Mangle, 2020). Since states tend to follow federal precedent, the absence of federal directive leaves states unsure how to codify and operationalize environmental justice and equity.

1.5 Project Objectives

This project explores two target areas for the DWR’s considerations to integrate and address equity: 1) incorporating equity considerations into the RIA, and 2) furthering DWR’s knowledge of how to better incorporate community input and engagement into RIA development and the general rulemaking process.

We used the following guiding questions to assist in our research as well as the development of the project deliverables:

1. How can equity considerations be incorporated into NC DEQ’s policy development and rulemaking processes?
4. Are there identifiable gaps in DWR’s development of regulatory impact analysis that could lead to inequities or overlooked communities?
5. How can NC DEQ’s rulemaking process better achieve procedural equity and include community engagement that builds trust and meaningfully addresses concerns?

2. Methods

In an initial [literature review](#), we focused research on four main areas to help refine the objectives and methods of the project: 1) what other state and municipalities are currently doing to incorporate equity; 2) what the federal government is currently doing and has historically done to incorporate equity and justice into their rulemaking processes; 3) the current literature around how equity can be incorporated into RIAs and cost-benefit analyses; and 4) the affected communities and whether the RIAs adequately reflect their needs. This literature review informed the research questions posed in the remainder of the project, additional deliverables, and the basis for interviews that we conducted.

As a result, the methods we utilized included an analysis of existing methods and frameworks to integrate equity into rulemaking procedures; a comparison of the integration of equity in other state environmental departments; interviews with various stakeholders involved in rulemaking; and the development of supplementary deliverables. These are detailed below.

2.1 Analysis of Academic and Economic Literature

We developed a memorandum (in **Appendix A**) that examines the economic and academic literature around equity integration to analyze existing frameworks and select what would be most applicable for DWR. This included examining the opportunities and challenges presented by incorporating equity into the standard cost-benefit analysis as well as other methods for providing greater consideration of socioeconomic factors in other sections of a regulatory impact analysis. The memorandum explores weighting as well as distributional analysis as methods to incorporate equity. However, because weighting in the United States lacks precedent in regulatory analysis and sparks debate, distributional analysis was particularly emphasized in the analysis of methods.

Academics, economists, and federal government employees have proposed various frameworks for implementation of distributional analysis. We have reviewed questions and methods reflected across frameworks to extract best practices to recommend to DWR. These consist of defining equity goals, utilizing guiding questions, considering the use of qualitative and quantitative data, and considering transfers throughout the analysis. Further, authors have additional advice and recommendations for analysts based on their developed frameworks that we include in the memo.

2.2 State and Federal Equity Process Comparison

We conducted research to examine what state environmental agencies and the federal Environmental Protection Agency (EPA) are implementing in relation to environmental justice and equity in rulemaking. The starting point for this research was exploring online which states

had environmental justice laws, programs, or offices. We were further guided by analyzing states within EPA's Region 4, into which North Carolina falls, in addition to other states in the Southeast as these would provide examples of environmental regulation work in landscapes with similar compliance requirements, geographies, political issues, demographics and potential socioeconomic factors. Finally, a key piece which informed our awareness of exemplary state agencies and state programs across the country was the interview process, where we asked experts and leaders for recommendations of model regulatory programs successfully engaging in justice and equity. This effort was compiled into a memorandum in order to offer NC DEQ insights as to what comparable actions can be implemented in the regulatory process based on other successes, understand and demonstrate feasible actions we can recommend in the final SOP deliverable, and highlight which equity and justice-oriented actions the NC DEQ might be able to implement agency-wide outside of the RIA. One of the most pivotal pieces of gray literature we found was a consultant-produced [Environmental Justice Study](#) for the Virginia DEQ, which examined the integration of several facets of environmental justice in state agencies. The full memo comparing state agency integration of equity and environmental justice can be found in **Appendix B**, and a summary can be found under the **Findings** section of this document.

In terms of federal guidance, two of the most important frameworks are the 2016 [Technical Guidance for Assessing Environmental Justice in Regulatory Analysis](#) published by the US EPA and the Biden administration's Justice40 initiative. The technical guidance document arose as an identified priority in EPA's Plan EJ 2014 and provides analysts with methods to use when assessing potential EJ concerns in federal rulemaking ("Technical Guidance for Assessing Environmental Justice in Regulatory Analysis"). The guidance offers key principles and definitions, best practices and understanding of concepts such as differential impacts and exposures, technical questions on how to consider equity and EJ in regulatory actions, as well as recommendations to consistently integrate EJ considerations across all regulatory actions ("Technical Guidance"). Alternatively, the Biden administration's Justice40 initiative is a "whole-of-government effort to ensure that Federal agencies work with states and local communities" to ensure that at least 40% of all federal dollars invested in climate and clean energy goes to disadvantaged communities (Young, Mallory, & McCarthy, 2021). In 2021, the Justice40 Pilot identified 21 priority programs to immediately begin directing benefits to disadvantaged communities and to provide a blueprint to other agencies on how to provide financial support. Currently, there seem to be few updates on the Justice40 initiative outside of an announcement to publish a beta version of the Climate and Economic Justice Screening Tool (Martinez and Vahlsing, 2021). The beta Climate and Economic Justice Screening Tool is meant to evaluate the consistency and success of how federal agencies are implementing programs and initiatives to fulfill Justice40's initiative (Martinez and Vahlsing). This tool differs from the EPA's existing EJSCREEN 2.0, which is a mapping system to identify socioeconomic, cumulative and environmental layers.

2.3 Interviews

To comprehensively inform this effort and all possible opportunities for the development of the SOP as well as fully understand the institutional context within which the project is grounded, we conducted a series of interviews. This included interviews with relevant DEQ staff, academic experts and economists, nonprofit staff, and environmental justice experts. In total, the team conducted 12 interviews. Some interviewees were recommended directly by our clients based upon either their expertise and familiarity with the RIA development process or based upon DWR's knowledge of interviewees' environmental justice advocacy efforts. We also received contacts from an environmental justice professor and then used the snowball sampling interviewing method to solicit recommendations for additional interviewees. The interviews were analyzed based upon consistencies among the interviews as well as how well suggestions lined up with literature and existing knowledge about environmental justice initiatives within the rulemaking process. We received IRB Approval (2022-0297) for this process, have thus anonymized all attributions for interviewee contribution throughout this document, and generally followed the script found in **Appendix C**.

By interviewing staff at the DEQ, we were seeking to understand the institutional history of the agency, potential politics, the barriers and internal challenges faced by staff, and the opportunities for recommendations for the final SOP deliverable. As such, we spoke to five staff at the DEQ representing the larger Division of Water Resources (since the client represents the planning section within DWR), the EJ Program, and the Office of State and Budget Management. Additionally, we have been engaging with a commissioner from the Environmental Management Commission throughout the course of this project for guidance and insights on the larger political landscape.

To more deeply understand the economic analysis opportunities to incorporate equity considerations, we have also spoken to two professors of economics courses at Duke's Nicholas School of the Environment as well as a professor of economics at North Carolina State University.

Finally, to ensure that our project is grounded in community-based environmental management, we have been intentional about speaking to, understanding, and incorporating feedback directly from community members and organizations that represent communities interfacing with the DEQ's rulemaking process. This process has included interviews with community members and nonprofit staff from around North Carolina.

2.4 Development of Supplementary Deliverables

Several supplementary deliverables were used in the process of developing the SOP: an educational primer and a policy tool framework. Each has been integrated into the developed SOP.

A) Educational EJ materials

One of the first steps we have identified for the SOP is an educational one. In order to implement equity, staff must first understand the foundations of equity and environmental justice and the importance of these frameworks in regulatory processes. Thus, the first step of the SOP is for staff to familiarize themselves with the foundations of environmental justice, the different forms of justice, and technical guidance around incorporating equity and environmental justice into rulemaking.

The process to determine which resources were the best sources to provide a broad yet comprehensive overview of environmental justice and equity was shaped by an online literature review and our experience learned through the Environmental Justice course taken at Duke University's Nicholas School of the Environment. The first resource is a chapter pulled from a book, *Environmental Health: From Global to Local* edited by Howard Frumkin. Chapter 8 was written by Charles Lee, who is one of the key founders of the environmental justice movement and has published many studies, papers, and literature on the topic. This chapter provides a broad overview of how the environmental justice movement evolved and was formally established in the 1982 Warren County protest. The chapter also provides a table with examples of community-based environmental justice issues to provide a sense of how expansive environmental hazards can be and to demonstrate the meaning of disproportionate and cumulative impacts. Further, there is also discussion of sensitive and susceptible populations and how health disparities can occur due to differential exposures and differential ability to recover. Finally, the chapter provides a solid overview of solutions: how the EPA has tackled EJ, further legal and research implications, and a community-based management approach.

Another core foundational understanding we determined was important for rulemakers was the understanding of how environmental justice is an umbrella to different forms of justice, such as procedural and distributive justice, and how these two concepts play out in rulemaking (item 2 in the educational EJ primer checklist, **Appendix D**). Item 3 in the checklist is literature published by Charles Lee in 2021 on different mechanisms to confront and address disproportionate impacts and systemic racism in environmental policy. This paper emphasizes the need to quantify disproportionate impacts and leverage existing mapping systems in order to create policy that addresses systemic change. The next two resources are the operationalization of equity: these are two documents that provide a detailed framework on considerations and questions for analysts to consider in order to incorporate environmental justice in regulatory analyses. The first framework is from the [National Coalition Building Institute](#), a leadership

training institute, which describes the four main RIA development phases with recommendations on how to include stakeholder engagement in each phase. The second technical resource is guidance provided by the US EPA offering technical guidance to analysts engaging in regulatory impact analysis development.

A full version of this primer can be found in **Appendix D**.

B) Policy Tool Framework

With guidance from our project advisor, we created a summative policy framework that examines various metrics of equity for the DWR to compare various policy interventions while contextualizing the Division's needs and constraints. In particular, DWR is struggling with the lack of available data and research to develop quantitative analyses as opposed to the current qualitatively-heavy analyses. One option for DWR to include an element of quantification in its qualitative analyses within the context of this project is through the development of a policy matrix examining different criteria for equity impacts. In our final product (a Standard Operating Procedure), we suggest how DWR can develop a decision-making matrix in the future. This matrix, alongside the Standard Operating Procedure, can be found in **Appendix E**.

3. Analysis and Findings

3.1 Equity Incorporation in the RIAs

We discovered a variety of findings that could have implications for incorporating equity specifically into the DWR's resulting regulatory impact analyses. We performed an analysis of existing methods in literature and at the federal level as well as a cross-state comparison to discover best methods for implementation of distributional analysis within an RIA as well as the ways in which other states have found success in incorporating equity into the RIA process.

A. Analysis of Academic and Economic Literature

The literature has several implications for what DWR could implement within their RIAs. Experts typically discuss both weighting and distributional analysis as viable methods for incorporating equity, but distributional analysis has a longer tradition in the United States and is more politically feasible. There are various methods for conducting a distributional analysis that various experts have proposed.

Weighting stakeholders within the cost benefit analysis would consist of determining the impacts for different groups based on income, race, or other socioeconomic factors. The analyst would assign different "weights" to the costs and benefits of the impacts for different groups. For example, if a subgroup of a community is facing cumulative impacts, the benefits of a policy reducing air pollution for that subgroup may be assigned more "weight." A potential issue that arises as a result of using weighting is that identifying the weights can be an "arbitrary decision that is hard to justify on ethical grounds because analysts must treat some citizens as deserving more weight than others" (Williams and Broughel). Several authors belong to the mindset that analysts need to be a neutral entity, suggesting that they "must provide descriptive information and refrain from incorporating opinions about fair distribution of wealth into their analysis" (Williams and Broughel). This would exclude weighting because analysts themselves would be selecting the criteria upon which to base their weights, injecting bias into the analysis. Splitting groups for which to calculate costs and benefits will depend on political decisions, so there must be new methodologies other than weighting to address equity concerns (Martens).

One of the suggested solutions to the problems that arise from weighting is a careful distributional analysis (Robinson et. al.). In most cases, this would look like analyzing costs and benefits of different stakeholders groups, usually delineating how policies might affect different income brackets. Because CBA follows the Kaldor-Hicks criterion that prioritizes a net gain to society, it supposedly weighs everyone equally. While this would not change in a distributional analysis, it could delineate the effects of a policy on different groups in a less controversial way than weighting (Farrow).

There are several ways of conducting a distributional analysis, but there are commonalities between different frameworks in the literature. Most notably, experts recommend defining equity goals, utilizing guiding questions, considering the use of qualitative and quantitative data, and considering transfers throughout the analysis. Expansion on these recommendations and their implications for DWR's work can be found in **Appendix A**. The guiding questions from varying frameworks can be found in **Table 2**.

Table 2. Proposed Framing Questions from the Literature and the Federal Government

EPA Technical Guidance	Nweke	Williams and Broughel
<p>1) Are there potential EJ concerns associated with environmental stressors affected by the regulatory action for population groups of concern in the baseline?</p> <p>2) Are there potential EJ concerns associated with environmental stressors affected by the regulatory action for population groups of concern for the regulatory options under consideration?</p> <p>3) For the regulatory options under consideration, are potential EJ concerns created or mitigated compared to the baseline?</p>	<p>1) Are minority and low income populations more proximate to regulated sources in question?</p> <p>2) What is the nature and magnitude of observed racial/ethnic and income inequalities in the baseline distribution?</p> <p>3) What level of reduction in pollutant concentrations in ambient media reduce social group inequalities and also yield desirable benefits for the population?</p> <p>4) What is the change in estimated baseline racial/ethnic and income inequalities (e.g., risk) given implementation of a specific option?</p> <p>5) Given a decrease in inequality in risk from baseline conditions, what is the magnitude of the observed decrease? Is the decrease meaningful?</p> <p>6) How are benefits distributed across social groups? How are implementation costs distributed across income groups?</p>	<p>1) What is the baseline distribution of the environmental outcome?</p> <p>2) What is the distribution of the environmental outcome for each regulatory option?</p> <p>3) How do the policy options being considered improve or worsen the distribution of the environmental outcome with respect to vulnerable subgroups?</p>

B. Cross-State Comparison

To understand potential avenues for state integration of equity considerations, we conducted a comparison of how other states' environmental agencies are currently incorporating justice and equity into their rulemaking processes. There are strong initial findings in the way other states are conducting work to integrate equity in their general rulemaking but also in the RIA specifically. Initially, the team began with a broad sweep of states with exemplary environmental justice programs, initiatives, or laws – this brought forth states like Connecticut, Washington, and New Jersey. The team then examined states that fall into EPA's Region 4 as North Carolina does (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee), and other states in the Southeast that might have comparable socioeconomic, political, and geographic landscapes (such as Virginia and Maryland).

To begin with, states currently implementing exemplary environmental justice initiatives have implemented policies or frameworks demonstrating how these efforts can be modeled at the state agency level. Connecticut's Department of Energy and Environmental Protection (DEEP) currently has an Environmental Equity Policy that aims to “reach all segments of the population” and understand the impacts and opportunities that their activities present to “racial and ethnic minority groups and lower income residents” (Connecticut Department of Energy and Environmental Protection.). Connecticut's DEEP acknowledges that the development of its cities has resulted its manufacturing and development bases to be located in primarily urban areas, which are typically comprised of majority racial and ethnic minority groups and lower income communities, and who tend to face a “higher number of potential sources of pollution...caus[ing] a disproportionate impact on [these] residents.” (Connecticut Department of Energy and Environmental Protection.) In Washington state, the Healthy Environment For All (HEAL) Act passed just last year (2021) aims to “eliminate environmental and health disparities in communities of color, indigenous communities, and economically disadvantaged communities” by making environmental justice integral to the state (State of Washington Department of Ecology). The policy requires the “departments of Agriculture, Commerce, Ecology, Health, Natural Resources, Transportation, and the Puget Sound Partnership...to conduct EJ assessments and incorporate EJ into strategic plans and budgets” (State of Washington Department of Ecology). Some of the key provisions in the HEAL Act related to rulemaking include defining EJ in state law and requiring its application, “us[ing] a racial justice lens in agency strategic plans, goals, and metric setting, program implementation, enforcement, and reporting affecting the environment” and requiring “an EJ assessment of proposed and historic environment bills, rulemakings, and budgets using the WA-EHD Map and other tools” (Front and Centered). New Jersey's Department of Environmental Protection is also working on rulemaking processes related to New Jersey's Environmental Justice Law -- including through a involved stakeholder process and a report published in 2020, *Furthering the Promise: A Guidance Document for Advancing Environmental Justice Across State Government*, that serves to provide historical context to state decisionmakers, establish environmental justice principles in New Jersey, and

provide a framework and tools to “agencies to implement environmental justice in their work and decision-making processes.” (New Jersey Department of Environmental Protection)

States with exemplary environmental justice initiatives in EPA’s Region 4 include South Carolina and Florida. For example, South Carolina’s Department of Health and Environmental Control (SC DHEC) has created an environmental justice, community engagement and outreach team in order to support multiple bureaus within the Office of Environmental Affairs. SH DHEC has also crafted trainings geared toward public participation, emphasizing that training should “meet the needs of communities . . . in a professional, culturally appropriate manner” (Skeo Solutions, Inc. and Metropolitan Group, 2020). The Office of Environmental Affairs has also appointed community liaisons within each bureau, who address community concerns. Additionally, the SH DHEC created an internal Public Participation Task Force, which has hosted listening sessions to receive input on its public participation actions. Another strong equity initiative is the St. John’s Water Management District in Florida, which offers a [permit portal](#) allowing the public to search a database of project permits, view which stage of the process the permit is in, view all related documents submitted by the applying entity, and submit comments at any time (Participant V, personal communication, March 10, 2022).

The Virginia Department of Environmental Quality hired a team of consultants in 2020 to identify challenges and opportunities for environmental justice and equity incorporation in their existing frameworks and processes. This process analyzed nine different areas: authority, leadership, staff capacity, guidance and tools, accessible information, relationship building, community engagement, environmental justice community capacity, and local government coordination (Skeo Solutions, Inc. and Metropolitan Group, 2020). Within their deliverable for the state, the consultants highlighted other state departments that operationalize justice and equity in exemplary demonstrations for each of those focus areas. One of the recommendations by the Virginia DEQ Environmental Justice Study is requiring the impact analyses include “evaluations of cumulative and disproportionate impacts on sensitive populations to ensure ‘fair treatment’ or ‘the equitable consideration of all people whereby no group of people bears a disproportionate share of any negative environmental consequence resulting from an industrial, governmental, or commercial operation, program, or policy’” (Source: [Virginia DEQ](#)). For example, New Mexico’s Environmental Improvement Board requires applicants to either demonstrate that proposed projects won’t result in disproportionate impacts if sited in vulnerable areas and require the facilities to submit a community impact assessment.

Table 3. Matrix of state policies successfully integrating equity in the RIA process or determination of disproportionate impacts.

State	Why Chosen?	Focus Area	Process or policy
Minnesota	Exemplary Program	Equity in State RIA	Air permit can't be issued for any facility near a historic environmental justice area without an analysis of the cumulative impacts and effects of past and current pollution
New York	Exemplary Program	Equity in State RIA	Applicants must consider existing cumulative and disproportionate impacts on local communities and evaluate additional disproportionate impacts of the proposed facility
New Jersey	Exemplary Program	Equity in State RIA	Must identify "burdened communities" (see below) and avoid granting permits to new or expanded facilities in these burdened communities.
		Disproportionate Impact Identification	Environmental justice or burdened community: <ul style="list-style-type: none"> • Communities of concern (low-income, minority, or limited English proficiency) • Presence of disproportionate environmental and public health stressor (contaminated sites or pollution) • Lack/absence of environmental/public health benefits (high quality or quantity of parks, access to healthy food and good public infrastructure).
California	Exemplary Program	Equity in State RIA	Must use available tools, existing risk assessments, indicators of vulnerability, cumulative impacts, and well-being indicators to understand existing population vulnerabilities (health or otherwise)
		Disproportionate Impact Identification	Determine a cumulative impact score by identifying pollution burden (exposures and environmental effects)

			multiplied by population characteristics (identification of vulnerable populations or socioeconomic factors).
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C. Federal Findings

At the federal level, we found varying resources pointing to how the NC DEQ's DWR can integrate equity considerations in their rulemaking processes. A recent EPA RIA published in 2021 around the "Cross-State Air Pollution Rule" quantifies public health benefits thoroughly but skims over topics of equity, environmental justice, disproportionate impacts and/or disadvantaged communities (Environmental Protection Agency). One of the main tools touted by federal government agencies in assessing impacts has been cost-benefit analysis (CBAs); the tool has recently been criticized for introducing bias and failing to evolve for the past 40 years. There is now a movement calling to reform CBAs by "listing cost and benefits in a non-monetized manner; greater and more transparent consideration of alternative policy options; greater accounting of ancillary benefits; decreased use of intergenerational discounting and analysis of deregulatory policies at the same rigor as regulatory policies" (Shapiro & Levi-Faur, 2011).

The Environmental Protection Agency also identified rulemaking as a 2020 EJ priority area, with the objective of "ensur[ing] environmental justice is appropriately analyzed, considered and addressed in EPA rules with potential environmental justice concerns, to the extent practicable and supported by law" (Environmental Protect Agency, Environmental Justice). In order to do this, EPA committed to implementing two main fundamental and foundational documents: *Guidance on Considering Environmental Justice During the Development of a Regulatory Action* and *Technical Guidance on Assessing for Environmental Justice in Regulatory Analysis*. The 2020 strategies focused on both implementing and enhancing rulemaking guidance; enhancing cultural competency and learning through trainings and other activities; monitoring and evaluating implementation progress (this component included a rigorous assessment of EJ analyses in rules every three years) and meaningfully involvement community input (Environmental Protect Agency, Environmental Justice).

Further, there is the consideration of procedural equity versus substantive equity, which together, "provide two useful evaluative criteria"; procedural equity referring to the decision allocation process and substantive equity referring to the "empirical distribution of costs and benefits resulting from policy choices to affected parties" (Regens & Rycroft, 1986). At the forefront of rulemaking, there must be a strong distinction between equity and efficiency, with the understanding that neither should be weighted more heavily than the other (Regens & Rycroft, 1986).

Due to the developing nature of Justice40, there is no guidance that we can yet recommend for NC DEQ to follow. However, the federal Office of Management and Budget put out a Request for Information (RFI) in the summer of 2021 soliciting feedback on “Methods and Leading Practices for Advancing Equity and Support for Underserved Communities through Government” (“Methods and Leading Practices”, 2021). This RFI has brought in comments to the federal level that have proven invaluable in terms of frameworks NC DEQ might soon start to see being implemented at the federal level. Three notable comment letters have been submitted by the [Urban Institute](#), the Institute for [Policy Integrity](#), and the [AAMC Center for Health Justice](#).

The Urban Institute recommends that equity assessments and strategies rely on relevant tools for equity analysis, such as the [Spatial Equity Tool](#), the [People's Health, Housing, and Livelihoods throughout the COVID-19 Period Tracker](#), the [Capital Flows](#) tool, and a plethora of other tools that look at socioeconomic factors not typically examined in environmental decisionmaking (but that have just as important implications as the typically considered factors). Additionally, the comment letter suggests various language frameworks that help to establish principles of ethical engagement in addition to suggestions for strategies on how to fund organizations led by and for people of color (Young and Boland, 2021.).

The AAMC Center for Health Justice's comment letter contains recommendations on stakeholder and community engagement (pointing to Executive Order 13895 which instructs agencies to increase engagement with “members of communities that have been historically underrepresented in the Federal Government and underserved by, or subject to discrimination in, Federal policies and programs”) (Alberti, 2021). Other themes covered in this comment letter include bidirectional communication, how to build and maintain community trust using principles of trustworthiness, ways to leverage existing resources across the federal government in order to procure and directing contract dollars to historically and currently marginalized and under-resourced communities, in addition to stakeholder involvement in procurement and contract activities. The letter also touches on how to handle race and ethnicity data in data collection activities, as well as mechanisms for prospective and retrospective evaluation (Alberti, 2021).

The Institute for Policy Integrity recommends that OMB should push agencies to assess regulatory impacts on a more granular scale (for example, assessing how different zip codes and census blocks are affected by pollution levels, accounting for baseline exposure and existing vulnerabilities) (“Comments on Avenues to Promote Equity and Advance Environmental Justice Through Rulemaking and Regulatory Analysis”, 2021). Additionally, OMB should provide agencies with comprehensive guidance on how to conduct distributional analysis and how to incorporate the findings from distributional analysis into decision-making (“Comments on

Avenues to Promote Equity and Advance Environmental Justice Through Rulemaking and Regulatory Analysis”, 2021).

Though it is yet to be seen which pieces of which comment letters OMB will pursue in terms of guidance to federal agencies and what guidance NC DEQ can then expect to see come from EPA, these public comment letters certainly provide model frameworks and recommendations.

3.2 Insights from Interviews

A. Community Engagement

We heard a lot of collective experience from several different interviewees, resulting in similar feedback consistently amplified in each community interview. An advocate at North Carolina Conservation Network gave insights into working with community groups and what their priorities are. Their role is to connect legal and scientific expertise to the lived experiences of community members. One of the main pieces of advice from this person was to ensure that community members inform agency practices on the front end so the final decisions reflect populations that have typically been ignored in regulation. In order to incorporate equity, the advocate mentioned including relative vulnerability instead of on exposure. This would entail painting a picture of the full community and the vulnerabilities they already face when implementing rules. The advocate mentioned the distrust in government, which informs the SOP in that we recommend relationship building and gathering information about the regulated communities. Finally, the advocate mentioned the hearings themselves and what factors should be considered in their implementation. We have thus incorporated considerations for the hearing process and how DWR could make it more equitable - the full set of our recommendations can be found in the **Recommendations** section.

We spoke with three employees from Clean Water for North Carolina who engage with and are a part of communities facing environmental injustices. They mentioned internet connectivity issues as a barrier for meaningful engagement, which the previous interviewee also mentioned. Further, these interviewees expressed frustration at the previous DEQ engagement methods; they felt as though the DEQ has reached out for comments and opinions while they have never been incorporated into the final rulemaking. They felt as though it was another box that the DEQ was checking off. This echoes the SELC employee's interview content as well. The Clean Water employees similarly emphasized the importance of community feedback and proper notification of affected communities. In particular, they brought up the fact that if community members comment on something that may not be pertinent to the rule that is being considered at the moment, the comments may not be entered into the record and would therefore not be considered for any other rulemaking. Further, the group mentioned the exclusivity of the way that RIAs are written. The level of technical information would need to be brought down for community members to be able to comment.

In an interview with an employee of American Rivers, the same issues were echoed as in previous interviews. To summarize, the employee mentioned the inaccessibility of the rulemaking process in the timing of listening sessions and the professional language within an RIA. The employee mentioned the possibility of contacting community leaders and engaging them with particular rulemakings.

In general, the interviews informed what possibilities for community engagement within the rulemaking process exist. Some interviews also informed the RIA creation process itself, but they were largely useful for the front end of the process.

B. Mapping Tools

Additionally, mapping tools can be used in order to help consider and address environmental justice and equity factors in the permitting and RIA process (Source: [Virginia DEQ](#)). A professor at Duke recommended utilizing a mapping tool (either the NC DEQ Community Mapping System, which contains a layer to identify socioeconomic demographics, or EPA's EJSCREEN which contains several layers to identify communities of concern) to draw at least a 2-mile radius around the facility and to understand the census tract or group block demographics that would be impacted by potential rulemaking. This sort of step would allow a systematic understanding of which populations are being disproportionately and/or cumulatively impacted by environmental burdens. Another professor at Duke recommended including a matrix in the RIAs as a method to blend quantitative and qualitative approaches.

An employee of the NC DEQ environmental justice office clarified the role of the EJ office in conducting RIAs. As of now, they only collaborate with other Divisions if the Division itself asks for assistance with particular projects and issues. However, the office does publish EJ reports that include GIS analysis of regions that may be environmental justice communities or that could be affected by particular rulemakings. These reports thus far have not found a use within the DEQ. We connected these back to the lack of EJ analysis in DWR's RIAs, and we are now recommending that DWR incorporate some of the same analysis to fulfill their mission and to provide utility for the EJ mapping software. The employee also pointed us toward Virginia as a potential bookmark for EJ rulemaking.

C. Economic Methods

We also spoke with an employee at the NC Office of State Budget and Management which assists DWR in the development of their RIAs in its economic development process, by providing data and offering one level of sign-off before the rulemaking goes on for EMC approval. The employee gave context behind the qualitative nature of the RIAs and informed us

of the lack of data that would allow for a quantitative cost-benefit analysis within DWR's RIAs. Further, none of the staff members are practitioners of applied economics methods such as benefits transfer. This steered us away from our original goal of helping the DWR increase their quantitative analysis within the RIAs. The employee also mentioned that— in relation to the idea borne from the last interview— there would need to be a link between the socioeconomic information provided and the suggested policy action. Finally, the employee recommended against weighting since it would not be economically feasible in North Carolina, which was consistent with the literature. Additionally, an interview with a NCSU professor of economics resulted in an idea for us to look back at the extant RIAs and to “critique” what has been done so far, incorporating equity along the way.

4. Recommendations

There are several discrete focus areas that the Division of Water Resources can implement changes in order to refine the rulemaking process to include more equity considerations. In this section, we'll cover recommended changes starting at the level of the Division's feasibility and ramp up to larger structural changes at the NC DEQ level. To begin with, we have recommended adjustments to the Standard Operating Procedure in the development of an RIA that DWR can directly implement. Next, there are some key recommendations for the community engagement process that can improve procedural equity and build trust with communities. Finally, we examine some key broader changes for the NC DEQ that can serve as a catalyst to achieving systemic change.

4.1 Standard Operating Procedure

The Standard Operating Procedure is the main deliverable requested by the DWR. We have several recommendations to approve upon the current process which have been laid out in **Appendix E**.

1. Strengthen familiarity with environmental justice

We suggest that DWR (and whoever may be using this framework in the future) become more familiar with environmental justice through the EJ Primer as a first step. This primer details the importance of environmental justice, its principles, how to operationalize EJ and will generally be helpful for staff to understand before they start collecting background information (which is the next step). Before, the process seemed to only include collecting background information from staff experts instead of various stakeholders. Therefore, this is when we recommend beginning to engage community members in an equitable way.

2. Use of mapping tools to establish equity goals and understand EJ concerns

For step two, those conducting the RIAs should then utilize mapping tools (either NCDEQ Community Mapping System or EPA's EJSCREEN 2.0) to identify the communities that may be impacted by the proposed rulemaking and to define explicit research questions surrounding equity goals of the project. In the NCDEQ Community Mapping System, analysts can use relevant environmental layers of the proposed rulemaking alongside "NC DEQ'S Potentially Underserved Block Groups." In EPA's EJSCREEN 2.0, analysts can circle at least a 2-mile radius, select relevant environmental layers of the proposed rulemaking, and include socioeconomic layers such as "People of Color", "Low Income", "Linguistically Isolated". Additionally, cumulative impacts can be considered by adding on "Health Disparities" layers while marginalization can be considered by adding in "Critical Service Gaps". In an example of how to determine communities of concern, New Jersey assigns this label if a community has a population of 35% low-income, 40% minority, or 40% limited English proficiency ("Furthering the Promise", 2020). Finally, we recommend collaborating with the NC DEQ EJ office staff to

incorporate environmental justice concerns into the RIA. The EJ office has worked with other divisions before upon request, and DWR could utilize them as a resource as well.

3. Understand regulatory baseline

Next, analysts define the existing regulatory baseline. In this stage, the analyst defines what current statutes or rules are requiring the rule change or that will limit its effect. We did not change this step because we are not changing any existing statutes or rules, so this shouldn't be any different than usual.

4. Identify differential costs and benefits

The fourth step is identifying the costs and benefits of the rulemaking. This is where we recommend conducting a qualitative distributional analysis. This looks like asking questions about who the intervention would benefit and to what extent as well as who would not benefit. Further, we recommend that DWR continues to engage the community to ascertain these costs and benefits.

5. Public comment early on

Step five is new to this phase of the process: implementing a public comment period and engaging stakeholders meaningfully. This step includes recommendations for making the public comment period more accessible, including scheduling meetings at convenient times for community members and holding multiple well-publicized public hearings. Further recommendations are addressed in the next section and come directly from interviews we conducted with various community members.

6. Estimate size of impact

Next, analysts are asked to estimate the size of impact. This is understanding how the future world would change as a result of the proposed rule. We recommend reviewing equity goals that were defined earlier in the process to examine whether any change was substantively meaningful for affected communities.

7. Monetize costs and benefits

The seventh step is monetizing costs and benefits. During this step, we want to be clear that we do not recommend monetizing impacts differently for different groups—this would entail weighting, which the literature does not recommend. However, if there are costs and benefits that are monetized at the advice and impact from the Office of State Management and Budget, we recommend that these are differentiated based on income brackets and socioeconomic factors that were differentiated in the fourth step of this process. There is precedent for differentiating between tax brackets, so we recommend starting with this and experimenting with how to calculate costs and benefits for different groups based on other socioeconomic factors once the first process is well-developed.

8. Conduct sensitivity analysis

The eighth step is conducting sensitivity analyses, which is describing impacts under different assumptions. There are always assumptions inherent in a model, and this step accounts for them. Much like step seven, we recommend performing sensitivity analysis based on the earlier-differentiated stratifications of different income groups.

9. Evaluate results

Step nine involves evaluating the results of the previous steps in this analysis to make a decision. It describes the outcomes of the rule that the RIA development process revealed. We are hoping that— with the integration of the steps we outlined earlier— DWR will also evaluate what the rule looks like based on different groups. At the recommendation of an economics professor, we suggested developing a matrix to describe policy options based on the outlined equity goals that were defined at the beginning of the process. This would not only be a good way to visualize findings but also a good way to move toward more quantitative information within the RIA.

10. Development of RIA for a public audience

The final step is new. We suggest preparing the RIA for public consumption at the request of community members. As of now, RIAs are difficult for community members to read; they have technical language and they are quite lengthy. We suggest DWR prepares a key findings document from the RIA that distills technical language into digestible material and summarizes the document. Further, we suggest that they implement executive summaries at the beginning of each section of the RIA so that community members can read these and select sections they might want to read more in-depth.

4.2 Community Engagement

One of the most fundamental ways to improve equity in any rulemaking process is through the community engagement and outreach structure. Per the EPA, the definition of environmental justice means the fair treatment AND meaningful involvement of all people with respect to the development, implementation and enforcement of environmental laws, policies and regulations (Environmental Protection Agency, n.d.). Relatedly, there are two ways to incorporate environmental justice and equity into regulatory proceedings: 1) through substantive and distributive equity, which would mean the identification and integration of rules that address disproportionate impacts and 2) through procedural equity, which focuses on meaningful community engagement in the regulatory process to achieve fair treatment. The key to meaningful community engagement is that community input must thoroughly and genuinely be taken into consideration in rule development.

Alongside analysis of existing frameworks, literature reviews, and direct interviews with community members, the project team has compiled several recommendations on potential

pathways to improve community engagement. One of the key goals in this process will be to build trust with community members who might be jaded with providing consistent input to government agencies that may not be acknowledged or considered in the final rule.

To begin with, there are several ways to improve relations with community members in a way that builds trust, acknowledges input, and builds meaningful community engagement. The Division of Water Resources can first seek to improve the network of stakeholders it seeks input from while embarking on public comment periods. Though many nutrient reduction rules may likely seem as having little or net positive local impacts, the act of informing and engaging communities will inherently strengthen ties and trust. It is also vital to see DWR model this behavior as a positive proof of concept for other Divisions and the larger NCDEQ operations. DWR might tend to lean to the same voices to submit public comment, but we encourage public comment be widened to a larger network that can be informed by the snowball sampling interview method but for spreading notice of open comment or hearing periods (asking a local nonprofit point of contact who they might recommend based on their networks and knowledge of community interests). For public hearings themselves, as the world transitions back to less digital communications, the project team heard from several community members that virtual only hearings are not preferred. This is due to the isolating nature of Zoom public hearings, where community members offering input can only see themselves and commissioners or other agency staff. One of the core aspects of offering public comment is the solidarity offered in seeing other community members present. There are a few recommendations to address this: 1) Offer several hearings, which can either be a combination of Zoom only or in-person only; 2) Offer a hybrid option for hearings, which means comment can be offered virtually or in-person for the same session; 3) adjust Zoom settings away from the “Webinar” view to allow attendees to see other participants.

There are also wide-sweeping recommendations for the general public hearing and comment structure: hearings be offered in evening hours in order to accommodate work schedules as much as possible; public comments submitted online should receive a confirmation email as an acknowledgement of submission; and, most importantly, post-ruling, the Hearing Officers report with summary of public comment submissions should continue to be published. It seems there is not a lot of awareness of this public comment summary provided in the Hearing Officer's report, which covers received comments and addresses their feasibility. DWR might consider having all Hearing Officer reports published on an external-facing website geared for a public audience.

Relatedly, after a public comment is submitted, stakeholders should receive a confirmation email stating acknowledgement of their comment and directing them to the website where Hearing Officer's reports are housed as a way to provide closure and awareness of this effort. This way, DWR is not solely responsible for emailing out to hundreds of stakeholders but can instead rely

on the publishing of the Officers report as transparent efforts to communicate the thought process of the final rule.

Further, one consistent piece of feedback the project team heard was the length of public comment. The current process of rulemaking allows for a public notice to be published of proposed rules; agencies must wait 15 days before they host a public hearing and 60 days before taking action on the proposed rule. Based on interviews, the project team heard consistently that 60 days is not considered enough time to hear of a rule, gather community awareness of the proposed rule, conduct research, and coordinate community response. NCDEQ might consider extending the public comment to at least 90 days, which also allows for more frequent public hearings, as well as a standardized and more reliable way to inform community members of proposed rulemaking.

One such avenue to follow is the model portal set up by the St. John's Water Management District in Florida (Participant V, personal communication, March 10, 2022). This portal allows any member of the public to search a database of project permits using a number a different parameters: specific region/city, permit type, time frame, or a permit number if they have this information (but not required, allowing the public better access to general information). Application information available for the public to view includes the name, phone number and email of staff members involved in reviewing the permit, as well as the status of the application alongside an infographic showing the different stages of the permit process to provide context; permit documents; map and tools as well as space to submit comments and upload documents. An example [here](#) shows parameters of all pending applications in Jacksonville. Additionally, [the landing page](#) is one the NC DEQ might consider emulating as it provides tons of general information that can help average citizens understand the process of permitting. Finally, there is a newsletter that community members can sign up to receive which will notify them of all [Permit Application Notices](#) received by the District before review is even conducted.

One final recommendation for the Division of Water Resources is the development of the RIA for the public. The current document is geared heavily towards rulemakers and practitioners and thus is a very technical document. The project team recommends creating an executive summary at the top of the document geared toward community members: this summary can be, in simple terms, what the environmental problem is, what the proposed regulatory solution is, which communities/areas will be impacted, and what costs and benefits can be expected as stratified by groups identified in the rest of the document. This could also summarize each RIA section individually such that community members could select which sections they would like to read in more detail. These summaries can be stored on a site that is geared just for the public, which can contain a platform like the St. John's Water Management District. Additionally, the DWR can consider collaborating with the Environmental Justice Program office at NC DEQ to compile rulemaking analyses created just for the public. The EJ office already creates EJ analyses and can

help the DWR in utilizing the right language and including the right considerations in publishing these public-oriented RIAs.

An overarching consideration to note is that several recommendations are for existing structures across the entire Department of Environmental Quality and not specifically DWR's chosen practices. The ideal scenario is that DWR is able to implement these changes to act as a model for other divisions in the DEQ to create larger systemic change throughout the full agency.

4.3 Broader Cultural Change

This master's project holds an immense amount of potential as any change that our clients at the Division of Water Resources are able to successfully implement in their Division can mean larger structural change within NC DEQ. A lot of the challenges and obstacles we discovered through our research, interviews, and analysis point to inequity being caused by bureaucratic methodology or historic structures. We see a few areas of cultural change within NC DEQ that can lead to more equitable planning and policies.

One recommendation is required training for all staff to understand environmental injustices and how to engage in environmental equity. Training like this is being modeled in state environmental agencies in South Carolina, Louisiana and Connecticut (see **Appendix C** for full state comparison text). An annual training in emerging equitable best practices and understanding current issues is one way to ensure that equity is always at the forefront of NC DEQ rulemaking to serve ALL North Carolinians. This leads directly to recommendations identified in the Virginia DEQ Environmental Justice study around leadership and staff capacity. One core recommendation is the fostering understanding, expertise, and cohesive support amongst NC DEQ leadership, especially as related to environmental justice and equity as subject matter expertise.

Additionally, there are currently only two economists for the Office of State Budget and Management overseeing the rulemaking for the whole state of North Carolina – which means analyses are not done as in-depth as might be ideal. As such, we recommend the DEQ hire more economists and social scientists among their divisions to help inform the foundation of regulatory impact analyses in a way that also considers cumulative and disparate impacts. NC DEQ also saw a major staff reduction during the 2008 recession – with as much as 40% of staff being cut – and these roles were never backfilled. This additional pressure on reduced staff to still conduct intense procedures supports the need to hire more positions. This also aligns with one core focus from the Virginia DEQ study: increasing staff competency and capacity to effectively support environmental justice will build their ability to effectively apply these considerations. This can be accomplished through training and by assigning a public participation coordinator that can serve as a community liaison within each Division, similar to South Carolina DEQ's model.

Finally, one key consideration to keep in mind is that NC DEQ has an EJ Program office that conducts environmental justice analyses, oversees the NC DEQ Community Mapping System, and provides vital subject matter expertise for all NC DEQ Divisions. Governor Roy Cooper's 2022 Executive Order also led to the appointment of 12 cabinet Environmental Justice leads, and we recommend DWR rely upon, learn from, and pass along findings to these leads during their implementation of the standard operating procedure. Further coordination between NC DEQ divisions and NC state agencies can lead to less siloing of work and more holistic and intersectional rulemaking that benefits communities in social, economic and environmental lenses.

5. Discussion and Conclusion

To achieve their goal of incorporating more equity into their RIAs, DWR needs to amend their process. In particular, DWR must determine and follow a set of questions when looking to incorporate equity within RIAs. Further, there needs to be more consideration of procedural equity, meaning more outreach to community groups who their policies could affect. From observing what other governments are implementing and what the literature recommends, we have developed a standard operating procedure for the DWR to implement that we will tailor based on best practices and constraints that they face while conducting analysis. The DWR's SOP implementation could serve as a framework that other departments within the NC DEQ could follow. Procedural equity and better policies for all North Carolinians would ensue as departmental employees interact with community groups and build trust.

The Justice40 initiative and the technical guidance offered by the US EPA around assessing environmental justice in rulemaking are the most comparable projects to this, yet the results from each are unclear; Justice40 is in its initial phase while the technical guidance hasn't seemed to have been widely operationalized. To use the Federal Emergency Management Agency as an example, there has been further outreach to affected communities and more discussions about meaningful incorporation of equity. While there has yet to be significant, measurable change, results from this program could have implications for state agencies. DWR should keep an eye on Justice40 and analyze what could be applied to the implementation of our recommendations.

Another avenue for incorporating considerations of equity and disparate impacts into the RIA process is discussing initiatives, trials, and areas of improvement with staff from other states' agencies. Equity work has already been implemented in several other states; discussions with the DEQ staff in Virginia, Louisiana, New Jersey and California could help NC DEQ staff understand further how to further operationalize equity, especially given similarity in scope.

Further, one of the most prominent methods to incorporate equitable considerations in analysis is by weighting within the CBA, but this was deemed impractical at this time. The literature is not well-established enough and the political climate would not lend itself to an acceptable method of incorporating weighting. However, DWR can monitor the discourse around weighting and continue to consider its practicality within NC DEQ as the literature and implementation develops.

One limitation to this project is the qualitative nature of the RIAs. Because the CBA literature is highly quantitative, the literature regarding incorporating equity into RIAs is also highly quantitative. Unfortunately, we have understood through research and interviews with stakeholders that further quantification within NC DEQ's RIAs isn't possible because of lack of access to data. Additionally, it is not feasible to conduct causal impact research for each and every rule change – and there are not enough resources to push for more data to inform more

extensive analysis. Further, we weren't able to directly examine the data the DWR is supplied in developing the RIAs – we only saw the final RIA product – so one additional limitation is that we weren't able to determine bias or gaps within the data itself.

For future work, DWR should look into developing their process and considering the scalability of their process. While we have relied on other states' methodologies as well as frameworks set forth in the literature, DWR's process could likely be further tailored to more accurately represent their abilities and constraints to implement recommendations. Further research would include reviewing the outlined process that resulted from this project, adjusting to optimize utility for DWR, and documenting insights that could be applied to other divisions and state departments. Additionally, another project could examine the data sources supplied to the DWE to determine if there are any biases or gaps used in the development of RIAs.

A fair and just regulatory NC DEQ is one that serves ALL North Carolinians, as stated in the agency's mission. In order to accomplish this, all of the agency's procedures must be examined in order to understand where the rulemaking is unjust and to gain insight as to how to further procedural and distributive equity in a way that creates a just process for all residents. This project focuses on the first step of the rulemaking process: the analysis of impacts of proposed rules, an integral starting point for authentic integration of equity considerations.

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7. Appendices

Appendix A: Analysis of Economic Methods in Literature

Memo: Equity in Regulatory Impact Analyses Literature Review

Executive Summary

Equity— defined by the North Carolina Department of Environmental Quality as fair access to livelihood, education and resources, full participation in the political and cultural life of the community, and self-determination in meeting fundamental needs— is emerging as an important consideration for all levels of government within the United States (NC DEQ). Since this is a new concept, there are few practicable examples from which to draw best methods. However, frameworks that have been developed could inform how DWR begins to incorporate equity into their RIAs.

Introduction and Background

NC DEQ's mission is to "provide science-based environmental stewardship for the health and prosperity of all North Carolinians" (NC DEQ). The Division of Water Resources (DWR) aims to fulfill this mission by incorporating equity in their Regulatory Impact Analyses (RIAs) which are typically used to "identify, quantify, monetize, and communicate the anticipated effects of the proposed rule" (NC DEQ Division of Water Resources). The RIA is generally understood in regulatory agencies to inform all decision-making, to improve rule designs, to promote transparency internally and externally, and to delineate all potential impacts. Potential impacts included in the RIA could include "impacts on time, expenditures, revenue, savings, efficiencies, public health, and ecosystem services and remediation" (NC DEQ Division of Water Resources). These considerations could be components of a cost-benefit analysis (CBA), which is typically a large component of the RIA.

The United States Environmental Protection Agency (EPA) also conducts and publishes their own RIAs. Though public health is noted as a consideration for making final decisions, there is no strong emphasis on either disproportionate impacts or cumulative impacts in the extant analyses from the EPA ("Regulatory Impact"). DWR mirrors the EPA's analyses in this regard, also not emphasizing disproportionate or cumulative impacts. But even though regulatory impact analysis may not reflect disparities that a proposed rule causes, rulemaking has resulted in disproportionate impacts in the past, at least in the EPA's case (Brown). For example, for many years, the cap and trade strategy for reducing carbon emissions has been lauded as an effective climate change solution, but recently, environmental justice communities have decried this

method due to its allowance of “hot spot” emissions sites that continue to burden frontline communities (Brown). Similar issues arise with water quality trading mechanisms.

The precedent of unexpected inequitable impact from policy development demonstrates the strong need for equity and environmental justice concerns to be integrated at the forefront of policy making. Further, Governor Roy Cooper’s executive order (E.O. 246) from January 7th, 2022 calls for the governor’s office and cabinet agencies to incorporate environmental justice and equity considerations into policies for reducing greenhouse gas emissions (State of North Carolina). Analysis from the literature points the way toward ensuring equity within RIAs and toward fulfilling Governor Cooper’s directive.

Defining Terms and Situating in History

Environmental Equity and Justice

Environmental justice, as defined by the EPA, is “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” Environmental equity, as defined by The Law Dictionary, is “equitable sharing of environmental impacts by a community.” These definitions differ in that the EPA’s definition mentions the front-end of the policy process (procedural justice) while environmental equity focuses more on the effect which could be called either distributive or substantive justice (Stanford Encyclopedia of Philosophy). Division of Water Resources has expressed interest in procedural justice, defined as “fair procedure lead[ing] to equitable outcomes” (Ventaloro), so this analysis will explore the incorporation of environmental justice within RIAs and Cost Benefit Analyses (CBAs).

With the rising prioritization of environmental justice (EJ) in the Biden Administration and the increasing awareness of its importance in established environmental organizations, this project comes at a relevant time. While there seems to be widespread interest in incorporating equity into the rulemaking process, governmental agencies and departments are not always given clear guidelines about how to move forward with practices that promote environmental justice and equity. President Biden’s Justice40 initiative started their pilot projects within various agencies in 2021. Results are only preliminary at this time, so best practices have not yet been determined. As further evidence of the interest in this area, President Biden’s memorandum to federal agencies encourages the incorporation of equity into RIAs. While the EPA has developed a technical guidance document that could assist with the achievement of President Biden’s goals, little is known about the usage of this document and the extent of its effects on the results of analyses (“Technical Guidance”).

The Use of Cost-Benefit Analysis and Regulatory Impact Analysis

The stance towards effectiveness of the CBA as a tool for determining regulation has developed throughout its use in the United States (Shapiro). Currently, it is central to the regulatory process, and academia largely focuses on improving CBA instead of arguing against its usage. One issue that critics have identified is that CBA extends the timeline for the rulemaking process and could thus be used as a political tool for those who are trying to elongate rule implementation. On the other side of the debate, prominent CBA advocate Cass Sunstein believed that CBA would account for “distorted preferences,” where people make illogical choices that would not benefit them and may even cause them harm. He also believed it made agency decision making more transparent both within the agency and among the public, requiring rule developers to defend decisions and projects with thorough analysis. In 2009, President Obama appointed Cass Sunstein as the Administrator for the Office of Information and Regulatory Affairs (OIRA), which solidified the prioritization of CBA in the U.S. rulemaking process (Shapiro). Now, RIAs are often centered around CBA, which are typically as quantitative as research allows.

Meanwhile, analysts and academics began to consider including equity within the RIA development process in 2006 (Shapiro). The calls for distributional analysis became stronger in the early 2000s, but the best process for its implementation has not been clearly defined. An RIA from the EPA Air Quality Division exhibits the uncertainty that analysts face when incorporating equity considerations (“Regulatory Impact”). The environmental justice section mandated by executive order did not contain much content beyond stating that there would likely not be any disparate impact, yet analysts did not perform supplementary analyses to lead to this conclusion. Further, in a recent statement from the White House, the administration will not mention race as a factor in environmental decision-making, inhibiting analysts from considering a layer that could be vital for understanding the distribution of impacts from any given rule (Friedman). Meanwhile, environmental justice communities continue to disproportionately bear burdens caused by new developments, expanding industry, and the climate crisis (Cho).

The path toward incorporating equity within RIA and CBA has thus far been paved differently depending on a variety of factors. Currently there is no consensus about what information would be relevant for any given environmental justice analysis (Maguire and Sheriff). As such, the implementation of Executive Order 12898— which requires environmental justice analysis for major federal actions— has been criticized as “slow and inconsistent.” Though other levels of government tend to rely upon federal guidance and implementation, examples at the federal level of incorporating environmental justice and equity into regulatory impact analysis have only been developed recently (Farber). In particular, a recent RIA acknowledges the disproportionate impacts that truck pollution has on already disadvantaged communities, but it is unclear how these considerations would affect the analysis or the final rule (Farber). Additionally, the EPA’s technical guidance document recommends that relevant policy, budgetary, and statutory

considerations should determine the level of analysis. Amidst the difficulties of relying on nascent research and varied implementation to inform the incorporation of equity into their RIAs, DWR needs to also consider how to adapt their standard operating procedure given their unique constraints (Wiener).

Despite the methods that exist for incorporating equity within RIAs, very few CBAs provide quantitative assessments of the benefits and costs of a regulation by particular subgroups in the population as of now because it would be too difficult to do so (Hahn). The current approach is to exclude equity in the CBA and consider it in the final decision (Hahn). Although the incorporation of equity into rulemaking may be complicated, there are consequences of omitting environmental justice and equity analysis from RIAs. For example, an Illinois Environmental Management Commission member called out the EPA for their flawed analysis and omission of EJ concerns in a letter to the chair of the Commission (Harley). The concern was much like the issue with cap and trade programs: there was no meaningful consideration of disproportionate impacts from the proposed regulation (Harley).

Current Approaches to Incorporating Equity into RIAs

Although this project focuses on a concept that has yet to be implemented widely and effectively, plenty of literature exists that could assist in DWR's goals. Authors have theorized several avenues through which entities could incorporate equity into their RIAs and CBAs. Based on their expertise, the authors advance frameworks and provide advice for policy analysts to consider and implement.

To start at the beginning of the process, experts suggest defining equity goals and objectives for RIA development— the earlier, the better (Regens and Rycroft) (Nweke) (“Comments”). Any person doing a CBA and trying to incorporate equity needs to clearly define what kind of equity is being analyzed (Martens). Analysis should cover two useful forms of equity within the rulemaking process: procedural equity, which refers to how communities are involved in the process of rulemaking, and substantive equity, which “conceptually represents the empirical distribution of costs and benefits resulting from policy choices to affected parties” (Regens and Rycroft). The analysts should also define equity objectives for each important step in the RIA before the process has started (Nweke).

There are several opportunities for explicitly incorporating equity into RIAs, most notably incorporating weights and conducting distributional cost-benefit analyses (Kuehn). Both could be controversial in their implementation, but there remains lots of discussion surrounding their effectiveness and necessity. A further debate surrounds the choice of conducting distributional analysis. Experts have theorized a variety of approaches, both within and outside the CBA

portions of the RIA. Finally, the literature contains general suggestions and analysts to consider when incorporating equity into their analysis.

Weighting

Weighting stakeholders within the cost benefit analysis would consist of determining the impacts for different groups based on income, race, or other socioeconomic factors. The analyst would assign different “weights” to the costs and benefits of the impacts for different groups. For example, if a subgroup of a community is facing cumulative impacts, the benefits of a policy reducing air pollution for that subgroup may be assigned more “weight.”

A potential issue that arises as a result of using weighting is that identifying the weights can be an “arbitrary decision that is hard to justify on ethical grounds because analysts must treat some citizens as deserving more weight than others” (Williams and Broughel). Several authors belong to the mindset that analysts need to be a neutral entity, suggesting that they “must provide descriptive information and refrain from incorporating opinions about fair distribution of wealth into their analysis” (Williams and Broughel). This would exclude weighting because analysts themselves would be selecting the criteria upon which to base their weights, injecting bias into the analysis. Splitting groups for which to calculate costs and benefits will depend on political decisions, so there must be new methodologies other than weighting to address equity concerns (Martens).

Despite its minimal use within the United States, weighting is not a new concept; in fact, the World Bank used to use distributional weights in their analyses (Adler). While weighting may not be feasible due its concomitant controversy, more authors are starting to recommend its usage in cost-benefit analysis (Adler) (Nurmi & Ahtiainen) (“Comments”).

Distributional Analysis

One of the suggested solutions to the problems that arise from weighting is a careful distributional analysis (Robinson et. al.). In most cases, this would look like analyzing costs and benefits of different stakeholders groups, usually delineating how policies might affect different income brackets. Because CBA follows the Kaldor-Hicks criterion that prioritizes a net gain to society, it supposedly weighs everyone equally. While this would not change in a distributional analysis, it could delineate the effects of a policy on different groups in a less controversial way than weighting (Farrow).

Another form of distributional analysis is to present straightforward information to decision makers about the distributional impact and leave any value judgments to them, which would be a middle ground between ignoring distribution and weighting based on socioeconomic factors

(Williams and Broughel) (Jeuland). In particular, “a CBA tells decision makers whether the benefits of a proposed policy exceed the costs, no matter how they are distributed” (Williams and Broughel). A similar suggestion according to a federal guidance document, Circular-A4, is that “regulatory analysis needs to provide a separate description of distributional effects... so that decision makers can properly consider them along with the effects of economic efficiency” (Williams and Broughel). However, some argue for distributional analysis that is closely linked to the CBA itself, despite analysts’ pursuit of neutrality (Martens).

Best Practices for Distributional Analysis

Academics, economists, and federal government employees have proposed various frameworks for implementation of distributional analysis. These frameworks have similarities in structure, which are the best practices that DWR needs to follow. These consist of defining equity goals, utilizing guiding questions, considering the use of qualitative and quantitative data, and considering transfers throughout the analysis. Further, authors have additional advice and recommendations for analysts based on their developed frameworks.

A consistent method throughout the literature was the usage of guiding questions to determine the impacts of any given rulemaking on distribution (“Technical Guidance”) (Nweke) (Williams and Broughel). While the frameworks from EPA Technical Guidance and Nweke include more detailed questions for an analyst to consider throughout the completion of an RIA, abridged lists were selected based upon their generality and can be found in Table 1.

Table 1. Proposed Framing Questions from the Literature and the Federal Government

EPA Technical Guidance	Nweke	Williams and Broughel
<p>1) Are there potential EJ concerns associated with environmental stressors affected by the regulatory action for population groups of concern in the baseline?</p> <p>2) Are there potential EJ concerns associated with environmental stressors affected by the regulatory action for population groups of concern for the regulatory options under consideration?</p> <p>3) For the regulatory options under consideration, are potential EJ concerns created or mitigated compared to the baseline?</p>	<p>1) Are minority and low income populations more proximate to regulated sources in question?</p> <p>2) What is the nature and magnitude of observed racial/ethnic and income inequalities in the baseline distribution?</p> <p>3) What level of reduction in pollutant concentrations in ambient media reduce social group inequalities and also yield desirable benefits for the population?</p> <p>4) What is the change in estimated baseline racial/ethnic and income inequalities (e.g., risk) given implementation of a specific option?</p> <p>5) Given a decrease in inequality in risk from baseline conditions, what is the magnitude of the observed decrease? Is the decrease meaningful?</p> <p>6) How are benefits distributed across social groups? How are implementation costs distributed across income groups?</p>	<p>1) What is the baseline distribution of the environmental outcome?</p> <p>2) What is the distribution of the environmental outcome for each regulatory option?</p> <p>3) How do the policy options being considered improve or worsen the distribution of the environmental outcome with respect to vulnerable subgroups?</p>

Consideration of type of data is also a common theme among these frameworks. In alignment with the literature on CBA, analysts should use quantitative data as much as possible. For an equity analysis, data should be disaggregated by income and race/ethnicity whenever possible (“Technical Guidance”). However, in the case when data are unavailable for conducting a quantitative analysis or when it is hard to quantify impacts, other information needs to be presented to shed light on EJ concerns (“Technical Guidance”). If an analyst cannot answer the

questions included in Table 1, they should proceed by describing the necessary data for more thorough analysis and by including qualitative information (“Technical Guidance”).

The main qualitative metrics for screening for environmental justice concerns include: proximity of regulated sources to minority populations and low-income populations and indigenous people, number of sources that may be impacting them, nature and amounts of pollutants, unique exposure pathways, stakeholder concerns, and history of environmental justice concerns in the community (“Technical Guidance”). These could factor into qualitative cost-benefit analysis. From a disaggregated qualitative CBA (that should be separate from the quantitative CBA portion of the RIA), an RIA could discuss the outcomes and distributions from a given project without attempting to quantify (“Comments”). This is a valid method; there is precedent for making decisions based on non-monetized impacts. The advisory document from the federal Office of Management and Budget that describes how RIAs should be conducted, Circular A-4, “endorses the consideration of nonmonetized benefits” (“Comments”).

If there is enough data for a quantitative distributional analysis, the analyst needs to consider transfers of costs or benefits from one group to another due to the suggested rule because the “tolerance to bear regulatory costs” might vary across demographics (Williams and Broughel). The willingness to pay (WTP) metric assists analysis in valuation of certain policies, and it is key in calculating costs and benefits. Further, its value can vary based on income brackets; wealthier people usually have higher WTP (Robinson, et. al.). Therefore, especially in the redistribution of wealth to lower-income populations, a distributional analysis done well will “identify the subpopulations a policy affects and present information about their various measures of willingness to pay for regulatory benefits” (Williams and Broughel). When low-income individuals do not pay for the regulation themselves, using an average WTP across the population would be reasonable in terms of equity because it circumvents overstating values held by poorer people that calculation of an average WTP threatens (Robinson et. al.).

Timing and Timeline Considerations

Distributive equity in RIAs includes identifying groups that are likely to be impacted by rulemaking—allowing analysts to understand disadvantaged groups ahead of time—and understanding “the degree to which a regulation is likely to have regressive or progressive effects” (Williams and Broughel). Environmental justice communities may face the cumulative effects of years of neglect, which suggests that understanding the community’s needs and prioritizing distributive equity would be important (Maguire and Sheriff). Further, communities may feel the burden of being constantly targeted by certain types of rules (Jeuland). An advanced timeline of understanding disadvantaged groups would ensure these concerns are incorporated into the distributional analysis of a proposed rule.

One concern with equity is the cost of the time that it takes to promulgate regulation, and CBA has already been critiqued for having the potential to be used as a tool to slow a decision-making process. However, there are legitimate benefits for incorporating procedural equity beyond being able to give a stamp of approval to a project (Regens and Rycroft). A tool that might help ease an extended timeline that comes with equity analysis is encouraging agencies to reconsider the entire regulatory development timeline in order to “engage different groups at different stages and in different forms” (Dooling). It could inform which projects and alternatives are being considered within the CBA, but it could also result in greater equity “by informing which rules are getting written in the first place” (Dooling) (Jeuland).

Implications for DWR

The literature has several implications for what DWR could implement within their RIAs. At the beginning of their RIA development, DWR should define equity goals for the process. They should consider both procedural and distributive equity and develop goals based on each type. To do so effectively, DWR needs to seek to understand the affected communities as early in the process as possible through both quantitative and qualitative information.

Within the CBA portion of the RIA, DWR could include distributional analysis using disaggregated qualitative costs and benefits. At this time, weighting is too controversial and politically infeasible topic to be recommended. However, a wide variety of authors concur that distributional analysis provides a good alternative. Further, because quantification is already challenging for DWR's RIAs, quantitative distributional analysis should be avoided at this time—incorporation of differing WTPs among different income brackets could develop over time as DWR increases quantification of their analysis. With these considerations, DWR should start their process by including a qualitative distributional analysis that is separate from but closely linked to their regular RIA development process. There are several best practices DWR needs to follow to do so successfully.

Common practice for distributional analysis entails outlining several research questions to utilize throughout the consideration of equity within an RIA. DWR needs to review the questions in Table 1 at the beginning of an analysis and answer the questions to the greatest extent possible. Because the best method of incorporating equity and justice considerations varies depending on several factors, DWR should revise the questions and compile their own framework depending on what will have been most useful for analysis after completing several iterations of distributional analysis development.

The importance of understanding the regulated communities and the cumulative effects from regulations that they may face cannot be overstated. While the recommended analysis is qualitative, DWR needs to ascertain both quantitative and qualitative distributional impacts.

Information could be presented to the decision maker regarding the environmental justice statistics near regulated sources and the history of environmental justice concerns in the affected communities (“Technical Guidance”). The former should be ascertained through utilizing environmental justice mapping tools such as EPA’s EJSCREEN or the NC DEQ Mapping Tool, and the latter could come from community engagement and literature review.

Although the timeline of RIA development will likely be elongated with the incorporation of equity, DWR should not be daunted; there are real benefits of including equity considerations in their process. Further, they could mitigate the timeline extension through seeking to understand the regulated communities ahead of time.

Discussion and Conclusion

Incorporating environmental equity and justice into regulation is not a new concept. However, the development of nuanced RIAs that have deeply considered environmental equity and justice impacts is lacking, as evidenced by the dearth of available research and its paltry implementation thus far. With the Biden administration espousing environmental justice in their outlined goals, development of similar projects are likely to increase, and there may be more findings from the federal government upon which DWR may draw. With more resources, clearer guidance, and precedence at a federal level, states and state departments like the NC Division of Water Resources could more readily develop equitable RIAs. In the meantime, DWR can adopt a standard procedure for incorporating these suggestions that paves the way toward a more equitable rulemaking process.

Methods

This research relied heavily upon resources from Duke Library’s online search tool. The project team also found useful sources from various government websites, particularly that of the EPA. Finally, Marc Jeuland– professor of cost-benefit analysis at Duke University– provided supplementary comments on earlier versions of this memo.

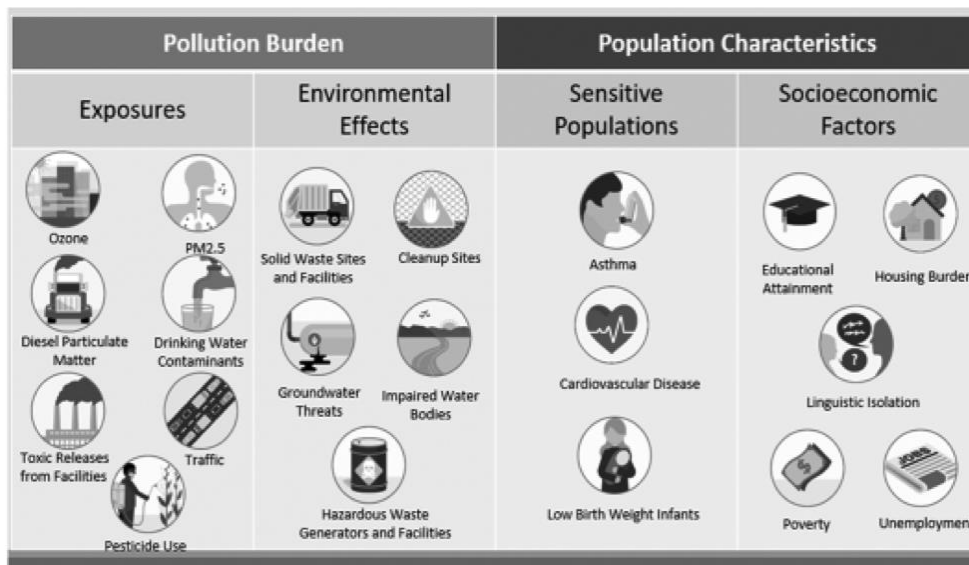
Appendix B: State Comparison Analysis

Memo: Comparison of State Agency Integration of Equity and Environmental Justice

There are many examples of how state environmental agencies are working to integrate justice and equity in various capacities. These can be divided into different focus areas including environmental justice in leadership, environmental justice laws, or focus on environmental justice in regulatory impact analyses. In this memo we will highlight some best practices from across different state agencies as informed by our research and [this environmental justice study](#) conducted at the Virginia Department of Environmental Quality in October 2020. There are also several states who are working to promulgate environmental justice laws; more details can be found [here](#).

Equity in the State Regulatory Impact Analysis Process

As related to the RIA development process, the Virginia DEQ EJ study contains a section on impact analyses in permitting. The main recommendation is for agencies to evaluate environmental justice impacts and benefits. This should include analysis of cumulative and disproportionate impacts on vulnerable populations in order to measure the fair treatment component of the [definition of environmental justice](#). As exemplified by California's CalEnviroScreen 2.0, a cumulative impact score can be calculated by examining the pollution burden a population faces (exposures and environmental effects) multiplied by population characteristics (sensitive populations and socioeconomic factors) (see **Figure 1** below).



(Figure 1. Source: [Another Game Change in the Making? Lessons from States Advancing Environmental Justice through Mapping and Cumulative Impacts Strategies](#) by Charles Lee)

There are a few models of states with legislation requiring the state's environmental agency to **consider impacts on affected populations during the permitting process:**

- “Kentucky requires an assessment of local impacts prior to granting hazardous waste permits”
- “North Carolina’s solid waste permitting status requires consideration of alternative sites and local socioeconomic and demographic data if a proposed landfill is within one mile of an existing landfill”
- Arkansas has created precedent “against permitting the construction/operation of any high impact solid waste management facility within twelve miles of any existing facility” (Environmental Justice Study for the Virginia Department of Environmental Quality, 2020)

Additionally, there are several states that **require a cumulative or disproportionate impact analysis to be conducted for environmental permits:**

1. The Minnesota Pollution Control Agency (MPCA) cannot issue an air permit for any facility located near an environmental justice area without first analyzing existing cumulative impacts and fully understanding the effects of past and current pollution from *all* sources on both the environment and communities.
2. The New York State Board on Electric Generation Siting and the Environment isn't allowed to permit construction or operation of an electricity facility without first examining cumulative and disproportionate impacts on communities. Applicants must further demonstrate evaluation of adverse and disproportionate impacts of the proposed facility's construction and operation.
3. The New Jersey State Legislature passed NJ S232, requiring the New Jersey Department of Environmental Protection (NJDEP) to identify “burdened communities” according to predetermined criteria (% of minority population, % of English proficiency, % of residents below the poverty level). NJDEP must also avoid granting permits for facilities (new or expanded) in burdened communities, unless the applicant has thoroughly evaluated the proposed facility's impact on the community, including an analysis of existing cumulative impacts. Further, the law requires NJDEP to assign community support for the facility if it is permitted. NJDEP can also deny a permit in a burdened community if approval would pose unreasonable risk to its residents and their environment.
4. California's EPA Department of Toxic Substances Control (DTSC) must use “available tools, local and regional health risk assessments, the region's federal Clean Air Act attainment status, and other indicators of community vulnerability, cumulative impact, and potential risks to health and well-being” in order to fully understand the vulnerability and existing health risks to nearby populations (for the hazardous waste facility permit process). (California EPA, 2021).

Alongside the consideration of cumulative impact and explicit instructions during the permitting

process, there is also some **guidance as to which criteria can be examined when executing these impact analyses:**

1. California's Department of Toxic Substances Control has also outlined criteria for "community involvement profiles" and is developing criteria to assess cumulative impacts in the permitting process (California EPA, 2021).
 - Profiles include "*community demographics, community interest, and the locations of sensitive receptors, nearby tribal lands, and other off-site sources of potential exposures to hazardous wastes, materials, and contaminated sites*" (including transportation-related impacts). (Source: [CA DTSC Fact Sheet](#))
2. New York State, alternatively, requires all major electric generation facilities applicants to fill out a pre-application environmental justice analysis which is used to determine whether there is an environmental justice community present by the proposed facility. This analysis includes:
 - A comprehensive description of the demographics, socioeconomics, and physical description of the impact area;
 - A cumulative impact analysis of air quality for emission sources;
 - An assessment of the existing significant, adverse, and disproportionate environmental impacts; and,
 - A full statement covering the environmental justice issues present in the area
3. New Mexico's Environmental Improvement Board's regulations require that applicants demonstrate that proposed projects don't cause disproportionate impacts on the health and/or environment of particular groups if the proposal is in a vulnerable area. Additionally, applicants must also submit a community impact assessment.
4. The Minnesota Pollution Control Agency also implements methodologies which require a cumulative level and effects analysis during the air permitting process.

Other Considerations

Alternatively, the Virginia DEQ Environmental Justice Study also examines exemplary implementation in state environmental agencies as divided by the following categories:

1. **Leadership: DEQ leadership supports and has subject matter understanding of environmental justice.**
 1. California
 - In 2001, the California Air Resources Board (ARB) published an Environmental Justice Policies and Actions seeking to "integrate environmental justice into all of [its] programs, policies, and regulations." The report required the ARB to consider EJ objectives and ensure compliance doesn't disproportionately impact low-income communities. (Skeo Solutions, Inc. and Metropolitan Group, 2020)
 - California also established a Working Group on Environmental Justice in

charge of providing guidance and recommendations to CalEPA on coordinating and implementing intra-agency strategies.

2. Delaware

- Delaware assigned a community ombudsperson to coordinate between communities and the Delaware Department of Natural Resources and Environmental Control in order “to engage communities in identifying and understanding environmental issues and addressing or resolving environmental problems, advocate for communities, assist communities in obtaining information on environmental issues. . . .”

3. Oregon

- Oregon requires that natural resources agencies have a citizen advocate position responsible for “. . . (a) encouraging public participation; (b) ensuring that the agency considers environmental justice issues; and (c) informing the agency of the effect of its decisions on communities traditionally under-represented in public processes.” (Skeo Solutions, Inc. and Metropolitan Group, 2020)
- Senate Bill 420 established an advisory Environmental Justice Task Force for the Governor and 13 natural resource agencies. The Governor appoints 12 members to the task force “with the goal of creating a citizen advocate group responsible for encouraging public participation, ensuring that the agency considers environmental justice issues, and informing the agency of the effect of its decisions on communities traditionally under-represented in public processes.” (Skeo Solutions, Inc. and Metropolitan Group, 2020)

4. Connecticut

- Connecticut’s Department of Energy and Environmental Protection (CTDEEP) passed an Environmental Justice Policy examining the diversity of staff to ensure they are reflected and representative of the Department’s constituency.
- The EJ Policy further focuses on examining equity issues among staff and provides additional training on environmental issues affecting low-income and minority communities.
- CTDEEP also has hired a coordinator staff person responsible for ensuring that established equity principles are incorporated into all of the department’s policies and programs.

2. Staff Capacity: “Increase staff clarity and capacity to effectively support environmental justice and apply environmental justice considerations throughout DEQ programs.”

a. South Carolina

- i. The South Carolina Department of Health and Environmental Control (SC DHEC) created a team to specialize in EJ, engagement and outreach in support of multiple bureaus within the Office of Environmental Affairs. The Office of Environmental Affairs has also designated its own community liaisons to serve as public participation coordinators within each bureau. (Skeo Solutions, Inc. and Metropolitan Group, 2020)
- ii. SC DHEC created tailored training for its staff by assessing current staff knowledge and attitudes of public participation. EJ training sessions were hosted with the EPA's Region 4 Office of Environmental Justice and the International Association of Public Participation (IAP2). Throughout this process, SC DHEC also underscored the need for training to "meet the needs of communities . . . in a professional, culturally appropriate manner."
- iii. Other notable states include Connecticut, Oregon, Indiana, Washington State, New Jersey – see Chapter 5 in the full Virginia DEQ EJ Study for more details.

3. Guidance and Tools: "Provide guidance and tools to ensure clear and consistent implementation of adopted environmental justice policies and practices."

- a. Louisiana
 - i. Louisiana's Department of Environmental Quality was required to hold public hearings focusing on environmental equity issues in its programs. The hearings also served as a way to study and quantify pollution emissions and effects on residential areas.
- b. Other notable states include California, Illinois, Michigan, New Jersey, New Mexico, New York, Oregon, Washington State – see Chapter 5 in the full Virginia DEQ EJ Study for more details.

4. Accessible Information: "Develop tools to provide more transparent, accessible and real-time environmental information to the public."

- a. New Jersey
 - i. New Jersey hosts an online portal providing information on all air permitting, enforcement, and inspection actions. The platform allows air permits to be searched for by county, facility, municipality, or zip code. Likewise, enforcement actions and inspections are searchable by county or zip code and date.
- b. Pennsylvania
 - i. Pennsylvania hosts a publicly accessible reporting platform through its DEP Environment Facility Application Compliance Tracking System (eFacts). Anyone can search by authorization, client, facility, inspection,

name, site, or site by municipality. E-facts “provides the public with multiple options and tools to view environmental/compliance information on regulated facilities as well as information on permitting, licensing and pending applications.” (Skeo Solutions, Inc. and Metropolitan Group, 2020)

c. Massachusetts

- i. The Massachusetts Executive Office of Energy and Environmental Affairs’ hosts an interactive environmental justice website which shows environmental justice areas as classified by 2010 Census block groups.

d. Florida

- i. The St. John’s Water Management District in Florida hosts a portal allowing any member of the public to search a database of project permits using a number a different parameters: specific region/city, permit type, time frame, or a permit number if they have this information (but not required, allowing the public better access to general information). Application information available for the public to view includes the name, phone number and email of staff members involved in reviewing the permit, as well as the status of the application alongside an infographic showing the different stages of the permit process to provide context; permit documents; map and tools as well as space to submit comments and upload documents.

- e. Other notable states include California, Minnesota, Oregon, and Washington State – see Chapter 5 in the full Virginia DEQ EJ Study for more details.

5. Relationship Building: “Invest in proactively building productive relationships with environmental justice and other adversely impacted communities.”

a. South Carolina

- i. South Carolina Department of Health and Environmental Control’s (DHEC) Office of Environmental Affairs staffs an Environmental Justice Coordinator who oversees environmental justice initiatives. A Community Liaison at the Office of Environmental Quality Control (EQC), the regulatory arm of DHEC, is responsible for addressing community concerns around EQC’s activities.
- ii. SC DHEC has an internal Public Participation Task Force which held hearing sessions to receive feedback from stakeholders on DHEC’s public participation actions. SC DHEC has worked to build relationships with EJ voices in order to ensure that underserved communities are involved in the decision-making process and “to ensure that those community concerns are addressed through the use of collaborative, problem-solving strategies and partnerships.” (Skeo Solutions, Inc. and Metropolitan Group, 2020)

- iii. The DHEC has committed to Environmental Justice Guiding Principles, which ensure the agency is proactively building relationships with communities “by sharing information, providing technical assistance, identifying resources, and promoting partnerships between communities and other stakeholders”. (Skeo Solutions, Inc. and Metropolitan Group, 2020)
 - b. Delaware
 - i. In 2001, the Delaware legislature created the Community Involvement Advisory Council (CIAC) and a Community Ombudsman position; both were created with the intention to liaise between the Department of Natural Resources and Environmental Control (DNREC) and communities. The Community Ombudsman is responsible for helping communities to identify and understand environmental problems that they face while helping the department understand the needs of communities. The Ombudsman “shall engage communities in identifying and understanding environmental issues and addressing or resolving environmental problems, advocate for communities, assist communities in obtaining information on environmental issues, and serve as a point of contact for the Department with communities and community organizations.”
 - c. Other notable states include Oregon – see Chapter 5 in the full Virginia DEQ EJ Study for more details.
- 6. Community Engagement: “Proactively and authentically engage communities on issues and decision-making that could potentially affect their health and quality of life.”**
- a. West Virginia
 - i. WV’s Department of Environmental Protection houses an Office of Environmental Advocate, which is responsible for responding to citizen information requests, providing guidance through DEP processes, and which also hosts informational public education workshops and forums.
 - b. Other notable states include Connecticut, Delaware, Illinois, Ohio, Oregon, Tennessee – see Chapter 5 in the full Virginia DEQ EJ Study for more details.
- 7. Environmental Justice Community Capacity: “Build the capacity of environmental justice communities to participate meaningfully in environmental decision-making.”**
- a. South Carolina
 - i. The South Carolina General Assembly created the SC Environmental Justice Advisory Committee in 2007, tasked with assessing the progress of environmental justice initiatives and providing recommendations to the

- Governor and General Assembly.
- ii. SC DHEC's Office of Environmental Affairs administers an Environmental Justice Initiative, which has been involved in a plethora of projects ranging from addressing procedural equity through public participation and providing technical assistance to communities. The EJ Initiative "focuses on including all stakeholders in the decision-making process, facilitating dissemination of information, providing technical assistance to environmental justice communities, building partnerships between communities and other stakeholders, collaborative problem solving, and strengthening agency leadership."
 - iii. DHEC worked with EPA's Region 4 Office of Environmental Justice (OEJ) to create an Environmental Justice Leadership School in 2013, which trained community members on leadership development principles, organizational sustainability practices, and other skills that assist attendees with sustaining the momentum of current and future projects. The program later acted as a model for EPA Region 4's OEJ Environmental Justice Academy and Allen University's Environmental Justice Scholars program. Participants cultivate skills to identify environmental challenges and accomplish environmental improvement goals in their communities.

b. Louisiana

- i. Louisiana Department of Environmental Quality (LDEQ) created the EnviroSchool program. This is an environmental education outreach effort of the Agency providing training for communities, businesses, and others on regulatory topics. These workshops are completely free and open to anyone, given throughout the entire state, and cover various topics such as "DEQ Construction Stormwater Permits and Onsite Sewerage System Maintenance, Health and the Environment" with the goal of educating others about the DEQ's regulatory process..
- ii. Other notable states include New York – see Chapter 5 in the full Virginia DEQ EJ Study for more details.

8. Local Government: "Invest in local government coordination and education to ensure alignment with environmental justice policies."

a. Massachusetts

- i. The Massachusetts Office of Energy and Environmental Affairs offers an environmental justice module in its online Smart Growth/Smart Energy Toolkit that presents guidance for municipalities and developers describing ways to better engage environmental justice populations in the planning and development process, including enhanced outreach and notification, engaging local leaders, holding meetings at accessible times,

providing supports to meeting participants and meeting local language needs

b. New Jersey

- i. New Jersey's Office of Smart Growth, an affiliate of the Department of Community Affairs, provides guidance to municipalities seeking planning endorsement by providing them with local environmental justice inventories and municipal plans for EJ. To assist with this, New Jersey's Department of Environmental Protection supplies local environmental and socioeconomic data while also providing applicants with technical assistance. The data provided directly ensures and complies with NJ law that local plans don't adversely and disproportionately affect communities of color and low-income populations.

Other notable states include California – see Chapter 5 in the full Virginia DEQ EJ Study for more details.

Appendix C: Interviews

Over the course of the project, we interviewed:

- 3 staff from the Division of Water Resources
- 3 faculty academics with background in economics or community based management
- 3 stakeholders either directly representing community voices or local nonprofits
- 1 staff from the Office of State Budget and Management
- 1 staff from NC DEQ's EJ Program
- 1 EJ committee

The following is the general script we used when conducting interviews with stakeholders:

Goal

To help the Division of Water Resources (DWR) make improvements to their Regulatory Impact Analysis (RIA) process.

An RIA or Regulatory Impact Analysis, is a tool used to identify, quantify, monetize, and communicate the anticipated effects of a proposed rule. It is a structured evaluation of the benefits and costs of regulation. The RIA informs decision-making, improves rule design, promotes transparency, and conveys information about potential impacts. The RIA may include impacts on time, expenditures, revenue, savings, efficiencies, public health, and ecosystem services and remediation. . It may be quantitative or qualitative and likely will be both. The best RIA takes finances, the environment, and social issues into account.

Product

The main product will be a Guide for Division of Water Resources (DWR) staff to help develop regulatory impact analyses (RIA). The Guide will contain information about what equity means in terms of environmental regulation, why equity matters, and what resources exist to help consider equity during rulemaking. The Guide will also provide information on what types of data commonly used in RIAs may be prone to bias as well as what equity work is being done in North Carolina and other states that can inform DWR's RIA process. The two products we have so far include an EJ checklist– which is basically an educational primer on environmental justice– and a literature review examining methods by which equity could be integrated into regulatory analyses. Some of our next steps include:

1. Exploring what other states are doing through their state environmental regulatory impact analyses as related to equity and justice.
2. Talking to various stakeholders that were involved (or not) in the process to create the Falls Lake RIA (which has served as the starting point for our research and analysis).

Questions

1. What do you see as the biggest obstacles to addressing equity in environmental regulation?
2. What do you see as the biggest opportunity for making meaningful change?
3. What resources do you rely on or know about? Where can we find data?
4. What do you think are the 3 most important indicators of equity/EJ? (
5. How does your work relate to environmental equity and environmental justice?
6. How do you define these terms?
7. Why do YOU think it matters?
8. Do you have any words of advice or cautionary tales?
9. Who else would you like us to talk to?

Appendix D: Educational Primer Synopsis

An annotated version of the educational primer for the SOP is below, with the full draft document [found here](#).

Literature

1. [Overview of Environmental Justice](#), Charles Lee
2. [What is Environmental Justice](#), Global Justice and the Environment
3. [Confronting Disproportionate Impacts and Systemic Racism in Environmental Policy](#) by Charles Lee
4. [A Framework for Incorporating Environmental Justice in Regulatory Analyses](#), National Coalition Building Institute (NCBI)
5. [Technical Guidance for Assessing Environmental Justice in Regulatory Analysis](#), US EPA

Below are additional websites that act as real-time hubs for different resources, articles, and extra information.

Resources

- Environmental Justice Hub: <https://www.ejnet.org/ej/>
- Environmental Justice Academic Journal: <https://home.liebertpub.com/publications/environmental-justice/259/overview>
- Emory University Common Terms: <https://equityandinclusion.emory.edu/resources/self-guided-learning/common-terms.html>
- Racial Justice Definitions and Distinctions: <https://www.aecf.org/blog/racial-justice-definitions>
- Environmental Justice Mapping Tools: <https://www.nwf.org/-/media/Documents/PDFs/Environmental-Threats/Environmental-Justice-Mapping-Tools.ashx?la=en&hash=347578719433ACCF5C50F1FE56C98AFFD17981>
- Disregard and Due Regard by Jonathan Wiener: <https://guaranicenter.org/wp-content/uploads/2021/01/Wiener.pdf>
- Types of Justice: https://www.beyondintractability.org/essay/types_of_justice

Definitions

- “Diversity means that each individual is unique and recognizes our individual differences. There are varied dimensions of differences: race, ethnicity, gender, sexual orientation, socioeconomic status, age, physical abilities, religious beliefs, political beliefs or other ideologies, global locations, and cultures...Diversity also involves different ideas, perspectives, and values.” ([Emory University](#))

- “Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. This goal will be achieved when everyone enjoys:
 - The same degree of protection from environmental and health hazards, and;
 - Equal access to the decision-making process to have a healthy environment in which to live, learn, and work.” ([US EPA](#))

- “Equity is the guarantee of fair treatment, access, opportunity, and advancement for all [populations] while at the same time striving to identify and eliminate barriers that have prevented the full participation of some groups. The guiding principle of equity acknowledges that there are underserved and underrepresented populations and that fairness regarding these unbalanced conditions is needed to assist equality in the provision of effective opportunities to all groups.” ([Emory University](#))

- Historically Underrepresented: “This term refers to groups who have been denied access and/or suffered past institutional discrimination in the United States and, according to the Census and other federal measuring tools, includes African Americans, Asian Americans, Hispanics or Chicanos/Latinos, and Native Americans.” (Source: [SHRM](#))

- Disparate Impact: “Disparate impact is often referred to as unintentional discrimination. The term adverse impact or disproportionate impacts are sometimes used as an alternative. Disparate impact occurs when policies, practices, rules or other systems that appear to be neutral result in a disproportionate impact on a protected group.” (Source: [SHRM](#))

- Procedural Justice: “Refers to the idea of fairness in the processes that resolve disputes and allocate resources. Procedural justice speaks to four principles, often referred to as the four pillars:
 - fairness in the processes
 - transparency in actions
 - opportunities for voice
 - impartiality in decision making”
 - (Source: [US DOJ](#))

- Distributive Justice: “the fair distribution of the burdens and benefits of social cooperation among diverse persons with competing needs and claims.” (Source: [Theories of Distributive Justice](#))

Appendix E: Standard Operating Procedure

This SOP was developed based upon a framework given to us by DWR. We used our findings to edit the structure (edits in purple) such that equity would be incorporated.

Incorporating Equity into the Regulatory Impact Analysis – Steps and Suggestions

1. **Familiarize yourself with environmental justice, its history in North Carolina, and technical frameworks to incorporate equity using [the Educational Primer](#).**
2. **Collect Background Information from Staff Experts and community members.**
 - a. Utilize mapping tools to chart out at least a 2-mile radius around impacted areas of proposed regulation and to identify local communities. 2-miles is a suggested starting radius, but analysts should consider whether a larger area should be examined based on the particular proposal. Information from this step will be used to determine relative vulnerability and answers to subsequent demographic questions.
 - In the [NCDEQ Community Mapping System](#), use relevant environmental layers to proposed regulation as well as “NC DEQ’S Potentially Underserved Block Groups” under *Facility, Permit and Incident Layers*. [Here is a tutorial](#) on utilizing the tool.
or
 - Utilizing [EPA’s EJSCREEN2.0](#)’s, include relevant environmental layers in 2-mile radius around impacted geographies. Here are [video tutorials](#) and a [PDF user guide](#) on utilizing the tool.
 - Include the following layers: People of Color, Low Income, Linguistically Isolated, Unemployment Rate (optional), Less Than High School Education (optional).
 - In order to account for cumulative impacts, consider adding on Health Disparities layers.
 - In order to account for marginalization, add in all Critical Service Gaps layers.
 - Define impacted groups in this step. For compliance entities, aim to stratify out groups to as granular a level as possible. This will help to understand socioeconomic landscape if/when costs are passed down to consumers (in utility bills, for example).
 - b. Describe the Problem (reason the proposed rule is needed)
 - What are the desired outcomes of the rule, and what undesirable outcomes do you want to avoid?
 - What is the cause of the problem? If the cause of the problem is unknown, what other causes have been investigated and ruled out?

- What is the size and scope of the problem?
 - What areas in North Carolina could have the same problem?
 - What other regulations or environmental problems does this area face?
- c. Describe the Solution (what will the proposed rule do)
- Is there evidence to suggest that the proposed action will address the cause of the problem?
 - Are some interventions more effective than others?
 - Does the regulatory action produce any potential EJ concerns associated with enviro stressors for population groups of concern?
 - Are there communities that would not receive the health benefits from potential nutrient reductions?
- d. Define explicit research questions surrounding equity goals of the project
- What communities will be affected? What are their demographics and what other impacts do they face (as indicated by Step 2a)?
 - What do community groups say about the proposed rulemaking?
 - What Tribes have cultural or geographical ties to the local area (refer back to Step 2a)? Even the ones that aren't federally recognized?
 - Who benefits from the rulemaking? Who doesn't benefit from the rulemaking? What are the differences in the two groups?
 - What's the history of the area? Have there been historical inequities here?
- e. Collaborate with the NC DEQ EJ Office staff (Renee Kramer) in order to identify, understand and integrate environmental justice concerns into the analysis. The EJ Office can also help to identify and support community outreach efforts.

Note: This is the optimal time to begin engaging community members. DWR can get the contacts from staff experts at this time and begin the outreach process to understand the communities that would be affected as well as other community stakeholders who might be interested.

3. Define the Regulatory Baseline

- Are there existing statutes or other rules that are requiring the rule change or that will limit its effect?

4. Identify Costs and Benefits

- How will the future be different as a result of the new rule? What will change from the baseline (the do-nothing scenario)?
- Who would the various interventions benefit and to what extent? What groups or communities would not receive the benefits?
- Who will be required to implement the proposed rule? Who will benefit from its implementation?

- What parties could be affected? Ascertain this information from going into the community and asking local nonprofits to participate in public meetings.
- Identify costs and benefits to government agencies and private sector groups, including local communities and Tribal groups.
- Identify costs and benefits to the environment.
- Investigate change in estimated baseline racial/ethnic income equalities given implementation of a specific option

5. Public Comment Period and Stakeholder Engagement

- Analysts need to ensure that the public engagement piece is structured in a way that meets the “meaningful involvement” portion of the definition of environmental justice.
- Ensure community members understand how their comments will be taken into account.
- Hold multiple public hearings. to allow communities to organize and to account for broadband inequity, a few meetings need to be in person, while others can remain online. At the very least, meetings need to offer a hybrid in-person/online option.
- Advertise public hearings well in advance – at least 2 to 3 months – rather than the standard month deadline.
- Hold at least some meetings in the evenings in order to increase participation.
- Publish a one-page summary using layman’s terms. (change the next sentence accordingly) Alongside the standard rule proposal and RIA/fiscal note document, analysts should consider publishing a one-pager summary in layman’s terms to increase engagement and to provide better communications to stakeholder not versed in technical language.
- Address community members' comments. Advertise the Hearing Officer’s report of public comments in order to address which comments changed the final rule and which comments were not taken into consideration as well as justification for omission. Ensuring the public feels heard is vital to the community engagement process.

Reach out directly to potentially impacted parties to get information or estimates of monetary impacts, including nonprofits and community groups.

6. Estimate Size of Impact (magnitude)

- How much will the future world change as a result of the proposed rule? Rely on research, data, other states’ experiences.
- What is the size of the difference between the expected outcomes and the baseline outcomes (the do-nothing scenario)?

- If the rule affects environmental justice communities, does the new rule reduce their exposure in a meaningful way?

e.g., If the rule change will save wetland acres, estimate how many acres. If the proposed rule requires farmers to reduce their nutrient runoff, estimate how much farmers need to reduce their nutrient inputs and how much runoff enters water bodies.

7. Monetize Costs and Benefits

- Quantify to the greatest extent possible.
- Make assumptions based on the best available data.
- List and discuss what cannot be quantified.
- Calculate (or qualitatively describe) net impact (**direction**).
- When possible, calculate the costs and benefits based on different income brackets and socioeconomic factors.

8. Conduct Sensitivity Analysis

- Describe and, in some cases, recalculate impact under different assumptions or scenarios.
- Illustrates the range of possible outcomes due to uncertainty (**likelihood**).

9. Evaluate Results, Make Decisions

- What intended and unintended outcomes did the process reveal? How were these distributed among different groups (private, government, citizens)?
- How can the benefits be maximized and the costs minimized?
 - What are the best policy options for each group individually?
- How do different methods of implementation or different interventions compare?
- Make decisions based upon:
 - The size of the net impact;
 - The strength of the data and assumptions behind the impact estimates (certainty, confidence);
 - The distributional impact (which groups receive benefits and pay costs)
 - The timing of the costs and benefits
- Consider developing a matrix that ranks the policy options based on outlined equity criteria. The following is an example:

Equity Criteria	[Policy Option A]	[Policy Option B]	[Policy Option C]
Cumulative impacts - does this community have a high rate of any of the criteria identified in Step 2a? [1 (low impact) to 5 (high impact)]			
Community Demographics [List out here from Step 2a]			
Room for community participation in rulemaking process development [1-5]			
Administrative capacity – burden on DWR staff [1 (low) - 5 (high)]			
Strain on low-income populations or smaller, lower resourced entities [1 (low) - 5 (high)]			

10. Prepare RIA for public consumption

- Prepare a “Key Findings” deliverable from the full RIA in a way that is digestible for the public (in layman's terms as opposed to technical language used in the full document).
- Input executive summaries at the beginning of each section
- Explain technical terms and vocabulary at the beginning of each section.
- Better advertise public comment period to communities, local groups and others engaged earlier in the process to cast as wide of a net possible for comment

